







農業部
林業及自然保育署
Forestry and Nature Conservation Agency,
Ministry of Agriculture

臺灣蝶類誌 第五卷
BUTTERFLY FAUNA OF TAIWAN REVISED EDITION

蛺蝶科
徐堉峰、梁家源、黃智偉
沈宗諭

農業部林業及自然保育署
Forestry and Nature Conservation Agency, Ministry of Agriculture



臺灣蝶類誌

BUTTERFLY FAUNA
OF
TAIWAN

蛺蝶科
NYMPHALIDAE

第五卷
Vol. V
REVISED EDITION







徐堉峰　梁家源　黃智偉　沈宗諭
YU-FENG HSU　JIA-YUAN LIANG　CHIH-WEI HUANG　ZONG-YU SHEN

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農業部林業及自然保育署

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FORESTRY AND NATURE CONSERVATION AGENCY,
MINISTRY OF AGRICULTURE, EXECUTIVE YUAN

Foreword

The island of Taiwan is about 36,000 km^2, thus only representing 0.024% of the Earth's terrestrial surface, but butterflies proliferate across it. In the case of butterflies, the number of butterfly species in Taiwan, Japan (10 times of Taiwan in area) and Australia (213 times of Taiwan) are 380, 214 and 435 species, respectively, indicating that the diversity of butterflies in Taiwan far exceeds that of Japan and Australia; that is, the distinctiveness of Taiwan's butterfly habitat in the world. Whether from an academic research, ecological conservation, or education promotion perspective, butterfly resources research is of great importance.

"Biota" records the evolution of scientific names for species, the origin of type specimen, description, distribution, ecology, and references. In order to allow researchers to quickly consult the original documents of species as the basic data for follow-up research and development, and demonstrate the achievements of the national taxonomy, the Forestry and Nature Conservation Agency (FANCA) is actively planning the publication of the "Biota". The FANCA has completed "Vascular Plant of Taiwan" and the second edition of "The Avifauna of Taiwan" while "Mammal Fauna of Taiwan" has also in preparations at present.

In terms of the research on butterfly classification, Professor Takashi Shirôzu published the original book " Butterflies of Formosa in Colour" in 1960 and three volumes entitled "Taiwan Butterfly Design Book" in 1999 were commissioned by Professor Yu-Feng Hsu of National Taiwan Normal University (NTNU). After nearly 20 years, breakthroughs in molecular biotechnology and the evolution of the concept of species have changed butterfly classification. However, there remains a lack of tools for their taxa to explain detail. Books on classification indicate the importance and urgency of a compilation of biota. The FANCA invited Professor Yu-Feng Hsu from NTNU to supplement and update butterfly specimens for the verification of taxonomic descriptions and illustrations, textual distribution, and habitats for a long time to complete the publication of the "Butterfly Fauna of Taiwan" study, which is an important milestone in history. For the first time, a complete series of monographs on the island and the associated islands butterfly resources have been collected and reviewed with the latest data on the current status; written in both English and Chinese, for five volumes in total. This year, the volume five Nymphalidae (Revised Edition) is expected to be published, in the hope of providing research and application to readers both at home and abroad. It is also hoped that compatriots in Taiwan can learn more about the diversity and preciousness of Taiwan's butterflies to protect their rich natural habitat.

Director General Lin Hwa-Ching

Forestry and Nature Conservation Agency, Ministry of Agriculture

推薦序

臺灣全島面積約 36000 平方公里，僅占世界陸域面積的萬分之二點四，卻擁有豐富的動植物資源；以蝴蝶種數為例，臺灣、日本 (面積為臺灣 10 倍) 與澳洲 (面積為臺灣 213 倍) 蝴蝶種數分別為 380 種、214 種與 435 種，可知臺灣蝶類的多樣性遠超過日本與澳洲，顯現臺灣在全球蝴蝶棲地之特殊性，深具學術研究、生態保育及教育推廣價值。

「生物誌」記載物種學名演變、模式產地、分類特徵描述、分布、生態及參考文獻。林業及自然保育署為了讓研究人員快速查閱種類命名的原始文獻，做為後續研究發展的基礎資料，更為了展現國家分類學研究成果，因此，積極籌劃生物誌，目前已完成《臺灣維管束植物簡誌》與《臺灣鳥類誌》第二版，而《陸域哺乳動物誌》也正整備中。

就蝴蝶分類研究而言，自日藉學者白水隆教授 1960 年出版《原色臺灣蝶類大圖鑑》與 1999 年國立鳳凰谷鳥園委託國立臺灣師範大學徐堉峰教授出版《臺灣蝶圖鑑》三卷後，近 20 年間，分子生物技術突破以及物種概念的演變，造成蝶類分類階層異動，然而，尚缺乏一部分類論述詳盡的專著，顯見生物誌編撰的重要性與急迫性。本署邀請臺灣師範大學徐堉峰教授團隊，長期間補充與更新蝴蝶標本，查證分類特徵描述與圖示、考證分布、棲地環境等資料，完成《臺灣蝶類誌》發行，可說是臺灣蝶類分類研究史的重要里程碑。該書為國內首部完整論述本島與離島蝶類資源之專著，分年逐步編纂，中英文對照，共計五卷。本年度出版第五卷蛺蝶科 (修訂版)，冀望提供國內外讀者研究應用，也讓國人更了解臺灣蝴蝶資源的多樣性與珍貴性，進而保護臺灣豐富的自然生態。

農業部林業及自然保育署 署長



謹識

2025 年 12 月

斑蝶、蛇目蝶、環紋蝶全屬於蛺蝶科

對許多愛蝶人來說，青斑蝶、紫斑蝶、蛇目蝶，甚至環紋蝶都是大家耳熟能詳的物種，在過去蝶類的分類系統，牠們分屬於斑蝶科、蛇目蝶科及環紋蝶科，但現在全都併入蛺蝶科了！

2021 年 12 月初堉峰來訊：「老師，我幫林務局編寫的『臺灣蝶類誌圖鑑』最後一冊『蛺蝶誌』即將在年底出版，能否麻煩您為它寫序？」面對堉峰的簡訊，我立刻打電話和他討論書中狀況，終於瞭解到早在 2005 以前年美國哈佛大學和歐洲蝶類學者就開始發表分子親緣研究討論斑蝶、蛇目蝶及環紋蝶科併入蛺蝶科的分類問題，一直到 2009 年左右終於獲得大多數蝶類學者的共識，所以上述這些大家耳熟能詳的蝶類也全都併入蛺蝶科了，使得臺灣的蛺蝶科變成 58 屬 153 種之多！

由於堉峰的圖鑑除雌雄標準圖像之外，還有雌雄性交尾器的解剖圖，這又讓我想起三十多年前調查臺灣蝶類資源、利用狀況及釐訂保育類昆蟲名錄時的一些往事；所以，我問他是否有當年「馬拉巴綠蛺蝶」(現稱作馬拉巴翠蛺蝶) 標本？因為當年臺灣蝶商曾販售這種高價的蝴蝶給日本蝶類收藏家，一對高達 26 萬臺幣之多。他回答我說，他為了找這種蛺蝶，曾遍訪日本藏家，吃足苦頭，好不容易花了數萬元臺幣，才從日本買回標本進行解剖！可見蝴蝶誌的苦功不只是分類系統及生態資訊的整理、完整雌雄標本的拍攝，還要解剖和進行學術性的分析及討論，更要額外付出高價到國外買回標本解剖！所以，如果不是堉峰打從小學起，就對蝴蝶研究的熱忱，這套圖鑑是無法完成的！

1960 年白水隆所出版的「原色臺灣蝶類大圖鑑」在我們當年做蝶類相關研究時，一直被稱作「聖經」；堉峰小學時也深受此書之啟蒙而終身投入蝶類研究，並帶出臺灣年輕一代蝶類學者；如今他更帶著他的學生完成臺灣蝴蝶誌終章—蛺蝶誌，這是一件相當大的學術工程；這會對未來臺灣蝶學研究開啟另一扇大門！恭喜堉峰，也謝謝林務局和堉峰合作完成這部學術性大作，堪稱為昆蟲界的「臺灣之光」！更希望所有喜歡臺灣蝴蝶的朋友們，能從蛺蝶誌及這部大書中找到自己所愛，大家一起合作保護臺灣的蝶類棲地，珍惜臺灣蝴蝶資源，潛心蝶學研究。

國立臺灣大學生物資源學院
名譽教授 楊平世謹識
2021.12.12

Preface

The preparation of volume 5 of the book series “Butterfly Fauna of Taiwan”, Nymphalidae, has been a difficult and complicate work. On the one hand, this family is the most speciose one among butterfly families in Taiwan. On the other hand, some species are very rare, or even already extinct. Literature, specimens and relevant information thus require more efforts to cumulate. Moreover, due to their larger sizes and attractive appearance, more revision works have been published for this family compared to other families. During the compilation of this volume, the pandemic covid-19 never went away. Conversely, a major local outbreak hit by May of 2021, making collecting materials for the volume hard to proceed. The draft of the volume was finally finished at the beginning of the winter this year. My co-authors and I hope the readers of the volume pay attention to the name changes of some taxa, and the volume may provide update information on nymphalid butterflies found in Taiwan.



National Taiwan Normal University, Taipei

作者序

「臺灣蝶類誌」第五卷蛺蝶科的撰寫工作比起先前的四卷來得艱辛複雜，一方面是由於廣義蛺蝶科是臺灣蝶類當中物種多樣性最高的類群，另一方面是其中包含很多珍貴稀有，甚至已經滅絕的種類。資料和標本取得難度都較高。此外，蛺蝶科包含很多大型、美麗的種類，國際關注度高，因此近年來涉及牠們的分類修訂也特別多。本卷撰寫期間新冠肺炎疫情未曾稍歇，今年 5 月份並爆發本土疫情，影響補充樣本的收集，讓我們的編寫團隊十分苦惱。總算幾經波折，書稿於今年秋冬之際初步完成。蛺蝶科近年來的分類異動較其他各科有過之而無不及，敬請讀者注意。我等希望本卷的出版可為愛蝶的朋友提供充分的新資訊。

徐堉峰

2021. 11. 28. 初冬於師大分部

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National Taiwan Normal University, Taipei

致謝

除了梁家源博士、黃智偉及沈宗諭先生以外，許多朋友及國立臺灣師範大學生科系的同學或協助工作進行、或作學術討論、或提供樣本與文獻，均讓本書之撰寫獲益良多。海外學者包括英國的 Dick Vane-Wright 博士、澳洲的 Michael Braby 博士，俄羅斯的 Alexander Monastyrskiy 博士 (現居越南)，日本的藤岡知夫博士、矢後勝也教授、千葉秀幸博士、築山 洋先生、植村好延先生、森下和彥先生、横地 隆先生、稻好 豐先生、豬又敏男先生、朝日純一先生、齊藤基樹先生，義大利的 Gian Cristoforo Bozano 先生，捷克的 Vadim Tshikolovets 先生，香港的楊建業先生與羅益奎先生，新加坡張天平先生，中國大陸的蔣國芳教授、周善益教授、鄧合黎先生、李愛民先生、朱建青先生、吳振軍先生、陳嘉霖先生、胡邵驥博士。臺灣本地的師長與朋友包括楊平世教授、顏聖紘教授、王守民先生、謝書綺小姐、楊育昌先生、陳光亮醫師、黃行七先生、呂晟智先生、陳常卿先生、李惠永先生、李興漢先生、董人愷先生、徐國華先生、唐榮林先生、劉明浩先生、林翰羽先生、陳登創先生、蘇泓恩先生、呂建德先生、洪裕榮先生、詹家龍先生、林柏昌先生、呂建德先生、張永仁先生及張家榮先生。臺灣師範大學研究團隊的成員及前成員則有羅尹廷先生、王立豪先生、林容諄小姐、陳姿伶小姐、蕭國偉先生、張宸睿先生、林文傑先生、黃黎先生、洪若淵先生、陳建仁先生、許育銘先生、陳光耀先生、陳璋臨先生、呂易陽先生、呂至堅博士、吳立偉博士及黃嘉龍博士及林育綺博士。北海道大學的吉澤和德教授、農業試驗所的李奇峰博士及中興大學昆蟲學系的楊曼妙教授慨允檢視他們負責管理的歷史收藏。對以上諸君在此致上我萬分謝忱。此外，若無林務局保育組的大力支持，「臺灣蝶類誌」無法問世，在此表達最高的敬意。最後，我誠摯希冀這套書的讀者會覺得它有參考價值，並歡迎賢達批評指教。

徐堉峰

2021. 11. 28. 初冬於師大分部

Preface to the revised edition

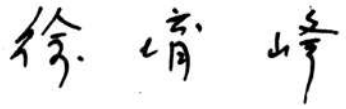
It has been just about three years after the last volume of the "Butterfly Fauna of Taiwan" was issued in 2021. Nonetheless, many changes in taxonomic status and scientific names on butterflies have occurred and published since the release of the first volume in 2017, due to advances in the researches on phylogenetics, systematics and nomenclature on butterflies. Besides, many errors, flaws, and typos have been found in every volume of the book series. Consequently, it became clear that a revision of the book series is necessary, so update information and name usage can be made available to the readers of the book series.



National Taiwan Normal University, Taipei

修訂版序

距離「臺灣蝶類誌」最終卷於 2021 年發行不過短短三年，但是從第一卷發行的 2017 年迄今，已有不少蝴蝶的分類地位和學名使用發生改變。這些改變主要是源自親緣關係、系統發育及命名學上的研究進展。除此之外，過去幾年間在「臺灣蝶類誌」每一分冊中都發現了不少謬誤、瑕疵及錯字。以上事實說明修訂「臺灣蝶類誌」的工作勢在必行。希望本書的修訂能為「臺灣蝶類誌」的使用者提供最新的蝶類相關資訊及合宜的學名使用。



2025. 2. 28. 於新春的臺北

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古眼蝶屬 435
幽眼蝶屬 439
黛眼蝶屬 449
蔭眼蝶屬 481
眉眼蝶屬 496
淺色眉眼蝶屬 519
蛇眼蝶屬 523
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Family NYMPHALIDAE Rafinesque, 1815

The family consists of more than 6,000 species distributed worldwide according to Ackery *et al.* (1999) and Espeland *et al.* (2018), making it the most speciose butterfly family if Riodinidae is separated from Lycaenidae. The common names for the members of the family include brushfoots, browns, fritillaries, admirals, tortoiseshells, ladies, crescents, monarchs, satyrs, ringlets, etc. Due to the diversity in morphology in both adults and immatures, many members within Nymphalidae were given family-level status in the past (e.g., Higgins & Riley, 1983; Tilden & Smith, 1986). Recent phylogenetic or systematic studies have demonstrated that only a single inclusive Nymphalidae will form a monophyletic group (Ackery *et al.*, 1999; Wahlberg *et al.*, 2005; Wahlberg *et al.*, 2009; Espeland *et al.*, 2018; Kawahara *et al*., 2023).

According to Ackery *et al.* (1999), only a single morphological character is recognized as synapomorphy to all members of Nymphalidae: ventromesial surface of antennal with three longitudinal ridges (carinae). Additional diagnostic features appear non universal, including: 1) female abdomen with von Siebold organ; 2) male forelegs reduced or modified (less so in Libythea and present in some Lycaenidae); 3) antero-lateral internal trichoid sensillae on trochanter of male foreleg absent (also found in Riodininae); 4) pupal head without cleavage line (also in Papilionidae and Pieridae); 5) pupa suspended by cremastral hooks only (also found in some species of other families).

Subfamily division varies depending on treatments of different authors. The most recent comprehensive phylogenetic works, such as Espeland *et al.* (2018) and Kawahara *et al*. (2023) recognize 12 subfamilies: Satyrinae, Charaxinae, Calinaginae, Nymphalinae, Cyrestinae, Biblidinae, Apaturinae, Pseudergolinae, Heliconiinae, Limenitidinae, Danainae, and Libytheinae.

In Taiwan, representatives of all 12 subfamilies occur. A total of approximately 132 species of butterflies in Nymphalidae are known to inhabit Taiwan and its associated islands, with 22 additional species of uncertain sources or accidental stray from areas outside of Taiwan.

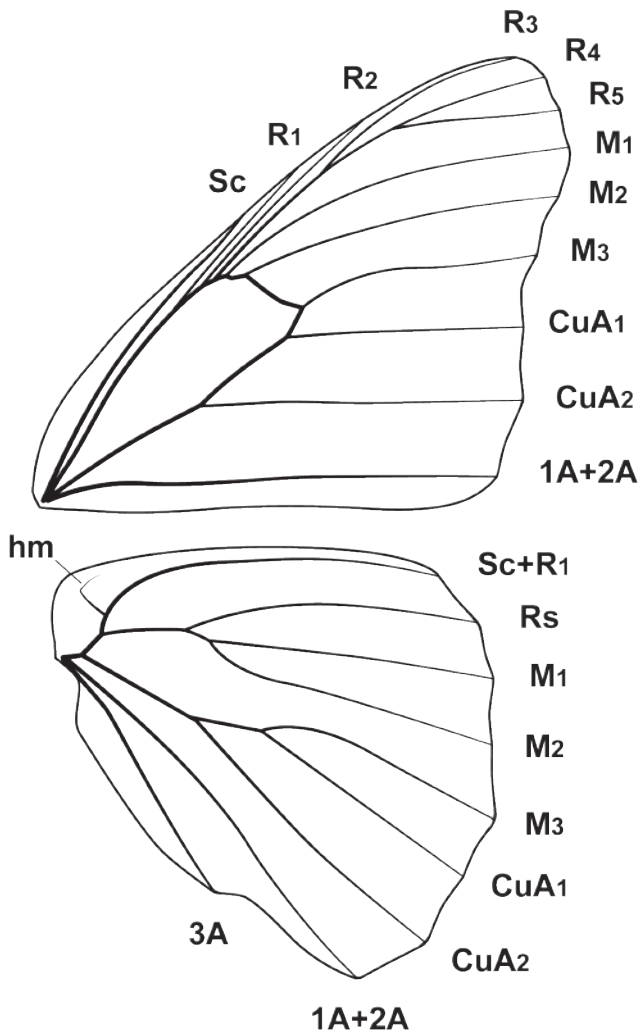
蛺蝶科

根據 Ackery *et al.* (1999) 及 Espeland *et al.* (2018)，本科包含超過 6000 種物種、呈泛世界分布，如果將蜆蝶科自灰蝶科分離的話，蛺蝶科將成為蝶類中蝶種最多的一科。本科成員的英文俗名包括 brushfoots、browns、fritillaries、admirals、tortoise-shells、ladies、crescents、monarchs、satyrs、ringlets 等。由於成蝶及幼蟲外部形態上多樣性很高，因此過去許多蛺蝶科成員被賦予科級地位。然而，近年之親緣關係及系統發育研究已闡明，只有將這些成員全部統整在單一蛺蝶科裡才能使之成為自然分類強調之單系群。

根據 Ackery *et al.* (1999)，僅有一項形態特徵是蛺蝶科所有成員之共衍徵：觸角腹面中央具三條稜脊。其餘有用特徵可能包括：1) 雌蝶腹部具有馮西博器 von Siebold organ；2) 雄蝶前足退化或特化 (但在喙蝶屬不明顯，而部分灰蝶科卻有此特徵)；3) 雄蝶前足轉節前端外側不具內生毛狀感覺器 (部分蜆蝶科亦如此)；4) 蛹的頭部不具裂縫線 (鳳蝶科及粉蝶科亦同)；5) 蛹僅藉懸垂鉤懸掛 (亦見於其他科之部分種類)。

亞科分類依不同研究者而異。新近親緣關係研究如 Espeland *et al*. (2018) 及 Kawahara *et al*. (2023) 將其分為 12 個亞科，包括眼蝶亞科、螯蛺蝶亞科、絹蛺蝶亞科、蛺蝶亞科、絲蛺蝶亞科、苾蛺蝶亞科、閃蛺蝶亞科、秀蛺蝶亞科、毒蝶亞科、線蛺蝶亞科、斑蝶亞科及喙蝶亞科。

12 個亞科在臺灣均有成員分布，共約有 132 種蛺蝶科物種棲息於臺灣本島及附屬離島，另有 22 種來源不明或源自其他區域之偶發性迷蝶。



Text-fig. 1. Wing venation of Nymphalidae (*Vanessa cardui*).

蛺蝶科翅脈脈相圖（小紅蛺蝶為例）

Subfamily LIBYTHEINAE Boisduval *et al.*, 1832

The members in the subfamily are usually called the snout butterflies. They were often treated as a family Libytheidae, but recent works tend to lump it into Nymphalidae as a subfamily Libytheinae (e.g., Scoble, 1992; Freitas & Brown, 2004; Ackery *et al.*, 1999; Espeland *et al.*, 2018). The whole metathorax of this subfamily is drawn under the mesoscutellum (Ackery *et al.*, 1999), and the labial palpi are typically porrect and extended, a feature led to its common name "snout" butterflies.

Members of Libytheinae are widespread, but represented by about a dozen species (Ackery *et al.*, 1999). Kawahara (2006) recognized 13 species in two genera, and later revised to 15 species (Kawahara, 2013).

In Taiwan, 1 species in 1 genus is known, but another stray species from the Philippines was recorded.

喙蝶亞科

本亞科成員英文稱為 snout butterflies。本亞科過去常視為獨立的喙蝶科，但近期研究傾向將其視為蛺蝶科中之一亞科。本亞科成員後胸埋藏於中胸小楯片下。下唇鬚通常前伸且延長，形如長鼻，即其英文俗名「snout」butterflies 之由來。中文俗名如「喙蝶」、「長鬚蝶」、「天狗蝶」也是基於類似理由。

本亞科成員廣布，過往認為包括 12 種 (Ackery *et al.*, 1999)。Kawahara (2006) 分類為 13 種，分為兩屬，後來更修訂為 15 種 (Kawahara, 2013)。

臺灣有 1 屬 1 種，但另有 1 種源自菲律賓之偶產迷蝶的記錄。

Genus *LIBYTHEA* Fabricius, 1807

Type species: *Papilio celtis* Laicharting, [1782]

According to Kawahara (2009), diagnostic characters of the genus include the following: 1) R_2 of forewing with base closer to fork of R_3 + R_4 than discoidal cell; 2) discoidal band across forewing cells M_1 and M_2 distally; 3) phallus sigmoid; 4) dorsal margin of valve strongly curved ventrad; 5) corpus bursa with signa.

Larvae feed on plants in the genus *Celtis* of Cannabaceae.

Kawahara (2013) recognized 9 species, widely distributed in the Old World.

1 species occurs in Taiwan, with another species recorded as a rare stray from the Philippines. .

喙蝶屬

根據 Kawahara (2009) 之研究，本屬形態特徵如下：1) 前翅 R_2 脈基部較靠近 R_3 + R_4 而非中室；2) 前翅中室斑紋外側跨入 M_1 及 M_2 室；3) 陽莖器反曲成 S 形；4) 抱器背緣明顯向腹側彎屈；5) 交尾囊具花壁。

幼蟲取食大麻科朴屬植物。

Kawahara (2013) 列舉 9 種，廣泛分布於舊世界。

臺灣有 1 種，並有一源自菲律賓之稀有偶產種記錄。

Libythea lepita Moore, [1858] (東方喙蝶／朴喙蝶／長鬚蝶／天狗蝶)

Libythea lepita Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 240. (Type locality: “N. India, Bootan [Bhutan]”)

Libythea celtis chinensis Fruhstorfer, 1909: Entomologische Zeitschrift 22 (49): 209. (Type locality: “West-China, Ome-Shan [Omesha, Sichuan, China]”)

Libythea celtis celtoides Fruhstorfer, 1909: Entomologische Zeitschrift 22 (49): 209. (Type locality:

"Tsushima, Nagasaki")

Libythea celtis matsumurae Fruhstorfer, 1909: Entomologische Zeitschrift 22 (49): 209. (Type locality: "Yesso [Hokkaido], Sapporo")

Libythea lepita sophene Fruhstorfer, 1914: Die Gross-Schmetterlinge der Erde 9: 769. (Type locality: "Mekong, Tibet")

Ssp. *formosana* Fruhstorfer, 1909

PLATE 1, Figs. 1–2; PLATE 70, Fig. 391; PLATE 108, Fig. 541

Libythea celtis formosana Fruhstorfer, 1909: Entomologische Zeitschrift 22 (49): 209. (Type locality: "Formosa, Horisha [Puli, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Wugu, Guanyinshan, 19. IV. 2010 (H. C. Huang). **TAIPEI CITY:** 1♀, Beitou, Zhongzhengshan, 21. IV. 2010 (H. C. Huang); 2♀, Beitou, Taipei Veterans General Hospital, 14. III. 2010, reared from *Celtis* sp., emgd. 24. III. 2010 (H. C. Huang); 1♀, Beitou, Shipai, 5. IV. 2020, reared from *C. formosana*, emgd. 24. IV. 2020, HSU 20D14 (L. Huang); 1♀, Beitou, Junjianyan, 17. III. 2013 (L. Huang); 1♂, Shilin, Pingding Ancient Canal, 11. III. 2014, reared from *C. sinensis*, emgd. 21. III. 2014, HSU 14C14 (Y. M. Hsu); 1♀, Wenshan, NTNU, Gongguan campus, 15. V. 2013 (L. Huang); 1♂, Songshan, Xiangshan, 13. II. 2016. **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Daman, 19. IV. 1987 (Y. F. Hsu); 1♂, Fuxing, Ronghua, 13. V. 1987 (Y. F. Hsu); 1♂, Fuxing, Xuanyuan, 900m, 21. X. 2008 (Y. F. Hsu). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, 1500m, 3. IX. 2005 (Y. F. Hsu). **TAIDONG Co.:** 1♂, 1♀, Beinan, Xiaoguihu, 28. IV. 2002.

Description. Adult – Forewing length 21–26 mm. Sexual dimorphism not prominent. Male (PLATE 1, Fig. 1): Head brown. Antennae dark brown, with a series of white dots near base, slightly enlarged at distal end. Proboscis brown. Labial palpus porrect, brown mixed with gray scalings; 3rd segment elongate, conical. Thorax brown dorsally, gray ventrally. Legs brown with gray scalings; protarsi fused, densely hairy. Abdomen brown dorsally, gray ventrally. Forewing triangular with apex produced, axe-shaped. Hindwing shovel-like, with costa convex, termen serrate, dorsum nearly straight. Wing uppersides ground color dark brown. Forewing with an orange band in discoidal cell, a discal orange spot, two small white spots near costa. Two subapical spots present; anterior one white, posterior one orange. Hindwing with an orange transverse band. Wing undersides with ground color variegated, pale brown with dark shade of various extent, sometimes with

an obscure white band. Forewing with markings similar to those of upperside. Female (PLATE 1, Fig. 2): Body and general wing patterns similar to those of male, but ground color of wing undersides more uniform; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 70, Fig. 391) – Tegumen narrow, short, forming broad sclerite ventrad, extending to juxta. Uncus large, prominent, blade-like with distal end acute, pointing slightly downwards. Saccu rod-like, shorter than height of vinculum. Vinculum broad basally, narrow distally; costa with margin rounded, bearing minute teeth; sacculus thick, sclerotized; distal portion of valva tapering distad, with a prominent distal spine, a few small spines present ventrally. Juxta forming plate with dorsal medial invagination and a ventral medial process. Phallus elongate, narrow, up-raising with distal end pointing down; aedeagus approximately 3X of phallobase, tapering acute distal tip.

Female genitalia (PLATE 108, Fig. 541) – Corpus bursae ovate. Signa as a pair of spiny cone with central thorn. Ductus bursae slightly longer than length of corpus bursae, Sterigma forming a medial sac-like invagination at posterior margin of sternum VII. Anterior apophyses as narrow flattened blades with truncate tip. Posterior apophyses slightly shorter than anal papillae, weakly sclerotized, nearly straight, flattened. Anal papillae lobe-like, setose.

Global distribution. North India, Pakistan, Korea, Japan, mainland China, Taiwan (Kawahara, 2006, 2013).

Distribution in Taiwan. Low to moderate elevations (Yamanaka, 1975; Hsu, 2006).

Larval Host plant(s). Cannabaceae: *Celtis sinensis*, *C. formosana*, *C. biondii* (Uchida, 1991; Hsu, 2006; Hung, 2013; Lu & Chen, 2014).

Biology. Multivoltine; overwintering as adults (Hsu, 2006; Lu & Chen, 2014).

Remarks. Although Fruhstorfer (1914) treated *L. lepita* as a species distinct from *L. celtis* (Laicharting, [1782]), most literature in the 20th century regards this taxon as a geographical race of the latter (e.g., Shirôzu, 1960). Based on detailed comparison on male genitalia, Kawahara (2006, 2013) revised the genus *Libythea* and recognized *lepita*

as a distinct species.

形態特徵：成蝶前翅長 21–26 mm。雌雄二型性不顯著。雄蝶 (圖 1)：頭褐色。觸角黑褐色，近基部具白色點列，末端略膨大。口器褐色。下唇鬚褐色雜灰色鱗、前伸，第三節細長、呈錐狀。胸部背面褐色，腹面灰色。足褐色混灰色鱗；前足跗節癒合、密被毛。腹部背面褐色、腹面灰色。前翅近三角形，翅頂斧狀。後翅鐮狀，前緣凸出、外緣具鋸齒、後緣頗直。翅背面黑褐色。前翅中室具橙色帶紋；翅中央有橙色斑點；近前緣處有兩枚白色小斑點；翅頂有兩枚斑點，前方者白色、後方者橘色。後翅有一橙色橫帶紋。翅腹面底色斑駁，底色淡褐色，上具有深淺程度不一之色塊，有時具模糊白色帶紋。前翅斑紋與背面相似。雌蝶 (圖 2)：形態特徵與雄蝶相似，但翅腹面底色較為均勻，前足跗節分節、具爪、無毛。

雄交尾器 (圖 391)：背兜短且狹窄，向腹側形成寬闊骨板與囊突相連。鉤突大型，刃狀，末端銳尖，略微向下勾。囊突桿狀，較抱器短。基腹弧基部寬闊，末部狹窄。抱器背邊緣弧形，有小齒。抱器腹厚且明顯骨化。抱器向末端漸細形成棘狀突起，腹側具數只小刺棘。陽基軛片為背側及腹側均內凹之骨化板。陽莖細長，上屈而末端下彎。陽莖器末端漸細、尖銳，長度約為陽莖基 3 倍。

雌交尾器 (圖 541)：交尾囊卵圓形；花壁錐狀、具棘，中央有刺；交尾囊管略長於交尾囊長度。交尾孔板於第七腹後緣內側中央形成囊狀凹陷。前內骨突窄刃狀，前端截狀。後內骨突較肛突短，輕微骨化、頗直、扁平。肛突葉狀，具剛毛。

世界分布：印度北部、巴基斯坦、朝鮮半島、日本、中國大陸及臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：大麻科之朴樹、石朴及沙楠子樹。

生物學：本種是一年多世代物種，成蝶越冬。

註記：雖然 Fruhstorfer (1914) 將東方喙蝶 *L. lepita* 及喙蝶 *L. celtis* (Laicharting, [1782]) 視為不同種，大部分 20 世紀的文獻仍將東方喙蝶視為喙蝶之地理族群 (例如 Shirôzu, 1960)。Kawahara (2006, 2013) 透過詳細之雄蟲交尾器研究對喙蝶屬進行修訂，而將東方喙蝶處理為獨立種。

Subfamily DANAINAE Boisduval, [1833]

The members in the subfamily are usually collectively called the milkweed butterflies (Ackery & Vane-Wright, 1984). They were often treated as a family Danaidae, but recent phylogenetic studies incline to regard this group as a subfamily Danainae within Nymphalidae (e.g., Freitas & Brown, 2004; Wahlberg *et al.*, 2009; Espeland *et al.*, 2018). The monophyly of the subfamily may be supported by the presence of paired, sheathed, and eversible hairpencils on the abdomen of the males and the clubbed, spinose, 4-segmented pretarsus of the females (Scoble, 1992), and adults imbibing pyrrolizidine alkaloids from plant to make sex pheromones and defense (Ackery *et al.*, 1999).

Members of Danainae are mostly tropical, with the greatest diversity in the Oriental region. Some species are famous for capability of long distance migration or dispersal, such as the Monarch (*Danaus plexippus*) and the Chestnut Tiger (*Parantica sita*). Some species may form aggregation in large scale during winter or dry season, such as various species of Crows (*Euploea* spp.).

In Taiwan, 24 species in 6 genera have been recorded, but some of them are occasional visitors or rare strays from the other regions, notably the Philippines.

斑蝶亞科

本亞科成員英文俗名統稱 milkweed butterflies (乳草蝶)。本亞科從前常被視為獨立之斑蝶科，但近期親緣關係研究傾向將其視為蛺蝶科下之一亞科。本亞科作為單系群可由雄蝶腹部成對、有鞘、可外翻之毛筆器，雌蝶前足跗節四節、具刺、棒狀以及成蝶吸食植物 PA 類生物鹼用於防禦及製造費洛蒙等特徵所支持。

本亞科成員多為熱帶種，於東洋區物種多樣性最高。部分種類以遠距離遷移能力而著名，如帝王斑蝶及大絹斑蝶。部分種類於乾季或冬季時會以龐大數量群聚，如多種紫斑蝶。

臺灣有記錄之種類有 6 屬 24 種，但部分種類為來自其他區域之偶發性、稀有迷蝶，源自菲律賓者尤多。

Genus *DANAUS* Kluk, 1802

Type species: *Papilio plexippus* Linnaeus, 1758

Ackery & Vane-Wright (1984) gave three characters unique to the genus: 1) valva with an annularly corrugated process; 2) secondary sexual organ of male hindwing formed as a pocket in which anterolateral roof or flap originates as a basal dorsal outgrowth; 3) male terminalia with pseudovalves.

Larvae feed on plants in Apocynaceae (including those formerly in Asclepiadaceae).

Ackery & Vane-Wright (1984) recognized 11 species, distributed worldwide, but mainly in the tropics.

4 species have been recorded from Taiwan. Of them, the Monarch butterfly (*Danaus plexippus*) evidently was an early immigrant from the New World and already went extinct around 1930s. *Danaus melanippus* is a frequent visitor from the Philippines. It is uncertain if this species has successfully established in Taiwan.

斑蝶屬

Ackery & Vane-Wright (1984) 列出三項本屬之獨特形態特徵：1) 抱器上有具褶突起；2) 雄蝶後翅第二性徵為源自翅背側產生之袋狀構造；3) 雄蝶交尾器有偽抱器。

幼蟲取食夾竹桃科植物，包括原屬於蘿藦科之植物。

Ackery & Vane-Wright (1984) 將本屬分為 11 種，呈泛世界分布，但主要分布於熱帶。

臺灣有 4 種之記錄，其中帝王斑蝶顯然為早期自新世界遷移進入之物種，並已於 1930 年代前後滅絕。白虎斑蝶則為發現頻率較高、源自菲律賓之偶產性迷蝶，目

前尚無法確定是否已成功立足。

Danaus plexippus (Linnaeus, 1758) (帝王斑蝶／大樺斑蝶)

PLATE 1, Figs. 3–4; PLATE 70, Fig. 392; PLATE 108, Fig. 542

Papilio plexippus Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 471. (Type locality: Kendall, New York State [U. S. A.])

Papilio archippus Fabricius, 1793: Entomologia Systematica 3 (1): 49. (Type locality: "America meridionali [South.America]") (preoccupied by *Papilio archippus* Cramer, 1776)

Danais archippus var. *fumosus* Hulst, 1886: Entomologica Americana 2 (9): 182. (Type locality: [New York])

Danaus menippe f. *americanus* Gunder, 1927: Entomological News 38 (5): 137. (Type locality: Sunny Glen Ranch, Brewster County, Texas [U. S. A.])

Danaus menippe f. *nivosus* Gunder, 1927: Entomological News 38 (5): 138. (Type locality: Jefferson Barracks, Missouri [U. S. A.]) (preoccupied by *Danais nivosus* Godman & Salvin, 1897)

Euploea curassavicae Fabricius, 1807: Systema Glossatorum: 69. (Type locality: "America meridionali [South.America]")

Specimens examined:

NANTOU Co.: 1♂, " 埔 里 社 41 5 21 ニ ト ベ [Renai, Puli, 21. V. 1908] / No. 105" (TARI); 1♂, "Horisha [Renai, Puli] 1909 Col. J. Sonan" (TARI); 1♀, "Odorisha, Mar 27, 1920 [Renai, Puli, 27. III. 1920]" (TARI); 1♀, "Sankakuho [Renai, Meifeng] FORMOSA 13. V. 1935. COL. T. MITONO" (TARI). **TAINAN CITY [= TAINAN Co.]:** 1♂, " 関仔嶺 41 7 4 [Baihe, Guanzhiling, 4. VII. 1908]" (TARI); 1♀, "No. [no additional data]".

Description. Adult – Forewing length 46–54 mm. Sexual dimorphism not prominent. Male (PLATE 1, Fig. 3): Head dark brown with white spots. Antennae dark brown, slightly enlarged distad, distal tip naked. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally. Thorax dark brown with white spots; patagium dark brown with central white spot. Legs dark brown with white markings; protarsi fused, stab-like, hairy. Abdomen dark brown; five series of white dots and narrow bands present ventrally. Forewing triangular, costa slightly convex, apex obtuse, dorsum straight. Hindwing rounded, with distal ends of veins slightly produced. Wing uppersides mostly brown tinged with yellow; a few white or creamy yellow subapical spots present Dark brown margins with series of white dots along termen of both wings. Dark scalings present along veins of both wings. A dark brown sexual brand present in cell CuA_2 of hindwing, where vein CuA_2 curved. Wing undersides with pattern similar to

that of upperside, ground color paler, white spots along termen more prominent. Fringe checkered. Female (PLATE 1, Fig. 4): Body and general wing patterns similar to those of male, ground color duller, without sexual brand on hindwing; protarsi segmented, clawed, not hairy.

Male genitalia (a specimen from Texas, USA is used as reference; PLATE 70, Fig. 392) – Tegumen broad, sclerotized with medial membranous area; socii prominent, digitate with skirt-like extension on inner surface near base, setose distally. Saccus stout, rod-like, with distal end blunt. Vinculum broad, membranous dorsally, sclerotized ventrally. Valva broad, with distal end bifurcated. Juxta as broad transverse plate. Phallus elongate, narrow, slightly up-curved, with distal opening ventral. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (a specimen from Texas, USA is used as reference; PLATE 108, Fig. 542) – Corpus bursae ovate, with heavily sclerotized cup at caudal end. Signa as two prominent elongate bands of spines on opposite wall of corpus bursae. Ductus bursae forming short, narrow anterior membranous tube and long, thick, posterior sclerotized portion. Sterigma with lamella antevaginalis forming heavily sclerotized band with small hook-like process at outer corner posteriorly; lamella postvaginalis forming dome-shaped sclerite with anterior U-shaped invagination. Anterior apophyses represented by short lobes with blunt ends. Posterior apophyses heavily sclerotized, straight. Anal papillae with base as heavily sclerotized band, produced caudally into rounded, setose lobe.

Global distribution. Native to southern Canada to South America, but found in many parts of the world where this species is not native (Tilden & Smith, 1986; Ackery & Vane-Wright, 1984).

Distribution in Taiwan. Recorded from localities throughout the island as early as 1860s (Wallace & Moore, 1866), but no reliable record after 1930s (Yamanaka, 1973).

Larval Host plant(s). Not formally recorded from Taiwan, but introduced *Asclepias curassavica* (Apocynaceae) was probably utilized (Shirôzu, 1960).

Biology. This species is known as a multivoltine species, on the wing throughout a year (Hsu, 2013).

Remarks. There is no doubt that the presence of monarch butterfly in Taiwan is a result of the remarkable expansion of this butterfly across the Pacific and Atlantic islands in the 19th century, as discussed by Vane-Wright (1993) in his "Columbus hypothesis". Vane-Wright (1993) and Zalucki & Clarke (2004) suggested that the monarch butterfly came to Taiwan and surrounding regions around 1900s; however, Robert Swinhoe already collected it from Taiwan in 1860s (Wallace & Moore, 1866), suggesting the colonization of this butterfly to the Far East is much earlier than people generally believe. It is generally accepted that the monarch butterfly is now extinct in Taiwan (Shirôzu, 1960; Chen, 1974). Lee & Wang (1995) stated that the monarch butterfly occurred in Jinmen (Kinmen) Islands, but subsequent surveys undertaken there all failed to find this species (Fan *et al.*, 2000; Tung & Yang, 2008; Chang, 2011; Hsu, 2014).

形態特徵：成蝶前翅長 46–54 mm。雌雄二型性不顯著。雄蝶 (圖 3)：頭黑褐色，有白色點。觸角黑褐色，端部略膨大、頂端裸露。口器黑褐色。下唇鬚前伸、黑褐色，側面具白色斑紋。胸部黑褐色，有白色斑點；頸板黑褐色，中央有白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀、被毛。腹部黑褐色，腹面有五列白色斑點及窄帶紋。前翅三角形、前緣略凸、翅頂鈍、後緣直。後翅圓，翅脈末端略凸出。翅背面大部分呈淺黃褐色，近翅頂處有白色或乳黃色斑點。前、後翅外緣有黑邊，內有白點。深色鱗沿翅脈分布。後翅於 CuA_2 室之 CuA_2 脈彎曲處具深褐色性標。翅腹面斑紋與背面相似，但色澤較淺，外緣白色斑點較鮮明。緣毛黑白相間。雌蝶 (圖 4)：形態特徵與雄蝶相似，但底色較淡，後翅不具性標，前足跗節分節、具爪、無毛。

雄交尾器 (以美國德州產標本為參考，圖 392)：背兜寬闊，內側有膜質區。背兜側突指狀，近基部有裙狀延伸，末端具剛毛。囊突粗桿狀，末端鈍。基腹弧寬闊，背側膜質，腹側骨化。抱器寬，末端分叉。陽基軛片寬、板狀。陽莖細長，略上彎，末端開口於腹面。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (以美國德州產標本為參考，圖 542)：交尾囊卵圓形，尾端有明顯骨化之杯狀構造。花壁為兩骨化明顯之具刺長帶，位於交尾囊壁對側。交尾囊管前端短，膜質、管狀，後端粗，骨化明顯。交尾孔板前陰片形成骨化明顯之帶狀構造，後外

角具小型鉤狀突起；後陰片形成穹頂狀骨片，前端有 U 型內摺。前內骨突短、葉狀、末端鈍端。後內骨突骨化明顯、頗直。肛突基部形呈骨化帶，尾端圓形、有毛。

世界分布：原產於美洲之加拿大南部至南美洲，但許多地方可見非原生族群。

臺灣分布：本種在臺灣最早紀錄於 1860 年代，但從 1930 年代後便無可靠記錄。

寄主植物：在臺灣無正式記錄，但夾竹桃科馬利筋可能曾是在臺利用之寄主。

生物學：本種是一年多代物種。

註記：過去在臺灣發現的帝王斑蝶無疑是這種蝴蝶 19 世紀跨太平洋與大西洋大擴張的結果，此一大擴張的過程在 Vane-Wright (1993) 的「哥倫布假說」論文中已有詳細論述。然而，Vane-Wright (1993) 及 Zalucki & Clarke (2004) 均認為帝王斑蝶約在 20 世紀初來到臺灣及鄰近地區，但羅伯特·斯文豪 (郇和) 卻早於 1860 年代便已經在臺灣採集到標本，顯示帝王斑蝶拓殖遠東地區的年代遠早於普遍認知。目前一般認為帝王斑蝶已在臺滅絕。Lee & Wang (1995) 曾記錄金門有帝王斑蝶棲息，但當地後續之蝶類調查皆未有發現。

Danaus genutia (Cramer, [1779]) (虎斑蝶 / 黑脈樺斑蝶)

PLATE 1, Fig. 5; PLATE 2, Fig. 6; PLATE 70, Fig. 393; PLATE 108, Fig. 543

Papilio genutia Cramer, [1779]: De uitlandsche kapellen 3 (17-21): 23, pl. 206, f. C, D. (Type locality: “China, Canton [Guangdong, China]”)

Danaus nipalensis Moore, 1877: The annals and magazine of natural history, series 4, 20 (115): 43. (Type locality: “Katmandu, Nepal”)

Danais (*Salatura*) *plexippus* f. *uniens* Martin, 1911: Mitteilungen der Münchner Entomologischen Gesellschaft 2 (1-2): 6. (Type locality: “Südostborneo [Southeast Borneo]”)

Danais (*Salatura*) *plexippus* f. *bandjira* Martin, 1911: Mitteilungen der Münchner Entomologischen Gesellschaft 2 (1-2): 7. (Type locality: “Westborneo [West Borneo]”)

Danais (*Salatura*) *plexippus* f. *bimana* Martin, 1911: Mitteilungen der Münchner Entomologischen Gesellschaft 2 (1-2): 8. (Type locality: “Hafenplatze Bima auf Sumbawa [Harbor Bima of Sumbawa]”)

Danaida plexippus plexippus f. *grynion* Fruhstorfer, 1907: Deutsche entomologische Zeitschrift Iris 19 (4): 173. (Type locality: “S. Annam; Sikkim”)

Salatura plexippus adnana Swinhoe, 1917: The annals and magazine of natural history; zoology, botany, and geology, series 8, 19: 331. (Type locality: “Luzon”)

Danaus plexippus plexippus f. *albipars* Talbot, 1943: Transactions of the Royal Entomological So-

ciety of London 93 (1): 126. (Type locality: "Burma, Pyinmana Distr., Karen Hills")
Danaus plexippus sumbana Talbot, 1943: Transactions of the Royal Entomological Society of London 93 (1): 127. (Type locality: "Sumba")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Ruifang, Nanya, 11. IX. 1998 (Y. T. Lo); 1♀, same locality, 23. VIII. 2002 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Wenshan, NTNU, Gongguan campus, 7. XII. 2011 (L. Huang). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, Zhiyi Forest Area, 28. X. 2016 (L. Huang) (genitalia preparation JYL982). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♀, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu); 1♀, Liugui, 23. X. 2005 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Lanyu, Qiwei, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♀, same locality, 1. III. 2021, reared from *Cynanchum lanhsuense*, emgd. 1. IV. 2021; 1♂, Lanyu, Hongtouyan, 15. VI. 2003 (Y. F. Hsu); 1♂, Lanyu, Sidaogou, 13/15. VI. 2003 (Y. F. Hsu); 1♂, same locality, 16/18. III. 2012, reared from *C. lanhsuense*, emgd. 16. IV. 2012, HSU 12C20 (Y. F. Hsu & H. C. Huang). **PENGHU Co.:** 1♂, Magong, 7. X. 2016 (J. J. Cherng).

Description. Adult – Forewing length 37–43 mm. Sexual dimorphism not prominent. Male (PLATE 1, Fig. 5): Head dark brown with white spots. Antennae dark brown, slightly enlarged distad, distal tip naked. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally. Thorax dark brown with white spots; patagium dark brown with central white spot. Legs dark brown with white markings; protarsi fused, stab-like, hairy. Abdomen brown tinged with yellow; five series of white dots present ventrally. Forewing triangular, costa slightly convex, apex obtuse, dorsum straight. Hindwing rounded, with distal ends of veins slightly produced. Wing uppersides mostly brown tinged with yellow, with prominent dark brown area apically on forewing; white markings forming a band in dark brown area. Dark brown margins with series of white dots along termen of both wings. Dark scalings present along veins of both wings. A dark brown sexual brand present in cell CuA_2 of hindwing, where vein CuA_2 curved. Wing undersides with pattern similar to that of upperside, ground color paler; sexual brand forming a dark brown fold with white scalings. Fringe checkered. Female (PLATE 2, Fig. 6): Body and general wing patterns similar to those of male, but without sexual brand on hindwing; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 70, Fig. 393) – Tegumen weakly sclerotized, socii large, fin-like, densely setose. Saccus triangular, broad at base. Vinculum broad. Valva broad, narrowed ventrally, bearing a prominent hook-like process ventrad. Juxta as broad transverse plate. Phallus stout, strongly upcurved; aedeagus longer than phallobase, heavily sclerotized posteriorly, with caudal end forming V-shaped invagination; two rows of small teeth near distal end, one dorsal, one ventral. Cornuti as a small anterior patch and large posterior patch of spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 108, Fig. 543) – Corpus bursae bulbous. Signa as two prominent patches of spines on opposite wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and thick, trumpet-like posterior, sclerotized portion. Sterigma forming prominent sclerotized dome, lamella postvaginalis forming a pair of fin-like sclerotized lobes. Anterior apophyses represented by short lobes with blunt ends. Posterior apophyses heavily sclerotized, curved. Anal papillae with base as heavily sclerotized band, produced caudally into triangular, setose lobe.

Global distribution. Nearly entire Oriental region, also Sulawesi, Lesser Sunda islands, and Northwest Australia (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan and associated islands (Yamanaka, 1973; Hsu, 2013).

Larval Host plant(s). Apocynaceae: *Cynanchum formosanum*, *C. lanhsuense*, *C. boudieri*, etc. (Hsu, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. This species is known as a multivoltine species, on the wing throughout the year (Hsu, 2013).

Remarks. *Salatura yuchingkini* Murayama & Shimonoya, 1963 has been considered as a hybrid between *D. genutia* and *D. chrysippus* by Kurosawa (1973) and Shirôzu (1986).

形態特徵：成蝶前翅長 37–43 mm。雌雄二型性不顯著。雄蝶 (圖 5)：頭黑褐色，有白點。觸角黑褐色，端部略膨大、頂端裸露。口器黑褐色。下唇鬚前伸、黑褐色，側面有白色斑紋。胸部黑褐色，有白色斑點；頸板黑褐色，中央有白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀、被毛。腹部黃褐色，腹面有五道白色點列。前翅三角形、前緣略凸、翅頂鈍、後緣直。後翅圓，翅脈末端略凸出。翅背面大部分淺黃褐色，前翅翅頂有鮮明黑褐色紋，黑褐色紋中有白色紋形成帶紋。前後翅外緣有黑邊，內有白點。有深色鱗沿翅脈分布。後翅於 CuA_2 室之 CuA_2 脈彎曲處具深褐色性標。翅腹面斑紋與背面相似，但顏色較淺；性標形成黑褐色袋狀構造，上有白色鱗。緣毛黑白相間。雌蝶 (圖 6)：形態特徵與雄蝶相似，但後翅不具性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 393)：背兜輕微骨化。背兜側突大型、鰭狀、密被毛。囊突三角形，基部寬。基腹弧寬闊。抱器寬，腹側狹窄，具彎鉤狀突起。陽基軛片呈寬板狀。陽莖粗壯，明顯上彎。陽莖器長度超過陽莖基。末端高度骨化，形成 V 形內凹，末端背側和腹側各具一排小齒。角狀器由前小、後大之兩骨化刺棘斑塊構成。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 543)：交尾囊球狀。花壁為兩骨化明顯之具刺斑塊，位於交尾囊壁對側。交尾囊管前端短、膜質、管狀，後端粗、喇叭狀，骨化明顯。交尾孔板骨化、穹頂狀，後陰片為一對鰭狀骨化葉。前內骨突短、葉狀、末端鈍。後內骨突骨化明顯、彎曲。肛突基部形呈骨化帶，尾端三角形、有毛。

世界分布：東洋區大部分地區、蘇拉威西、小巽他群島及澳洲東北部。

臺灣分布：分布於本島低至中海拔地區，亦見於離島。

寄主植物：夾竹桃科之臺灣牛皮消、蘭嶼牛皮消、薄葉牛皮消等。

生物學：本種為一年多代物種，成蝶全年可見。

註記：Kurosawa (1973) 及 Shirôzu (1986) 指出清金虎斑蝶 *Salatura yuchingkini* Murayama & Shimonoya, 1963 實為虎斑蝶及金斑蝶之雜交型。

Danaus melanippus (Cramer, [1777]) (白虎斑蝶／黑脈白斑蝶)

Papilio melanippus Cramer, [1777]: De uitlandsche kapellen 2 (9-16): 44, pl. 127, f. A, B. (Type locality: “Coromandel, te Tranquebar [Java]”)

Ssp. *edmondii* Bougainville, 1837

PLATE 2, Fig. 7; PLATE 70, Fig. 394; PLATE 108, Fig. 544

Danais edmondii Bougainville, 1837: Journal de la navigation autour du globe de la frégate La Thétis et de la corvette L'Espérance pendant les années 1824, 1825 et 1826, tome second 2: 344, pl. 44, f. 3. (Type locality: Philippines)

Specimens examined:

TAIDONG Co.: 1♂, Lanyu, 24. VII. 1988 (C. S. Tseng).

Description. Adult – Forewing length 35–44 mm. Sexual dimorphism not prominent. Male (PLATE 2, Fig. 7): Head dark brown with white spots. Antennae dark brown, slightly enlarged distad, distal tip naked. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally. Thorax dark brown with white spots; patagium dark brown with central white spot. Legs dark brown with white markings; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally; brown tinged with yellow ventrally, with five series of white dots. Forewing triangular, costa slightly convex, apex obtuse, dorsum straight. Hindwing rounded, with distal ends of veins slightly produced. Wing uppersides mostly white, with prominent dark brown area apically on forewing; white markings forming a band in dark brown area. Dark brown margins with series of white dots along termen of both wings. Dark scalings present along veins of both wings. A dark brown sexual brand present in cell CuA_2 of hindwing, where vein CuA_2 curved. Wing undersides with pattern similar to that of upperside, white scalings more extensive than those of uppersides; sexual brand forming a dark brown fold with white scalings. Fringe checkered. Female: Body and general wing patterns similar to those of male, but without sexual brand on hindwing; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 70, Fig. 394) – Tegumen weakly sclerotized, socii large, fin-like, densely setose. Saccus triangular, broad at base. Vinculum broad. Valva narrowed ventrally, bearing a prominent hook-like process ventrad. Juxta as broad transverse plate. Phallus stout, strongly up-curved; aedeagus nearly as long as phallobase, heavily

sclerotized posteriorly, with caudal end forming V-shaped invagination; a row of small teeth near distal end ventrally. Cornuti as a small anterior patch and large posterior patch of spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 108, Fig. 544) – Corpus bursae bulbous. Signa as two prominent patches of spines on opposite wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and thick, tubular, posterior, sclerotized portion. Sterigma with lamella antevaginalis forming prominent bell-shaped sclerite, lamella postvaginalis forming abroad, transverse sclerite. Anterior apophyses represented by short lobes with blunt ends. Posterior apophyses heavily sclerotized, curved. Anal papillae with base as heavily sclerotized band, produced caudally into setose lobe.

Global distribution. Northeast India, Indochina, Southeast Asia, Sulawesi, Lesser Sunda islands (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Mainly found from southern Taiwan, especially Lanyu island of Taidong (Yamanaka, 1973).

Larval Host plant(s). Apocynaceae: *Cynanchum lanhsuense* at Lanyu (Lee & Chang, 1989; Lee, 1990).

Biology. This species is known as a multivoltine species (Lee & Chang, 1989; Lee, 1990).

Remarks. This species was considered as rare stray from the Philippines to southern Taiwan (Yamanaka, 1973), but sighting cases seem to have increased at Lanyu island in recent years, suggesting possible establishment there.

形態特徵：成蝶前翅長 35–44 mm。雌雄二型性不顯著。雄蝶 (圖 7)：頭黑褐色，有白點。觸角黑褐色，端部略膨大、頂端裸露。口器黑褐色。下唇鬚前伸、黑褐色，側面有白色斑紋。胸部黑褐色，有白色斑點；頸板黑褐色，中央有白色斑點。足黑

褐色，有白色斑紋，前足跗節癒合、似刺、匕狀。腹部背面褐色、腹面褐色泛黃色，上有五道白色點列。前翅三角形、前緣略凸、翅頂鈍、後緣直。後翅圓，翅脈末端略凸出。翅背面大部分呈白色，前翅翅頂具鮮明黑褐色紋，黑褐色紋中有白色紋形成帶紋。前後翅外緣有黑邊，內有白點。有深色鱗沿翅脈分布。後翅於 CuA_2 室之 CuA_2 脈彎曲處具深褐色性標。翅腹面斑紋與背面相似，但白色鱗片分布較廣；性標形成黑褐色袋狀構造，上有白色鱗。緣毛黑白相間。雌蝶：形態特徵與雄蝶相似，但後翅不具性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 394)：背兜輕微骨化。背兜側突大型、鰭狀，密被毛。囊突三角形，基部寬。基腹弧寬闊。抱器腹側狹窄，具鉤狀突起。陽基軛片呈寬板狀。陽莖粗壯，明顯上彎。陽莖器長度約略與陽莖基等長，末端高度骨化，形成 V 形內凹，腹側近末端處有一排小齒。角狀器由前小、後大之兩骨化刺棘斑塊構成。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 544)：交尾囊球狀，花壁為兩片骨化明顯之具刺斑塊，位於交尾囊壁對側。交尾囊管前端短、膜質管狀，後端骨化明顯。交尾孔板具前陰片，形成明顯之鐘狀骨片，後陰片形成寬闊橫向骨片。前內骨突短、葉狀，末端鈍。後內骨突骨化明顯、彎曲。肛突基部明顯骨化，末端葉狀，有毛。

世界分布：印度東北部、中南半島、東南亞、蘇拉威西、小巽他群島。

臺灣分布：主要見於南臺灣，尤其是臺東蘭嶼。

寄主植物：於蘭嶼取食夾竹桃科之蘭嶼牛皮消。

生物學：本種是一年多世代物種。

註記：本種過去被認為是從菲律賓移入南臺灣之稀有偶產迷蝶，但近年來在蘭嶼的觀察記錄有增加趨勢，或已有族群成功立足。

Danaus chrysippus (Linnaeus, 1758) (金斑蝶 / 樺斑蝶)

PLATE 2, Figs. 8–10; PLATE 71, Fig. 395; PLATE 109, Fig. 545

Papilio (*Danaus*) *chrysippus* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 471. (Type locality:“America [Canton, China]”)

Papilio asclepiadis Gagliardi, 1811: Atti del Reale Istituto d'Incoraggiamento alle Scienze Naturali di Napoli 1: 160, pl. 1. (Type locality: “India Orientali vel Aegypto [East India; Egypt]”)

Limnas bowringi Moore, 1883: Proceedings of the Zoological Society of London 1883 (2): 239. (Type locality: “Hongkong”)

Danais chrysippus var. *vigelii* Heylaerts, 1884: Annales de la Société entomologique de Belgique 28: XCIX. (Type locality: “l'Afrique”)

Danais clarippus Weymer, 1884: Entomologische Nachrichten 10 (17): 257. (Type locality: “Nias bei Sumatra [Nias near Sumatra]”)

Limnas klugii Butler, [1886]: Proceedings of the Zoological Society of London 1885 (4): 758. (Type locality: “Somaliland [Somalia]”)

Salatura chrysippus kanariensis Fruhstorfer, 1899: Stettiner entomologische Zeitung 59 (10-12): 412. (Type locality: “Canarischen Inseln [Canary Is.]”)

Danais chrysippus rubra van Eecke, 1915: Zoologische Mededeelingen 1 (3/4): 205. (Type locality: “Nicobar”)

Danais chrysippus auriflava van Eecke, 1915: Zoologische Mededeelingen 1 (13): 205. (Type locality: “Simaloer [Simeulue, Sumatra]”)

Danais chrysippus fuscippus van Eecke, 1915: Zoologische Mededeelingen 1 (3/4): 206. (Type locality: “Soenda-eilanden [Sunda islands]”)

Danais chrysippus f. *limbata* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 91. (Type locality: “Hori, Formosa [Puli. Taiwan]”)

Danais chrysippus f. *subpurpurea* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 91. (Type locality: “Hori, Formosa [Puli. Taiwan]”)

Danaida liboria Hulstaert, 1931: Genera Insectorum 193: 28. (Type locality: “Inde continent, Afrique orientals [India; East Africa]”)

Danaus chrysippus chrysippus f. *amplifascia* Talbot, 1943: Transactions of the Royal Entomological Society of London 93 (1): 122. (Type locality: “India: Poona”)

Specimens examined:

TAIPEI CITY: 1♂, 1♀, Muzha, Taipei City Zoo, 28. V. 2009 (C. H. Lin, jr); 1♂, Wenshan, NTNU, Gongguan campus, 27. V. 2005 (Y. F. Hsu); 1♂, 1♀, Wenshan, Wanlong, 27. VII. 2021, reared from *Asclepias curassavica*, emgd. 16/17. VIII. 2021, HSU 21G17 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Hengchun, Kengding, 17. VII. 1987 (Y. F. Hsu) (NTUIM). **TAIDONG Co.:** 1♂, Beinan, Danan, 120m, 29. VIII. 2005 (Y. F. Hsu); 1♂, Lanyu, 19. III. 2006; 1♂, same locality, 21/23. XI. 2008 (C. H. Lin, jr & C. L. Huang); 1♂, Lanyu, Sidaogou, 10. III. 2009, reared from *A. curassavica*, emgd. 8. IV. 2009, HSU 09C8 (Y. F. Hsu).

Description. Adult – Forewing length 31–39 mm. Sexual dimorphism not prominent. Male (PLATE 2, Figs. 8–9): Head dark brown with white spots. Antennae dark brown,

slightly enlarged distad, distal tip naked. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally. Thorax dark brown with white stripes dorsally, dark brown with white spots ventrally; patagium dark brown with central white spot. Legs dark brown with white markings; protarsi fused, stab-like, hairy. Abdomen brown tinged with yellow dorsally, white ventrally. Forewing triangular, costa slightly convex, apex obtuse; dorsum straight. Hindwing rounded. Wing uppersides mostly brown tinged with yellow, darkened anteriad on forewing. A prominent dark brown area present apically on forewing; white markings forming a band in dark brown area. Dark brown margins with series of white dots along termen of both wings. A dark brown sexual brand present in cell CuA_2 of hindwing, where vein CuA_2 curved. Wing undersides with pattern similar to that of upperside, ground color paler; sexual brand forming a dark brown fold with a white spot. Fringe checkered. Female (PLATE 2, Fig. 10): Body and general wing patterns similar to those of male, but without sexual brand on hindwing; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 71, Fig. 395) – Tegumen weakly sclerotized, setose, socii pouch-like, bearing long setae dorsally, short setae laterally. Saccus broad at base, tapering cephalically to pointed end. Vinculum broad. Valva broad, short, heavily sclerotized into dark brown margin, with dorsal end angled, ventral end a digitat process with minute spines. Juxta cardioid. Phallus stout, straight; aedeagus slightly shorter than phallobase, with caudal end forming V-shaped invagination associated with membranous structure, with inner wall of caudal opening bearing minute spines. Cornuti as a pair of serrate disc. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 109, Fig. 545) – Corpus bursae bulbous, caudal part modified into heavily sclerotized, saddle-like structure. Signa as two prominent, oval patches of spines on opposite wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and longer, posterior, sclerotized portion, broadened posteriorly. Sterigma forming prominent sclerotized dome, lamella postvaginalis forming a pair of sclerotized patches. Anterior apophyses represented by short lobes with blunt ends. Posterior apophyses heavily sclerotized, slightly bent cephalad. Anal papillae with base as heavily sclerotized band, produced caudally into ligulate, setose lobe.

Variation. A form with hindwing whitened has been called f. *alcippoides* (Moore) (Eliot, 1992).

Global distribution. Widespread in Afrotropical, Oriental and Australian regions (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Low elevations throughout Taiwan (Yamanaka, 1973; Hsu, 2013); also recorded from associated islands (Hsu, 2013, 2014).

Larval Host plant(s). Apocynaceae: *Asclepias curassavica*, *A. physocarpa*, *Stapelia grandiflora*, *Vincetoxicum chinense*, *V. atratum*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. This species is known as a multivoltine species, on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014).

Remarks. Morishita (1985) stated that f. *alcippoides* is genetically dominant over the normal form, and has replaced the latter in many areas in Sundaland. Although Hsu (1995) has reported this form from Taiwan, it remains rare today.

形態特徵：成蝶前翅長 31–39 mm。雌雄二型性不顯著。雄蝶 (圖 8–9)：頭黑褐色，有白點。觸角黑褐色，端部略膨大、頂端裸露。口器黑褐色。下唇鬚前伸、黑褐色，側面有白色斑紋。胸部黑褐色，背面有白色條紋、腹面則有白色斑點；頸板黑褐色，中央有白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀、被毛。腹部背面黃褐色，腹面白色。前翅三角形、前緣略凸、翅頂鈍、後緣直。後翅圓。翅背面大部分淺黃褐色，前翅前半部色澤較深。前翅翅頂有鮮明黑褐色紋，黑褐色紋中有白色紋形成帶紋。前、後翅外緣有黑邊，內有白點。後翅於 CuA_2 室之 CuA_2 脈彎曲處具深褐色性標。翅腹面斑紋與背面相似，但色澤較淺；性標形成黑褐色袋狀構造並具白色斑點。緣毛黑白相間。雌蝶 (圖 10)：形態特徵與雄蝶相似，但後翅不具性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 395)：背兜輕度骨化，有毛。背兜側突袋狀，背側具剛毛，腹側有短

毛。囊突基部寬，向前漸窄。基腹弧寬闊。抱器寬短，末緣高度骨化，棕黑色，背端角狀，腹側末端形呈指狀突起且具小刺。陽基軛片心形。陽莖粗壯、筆直。陽莖器長度略短於陽莖基，末端膜質，形成 V 形內凹，開口內側具小刺棘。角狀器為一對鋸齒盤。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 545)：交尾囊球狀，尾端形成骨化明顯之鞍狀構造。花壁為一對骨化明顯之具刺橢圓形骨斑，位於交尾囊壁對側。交尾囊管前端短、膜質、管狀，後端長、骨化明顯，後端略粗。交尾孔板為穹頂狀骨，後陰片形呈一對骨化斑塊。前內骨突短、葉狀、末端鈍。後內骨突骨化明顯，前端略彎曲。肛突基部形呈骨化帶，尾端形舌狀、有毛。

變異：後翅泛白者有時被稱為白化型 f. *alcippoides* (Moore)。

世界分布：廣泛分布於非洲區、東洋區及澳洲區。

臺灣分布：分布於本島低海拔地區，離島亦有分布。

寄主植物：夾竹桃科之馬利筋、釘頭果、大花魔星花、毛白前、牛皮消等。

生物學：本種為一年多代物種，成蝶全年可見。

註記：Morishita (1985) 指出白化型在遺傳上對一般型為顯性，在異他地區許多地方已取代後者。雖然 Hsu (1995) 曾報告白化型在臺灣的發現記錄，但時至今日仍然罕見。

Genus *TIRUMALA* Moore, [1880]

Type species: *Papilio limniace* Cramer, [1775]

Ackery & Vane-Wright (1984) gave two characters unique to the genus: 1) male hindwing cell CuA_1 with a deep pouch beneath, containing particle-producing hairs; 2) anterolateral lip of female A8 sternite with well-developed lateral, ventrally-directed

projections.

Larvae feed on plants in Apocynaceae (including those formerly in Asclepiadaceae).

Ackery & Vane-Wright (1984) recognized 9 species, distributed in Old World tropics.

4 species have been recorded from Taiwan, but two of them are rare strays from the Philippines.

青斑蝶屬

Ackery & Vane-Wright (1984) 確認之本屬獨特形態特徵有二：1) 雄蝶後翅 CuA_1 室具深袋，內有製造費洛蒙相關物質之毛狀構造；2) 雌蝶第 8 腹節小腹片前方側面蓋狀構造側面有指向腹面之突起。

幼蟲取食夾竹桃科植物，包括原屬於蘿藦科之植物。

Ackery & Vane-Wright (1984) 將本屬分為 9 種，分布於舊世界熱帶。

臺灣有 4 種之記錄，但其中 2 種為源自菲律賓之稀有偶產迷蝶。

Tirumala limniace **(Cramer, [1775]) (淡紋青斑蝶／淡色小紋青斑蝶)**

Papilio limniace Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 92, pl. 59, f. D, E. (Type locality: “China”)

Danaida limniace moaria Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 274. (Type locality: “Formosa”)

Danaida limniace norinia Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 274. (Type locality: “Hainan”)

Danais limniace fruhstorferi van Eecke, 1915: Zoologische Mededeelingen 1 (3/4): 209. (Type locality: “Wetter” [error?])

Danaida limniace kuchingana Moulton, 1915: The Entomologist 48: 97. (Type locality: “Kuching (Sarawak)”)

Ssp. *limniace* Cramer, [1775]

PLATE 3, Figs. 11–12; PLATE 71, Fig. 396; PLATE 109, Fig. 546

Ssp. *orestilla* Fruhstorfer, 1910

Danaida limniace orestilla Fruhstorfer, 1910: Die Gross-Schmetterlinge der Erde 9: 205. (Type locality: "Luzon")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Fushan, 10. XI. 2008, reared from *Dregea volubilis*, emgd. 1. XII. 2008, HSU 08L32 (C. C. Lu, jr). **TAIPEI CITY:** 2♀, Daan, NTU campus, 28. III. 2001, reared from *D. volubilis*, emgd. 26. III/ 22. IV. 2001, HSU 01C63 (Y. T. Lo); 1♂, 1♀, Wenshan, NTNU, Gongguan campus, 26. II. 2009 (Y. F. Hsu); 1♀, same locality, 1. III. 2009 (Y. F. Hsu); 1♂, same locality, 5. III. 2009 (Y. F. Hsu); 1♀, same locality, 30. IX. 2015 (Y. F. Hsu); 1♂, same locality, 8. IX. 2018, emgd. 19. IX. 2018 (L. Huang) (genitalia preparation JYL963). **HUALIAN Co.:** 1♂, Zhuoxi, Zhongping Forest Trail, 1. VI. 2007, reared from *Telosma pallida*, emgd. 1. VI. 2007, HSU 07F21 (L. H. Wang & C. C. Lu); 2♀, same locality, 16. VII. 2007, reared from *T. pallida*, emgd. 30. VII/ 1. VIII. 2007, HSU 07G9 (L. H. Wang & C. C. Lu); 1♀, Xiulin, Taroko, 20. VII. 2007, reared from *D. volubilis*, emgd. 30. VII. 2007, HSU 07G18 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Liugui, 23. X. 2005 (Y. F. Hsu); 1♀, Tianliao, 23. II. 2021, reared from *D. volubilis*, emgd. 18. III. 2021, HSU 21B16 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu); 1♂, Lanyu, Sidaogou, 10. IV. 2007 (Y. F. Hsu).

Description. Adult – Forewing length 35–51 mm. Sexual dimorphism not prominent. Male (PLATE 3, Fig. 11): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally and ventrally. Thorax dark brown with narrow, white, medial band dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown with white markings; protarsi fused, stab-like. Abdomen brown dorsally, yellowish brown with white transverse bands ventrally. Forewing triangular, costa slightly convex, apex obtuse, dorsum straight. Hindwing rounded. Wing uppersides dark brown with translucent, bluish white distal spots and proximal stripes; marking in discoidal cell of forewing divided into a distal spot and a proximal band; two stripes in cell CuA_2 nearly equal in length. A gray sexual brand present in cell CuA_2 of hindwing,

where vein CuA_2 curved. Wing undersides with pattern similar to that of upperside, ground color paler except posterior portion of forewing; sexual brand forming a semicircular pouch. Fringe checkered. Orange coremata present. Female (PLATE 3, Fig. 12): Body and general wing patterns similar to those of male, but without coremata and sexual brand on hindwing; protarsi segmented, clawed.

Male genitalia (PLATE 71, Fig. 396) – Tegumen broad, setose, socii reniform, setose. Saccus broad at base, tapering cephalically to blunt end. Vinculum broad. Valva broad, short, heavily sclerotized into dark brown margin; ventral end forming elongate, digitate process. Juxa semi-circular. Phallus stout, down-curved caudad; aedeagus approximately as long as phallobase, with caudal end forming membranous structure with a patch of minute spines. Cornuti as several spiny sclerites. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 109, Fig. 546) – Corpus bursae bulbous, caudal part modified into heavily sclerotized, tubular structure. Signa as two prominent, oval patches of spines on opposite wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and longer, posterior, sclerotized portion. Sterigma forming prominent sclerotized dome. Anterior apophyses absent. Posterior apophyses sclerotized, nearly straight. Anal papillae with base sclerotized, produced caudally into setose lobe.

Global distribution. India, Sri Lanka, Indochina, northern Borneo, Java, Lesser Sunda islands, Sulawesi, Philippines, South China, Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan and associated islands (Yamanaka, 1973; Hsu, 2013).

Larval Host plant(s). Apocynaceae: *Dregea volubilis* and *Telosma pallida* (Hsu, 2013; Hung, 2013; Lu & Chen, 2014).

Biology. This species is known as a multivoltine species, on the wing throughout the year

(Hsu, 2013).

Remarks. Subspecies *orestilla* Fruhstorfer, 1910, characteristic by yellowish white instead of bluish white translucent markings on wings, is occasionally found as a stray from the Philippines (Shimonoya & Yu, 1970; Yen *et al.*, 1995).

形態特徵：成蝶前翅長 35–51 mm。雌雄二型性不顯著。雄蝶 (圖 11)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，側面及腹面具白色斑紋。胸部黑褐色，背面中央有白色窄帶紋、腹面有白色斑點；頸板黑褐色，前側及後側各具一白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀。腹部背面褐色、腹面黃褐色而有白色橫帶紋。前翅三角形、前緣略凸、翅頂鈍、後緣直。後翅圓。翅背面黑褐色，外側有藍白色半透明小斑點、內側則有窄條紋；前翅中室斑分裂成外側斑點及內側帶紋；CuA_2 室有二條等長條紋。後翅於 CuA_2 室之 CuA_2 脈彎曲處具灰色性標。翅腹面斑紋與背面相似，除前翅後半部外底色較淺；性標形成半圓形袋狀構造。緣毛黑白相間。具橙色氣味刷。雌蝶 (圖 12)：形態特徵與雄蝶相似，不具氣味刷、後翅無性標，前足跗節分節、具爪。

雄交尾器 (圖 396)：背兜寬，具毛。背兜側突腎形，有毛。囊突基部寬，末端鈍。基腹弧寬闊。抱器寬短，末端高度骨化，呈黑褐色，腹側有指狀突起。陽基軛片半圓形。陽莖粗壯，末端下彎。陽莖器長度約略與陽莖基等長，末端膜質，附有一小片小刺棘。角狀器形成複數骨化刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 546)：交尾囊球狀，後端骨化明顯、管狀。花壁為兩片骨化明顯之橢圓形具刺骨斑，位於交尾囊壁對側。交尾囊管前端短、膜質管狀，後端長、骨化明顯。交尾孔板為骨化圓頂。前內骨突消失。後內骨突骨化，頗直。肛突基部骨化，尾端形成具毛葉狀瓣。

世界分布：印度、斯里蘭卡、中南半島、婆羅洲北部、爪哇、小巽他群島、蘇拉威西、菲律賓、華南及臺灣。

臺灣分布：分布於本島低至中海拔地區，離島亦有分布。

寄主植物：夾竹桃科之華他卡藤及夜香花。

生物學：本種是一年多代物種，成蝶全年可見。

註記：亞種 ssp. *orestilla* Fruhstorfer, 1910 為來自菲律賓之偶發性迷蝶，其特徵為半透明斑紋呈黃白色而非藍白色。

Tirumala septentrionis (Butler, 1874) (小紋青斑蝶／薔青斑蝶)

PLATE 3, Figs. 13–14; PLATE 71, Fig. 397; PLATE 109, Fig. 547

Danais septentrionis Butler, 1874: The Entomologist's monthly magazine 11: 163. (Type locality: Nepal)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, 17. V. 2007 (L. W. Wu); 1♀, Wulai, 200m, 19. X. 2009 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Shilin, Jiantan, 27. IX. 2018, reared from *Heterostemma brownii*, emgd. 12. X. 2018 (L. Huang). **JIAYI Co.:** 1♂, Alishan, Shizhuo/ Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu). **JINMEN Co.:** 1♂, Jinning, Zhongshan Forest, 29. X. 2014 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 45–50 mm. Sexual dimorphism not prominent. Male (PLATE 3, Fig. 13): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally and ventrally. Thorax dark brown with narrow, white, medial band dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown with white markings; protarsi fused, stab-like. Abdomen brown dorsally, yellowish brown with white transverse bands ventrally. Forewing triangular, costa slightly convex, apex obtuse, dorsum straight. Hindwing rounded. Wing uppersides dark brown with translucent, bluish white small distal spots and narrow proximal stripes; marking in discoidal cell of forewing divided into a distal spot and a proximal band; two stripes in cell CuA_2 with anterior much shorter than posterior one. A gray sexual brand present in cell CuA_2 of hindwing, where vein CuA_2 curved. Wing undersides with pattern similar to that of upperside, ground color paler except posterior portion of forewing; sexual brand forming a semicircular pouch. Fringe checkered. Yellowish white coremata present. Female (PLATE 3, Fig. 14): Body and general wing patterns similar to those of male, but without coremata and sexual brand on hindwing; protarsi segmented, clawed.

Male genitalia (PLATE 71, Fig. 397) – Tegumen broad, setose, socii reniform, setose. Saccus broad at base, tapering cephalically to blunt end. Vinculum broad. Valva broad, short, heavily sclerotized into dark brown margin; ventral end forming elongate, digitate process. Juxta semi-circular. Phallus stout, down-curved caudad; aedeagus approximately as long as phallobase, with caudal end forming membranous structure with a patch of minute spines. Cornuti as several spiny sclerites. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 109, Fig. 547) – Corpus bursae bulbous, caudal part modified into heavily sclerotized, tubular structure. Signa as two prominent, oval patches of spines on opposite wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and longer, posterior, sclerotized portion. Sterigma forming prominent sclerotized dome. Anterior apophyses absent. Posterior apophyses sclerotized, nearly straight. Anal papillae with base sclerotized, produced caudally into setose lobe.

Global distribution. Himalayas, India, Sri Lanka, Indochina, Sundaland, Mindanao, South China, Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan and associated islands (Yamanaka, 1973; Hsu, 2013).

Larval Host plant(s). Apocynaceae: *Heterostemma brownii* (Hsu, 1999, 2013).

Biology. This species is known as a multivoltine species, on the wing throughout the year (Hsu, 1999, 2013).

形態特徵：成蝶前翅長 45–50 mm。雌雄二型性不顯著。雄蝶 (圖 13)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，側面及腹面具白紋。胸部黑褐色，背面中央有白色窄帶紋、腹面有白色斑點；頸板黑褐色，前側及後側各具一白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀。腹部背面褐色、腹面黃褐色而有白色橫帶紋。前翅三角形、前緣略凸、翅頂鈍、後緣直。後翅圓。翅

背面黑褐色，外側具藍白色半透明小斑點、內側則有窄條紋；前翅中室斑分裂成外側斑點及內側帶紋；CuA_2 室有二條紋，前側者遠短於後側者。後翅於 CuA_2 室之 CuA_2 脈彎曲處有灰色性標。翅腹面斑紋與背面相似，除前翅後半部外底色較淺；性標形成半圓形袋狀構造。緣毛黑白相間。具黃白色氣味刷。雌蝶 (圖 14)：形態特徵與雄蝶相似，不具氣味刷、後翅無性標，前足跗節分節、具爪。

雄交尾器 (圖 397)：背兜寬，具毛。背兜側突腎形，有毛。囊突基部寬，末端鈍。基腹弧寬闊。抱器寬短，末端高度骨化，呈黑褐色，腹側具細長指狀突起。陽基軛片半圓形。陽莖粗壯，末端下彎。陽莖器長度約略與陽莖基等長，末端膜質，附有一小片小刺棘。角狀器形成複數骨化刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 547)：交尾囊球狀，後端骨化明顯、管狀。花壁為兩片骨化明顯之橢圓形具刺骨斑，位於交尾囊壁對側。交尾囊管前端短、膜質，後端長、骨化明顯。交尾孔板為骨化圓頂。前內骨突消失。後內骨突骨化，頗直。肛突基部骨化，尾端形成具毛葉狀瓣。

世界分布：喜瑪拉雅地區、印度、斯里蘭卡、中南半島、巽他地區、民答那峨、華南及臺灣。

臺灣分布：本島低至中海拔地區，離島亦有記錄。

寄主植物：夾竹桃科之布朗藤。

生物學：本種是一年多世代物種，成蝶全年可見。

Genus *PARANTICA* Moore, [1880]

Type species: *Papilio aglea* Stoll, [1782]

Ackery & Vane-Wright (1984) gave one character diagnostic to the genus: 1) cross vein M_1-M_2 and M_2-M_3 forming an angle.

Larvae feed on plants in Apocynaceae (including those formerly in Asclepiadaceae).

Ackery & Vane-Wright (1984) recognized 38 species, distributed in the Oriental region, East Asia, and western Pacific.

4 species have been recorded from Taiwan, but one of them is rare stray from the Philippines.

絹斑蝶屬

Ackery & Vane-Wright (1984) 所列之本屬獨有形態特徵為 M_1-M_2 橫脈及 M_2-M_3 橫脈間形成角狀。

幼蟲取食夾竹桃科植物，包括原屬於蘿藦科之植物。

Ackery & Vane-Wright (1984) 將本屬分為 38 種，分布於東洋區、東亞及西太平洋。

臺灣有 4 種之記錄，但其中 1 種為源自菲律賓之稀有偶產迷蝶。

Parantica aglea (Stoll, [1782]) (絹斑蝶／姬小紋青斑蝶)

Papilio aglea Stoll, [1782]: De uitlandsche kapellen 4: 173, pl. 377, f. E. (Type locality: "Java [error], Coromandel")

Danais grammica Boisduval, 1836: Histoire naturelle des insectes; spécies général des lépidoptères 1: pl. 11, f. 10. (Type locality: "Java [error]")

Danais ceylanica Felder, 1862: Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien 12 (1/2): 479. (Type locality: Ceylon [Sri Lanka])

Ssp. *maghaba* Fruhstorfer, 1909

PLATE 4, Figs. 15–16; PLATE 71, Fig. 398; PLATE 109, Fig. 548

Danais aglea maghaba Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116. (Type locality: Formosa)

Ssp. *melanoides* Moore, 1883

PLATE 4, Fig. 17

Parantica melanoides Moore, 1883: Proceedings of the Zoological Society of London 1883 (2): 247. (Type locality: "Himalayas, Mussoorie; Cashmere; Nepal; Darjeeling; Cherra; Assam; Up-

per Tenasserim; Siam [Thailand]; Hainan Island")

Danais aglea phormis Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116. (Type locality: "Tonkin, Siam-, und Annam [Vietnam and Thailand]")

Specimens examined:

Ssp. *maghaba*: **JILONG CITY:** 1♀, Longgang Trail, 2. IX. 2006 (Y. F. Hsu). **TAIPEI CITY:** 1♂, 1♀, Wenshan, Xianjiyan, 7. V. 2002 (H. S. Que). **JIAYI Co.:** 1♀, Fanlu, Chukou, 300m, 11. X. 2004 (Y. F. Hsu) (genitalia preparation JYL1043); 1♂, same locality, 350m, 10. X. 2005 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Zuocang Trail, 7. III. 2006 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Baihe, Guanziling, 300m, 24. IX. 2003 (Y. F. Hsu); 1♀, Baihe, Zhentoushan, 27. VIII. 2004 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Meinong, Shuangxi, 22. I. 2007 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Shizi, Nunaishan, 26. III. 2006 (Y. F. Hsu); 1♂, Wutai, Wutoushan, 1100/1200m, 5. V. 2007 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, 21/23. XI. 2008 (C. H. Lin, jr & C. L. Huang).

Ssp. *melanoides*: **JINMEN Co.:** 1♀, Lieyu, Yangshan, 9. XI. 2021 (H. C. Huang).

Description. Adult – Forewing length 37–45 mm. Sexual dimorphism not prominent. Male (PLATE 4, Fig. 15): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally and ventrally. Thorax dark brown with narrow, white, medial band dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown with white markings; protarsi fused, stab-like, hairy. Abdomen brown dorsally, white ventrally. Forewing triangular, costa slightly convex, apex obtuse, termen produced anteriad, dorsum straight. Hindwing rounded. Wing uppersides dark brown with translucent, bluish white distal spots and proximal stripes; a fine thread in cell Sc; an intact elongate band present in discoidal cell of forewing, with merely fine dark brown threads distally; two stripes in cell CuA_2 nearly equal in length, fused basad and sometimes distad. Sexual brands as two patches of dark brown specialized scalings present by sides of vein CuA_2 and 1A+2A of hindwing. Wing undersides with pattern similar to that of upperside, ground color paler, translucent markings more extensive; sexual brands as black patched with white scalings along associated veins. Fringe checkered. Female (PLATE 4, Figs. 16–17): Body and general wing patterns similar to

those of male, but without sexual brands; protarsi segmented, clawed.

Male genitalia (PLATE 71, Fig. 398) – Tegumen narrow, socii as elongate, setose sacs. Saccus rod-like, with distal end blunt. Vinculum relatively broad. Valva triangular, setose, thickened and sclerotized ventrally, with dark brown spines present on inner surface along ventral margin. Juxta small, cardioid. Phallus stout, strongly down-curved caudad; aedeagus approximately as long as phallobase, with caudal end bearing minute teeth. Cornuti as a bundle of long spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 109, Fig. 548) – Corpus bursae bulbous, with large appendix bursae, bearing minute spines near ductus bursae. Signa as prominent patches of spines on inner wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and longer, posterior, sclerotized portion, broadened posteriorly. Sterigma as sclerotized dome, ostium bursae large. Anterior apophyses absent. Posterior apophyses elongate, straight. Anal papillae ovate, densely setose.

Global distribution. India, Sri Lanka, Andamans, Indochina, South China, Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan, also recorded from a few associated islands (Yamanaka, 1973; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Apocynaceae: *Vincetoxicum* spp. and *Heterostemma brownii* (Hsu, 2013; Lu & Chen, 2014).

Biology. This species is known as a multivoltine species, on the wing throughout a year (Hsu, 2013; Lu & Chen, 2014).

Remarks. An individual was recently collected from Jinmen. Its bluish white markings are more extensive than those from Taiwan, evidently belonging to ssp. *melanoides*

ranging from Himalayas, Indochina to East China (Morishita, 1985).

形態特徵：成蝶前翅長 37–45 mm。雌雄二型性不顯著。雄蝶 (圖 15)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，側面及腹面有白色斑紋。胸部黑褐色，背面中央有白色細帶紋，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀、被毛。腹部背面褐色，腹面白色。前翅三角形，前緣略凸出、翅頂鈍、外緣前半部凸出、後緣直。後翅圓。翅背面黑褐色，外側有藍白色半透明斑點，內側有條紋；前翅 Sc 室內有一細線，中室填滿半透明紋，其外端有黑褐色細線紋，CuA_2 室內有二道等長條紋，兩條紋基部融合、有時外端亦相接；後翅 CuA_2 及 1A+2A 脈兩側各具一片特化鱗組成之黑褐色性標。翅腹面斑紋與背面相似，但底色較淺、半透明斑紋較為大、性標黑色，並於翅脈上散佈白色鱗。緣毛黑白相間。雌蝶 (圖 16–17)：形態特徵與雄蝶相似，但不具性標，前足跗節分節、具爪。

雄交尾器 (圖 398)：背兜狹窄。背兜側突囊狀、細長、有毛。囊突桿狀，末端鈍。基腹弧寬。抱器三角形，密被剛毛，腹側厚且骨化，腹緣內側有棕色刺突。陽基軛片小、心形。陽莖粗壯，末端明顯下彎。陽莖器長度約與陽莖基等長，尾端具整齊排列之細齒。角狀器為一束長刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 548)：交尾囊球狀，具附囊，近交尾囊管處有細刺。花壁為具刺骨斑，位於交尾囊內側。交尾囊管前部膜質、短、管狀，後部長，略骨化，尾端膨大。交尾囊孔板穹頂狀，交尾囊孔大型。前內骨突消失。後內骨突細長、頗直。肛突卵圓形，密生剛毛。

世界分布：印度、斯里蘭卡、安達曼群島、中南半島、華南及臺灣。

臺灣分布：本島低至中海拔地區，離島亦有記錄。

寄主植物：夾竹桃科之歐蔓屬植物及布朗藤。

生物學：本種是一年多代物種，全年可見成蝶活動。

註記：最近從金門發現的本種個體青白斑較顯著，應屬於分布於喜瑪拉雅地區、中南半島至華南的亞種 ssp. *melanoides*。

Parantica swinhoei (Moore, 1883) (斯氏絹斑蝶／臺灣青斑蝶／小青斑蝶)

PLATE 5, Figs. 18–19; PLATE 72, Fig. 399; PLATE 110, Fig. 549

Caduga swinhoei Moore, 1883: Proceedings of the Zoological Society of London 1883 (2): 250. (Type locality: North Formosa)

Danais melaneus paculus Fruhstorfer, 1908: Entomologische Zeitschrift 22 (25): 102. (Type locality: "Koshun, Formosa [Hengchun, Taiwan]")

Specimens examined:

JILONG CITY: 1♀, Zhongzheng, Haimentianxian, 21. IV. 2001 (M. X. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Wulai, 12. IV. 2006 (Y. F. Hsu); 1♂, same locality, 16. I. 2007 (Y. F. Hsu); 1♀, Sanzhi, Datunshan, 800m, 15. VIII. 2011 (Y. F. Hsu); 1♀, same locality, 18. VIII. 2011 (Y. T. Lin); 1♀, Bali, Guanyinshan, 500m, 15. IV. 2011 (Z. H. Yen). **TAIPEI CITY:** 3♂, Wenshan, NTNU, Gongguan campus, IV. 2004, reared from *Marsdenia tinctoria*, emgd. 26. IV. 2004, HSU 04D71 (Y. F. Hsu & C. T. Chung); 1♂, same locality, 18. I. 2020, reared from *Tylophora ovata* [= *Vincetoxicum hirsutum*], emgd. 10. II. 2020, HSU 20A17 (L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Beichatianshan, 1200/1700m, 18. V. 2001 (Y. T. Lo). **XINZHU Co.:** 1♂, Zhudong, 5. XI. 2008, reared from *T. ovata* [= *V. hirsutum*], emgd. 26. XI. 2008, HSU 08L2.1 (L. H. Wang & M. S. Sun). **MIAOLI Co.:** 1♂, Taian, 230 Forest Trail, 28. VIII. 2021 (C. W. Huang). **YILAN Co.:** 2♀, Toucheng, Guishan Is., 4/5. III. 2006 (H. C. Huang & C. L. Huang); 1♂, same locality, III. 2006 (H. C. Huang). **HUALIAN Co.:** 1♂, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu); 1♂, same locality, 1200m, 7/8. V. 2006 (Y. F. Hsu); 1♂, Shizi, Nunaishan, 26. III. 2006 (Y. F. Hsu); 2♂, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Lanyu, Lanyu Weather Station, 20. III. 2021 (C. W. Huang); 1♂, same locality, 6. IV. 2021 (Y. F. Hsu).

Description. Adult – Forewing length 40–48 mm. Sexual dimorphism not prominent. Male (PLATE 5, Fig. 18): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with white markings basally and ventrally, with a small lateral spot. Thorax dark brown with narrow, white, medial band dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown with white markings; protarsi fused, stab-like, hairy. Abdomen yellowish brown, with transverse white bands ventrally.

Forewing triangular, costa slightly convex, apex obtuse, termen slightly produced anteriad, dorsum straight. Hindwing flabellate. Wing uppersides dark brown with translucent, bluish white distal spots and proximal stripes; an intact elongate band present in discoidal cell of forewing; a transparent band in cell CuA_2, with a medial, obscure, transverse dark brown stripe. Sexual brands as a few patches of dark brown specialized scalings present on distal portion of hindwing. Wing undersides with pattern similar to that of upperside, ground color paler and reddish, translucent markings more extensive; sexual brands as black patched with white scalings along associated veins. Fringe checkered. Female (PLATE 5, Fig. 19): Body and general wing patterns similar to those of male, but without sexual brands; protarsi segmented, clawed.

Male genitalia (PLATE 72, Fig. 399) – Tegumen narrow, socii as elongate, setose sacs. Saccus rod-like, with distal end blunt. Vinculum narrow. Valva axe-shaped, with posterior margin truncate, densely setose with long setae, with brown spines present on inner surface along ventral margin. Juxta small, V-shaped. Phallus stout, down-curved caudad; aedeagus approximately as long as phallobase. Cornuti as a bundle of spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 110, Fig. 549) – Corpus bursae bulbous, with large appendix bursae, bearing minute spines near ductus bursae. Signa as prominent patches of spines on inner wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and longer, posterior, sclerotized portion, broadened posteriorly. Sterigma dome-shaped, with a pair of heavily sclerotized fold, ostium bursae large. Anterior apophyses absent. Posterior apophyses elongate, bent. Anal papillae ovate, densly setose, sclerotized basad.

Global distribution. Northeast India, Indochina, South China, and Taiwan (Koiwaya & Nishimura, 1997).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan, also recorded from a few associated islands (Yamanaka, 1973; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Apocynaceae: *Marsdenia tinctoria* (Hsu, 2013; Lu & Chen, 2014)

and *Vincetoxicum hirsutum*.

Biology. This species is known as a multivoltine species, on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014).

Remarks. This species was long treated as a race of *Parantica melaneus* (Cramer, [1775]) until Koiwaya & Nishimura (1997) pointed out that each of them represents a distinct species with distribution partially overlapped.

形態特徵：成蝶前翅長 40–48 mm。雌雄二型性不顯著。雄蝶 (圖 18)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，基部及腹面有白斑，側面有小斑點。胸部黑褐色，背面中央有白色細帶紋，腹面有白色斑點；頸板黑褐色，前側及後側各具一白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀、被毛。腹部黃褐色，腹面有白色細橫帶紋。前翅三角形，前略凸出、翅頂鈍、外緣前半部凸出、後緣直。後翅扇形。翅背面黑褐色，外側有藍白色半透明斑點，內側則有條紋；前翅中室填滿被半透明紋、CuA_2 室有透明帶紋，帶紋中央有黑褐色細橫紋；後翅外側有特化鱗組成之黑褐色性標。翅腹面斑紋與背面相似，但底色較淺且泛紅色色調、半透明斑紋較大、性標黑色，並於翅脈處散佈白色鱗。緣毛黑白相間。雌蝶 (圖 19)：形態特徵與雄蝶相似，但不具性標，前足跗節分節、具爪。

雄交尾器 (圖 399)：背兜狹窄。背兜側突囊狀、細長、有毛。囊突桿狀，末端鈍。基腹弧狹窄。抱器斧狀，後緣截狀，密被長剛毛，腹緣內側具棕色刺突。陽基軛片小型、V 字形。陽莖粗壯，末端下彎。陽莖器長度約與陽莖基等長。角狀器為一束棘刺。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 549)：交尾囊球狀，有附囊，近交尾囊管處有細刺。花壁為具刺骨斑，位於交尾囊內側。交尾囊管前部膜質、短，管狀，後部長、骨化，後端膨大。交尾囊孔板穹頂狀，具一對骨化褶，交尾囊孔大型。前內骨突消失。後內骨突細長、彎曲。肛突卵圓形，密生剛毛，基部骨化。

世界分布：印度東北部、中南半島、華南及臺灣。

臺灣分布：分布於本島低至中海拔地區，部分離島亦有記錄。

寄主植物：夾竹桃科之絨毛芙蓉蘭及鷗蔓。

生物學：本種是一年多代物種，全年皆可見成蝶活動。

註記：本種原被視為黑絹斑蝶 *Parantica melaneus* (Cramer, [1775]) 的亞種，Koiwaya & Nishimura (1997) 指出兩者不同種，且分布上部分重疊。

Parantica sita (Kollar, [1844]) (大絹斑蝶 / 青斑蝶)

Danais sita Kollar, [1844]: Kaschmir und das Reich der Siek 4 (2): 424, pl. 6. (Type locality: "Massuri im Himaleya [Mussoorie, N. India]")

Ssp. *niphonica* Moore, 1883

PLATE 5, Figs. 20–21; PLATE 72, Fig. 400; PLATE 110, Fig. 550

Caduga niphonica Moore, 1883: Proceedings of the Zoological Society of London 1883 (2): 249. (Type locality: "Japan (Nikko)")

Caduga loochooana Moore, 1883: Proceedings of the Zoological Society of London 1883 (2): 250. (Type locality: Loo Choo Islands. [Nansei Shoto of Japan])

Specimens examined:

JILONG CITY: 1♂, NTOU campus, 7. IV. 2001 (M. X. Lin); 2♂, 1♀, Mianhuayu, 22. X. 2018 (H. C. Huang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Shiding, Ergeshan, 25. V. 2004 (Y. F. Hsu); 1♂, Wulai, Fushan, 20. II. 2010 (Z. H. Yen); 1♀, Wulai, Fushan, 400m, 19. IV. 2017 (L. Huang) (genitalia preparation JYL1001); 1♀, Xindian, Yinhedong, 12. II. 2016 (Y. F. Hsu); 2♂, Bali, Guanyinshan, 500m, 15. IV. 2011 (Z. H. Yen). **TAIPEI CITY:** 1♂, 1♀, Beitou, Shipai, 14. XII. 2018, reared from reared from *Tylophora ovata* [= *Vincetoxicum hirsutum*], emgd. 2/9. I. 2019, HSU 18M30 (H. C. Huang & L. Huang); 1♀, Wenshan, Wanlong, 13. III. 2018 (L. Huang). **YILAN Co.:** 1♂, Toucheng, Guishan Is., 6. XI. 2005 (W. K. Chen); 2♀, same locality, 4/5. III. 2006 (H. C. Huang & C. L. Huang). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 20. V. 2007 (Y. F. Hsu). **TAIDONG Co.:** 3♂, 2♀, Lanyu, Sidaogou, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂, 1♀, same locality, 27/30. III. 2010 (Y. F. Hsu); 1♂, Lanyu, Central Transverse Road, 27/29. III. 2010 (J. H. Lin); 1♀, Lanyu, 23. XI. 2008 (C. H. Lin, jr); 3♂, 1♀, Lanyu, Lanyu Weather Station, 20/21. III. 2021 (Y. F. Hsu); 2♂, Ludao, "Sleeping Beauty", 29. IV. 2014 (H. C. Huang); 1♂, Ludao, Haishenping, 30. IV. 2014 (H. C. Huang). **JINMEN Co.:** 1♂, Jinsha, Shamei, 10. XI. 2021 (H. C. Huang).

Description. Adult – Forewing length 48–62 mm. Sexual dimorphism not prominent. Male (PLATE 5, Fig. 20): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with white markings basally and ventrally, with a small lateral spot. Thorax dark brown with narrow, white, medial band dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown with white markings; protarsi fused, stab-like, hairy. Abdomen brown dorsally, sometimes tinged with red, white ventrally. Forewing triangular, costa slightly convex, apex obtuse, termen produced anteriad, dorsum straight. Hindwing flabellate. Wing uppersides dark brown on forewing, reddish brown on hindwing, with translucent, bluish white distal spots and proximal bands and stripes; an intact elongate band present in discoidal cell of forewing; a transparent band in cell CuA_2. Sexual brands as prominent patch of brown specialized scalings near tornus of hindwing. Wing undersides with pattern similar to that of upperside, ground color paler, translucent markings more extensive; sexual brands as black patched with white scalings along associated veins. Fringe checkered. Female (PLATE 5, Fig. 21): Body and general wing patterns similar to those of male, but without sexual brands; protarsi segmented, clawed.

Male genitalia (PLATE 72, Fig. 400) – Tegumen narrow, socii as setose sacs. Saccus rod-like, with distal end blunt. Vinculum narrow. Valva axe-shaped, with posterior margin slightly convex, densely setose with long setae, with brown spines present on inner surface along ventral margin. Juxta small, V-shaped. Phallus stout, down-curved caudad; aedeagus approximately as long as phallobase. Cornuti as a bundle of spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 110, Fig. 550) – Corpus bursae bulbous, with large appendix bursae, bearing minute spines near ductus bursae. Signa as prominent patches of spines on inner wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and longer, posterior, weakly sclerotized portion, broadened posteriorly. Sterigma dome-shaped, ostium bursae large. Anterior apophyses absent. Posterior apophyses elongate, bent. Anal papillae ovate, densly setose, sclerotized basad.

Global distribution. Himalayas, Indochina, Malay Peninsula, Palawan, Korea, Japan,

Tibet, Southwest to East China, Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan and associated islands (Yamanaka, 1973; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Apocynaceae: *Marsdenia formosana*, *Vincetoxicum hirsutum*, *Hoya carnosa*, etc. (Uchida, 1991; Hsu, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. This species is known as a multivoltine species, on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014).

Remarks. This species is famous for being capable to make long distance dispersal or movement. Marked individuals in Japan have been re-captured in Taiwan, and vice versa (Fujii, 2001; Fukuda, 2021). Individuals originated from Japan have also been found from localities along southeast China, including Hong Kong, Shanghai, Jinmen, Mazu, etc. (Hsu, 2014; Chen *et al*., 2018)

Based on genetic divergence in mitochondrial genome, Hu & Wang (2018) proposed that the taxon *niphonica* may represent a species distinct from *P. sita*, but Luo *et al*. (2022, *in press*) has demonstrated gene flow is still present between the two taxa, and mitochondrial gene barcode may not be appropriate specie delimitation tool for species with sex-biased migration, thus *niphonica* is still considered as a subspecies of *P. sita* herein.

形態特徵：成蝶前翅長 48–62 mm。雌雄二型性不顯著。雄蝶 (圖 20)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，基部及腹面有白斑，側面有小斑點。胸部黑褐色，背面中央有白色窄帶紋，腹面有白色斑點；頸板黑褐色，前側及後側各具一白色斑點。足黑褐色，有白紋，前足跗節癒合、匕狀、被毛。腹部背面褐色，有時泛紅色，腹面白色。前翅三角形，前緣略凸出、翅頂鈍、外緣前半部凸出、後緣直。後翅扇形。前翅背面黑褐色、後翅背面紅褐色；外側有藍白色半透明斑點、內側則有帶紋及條紋；前翅中室填滿半透明紋、CuA_2 室內亦有半透明紋；後翅臀區附近有由褐色特化鱗組成的鮮明塊狀性標。翅腹面斑紋與背面相似，

但底色較淺、半透明斑紋較大、性標黑色，並於翅脈上散佈白色鱗。緣毛黑白相間。雌蝶 (圖 21)：形態特徵與雄蝶相似，不具性標，前足跗節分節、具爪。

雄交尾器 (圖 400)：背兜狹窄。背兜側突囊狀，有毛。囊突桿狀、末端鈍。基腹弧狹窄。抱器斧狀，後緣略凸出，密被長毛，腹緣內側有棕色刺突。陽基軛片小型、V 字狀。陽莖粗壯，末端下彎。陽莖器長度略與陽莖基等長。角狀器為一束棘刺。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 550)：交尾囊球狀，具大型附囊，近交尾囊管處具細刺。花壁為具刺骨斑，位於交尾囊內側。交尾囊管前部膜質，短而呈管狀，後部長，略骨化，尾端膨大。交尾囊孔板穹頂狀，交尾囊孔大型。前內骨突消失。後內骨突細長、彎曲。肛突卵圓形，密生剛毛，基部骨化。

世界分布：喜瑪拉雅地區、中南半島、馬來半島、巴拉望、朝鮮半島、日本、華西南至華東及臺灣。

臺灣分布：本島低至中海拔地區，離島亦有記錄。

寄主植物：夾竹桃科之臺灣牛彌菜、鷗蔓、毬蘭等。

生物學：本種是一年多代物種，全年均可見成蝶活動。

註記：本種因具長距離遷徙能力而著稱。於日本標記之個體可於臺灣再捕獲，反之亦然。此外在華東南地區，包括香港、上海、金門、馬祖等皆可發現源自日本之個體。

Hu & Wang (2018) 依粒線體基因數據提出 *niphonica* 和 *sita* 可被視為不同種，但 Luo *et al.* (2022) 發現兩者間仍有基因交流，並指出粒線體生命條碼運用在擁有性別偏差遷移現象的物種之種界定上須格外小心，故在此仍將 *niphonica* 視為 *sita* 的亞種。

Genus *IDEOPSIS* Horsfield, 1857

Type species: *Idea* (?) *gaura* Horsfield, [1829]

Ackery & Vane-Wright (1984) gave two characters unique to the genus: 1) inner surface of valva folded and produced into a downwardly-directed, pointed process; 2) vein 1A+2A of hindwing with androconia along entire length in male.

Larvae feed on plants in Apocynaceae (including those formerly in Asclepiadaceae).

Ackery & Vane-Wright (1984) recognized 8 species, mainly distributed in Oriental region, but extending to southern Japan and western Pacifics.

1 species occurs in Taiwan.

旖斑蝶屬

Ackery & Vane-Wright (1984) 列出之本屬獨特形態特徵有二：1) 抱器內表面有褶，向下突出形成尖銳突起；2) 雄蝶後翅沿 1A+2A 脈具發香鱗。

幼蟲取食夾竹桃科植物，包括原屬於蘿藦科之植物。

Ackery & Vane-Wright (1984) 將本屬分為 8 種，主要分布於東洋區，亦見於日本南部及西太平洋。

臺灣有 1 種。

Ideopsis similis (Linnaeus, 1758) (旖斑蝶／琉球青斑蝶)

PLATE 6, Figs. 22–23; PLATE 72, Fig. 401; PLATE 110, Fig. 551

Papilio (*Nymphalis*) *similis* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 479. (Type locality:“Asia” [China, Canton])

Papilio aventina Cramer, [1775]: De uitlandsche Kapellen 1 (1-7): 92, pl. 59, f. F. (Type locality:“Amboina [Ambon]”)

Danais similis var. *chinensis* Felder, 1862: Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien 12 (1/2): 488. (Type locality: Hong Kong)

Danais exprompta Butler, 1874: The Entomologist's monthly magazine 11: 164. (Type locality: “Ceylon”)

Radena similis tragasa Fruhstorfer, 1910: Die Gross-Schmetterlinge der Erde 9: 211. (Type locality: "Ishigaki und Okinawa")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanzhi, Datunshan, 950m, 3. VII. 2008 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Beitou, Datunshan, 10. VI. 2021 (C. W. Huang & Z. L. Chen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Sanmin, Bianfudong, 350m, 8. IX. 2008 (Y. F. Hsu). **XINZHU Co.:** 1♂, Zhudong, 5. XI. 2008, reared from *Tylophora ovata* [= *Vincetoxicum hirsutum*], emgd. 24. XI. 2008, HSU 08L2 (L. H. Wang & M. H. Sun). **KAOHSIUNG CITY:** Gushan, Chaishan, 23. I. 2017, reared from *T. ovata* [= *V. hirsutum*], emgd. 20. II. 2017, HSU 17A20 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, Sidaogou, 27/30. III. 2010 (Y. F. Hsu); 1♂, same locality, 20. III. 2021 (Y. F. Hsu); 1♀, Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu); 2♂, 1♀, Hongye, 25/26. II. 2001, reared from *T. ovata* [= *V. hirsutum*], emgd. 3. IV. 2001, HSU 01B26 (L. W. Wu, J. M. Wu & T. W. Chang). **LIANJIANG Co.:** 1♂, Nangan, Shengtian Park, 20. VII. 2020 (Y. F. Hsu).

Description. Adult – Forewing length 37–47 mm. Sexual dimorphism not prominent. Male (PLATE 6, Fig. 22): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with white markings laterally. Thorax dark brown with narrow, white, medial band dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown with white markings; protarsi fused, stab-like. Abdomen brown dorsally, yellowish brown ventrally. Forewing triangular, costa slightly convex, apex obtuse, dorsum straight. Hindwing rounded. Wing uppersides dark brown with translucent, bluish white, distal spots and proximal stripes; two stripes in cell CuA_2 nearly equal in length. Elongate band of specialized scalings present along dorsum of hindwing, paler compared with other portion of wing. Wing undersides with pattern similar to that of upperside, ground color paler. Fringe checkered. Female (PLATE 6, Fig. 23): Body and general wing patterns similar to those of male, but without band of specialized scalings along hindwing dorsum; protarsi segmented, clawed.

Male genitalia (PLATE 72, Fig. 401) – Tegumen narrow, socii as pea-like, setose sacs. Saccus rod-like, with distal end slightly enlarged, blunt. Vinculum narrow. Valva axe-

shaped, with posterior margin truncate, produced into a blunt projection ventrad, setose. Juxta small, V-shaped. Phallus stout, slightly down-curved caudad; aedeagus approximately as long as phallobase. Cornuti as a bundle of spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 110, Fig. 551) – Corpus bursae bulbous, with prominent appendix bursae, bearing minute spines near ductus bursae. Signa as prominent oval patch of spines on inner wall of corpus bursae. Ductus bursae forming short, anterior membranous tube and longer, posterior, sclerotized portion, broadened posteriorly. Sterigma dome-shaped, ostium bursae broad. Anterior apophyses absent. Posterior apophyses elongate, straight. Anal papillae lobe-like, densly setose, sclerotized basad.

Global distribution. Sri Lanka, Indochina, Okinawa and Amami islands of Japan, South China, Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985; Shirôzu, 2006).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan and a few associated islands (Yamanaka, 1973; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Apocynaceae: *Vincetoxicum* spp. (Hsu, 2013; Hung, 2013; Lu & Chen, 2014).

Biology. This species is known as a multivoltine species, on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 37–47 mm。雌雄二型性不顯著。雄蝶 (圖 22)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，側面有白色斑紋。胸部黑褐色，背面中央有白色細帶紋，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，有白色斑紋，前足跗節癒合、匕狀。腹部背面褐色，腹面黃褐色。前翅三角形，前緣略凸出、翅頂鈍、後緣直。後翅圓。翅背面黑褐色，外側有藍白色半透明斑點，內側有條紋；前翅 CuA_2 室內有二道等長條紋；特化鱗沿後翅後緣形成長條，顏色淺於翅面底色。翅腹面斑紋與背面相似，但底色較淺。緣毛黑白相間。雌蝶 (圖 23)：形態特徵與雄蝶相似，但後翅後緣無特化鱗形成之長條，前足跗節分節、具爪。

雄交尾器 (圖 401)：背兜狹窄。背兜側突豌豆狀，具剛毛。囊突桿狀，末端略膨大、圓鈍。基腹弧狹窄。抱器斧形，後緣截狀，密被剛毛，腹緣內側有鈍凸起。陽基軛片小、V 字形。陽莖粗壯，末端略微下彎。陽莖器長度略與陽莖基等長。角狀器為一束長棘刺。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 551)：交尾囊球狀，具附囊，近交尾囊管處具細刺。花壁為具刺橢圓形骨斑，位於交尾囊內側。交尾囊管前部膜質、短、管狀，後部長、骨化，委端膨大。交尾囊孔板穹頂狀，交尾囊孔大型。前內骨突消失。後內骨突細長、頗直。肛突葉狀，密生剛毛，基部骨化。

世界分布：斯里蘭卡、中南半島、沖繩及奄美群島、華南及臺灣。

臺灣分布：分布於本島低至中海拔地區，包括部分離島。

寄主植物：夾竹桃科歐蔓屬植物。

生物學：本種是一年多代物種，全年皆可見成蝶活動。

Genus *EUPLOEA* Fabricius, 1807

Type species: *Papilio corus* Fabricius, 1793

Ackery & Vane-Wright (1984) gave one character unique to the genus: base of vein Sc and R of hindwing fused, not forming a precostal cell.

Larvae feed on plants in Apocynaceae (including those formerly in Asclepiadaceae) and Moraceae.

Ackery & Vane-Wright (1984) recognized 54 species, mainly distributed in the Oriental region, but extending to islands in the Indian Ocean and western Pacific.

Approximately 10 species have been recorded from Taiwan, but some of them are considered as stray species from the Philippines.

紫斑蝶屬

Ackery & Vane-Wright (1984) 確認之本屬獨有形態特徵為後翅 Sc 脈及 R 脈基部癒合，不形成先前緣室。

幼蟲取食夾竹桃科 (包括原先的蘿藦科) 及桑科植物。

Ackery & Vane-Wright (1984) 羅列 54 種包含在本屬內，主要分布於東洋區，但也見於印度洋及西太平洋。

臺灣有記錄者約有 10 種，但部分種類可能是源自菲律賓之偶產迷蝶。

Euploea sylvester (Fabricius, 1793) (雙標紫斑蝶／斯氏紫斑蝶)

Papilio sylvester Fabricius, 1793: Entomologia Systematica 3 (1): 41: no. 124. (Type locality: N. Queensland, Australia according to Ackery & Vane-Wright, 1984)

Ssp. *swinhoei* Wallace, 1866

PLATE 6, Figs. 24–25; PLATE 72, Fig. 402; PLATE 110, Fig. 552

Euploea swinhoei Wallace, 1866: Proceedings of the Zoological Society of London 1866 (2): 358. (Type locality: "Takow, Formosa [Kaohsiung, Taiwan]")

Ssp. *laetifica* Butler, 1866

Euploea laetifica Butler, 1866: Proceedings of the Zoological Society of London 1866 (2): 292. (Type locality: "Philippine Islands")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Danshui, Erziping, 20. IV. 2011 (C. L. Huang). **TAOYUAN CITY:** 1♂, Fuxing, Northern Cross-Island Highway, 48Km, 3. V. 2017, reared from *Gymnema sylvestre*, emgd. 23. V. 2017, HSU 17E09 (C. W. Huang & Y. M. Hsu). **XINZHU Co.:** 1♂, Guanxi, 29. V. 2004 (Y. F. Hsu); 1♀, same locality, 29. VI. 2004 (Y. F. Hsu); 1♂, 1♀, Xinfeng, Niuguling, 100m, 5. VI. 2010 (Y. F. Hsu & H. C. Huang). **NANTOU Co.:** 1♂, Renai, Jiuxianxi, 700m, 14/15. IV. 2012 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Liugui, 23. X. 2005 (Y. F. Hsu).

Description. Adult – Forewing length 43–47 mm. Sexual dimorphism present. Male (PLATE 6, Fig. 24): Head dark brown with white spots. Antennae dark brown. Proboscis

dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown with series of white spots ventrally and laterally. Forewing triangular, with costa, termen, dorsum convex, apex obtuse. Hindwing rounded. Wing uppersides dark brown with purplish blue shine; a series of bluish white submarginal spots on both wings, with additional distal spot series on hindwing; a patch of grayish white area along costa of hindwing. Two parallel gray sexual brands in cell CuA_2 of forewing. Wing undersides with ground color brown, darkened proximally on forewing. Submarginal spot series white, minute. Discal spot series present, as two prominent white spots on forewing, several minute dots on hindwing. White dot present near distal end of discoidal cells of both wings, prominent on forewing, minute on hindwing. Fringe checkered. Coremata pale brown. Female (PLATE 6, Fig. 25): Body and general wing patterns similar to those of male, but dorsum of forewing straight, sexual brands absent; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 72, Fig. 402) – Tegumen narrow, socii as short, setose sacs. Saccus relatively long, tapering anteriorly, with distal end blunt. Vinculum narrow. Valva as broad, setose lobe with digitate process pointing ventrad. Juxa slender, V-shaped. Phallus elongate, slightly down-curved caudad; aedeagus slightly shorter than phallobase, with surface of caudal portion granulate. Cornuti as a band of spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 110, Fig. 552) – Corpus bursae bulbous, with caudal portion sclerotized, with several folds. Signa as a pair of spiny patches on opposite walls. Ductus bursae elongate, sclerotized, enlarged posteriorly. Sterigma dome-shaped, weakly sclerotized, with a pair of small sclerites outside of ostium bursae. Anterior apophyses absent. Posterior apophyses elongate, curved. Anal papillae densly setose posteriorly, sclerotized basad.

Global distribution. Throughout nearly entire Oriental region and northern part of Australian region, east to New Caledonia and New Hebrides (Ackery & Vane-Wright,

1984; Morishita, 1985).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan, occasionally found from associated islands (Yamanaka, 1973; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Apocynaceae: *Gymnema sylvestre* (Uchida, 1991; Hsu, 1999, 2013; Hung, 2013).

Biology. Adults are on the wing throughout the year (Yamanaka, 1973; Hsu, 2013). They are known to gather in canyons of southern Taiwan in winter, forming overwintering aggregation with other *Euploea* species.

Remarks. The population of *E. sylvester* from Tioman group of islands are similar to ssp. *swinhoei* in appearance and classified as this subspecies in some literature (ex. Morishita, 1985). Van der Poorten & Van der Poorten (2020) pointed out that it is probably genetically more related to ssp. *tyrianthina* Moore, 1883 from Borneo.

A female individual belonging to ssp. *laetifica* Butler, 1866 of the Philippines was reported by Shimonoya & Yu (1970), representing a rare stray.

形態特徵：成蝶前翅長 43–47 mm。具雌雄二型性。雄蝶 (圖 24)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側表面具一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面均有一列白色斑點。前翅三角形，前緣、外緣及後緣略凸出、翅頂鈍。後翅圓。翅背面黑褐色泛藍紫色；亞外緣有一列藍白色斑點，後翅外側另有一列斑點。後翅前緣有一灰色斑塊。前翅 CuA_2 室內有兩平行排列性標。翅腹面底色褐色，前翅基部深色。亞外緣有一列白色小點。中央斑列於前翅為兩鮮明白色斑點，後翅則為數只小點。中室末端有白色斑點，於前翅鮮明，於後翅細小。緣毛黑白相間。氣味刷淡褐色。雌蝶 (圖 25)：形態特徵與雄蝶相似，但前翅後緣直、不具性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 402)：背兜狹窄。背兜側突小型、囊狀、有毛。囊突較長，向前漸細，末端鈍。基腹弧狹窄。抱器寬闊、瓣狀，密生毛，末端腹側有指狀突起。陽基軛片細，V 字形。陽莖細長，末端略下彎。陽莖器長度略短於陽莖基，末端表面顆粒狀。角狀器為一具棘刺骨帶。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 552)：交尾囊球狀，尾端明顯骨化，有許多皺褶。花壁為具刺骨斑，位於交尾囊壁對側。交尾囊管骨化、細長，尾端膨大。交尾囊孔板輕微骨化，穹頂狀，交尾囊孔外側具一對小骨片。前內骨突消失。後內骨突細長、彎曲。肛突後端密生毛，基部略骨化。

世界分布：廣泛分佈於東洋區及澳洲區北部，東至新喀里多尼亞及新赫布里底群島。

臺灣分布：本島低至中海拔地區，離島亦偶有記錄。

寄主植物：夾竹桃科之武靴藤。

生物學：成蝶全年可見。著名的「紫蝶幽谷」即為本種與其他紫斑蝶屬成員於南臺灣峽谷群聚越冬之景象。

註記：本種於刁曼島的族群因外觀相似而被一些文獻歸入記載自臺灣的亞種 ssp. *swinhoei*。Van der Poorten & Van der Poorten (2020) 指出該族群在遺傳上應更接近產自婆羅洲的亞種 ssp. *tyrianthina* Moore, 1883。

Shimonoya & Yu (1970) 曾報告一筆屬於本種菲律賓亞種 ssp. *laetifica* Butler, 1866 之偶產迷蝶的雌蝶記錄。

Euploea midamus (Linnaeus, 1758) (藍點紫斑蝶／金門紫斑蝶)

PLATE 7, Figs. 26–27; PLATE 73, Fig. 403; PLATE 111, Fig. 553

Papilio midamus Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 470. (Type locality: “China, Canton [Guangdong, China]”)

Papilio superbus Herbst, 1793: Natursystem aller bekannten in- und ausländischen Insekten 6: 14, pl. 119, f. 3, pl. 120, f. 1-2. (Type locality: “Ostindien [East Indian]”)

Isamia sinica Moore, 1883: Proceedings of the Zoological Society of London 1883 (3): 312. (Type locality: “S. China”)

Isamia dameli Moore, 1883: Proceedings of the Zoological Society of London 1883 (3): 316. (Type

locality: Shanghai)

Euploea midamus aegumurus Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 277. (Type locality: "Insel Hainan [Hainan Island]")

Specimens examined:

TAIZHONG CITY [= TAIZHONG Co.]: 1♂, Dongshi, Dongshi Forest Garden, 16. IX. 2007 (J. T. Lu). **JINMEN Co.:** 1♂, VIII. 2008 (W. T. Chen); 1♂, same locality, 12/14. XI. 2016, reared from *Strophanthus divaricatus*, emgd. 5. XII. 2016, HSU 16L10 (H. C. Huang); 2♀, Jinning, Zhongshan Forest, 29. X. 2000 (C. C. Lu & Y. T. Lo); 1♂, same locality, 19/20. XI. 2013 (Y. F. Hsu & H. C. Huang); 1♂, Jinsha, Wuhushan, 25. VII. 2001, reared from *S. divaricatus*, emgd. 15. VIII. 2001 (Y. T. Lo); 2♂, 1♀, same locality, 6. VIII. 2001, reared from *S. divaricatus*, emgd. 5/28. VIII. 2001 (Y. T. Lo); 3♂, 1♀, Jinhu, Botanical Garden, 7. XI. 2018 (H. C. Huang).

Description. Adult – Forewing length 45–55 mm. Sexual dimorphism present. Male (PLATE 7, Fig. 26): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown with series of white spots ventrally and laterally. Forewing broad, with costa, termen slightly convex, dorsum produced, apex obtuse. Hindwing rounded. Wing uppersides dark brown with blue shine on forewing; two series of white submarginal spots on both wings, with spots of proximal series elongate. A discal series of purplish blue spots on forewing; a purplish blue dot near distal end of discoidal cell of forewing. A patch of silvery gray area along costa of hindwing, connecting to a prominent grayish white patch extending into discoidal cell of hindwing. Wing undersides with ground color brown, a gray patch present on forewing posteriorly. Submarginal markings as two series of white dots on both wings, but frequently reduced. Discal spot series present on both wings, with spot in cell CuA_1 of forewing most prominent. Single white spot near distal end of both wings. Fringe checkered. A gray bar in cell CuA_2 of forewing as sexual brand. Coremata orange. Female (PLATE 7, Fig. 27): Body and general wing patterns similar to those of male, but dorsum of forewing straight; sexual brand absent; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 73, Fig. 403) – Tegumen broad, weakly sclerotized, socii

reduced, weakly sclerotized, setose. Saccus rod-like, with distal end blunt. Vinculum narrow. Valva as broad, setose lobe with short, obtuse, ventral projection distally, associated with a disc-shaped portion with serrate margin. Juxta as a plate with dorsal medial invagination. Phallus elongate, down-curved caudad; aedeagus nearly as long as phallobase. Cornuti as a band of spines on a conical sac, associated a patch of minute spines ventrally. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 111, Fig. 553) – Corpus bursae bulbous, with caudal portion heavily sclerotized. Signa as a pair of spiny patches on opposite walls. Ductus bursae elongate, heavily sclerotized, enlarged posteriorly into a trumpet. Sterigma saddle-shaped, weakly sclerotized. Anterior apophyses absent. Posterior apophyses straight. Anal papillae densely setose posteriorly, sclerotized basad.

Global distribution. Nearly entire Oriental region, but not in Peninsula India and Sri Lanka (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. In Taiwan, this species is best known from Jinmen Island, but found from main island of Taiwan and Mazu islands in rare occasions (Hsu, 2013, 2014).

Larval Host plant(s). Apocynaceae: *Strophanthus divaricatus* (Lee & Wang, 1995; Chang, 2011).

Biology. A multivoltine species, with adult on the wing most of the year (Lee & Wang, 1995; Chang, 2011).

形態特徵：成蝶前翅長 45–55 mm。具雌雄二型性。雄蝶 (圖 26)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側表面有一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面各具一列白色斑點。前翅寬闊、前緣及外緣略凸出、後緣凸出、翅頂鈍。後翅圓。翅背面黑褐色泛藍色；亞外緣有兩列白色斑點，內側者形狀較長形。前翅中央有一列藍紫色斑點；中室內之外側有一藍紫色斑點。銀白色斑塊見於後翅前緣，連接淺灰或黃灰色斑塊，並擴及中室。翅腹面底色褐色，前翅後半部有灰色斑塊。前後翅、亞外緣均具兩列斑點，但常減退。前、後翅均有中央斑列，但位於前翅 CuA_1 室之斑紋最為鮮明；中室末端

有一只白色斑點。緣毛黑白相間。前翅 CuA_2 室內具灰色短條狀性標。氣味刷淡褐色。雌蝶 (圖 27)：形態特徵與雄蝶相似，但前翅後緣直、不具性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 403)：背兜寬闊，輕微骨化。背兜側突退化，輕度骨化，有毛。囊突桿狀、末端鈍。基腹弧狹窄。抱器寬闊、瓣狀，密生毛，末端腹側有短突起及帶鋸齒緣之圓形小骨盤。陽基軛片板狀，背側內凹。陽莖細長，末端下彎。陽莖器長度略與陽莖基等長。角狀器形成一錐形膜，上有刺棘帶，以及腹側一片小刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 553)：交尾囊球狀，尾端明顯骨化。花壁為具刺骨斑，位於交尾囊壁對側。交尾囊管明顯骨化、細長，前端膨大、喇叭狀。交尾囊孔板鞍狀，略骨化。前內骨突消失。後內骨突直。肛突後端密生毛，基部略骨化。

世界分布：泛東洋區分布，但不見於印度半島及斯里蘭卡。

臺灣分布：主要分布於金門，但臺灣本島及馬祖也有少數記錄。

寄主植物：夾竹桃科之羊角拗。

生物學：本種為一年多代物種，幾乎全年可見成蝶活動。

Euploea mulciber (Cramer, [1777]) (異紋紫斑蝶 / 異型紫斑蝶 / 端紫斑蝶)

Papilio mulciber Cramer, [1777]: De uitlandsche kapellen 2 (9-16): 45, pl. 127, f. C, D. (Type locality: “Coromandel [East coast of India]”)

Papilio claudia Fabricius, 1777: Genera Insectorum: 263. (Type locality: “India”) [preoccupied by *Papilio claudia* Cramer, [1775]]

Trepsichrois mulcibra Hübner, 1816: Verzeichniss bekannter Schmettlinge (1): 16. [unjustified emendation]

Papilio claudius Fabricius, 1787: Mantissa Insectorum 2: 25. (Type locality: “Tranquebaria [Tharangambadi, India]”)

Trepsichrois linnaei Moore, 1883: Proceedings of the Zoological Society of London 1883 (3): 286, pl. 29, f. 4. (Type locality: “N.W. & E. Himalayas, Khasia, British Burmah, Malay peninsula, Penang, Sumatra, Siam, Formosa”)

Euploea mulciber var. *duarseri* de Rhé-Philipe, 1910: Journal of the Bombay Natural History Society 20 (3): 754. (Type locality: “Sikkim”)

Euploea midanus var. *babina* van Eecke, 1914: Notes from the Leyden Museum 36: 53. (Type locality: "Pulu Babi")

Ssp. *barsine* Fruhstorfer, 1904

PLATE 7, Figs. 28–29; PLATE 73, Fig. 404; PLATE 111, Fig. 554

Euploea mulciber barsine Fruhstorfer, 1904: Berliner entomologische Zeitschrift 49 (1/2): 176. (Type locality: "Ku-Sia, Süd-Formosa [Zhoying, Kaohsiung, Taiwan]")

Specimens examined:

JILONG CITY: 1♂, Longgang Trail, 26. VIII. 2008 (C. K. Wang & C. H. Yen). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Wanli, Fengguizui, 600m, 27. X. 2009 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Wenshan, Hills behind NCCU campus, 1. VI. 2005 (Y. F. Hsu); 1♂, Wenshan, Muzha, Taipei City Zoo, 25. IV. 2010, reared from *Ficus microcarpa*, emgd. 22. V. 2010, HSU 10D23 (Y. F. Hsu); 1♂, Wenshan, Wanlong, 14. IV. 2019 (L. Huang); 1♂, Shilin, Shuangxi, 26. IX. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Taiwu, 1500/1600m, 12. V. 2000, reared from *Trachelospermum jasminoides*, emgd. 24. V. 2000, HSU 00E12 (C. C. Lu). **TAIDONG Co.:** 1♀, Lanyu, Shuangshiyan, 28. II. 2010 (J. H. Lin); 1♀, Yanping, Hongye, 700m, 25/26. VI. 2012 (Y. T. Lo).

Description. Adult – Forewing length 41–51 mm. Sexual dimorphism prominent. Male (PLATE 7, Fig. 28): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown banded with white ventrally and laterally. Forewing triangular, with costa, dorsum slightly convex, termen relatively straight, apex produced and obtuse. Hindwing flabellate. Wing uppersides dark brown with indigo blue shine, notably on distal portion of forewing; series of bluish white discal, postdiscal, and submarginal spots on forewing. Wing undersides with ground color brown. Markings of forewing similar to those of uppersides. Spots of hindwing with submarginal series complete, discal and postdiscal series reduced posteriorly. Sexual brands as a broad, gray patch on hindwing uppersides anteriorly, with a grayish white patch along costa, and a gray patch on forewing undersides posteriorly. Small patch of creamy white specialized scalings in discoidal cell of hindwing uppersides, near base of vein Rs; another patch in cell CuA_2 of forewing undersides, near wing

base. Fringe checkered. Coremata yellow. Female (PLATE 7, Fig. 29): Body with white spots and narrow striae on tergum of thorax, markings on abdomen more extensive. Forewing dorsum straight. Markings of forewing more prominent, with metallic shine less extensive, violet blue. Hindwing with prominent white radial bands; a series of white submarginal spots present. Wing undersides paler, without metallic shine, markings more prominent; sexual brands absent; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 73, Fig. 404) – Tegumen narrow, weakly sclerotized. Saccus relatively long, large, tapering anteriorly, with distal end rounded. Vinculum narrow. Valva as broad, setose lobe with short digitate process pointing ventrad. Juxta as a plate with shallow invagination dorsally. Phallus elongate, slightly down-curved caudad; aedeagus nearly as long as phallobase, with surface of caudal portion granulate. Cornuti as a band of spines, associated with a patch of minute spines ventrad. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 111, Fig. 554) – Corpus bursae bulbous, with caudal portion sclerotized, with several folds. Signa as a pair of spiny patches on opposite walls. Ductus bursae elongate, curved. sclerotized, tubular, broadened near ostium bursae. Sterigma dome-shaped, weakly sclerotized. Anterior apophyses absent. Posterior apophyses elongate, straight. Anal papillae ovate, with anterior end produced, densely setose posteriorly, sclerotized basad.

Global distribution. Widespread in Oriental region, also Lesser Sunda Islands (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan, also found from associated islands (Yamanaka, 1973; Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Moraceae: *Ficus microcarpa*, *F. formosana*, *F. irisana*, *F. virgata*, *F. nervosa*, *F. pumila*, *F. sarmentosa*; Apocynaceae: *Cryptolepis sinensis*, *Trachelospermum jasminoides*, etc. (Uchida, 1991; Hsu, 2002, 2013; Hung, 2013)

Biology. Adults are on the wing throughout the year (Yamanaka, 1973; Hsu, 2002, 2013). They are known to gather in canyons of southern Taiwan in winter forming overwintering aggregation with other *Euploea* species.

Remarks. Ssp. *barsine* was regarded as a race endemic to Taiwan, but has successfully colonized southern islands of Japan since 1992 (Shirôzu, 2006).

形態特徵：成蝶前翅長 41–45 mm。雌雄二型性明顯。雄蝶 (圖 28)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側表面有一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面有白色橫帶。前翅三角形，前緣及後緣略凸出、外緣直、翅頂凸出、圓鈍。後翅扇形。翅背面黑褐色泛靛藍色，於前翅外側格外鮮明；前翅中央、外側及亞外緣各具一列藍白色斑點。翅腹面底色褐色，前翅斑紋與背面相似；後翅亞外緣斑點列完整，中央及外側斑點列後半部減退。性標分別為後翅背面前半部之灰色寬斑、沿前緣分布之灰白色斑塊及前翅腹面後半部之灰色斑塊。小面積之乳白色特化鱗見於後翅背面中室近 Rs 脈基部處及前翅腹面 CuA_2 室近翅基處。緣毛黑白相間。氣味刷黃色。雌蝶 (圖 29)：胸部背板具白色斑點及細線紋。腹部斑紋更加鮮明。前翅後緣直。前翅背面斑紋較鮮明，但金屬光澤較微弱，呈藍紫色。後翅背面具鮮明輻射狀帶紋，亞外緣具一列白色斑點。翅腹面底色較淺、無金屬光澤、斑紋較鮮明且不具性標。前足跗節分節、具爪、無毛。

雄交尾器 (圖 404)：背兜狹窄，輕微骨化。囊突較長、大型，向前漸細，末端棒狀。基腹弧狹窄。抱器寬闊、瓣狀，密生毛，腹側末端短指狀。陽基軛片板狀，背側有淺內凹。陽莖細長，末端略下彎。陽莖器長度略與陽莖基等長，末端表面有小顆粒。角狀器形成背側帶狀刺棘及腹側一片細刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 554)：交尾囊球狀，尾端明顯骨化，上有許多皺褶。花壁為具刺骨斑，位於交尾囊壁對側。交尾囊管骨化、管狀、細長、彎曲，近交尾囊處膨大。交尾囊孔板穹頂狀，略骨化。前內骨突消失。後內骨突細長、直。肛突後端密生毛，基部略骨化。

世界分布：呈泛東洋區分布，小巽他群島亦有分布。

臺灣分布：本島低至中海拔地區，離島亦有記錄。

寄主植物：桑科之榕樹、天仙果、澀葉榕、島榕、九重吹、薜荔、珍珠蓮及夾竹桃科之隱鱗藤及絡石等。

生物學：成蝶全年可見。著名的「紫蝶幽谷」即為本種與其他紫斑蝶屬成員於南臺灣峽谷群聚越冬之景象。

註記：亞種 ssp. *barsine* 過往被認為是臺灣特有，但 1992 年後已成功立足於日本南部島嶼。

Euploea phaenareta (Schaller, 1785) (大紫斑蝶／臺南紫斑蝶)

Papilio (*Danaus*) *phaenareta* Schaller, 1785: Der Naturforscher 21: 177, pl. 5, f. 1-2. (Type locality: S. Moluccas [?Ambon according to Vane-Wright, 1975])

Papilio (*Danaus*) *affinis* Gmelin, 1790: in Linnaeus, Systemic Naturae (Edn. 13) 1 (5): 2289. (Type locality: "extra Europam [? Ambon]")

Trepsichrois alea Hübner, 1816: Verzeichniss bekannter Schmettlinge: 16. (Type locality: Ambon according to Vane-Wright, 1975)

Ssp. *juvia* Fruhstorfer, 1908

PLATE 8, Figs. 30–31; PLATE 73, Fig. 405; PLATE111, Fig. 555

Euploea (*Salpinx*) *juvia* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (31): 127. (Type locality: Taihanroku, Formosa [Nanwan, Hengchun, Taiwan])

Specimens examined:

TAIPEI/ XINBEI [Taihoku]: 1♀, 20. VIII. 1938 (Y. Yamagishi) (TARI). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, 6. VI. 1936 (T. Mitono) (TARI). **PINGDONG Co.:** 1♀, Hengchun, VII. 1955 (S. Araki). **TAIDONG Co.:** 1♂, Lanyu, IV. 1960 (S. Araki).

Description. Adult – Forewing length 59–69 mm. Sexual dimorphism present. Male (PLATE 8, Fig. 30): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown with faint white spots

laterally and ventrally. Forewing elongate, with dorsum strongly convex, apex obtuse. Hindwing triangular. Wing uppersides dark brown with purplish blue shine; three series of small spots on both wings, with distal series minute, bluish white, medial series bluish white, proximal series purplish blue. A small purplish blue spot near distal end of discoidal cell. A grayish white patch present along costa of hindwing, connecting to a prominent yellowish brown sexual brand. Wing undersides with ground color brown. Spots similar to those on uppersides, mostly smaller, but proximal series of forewing larger. Fringe checkered. Female (PLATE 8, Fig. 31): Body and general wing patterns similar to those of male, but dorsum of forewing strait, sexual brands absent; protarsi segmented, clawed, not hairy.

Male genitalia (a specimen of ssp. *castelnaui* from Phuket is used as reference; PLATE 73, Fig. 405) – Tegumen broad, weakly sclerotized, socii reduced, small, pea-like, setose. Saccus relatively short, tapering anteriorly, with distal end blunt. Vinculum relatively thick. Valva as broad, setose lobe, with short process projecting downwards, associated with disc-like sclerites bearing small bumps along distal margin. Juxta as a broad plate with dorsal and ventral medial invagination. Phallus short, stout, straight; aedeagus shorter than phallobase, granulate caudad. Cornuti as a bundle of prominent spines on a conical tubular membrane, and a patch of small, ventral spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (a specimen of ssp. *castelnaui* from Phuket is used as reference; PLATE 111, Fig. 555) – Corpus bursae bulbous, with caudal portion heavily sclerotized. Signa as spiny patches on sclerotized portion of corpus bursae. Ductus bursae short, stout, heavily sclerotized, enlarged posteriorly. Sterigma as broad sclerotized dome. Anterior apophyses absent. Posterior apophyses slender, straight. Anal papillae densly setose posteriorly, weakly sclerotized basad.

Global distribution. Sri Lanka, Sundaland, southern Indochina, Lesser Sunda Islands, Sulawesi, New Guinea, New Britain, New Ireland, Solomons, Philippines, and Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. This species mainly inhabited low land of southern Taiwan, but

was also recorded from northern Taiwan, Penghu and Lanyu (Shirôzu, 1960; Yamanaka, 1973).

Larval Host plant(s). Not recorded in Taiwan, *Cerbera* (Apocynaceae) elsewhere (Ackery & Vane-Wright, 1984; Khew, 2015; Hsu, 1999, 2013).

Biology. It was recorded from nearly all months in a year (Yamanaka, 1973).

Remarks. This species disappeared from Taiwan around 1960s, and now generally believed already extinct in Taiwan (Hsu, 2013).

形態特徵：成蝶前翅長 59–69 mm。具雌雄二型性。雄蝶 (圖 30)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側有一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面有模糊白色斑點。前翅狹長、後緣明顯凸出、翅頂鈍。後翅三角形。翅背面黑褐色泛藍紫色；前後翅均具三列小斑點，外側者細小、藍白色，置中者藍白色，內側者藍紫色。中室末端有藍紫色小斑點。沿後翅前緣有灰白色斑塊，並連接鮮明黃褐色性標。翅腹面底色褐色，除前翅內側斑紋較大外，其餘均較小。緣毛黑白相間。雌蝶 (圖 31)：形態特徵與雄蝶相似，但前翅後緣直，不具性標，前足跗節分節、具爪、無毛。

雄交尾器 (以泰國普吉島產的亞種為參考，圖 405)：背兜寬闊，輕度骨化。背兜側突小、豌豆狀，有毛。囊突短，向前漸細，末端鈍。基腹弧頗厚。抱器寬闊、瓣狀，密生剛毛，具向下短突起且邊緣有小型骨化盤。陽基軛片寬、板狀，背側和腹側有內陷。陽莖粗短、直。陽莖器長度短於陽莖基，末端管壁顆粒狀。角狀器包括錐形膜上之一束棘刺，以及腹側一小片細棘刺。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (以泰國普吉島產的亞種為參考，圖 555)：交尾囊球狀，尾端明顯骨化。花壁為具刺骨斑，位於交尾囊骨化部上。交尾囊管短、粗大，明顯骨化，後端膨大。交尾囊孔板寬闊、骨化、穹頂狀之。前內骨突消失，後內骨突細長。肛突後端生密毛，基部略骨化。

世界分布：斯里蘭卡、巽他地區、中南半島南部、小巽他群島、蘇拉威西、新幾內亞、新不列顛、新愛爾蘭、菲律賓及臺灣。

臺灣分布：過去主要分布於南臺灣低地，但北臺灣、澎湖及蘭嶼亦曾有記錄。

寄主植物：臺灣之族群未有記錄，其他地區之族群取食夾竹桃科海檬果屬植物。

生物學：往昔幾乎全年有記錄。

註記： 1960 年代後本種在臺灣消失，咸信已滅絕。

Euploea eunice (Godart, 1819) (圓翅紫斑蝶 / 黑紫斑蝶)

Danais eunice Godart, 1819: Encyclopédie méthodique Histoire naturelle 9 (1): 177. (Type locality: Java)

Ssp. *hobsoni* Butler, 1877

PLATE 8, Fig. 32; PLATE 9, Fig. 33; PLATE 73, Fig. 406; PLATE 111, Fig. 556

Salpinx hobsoni Butler, 1877: Proceedings of the Zoological Society of London 1877: 811. (Type locality: “Formosa”)

Euploea leucostictos f. *gaza* Fruhstorfer, 1910: Die Gross-Schmetterlinge der Erde 9: 262. (Type locality: “Taihanroku [Nanwan, Hengchun, Taiwan]”)

Salpinx leucostictos botelianus Murayama & Shimonoya, 1963: Tyô to Ga 13 (3): 52, Fig. 18, 19, 21, 22. (Type locality: “Bote1−Tobago (Ranyu Is), Formosa [Lanyu, Taiwan]”)

Specimens examined:

JILONG CITY: 2♀, NTOU campus, 19. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Shimen, Baisha Bay, 29. IV. 2012, reared from *Ficus* sp., emgd. 4. V. 2012, HSU 12D28 (H. C. Chuang); 1♂, 3♀, Xindian, Feicui Dam, 11. IV. 2012, reared from *F. microcarpa*, emgd. 30. IV/ 4. V. 2012, HSU 12D3 (Y. F. Hsu); 1♂, same locality, 11. IV. 2012, reared from *F. virgata*, emgd. 7. V. 2012, HSU 12D7 (Y. F. Hsu); 1♀, Xindian, Sikanshui, 11. VII. 2020, reared from *F. virgata*, emgd. 3. VIII. 2020, HSU 20G3 (Y. F. Hsu); 1♂, Jinshan, Yulu Ancient Trail, 500m, 8. VI. 2010, reared from *F. beecheyana* [= *F. erecta* var. *beecheyana*], emgd. 15. VI. 2010, HSU 10F15 (C. Y. Liao); 2♀, Danshui, Erziping, 700m, 18. V. 2011 (Y. T. Lin); 1♂, 1♀, same locality, 18. V. 2011, reared from *F. erecta*, emgd. 1. VI. 2011, HSU 11E24 (Y. T. Lin); 1♀, same locality, 21. VII. 2011 (Y. T. Lin); 1♂, same locality, 23. V. 2012, reared from *F. erecta*, emgd. 4. VI. 2012, HSU 12E13 (H. C. Huang); 2♀, Danshui, Erziping, 800m, 18. V. 2011, reared from *F. erecta*, emgd. 12. VI. 2011, HSU YMS11E66 (Y. T. Lin); 2♂, Wulai, 30. IV. 2010, reared from *F. microcarpa*, emgd. 23/24. V. 2010, HSU 10D41 (C. L. Huang

& C. T. Liao); 1♂, Wulai, 200m, 4. IV. 2012, reared from *F. microcarpa*, emgd. 24. IV. 2012, HSU 12D1 (Y. F. Hsu). **TAIPEI CITY:** 1♀, downtown Taipei, East Dist., 17. IV. 2012, reared from *F. microcarpa*, emgd. 7. V. 2012, HSU 12D20 (Y. F. Hsu); 1♀, Shilin, Huagang, PCCU campus, 400m, 16. IV. 2012, reared from *F. virgata*, emgd. 7. V. 2012, HSU 12D19 (Y. F. Hsu); 1♀, Wenshan, NTNU, Gongguan campus. 19. IV. 2000, emgd. 9. V. 2000 (Y. T. Lo); 1♀, same locality, 21. IV. 2001, emgd. 11. V. 2001 (Y. T. Lo); 1♂, same locality, 25. XI. 2018, reared from *F. microcarpa*, emgd. 5. X. 2018, HSU 18J15 (Y. F. Hsu); 3♀, Beitou, Zhongyi, 8. IV. 2012, reared from *F. microcarpa*, emgd. 27. IV. 2012, HSU 12D2 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 2♂, 1♀, Fuxing, Xuanyuan Trail, 1000m, 19. V. 2012, reared from *F. erecta*, emgd. 24/26. V. 2012, HSU 12E6 (H. C. Huang) (genitalia preparation JYL1013). **YILAN Co.:** 1♂, Toucheng, Guishan Is., 10. IV. 2004 (Y. F. Hsu); 1♂, Datong, Lunpi, 11. V. 2007, reared from *F. microcarpa*, emgd. 27. V. 2007, HSU 07E20 (Y. F. Hsu). **NANTOU Co.:** 2♂, Renai, Jiuxianxi, 700m, 14/15. IV. 2012 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Donghe, Taiyuan, 31. VIII. 2006, reared from *Ficus* sp., emgd. 3. IX. 2006, HSU 06H41 (Y. F. Hsu); 1♂, same locality, 31. VIII. 2006 (Y. F. Hsu); 1♂, Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu); 1♀, Yanping, Hongye, 400m, 25. IX. 2009 (N. Y. Tsai); 1♀, Lanyu, Qiwei, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♂, Lanyu, 30. X. 2009 (J. H. Lin).

Description. Adult – Forewing length 41–54 mm. Sexual dimorphism present. Male (PLATE 8, Fig. 32): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown with series of bluish white spots ventrally and laterally. Forewing broad, with costa, termen slightly convex, dorsum strongly produced, apex obtuse. Hindwing rounded. Wing uppersides dark brown with purplish blue shine; a series of bluish or purple submarginal spots on both wings, with additional distal minute spot series on forewing. Bluish or purple spots present on forewing with number and size variable. A patch of silvery gray area along costa of hindwing, connecting to a prominent pale gray or grayish yellow patch extending into discoidal cell of hindwing. One or two bluish or purplish white discal bars in cell CuA_2 of forewing. Wing undersides with ground color brown, a gray patch present on forewing

posteriorly. Submarginal markings as two series of white dots on both wings. An oval discal spot in cell CuA_1 of forewing. Fringe checkered. Coremata pale brown. Female (PLATE 9, Fig. 33): Body and general wing patterns similar to those of male, but termen, dorsum of forewing straight, gray patches on wings absent, replaced by small areas of grayish white scalings on both wings; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 73, Fig. 406) – Tegumen broad, weakly sclerotized, socii bump-like, setose. Saccus elongate, tapering anteriorly, with distal end blunt. Vinculum narrow. Valva as broad, setose lobe with short, obtuse, ventral projection distally. Juxta as a plate with dorsal and ventral medial invagination. Phallus elongate, down-curved caudad; aedeagus longer than phallobase. Cornuti as multiple rows of minute spines and a large conical spine. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 111, Fig. 556) – Corpus bursae bulbous, with caudal portion sclerotized. Signa as a pair of spiny patches on opposite walls. Ductus bursae elongate, sclerotized, slightly enlarged posteriorly. Sterigma dome-shaped, weakly sclerotized. Anterior apophyses absent. Posterior apophyses curved. Anal papillae densely setose posteriorly, sclerotized basad.

Global distribution. Indochina, Sundaland, Philippines, South China, and Taiwan (Ackery & Vane-Wright, 1984).

Distribution in Taiwan. Low to moderate elevations throughout Taiwan, occasionally found from associated islands (Yamanaka, 1973; Hsu, 2013, 2014).

Larval Host plant(s). Moraceae: *Ficus* spp., including *F. microcarpa*, *F. caulocarpa*, *F. superba*, *F. virgata*, *F. erecta*, *F. pumila*, etc. (Uchida, 1991; Hsu, 2002, 2013; Hung, 2013)

Biology. Adults are on the wing throughout the year (Yamanaka, 1973; Hsu, 2013). They are known to gather in canyons of southern Taiwan in winter forming overwintering

aggregation with other *Euploea* species.

Remarks. This species was considered conspecific with *E. leucostictos* (Gmelin, 1790) in some literature (e.g., Shirôzu, 1960; Morishita, 1985), but Ackery & Vane-Wright (1984) concluded that the two should each be a distinct species.

The specimens found from Lanyu, Taidong have been given a subspecific status, namely *botelianus* Murayama & Shimonoya, 1963, but the diagnostic characters discussed in Murayama & Shimonoya (1963a) are within variation of ssp. *hobsoni* Butler, 1877. It appears that *E. eunice* does not have a stable occurrence in Lanyu, and individuals found from the island probably represents rare accidentals from Taiwan or other sources, subsequently *botelianus* Murayama & Shimonoya, 1963 is regarded as a junior subjective synonym of *hobsoni* Butler, 1877 in this work by Hsu *et al*. (2021). Shirôzu (1960) mentioned that individual with larger bluish white spots on forewing uppersides was found from Lanyu, and assigned it as ssp. *kadu* Eschscholtz, 1812, a taxon described from Guam. The specimen he examined was not shown, so no determination of its (their) taxonomic status can be given.

形態特徵：成蝶前翅長 41–54 mm。具雌雄二型性。雄蝶 (圖 32)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側表面有一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面均有一列藍白色斑點。前翅寬闊、前緣及外緣略凸出、後緣明顯凸出、翅頂鈍。後翅圓。翅背面黑褐色泛藍紫色；亞外緣有一列藍色或紫色斑點，前翅外側另有一列小點。前翅藍、紫色斑點數量及大小多變異。銀白色斑塊見於後翅前緣，連接鮮明淡灰色或黃灰色斑塊後擴及中室。前翅 CuA_2 室有一至兩個藍白色或紫白色短條紋。翅腹面底色褐色，前翅後半部有灰色斑塊。前、後翅亞外緣均有兩列白色小點。前翅 CuA_1 室中央有橢圓形斑紋。緣毛黑白相間。氣味刷淡褐色。雌蝶 (圖 33)：形態特徵與雄蝶相似，但前翅外緣及後緣直，前、後翅皆由一片灰白色鱗取代灰色斑塊，前足跗節分節、具爪、無毛。

雄交尾器 (圖 406)：背兜寬，輕微骨化。背兜側突瘤狀、有毛。囊突細長，向前漸細，末端鈍。基腹弧狹窄。抱器寬闊、瓣狀，密生毛，末端腹側有鈍突起。陽基軛片板狀，背側和腹側內陷。陽莖細長，末端下彎。陽莖器長於陽莖基。角狀器由多排細刺棘

及一大型錐刺構成。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 556)：交尾囊球狀，尾端明顯骨化。花壁為具刺骨斑，位於交尾囊壁對側。交尾囊管骨化、細長，後端略膨大。交尾囊孔板輕微骨化，穹頂狀。前內骨突消失。後內骨突彎曲。肛突後端密生毛，基部略骨化。

世界分布：中南半島、巽他地區、菲律賓、華南及臺灣。

臺灣分布：本島低至中海拔地區，離島亦有記錄。

寄主植物：桑科榕屬之植物，包括榕樹、大葉雀榕、雀榕、牛奶榕、天仙果、薜荔等。

生物學：成蝶全年可見。著名的「紫蝶幽谷」為本種與其他紫斑蝶屬成員於南臺灣峽谷群聚越冬之景象。

註記：本種過去被認為與 *E. leucostictos* (Gmelin, 1790) 同種，但 Ackery & Vane-Wright (1984) 判斷兩者應各自為獨立種。

本種產於蘭嶼之標本曾被視為不同亞種 ssp. *botelianus* Murayama & Shimonoya, 1963，但其鑑別特徵在亞種 ssp. *hobsoni* Butler, 1877 之變異幅度範圍內。此外，本種在蘭嶼的發生並不穩定，島上發現之個體可能源自臺灣或其他地區之偶發性遷入，從而本著作初版 (Hsu *et al*., 2021) 將 *botelianus* Murayama & Shimonoya, 1963 視為亞種 ssp. *hobsoni* Butler, 1877 之次主觀同物異名。Shirôzu (1960) 提及從蘭嶼發現的個體前翅藍白斑較大，並鑑定為從關島記載的 ssp. *kadu* Eschscholtz, 1812。然而，由於沒有提供圖片，因此其分類地位無從索解。

Euploea tulliolus (Fabricius, 1793) (小紫斑蝶 / 妒麗紫斑蝶 / 埔里紫斑蝶)

Papilio tulliolus Fabricius, 1793: Entomologia Systematica 3 (1): 41. (Type locality: “India” [Queensland, Australia according to Ackery & Vane-Wright (1984)])

Calliploea postalbimacula Bryk, 1937: Lepidopterorum catalogus 78: 336. (Type locality: Cape York)

Ssp. *koxinga* Fruhstorfer, 1908

PLATE 9, Figs. 34–35; PLATE 74, Fig. 407; PLATE 112, Fig. 557

Euploea (*Calliploea*) *adyte koxinga* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48.

(Type locality: “Formosa, Suisha-See”)

Ssp. *pollita* Erichson, 1834

PLATE 9, Fig. 36

Euploea pollita Erichson, 1834: Novorum Actorum Academiae Caesareae Leopoldino-Carolinae Natura Curiosorum 16 (Supplementum 1): 282, t. 40, f. 6. (Type locality: “Luzon”)

Calliploea monilis Moore, 1883: Proceedings of the Zoological Society of London 1883 (3): 293. (Type locality: “Philippines (Mindanao)”)

Euploea mazares masakii Esaki & Nomura, 1937: Zephyrus 7: 106. (Type locality: “Ryûkyû, Ishigakishima (Okinawa ken)”)

Specimens examined:

TAIPEI CITY: 1♀, Daan, Gongguan, 27. XI. 2007 (Y. F. Hsu). **XINZHU Co.:** 1♀, Zhudong, 9. VI. 2007 (Y. F. Hsu); 1♂, Baoshan, Shanhu, 27. XII. 2008 (Y. F. Hsu). **MIAOLI Co.:** 2♂, Taian, Xishishan Forest Trail, 8Km, 28. VIII. 2021 (C. W. Huang). **JIAYI Co.:** 1♀, Alishan, Shanmei, 500m, 29. IX. 2007 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, 1♀, Baihe, Zhentoushan, 27. VIII. 2004 (Y. F. Hsu); 1♀, Guantian, Wushantou, 100m, 22. I. 2007 (Y. F. Hsu); 2♂, Baihe, Guanziling, 300m, 13. IX. 2009 (Y. F. Hsu); 1♂, 1♀, Liujia. Chishanlonghuyan, 24. IV. 2019, reared from *Malaisia scandens*, emgd. 14. V. 2019, HSU 19D24 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Fenggangshan, 1300m, 30. IX. 2007 (Y. F. Hsu); 1♀, Tianliao, 80m, 1. VI. 2012 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, Wutai, Old Dawu/ Bayouxi, 500/900m, 14. III. 2009 (Y. F. Hsu & H. C. Huang). **TAIDONG Co.:** 2♀, Lanyu, Qiwei, 17/18. V. 2009 (N. Y. Tsai & C. H. Lin); 1♂, 2♀, same locality, 200m, 18. V. 2009 (N. Y. Tsai & C. H. Lin); 1♂, same locality, 26. V. 2009 (Y. F. Hsu); 1♀, Lanyu, Yeyin, 1. III. 2010 (J. H. Lin).

Description. Adult – Forewing length 36–41 mm. Sexual dimorphism present. Male (PLATE 9, Figs. 34, 36): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown with series of white spots ventrally and laterally. Forewing broad, with costa, termen slightly convex, dorsum strongly produced, apex obtuse. Hindwing rounded. Wing uppersides dark brown with

purplish blue shine; a series of bluish purple submarginal spots on both wings. A patch of silvery gray area along costa of hindwing, connecting to a prominent gray patch extending into discoidal cell of hindwing. Wing undersides with ground color brown, a gray patch present on forewing posteriorly. Submarginal markings as two series of white dots on both wings. An oval discal spot in cell CuA_1 of forewing. Fringe checkered. Coremata white tinged with yellow. Female (PLATE 9, Fig. 35): Body and general wing patterns similar to those of male, but dorsum of forewing straight, gray patches on wings absent, replaced by small areas of grayish white scalings on both wings; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 74, Fig. 407) – Tegumen broad, weakly sclerotized, socii bump-like, setose. Saccus elongate, tapering anteriorly, with distal end blunt. Vinculum narrow. Valva as broad, setose lobe with short ventral projection distally; a semi-circular process with lace-like margin present near its base. Juxta as a plate with dorsal and ventral medial invagination. Phallus elongate, down-curved caudad; aedeagus slightly shorter than phallobase, with surface granulate. Cornuti cone-shaped, spiny. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 112, Fig. 557) – Corpus bursae bulbous, with caudal portion sclerotized. Signa as a pair of spiny oval patches on opposite walls. Ductus bursae elongate, sclerotized, curved, slightly enlarged posteriorly. Sterigma dome-shaped, weakly sclerotized. Anterior apophyses absent. Posterior apophyses slightly curved. Anal papillae densely setose posteriorly, weakly sclerotized basad.

Global distribution. Throughout eastern Oriental region, Northeast Australia, New Guinea, New Caledonia, Solomons, Fiji, etc. (Ackery & Vane-Wright, 1984; Morishita, 1985)

Distribution in Taiwan. Low to moderate elevations throughout Taiwan, occasionally found from associated islands (Yamanaka, 1975; Hsu, 2013, 2014).

Larval Host plant(s). Moraceae: *Malaisia scandens* (Hsu, 2013).

Biology. Adults are on the wing throughout the year (Yamanaka, 1973; Hsu, 2013). They are known to gather in canyons of southern Taiwan in winter, forming overwintering aggregation with other *Euploea* species.

Remarks. Shimonoya & Yu (1970) recorded many individuals with prominent subapical white marking on forewing and identified them as *E. tulliolus monilis* Moore, 1883, from southern Taiwan. Morishita (1985), however, recognized *monilis* as a synonym of *pollita* Erichson, 1834. Shimonoya & Yu (1970) suggested that these individuals probably represent colonies originally from the Philippines. This Philippine race appears to have failed to establish in Taiwan as it later diminished.

形態特徵：成蝶前翅長 36–41 mm。具雌雄二型性。雄蝶 (圖 34、36)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側有一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面各有一列白色斑點。前翅寬闊、前緣及外緣略凸出、後緣明顯凸出、翅頂鈍。後翅圓。翅背面黑褐色泛藍紫色；亞外緣有一列藍紫色斑點。銀白色斑塊沿後翅前緣分布，並連接鮮明灰色斑塊擴及中室。翅腹面底色褐色，前翅後半部有灰色斑塊。前、後翅亞外緣均具兩列白點。前翅 CuA_1 室中央有橢圓形斑點。緣毛黑白相間。氣味刷白色泛黃色。雌蝶 (圖 35)：形態特徵與雄蝶相似，但前翅後緣直，前、後翅均由灰白色鱗取代灰色斑塊，前足跗節分節、具爪、無毛。

雄交尾器 (圖 407)：背兜寬闊，輕度骨化。背兜側突隆起，有毛。囊突細長，向前漸細，末端鈍。基腹弧狹窄。抱器寬闊、瓣狀，密生毛，腹側末端有短突起且基部具半圓形花邊狀突起。陽基軛片寬、板狀，背側及腹側內陷。陽莖細長，下彎。陽莖器長度短於陽莖基，末端顆粒狀。角狀器形成錐狀膜，上生許多刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 557)：交尾囊球狀，尾端明顯骨化。花壁為兩只明顯骨化之具刺橢圓形骨斑，位於交尾囊壁對側。交尾囊管骨化、細長，尾端略膨大。交尾囊孔板穹頂狀，略骨化。前內骨突消失。後內骨突略彎曲。肛突後端密生毛，基部略骨化。

世界分布：東洋區東部、澳洲東北部、新幾內亞、新喀里多尼亞、斐濟等。

臺灣分布：本島低至中海拔地區，偶見於離島。

寄主植物：桑科之盤龍木。

生物學：成蝶全年可見。著名的紫蝶幽谷即為本種與其他紫斑蝶屬成員於峽谷群聚越冬之景象。

註記：Shimonoya & Yu (1970) 於南臺灣記錄許多前翅亞翅頂具鮮明白色斑紋之個體，並鑑定為本種之亞種 ssp. *monilis* Moore, 1883。然而，Morishita (1985) 指出該名實為 *pollita* Erichson, 1834 之同物異名。Shimonoya & Yu (1970) 推測該群個體可能源自菲律賓。此等有菲律賓族亞種特徵的小紫斑蝶隨後在臺消失，顯示未能成功於臺灣立足。

Euploea core (Cramer, [1780]) (幻紫斑蝶)

Papilio core Cramer, [1780]: De uitlandsche kapellen 3 (23-24): 133, pl. 266, f. E, F. (Type locality: "Coromandel [India, east coast] ")

Euploea siamensis C. & R. Felder, [1865]: Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorf-Urbair, pt. 9, Bd 2, Abt. 2 (2): 341, pl. 41, f. 6. (Type locality: "Siam [Thailand]; Cochin [Kochi, India]")

Crastia binghami Moore, 1883: Proceedings of the Zoological Society of London 1883 (3): 278. (Type locality: "Thoungyeen, Upper Tenasserim")

Euploea godarti f. *defigurata* Fruhstorfer, 1910: Die Gross-Schmetterlinge der Erde 9: 236. (Type locality: "Burma")

Ssp. *amymone* Godart, 1819

PLATE 10, Figs. 37–38; PLATE 74, Fig. 408; PLATE 112, Fig. 558

Danais amymone Godart, 1819: Encyclopédie méthodique Histoire naturelle 9 (1): 179. (Type locality: "Amboina" [error?])

Euploea kinbergi Wallengren, 1860: Wiener entomologische monatschrift 4 (2): 35. (Type locality: "China")

Euploea moorei C. & R. Felder, [1865]: Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorf-Urbair, pt. 9, Bd 2, Abt. 2 (2): 316. (nomen nudum)

Euploea lorquinii C. & R. Felder, [1865]: Reise der österreichischen Fregatte Novara Bd 2 (Abth. 2) (2): 340. (Type locality: "China Australis [South China]")

Crastia tonkinensis Swinhoe, 1903: The annals and magazine of natural history; zoology, botany, and geology, series 7, 11: 499. (Type locality: Tonkin [Vietnam])

Euploea amymone tersatica Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 276. (Type

locality: “Hainan”)

Euploea prunosa hadrumaia Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 276. (Type locality: “Hainan”)

Euploea core garampiana Murayama, 1961: Tyô to Ga 11 (4): 56, f. 4. (Type locality: “Garampi, S. Formosa”)

Specimens examined:

JIAYI Co.: 1♂, Fanlu, Dongxialiao, 600m, 5. IX. 2004 (R. K. Dong). **TAINAN CITY :** 1♂, 23. X. 2017 (J. T. Lu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♀, Qijin, Dongsha Is., 12. IV. 2005, reared from *Nerium indicum* [= *N. oleander*], emgd. 20/24. IV. 2005, HSU 05D22 (C. F. Lin); 2♂, 1♀, same locality, 14. IV. 2005 (C. F. Lin); 2♂, 2♀, same locality, 27. IV. 2006, reared from *Ficus microcarpa*, emgd. 1/8. V. 2006, HSU 06D64 (S. S. Wang); 2♂, 2♀, same locality, 2/7. X. 2008 (Y. F. Hsu) (genitalia preparation JYL1025); 3♂, 3♀, same locality, 2/7. X. 2008, reared from *N. indicum* [= *N. oleander*], emgd. 20/29. X. 2008, HSU 08K5 (Y. F. Hsu) (genitalia preparation JYL1024); 4♂, 6♀, same locality, 2/7. X. 2008, reared from *F. microcarpa*, emgd. 20/29. X. 2008, HSU 08K6 (Y. F. Hsu). **JINMEN Co.:** 1♂, VII. 2001 (H. Y. Lee).

Description. Adult – Forewing length 41–47 mm. Sexual dimorphism present. Male (PLATE 10, Fig. 37): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown with series of bluish white spots ventrally and laterally. Forewing broad, with costa slightly convex, termen nearly straight, dorsum produced, apex obtuse. Hindwing rounded. Wing uppersides dark brown slightly with deep blue shine; two series of white submarginal spots on both wings. Small, white discal spots sometimes present on forewing; a small white dot usually near distal end of discoidal cell of forewing. A gray bar in cell CuA_2 of forewing as sexual brand. Wing undersides with ground color brown, a gray patch present on forewing posteriorly. Submarginal markings as two series of white dots on both wings, but frequently reduced. Discal spot series present on both wings, with spot in cell CuA_1 of forewing most prominent. Single white spot near distal end of both wings. Fringe checkered. Coremata orange. Female (PLATE 10, Fig. 38): Body and general wing patterns similar to those of male, but termen, dorsum of forewing straight; sexual brand

absent; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 74, Fig. 408) – Tegumen weakly sclerotized, socii reduced, weakly sclerotised, setose. Saccus elongate, tapering anteriorly, with distal end blunt. Vinculum narrow. Valva as broad, setose lobe with rounded margin, serrate along lower half; short, obtuse, ventral projection present distally. Juxta as a plate with dorsal medial invagination. Phallus elongate, down-curved caudad; aedeagus shorter than phallobase. Cornuti as a prominent, conical, dorsal spine on a tubular membrane, and a patch of ventral spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 112, Fig. 558) – Corpus bursae ovate, with caudal portion heavily sclerotized. Signa as a pair of spiny patches on opposite walls. Ductus bursae elongate, heavily sclerotized, enlarged anteriorly into a trumpet, slightly enlarged posteriorly. Sterigma as weakly sclerotized dome. Anterior apophyses absent. Posterior apophyses straight. Anal papillae densely setose posteriorly, sclerotized basad.

Global distribution. India, Sri Lanka, Andamans, Indochina, Sumatra, Java, New Britain, New Ireland, South China, and Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. In Taiwan, this species is best known from Dongsha Island, but occasionally found from main island of Taiwan and other associated islands such as Jinmen and Mazu islands (Hsu, 2013, 2014).

Larval Host plant(s). Moraceae: *Ficus microcarpa*; Apocynaceae: *Nerium oleander*.

Biology. A multivoltine species, with adult on the wing throughout the year.

Remarks. The form with prominent purplish white scalings around forewing apex was treated as ssp. *godarti* Lucas, 1853, but it is now considered merely a form found at various frequency in different subspecies or populations (Bascombe *et al*., 1999).

形態特徵：成蝶前翅長 41–47 mm。具雌雄二型性。雄蝶 (圖 37)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側有一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面各具一列藍白色斑點。前翅寬闊、前緣略凸出、外緣直、後緣凸出、翅頂鈍。後翅圓。翅背面黑褐色，略泛深藍色；亞外緣有兩列白色斑點。前翅中央時有白色小斑點；中室末端常有白色小點；CuA_2 室內有灰色短條紋狀性標。翅腹面底色褐色，前翅後半部有灰色斑塊。前、後翅亞外緣均具兩列白色點，常消失；翅面中央有一列斑點，於前翅 CuA_1 室者最鮮明；中室內之外側有白色點。緣毛黑白相間。氣味刷淡褐色。雌蝶 (圖 38)：形態特徵與雄蝶相似，但前翅外緣及後緣直，無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 408)：背兜輕度骨化。背兜側突微小，有毛。囊突細長，向前漸細，末端鈍。基腹弧狹窄。抱器寬闊、瓣狀，密生毛，基半部有鋸齒，腹側末端有鈍頭短突起。陽基軛片寬、板狀，背側有凹陷。陽莖細長，下彎。陽莖器長度短於陽莖基，末端顆粒狀。角狀器形成管狀膜，上有錐狀刺棘，以及位於腹面之一片小刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 558)：交尾囊卵圓形，尾端明顯骨化。花壁為具刺骨斑，位於交尾囊壁對側。交尾囊管明顯骨化、細長，前端粗，喇叭狀，後端略膨大。交尾囊孔板穹頂狀，略骨化。前內骨突消失。後內骨突直。肛突後端密生毛，基部略骨化。

世界分布：印度、斯里蘭卡、安達曼群島、中南半島、蘇門達臘、爪哇、新不列顛、新愛爾蘭、華南及臺灣。

臺灣分布：多見於東沙群島，但臺灣本島、金門及馬祖亦時有發現。

寄主植物：桑科之榕樹及夾竹桃科之夾竹桃。

生物學：本種為一年多代物種，成蝶全年可見。

註記：前翅翅頂附近有一片紫白色鱗者過去被處理為亞種 ssp. *godarti* Lucas, 1853，現今則被認為僅是在不同族群裡發生頻率不一的一個型。

Euploea camaralzeman Butler, 1866 (白列紫斑蝶 / 白帶紫斑蝶)

Euploea camaralzeman Butler, 1866: Proceedings of the Zoological Society of London 1866 (2): 271, pl. 29, f. 1. (Type locality: "Siam [Thailand]")

Ssp. *cratis* Butler, 1866

PLATE 10, Figs. 39–40; PLATE 74, Fig. 409; PLATE 112, Fig. 559

Euploea cratis Butler, 1866: Proceedings of the Zoological Society of London 1866 (2): 297, 298, f. 1. (Type locality: "Philippine Islands")

Euploea (*Crastia*) *crastis* var. *formosana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 519. (Type locality: "Formosa (Koshun [Hengchun])")

Specimens examined:

TAIDONG Co.: 1♀, Lanyu, Qiwei, 26. VI. 2009 (N. Y. Tsai). **PINGDONG Co.:** "Koshun [= Hengchun], 1914 (Asakura)" (TARI). **PENGHU Co.:** 1♀, Xiyu, East Fort, 11. VI. 2014 (C. W. Huang & J. Y. Liang); 4♂, 2♀, same locality, 11. VI. 2014, reared from *Ficus microcarpa*, emgd. 10/14. VII. 2014, HSU 14F28 (C. W. Huang & J. Y. Liang) (genitalia preparation JYL1009, JYL1010).

Description. Adult – Forewing length 43–48 mm. Sexual dimorphism weakly present. Male (PLATE 10, Fig. 39): Head dark brown with white spots. Antennae dark brown. Proboscis dark brown. Labial palpus porrect, dark brown with double white markings on external surface. Thorax dark brown dorsally, dark brown with white spots ventrally; patagium dark brown with a proximal and a distal white spot. Legs dark brown; protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, dark brown with series of prominent white bands ventrally and laterally. Forewing broad, with costa, termen slightly convex, dorsum produced, apex obtuse. Hindwing rounded. Wing uppersides dark brown with prominent white markings; one series of white submarginal dots on both wings. A discal series of white spots on both wings, irregular in size and serpentine in arrangement on forewing; as elongate bar, forming a band in arrangement on hindwing. A small, V-shape, white spot near distal end of discoidal cell of forewing, with several white markings at proximal ends of surrounding cells. Wing undersides with ground color brown, paler than that of upperside. White markings more prominent, with additional white markings on hindwing proximally. Coremata creamy yellow. Female (PLATE 10, Fig. 40): Body and general wing patterns similar to those of male, but dorsum of forewing straight; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 74, Fig. 409) – Tegumen weakly sclerotized, socii reduced, weakly sclerotized, setose. Saccus relatively short, stout, tapering anteriorly, with distal end blunt. Vinculum narrow. Valva as broad, setose lobe with serrate, rounded margin; short, obtuse, ventral projection present distally. Juxta as a plate with dorsal medial invagination. Phallus elongate, down-curved caudad; aedeagus longer than phallobase. Cornuti as a prominent, conical, dorsal spine on a tubular membrane, and a patch of ventral spines. Coremata as a pair of pouches containing elongate hairpencil.

Female genitalia (PLATE 112, Fig. 559) – Corpus bursae bulbous, with caudal portion heavily sclerotized. Signa as a pair of spiny patches on opposite walls. Ductus bursae elongate, curved, heavily sclerotized, enlarged posteriorly. Sterigma as weakly sclerotized dome. Anterior apophyses absent. Posterior apophyses straight. Anal papillae densely setose posteriorly, sclerotized basad.

Global distribution. Indochina, Sundaland, northern Philippines (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. It appears that this species is not a resident in Taiwan; however, it is occasionally found from southern Taiwan and associated islands such as Penghu, Lanyu, and Dongsha (Hsu, 2014). Occasional reproduction of the species has been observed, but this species has not been able to be successfully established in Taiwan (Hsu, 2014).

Larval Host plant(s). The recorded larval host plant in Taiwan is *Ficus microcarpa*.

Biology. This species remains a rare stray from northern Philippines. It is evidently a multivoltine species in the Philippines.

Remarks. Matsumura described a taxon named *formosana* Matsumura, 1919, which was considered a valid subspecies by Morishita (1985). Shirôzu & Ueda (1992) treated it as a sub-subspecific name under *cratis* Butler, 1866 but did not formally synonymize

it in a catalogue. As this species is not a residential species in Taiwan, and the diagnostic characters of individuals found in Taiwan are conformed to those of *cratis*, we agree with Shirôzu & Ueda's (1992) treatment, and synonymize *formosana* with *cratis* in Hsu *et al*. (2021).

形態特徵：成蝶前翅長 43–48 mm。雌雄二型性不明顯。雄蝶 (圖 39)：頭黑褐色，有白點。觸角黑褐色。口器黑褐色。下唇鬚前伸、黑褐色，外側表面有一對白色斑紋。胸部黑褐色，腹面有白色斑點；頸板黑褐色，前側及後側各有一白色斑點。足黑褐色，前足跗節癒合、匕狀、被毛。腹部黑褐色，側面及腹面有鮮明白色橫帶。前翅寬闊，前緣及外緣略凸出、後緣凸出、翅頂鈍。後翅圓。翅背面黑褐色，上有鮮明白色斑紋，亞外緣具一列白點；翅中央有一列白色斑點，於前翅大小不一，蜿蜒排列，於後翅為短條紋，呈帶狀排列；前翅中室末端有 V 字形白斑，中室外側環繞數只白色斑紋。翅腹面底色為較背面淺，斑紋較鮮明，後翅內側有更多白色斑紋。氣味刷褐色。雌蝶 (圖 40)：形態特徵與雄蝶相似，但前翅後緣筆直，前足跗節分節、具爪、無毛。

雄交尾器 (圖 409)：背兜輕微骨化。背兜側突退化，骨化不明顯，有毛。囊突較短、粗壯，向前漸細，末端鈍。基腹弧狹窄。抱器寬闊、瓣狀、有毛，邊緣圓，腹側有鋸齒，腹側末端具短鈍突。陽基軛片寬、板狀，背側內陷。陽莖細長、下彎。陽莖器長度長於陽莖基。角狀器形成管狀膜，上有一錐狀刺棘，以及位於腹面之一片小刺棘。氣味刷為一對長袋，內有細長毛筆器。

雌交尾器 (圖 559)：交尾囊球狀，尾端明顯骨化。花壁為具刺骨斑，位於交尾囊壁對側。交尾囊管明顯骨化、細長、彎曲，後端膨大。交尾囊孔板輕微骨化，穹頂狀。前內骨突消失。後內骨突直。肛突後端密生毛，基部略骨化。

世界分布：中南半島、巽他地區、菲律賓北部。

臺灣分布：本種並非固有種，但偶爾發現於南臺灣及離島如澎湖、蘭嶼、東沙島等地。本種曾有在臺產卵繁殖之記錄，但迄今未成功立足。

寄主植物：本種在臺灣記錄之寄主為桑科之榕樹。

生物學：本種為源自菲律賓北部之稀有偶產迷蝶，於菲律賓為一年多世代物種。

註記：Morishita (1985) 認為 Matsumura 所描述之亞種 ssp. *formosana* Matsumura, 1919 為有效亞種。Shirôzu & Ueda (1992) 將其視為亞種 ssp. *cratis* Butler, 1866 內之次亞種級名稱，但未正式將其處理為同物異名。鑒於本種並非臺灣固有種且發現自臺灣之個體鑑別特徵符合亞種 ssp. *cratis*，我等在此認同 Shirôzu & Ueda (1992) 之處理，並於本著作初版 (Hsu *et al*., 2021) 將亞種 ssp. *formosana* 處理為亞種 ssp. *cratis* 之同物異名。

Genus *IDEA* Fabricius, 1807

Type species: *Papilio idea* Linnaeus, 1763

Ackery & Vane-Wright (1984) gave one character unique to the genus: hairpencils double in males.

Larvae feed on plants in Apocynaceae.

Ackery & Vane-Wright (1984) recognized 12 species, distributed in Oriental region.

1 species occurs in Taiwan.

白斑蝶屬

Ackery & Vane-Wright (1984) 確認之本屬獨有形態特徵為雄蝶具備兩對毛筆器。

幼蟲取食夾竹桃科植物。

Ackery & Vane-Wright (1984) 將本屬分為 12 種，分布於東洋區。

臺灣有 1 種。

Idea leuconoe Erichson, 1834 (大白斑蝶／大帛斑蝶／黑點大白斑蝶／大胡麻斑蝶)

Idea leuconoe Erichson, 1834: Novorum Actorum Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum 16 (Supplementum 1): 283. (Type locality: Luzon)

Ssp. *clara* Butler, 1867

PLATE 11, Figs. 41–42; PLATE 74, Fig. 410; PLATE 112, Fig. 560

Hestia clara Butler, 1867: Transactions of the Entomological Society of London, series 3, 5: 469. (Type locality: "?Java" [error, should be Taiwan])

Ssp. *kwashotoensis* Sonan, 1928

PLATE 11, Figs. 43–44; PLATE 75, Fig. 411; PLATE 113, Fig. 561

Hestia leuconoe clara f. *kwashotoensis* Sonan, 1928: Zoological Magazine (Tokyo) 40: 461. (Type locality: "Kwashoto [Ludao]")

Specimens examined:

Ssp. *clara*: **JILONG CITY:** 1♂, Longgang Trail, 26. IX. 2006 (Y. F. Hsu); 1♂, 1♀, Zhongzheng, NTOU, 4. II. 2017, reared from *Parsonsia laevigata* [= *P. alboflavescens*], emgd. 28. III./ 3. IV. 2017, HSU 17B05 (L. Huang) (genitalia preparation JYL1003, JYL1004). **XINBEI CITY [= TAIPEI Co.]:** 2♀, Ruifang, Nanya, 9. X. 1998 (Y. F. Hsu); 1♀, same locality, 13. X. 1998 (Y. F. Hsu); 1♂, 1♀, same locality, 22. IX. 2000, reared from *P. laevigata* [= *P. alboflavescens*], emgd. 24. X. 2000, HSU 00J40 (C. C. Lu & C. R. Chen); 1♂, same locality, 25. VIII. 2001; 1♂, same locality, 25. VIII. 2001, reared from *P. laevigata* [= *P. alboflavescens*], emgd. 25. IX. 2001, HSU 01H49 (H. S. Chuen, C. Y. Kung & Y. C. Yang). **YILAN Co.:** 1♂, Toucheng, Guishan Is., 24. III. 2001, reared from *P. laevigata* [= *P. alboflavescens*], emgd. 30. IV. 2001, HSU 01C48 (H. C. Hsu); 1♀, same locality, 9. VI. 2001 (H. C. Hsu). **TAIDONG Co.:** 1♂, Daren, Duyayuanshan, Paotai, 850m, 3/6. V. 2002 (C. L. Huang); 1♀, Lanyu, 24. VI. 1986 (Y. F. Hsu); 1♂, 1♀, Lanyu, Sidaogou, 14. VI. 2003, reared from *P. laevigata* [= *P. alboflavescens*], emgd. 17/19. VII. 2003, HSU 03G11 (Y. F. Hsu); 2♂, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 10. IV. 2006 (Y. F. Hsu); 1♀, same locality, 18. IV. 2006 (Y. F. Hsu); 1♀, same locality, 10. IV. 2007 (Y. F. Hsu); 3♂, same locality, 17/18. XI. 2007 (Y. F. Hsu &. C. C. Hsieh); 1♂, Lanyu, Qiwei, 6. IV. 2021 (Y. F. Hsu).

Ssp. *kwashotoensis*: **TAIDONG Co.:** 1♂, Ludao, 30. VI. 1986 (Y. F. Hsu); 1♀, same locality, 25/27. IX. 2004, reared from *P. laevigata* [= *P. alboflavescens*], emgd. 3. XI. 2004, HSU 04J46 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 4. IX. 2005 (W. C.

Chang & C. L. Huang); 2♂, same locality, 4. IX. 2005, reared from *P. laevigata* [= *P. alboflavescens*], emgd. 8/15. X. 2005, HSU 05J20 (C. L. Huang & W. C. Chang); 1♂, same locality, 28/29. VII. 2007 (T. W. Chen & Y. C. Lin) (genitalia preparation JYL1041); 1♀, same locality, 8/10. IX. 2009 (C. L. Huang & Y. C. Lin) (genitalia preparation JYL1042).

Description. Adult – Forewing length 58–71 mm. Sexual dimorphism absent. Male (PLATE 11, Figs. 41, 43): Head dark brown with white spots. Antennae dark brown, with distal tip naked. Proboscis dark brown. Labial palpus porrect, white on outer surface, dark brown on inner surface. Thorax dark brown with white spots; patagium dark brown basally, white distally. Legs dark brown with white markings; protarsi fused, stab-like. Abdomen with a medial, longitudinal, dark brown band dorsally. Forewing broad, triangular, costa slightly convex, apex obtuse, dorsum straight. Hindwing rounded. Wing uppersides with ground color white, translucent, tinged with yellow proximally. Dark brown band present along costa of forewing. Prominent dark brown markings present, with a zigzag discal band on forewing, a series of discal spots on hindwing. Dark brown margins with circular windows along termen of both wings. Two dark brown markings present in discoidal cell of forewing, one distal and one proximal. Narrow dark brown bands present in discoidal cell of hindwing, sometimes also forewing. Dark brown scalings present along veins. Wing undersides with pattern similar to that of upperside, dark brown markings more extensive. Brown coremata present. Female (PLATE 11, Figs. 42, 44): Body and general wing patterns similar to those of male, without coremata; protarsi segmented, clawed.

Male genitalia (PLATE 74, Fig. 410; PLATE 75, Fig. 411) – Tegumen membranous, socii as small, pea-like sclerotized sac, setose. Saccus dome-shaped, attenuate cephalically to a blunt tip. Vinculum narrow. Valva elongate, bearing prominent process with distal end forming several teeth, asymmetrical. Juxta as a large, V-shaped plate. Phallus elongate, down-curved caudad; aedeagus nearly as long as phallobase. Cornuti as two bands of spines. Coremata as a pair of pouches containing elongate, narrow hairpencil.

Female genitalia (PLATE 112, Fig. 560; PLATE 113, Fig. 561) – Corpus bursae ovate.

Signa as a pair of elongate, spiny patches on opposite walls. Ductus bursae elongate; anterior portion membranous, posterior portion heavily sclerotized, with an invaginated, membranous sac near caudal end; a sclerotized, medial sac present at ostium bursae ventrally. Sterigma as simple membranous dome. Anterior apophyses absent. Posterior apophyses straight. Anal papillae setose posteriorly, weakly sclerotized basad.

Global distribution. Sundaland, southern Thailand, Philippines, Okinawa and Yaeyamas of Japan, Taiwan (Ackery & Vane-Wright, 1984; Morishita, 1985).

Distribution in Taiwan. Four disjunct populations are currently recognized: northeastern Taiwan, southern Taiwan, Lanyu and Ludao (Yamanaka, 1973; Hsu, 1999).

Larval Host plant(s). Apocynaceae: *Parsonsia alboflavescens* (Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014).

Biology. This species is known as a multivoltine species (Yamanaka, 1973; Hsu, 1999; Lu & Chen, 2014).

Remarks. The population at Ludao island is characterized by extensive dark markings on wings of adults and reduction of yellow bands on body of larvae (Hsu, 1999; Lu & Chen, 1994), usually recognized as a distinct subspecies, ssp. *kwashotoensis* Sonan, 1928 (e.g., Shirôzu, 1960; Shirôzu & Ueda, 1992).

形態特徵：成蝶前翅長 58–71 mm。無雌雄二型性。雄蝶 (圖 41、43)：頭黑褐色，有白點。觸角黑褐色，頂端裸露。口器黑褐色。下唇鬚前伸，外側白色、內側黑褐色。胸部黑褐色，有白色斑點；頸板基部黑褐色、末端白色。足黑褐色，有白色斑紋；前足跗節癒合、匕狀。腹部白色，背面中央具縱向黑褐色帶。前翅寬、三角形，前緣略凸、翅頂鈍、後緣直。後翅圓。翅背面底色白色半透明，內側泛黃。黑褐色帶紋沿前翅前緣分布。前後翅皆具醒目之黑褐色斑紋。前翅中央具之字形帶紋；後翅中央則有一列斑點。前、後翅外緣有鑲黑邊之圓形窗斑。前翅中室有二枚黑褐色斑紋，分別位於中室內內側及外側。後翅中室內具黑褐色窄帶，有時亦見於前翅。黑

褐色鱗沿翅脈分布。翅腹面斑紋與背面相似，但黑褐色斑紋更為鮮明。氣味刷褐色。雌蝶 (圖 42、44)：形態特徵與雄蝶相似，不具氣味刷；前足跗節分節、具爪。

雄交尾器 (圖 410–411)：背兜膜質，背兜側突細小、骨化、豌豆狀，具剛毛。囊突圓頂狀，前端鈍。基腹弧狹窄。抱器長，末端有數只齒狀突起，左右不對稱。陽基軛片形成大型 V 形骨板。陽莖細長，末端下彎。陽莖器長度約略與陽莖基等長。角狀器為兩列棘刺帶。氣味刷包覆在一對長袋狀中，毛筆器細長。

雌交尾器 (圖 560–561)：交尾囊卵圓形。花壁具刺，修長、帶狀，位於交尾囊兩側。交尾囊管長；前端膜質，後端明顯骨化，近尾部處有一內陷囊膜；交尾囊孔腹面中央具一骨化小囊袋。交尾孔板簡單、膜質、半圓形。前內骨突消失。後內骨突頗直。肛突後端具毛，基部略骨化。

世界分布：巽他地區、泰國南部、菲律賓、沖繩及八重山群島、臺灣。

臺灣分布：目前存有四隔離族群，分別位於本島東北角、南臺灣、綠島及蘭嶼。

寄主植物：夾竹桃科之爬森藤。

生物學：本種是一年多世代物種。

註記：綠島的族群具有成蝶暗色斑紋較顯著及幼蟲黃色帶紋減退之特徵，常被單獨視為一亞種。

Subfamily HELICONIINAE Boisduval, 1833

The subfamily was sometimes treated as a distinct family (e.g., Garth & Tilden, 1986), and some members currently placed in this subfamily were assigned to the other subfamilies or families. For instance, Argynnini was often placed in Nymphalinae (e.g.,, Scott, 1986), and Acraeini often recognized as a subfamily Acraeinae (e.g., Scoble, 1992). Recent phylogenetic works all support it as a subfamily within Nymphalidae (e.g., Wahlberg *et al.*, 2003; Freitas & Brown, 2004; Wahlberg *et al.*, 2009; Espeland *et al.*, 2018).

This subfamily is mainly tropical in distribution, but Argynnini is mostly Holarctic. Main larval hostplants include the plants in the family Urticaceae, Asteraceae, Violaceae, Flacourtiaceae and Passifloraceae (Ackery *et al.*, 1999).

In Taiwan, 11 species in 8 genera have been recorded, but some appear to be accidental strays or doubtful taxa.

毒蝶亞科

本亞科過去有時被視為獨立科，而本亞科部分成員往往被置於其他亞科或科內，如豹蛺蝶族過去常被置於蛺蝶亞科中、珍蝶族則曾被視為獨立的珍蝶亞科。近期親緣關係研究支持本亞科為蛺蝶科內的一亞科。

本亞科成員主要分布於熱帶，但豹蛺蝶族大多數分布於全北區。主要寄主植物包括蕁麻科、菊科、堇菜科、大風子科及西番蓮科。

臺灣有 8 屬 11 種之記錄，但部分種類係偶產迷蝶或疑問種。

Genus *TELCHINIA* Hübner, [1819]

Type species: ***Papilio serena*** **Fabricius, 1775**

Diagnostic characters may include the following: 1) compound eyes naked; 2) 3rd segment of labial palpus small in size; 3) claws of male pterothoracic legs asymmetrical.

Many plant families have been recorded as larval hostplants by Hennig & Williams (2010).

As the genus *Telchinia* was recently re-separated from *Acraea* sensu lato based on limited taxon sampling by several works on molecular phylogeny, it is uncertain how many species should be placed in the genus. Members of the genus are mainly distributed in Afrotropical and Oriental regions.

1 species occurs in Taiwan.

細蝶屬

形態特徵如下：1) 複眼裸露；2) 下唇鬚第三節細小；3) 雄蝶生翅胸足端之爪不對稱。

幼蟲以多科植物為寄主。

因本屬最近才依據分子親緣關係樹，被從廣義珍蝶屬中重新分離出來，因此無法確定本屬包含多少物種。本屬成員主要分布於非洲區及東洋區。

臺灣有 1 種。

Telchinia issoria Hübner, [1819] (苧麻細蝶／苧麻珍蝶／苧麻蝶／細蝶)

Telchinia issoria Hübner, [1819]: Verzeichniss bekannter Schmettlinge (2): 27. (Type locality: "China")

Papilio vesta Fabricius, 1787: Mantissa Insectorum 2: 14. (preoccupied by *Papilio vesta* Cramer, [1777]) (Type locality: "China")

Acraea anomala Kollar, [1844]: Kaschmir und das Reich der Siek 4: 425, pl. 3, f. 3-4. (Type locality: "Massuri [Mussoorie, India]")

Acraea vesta f. *le-douxi* Bryk, 1928: Entomologische Zeitschrift 42 (14): 171. (Type locality: "Tien-tsuen [Tianquen, Sichuan, China]")

Ssp. *formosana* Fruhstorfer, 1914

PLATE 12, Figs. 45–46; PLATE 75, Fig. 412; PLATE 113, Fig. 562

Pareba vesta formosana Fruhstorfer, 1914: Die Gross-Schmetterlinge der Erde 9: 741. (Type locality: "Chip-Chip und andere Gebirgsorte auf Formosa [Chip-Chip and other mountainous regions of Formosa]")

Ssp. *issoria* Hübner, [1819]

PLATE 12, Fig. 47; PLATE 75, Fig. 413

Specimens examined:

Ssp. *formosana*: **XINBEI CITY [= TAIPEI Co.]:** 2♂, Wulai, Zhongzhi, 9. VII. 2004 (J. R. Chen & C. T. Chaung). **YILAN Co.:** 3♂, Yuanshan, Fushan Research Station, 4/5. VIII. 2006 (Y. F. Hsu & H. C. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 5♂, 2♀, Heping, Shangguguan, 800/900m, 28. VII. 2007, reared from *Debregeasia orientalis*, emgd. 1/4. VIII. 2007, HSU 07G41 (Y. F. Hsu) (genitalia preparation JYL1050); 2♂, 1♀, same locality, 29. VII. 2007 (Y. F. Hsu); 1♂, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **NANTOU Co.:** 1♂, Xinyi, Dongpu, 1500/1600m, 2. IX. 2007 (Y. F. Hsu); 2♂, Renai, Tunyuan, 17. VIII. 2021, reared from *Boehmeria nivea*, emgd. 28/29. VIII. 2021, HSU 21H27 (Z. Y. Shen). **PINGDONG Co.:** 3♂, Wutai, 26. III. 2001, reared from *B*. *nivea*, emgd. 12/16. IV. 2001 (H. S. Chuen).

Ssp. *issoria*: **LIANJIANG Co.:** 2♂, Nangan, Jinsha, 20. VII. 2013 (C. L. Huang, H. C. Huang & H. Y. Lee) (genitalia preparation JYL927).

Description. Adult – Forewing length 27–33 mm. Sexual dimorphism weakly present. Male (PLATE 12, Figs. 45, 47): Head dark brown, with orange chaetosemata, mixed with some orange scalings on frons, rim behind compound eyes white. Antennae enlarged at distal end, dark brown. Proboscis dark brown. Labial palpus porrect, hairy, dark brown, with orange laterally. Thorax dark brown dorsally, dark brown with creamy white dots

ventrally. Legs dark brown, but protibia and protarsus creamy white; protarsi fused, stab-shaped, hairy. Abdomen brown dorsally, with two rows of creamy yellow spots; creamy yellow ventrally, with four narrow, longitudinal bands. Forewing elongate, with rounded apex, costa and dorsum straight, termen slightly convex. Hindwing flabellate, with termen rounded. Wing uppersides ground color orange, with brown margin on both wings. Small brown markings present on forewing; a short subapical band, one distal spot in cell CuA_2, two short bands in discoidal cell. A series of creamy yellow dots along termen of both wings. Wing undersides ground color paler than that of uppersides. Veins darkened. A dark brown wavy bands along termen on both wings, hindwing with additional dark brown curve band immediately proximal to wavy band. Short brown band at distal end of discoidal cell of forewing. Fringe brown. Female (PLATE 12, Fig. 46): Body and wing pattern similar to those of male, ground color of wings paler; dark brown markings more prominent; protarsi segmented, clawed. A prominent brown, conical sphragis present after mating.

Male genitalia (PLATE 75, Figs. 412–413) – Tegumen large, convex dorsally. Uncus as a large, simple hook, down-curved. Gnathos vestigial. Saccus large, stout, slightly attenuate to blunt distal end. Vinculum strongly curved, Valva simple, thick basad, attenuate to a distal rod, setose. Juxta small, simple. Phallus elongate, slightly down-curved; aedeagus longer than phallobase, with caudal end beveling.

Female genitalia (PLATE 113, Fig. 562) – Corpus bursae small, spherical. Ductus bursae heavily sclerotized, vase-like. Sterigma forming a large, diamond-shaped plate, leading posteriorly to funnel-like structure. Anterior apophyses as small, flatten, triangular processes. Posterior apophyses shorter than anal papillae, as flattened curved bar. Anal papillae lobe-like, heavily sclerotized caudally, densely setose.

Global distribution. Himalayas, Northeast India, Indochina, Sumatra, Java, Bali, West to East China, Taiwan (Tsukada, 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013). Populations found in Mazu Islands are assigned to the

nominotypical subspecies (Lee, 2000).

Larval Host plant(s). Urticaceae: *Boehmeria nivea*, *B. densiflora*, *Debregeasia orientalis*, *Gonostegia hirta*, *Pouzolzia elegans*, etc. (Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species.

Remarks. This species is usually considered a member of the collective genus *Acraea* Fabricius, 1807. Based on molecular phylogeny, Silva-Brandão *et al*. (2008) and Timmermans *et al*. (2016) suggest dividing *Acraea* into several monophyletic genera, and *issoria* is assigned to the genus *Telchinia* Hübner, 1819.

形態特徵：成蝶前翅長 27–33 mm。雌雄二型性不顯著。雄蝶 (圖 45、47)：頭黑褐色，具橙色毛隆，前額雜有橙色鱗。複眼後側輪緣白色。觸角末端膨大、黑褐色。口器黑褐色。下唇鬚前伸、被毛、黑褐色，側面橙色。胸部黑褐色，腹面有乳白色斑點。足黑褐色，但前足脛節及前足跗節乳白色，前足跗節癒合、匕狀、被毛。腹部背面褐色，有兩列乳黃色斑點，腹面乳黃色，有四道縱向細帶紋。前翅修長、翅頂鈍、前緣及後緣直線狀、外緣略凸出。後翅扇形，外緣甚圓。翅背面底色橙色，有黑褐色邊；前翅有褐色小斑紋，分別為亞翅頂帶紋、CuA_2 室中央斑點及中室內之二條短帶紋；沿外緣有一列乳黃色點。翅腹面底色較淺、翅脈色彩較深；沿外緣有黑褐色波狀帶紋；後翅另有黑褐色彎曲帶紋緊鄰波狀帶紋內側；前翅中室末端有褐色短帶紋。緣毛褐色。雌蝶 (圖 46)：形態特徵與雄蝶相似，但底色較淺、黑褐色斑紋較鮮明，前足跗節分節、具爪、無毛，交配後尾端出現褐色錐狀交尾栓。

雄交尾器 (圖 412–413)：背兜大型，背側隆起。鉤突大型、鉤狀、下彎。顎形突退化。囊突大型、粗壯，末端圓。基腹弧明顯彎曲。抱器簡單，基部厚，向末端漸細，呈桿狀，具剛毛。陽基軛片小型、簡單。陽莖細長，略下彎。陽莖器長度較陽莖基長，末端斜切，開口於背側。

雌交尾器 (圖 562)：交尾囊小型，球狀。交尾囊管明顯骨化、瓶狀。交尾囊孔板形成大型菱形骨板，向後呈漏斗狀結構。前內骨突小型、扁平、三角形。後內骨突短

於肛突，扁平、彎曲，呈棒狀。肛突葉狀、明顯骨化，密生剛毛。

世界分布：喜瑪拉雅地區、印度東北部、中南半島、蘇門答臘、爪哇、峇厘島、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區，馬祖族群屬於承名亞種。

寄主植物：蕁麻科之苧麻、密花苧麻、水麻、糯米團、水雞油等。

生物學：一年多代物種。

註記：本種常被認為是廣義珍蝶屬 *Acraea* Fabricius, 1807 之成員。Silva-Brandao *et al*. (2008) 及 Timmermans *et al*. (2016) 根據分子證據將 *Acraea* 屬分為數個單系屬，本種被置於 *Telchinia* Hübner, 1819 屬內。

Genus *ARGYNNIS* Fabricius, 1807

Type species: *Papilio paphia* Linnaeus, 1758

Diagnostic characters may include the following: 1) compound eyes naked; 2) antennal club enlarged; 3) discoidal cells closed on both wings; 4) wings yellow ochre with dark brown spots on uppersides.

Larvae feed on plants in Violaceae.

De Moya *et al*. (2017) recognized 9 species, mainly distributed in the Palearctic region, but one species ranging west to eastern Africa and east to New Guinea and Australia (Tsukada, 1985).

Two species occur in main island of Taiwan. and one additional species is found from Mazu Island.

豹蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 觸角錘部膨大；3) 中室封閉；4) 翅背面赭黃色綴黑褐色斑點。

幼蟲取食堇菜科植物。

De Moya *et al*. (2017) 將本屬分為 9 種，主要分布於古北區，但其中 1 種分布遼闊，東至非洲東部、西及新幾內亞及澳洲。

臺灣本島有 2 種，另有 1 種見於馬祖。

Argynnis paphia (Linnaeus, 1758) (綠豹蛺蝶／綠斑豹蝶)

Papilio (*Nymphalis*) *paphia* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 481. (Type locality: "Urtica" [Sweden])

Papilio (*Nymphalis*) *paphia valesina* Esper, [1798]: Die Schmetterlinge in Abbildungen nach der Natur Supplemente:73, t. 107, f. 1, 2. (Type locality: "Valencienne, Frankreich [Frence]")

Argynnis paphia var. *immaculata* Bellier, 1862: Annales de la Société entomologique de France, série 4, 2: 616. (Type locality: "Corse, [France]")

Argynnis paphia var. *anargyra* Staudinger, 1871: Catalog der Lepidopteren des europæischen Faunengebiets. I. Macrolepidoptera: 22. (Type locality: "Eur. m: As. oc.")

Argynnis paphia var. *butleri* Krulikowsky, 1909: Revue russe d'entomologie 9: 298. (Type locality: "Wiatka [Vyatka, Russia]") (preoccupied by *Argynnis butleri* Edwards, 1883)

Argynnis paphia geisha Hemming, 1941: Proceedings of the royal entomological society of London (B) 10 (10): 207. (replacement name for *butleri* Krulikowsky, 1909)

Ssp. *formosicola* Matsumura, 1927

PLATE 12, Figs. 48–49; PLATE 75, Fig. 414; PLATE 113, Fig. 563

Argynnis paphia formosicola Matsumura, 1927: Insecta Matsumurana 2 (2): 116. (Type locality: "Formosa")

Specimens examined:

HUALIAN Co.: 1♂, Xiulin, Bilu, 2000m, 3. VII. 1989 (Y. F. Hsu); 1♂, Xiulin, Xinbaiyang, 1600/1700m, 3. VII. 2008 (L. H. Wang) (genitalia preparation JYL1011); 12♂, 14♀, Xiulin, Guanyuan, ca 2350 m, 8. IX. 2020, reared from *Viola* sp., emgd. 19. III/5. IV. 2021, HSU 20J4 (Y. F. Hsu) (genitalia preparation JYL1012).

Description. Adult – Forewing length 33–38 mm. Sexual dimorphism weakly present. Male (PLATE 12, Fig. 48): Head orange, rim behind compound eyes white. Antennae enlarged at distal end, bulbous, dark brown mixed with white scalings, naked ventrally and at distal tip. Proboscis brown. Labial palpus porrect, hairy, creamy white, with orange dorsally. Thorax orange dorsally, white tinged with green ventrally. Legs creamy white, turning brown distally; protarsi fused, stab-shaped, hairy. Abdomen orange dorsally, creamy white ventrally. Forewing broad, triangular, costa convex; termen, dorsum straight. Hindwing flabellate, with termen serrate. Wing uppersides ground color orange, darkened proximally; dark brown markings on both wings; three rows of dark brown spots; 4 short bars in discoidal cell of forewing, 1 at distal end of discoidal cell of hindwing. A series of dark brown markings with a narrow band along termen of both wings. Wing undersides mostly metallic green and olive-green on hindwing and forewing apex; several white bands on hindwing. A series of faint eyelike distal spots on hindwing. Fringe orange, checkered with dark brown. Sexual brands as bands of dark brown scalings along veins of forewing. Female (PLATE 12, Fig. 49): Body and wing pattern similar to those of male, but ground color of wing uppersides darker, partially tinged with green; dark brown markings more prominent; no sexual brands; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 75, Fig. 414) – Tegumen broad, tapering caudad, with a medial membranous window. Uncus as a large hook, with several spines on dorsal surface. Gnathos as simple, flattened sclerite. Saccus short, broad, with distal end rounded. Vinculum narrow. Valva rectangular; ampulla forming spiny club; costa produced dorsally to a fin-like extension, with a ventral spiny process; harpe setose, with distal end truncate, a dorsal, distal, sac-like process and two proximal blade-like processes present; sacculus thick at base, with a dorsal setose bump. Juxta large, forming a pair of bowling-like processes dorsally, and a medial, poker club-like ventral base. Phallus robust, straight; aedeagus more than 2X of phallobase, spiny at distal end and with a spiny sclerite at right side.

Female genitalia (PLATE 113, Fig. 563) – Corpus bursae column-shaped. Ductus bursae without clear delimitation with corpus bursae, with rib-like structure near ostium bursae. Ostium bursae surrounded by concentric rib-like rings. Sterigma with

lamella antevaginalis forming broad V- or Y-shaped plate, lamella postvaginal forming prominent, granulate sac. Posterior apophyses slightly longer than anal papillae, nearly straight. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Global distribution. Widely distributed in Eurasia, from western Europe and North Africa, across Siberia, to Sakhalin. Japan, Korea, most part of China, and Taiwan (Tuzov & Bozano, 2017; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Restricted to higher elevations of central and southern Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Violaceae: *Viola adenothrix*, *V. grypoceras*, etc. (Hung, 2013; Hu & Lin, 2019)

Biology. Univoltine, with adults on the wing in summer.

形態特徵：成蝶前翅長 33–38 mm。雌雄二型性不顯著。雄蝶 (圖 48)：頭橙色。複眼後側輪緣白色。觸角末端膨大、球狀，黑褐色雜白色鱗，腹面及頂端裸露。口器褐色。下唇鬚前伸、被毛、乳白色，背面橙色。胸部背面橙色，腹面白色帶綠色調。足乳白色、末端褐色，前足跗節癒合、匕狀、被毛。腹部背面橙色，腹面乳白色。前翅寬闊、三角形，前緣凸出、外緣及後緣直。後翅扇形，外緣鋸齒狀。翅背面底色橙色，內側較深色，鑲有黑褐色斑紋；有黑褐色斑點具成三列；前翅中室內有四道短條紋，後翅中室末端則有一道；前、後翅外緣有一列黑褐色細帶紋。前翅腹面翅頂及後翅腹面大部分為具金屬光澤之綠色或橄欖綠色；後翅有數條白色帶紋，外側有一列模糊眼紋。緣毛橙色鑲黑褐色。由黑褐色特化鱗組成帶狀性標沿前翅翅脈分布。雌蝶 (圖 49)：形態特徵與雄蝶相似，但前翅背面底色較暗且常帶綠色調、黑褐色斑紋較鮮明、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 414)：背兜寬闊，向尾端漸窄，中央有膜質區。鉤突大型、鉤狀，背側有數只棘刺。顎形突扁平、塊狀。囊突寬短，末端圓。基腹弧狹窄。抱器矩形。抱器內突棒狀，生有許多小棘刺。抱器背向背側延伸成鰭狀，腹側有棘刺。抱握夾具剛毛，末端截狀，於背側末端形成囊狀突起，基部有兩只瓣狀突起。抱器腹基部

粗厚，背側隆起、具剛毛。陽基軛片大型，於背側形成一對棒狀突起。陽莖粗壯、筆直。陽莖器長度超出陽莖基 2 倍，末端斜切、有棘刺，右側形成有棘刺之骨片。

雌交尾器 (圖 563)：交尾囊柱狀。交尾囊管和交尾囊間無明顯區隔，近交尾囊孔處具肋狀構造。交尾囊孔處有同心圓形肋狀環圍繞。交尾囊孔板之前陰片形成 V 形或 Y 形寬板，後陰片形成表面顆粒狀之囊袋。後內骨突略長於肛突，頗直。肛突葉狀，略骨化，後端具剛毛。

世界分布：廣泛分布於歐亞大陸，從西歐與北非，跨越西伯利亞至庫頁島、日本、朝鮮半島、中國大陸及臺灣。

臺灣分布：侷限分布於臺灣本島中南部較高海拔地區。

寄主植物：堇菜科之喜岩堇菜、紫花堇菜等。

生物學：本種是一年一世代物種，成蝶於夏季活動。

Argynnis hyperbius (Linnaeus, 1763) (斐豹蛺蝶 / 黑端豹斑蝶 / 斐胥)

PLATE 13, Figs. 50–51; PLATE 76, Fig. 415; PLATE 113, Fig. 564

Papilio (*Nymphalis*) *hyperbius* Linnaeus, 1763: Amoenitates academicae 6: 408. (Type locality: “China”)

Papilio (*Nymphalis*) *niphe* Linnaeus, 1767: Systema Naturae (Edn. 12) 1 (2): 785. (replacement name for *Papilio hyperbius* Linnaeus, 1763)

Papilio (*Nymphalis*) *argyrius* Linnaeus, 1769: Amoenitates academicae 7: 502. (Type locality: “Chinam [China]”)

Papilio tigris Jung, 1792: Alphabetisches Verzeichnis der bisher bekannten Schmetterlinge 2: 239. (Type locality: “Chin. [China]”)

Argynnis tephnia Godart, 1819: Encyclopédie méthodique Histoire naturelle 9 (1): 262. (Type locality: “Chine; Indes orientales” [China; “East Indies”])

Argynnis aruna Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 156, pl. 3a, f. 4. (Type locality: N. India)

Argynnis hyperbius hybrida Evans, 1912: Journal of the Bombay Natural History Society 21 (2): 558. (Type locality: India)

Argynnis hyperbius f. *coomani* Le Cerf, 1933: Bulletin du Muséum national d'histoire naturelle, série 2, 5: 212. (Type locality: “Man-Son (500 à 800 mètres altitude), près Lang-Son, Tonkin”)

Specimens examined:

JILONG CITY: 1♂, Longgang Trail, 50m, 27. XI. 2009 (W. H. Chien). **TAIPEI CITY:** 1♀, Wenshan, Xianjiyan, 17. VIII. 2008, reared from *Viola inconspicua*, emgd. 7. IX. 2008, HSU 08H9 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Longtan, 18. IX. 1999 (Y. F. Hsu). **YILAN Co.:** 1♂, Yuanshan, Fushan Research Station, 4/5. VIII. 2006, reared from *Viola* sp., emgd. 11. VIII. 2006, HSU 06H13 (Y. F. Hsu, H. C. Huang, Y. C. Hsu & C. K. Wang). **NANTOU Co.:** 2♂, Renai, Guandaoshan, 15. V. 1997 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Lanyu, Central Transverse Road, 27/29. III. 2010 (J. H. Lin). **LIANJIANG Co.:** 1♀, Beigan, Daqiu, 22. VII. 2020 (Y. F. Hsu). **JINMEN Co:** 1♂, Jinning, Zhongshan Forest, 29. V. 2011 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 30–40 mm. Sexual dimorphism present. Male (PLATE 13, Fig. 50): Head orange, rim behind compound eyes white. Antennae enlarged at distal end, bulbous, dark brown mixed with white scalings, naked ventrally and at distal tip. Proboscis brown. Labial palpus porrect, hairy, creamy white, with orange dorsally. Thorax orange dorsally, white with tilted orange bands ventrally. Legs creamy white, turning brown distally; protarsi fused, stab-shaped, hairy. Abdomen orange dorsally, creamy white ventrally. Forewing broad, triangular, with apex produced, rounded, costa convex, dorsum straight. Hindwing flabellate, with termen serrate. Wing uppersides ground color orange, with dark brown markings on both wings; three rows of dark brown spots; five short bars in discoidal cell of forewing, three on that of hindwing. A series of dark brown markings with a narrow band along termen of both wings. Pale blue scalings present at tornus of hindwing. Wing undersides mostly olive-green mottled with creamy yellow and white except proximal portion of forewing. A broad discal band margined with dark brown on hindwing. A series of eyelike distal spots on hindwing. Fringe white, checkered with dark brown. Female (PLATE 13, Fig. 51): Body and wing pattern similar to those of male, but distal portion of forewing uppersides dark brown with a white, tilted band, associated with a white distal band and a dark proximal band on forewing undersides; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 76, Fig. 415) – Tegumen broad, tapering caudad, with a medial membranous window. Uncus as a large hook. Gnathos as simple, flattened sclerite. Saccus short, broad, with distal end rounded. Vinculum narrow. Valva rectangular; ampulla forming spiny club; costa produced dorsally to a fin-like extension, with a

ventral spiny process; harpe setose, with distal end truncate, a dorsal, distal, sac-like process and two proximal blade-like processes present; sacculus thick at base, with a dorsal setose bump. Juxta large, forming a pair of bowling-like processes dorsally, and a medial, poker club-like ventral base. Phallus robust, straight; aedeagus more than 2X of phallobase, spiny at distal end and with a spiny sclerite at right side.

Female genitalia (PLATE 113, Fig. 564) – Corpus bursae column-shaped. Ductus bursae short, thick. Sterigma with lamella antevaginalis forming broad, bi-lobed plate, lamella postvaginal forming a sac. Posterior apophyses slightly longer than anal papillae, nearly straight. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Global distribution. East Africa, India, Sri Lanka, Himalayas, Indochina, Malaya, Sumatra, Lesser Sunda Islands, New Guinea, Eastern Australia, northern Philippines, Korea, southern Japan, Southwest to North China, Taiwan (Tsukada, 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also many associated islands (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Violaceae: *Viola inconspicua nagasakiensis*, *V. adenothrix*, *V. betonicifolia*, *V. nagasawai*, *V. arcuata*, *V. formosana*, etc. (Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, with adults on the wing throughout the year.

Remarks. This species is usually placed in a monotypic genus *Argyreus* Scopoli, 1777, but de Moya *et al*. (2017) has performed a phylogenetic study based on one mitochondrial and four nuclear genes, concluding that it is more appropriate to assign this species to the genus *Argynnis*.

形態特徵：成蝶前翅長 30–40 mm。有雌雄二型性。雄蝶 (圖 50)：頭橙色。複眼後

側輪緣白色。觸角末端膨大、球狀，黑褐色雜白色鱗，腹面及頂端裸露。口器褐色。下唇鬚前伸、被毛、乳白色，背面橙色。胸部背面橙色，腹面白色而有橙色斜帶紋。足乳白色、末端褐色，前足跗節癒合、匕狀、被毛。腹部背面橙色，腹面乳白色。前翅寬闊、三角形，翅頂外凸成圓形、前緣凸出、後緣直。後翅扇形，外緣鋸齒狀。翅背面底色橙色，上綴黑褐色斑紋；有黑褐色斑點排成三列；前翅中室內有五只短條紋，後翅中室內則有三只；前、後翅外緣均有一列黑褐色斑點及細帶紋；後翅臀區有一片淡藍色鱗。翅腹面除前翅基半部外，大部分為橄欖綠色鑲有斑駁乳黃色及白色紋；後翅中央有鑲黑褐色邊之寬帶紋。後翅外側有眼狀斑紋。緣毛白色鑲黑褐色。雌蝶 (圖 51)：形態特徵與雄蝶相似，但前翅背面外半部呈黑褐色，並具白色斜帶紋，腹面相同位置外側有白色帶紋，內側有黑褐色帶紋，前足跗節分節、具爪、無毛。

雄交尾器 (圖 415)：背兜寬闊，向尾端漸窄，中央具膜質區。鉤突鉤狀。顎形突呈扁平、塊狀。囊突寬短，末端圓。基腹弧狹窄。抱器矩形。抱器內突棒狀，生有許多小棘刺。抱器背向背側延伸為鰭狀，腹側緣有棘刺。抱握夾有剛毛，背側末端形成囊狀突起，基部有兩只瓣狀突，腹側內有不規則鋸齒。抱器腹基部粗厚，背側具一疣狀小突起。陽基軛片大型，於背側形成一對扁平長突起。陽莖粗壯、筆直。陽莖器長度長於陽莖基 2 倍，末端斜切、有棘刺，右側有一密生刺棘之骨片。

雌交尾器 (圖 564)：交尾囊柱狀。交尾囊管粗短。交尾囊孔板之前陰片寬闊，雙瓣狀板；後陰片囊狀。後內骨突略長於肛突，頗直。肛突葉狀，略骨化，後端具剛毛。

世界分布：東非、印度、斯里蘭卡、喜瑪拉雅地區、馬來亞、蘇門答臘島、小巽他群島、新幾內亞、澳洲東部、菲律賓北部、朝鮮半島、日本南部、華西南至華北、臺灣。

臺灣分布：本島低至中海拔地區，許多離島亦有記錄。

寄主植物：堇菜科之小堇菜、喜岩堇菜、箭葉堇菜、臺北堇菜、如意草、臺灣堇菜等。

生物學：本種是一年多世代物種，全年皆可見成蝶活動。

註記：本種常被置於單種屬斐豹蛺蝶屬 *Argyreus* Scopoli, 1777 中，但 de Moya *et al*. (2017) 根據分子親緣研究，認為本種應置於豹蛺蝶 *Argynnis* 屬內。

Argynnis childreni Gray, 1831 (大豹蛺蝶／銀豹蛺蝶)

PLATE 13, Figs. 52–53; PLATE 76, Fig. 416; PLATE 114, Fig. 565

Argynnis childreni Gray, 1831: Zoological Miscellany (1): 33. (Type locality: "Nepaul [Nepal]")

Argynnis sakontala Kollar, [1944]: Kaschmir und das Reich der Siek 4 (2): 439, pl. 12. (Type locality: "Himaleya, Massuri [Mussoorie], [India]")

Argynnis childreni binghami Oberthür, 1912: Études de lépidoptérologie comparée 6: 314, pl. 103, f. 966. (Type locality: "Shillong, [India]")

Argynnis childreni caesarea Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 516. (Type locality: "West- und Central-China bis Ningpo [West and Central China to Ningpo]; Kaulung [Kowloon] nahe Hongkong; Chusan-Archipel [Zhoushan archipelago]")

Specimens examined:

LIANJIANG Co.: 1♀, Nangan, Renai, 29. V. 2005 (D. C. Chen); 8♂, 3♀, Beigan, 19. XI. 2013, reared from *Viola* sp., emgd. 2/21. II. 2014, HSU 13L63 (L. H. Wang & H. Y. Lee).

Description. Adult – Forewing length 40–46 mm. Sexual dimorphism weakly present. Male (PLATE 13, Fig. 52): Head orange, rim behind compound eyes white. Antennae enlarged at distal end, flattened, bulbous, dark brown with white scalings, naked ventrally and at distal tip. Proboscis brown. Labial palpus porrect, hairy, creamy white, with orange dorsally and on inner surface. Thorax orange dorsally, pale orange ventrally. Legs creamy white, partially orange; protarsi fused, stab-shaped, hairy. Abdomen orange dorsally, creamy white ventrally. Forewing broad, triangular, costa convex; termen, dorsum straight, apex obtuse. Hindwing flabellate, with termen serrate. Wing uppersides ground color orange, with a deep blue patch along hindwing termen; dark brown markings on both wings; three rows of dark brown spots, proximal series serpentine, discal and distal series slightly curved; four short bars in discoidal cell of forewing, one at distal end of discoidal cell of hindwing. Two narrow bands present along termen of both wings. Wing undersides mostly metallic green ochre on hindwing and forewing apex, with reticulate white bands margined with dark brown. Forewing mostly red, with dark brown marking similar to those of upperside. Eyelike distal spots on hindwing dark brown tinged with blue, inconspicuous. Fringe white, with distal ends of veins dark brown. Sexual brands as narrow bands of bronze-colored scalings along vein CuA_1, CuA_2, 1A+2A of forewing. Female (PLATE 13, Fig. 53): Body and wing pattern similar to those of male, dark brown markings more prominent; no sexual brands; protarsi

segmented, clawed, not hairy.

Male genitalia (PLATE 76, Fig. 416) – Tegumen broad, tapering caudad, with a medial membranous window. Uncus as a large, flattened hook, setose dorsally. Gnathos as simple, flattened sclerite. Saccus short, broad, with distal end rounded. Vinculum narrow. Valva rectangular; ampulla with two prominent, distal spines, ventral one longer, serrate on dorsal surface; costa produced dorsally to a lobe-like extension, with a ventral spiny ridge; harpe setose, with distal end forming a dorsal spine associated with two proximal blade-like processes, and a ventral lobe; sacculus thick at base. Juxta large, forming a pair of elongate, flat processes dorsally, and a medial, V-shaped ventral base. Phallus robust, straight; aedeagus slightly longer than phallobase, with distal end beveling. Adeagus with a pair of spiny belts at distal end.

Female genitalia (PLATE 114, Fig. 565) – Corpus bursae as elongate sac. Ductus bursae without clear delimitation with corpus bursae, enlarged posteriad. Sterigma with lamella antevaginalis forming broad plate. Posterior apophyses slightly longer than anal papillae, straight, with anterior end clubbed. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Global distribution. Himalayas, Northeast India, northern Indochina, Korea, West, Central, North, and East China, Taiwan (Tuzov & Bozano, 2017; Lang, 2012).

Distribution in Taiwan. Found from Mazu Islands (Lee, 2000; Hsu, 2013).

Larval Host plant(s). Violaceae: *Viola confusa*, etc. (Lee, 2000)

Biology. Univoltine, with adults emerged in late spring and early summer, following by summer aestivation, resuming activity in autumn.

Remarks. This species is usually placed in a monotypic genus *Childrena* Hemming, 1943, but de Moya *et al*. (2017) suggested that it is more appropriate to assign this

species to the genus *Argynnis*.

形態特徵：成蝶前翅長 40–46 mm。雌雄二型性不顯著。雄蝶 (圖 52)：頭橙色。複眼後側輪緣白色。觸角末端膨大、扁平、球狀，黑褐色雜白色鱗，腹面及頂端裸露。口器褐色。下唇鬚前伸、匕狀、乳白色，背面及外側表面橙色。胸部背面橙色，腹面淺橙色。足乳白色、部分橙色，前足跗節癒合、匕狀、被毛。腹部背面橙色，腹面乳白色。前翅寬闊、三角形，前緣凸出、外緣及後緣直、翅頂鈍。後翅扇形，外緣鋸齒狀。翅背面底色橙色，上綴黑褐色斑紋；後翅沿外緣有深藍色斑紋；黑褐色斑點排成三列，中央及外側者略呈弧形排列，於內側者蜿蜒排列；前翅中室內有具四道短條紋，後翅中室末端則有一道；前、後翅外緣均有二道細帶紋。前翅腹面翅頂及後翅腹面大部分為具金屬光澤之赭綠色，上綴帶黑褐色邊之白色網紋；前翅大部分紅色，綴有與背面相似之黑褐色斑紋；後翅外側有不明顯泛藍色黑褐色眼紋。緣毛白色，但翅脈末端處黑褐色。銅色特化鱗組成之窄帶紋狀性標沿前翅 CuA_1、CuA_2、1A+2A 脈分布。雌蝶 (圖 53)：形態特徵與雄蝶相似，但黑褐色斑紋更為鮮明、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 416)：背兜寬闊，向尾端漸窄，中央有膜質區。鉤突大型、扁平、鉤狀，背側生有剛毛。顎形突扁平、塊狀。囊突寬短，末端圓。基腹弧狹窄。抱器矩形。抱器內突形成兩刺突，腹側刺突較長且背緣具鋸齒。抱器背向背側延伸成葉狀，腹側緣具棘刺。抱握夾有毛，末端背側成錐狀，於近端有兩刃狀突起，腹側有葉狀突。抱器腹基部粗厚。陽基軛片大型，於背側形成一對細長扁平突起，腹側基部呈 V 形。陽莖粗壯、筆直。陽莖器長度略長於陽莖基，末端斜切，並有一對棘刺帶。

雌交尾器 (圖 565)：交尾囊為細長囊袋。交尾囊管與交尾囊間無明顯區隔，後端膨大。交尾囊孔板之前陰片成一寬骨板。後內骨突略長於肛突、頗直，前端呈棒狀。肛突葉狀，略骨化，後端具剛毛。

世界分布：喜瑪拉雅地區、印度東北部、中南半島北部、朝鮮半島、華西、華中、華北、華東及臺灣。

臺灣分布：見於馬祖。

寄主植物：堇菜科之短毛堇菜等。

生物學：本種是一年一世代物種，成蝶於晚春初夏之際羽化，隨後夏眠，並於秋季恢復活動。

註記：本種常被置於單種屬大豹蛺蝶屬 *Childrena* Hemming, 1943 中，但 de Moya *et al*. (2017) 認為本種應置於豹蛺蝶屬 *Argynnis* 中。

Genus *BOLORIA* Moore, [1900]

Type species: *Papilio pales* [Denis & Schiffermuller], 1775

Diagnostic characters may include the following: 1) compound eyes naked; 2) forewing triangular, hindwing square in shape; 3) basal area of wings hairy; 4) antennal club enlarged; 5) discoidal cells closed on both wings; 6) wings yellow ochre with dark brown spots on uppersides.

Larvae feed on plants in Violaceae, Polygonaceae, and Ericaceae.

Tuzov & Bozano (2006) recognized 17 species, mainly distributed in the Palearctic region.

1 species has been recorded from Taiwan.

珀豹蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 前翅三角形、後翅方形；3) 翅膀基部被毛；4) 觸角錘部膨大；5) 中室封閉；6) 翅背面赭黃色並具黑褐色斑點。

幼蟲取食堇菜科、蓼科及杜鵑花科等植物。

Tuzov & Bozano (2006) 將本屬分為 17 種，主要分布於古北區。

臺灣有 1 種之記錄。

Boloria palina Fruhstorfer, [1904] (珀豹蛺蝶／楊氏淺色小豹蝶／龍女寶蛺蝶)

Argynnis pales palina Fruhstorfer, [1904]: Deutsche entomologische Zeitschrift “Iris” 16: 306. (Type locality: “Ta-Tsien-Lou [Kangding]; Siao-Lou [Xiaolu], Setchuan [Sichuan]”)

Argynnis pales palina f. *conjuncta* Eisner, 1942: Zoologische mededeelingen 24 (4): 124. (Type locality: Szetschwan [Sichuan])

Argynnis pales palina f. *deficiens* Eisner, 1942: Zoologische Mededeelingen 24 (4): 124. (Type locality: Szetschwan [Sichuan])

Ssp. *yangi* Hsu & Yen, 1997

PLATE 13, Fig. 54

Boloria pales yangi Hsu & Yen, 1997: The Journal of Research on the Lepidoptera 34: 143, f. 2, 3, 12-15. (Type locality: “TAIWAN: [Taichung Hsien], Lishan”)

Specimens examined:

TAIZHONG CITY [= TAICHUNG Co]: 2♂ (holotype and paratype), [Heping], Lishan, 10. V. 1964. (C. T. Yang) (NCU).

Description. Adult – Forewing length 18 mm. Sexual dimorphism probably weakly present. Male (PLATE 13, Fig. 54): Head orange, rim behind compound eyes dark brown mixed with white. Antennae enlarged at distal end, bulbous, dark brown mixed with white scalings, naked ventrally and at distal tip. Proboscis brown. Labial palpus porrect, creamy white, densely covered with dark brown and orange hairs. Thorax dark brown dorsally, creamy yellow ventrally. Legs brown ochre; protarsi fused, stab-shaped, hairy. Abdomen dark brown dorsally, creamy white ventrally. Forewing triangular; costa convex; termen slightly convex; dorsum straight. Hindwing somewhat square, with termen produced mesad. Wing uppersides ground color orange, dark brown proximally. Dark brown markings present on both wings; three rows of dark brown spots, with proximal row serpentine on forewing, linking to a line on hindwing; mesal and distal rows curved; four short bars in discoidal cell of forewing, two on that of hindwing. A dark brown band along termen of both wings. Wing underside creamy white mottled with red ochre and white markings on hindwing and forewing apex. Forewing mostly orange, with dark brown marking similar to those of upperside. Fringe white, checkered with dark brown. Female (unknown in Taiwan, description based on specimens of the

nominotypical subspecies from Sichuan): Body and wing pattern similar to those of male, ground color of wing uppersides paler; protarsi segmented, clawed, not hairy.

Male genitalia [modified from Hsu & Yen (1997)] – Tegumen broad, tapering posteriorly, with uncus bifurcate; a medial triangular membranous area present. Saccus broad, short. Valva broad, somewhat rectangular in shape; ampulla elongate with minute teeth dorsad, forming downcurved arm with a wart-like dorsal process at basal 1/4; harpe simple, setose, with distal end nearly straight; cucullus forming a prominent, densely setaceous triangular tooth dorsodistally. Juxta forming thin, flat lobe with deep dorsal cleft mesad. Phallus stout, short, with phallobase about as long as aedeagus. Distal end of aedeagus forming two vertical semi-circular lobes; both lobes spinulose externally but asymmetrically.

Female genitalia – Not available.

Global distribution. West China and Taiwan (Tuzov & Bozano, 2006; Hsu, 2013).

Distribution in Taiwan. Only known from two male specimens collected from a high elevation site in central Taiwan (Hsu & Yen, 1997; Hsu, 2013).

Larval Host plant(s). Unknown in Taiwan.

Biology. Assumed to be univoltine; type series were collected on May 10th, 1964.

Remarks. The taxon *yangi* was described as a subspecies of *Boloria pales* (Denis & Schiffermüller, 1775), but Tuzov & Bozano (2006) treated *pales* as a European species, and regarded *yangi* as a subspecies of *palina* Fruhstorfer, 1904. This treatment was followed by Lang (2012) and adopted herein.

Type specimens of ssp. *yangi* were collected by the late leading hemipterist Prof. Chung-Tu Yang of NCU, and the name *yangi* was named in his honor (Hsu & Yen, 1997).

形態特徵：成蝶前翅長 18 mm。可能略有雌雄二型性。雄蝶 (圖 54)：頭橙色。複眼後側輪緣黑褐色雜白色。觸角末端膨大呈球狀，黑褐色雜白色鱗片，腹面及頂端裸露。口器褐色。下唇鬚前伸、乳白色，密覆黑褐色及橙色毛。胸部背面黑褐色，腹面乳白色。足赭褐色，前足跗節癒合、刺狀、被毛。腹部背面褐色，腹面乳白色。前翅三角形，前緣凸出、外緣略凸、後緣直。後翅略呈方形，外緣中央突出。翅背面底色橙色，內側黑褐色，有黑褐色斑紋排成三列黑褐色斑點，中央及外側者呈弧形排列，前翅內側者蜿蜒排列，後翅內側者呈線形；前翅中室內有四只短條紋，後翅中室則有兩只；外緣有一黑褐色帶紋。翅腹面前翅翅頂及後翅乳白色雜有赭紅色及白色斑紋；前翅大部分橙色，有黑褐色斑紋背面排列大致雷同。緣毛白色鑲黑褐色。雌蝶 (臺灣產者未知，參考四川產承名亞種標本描述)：形態特徵與雄蝶相似，翅背面底色較淺，前足跗節分節、具爪、無毛。

雄交尾器 (引用 Hsu & Yen (1997))：背兜寬闊，向後漸窄，鉤突末端二分，中央有三角形膜窗。囊突寬短。抱器寬闊，略呈矩形。抱握鋏簡單、有毛，末端近直線狀。抱器內突背側有細齒，形成長臂，於基部 1/4 位置背側有瘤突。基腹弧頗厚。抱器端背側端部形成生有密毛之三角形齒突。陽基軛片寬薄，背側中央深凹。陽莖粗短。陽莖器長度略與陽莖基等長。陽莖器末端有一對豎立之不對稱半圓形葉狀構造，上生細刺。

雌交尾器：無材料。

世界分布：華西及臺灣。

臺灣分布：目前僅有兩隻產自中臺灣高海拔地區之雄蝶標本。

寄主植物：未知。

生物學：可能是一年一世代之物種；模式系列採於 1964 年 5 月 10 日。

註記：本分類群原被認為是 *Boloria pales* (Denis & Schiffermüller, 1775) 之亞種，但 Tuzov & Bozano (2006) 將 *Boloria pales* 處理為僅分布於歐洲種的種類，並視本分類單元為 *Boloria palina* 之亞種。隨後 Lang (2012) 從其說。

亞種 ssp. *yangi* 之模式標本由已故中興大學著名半翅目昆蟲學者楊仲圖教授採集，

亞種即獻名給楊教授以彰顯其貢獻。

Genus *PHALANTA* Horsfield, [1829]

Type species: *Papilio phalantha* Drury, [1773]

Diagnostic characters may include the following: 1) compound eyes naked; 2) forewing R_4 reaching apex; 3) discoidal cells closed on both wings; 4) wings yellow ochre with dark brown spots on uppersides.

Larvae feed on plants in Salicaceae (Tsukada, 1985).

Tsukada (1985) recognized 5 species, distributed in the Oriental, Afrotropical and Australian regions.

1 species now occurs in Taiwan, as an addition to the fauna a few decades ago.

珐蛱蝶屬

形態特徵如下：1) 複眼裸露；2) 前翅 R_4 脈延伸至翅頂；3) 中室封閉；4) 翅背面赭黃色而綴黑褐色斑點。

幼蟲取食楊柳科植物。

Tsukada (1985) 將本屬分為 5 種，分布於東洋區、非洲區及澳洲區。

臺灣有 1 種，係數十年前移入定居的蝶種。

Phalanta phalantha (Drury, [1773]) (珐蛱蝶／紅擬豹斑蝶)

PLATE 13, Figs. 55–56; PLATE 76, Fig. 417; PLATE 114, Fig. 566

Papilio (*Nymph.*) *phalantha* Drury, [1773]: Illustrations of natural history 1: index, 41, pl. 21, f. 1-2. (Type locality: “China”)

Papilio columbina Cramer, [1779]: De uitlandsche kapellen 3 (17-21): 76, pl. 238, f. A, B. (Type locality: "China; Coromandel")
Atella luzonica Moore, 1900: Lepidoptera Indica 4: 201. (Type locality: "Luzon; Mindoro; Philippines") (nomen nudum)
Atella phalanta luzonica Fruhstorfer, 1906: Wiener entomologische Zeitung 25 (10): 321. (Type locality: "Philippinen [Philippines]")
Atella phalanta phalanta Rothschild, 1915: Novitates Zoologicae 22 (1): 126. (subsequent incorrect spelling)

Specimens examined:

TAIPEI CITY: 1♂, Wenshan, NTNU, Gongguan campus, 27. IX. 2000, reared from *Salix warburgii*, emgd. 16. X. 2000 (Y. T. Lo); 2♂, same locality, 13/18. IV. 2007, reared from *S. babylonica*, emgd. 28. IV. 2007, HSU 07D16 (Y. F. Hsu). **NANTOU Co.:** 2♂, 2♀, Puli, reared from *S. babylonica*, emgd. 12/15. X. 1987 (Y. F. Hsu). **JIAYI Co.:** 1♀, Lantan, 24. IX. 2019, reared from *S. babylonica*, emgd. 3. X. 2019, HSU 19J35 (L. Huang & H. C. Huang). **PINGDONG Co.:** 1♂, Hengchun, Sichongxi, 7. IX. 2000 (Y. F. Hsu).

Description. Adult – Forewing length 26–29 mm. Sexual dimorphism absent. Male (PLATE 13, Fig. 55): Head orange, rim behind compound eyes white. Antennae enlarged at distal end, dark brown, naked ventrally. Proboscis ivory white. Labial palpus porrect, hairy, creamy white, orange dorsally; 3rd segment greatly reduced. Thorax orange dorsally, white ventrally. Legs white proximally, orange distally; protarsi fused, stab-shaped, hairy. Abdomen orange dorsally, white ventrally. Forewing triangular, with apex sometimes slightly produced; costa convex; termen, dorsum nearly straight. Hindwing ovate, with termen slightly wavy. Wing uppersides ground color orange, with dark brown markings on both wings; four rows of dark brown markings, distal row forming continuous wavy line; two hollow spots in discoidal cell of forewing. Two narrow, dark brown bands along termen of both wings. Wing undersides ground color and markings paler, with distal half of hindwing and a small area of forewing tinged with purple shine. Fringe orange. Female (PLATE 13, Fig. 56): Body and wing pattern similar to those of male; protarsi segmented, clawed.

Male genitalia (PLATE 76, Figs. 417) – Tegumen moderately broad, abruptly attenuate caudad, with diamond-shaped medial membranous window. Uncus as a narrow, flattened

process, attenuate posteriorly, with distal end pointed. Gnathos as simple sheet bearing minute spines. Saccus short, broad, with distal end rounded. Vinculum narrow, curved dorsad. Valva as claw-like lobe; costa bearing a small proximal setose wart and a slender, spiny, free distal process; sacculus produced distally to a flattened, setose process. Juxta as a pair of setose lobes. Phallus robust, short, straight; aedeagus nearly as long as phallobase, with distal end beveling. Adeagus with distal end bearing a spiny, sclerotized belt at right side; a small, spiny, spoon-like sclerite at left side.

Female genitalia (PLATE 114, Fig. 566) – Corpus bursae as elongate, slender sac, slightly enlarged anteriorly, abruptly broadened near ductus bursae. Ductus bursae without clear delimitation with corpus bursae, enlarged posteriad. Sterigma with lamella antevaginalis forming a setose plate, lamella postvaginalis a chamber. Posterior apophyses shorter than anal papillae, curve. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Global distribution. Madagascar, Socotra Island, North Australia, Sulawesi, Lesser Sunda Islands, nearly entire Oriental region, Taiwan and Yaeyamas of Japan (Tsukada, 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also found from Jinmen and Mazu Islands (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Salicaceae: *Salix babylonica*, *S. kusanoi*, *S. warburgii*, *Scolopia oldhamii* (Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014).

Biology. A multivoltine species, with adults on the wing throughout the year (Hsu, 1999; Lu & Chen, 2014).

Remarks. This species was a rare stray to Taiwan from the Philippines or other southern sources prior to 1960s. It later became successfully established, and now common in lowland habitats throughout Taiwan, including urban areas (Hsu, 1999; Lu & Chen, 2014). It has also become established in Yaeyama Islands of Japan around 2000 (Shirôzu, 2006).

形態特徵：成蝶前翅長 26–29 mm。無雌雄二型性。雄蝶 (圖 55)：頭橙色。複眼後側輪緣白色。觸角末端膨大、黑褐色、腹面裸露。口器象牙色。下唇鬚前伸、被毛、乳白色、背面橙色；第三節明顯退化。胸部背面褐色，腹面白色。足基部白色、外部橙色，前足跗節癒合、匕狀、被毛。腹部背面橙色，腹面白色。前翅三角形，翅頂有時略凸出、前緣凸出、外緣及後緣近直線狀。後翅卵形，外緣略呈波狀。翅背面底色橙色，綴有黑褐色斑紋，排為四列，外側者呈波紋；前翅中室有二只鏤空斑點；前、後翅沿外緣均有兩列黑褐色細帶紋。翅腹面底色及斑紋色彩較淺，後翅外半部及前翅小部分區域泛紫色。緣毛橙色。雌蝶 (圖 56)：形態特徵與雄蝶相似，但前足跗節分節、具爪。

雄交尾器 (圖 417)：背兜寬闊，向末端驟縮，中央有菱形膜質區。鉤突修長、扁平，向後漸細，末端尖。顎形突薄，具微小棘刺。囊突寬短，末端圓。基腹弧狹窄，背側彎曲。抱器螯狀。抱器背基部有疣狀小凸起，末端形成細長而有小棘刺之突起。抱器腹延伸為扁平、有毛之突起。陽基軛片為一對具毛葉狀瓣。陽莖粗短，甚直。陽莖器長度略與陽莖基等長，末端斜切，開口於背側；末端右側有具刺骨帶，左側有一生有細刺之勺狀骨。

雌交尾器 (圖 566)：交尾囊細長、前端略膨大，近交尾囊管處驟粗。交尾囊管和交尾囊間無明顯界限，後端膨大。交尾囊孔板之前陰片形成具毛骨板，後陰片形成腔室。後內骨突短於肛突，彎曲。肛突葉狀，略骨化，尾端具剛毛。

世界分布：馬達加斯加、索科特拉島、澳洲北部、蘇拉威西島、小巽他群島、東洋區、臺灣及日本八重山群島。

臺灣分布：本島低至中海拔地區，金門及馬祖亦有記錄。

寄主植物：楊柳科之垂柳、水社柳、水柳及魯花樹。

生物學：本種是一年多世代物種，全年皆可見成蝶活動。

註記：本種在 1960 年代以前原為來自菲律賓或南洋其他地區之稀有偶產迷蝶，後來成功立足建立穩定族群，現已為包含都市綠地之低海拔地區常見物種。本種於西元 2000 年前後亦已成功立足於日本八重山群島。

Genus *CUPHA* Billberg, 1820

Type species: ***Papilio erymanthis*** **Drury, [1773]**

Diagnostic characters may include the following: 1) compound eyes naked; 2) forewing R_4 not reaching apex; 3) discoidal cells closed on forewing, open on hindwing; 4) ground color of wing uppersides brown, with prominent yellow band on forewing.

Larvae feed on plants in Salicaceae and Sapindaceae (Tsukada, 1985).

Tsukada (1985) recognized 10 species, distributed in the Oriental and Australian regions.

1 species occurs in Taiwan.

襟蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 前翅 R_4 脈不達翅頂；3) 前翅中室封閉、後翅開放；4) 翅膀背面底色褐色，前翅具鮮明黃色帶紋。

幼蟲取食楊柳科及無患子科植物。

Tsukada (1985) 將本屬分為 10 種，分布於東洋區及澳洲區。

臺灣有 1 種。

Cupha erymanthis (Drury, [1773]) (黃襟蛺蝶／臺灣黃斑蛺蝶)

PLATE 13, Fig. 57; PLATE 14, Fig. 58; PLATE 76, Fig. 418; PLATE 114, Fig. 567

Papilio (*Dan.*) *erymanthis* Drury, [1773]: Illustrations of natural history 1: index, 29, pl. 15, f. 3-4. (Type locality: “China”)

Cupha erymanthis f. *takamukui* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 96, pl. 4, f. 7. (Type locality: “Hori [Puli], Formosa”)

Specimens examined:

JILONG CITY: 1♂, Longgang Trail, 26. VIII. 2008 (C. K. Wang & C. H. Yen); 1♀, same locality, 14. I. 2010 (W. H. Chien & J. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Xindian, Feicui Dam, 25. IV. 2001; 1♂, 1♀, Xindian, Zhitan Elementary School, 6. III. 2011, reared from *Scolopia oldhamii*, emgd. 31. III. 2011, HSU 11C06 (C. L. Huang). **TAIPEI CITY:** 1♀, Wenshan, NTNU, Gongguan campus, 20. III. 2007 (Y. F. Hsu); 1♀, same locality, 23. III. 2007 (Y. F. Hsu); 1♀, Wenshan, Chanchushan, X. 2018, emgd. 14. X. 2018 (L. Huang) (genitalia preparation JYL984); 1♂, Zhongzheng, Taipei Botanical Garden, 8. X. 2018, emgd. 24. X. 2018 (L. Huang) (genitalia preparation JYL966); 1♂, Neihu, 2. II. 2020 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Fengyuan, Zhongzheng Park, 2. XI. 2020 (L. Huang). **TAINAN CITY [= TAINAN Co.]:** 1♀, Guantian, Wushantou, 100m, 2. I. 2007 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Mudan, Xuhai, 4. IX. 2010 (Y. F. Hsu). **JINMEN Co.:** 2♂, 1♀, Jinsha, Wuhushan, 28/30. X. 2000 (C. C. Lu & Y. T. Lo); 2♂, Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang); 2♂, Jinhu, Taiwushan, Haiin Temple, 5. XII. 2021 (K. W. Hsiao).

Description. Adult – Forewing length 28–33 mm. Sexual dimorphism absent. Male (PLATE 13, Fig. 57): Head brown, rim behind compound eyes white. Antennae slightly enlarged at distal end, dark brown, naked ventrally. Proboscis ivory white. Labial palpus porrect, hairy, creamy white, brown dorsally; 3rd segment greatly reduced. Thorax brown dorsally, white ventrally. Legs white proximally, orange distally; protarsi fused, stab-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing triangular; costa convex; termen slightly convex, dorsum nearly straight. Hindwing rounded, with end of vein M_3 slightly produced. Wing uppersides ground color brown, with a prominent creamy yellow, tilted band on forewing; three dark brown dots in yellow band; forewing apex dark brown. An obscure, hollow bar at distal end of discoidal cell of forewing. Four rows of dark brown markings on hindwing, distal row forming continuous wavy line, proximal two rows as broken lines. Two narrow, dark brown bands along termen of hindwings. Wing undersides ground color paler, yellow ochre. A prominent discal band present on both wings, purple or brownish purple; other markings less prominent than those of upperside. Hollow bars in discoidal cells irregular in shape, two on forewing, one on hindwing. Fringe brown. Female (PLATE 14, Fig. 58): Body and wing pattern similar to those of male; protarsi segmented, clawed.

Male genitalia (PLATE 76, Fig. 418) – Tegumen moderately broad, abruptly attenuate caudad, with a prominent medial membranous window. Uncus as a narrow, flattened process. Gnathos as simple sheet bearing minute spines. Saccus short, broad, with distal end rounded. Vinculum narrow, curved dorsally. Valva as large triangular lobe; costa bearing a proximal setose wart and a slender, spiny, free distal process; sacculus with a triangular, flattened spine. Juxta as a pair of setose fins. Phallus robust, short, straight; aedeagus slightly shorter than phallobase, with distal end beveling. Adeagus with distal end bearing a pair of spiny, sclerotized belts.

Female genitalia (PLATE 114, Fig. 567) – Corpus bursae as elongate, slender sac, slightly enlarged anteriorly. Ductus bursae without clear delimitation with corpus bursae, enlarged posteriad. Sterigma with lamella antevaginalis forming a setose plate, lamella postvaginalis a chamber. Posterior apophyses shorter than anal papillae, curve. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Global distribution. South and North India, entire Oriental region, Lesser Sunda Islands, Taiwan (Tsukada, 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also found from Jinmen and Mazu Islands (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Salicaceae: *Salix babylonica*, *S. kusanoi*, *S. warburgii*, *Scolopia oldhamii* (Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014).

Biology. A multivoltine species, with adults on the wing throughout the year (Hsu, 1999; Lu & Chen, 2014).

形態特徵：成蝶前翅長 28–33 mm。無雌雄二型性。雄蝶 (圖 57)：頭褐色。複眼後側輪緣白色。觸角末端略膨大、黑褐色、腹面裸露。口器象牙色。下唇鬚前伸、被毛、乳白色、背面褐色；第三節明顯退化。胸部背面褐色，腹面白色。足基部白色、外部橙色，前足跗節癒合、匕狀、被毛。腹部背面褐色，腹面白色。前翅三角形，前緣凸出、外緣略凸出、後緣頗直。後翅圓，M_3 脈末端略突出。翅背面底色褐色；

前翅有鮮明乳黃色斜帶紋，帶紋內有三只黑褐色斑點；前翅翅頂黑褐色，中室末端有模糊鏤空帶紋；後翅有四列黑褐色斑紋，靠外側者排成連續波紋、內側兩列呈破碎線紋，沿外緣有二道黑褐色細帶紋分布。翅腹面底色較淺，呈赭黃色，中央有鮮明紫色或紫褐色帶紋，其餘斑紋與背面相似，但較不鮮明；中室鏤空紋形狀不規則，前翅有兩只、後翅僅一只。緣毛褐色。雌蝶 (圖 58)：形態特徵與雄蝶相似，但前足跗節分節、具爪。

雄交尾器 (圖 418)：背兜寬闊，向末端驟縮，中間有菱形膜質區。鉤突修長、扁平。顎形突薄，具微小棘刺。囊突寬短，末端圓。基腹弧狹窄，背側彎曲。抱器三角形。抱器背基部有疣狀小突起，末端形成細長而有小棘刺之突起。抱器腹有一三角形片狀突起。陽基軛片為一對具毛鰭狀瓣。陽莖粗短，頗直。陽莖器長度略短於陽莖基，末端斜切，開口於背側，尾端有一對生有小棘刺之骨化帶。

雌交尾器 (圖 567)：交尾囊細長，前端略為膨大。交尾囊管和交尾囊間無明顯界限，後端膨大。交尾囊孔板之前陰片形成具毛骨板狀，後陰片形成腔室。內骨突短於肛突，彎曲。肛突葉狀，略骨化，尾端具剛毛。

世界分布：印度北部及南部、東洋區、小巽他群島及臺灣。

臺灣分布：本島低至中海拔地區，金門及馬祖亦有分布。

寄主植物：楊柳科之垂柳、水社柳、水柳及魯花樹。

生物學：本種是一年多代物種，全年皆可見成蝶活動。

Subfamily LIMENITIDINAE Behr, 1864

The rank and position of Limenitidinae has always been unstable and long debatedamong researchers, and has been described as a “trash can” subfamily (Dhungel & Wahlberg, 2018). Some recent works on molecular phylogeny do recover the subfamily as a monophyletic group (e.g., Dhungel & Wahlberg, 2018; Espeland *et al*., 2018), but Ackery *et al*. (1999) pointed out there are no recognized autapomorphies for this subfamily.

This subfamily is virtually cosmopolitan in distribution, with over 1000 species (Ackery *et al*., 1999). Major larval hostplants are plants in Euphorbiaceae, Sapindaceae, and Caprifoliaceae (Ackery *et al*., 1999).

In Taiwan, 32 species in 7 genera have been recorded, including 4 species only doubtfully recorded.

線蛺蝶亞科

研究者間長期爭辯本亞科之分類階層及地位，莫衷一是，因此曾被形容為「垃圾桶」亞科。近來有些分子親緣關係研究認可本亞科為單系群，但 Ackery *et al*. (1999) 指出本亞科並無可供辨識之衍徵。

本亞科超過 1000 種，近乎呈泛世界分布。主要寄主植物為大戟科、無患子科及忍冬科。

臺灣有 7 屬 32 種之記錄，其中 4 種記錄存疑。

Genus *NEPTIS* Fabricius, 1807

Type species: *Papilio aceris* Esper, [1783]

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus short with tarsomeres fused in male, elongate and segmented in female; 3) forewing termen shorter than dorsum; 4) harpe and ampulla clearly differentiated, with ampulla bearing terminal process of various shapes.

Larvae mainly feed on plants in many dicotyledonous families.

Bozano (2008) listed 151 species, distributed in Palearctic, Afrotropical, Oriental, and Australian regions.

16 species have been recorded from Taiwan, but occurrence of 2 of them is doubtful.

環蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節短而癒合，在雌蝶則長而分節；3) 前翅外緣較後緣短；4) 抱握鋏及抱器內突區分明顯，抱器內突末端形態多樣。

幼蟲主要以各種雙子葉植物為寄主。

Bozano (2008) 將本屬分為 151 種，分布於古北區、非洲區、東洋區及澳洲區。

臺灣有 16 種之記錄，其中有 2 種記錄存疑。

Neptis hylas (Linnaeus, 1758) (豆環蛺蝶／中環蛺蝶／琉球三線蝶)

Papilio (*Barbarus*) *hylas* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 486. (Type locality: "Indiis" [China, Canton])

Papilio leucothoe Clerck, 1764: Icones Insectorum Rariorum: pl. 5, f. 4. (Type locality: "China, Indo-China") (preoccupied by *Papilio leucothoe* Linnaeus, 1758)

Papilio acidalia Weber, 1801: Observationes Entomologicae: 107. (Type locality: "E. China")

Limenitis eurynome Westwood, 1842: Natural history of the insects of China (2nd ed.): 66, pl. 35, f. 3. (Type locality: "China")

Neptis sangaica Moore, 1877: The annals and magazine of natural history; zoology, botany, and geology, series 4, 20 (115): 47. (Type locality: Snowy Valley, Chekiang [Zhejiang])

Neptis hainana Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 697. (Type locality: Hainan)

Ssp. *luculenta* Fruhstorfer, 1907

PLATE 14, Figs. 59–60; PLATE 77, Fig. 419; PLATE 114, Fig. 568

Neptis hylas luculenta Fruhstorfer, 1907: Internationale entomologische Zeitschrift 1 (22): 160. (Type locality: Ishigaki)

Neptis hylas lulculenta Shirôzu & Ueda, 1992: Lepidoptera of Taiwan 1, part 2: checklist: 147. (subsequent incorrect spelling)

Neptis argiromaculosa Wang, Sasaki, Hsu & Yata, 2003: Butterflies: 9, fig. 1, A-D, 2-4. (Type locality: "Taiwan")

Ssp. *hylas* Linnaeus, 1758

PLATE 14, Figs. 61–63; PLATE 77, Fig. 420; PLATE 115, Fig. 569

Specimens examined:

Ssp. *luculenta*: **JILONG CITY:** 1♂, Xinshan Dam, 29. VIII. 2004 (H. C. Huang). **TAIPEI CITY:** 1♀, Wenshan, NTNU, Gongguan campus, 1. VIII. 2001 (Y. F. Hsu); 1♂, Songshan, Hushan, 20. IV. 2010 (C. L. Huang); 1♂, 1♀, same locality, 29. III. 2010, reared from *Millettia reticulata* [= *Wisteriopsis reticulata*], emgd. 6. V. 2010, HSU 10C41.1 (C. L. Huang); 1♂, Shilin, Popo Bridge, 8. XII. 2018, reared from *Trema cannabina*, emgd. 8. I. 2019, HSU 18M32 (L. Huang); 1♀, same locality, 8. XII. 2018, reared from *Urena lobata*, emgd. 4/8. I. 2019, HSU 18M33 (L. Huang). **YILAN Co.:** 1♂, Toucheng, Guishan Is., 24. VI. 2006 (C. L. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Beitun, Dakeng, 19. III. 2005 (C. C. Lu); 1♂, Dali, 26. V. 2005 (C. C. Lu); 1♀, same locality, 28. V. 2005 (C. C. Lu); 1♂, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **NANTOU Co.:** 1♂, Lugu, Fenghuanggu Bird Park, 23. XI. 1996, reared from *U. lobata*, emgd. 26. XII. 1996, HSU 96L31 (Y. F. Hsu); 1♀, Renai, Jiantai Forset Trail, 1. XII. 2007, reared from *Galactia* sp., emgd. 24. XII. 2007, HSU 07M3 (C. L. Huang & J. M. Wu); 1♀, Renai, Nanshanxi, 900m, 23. I. 2008 (Y. F. Hsu); 3♂, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang). **HUALIAN Co.:** 1♂, Xiulin, Zuocang Trail, 7. III. 2006 (Y. F. Hsu); 1♀, Xiulin, Huitouwan, 700m, 29. VII. 2006, reared from *Rhynchosia volubilis*, emgd. 10. VIII. 2006, HSU 06G21.1 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Guantian, Wushantou, 80m, 24. X. 2005 (Y.

F. Hsu); 1♀, same locality, 19. XII. 2005 (Y. F. Hsu); 4♂, 1♀, Dongshan, Kantoushan, 600/800m, 8. III. 2010, reared from *U. lobata*, emgd. 25. III/25. IV. 2010, HSU 10C6 (Y. F. Hsu); 1♀, same locality, 15. X. 2011, reared from *T. cannabina*, emgd. 28. X. 2011, HSU 11K20 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♀, Meinong, Shuangxi, 150m, 22. I. 2007 (Y. F. Hsu); 1♂, Maolin, Shanping, 13. I. 2010 (Y. F. Hsu); 1♂, Tianliao, 100m, 9. IV. 2010, reared from *U. lobata*, emgd. 6. V. 2010, HSU 10D5 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Hengchun, Longluan Temple, 12. IX. 1996, reared from *Desmodium gangeticum* [= *Pleurolobus gangeticus*], emgd. 1. X. 1996, HSU 96J24 (Y. F. Hsu); 1♂, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu); 1♂, 1♀, Sandimen, 19. XII. 2009 (Y. F. Hsu); 2♂, Liuqiu, 7. III. 2010 (N. Y. Tsai).

Ssp. *hylas*: **LIANJIANG Co.:** 2♂, Beigan, Qinbi, 22. IV. 2007 (Y. F. Hsu & H. C. Huang); 2♂, Beigan, Wusha, 15/16. IV. 2014 (Y. F. Hsu, H. C. Huang & C. L. Huang); 1♀, Beigan, Qinbi/Ankang, 21. VII. 2020 (Y. F. Hsu); 1♂, Nangan, Jinsha, 18. XI. 2013 (L. H. Wang & H. Y. Lee); 1♂, same locality, 9. IV. 2014 (L. H. Wang & H. Y. Lee); 1♂, Nangan, Shengtian Park, 20. VII. 2020 (Y. F. Hsu). **JINMEN Co.:** 1♂, 1♀, Jinhu, Shenshiqiao, 27/28. V. 2011 (Y. F. Hsu & H. C. Huang); 1♀, Jinsha, Houleng Park, 28. V. 2011 (Y. F. Hsu & H. C. Huang); 1♀, Jinhu, Botanical Garden, 18. XI. 2013 (Y. F. Hsu) (genitalia preparation JYL922); 1♂, Jinning, Zhongshan Forest, 20. XI. 2013 (Y. F. Hsu & H. C. Huang); 1♂, Zhaishan, 21. XI. 2007, reared from *Sageretia theezans* [= *S. thea*], emgd. 28. XII. 2007, HSU 07L16 (Y. F. Hsu).

Description. Adult – Forewing length 24–32 mm. Sexual dimorphism absent or slightly present. Male (PLATE 14, Figs. 59, 61–62): Head dark brown. Antennae slightly enlarged, grooved distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown, with metallic green shine dorsally, white with tilted ochre yellow bands ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent, elongate band in discoidal cell, a short, tooth-shaped white marking in cell M_2 proximally; a series

of small, white submarginal markings present. On hindwing, two prominent bands present, with proximal band forming a continuous straight band; distal band as a series of disconnected white spots. Two additional, faint lines present, one between two white bands, other submarginal. Wing undersides ground color ochre yellow. White markings similar to those of uppersides, but edged by dark brown; two series of submarginal white bands present. Two white stripes present at base of hindwing. Sexual brand present as a patch of pale gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 14, Figs. 60, 63): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 77, Figs. 419–420) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming stout, strongly recurved hook; harpe forming long blade with distal end blunt. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, curved, spiny, sclerotized band.

Female genitalia (PLATE 114, Fig. 568; PLATE 115, Fig. 569) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae shorter than corpus bursae. Sterigma forming arc-shaped sclerite by ostium bursae. Posterior apophyses shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Variation. Individuals occurring in the dry or colder seasons have the tendency of reduction in markings on wing undersides.

Global distribution. Throughout out the Oriental region, also Lesser Sunda Islands (Eliot, 1969; Tsukada, 1985).

Distribution in Taiwan. Ssp. *luculenta* occurs from low to moderate elevations in main island of Taiwan and some associated islands (Yamanaka, 1975; Hsu, 2002, 2013); the nominotypical subspecies occurs in Jinmen and Mazu Islands (Hsu, 2014).

Larval Host plant(s). For ssp. *luculenta*: Fabaceae: *Pueraria montana*, *Wisteriopsis reticulata*, *Grona heterophylla*, *Gr. heterocarpa*, *Pleurolobus gangeticus*, *Crotalaria pallida*, *Galactia tenuiflora*; Malvaceae: *Urena lobata*; Cannabaceae: *Trema cannabina*, etc. (Uchida, 1991; Hsu, 2002, 2013; Hung, 2013; Lu & Chen, 2014). For ssp. *hylas*: Rhamnaceae: *Sageretia thea*; Urticaceae: *Boehmeria nivea*.

Biology. A multivoltine species, with adults on the wing throughout the year.

Remarks. Although specimens examined by Fruhstorfer included material from both Ishigaki and Formosa (Taiwan) when ssp. *luculenta* was described, he decided to designate the sole specimen from Ishigaki as the type, in spite of 6 specimens were available from Takau of Formosa. Wang *et al*. (2003) described the population of Taiwan as a new species *argiromaculosa* based on minor difference in female genitalia and markings of larvae, and kept *luculenta* as a race of *hylas*. It is not reasonable to treat a population geographically situated between two conspecific populations as a distinct species, and Lu & Chen (2014) has demonstrated that the markings of larva of *hylas* in Taiwan is variable and cannot be a useful diagnostic feature. Furthermore, no reliable characters may serve to distinguish the samples from Taiwan from those of Yaeyamas (e.g., Shirôzu, 2006). The name *argiromaculosa* is thus treated as a subjective junior synonym of *luculenta* Fruhstorfer, 1907 by Hsu *et al*. (2021).

The populations found from Jinmen and Mazu Islands are characteristic by being darker on the ground color of wing undersides, more prominent white markings on wings, and stouter hook of ampulla when compared to the population in Taiwan. They are considered belonging to the nominotypical subspecies.

形態特徵：成蝶前翅長 24–32 mm。雌雄二型性略有或缺乏。雄蝶 (圖 59、61–62)：頭黑褐色。觸角略膨大、末端具溝槽、頂端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，有綠色金屬光澤，腹面白色，有赭黃色斜帶紋。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬闊、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋。前翅中央斑列彎曲排列，中室

有鮮明長條紋，M_2 室內側有牙狀白色短斑，亞外緣有一列白色小紋；後翅有兩道鮮明帶紋，內側者筆直，外側者為一列白色斑紋，白色帶紋之間及亞外緣另有兩道模糊線紋。翅腹面底色赭黃色，白色斑紋與背面相似，但鑲黑邊；後翅基部有二道白色條紋。後翅背面前緣有淡灰色特化鱗組成之性標。緣毛黑白相間。雌蝶 (圖 60、63)：形態特徵與雄蝶相似，無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 419–420)：背兜背側隆起。鉤突細長，頗直，末端具一下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突形成粗壯、強彎曲之反鉤。抱握鋏修長、刃片，末端圓鈍。陽基軛片 V 字形，背端圓鈍，具剛毛。陽莖末端上曲。陽莖器長度略長於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 568–569)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短於交尾囊。交尾囊孔板於交尾囊孔邊形成弧形骨帶。後內骨突短於肛突，甚直。肛突葉狀、中度骨化、具剛毛。

變異：低溫、乾季型個體翅腹面斑紋有減退傾向。

世界分布：泛東洋區及小巽他群島。

臺灣分布：亞種 ssp. *luculenta* 分布於本島低至中海拔地區及部分離島；承名亞種則見於金門及馬祖。

寄主植物：亞種 ssp. *luculenta*：豆科之山葛、老荊藤、變葉山螞蝗、假地豆、大葉山螞蝗、黃野百合、細花乳豆；錦葵科之野棉花；大麻科之銳葉山黃麻等。亞種 ssp. *hylas*：鼠李科之臺灣雀梅藤；蕁麻科之苧麻。

生物學：一年多代物種，全年皆可見成蝶活動。

註記：雖然 Fruhstorfer 在記述亞種 ssp. *luculenta* 時檢視了石垣島及臺灣之標本，僅管當時他手邊有六隻產自臺灣打狗 (高雄) 的標本個體，卻決定指定石垣島產之唯一標本做為模式標本。Wang *et al*. (2003) 依據雌蝶交尾器及幼蟲斑紋之微小差異將臺灣之族群記述為新種 *argiromaculosa*，並保留 *luculenta* 為豆環蛺蝶之亞種。由於將分布於兩同種地理族群之間的族群視為別種頗不合理，且 Lu & Chen (2014) 指

出臺灣產豆環蛺蝶幼蟲斑紋多變異，無法做為鑑別特徵，因此並無可靠的特徵區分臺灣及八重山群島之族群，本著作初版 (Hsu *et al*., 2021) 將 *argiromaculosa* 視為 *luculenta* 之次同物異名。

金門及馬祖之族群與臺灣產族群相比，翅腹面底色較暗、白色斑紋較鮮明、抱器內突呈粗鉤狀，屬於承名亞種。

Neptis sappho (Pallas, 1771) (小環蛺蝶／小三線蝶)

Papilio sappho Pallas, 1771: Reise durch verschiedene Provinzen des russischen Reichs 1: 471. (Type locality: "Russia [Volga]")

Papilio aceris tatarici Lepechin, 1774: Tagebuch der Reise durch verschiedene Provinzen des russischen Reiches 1: 203, pl. 17, f. 5-6. (Type locality: "Kirschdorf Usol'e, [S. Russia].")

P[*apilio*] *Nymph*. *Phal*. *aceris* Esper, 1783: Die Schmetterlinge in Abbildungen nach der Natur 2 (7): 142, pl. 81, f. 3-4. (Type locality: "Austria [Hainburg]")

Papilio lucilla Schrank, 1801: Fauna Boica 2 (1): 191. (Type locality: "Baiern, [Germany]")

Papilio plautilla Hübner, 1794: Sammlung europäischer Schmetterlinge. [1]: 17, pl. 21, f. 99-100. (Type locality: "Siebenbürgen [Transylvania, Romania], und Russlant [Russia]")

Ssp. *formosana* Fruhstorfer, 1908

PLATE 14, Fig. 64; PLATE 15, Fig. 65; PLATE 77, Fig. 421; PLATE 115, Fig. 570

Neptis nandina formosana Fruhstorfer, 1908: Stettiner entomologische Zeitung 69 (2): 411. (Type locality: "Formosa, aus zirka 4000 Fuß Meereshöhe")

Neptis aceris reducta Shirôzu (not Fruhstorfer), 1960: Butterflies of Formosa in Colour: 479, pl. 46, f. 405-407. (mis-identification)

Specimens examined:

JILONG CITY: 1♂, Haimentianxian, 26. IX. 2006 (Y. F. Hsu); 1♂, Longgang Trail, VIII. 2008 (C. K. Wang & C. H. Yen). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Xindian, Feicui Dam, 12. VII. 2002, reared from *Pueraria lobata* [= *P. montana*], emgd. 1. VIII. 2002, HSU 02G19 (H. S. Que); 1♂, Wulai, Jiajiuliao, 150m, 9. VI. 2008 (Y. F. Hsu); 1♂, Bali, Guanyinshan, 26. VIII. 2013 (H. C. Huang). **TAIPEI CITY:** 1♀, Daan, Liuzhangli, 12. II. 2005 (Y. F. Hsu); 1♀, Songshan, Hushan, 6. III. 2010 (C. K. Wang); 2♂, 1♀, same locality, 29. III. 2010, reared from *Millettia reticulata* [= *Wisteriopsis reticulata*], emgd. 20/26. IV. 2010, HSU 10C41 (C. L. Huang); 1♂, Songshan, Xiangshan, 12. IV. 2010 (H. C. Huang); 1♂, 1♀, Wenshan, NTNU, Gongguan campus, 10. V. 2010, reared from *M. reticulata* [= *W. reticulata*], emgd. 30. V. 2010, HSU 10E69 (C. L. Huang); 1♂, same locality, 8. II. 2020, reared from *M. reticulata* [= *W. reticulata*], emgd. 22. II. 2020, HSU

20B13 (L. Huang); 1♂, Wenshan, Xianjiyan, 23. VI. 2011, reared from *Urena lobata*, emgd. 15. VII. 2011, HSU 11F35 (C. L. Huang). **YILAN Co.:** 2♂, Toucheng, Guishan Is., 25. VI. 2006 (C. L. Huang); 1♂, same locality, 16. VIII. 2020 (H. C. Huang). **TAOYUAN CITY:** 1♂, Fuxing, Baling, 27. VI. 2018 (C. W. Huang). **MIAOLI Co.:** 1♀, Sanwan, Shitoushan, 10. VII. 2003 (H. S. Que); 3♀, Taian, Xiangbi, 750m, 1. XII. 2012, reared from *Aphananthe aspera*, emgd. 23. XII. 2012/7. I. 2013, HSU 12M4 (Y. F. Hsu & S. N. Hung); 1♀, Tainan, 11. X. 2021, reared from *Dumasia villosa*, emgd. 31. X. 2021 (Y. M. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Beitun, Dakeng, 15. II. 2005 (C. C. Lu); 2♀, same locality, 2. III. 2005 (C. C. Lu); 1♀, same locality, 8. III. 2005 (C. C. Lu). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (Y. F. Hsu); 1♂, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu); 1♂, Shizi, Nunaishan, 200m, 26. III. 2006 (Y. F. Hsu); 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 26–30 mm. Sexual dimorphism slightly present. Male (PLATE 14, Fig. 64): Head dark brown. Antennae slightly enlarged, grooved distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown, with metallic shine dorsally, white with tilted brown bands ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing upperside ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent, elongate band in discoidal cell, an eyebrow-shaped white marking in cell M_2 proximally; a series of small, white submarginal markings present. On hindwing, two prominent bands present, with proximal band thicker, nearly straight; distal band as a series of disconnected white spots, sometimes reduced. Two additional, faint lines present, one between two white bands, other submarginal. Wing undersides ground color brown. White markings similar to those of uppersides, but more prominent, with two series of submarginal white spots. Two white stripes present at base of hindwing. Sexual brand present as a patch of pale gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 15, Fig. 65): Body and wing pattern similar to those of male, white markings usually more prominent compared to male, notably distal white band on

hindwing, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 77, Fig. 421) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva oblong; ampulla forming prominent, stout, recurved hook; harpe forming long blade with distal end blunt. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, curved, spiny, sclerotized band.

Female genitalia (PLATE 115, Fig. 570) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae shorter than corpus bursae. Sterigma forming transverse sclerotized band by ostium bursae. Posterior apophyses shorter than anal papillae, straight. Anal papillae lobe-like, moderately sclerotized, setose.

Variation. Individuals with white markings reduced are usually found in the fall.

Global distribution. Widespread in Eurasia, west to Central and Southeast Europe, covering South Russia and Siberia, east to Japan. Korea, mainland China and Taiwan, reaching India and Indochina (Eliot, 1969; Bozano, 2008).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Fabaceae: *Pueraria montana*, *Wisteriopsis reticulata*, *Dumasia villosa*; Cannabaceae: *Aphananthe aspera*; Malvaceae: *Urena lobata*, etc. (Hung, 2008, 2013; Lu & Chen, 2014; Hsu *et al*., 2019a)

Biology. A multivoltine species, with adults on the wing throughout the year.

形態特徵：成蝶前翅長 26–30 mm。略有雌雄二型性。雄蝶 (圖 64)：頭黑褐色。觸

角略膨大、末端具溝槽、頂端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，有金屬光澤，腹面白色，有褐色斜帶紋。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬闊、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列彎曲排列，中室有鮮明長條紋，M_2 室內側有白色眉狀斑紋，亞外緣有模糊白色小斑紋；後翅有兩條鮮明帶紋，內側者較粗、甚直，外側者則為一列白色斑點、有時減退，白色帶紋之間及亞外緣另有兩道模糊線紋。翅腹面底色褐色，白色斑紋與背面相似，但更為鮮明，亞外緣有兩道白色線紋；後翅基部有二道白色條紋。後翅背面前緣有淡灰色特化鱗組成之性標。緣毛黑白相間。雌蝶 (圖 65)：形態特徵與雄蝶相似，但白色斑紋較為鮮明，尤其是後翅外側帶紋，無性標。前足跗節分節、具爪、無毛。

雄交尾器 (圖 421)：背兜背側隆起。鉤突細長，甚直，末端具一下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器橢圓形。抱器內突形成朝上之粗壯反鉤。抱握鋏修長、刃狀，末端圓鈍。陽基軛片 V 字形，背端圓鈍。陽莖末端上曲。陽莖器長度略長於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 570)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短於交尾囊。交尾囊孔板於交尾囊孔邊形成橫向骨化帶。後內骨突短於肛突，甚直。肛突葉狀、中度骨化、具剛毛。

變異：秋季時易見白色斑紋減退之個體。

世界分布：廣泛分布於歐亞大陸，西至中歐與東南歐，包括俄羅斯南部與西伯利亞，東至日本、朝鮮半島、中國大陸、臺灣，南達印度及中南半島。

臺灣分布：本島低至中海拔山區。

寄主植物：豆科之山葛、老荊藤；大麻科之糙葉樹；錦葵科之野綿花等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Neptis soma Moore, [1858] (斷線環蛺蝶／泰雅三線蝶／娑環蛺蝶)

Neptis soma Moore, [1858]: Proceedings of the Zoological Society of London 1858 (347/348): 9, pl. 49, f. 6. (Type locality: Silhet, N. India)

Neptis yerburyi sikkima Evans, 1924: Journal of the Bombay Natural History Society 30 (1): 77. (Type locality: Assam)

Ssp. *tayalina* Murayama & Shimonoya, 1968

PLATE 15, Figs. 66–67; PLATE 77, Fig. 422; PLATE 115, Fig. 571

Neptis yerburyi tayalina Murayama & Shimonoya, 1968: New Entomologist 17 (1): 7. (Type locality: "Poli [Puli]")

Neptis soma shirozui Eliot, 1969: Bulletin of the British Museum (Natural History) Entomology, supplement 15: 70. (Type locality: "Formosa") (preoccupied by *Neptis coenobita shirozui* Okano, 1955)

Ssp. *ominicola* Fruhstorfer, 1908

PLATE 15, Figs. 68–70; PLATE 78, Fig. 423; PLATE 115, Fig. 572

Neptis yerburyi ominicola Fruhstorfer, 1908: Stettiner entomologische Zeitung 69 (2): 411. (Type locality: "West-China, Omi-Shan")

Specimens examined:

Ssp. *tayalina*: **XINBEI CITY [= TAIPEI Co.]:** 1♀, Sanxia, Beichatianshan, 1500/1700m, 30/31. V. 2000 (Y. T. Lo); 1♂, Xindian, Zhitan, 4. I. 2003, reared from *Ventilago leiocarpa*, emgd. 24. II. 2003, HSU 03A1 (H. S. Que & C. Y. Kung). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Lalashan, 3. IX. 1986, reared from *Rubus* sp., emgd. 14. X. 1986 (Y. F. Hsu); 1♀, Fuxing, Xuewunao, 21. II. 2017, reared from *Zelkova serrata*, HSU 17B31.1M (Y. M. Hsu, C. J. Chang & C. W. Huang). **YILAN Co.:** 1♂, Datong, Tuleng, 1600m, 11. VIII. 2009 (Y. F. Hsu); 1♀, Datong, Wangyangshan, 1900m, 7. IX. 2011 (L. H. Wang & C. L. Huang); 1♂, same locality, 14/15. VIII. 2012, reared from *Fagus hayatae*, emgd. 10. IX. 2012, HSU 12H42 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Anmashan, 31. X. 1995, reared from *Rubus lambertianus*, emgd. 3. XII. 1995, HSU 95K10 (Y. F. Hsu); 2♀, same locality, 31. X. 1995, reared from *R. rolfei*, emgd. 6/15. XII. 1995, HSU 95K11 (Y. F. Hsu); 2♀, same locality, 14. IV. 1996, reared from *R. rolfei*, emgd. 25. IV. 1996, HSU 96D9 (Y. F. Hsu); 1♂, 1♀, same locality, 18/19. V. 1996 (Y. F. Hsu); 1♂, same locality, 12. XI. 1996 (Y. F. Hsu); 1♀, same locality, 12. XI. 1996, reared from *Ulmus uyematsui*, emgd. 12. XII. 1996, HSU 96L8 (Y. F. Hsu); 1♂, Heping, Anmashan, 220 Trail, 2000m, 13. III. 1998, reared from *U. uyematsui*, emgd. 6. III. 1998, HSU 98C16 (Y. F. Hsu);

1♂, Beitun, Dakeng, 13. VI. 2004 (Y. F. Hsu); 1♂, Heping, Siyuan, 25. VII. 2007 (L. H. Wang). **NANTOU Co.:** 1♀, Renai, Beidongyanshan, 1600m, 2. X. 1995, reared from *R. lambertianus*, emgd. 10. X. 1995, HSU 95K4 (Y. F. Hsu); 1♀, same locality, 1800m, 17. XII. 2005, reared from *Debregeasia orientalis*, emgd. 21. I. 2006, HSU 05M33 (Y. F. Hsu); 1♂, Renai, Hewangshan, 22. I. 1997, reared from *Celtis formosana*, emgd. 18. II. 1998, HSU 98A4 (C. C. Lu & C. Y. Hung); 1♂, Renai, Nanshanxi, 11. I. 2000 (C. Y. Hung); 1♀, Renai, Songgang, 13. VII. 1996, reared from *Sabia transarisanensis*, emgd. 2. VIII. 1996, HSU 99G22 (Y. F. Hsu); 2♂, same locality, 1900m, 3. III. 2001, reared from *U. uyematsui*, emgd. 18. III. 2001, HSU 01C02 (Y. F. Hsu); 1♂, same locality, 3. III. 2001 (Y. T. Lo); 1♂, Renai, Hehuanxi, 2000m, 11. V. 2003 (C. C. Lu, J. R. Chen & Y. C. Yang). **HUALIAN Co.:** 1♀, Xiulin, Huitouwan, 700m, 30. I. 2007, reared from *Pouzolzia elegans*, emgd. 11. II. 2007, HSU 07A46 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Meishan, 700m, 8. XI. 2010 (H. C. Huang). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu); 1♀, same locality, 1200m, 9. IV. 2001 (C. C. Lu); 1♂, 1♀, same locality, 1200m, 4. IV. 2002 (Y. F. Hsu, C. C. Lu & C. L. Huang); 1♂, same locality, 1100/1300m, 9. IV. 2000 (Y. F. Hsu); 1♂, Wutai, Old Dawu, 4. I. 2000, reared from *Z. serrata*, emgd. 14. III. 2000, HSU 00A15 (Y. T. Lo); 1♂, Chunri, Danhanshan, 24. XI. 2014 (Y. F. Hsu).

Ssp. *ominicola*: **LIANJIANG Co.:** 1♀, Nangan, Shengli Dam, 9/11. XII. 2006, reared from *Sageretia theezans* [= *S. thea*], emgd. 29. I. 2007, HSU 06M4 (H. C. Huang); 1♂, Nangan, Shengtian Park, 17. IV. 2014 (C. L. Huang); 1♀, same locality, 23. VII. 2020 (Y. F. Hsu); 1♂, Nangan, Jinsha, Shengtian Road, 14. IV. 2014 (Y. F. Hsu, H. C. Huang & C. L. Huang); 1♀, Nangan, Tree Nursery, 17. VI. 2014 (C. L. Huang); 1♂, Nangan, Jinsha, 18. VI. 2014 (C. L. Huang); 1♂, Nangan, Renai, 20. VII. 2020, reared from *Celtis sinensis*, emgd. 10. VIII. 2020, HSU 20G18 (Y. F. Hsu); 2♂, Beigan, Qinbi, 22. IV. 2007 (Y. F. Hsu & H. C. Huang); 10♂, 2♀, Beigan, Wusha, 15/16. IV. 2014 (Y. F. Hsu, H. C. Huang & C. L. Huang).

Description. Adult – Forewing length 23–32 mm. Sexual dimorphism slightly present. Male (PLATE 15, Figs. 66, 68–69): Head dark brown. Antennae slightly enlarged, grooved distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white, dark

brown dorsally. Thorax brown dorsally, with metallic green shine, white with tilted brown bands ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent, elongate band in discoidal cell, a short eyebrow-shaped white marking in cell M_2 proximally; a series of small, white submarginal markings present. On hindwing, two prominent bands present, with proximal band forming a continuous straight band; distal band as a series of disconnected white spots. Two additional, faint lines present, one between two white bands, other submarginal. Wing undersides ground color brown. White markings similar to those of uppersides, but more prominent, with two series of submarginal white spots, forming two continuous narrow bands; outer one sometimes reduced or vestigial mesad. Two white stripes present at base of hindwing, posterior one faint. Sexual brand present as a patch of pale gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 15, Figs. 67, 70): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 77, Fig. 422; PLATE 78, Fig. 423) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming sickle-shaped process with recurved, sharp hook; harpe forming long blade with distal end angled. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 115, Figs. 571–572) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae shorter than corpus bursae, forming small sclerotized ring at ostium bursae. Sterigma forming arc-shaped sclerite by ostium bursae. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Himalayas, India, Indochina, Malaya, West to South China, Taiwan (Eliot, 1969; Bozano, 2008).

Distribution in Taiwan. Ssp. *tayalina* occurs from low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 1999, 2013); ssp. *ominicola* is found from Mazu Islands (Hsu, 2014).

Larval Host plant(s). A variety of plants in a few families are used as larval hostplants for ssp. *tayalina*, includiung Cannabaceae: *Celtis formosana*, *C. sinensis*; Ulmaceae: *Ulmus uyematsui*, *Zelkova serrata*; Rosaceae: *Rubus lambertianus*, *R. formosensis*; Hydrangeaceae: *Deutzia pulchra*; Sabiaceae: *Sabia transarisanensis*; Rhamnaceae: *Rhamnus formosana*, *Ventilago leiocarpa*; Urticaceae: *Debregeasia orientalis*, *Pouzolzia elegans*, etc. (Hsu, 1999; Hung, 2013; Lu & Chen, 2014). For ssp. *ominicola*: Rhamnaceae: *Sageretia thea* and Cannabaceae: *Celtis sinensis*.

Biology. A multivoltine species, with adults on the wing nearly throughout the year.

Remarks. Ssp. *tayalina* is characteristic by frequent reduction of the outer submarginal white band on hindwing undersides, a trait not found in ssp. *ominicola*. Moreover, the ground color of wing undersides is usually darker in ssp. *ominicola* compared to ssp. *tayalina*.

形態特徵：成蝶前翅長 23–32 mm。略有雌雄二型性。雄蝶 (圖 66、68–69)：頭黑褐色。觸角略膨大、末端具溝槽、頂端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色具金屬光澤，腹面白色具褐色斜帶紋。足白色，末端帶褐色調；前足跗節癒合、針狀、披毛。腹部背面褐色，腹面白色。前翅寬、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，具鮮明白色斑紋；前翅中央斑列彎曲排列，中室有鮮明長條紋，M_2 室基部有白色眉狀短紋，亞外緣有一列白色斑紋；後翅有兩道鮮明帶紋，內側者為直帶紋，外側者為一列白色斑點，兩帶紋間及亞外緣另有二道模糊細線紋。翅腹面底色褐色，白色斑紋與背面相似但較鮮明，亞外緣有兩列由白色斑點組成之細帶紋，帶紋中央常減退或消失，後翅基部有二道白條、後側者模糊。後翅背面前緣由

灰色特化鱗組成性標。緣毛黑白相間。雌蝶 (圖 67、70)：形態特徵與雄蝶相似，無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 422–423)：背兜背側隆起。鉤突細長，頗直，末端有下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突鐮刀狀，末端有朝上之尖銳反勾。抱握鋏刃狀。抱器腹粗厚。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端略上彎。陽莖器長度短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 571–572)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短於交尾囊，交尾孔口處有小型骨化環。交尾囊孔於交尾囊孔邊形成弧形骨片。後內骨突短於肛突。肛突葉狀、中度骨化、具剛毛。

世界分布：喜瑪拉雅地區、印度、中南半島、馬來亞、華西至華南、臺灣。

臺灣分布：亞種 ssp. *tayalina* 分布於本島低至中海拔地區；亞種 ssp. *ominicola* 分布於馬祖。

寄主植物：亞種 ssp. *tayalina*：大麻科之石朴、朴樹；榆科之阿里山榆、櫸木；薔薇科之高梁泡、臺灣懸鉤子；八仙花科之大葉溲疏；清風藤科之阿里山清風藤；鼠李科之桶鉤藤、光果翼核木；蕁麻科之水麻、水雞油等。亞種 ssp. *ominicola*：鼠李科之雀梅藤及大麻科之朴樹。

生物學：本種為一年多代物種，幾乎全年可見成蝶活動。

註記：亞種 ssp. *tayalina* 有後翅腹面亞外緣白色帶紋常減退之特徵，亞種 ssp. *ominicola* 則否。此外亞種 ssp. *ominicola* 翅腹面底色通常較亞種 ssp. *tayalina* 深色。

Neptis nata Moore, [1858] (細帶環蛺蝶 / 臺灣三線蝶 / 娜環蛺蝶)

Neptis nata Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 168, pl. 4a, f. 6. (Type locality: Borneo)

Neptis fulva Pryer & Cator, 1894: The British North Borneo herald 12: 260. (Type locality: N. Borneo)

Neptis kechil Pryer & Cator, 1894: The British North Borneo herald 12: 260. (Type locality: N. Borneo)

Neptis nata f. *rasilis* Fruhstorfer, 1908: Stettiner entomologische Zeitung 69 (2): 313. (Type locality: Borneo)

Neptis nata egestas Fruhstorfer, 1908: Stettiner entomologische Zeitung 69 (2): 314; (Type locality: S.-O.-Borneo [SE Borneo])

Ssp. *lutatia* Fruhstorfer, 1913

PLATE 15, Fig. 71; PLATE 16, Fig. 72; PLATE 78, Fig. 424; PLATE 116, Fig. 573

Neptis soma lutatia Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 607. (Type locality: "Formosa von der Ebene bis zu etwa 1200 m [from the low-lands to about 3800 ft. of alt.]")

Neptis disparalis Murayama, 1968: Tyô to Ga 19 (1/2): 22, f. 20, 22. (Type locality: Poli, Formosa [Puli, Taiwan])

Ssp. *adipala* Moore, 1872

PLATE 16, Figs. 73–74

Neptis adipala Moore, 1872: Proceedings of the Zoological Society of London 1872 (2): 563, pl. 32, f. 8. (Type locality: Khasia Hills)

Neptis nandina tushita f. *tushita* Fruhstorfer, 1908: Stettiner entomologische Zeitung 69 (2): 325, pl. 2, f. 8. (Type locality: Siam [Thailan])

Neptis nandina acala f. *acala* Fruhstorfer, 1908; Stettiner entomologische Zeitung 69 (2): 325. (Type locality: "Tonkin, Chiem-Hoa" [Vietnam, Chiêm Hóa])

Neptis nandina acala f. *pseudadipala* Fruhstorfer, 1908; Stettiner entomologische Zeitung 69 (2): 325. (Type locality: "Tonkin [Vietnam], Than-Moi)

Specimens examined:

Ssp. *lutatia*: **XINBEI CITY [= TAIPEI Co.]:** 1♂, Xindian, Suziyuan, 1. XI. 2001, reared from *Trema orientalis*, emgd. 3. XI. 2001, HSU 01L5 (C. C. Lu); 1♂, 1♀, Xindian, Daxiangshan, 15. XII. 2010, reared from *Callicarpa formosana*, emgd. 20. I. 2011, HSU 10M16 (C. L. Huang); 1♀, Xindian, Hemeishan, 15. IV. 2020, reared from *T. orientalis*, emgd. 11. V. 2020, HSU 20D7.1 (L. Huang); 1♂, Xindian, Yanzhi Lake, 8. II. 2020, reared from *T. orientalis*, emgd. 16/24. II. 2020 (Y. F. Hsu); 1♀, Wulai, 23. IX. 2005, reared from *Boehmeria nivea*, emgd. 19. X. 2005, HSU 05J68 (J. R. Chen); 1♀, Wulai, Jiajiuliao, 150m, 9. VI. 2008 (Y. F. Hsu); 1♂, Bali, Guanyinshan, 500m, 15. IV. 2011 (Z. H. Yen); 2♂, same locality, 27. VII. 2011 (Z. H. Yen); 1♂, Wulai, Tonghouxi, 17. XI. 2012, reared from *T. orientalis*, emgd. 17. XI. 2012, HSU 12L11 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Zhongzheng, Taipei Botanical Garden, 2. XI. 2001, reared from *Pongamia pinnata*, emgd. 10. XI. 2001, HSU 01L2 (C. C. Lu); 1♂, Wenshan, Xianjiyan, 16. XII. 2001, reared from *Bridelia insulana* [= *Br. balansae*], emgd. 2. III. 2002, HSU 01M25 (C. C. Lu & H. S. Chuen); 1♀, same locality, 7. XII. 2011 (C. S. Chuang); 1♂,

same locality, 12. I. 2020, reared from *Br. insulana* [= *Br. balansae*], emgd. 17. II. 2020, HSU 20A7 (Y. F. Hsu & C. C. Lu, jr); 1♂, Wenshan, Muza, Hills S. of NCCU campus, 5. III. 2009 (N. Y. Tasi); 1♂, Wenshan, NTNU, Gongguan campus, 11. III. 2010 (Y. F. Hsu); 1♂, same locality, 10. II. 2019, reared from *Ca. formosana*, emgd. 22. III. 2019, HSU 19B8 (L. Huang); 1♀, same locality, 8. III. 2020, reared from *Quisqualis indica* [= *Combretum indicum*], emgd. 30. III. 2020, HSU 20C7 (L. Huang); 1♀, Songshan, Zhongqiang Park, 8. III. 2002, reared from *Po. pinnata*, emgd. 12. III. 2002, HSU 02C13 (J. R. Chen); 1♂, Songshan, Hushan, 6. III. 2010 (C. K. Wang); 1♂, Shilin, Zhishanyan, 9. X. 2005, reared from *Po. pinnata*, emgd. 30. X. 2005 (H. C. Huang); 1♀, Beitou, 1. VI. 2010 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Luofu, 300m, 8. X. 2002, reared from *Pueraria montana*, emgd. 15. XI. 2002, HSU 02K17 (H. S. Chuen); 1♂, Fuxing, Xuanyuan, 1000m, 17. IX. 2008 (Y. F. Hsu & L. W. Wu); 1♂, Fuxing, Kala, 900m, 13. VII. 2011 (H. C. Huang); 1♀, Fuxing, Daman, 700m, 4. V. 2011 (Y. F. Hsu). **YILAN Co.:** 1 ♂, 1♀, Yuanshan, Fushan Botanical Garden, 17. V. 2016, reared from *Reevesia formosana*, emgd. 11. VI. 2016, HSU 16E21 (Y. M. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 2♂, Heping, Anmashan, 12. XI. 1996 (Y. F. Hsu); 1♂, Heping, Shaolaishan, 12. VIII. 2011 (Y. F. Hsu); 1♂, Heping, Defulan Trail, 700m, 22. I. 2013, reared from *Aphananthe aspera*, emgd. 5. II. 2013, HSU 13A12 (Y. F. Hsu). **NANTOU Co.:** 1♂, 1♀, Renai, Huisun, 12. IX. 1997 (C. Y. Hung); 1♂, Renai, Nanshanxi, 6. III. 2002 (C. C. Lu); 1♂, Lugu, Fenghuanggu, 5. XII. 2004, reared from *Pu. lobata* [= *Pu. montana*], emgd. 26. I. 2005, HSU 04M25 (C. L. Huang); 1♀, Hushan, reared from *Pu. montana*, emgd. 27. I. 2006 (C. R. Chen); 1♀, Renai, Jiuxianxi, 700m, 14/15. IV. 2012 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Yuli, Yuancheng, 300m, 2. I. 2015, reared from *Bauhinia championii* [= *Phanera championii*], emgd. 3. III. 2015, HSU 15A5.1 (Y. F. Hsu & J. Y. Liang). **JIAYI Co.:** 1♂, Alishan, Shanmei, 500m, 6. V. 2007 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Liugui, Shanping, 9. I. 2010, reared from *T. orientalis*, emgd. 2. II. 2010, HSU 10A2 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Fangliao, Yuquan, 1. III. 2008 (Y. F. Hsu); 1♀, Sandimen, 200m, 26. III. 2011 (Y. F. Hsu); 1♂, Hengchun, Sheding, 23. VII. 2011 (Y. T. Lin & T. W. Chen). **TAIDONG Co.:** 1♀, Beinan, Lijia Forest Trail, 23. VIII. 2009 (N. Y. Tsai).

Ssp. *adipala*: **JINMEN Co.:** 1♀, Jinhu, Caicuo, 9. XI. 2024 (H. C. Huang); 1♂, Jinsha, Doumen Trail, 10. XI. 2024, reared from *Celtis biondii*, emgd. 20. XII. 2024, HSU

24L26 (J. X. Lo).

Description. Adult – Forewing length 23–33 mm. Sexual dimorphism slightly present. Male (PLATE 15, Fig. 71; PLATE 16, Fig. 73): Head dark brown. Antennae slightly enlarged, grooved distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown, with metallic shine dorsally, white with tilted brown bands ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent, elongate band in discoidal cell, an eyebrow-shaped white marking in cell M_2 proximally; a series of small, white submarginal markings present, spot in cell M_3 notably small. On hindwing, ground color brown. White markings similar to those of uppersides, more prominent. Two prominent bands present, usually narrow, with proximal band thicker, nearly straight; distal band as a series of disconnected white spots, sometimes reduced. Two additional, faint lines present, one between two white bands, other submarginal. Wing undersides ground color brown. White markings similar to those of uppersides, but more prominent, with two series of submarginal white spots, inner one as a continuous line, outer one as broken line Two white stripes present at base of hindwing, posterior one faint. Sexual brand present as a patch of pale gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 16, Figs. 72, 74): Body and wing pattern similar to those of male, white markings usually more prominent compared to male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 78, Fig. 424) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming sickle-shaped process with fine, recurved hook; harpe forming long blade with distal end blunt. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 116, Fig. 573) – Corpus bursae ovate. Signa as broad patch of spines. Ductus bursae shorter than corpus bursae, forming small sclerotized ring at ostium bursae. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming funnel-like structure. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Himalayas, India, Indochina, Sundaland, Lesser Sunda Islands, West to South China, Taiwan (Eliot, 1969; Tsukada, 1985).

Distribution in Taiwan. Ssp. *lutatia* is distributed from low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2002, 2013). Ssp. *adipala* has recently been found from Jinmen.

Larval Host plant(s). Ssp. *lutatia* is known to utilize a variety of plants in a few families, including Cannabaceae: *Trema orientalis*, *T. cannabina*, *Celtis formosana*, *C. sinensis*, *Aphananthe aspera*; Phyllanthaceae: *Bridelia balansae*; Fabaceae: *Pterocarpus indicus*, *Dalbergia sissoo*, *Pongamia pinnata*, *Phanera championii*, *Pueraria montana*; Lamiaceae: *Callicarpa formosana*; Combretaceae: *Combretum indicum*; Urticaceae: *Boehmeria nivea*; Malvaceae: *Reevesia formosana*, etc. (Uchida, 1991; Hsu, 2002; Hung, 2013; Lu & Chen, 2014). Ssp. *adipala* is known to utilize plants in Cannabaceae: *C. biondii*.

Biology. A multivoltine species, with adults on the wing throughout the year.

Remarks. The white bands of this species is usually narrower, and markings smaller when compared with similar congeneric species in Taiwan. Another useful diagnostic feature of this species is that the width of white spot in cell M_3 of forewing is smaller than 1/2 width of the spot in CuA_1, whereas it is larger than 1/2 width of it.

Ssp. *adipala* differs from ssp. *lutatia* by reduced white spot in cell M_3 of forewing and thicker outer band on hindwing.

形態特徵：成蝶前翅長 23–33 mm。略有雌雄二型性。雄蝶 (圖 71、73)：頭黑褐色。觸角略膨大、末端具溝槽、頂端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，有金屬光澤，腹面白色，有褐色斜帶紋。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬闊、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列彎曲排列，中室有鮮明長條紋，M_2 室基部有眉形紋，亞外緣有一列白色小斑、於 M_3 室者格外小型；後翅有兩條鮮明白帶，通常甚細，內側者較粗、頗直，外側者為一列白色斑紋、常減退，兩帶紋間及亞外緣另有二模糊細線紋。翅腹面底色褐色，白色斑紋與背面相似，較鮮明。亞外緣有兩道細白帶，內側者為連續線紋，外側者則成虛線，後翅基部有兩道白色細條，後側者模糊。後翅背面前緣有淡灰色特化鱗組成性標。緣毛黑白相間。雌蝶 (圖 72、74)：形態特徵與雄蝶相似，但白色斑紋通常較鮮明、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 424)：背兜背側隆起。鉤突細長、頗直，末端有一下彎小勾。顎形突細長、帶狀，中央有小骨盤。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突鐮狀，末端有朝上之細反勾。抱握鋏刃狀。抱器腹粗厚。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端略上彎。陽莖器長度略與陽莖基等長，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細骨帶。

雌交尾器 (圖 573)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短於交尾囊，交尾孔口形成小骨化環。交尾囊孔板於交尾囊孔邊形成弧型骨片。後陰片漏斗狀。後內骨突明顯短於肛突。肛突葉狀、中度骨化、具剛毛。

世界分布：喜瑪拉雅地區、印度、中南半島、巽他地區、小巽他群島、華西至華南、臺灣。

臺灣分布：Ssp. *lutatia* 分布於本島低至中海拔地區，ssp. *adipala* 則於晚近在金門地區發現。

寄主植物：大麻科之山黃麻、銳葉山黃麻、石朴、朴樹、糙葉樹；葉下珠科之刺杜密；豆科之印度紫檀、印度黃檀、水黃皮、菊花木、山葛；唇形科之杜虹花；使君子科之使君子；蕁麻科之苧麻；錦葵科之臺灣梭羅樹等。ssp. *adipala* 則已知利用大麻科之沙楠子樹。

生物學：本種為一年多世代物種，全年皆可見成蝶活動。

註記：本種與臺灣同屬之近似種相比，白色帶紋通常較窄且白斑紋較小型。此外，本種前翅 M_3 室白斑寬度小於 CuA_1 白斑寬度一半，其他種類則前者大於後者，亦為有用之鑑別特徵。

Ssp. *adipala* 與 ssp. *lutatia* 的差別在於前翅 M_3 室白斑較小及後翅外側白帶較粗。

Neptis reducta Fruhstorfer, 1908 (無邊環蛺蝶／寬紋三線蝶／回環蛺蝶)

PLATE 16, Figs. 75–76; PLATE 78, Fig. 425; PLATE 116, Fig. 574

Neptis mahendra reducta Fruhstorfer, 1908: Entomologische Zeitschrift 22 (35): 141. (Type locality: "See von Lehiku, Zentral-Formosa")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Ronghua, 13. V. 1987 (Y. F. Hsu); 1♂, 1♀, Fuxing, Sule, 1. VII. 2005 (J. H. Lin); 1♂, Fuxing, Xuanyuan, 1000m, 17. IX. 2008 (Y. F. Hsu & L. W. Wu). **XINZHU Co.:** 1♂, Wufeng, Qingquan, 900m, 3. XI. 2010 (C. L. Huang). **TAIZHONG CITY:** 1♂, Heping, Defulan Trail, 600m, 29. XII. 2012, reared from *Aphananthe aspera*, emgd. 25. I. 2013, HSU 12M21 (C. C. Lu, jr); 2♂, 1♀, same locality, 700m, 12. XI. 2018, reared from *A. aspera*, emgd. 25/27. XII. 2018, HSU 18L10 (Y. F. Hsu); 1♂, 1♀, Heping, Dongmaoshan, 800m, 10. X. 2013, reared from *A. aspera*, emgd. 9/15. XII. 2013, HSU 13K7 (Y. F. Hsu); 1♂, Heping, Guguan, 800m, 24. XI. 2017, reared from *A. aspera*, emgd. 30. XII. 2017, HSU 17L15 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Huisun, 12. IX. 1997 (C. Y. Hung); 2♂, Renai, Huisun, 700m, 31. X. 2009 (Y. F. Hsu); 1♂, same locality, 6. VII. 2010 (C. L. Huang); 1♂, same locality, 15. X. 2012, reared from *A. aspera*, emgd. 11. XII. 2012, HSU 12K4 (Y. F. Hsu); 1♀, same locality, 800m, 15. X. 2012 (Y. F. Hsu); 1♂, Renai, Aowanda, 17. VIII. 2014, reared from *A. aspera*, emgd. 27. VIII. 2014, HSU 14H29 (W. J. Lin & J. R. Chen). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Liguan, 1600m, 1. VI. 2007 (L. H. Wang); 1♀, Taoyuan, Meishan, 30. VI. 2016 (L. Huang).

Description. Adult – Forewing length 27–31 mm. Sexual dimorphism slightly present. Male (PLATE 16, Fig. 75): Head dark brown. Antennae slightly enlarged, grooved

distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, with metallic shine dorsally, white with tilted brown bands ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent, elongate band in discoidal cell, a tooth-shaped white marking in cell M_2 proximally; a series of white submarginal markings present. On hindwing, two prominent bands present, with proximal band thicker, nearly straight; distal band as a series of disconnected white spots. Two additional, faint lines present, one between two white bands, other submarginal. Wing undersides ground color brown. White markings similar to those of uppersides, but more prominent, with two series of submarginal white markings on forewing, as one prominent white line on hindwing. Two white stripes present at base of hindwing. Sexual brand present as a tooth-like patch of silvery white scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 16, Fig. 76): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 78, Fig. 425) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming sickle-shaped process with recurved teeths; harpe forming long blade with distal end blunt. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus nearly as long as phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 116, Fig. 574) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae shorter than corpus bursae. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming funnel-like structure. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. This species was regarded as a species endemic to Taiwan (Shirôzu, 1960; Eliot, 1969), until Kimura *et al*. (2016) reported it from Thailand.

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013; Hsu *et al*., 2019a).

Larval Host plant(s). Cannabaceae: *Aphananthe aspera* (Hsu *et al*., 2019a).

Biology. A multivoltine species, overwintering as larva (Hsu *et al*., 2019a).

Remarks. This species is superficially similar to *N. sappho*, which is sometimes sympatric in occurrence and may share the larval hostplant. They can be separated using the following diagnostic characters: 1) White marking at base of cell M_2 of forewing is elongate in *reducta*, reaching an imaginary line connecting inner margins of spots in cell M_1 and M_3, whereas it is shorter, not in touch of such imaginary line in *sappho*. 2) Sexual brand forming tooth-like pattern in *reducta*, whereas it is a plain gray patch in *sappho*. 3) White markings along termen of hindwing are prominent in *sappho*, whereas it is reduced or vestigial in *reducta*.

形態特徵：成蝶前翅長 27–31 mm。略有雌雄二型性。雄蝶 (圖 75)：頭黑褐色。觸角略膨大、末端具溝槽、頂端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，有金屬光澤，腹面白色，有褐色斜帶紋。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列彎曲排列，中室有鮮明長條紋，M_2 室基部有牙狀斑，亞外緣有一列白色斑紋；後翅有兩道鮮明帶紋，內側者較粗、甚直，外側者為一列白色斑紋，兩帶紋間及亞外緣另有二模糊細線紋。翅腹面底色褐色，白色斑紋與背面相似但較鮮明，前翅亞外緣有兩列白色斑紋，後翅亞外緣則有一白色線紋、翅基部有二道白色條紋。後翅背面前緣由銀白色特化鱗組成齒狀性標。緣毛黑白相間。雌蝶 (圖 76)：形態特徵與雄蝶相似、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 425) : 背兜背側隆起。鉤突細長，甚直，末端具下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突鐮刀狀，末端呈有朝上之彎曲反鉤。抱握鋏刃狀，末端圓鈍。抱器腹粗厚。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端略上彎。陽莖器長度略與陽莖基等長，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細骨帶。

雌交尾器 (圖 574) : 交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短於交尾囊。交尾囊孔板於交尾囊孔邊形成弧形骨片；後陰片漏斗狀。後內骨突明顯短於肛突。肛突葉狀、中度骨化、具剛毛。

世界分布：本種原被視為臺灣特有種，但 Kimura *et al*. (2016) 最近已於泰國發現本種。

臺灣分布：本島低至中海拔地區。

寄主植物：大麻科之糙葉樹。

生物學：一年多代物種，以幼蟲態越冬。

註記：本種與共域且會利用相同寄主植物之小環蛺蝶十分相似。兩者可藉由以下鑑別特徵區分：1) 本種 M_2 室白色斑紋較長，及於 M_1 及 M_3 室斑紋內側之假想連線，小環蛺蝶則否；2) 本種性標具齒狀紋，小環蛺蝶則為清晰之灰色斑塊；3) 小環蛺蝶後翅外緣白色斑紋鮮明，本種則減退或僅殘留痕跡。

Neptis taiwana Fruhstorfer, 1908 (蓬萊環蛺蝶 / 埔里三線蝶 / 臺灣環蛺蝶)

PLATE 16, Figs. 77–78; PLATE 78, Fig. 426; PLATE 116, Fig. 575

Neptis (*Bimbisara*) *ananta taiwana* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (32): 131. (Type locality: “Formosa, Chip-Chip [Jiji]”)

Neptis ananta var. *moltrechti* Oberthür, 1908: Bulletin de la Société entomologique de France 1908: 330. (Type locality: “Kagi [Jiayi]”)

Neptis horishana Matsumura, 1908: Entomologische Zeitschrift 22 (39): 158. (Type locality: “Formosa (Horisha [Puli])”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Jinshan, Yulu Ancient Trail, 16. IV. 2010 (N. Y.

Tsai); 1♂, Wulai, Xinxian, 23. IX. 2015, reared from *Phoebe formosana*, emgd. 16. X. 2016, HSU 15J56 (Y. M. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Lalshan, 18. IX. 1999, reared from *Litsea hypophaea*, emgd. 2. XI. 1999, HSU 99J54 (C. C. Lu). **YILAN Co.:** 1♀, Nanao, Shenmihu, 30. VI. 2001 (H. S. Chuen). **XINZHU Co.:** 1♀, Jianshi, Lidongshan, 1500m, 3. IX. 2005 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Hehuanxi, 2000m, 25. VIII. 2007 (Y. F. Hsu). **JIAYI Co.:** 1♂, Alishan, Shanmei, 500m, 31. III. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 30–35 mm. Sexual dimorphism absent or weakly present. Male (PLATE 16, Fig. 77): Head dark brown. Antennae slightly enlarged distad. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa, termen, dorsum nearly straight, apex slightly truncated. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent creamy white markings. On forewing, a few discal spots arranged into a curve, a prominent, elongate band in discoidal cell extending into cell M_2, with an anterior notch distally; two faint, gray, narrow submarginal bands along termen. On hindwing, two creamy white bands present, with proximal band thicker, nearly straight; distal band narrow, obscure, curved. Two faint lines present, one between two creamy white bands, other submarginal. Wing undersides ground color yellow ochre to brown ochre. White markings on forewing as upperside, only one band on hindwing. Narrow grayish purple bands present, two on forewing, three on hindwing. A triangular grayish purple spot at base of hindwing. Sexual brand present as a patch of gray scalings by costa of hindwing uppersides, with veins white. Fringe checkered. Female (PLATE 16, Fig. 78): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 78, Fig. 426) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming flattened, twisted process with a few teeth; harpe forming long blade. Juxta V-shaped, with dorsal ends

blunt, setose. Phallus up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 116, Fig. 575) – Corpus bursae ovate. Signa as broad patch of spines. Ductus bursae shorter than corpus bursae, forming small sclerotized funnel at ostium bursae. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming bowl-like structure. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. This species is endemic to Taiwan according to Eliot (1969).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2002, 2013).

Larval Host plant(s). Lauraceae: *Camphora officinarum*, *Litsea hypophaea*, *L. acuminata*, *Machilus pseudolongifolia*, *M. thunbergii*, *Phoebe formosana*, etc. (Chang, 1972; Hsu, 2002; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, with adults on the wing in all seasons except winter when it overwinters as larva.

Remarks. This species was often regarded as an insular race of continental *N. ananta* Moore, 1858 (e.g., Shirôzu, 1960) until Eliot (1969) revised it to a species endemic to Taiwan.

形態特徵：成蝶前翅長 30–35 mm。雌雄二型性略有或缺乏。雄蝶 (圖 77)：頭黑褐色。觸角末端略膨大。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬、近三角形，前緣、外緣及後緣近直線狀，翅頂略呈截狀。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明乳白色斑紋；前翅中央斑列彎曲排列，中室有延伸至 M_2 室之鮮明長條紋，其外側前方有小缺口。亞外緣有二列灰色

模糊細帶紋；後翅有二道乳白色帶紋，內側者較粗、甚直，外側者窄、較模糊、彎曲，兩帶紋間及亞外緣另有二道模糊線紋。翅腹面底色赭黃色至赭褐色，前翅白色斑紋與背面相似，惟後翅僅有一道白色帶紋。另有灰紫色細帶紋，前翅兩條、後翅三條，後翅基部有三角形灰紫色紋。後翅背面前緣灰色特化鱗組成性標，其翅脈處白色。緣毛黑白相間。雌蝶 (圖 78)：形態特徵與雄蝶相似、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 426)：背兜背側隆起。鉤突細長，甚直，末端有下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突扁平，末端有尖銳突起。抱握鋏長刃狀。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端上彎。陽莖器長度短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 575)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短於交尾囊，近交尾囊處形成骨化漏斗狀構造。交尾囊孔板於交尾囊孔附近形成弧形骨片；後陰片形碗狀。後內骨突明顯短於肛突。肛突葉狀、中度骨化、具剛毛。

世界分布：依據 Eliot (1969) 之研究，本種為臺灣特有種。

臺灣分布：本島低至中海拔地區。

寄主植物： 樟科之樟樹、黃肉樹、長葉木薑子、假長葉楠、豬腳楠、臺灣雅楠等。

生物學：本種為一年多代物種，以幼蟲越冬。

註記：本種常被認為是大陸性物種阿環蛺蝶 *N. ananta* Moore, 1858 (如 Shirôzu, 1960) 之島嶼亞種，Eliot (1969) 依據交尾器構造差異處理為臺灣特有種。

Neptis noyala Oberthür, 1906 (流紋環蛺蝶 / 瑙環蛺蝶 / 池田三線蝶)

Neptis noyala Oberthür, 1906: Études de lépidoptérologie comparée 2: 13, pl. 8, f. 7. (Type locality: "Siao-Lou [Xiaolu]; Tien-Tsuen [Tianquan], [Sichuan]")

Ssp. *ikedai* Shirôzu, 1952

PLATE 17, Fig. 79–80; PLATE 79, Fig. 427; PLATE 116, Fig. 576

Neptis ikedai Shirôzu, 1952: Sieboldia 1: 25, pl. 9, f. 54. (Type locality: "Rarasan, Taihoku Pref., North Formosa [Lalashan, Taoyuan, Taiwan]")

Specimens examined:

XINBEI CITY: 1♂, Wulai, Fushan, Kalamoji Trail, 550m, 25. V. 2012 (Y. F. Hsu); 1♂, Wulai, Hapen, 21. I. 2021, reared from *Castanopsis* sp., emgd. 24. III. 2021, HSU 21A06 (C. W. Huang, L. H. Wang & Y. F. Hsu). **TAOYUAN CITY:** 1♀, Fuxing, Northern Cross-Island Highway, 56Km, 30. IX. 2014, reared from *Castanopsis carlesii* [= *C. cuspidata* var. *carlesii*], emgd. 5. XII. 2014, HSU 14J88 (Y. M. Hsu & Y. F. Hsu) (genitalia preparation JYL981); 1♀, Fuxing, Sileng, 6. XII. 2020, reared from *C. carlesii* [= *C. cuspidata* var. *carlesii*], emgd. 18. IV. 2021 (Z. L. Chen, Y. Q. Yeh & G. Y. Chen). **YILAN Co.:** 1♀, Nanao, Shenmihu, 1. VII. 2001 (C. C. Lu). **XINZHU Co.:** 1♂, Jianshi, Yulao. 1200m, 2. XI. 2002, reared from *C. carlesii* [= *C. cuspidata* var. *carlesii*], emgd. 31. I. 2003, HSU 02L39 (C. C. Lu & H. S. Que); 1♀, Jianshi, Lidongshan, 3. IX. 2005, reared from *C. carlesii* [= *C. cuspidata* var. *carlesii*], emgd. 10. I. 2006, HSU 05J1 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 2♀, Heping, Lileng Forest Trail, 19. XI. 2000, reared from *C. kawakamii*, emgd. 12. III. 2001, HSU 00L11 (C. C. Lu). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 1000m, 27. V. 2012 (C. C. Lu, jr) (genitalia preparation JYL980); 1♂, 1♀, same locality, 10. I. 2017, reared from *C. fargesii*, emgd. 9. III/4. IV. 2017 (H. Y. Lin); 1♂, same locality, II. 2019, reared from *C. fargesii*, emgd. 6. V. 2019 (C. C. Lu, jr).

Description. Adult – Forewing length 31–34 mm. Sexual dimorphism absent or weakly present. Male (PLATE 17, Fig. 79): Head dark brown. Antennae slightly enlarged distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent creamy white markings. On forewing, a few discal spots arranged into two groups, with one subspical and other posterior; a prominent, elongate band in discoidal cell, with a gray bar present at distal end; an eyebrow-like white marking present in cell M_2 proximally; one faint, grayish white, narrow submarginal band along termen. On hindwing, three bands present; one

proximal, prominent, creamy white, nearly straight; other distal, narrow, grayish white, curved, distal; another submarginal, faint, gray, curved. Wing undersides ground color ochre. White markings on forewing similar to those of upperside, but distal band of hindwing white, prominent. Sexual brand not prominent, as a patch of gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 17, Fig. 80): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 79, Fig. 427) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band with medial, sclerotized disc. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming recurved horn; harpe forming long blade with distal end rounded. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus nearly as long as phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 116, Fig. 576) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae near as long as corpus bursae, with weakly sclerotized ring near ostium bursae. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming funnel-like structure. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. West and East China, Hainan, Taiwan (Eliot, 1969; Bozano, 2008; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Castanopsis fargesii*, *C. cuspidata* var. *carlesii*, *C. uraiana*, *Quercus gilva*, etc.

Biology. Univoltine, with adults on the wing in summer; overwintering as young larva.

形態特徵：成蝶前翅長 31–34 mm。雌雄二型性略有或缺乏。雄蝶 (圖 79)：頭黑褐色。觸角末端略膨大、頂端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，具鮮明乳白色斑紋；前翅中央斑列分為二群，分別位於亞翅頂及後側，中室有鮮明長條紋、末端有灰色短紋，M_2 室有眉狀斑，亞外緣有一列模糊灰白色細帶紋；後翅有三條帶紋，內側者鮮明、乳白色、甚直，外側者細窄、灰白色、彎曲，亞外緣者模糊、灰色、彎曲。翅腹面底色赭色，白色斑紋與背面相似，但後翅外側帶紋白色且鮮明。後翅背面前緣由灰色特化鱗組成不鮮明性標。緣毛黑白相間。雌蝶 (圖 80)：形態特徵與雄蝶相似，無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 427)：背兜背側隆起。鉤突細長，頗直，末端有下彎小勾。顎形突細長、帶狀，中央有盤狀骨斑。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突形成朝上之反鉤。抱握鋏刃狀，末端圓鈍。陽基軛片 V 字形、背端鈍，具剛毛。陽莖末端上彎。陽莖器長度略與陽莖基等長，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之窄細彎曲骨化帶。

雌交尾器 (圖 576)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管與交尾囊近乎等長，交尾孔口有輕度骨化之骨環。交尾囊孔邊有交尾囊板形成之弧型骨片；後陰片呈漏斗狀構造。後內骨突明顯短於肛突。肛突葉狀、中度骨化，具剛毛。

世界分布：華西、華東、海南及臺灣。

臺灣分布：本島中海拔山區。

寄主植物：殼斗科之火燒栲、長尾栲、烏來柯、赤皮櫟等。

生物學：本種為一年一代物種，成蝶活動於夏季，以早齡小幼蟲態越冬。

Neptis sankara (Kollar, [1844]) (眉紋環蛺蝶／斷環蛺蝶／素木三線蝶)

Limenitis sankara Kollar, [1844]: Kaschmir und das Reich der Siek 4 (2): 428. (Type locality: "Himaleya [Himalaya], Massuri [Mussoorie]")

Neptis amboides Moore, 1882: Proceedings of the Zoological Society of London 1882: 241. (Type locality: "Ruttun Pir, Cashmere; Kangra district, [India]")

Ssp. *shirakiana* Matsumura, 1929

PLATE 17, Figs. 81–82; PLATE 79, Fig. 428; PLATE 117, Fig. 577

Neptis shirakiana Matsumura, 1929: Insecta Matsumurana 3 (2/3): 95, pl. 4, f. 10. (Type locality: "Formosa; Hori [Puli]")

Specimens examined:

XINBEI CITY: 1♂, Xindian, Sikanshui, 400m, 27. V. 2013, reared from *Prunus campanulata*, emgd. 30. VII. 2013, HSU 13E50 (R. J. Chen); 1♂, same locality, 16. VII. 2013, reared from *P. campanulata*, emgd. 29. VII. 2013, HSU 13G27 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Shangbaling, 1350m, 15. VI. 1987 (Y. F. Hsu); 1♂, Fuxing, Daman/ Xuanyuan, 2. VI. 1987 (Y. F. Hsu). **YILAN Co.:** 1♀, Datong, Tuleng, 1600m, 26. VII. 2008 (L. H. Wang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Guguan, Shaolai Trail, 800m, 5. IX. 2010 (J. H. Lin). **TAIDONG Co.:** 1♀, Haiduan, Liyuan, 1800m, 2. VII. 2014 (C. W. Huang).

Description. Adult – Forewing length 34–38 mm. Sexual dimorphism absent or weakly present. Male (PLATE 17, Fig. 81): Head dark brown. Antennae slightly enlarged distad. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a few discal spots arranged into a curved band, a prominent, elongate band in discoidal cell extending into cell M_2, with an anterior notch distally, pointed at distal tip; two faint, white, narrow submarginal bands along termen. On hindwing, two white bands present, with proximal band thicker, nearly straight; distal band narrow, curved. One faint, gray submarginal line present. Wing undersides ground color brown ochre. White markings on forewing similar to those upperside, with submarginal bands more prominent, double.

Two white stripes present at base of hindwing. Sexual brand present as a patch of gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 17, Fig. 82): Body and wing pattern similar to those of male, no sexual brand, wings broader; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 79, Fig. 428) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming sickle-shaped process with erect hook bent inwards, bearing small teeth; harpe forming long blade with distal end angled; sacculus thick. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus nearly as long as phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 117, Fig. 577) – Corpus bursae ovate. Signa as broad patch of spines. Ductus bursae shorter than corpus bursae. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming funnel-like structure. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. North India, Himalayas, West to East China, Taiwan (Eliot, 1969; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Rosaceae: *Prunus campanulata*.

Biology. Probably more than one generation per year, overwintering as larva.

形態特徵：成蝶前翅長 34–38 mm。雌雄二型性略有或缺乏。雄蝶 (圖 81)：頭黑褐色。觸角末端略膨大。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，

腹面白色。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬闊、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列彎曲排列，中室有延伸至 M_2 室之鮮明長條紋，其外側前方有小缺口、末端尖，亞外緣有二列模糊白色細帶紋；後翅有二帶紋，內側者較粗、頗直，外側者細、彎曲，亞外緣有灰色細線紋。翅腹面底色赭褐色，白色斑紋與背面相似，但前翅亞外緣帶紋有兩條且較為鮮明、後翅基部有二道白色條紋。後翅背面前緣由灰色特化鱗組成性標。緣毛黑白相間。雌蝶 (圖 82)：形態特徵與雄蝶相似，但翅膀幅較寬、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 428)：背兜背側隆起。鉤突細長，頗直，末端有下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突鐮刀狀，上生細齒，末端形成略內彎之鉤狀突。抱握鋏刃狀。抱器腹粗厚。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端略上彎。陽莖器長度略與陽莖基等長，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 577)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短於交尾囊。交尾囊孔邊有交尾囊孔板形成之弧形骨片。後陰片形成漏斗狀構造。後內骨突明顯短於肛突，肛突葉狀、中度骨化、具剛毛。

世界分布：印度北部、喜瑪拉雅地區、華西至華東、臺灣。

臺灣分布：本島低、中海拔山區。

寄主植物：薔薇科之山櫻花。

生物學：本種一年可能不止一世代，以幼蟲態越冬。

Neptis sylvana Oberthür, 1906 (深山環蛺蝶／林環蛺蝶／江崎三線蝶)

Neptis sylvana Oberthür, 1906: Études de lépidoptérologie comparée 2: 16, pl. 9, f. 6. (Type locality: “Tsekou, [Yunnan]”)

Neptis zaida drummondi Tytler, 1926: Journal of the Bombay Natural History Society 31 (3): 583, pl. 2, fig. 7. (Type locality: “Loimwe, Southern Shan States, Burma”)

Ssp. *esakii* Nomura, 1935

PLATE 17, Figs. 83–84; PLATE 79, Fig. 429; PLATE 117, Fig. 578

Neptis esakii Nomura, 1935: Zephyrus 6 (1/2): 29. (Type locality: "Urai-Pisutan-Saramao, Tousei Gun, Taichu Shu [Qingshan-Dajian-Lishan, Taizhong]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 22. V. 1993 (Y. F. Hsu & M. Y. Lin). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Lalashan, 31. VII. 2004 (R. K. Dong); 1♂, Fuxing, Xuanyuan, 6. V. 2005 (C. H. Lin, jr). **YILAN Co.:** 1♂, Datong, Siyuan, 2000m, 1. III. 2009, reared from *Quercus stenophylloides*, emgd. 2. IV. 2009, HSU 09C1 (H. Y. Lee). **XINZHU Co.:** 1♀, Jianshi, Lidongshan, 1550m, 16. VII. 2005 (H. C. Huang). **NANTOU Co.:** 1♀, Renai, Beidongyanshan, 1. VII. 1989 (Y. F. Hsu); 1♀, Renia, Hewang, 1600m, 22. VI. 2008 (R. K. Dong) (genitalia preparation JYL972). **KAOHSIUNG CITY:** 1♂, Taoyuan, Southern Cross-Island Road, 135Km, 3. VII. 2015 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL971). **TAIDONG Co.:** 1♀, Haiduan, Liyuan, Southern Cross-Island Road, 165Km, 1800m, 3. VII. 2014 (C. W. Huang); 1♀, Haiduan, Liyuan/ Xiangyang, 19. VI. 2020 (C. W. Huang).

Description. Adult – Forewing length 31–37 mm. Sexual dimorphism absent or weakly present. Male (PLATE 17, Fig. 83): Head dark brown. Antennae flattened and slightly enlarged distad, 2/3 of distal length naked. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing nearly triangular, costa slightly convex; termen, dorsum nearly straight, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white or creamy white markings. On forewing, a few discal spots arranged into three groups; a prominent, elongate band in discoidal cell, extending into cell M_2; a few small white markings roughly forming a band perpendicular to costa. A faint, grayish, narrow submarginal band along termen. On hindwing, three bands present; one proximal, prominent, white, nearly straight; other distal, narrow, white, slightly curved, distal; another submarginal, gray, narrow, curved. Wing undersides ground color olive brown to yellowish brown. White markings similar to those of upperside, but distal bands of hindwing purplish. Sexual brand not prominent, as a patch of gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 17, Fig. 84): Body and wing pattern similar to those of male, no sexual brand;

protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 79, Fig. 429) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band with medial, sclerotized disc. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming axe-like process distally, with a dorsal spine and ventral setose wart proximally; harpe forming long blades; acculus thick. Juxa V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus nearly as long as phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 117, Fig. 578) – Corpus bursae bulbous. Signa as broad patch of minute spines. Ductus bursae near as long as corpus bursae. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming funnel-like structure. Posterior apophyses much shorter than anal papillae, slender, straight. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. North Myanmar, Southwest China, Taiwan (Eliot, 1969; Bozano, 2008; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus stenophylloides*.

Biology. Univoltine, with adults on the wing in summer; overwintering as young larva.

形態特徵：成蝶前翅長 31–37 mm。雌雄二型性略有或缺乏。雄蝶（圖 83）：頭黑褐色。觸角末端扁平、略膨大、端部 2/3 裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅近三角形，前緣近直線狀，外緣略凸，後緣內側略突

出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色或乳白色斑紋；前翅中央斑列分為三群，中室有延伸至 M_2 室之鮮明長條紋，另有數只白色小斑紋形成短帶，約略與前緣垂直，亞外緣有一列模糊灰色細帶紋；後翅有三道帶紋，內側者鮮明、白色、甚直，外側者較細、白色、略彎曲，亞外緣者極細、灰色、彎曲。翅腹面底色橄欖褐或黃褐色，白色斑紋與背面相似，但後翅外側帶紋泛紫色。後翅背面前緣有灰色特化鱗組成不甚鮮明之性標。緣毛黑白相間。雌蝶 (圖 84)：形態特徵與雄蝶相似、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 429)：背兜背側隆起。鉤突細長，頗直，末端具下彎小勾。顎形突細長、帶狀，中央有盤狀骨斑。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突末端斧狀，背側具有齒突，腹側有被剛毛疣突。抱握鋏長刃狀。抱器腹粗厚。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端上彎。陽莖器長度略與陽莖基等長，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細骨帶。

雌交尾器 (圖 578)：交尾囊球狀。花壁為一片寬闊、具細刺之骨帶。交尾囊管與交尾囊近乎等長。交尾囊孔板於交尾囊孔邊形成弧形骨片。後陰片形成漏斗狀構造。後內骨突明顯短於肛突。肛突葉狀、中度骨化，具剛毛。

世界分布：緬甸北部、華西南、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：殼斗科之狹葉櫟。

生物學：本種為一年一世代物種，成蝶活動於夏季，以早齡幼蟲越冬。

Neptis podarces Nire, 1920 (臺灣蓮花環蛺蝶 / 花蓮三線蝶)

PLATE 17, Fig. 85; PLATE 18, Fig. 86; PLATE 79, Fig. 430; PLATE 117, Fig. 579

Neptis hesione podarces Nire, 1920: Zoological Magazine 32 (386): 374. (Type locality: “Horisha [Puli], Formosa”)

Neptis karenkonis Matsumura, 1929: Insecta Matsumurana 3 (2/3): 94, pl. 4, f. 9. (Type locality: “Karenko, Daito Pref., Formosa”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Sanxia, Beichatianshan, 28. V. 1992 (Y. F. Hsu);

1♂, Wulai, 700m, 13. I. 2010, reared from *Ficus sarmentosa*, emgd. 4. III. 2010, HSU 10A5 (L. H. Wang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sileng, 1000m, 15. II. 2006, reared from *F. sarmentosa*, emgd. 6. IV. 2006, HSU 06B27 (Y. F. Hsu); 3♀, Fuxing, Fubayueling Historical Trail, 14. IX. 2014, reared from *F. sarmentosa*, emgd. 5/30. XII. 2014, HSU 14J21 (C. L. Huang, C. W. Huang & Y. M. Hsu); 4♂, Fuxing, Xuanyuan, 4. VI. 2018 (L. Huang). **XINZHU Co.:** 1♂, Jianshi, Mamei, 1600m, 13. IX. 2005, reared from *F. sarmentosa*, emgd. 26. II. 2006, HSU 05J43 (L. H. Wang & H. Y. Lee); 1♀, Jianshi, Shilu Forest Trail, 18. I. 2006, reared from *F. sarmentosa*, emgd. 14. IV. 2006, HSU 06A17 (C. C. Lu & J. R. Chen); 1♀, Jianshi, Yulao, 1500m, 27. IX. 2007, reared from *F. sarmentosa*, emgd. 5. III. 2008, HSU 07J55 (C. L. Huang); 1♂, Jianshi, Lidongshan, 10. IX. 2014, reared from *F. sarmentosa*, emgd. 5. XII. 2014, HSU 14J19 (C. L. Huang & L. H. Wang); 3♀, same locality, 19. IX. 2014, reared from *F. sarmentosa*, emgd. 4. I/ 26. III. 2015, HSU 14J41 (C. L. Huang, L. H. Wang & C. W. Huang); 1♂, same locality, 14. VIII. 2015, reared from *F. sarmentosa*, emgd. 11. XII. 2015, HSU 15H19 (W. J. Lin, C. W. Huang & Y. H. Lin); 1♂, same locality, 18. IX. 2015, raered from *F. sarmentosa*, emgd. 8. XII. 2015, HSU 15J26 (M. X. Luo, H. Y. Chen & K. X. Chang); 1♂, Jianshi, Dahunshan, 1500m, 7. IX. 2018, reared from *F. sarmentosa*, emgd. 6. I. 2019, HSU 18J18 (Y. S. Lin). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Anmashan, 9. IX. 2005, reared from *F. sarmentosa*, emgd. 25. I. 2006, HSU 05J32 (C. C. Lu, L. W. Wu & C. R. Chen). **NANTOU Co.:** 1♂, Xinyi, Renlun Forest Trail, 1800m, 24. XI. 2009, reared from *F. sarmentosa*, emgd. 4. II. 2010, HSU 09L15.3 (C. L. Huang); 1♂, same locality, 7. I. 2011, reared from *F. sarmentosa*, emgd. 1. III. 2011, HSU 11A09 (L. H. Wang) (genitalia preparation JYL945). **TAIDONG Co.:** 1♂, 1♀, Beinan, Dananxi, 18. VI. 2004 (C. L. Huang); 1♂, 1♀, Beinan, Dananxi, 1350m, 17. XII. 2004, reared from *F. sarmentosa*, emgd. 22. II. /14. III. 2005, HSU 04M39 (C. L. Huang); 1♂, Yanping, Hongye, 500/600m, 26. XII. 2009, reared from *F. sarmentosa*, emgd. 1. III. 2010, HSU 09M17.2 (L. H. Wang & M. S. Sun).

Description. Adult – Forewing length 25–30 mm. Sexual dimorphism absent or weakly present. Male (PLATE 17, Fig. 85): Head dark brown. Antennae flattened and slightly enlarged distad, 2/3 of distal length naked. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white

ventrally. Forewing nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white or creamy white markings. On forewing, a few discal spots arranged into three groups, two spots plus a small dot subapical, one spot medial and one spot posterior; a prominent, elongate band in discoidal cell, extending into cell M_2. A faint, white or grayish white, narrow submarginal band along termen. On hindwing, three bands present; one proximal, prominent, white, nearly straight; other distal, narrow, white, faint, slightly curved, distal; another submarginal, gray, narrow, curved. Wing undersides ground color brown ochre on forewing, with white markings similar to those on upperside; several narrow bands of different color along termen; wing pattern on hindwing forming several bands of various sizes and colors, including white, creamy yellow, and reddish brown. Sexual brand as a patch of gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 18, Fig. 86): Body and wing pattern similar to those of male, wings broader, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 79, Fig. 430) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming flattened process with a few teeth; harpe forming long blade with distal end angled. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 117, Fig. 579) – Corpus bursae ovate. Signa as broad patch of small spines. Ductus bursae shorter than corpus bursae. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming funnel-like structure. Posterior apophyses much shorter than anal papillae, curved. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Endemic to Taiwan (Li *et al*., 2024).

Distribution in Taiwan. Low to moderate elevations in montane zone of Taiwan

(Yamanaka, 1975; Hsu, 2013; Huang & Hsu, 2016).

Larval Host plant(s). Moraceae: *Ficus sarmentosa*.

Biology. Univoltine, with adults on the wing in summer; overwintering as non-diapausing larva (Huang & Hsu, 2016).

Remarks. This species was long considered a subspecies of *Neptis hesione* Leech, 1890, until Li *et al*. (2024) recognized it a species endemic to Taiwan.

The young larva of this species constructs frass chain, a rare behavior trait in the genus *Neptis* (Huang & Hsu, 2016).

形態特徵：成蝶前翅長 25–30 mm。雌雄二型性略有或缺乏。雄蝶 (圖 85)：頭黑褐色。觸角末端扁平、略膨大、末段長度 2/3 裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有白色或乳白色斑紋；前翅中央斑列分為三群，亞翅頂有兩只斑紋及一小斑點、中間有一只、後側亦有一只，中室有長條紋，延伸至 M_2 室，亞外緣有一列模糊白色或灰白色細帶紋；後翅有三道帶紋，內側者鮮明、白色、甚直，外側者較細、模糊、白色、末端微彎曲，亞外緣者甚細、灰色、彎曲。前翅腹面底色赭褐色，白色斑紋與背面相似，外緣有數條不同色之細帶紋；後翅具數條大小、顏色不一之帶紋，包括白色、乳黃色、紅褐色及黑褐色。後翅背面前緣由灰色特化鱗組成性標。緣毛黑白相間。雌蝶 (圖 86)：形態特徵與雄蝶相似，但翅幅較寬、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 430)：背兜背側隆起。鉤突細長，甚直，末端有下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突扁平，末端具齒狀突起。抱握鋏長刃狀。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端上彎。陽莖器長度短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 579)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短

於交尾囊。交尾囊孔板於交尾囊孔邊形成弧形骨片；後陰片漏斗狀。後內骨突明顯短於肛突，彎曲。肛突葉狀、中度骨化、具剛毛。

世界分布：本種是臺灣特有種。

臺灣分布：本島低至中海拔山區。

寄主植物：桑科之珍珠蓮。

生物學：一年一世代物種，成蝶主要活動於夏季，並以非休眠幼蟲越冬。

註記：本種過去被視為蓮花環蛺蝶之臺灣亞種，Li *et al*. (2024) 修訂為臺灣特有種。本種小幼蟲有造糞鏈之習性，在環蛺蝶屬中十分罕見。

Neptis philyra Ménétriés, 1859 (槭環蛺蝶 / 啡環蛺蝶 / 三線蝶)

Neptis philyra Ménétriés, 1859: Bulletin de la Classe physico-mathématique de l'Académie impériale des sciences de Saint-Pétersbourg 17 (12-14): 214. (Type locality: “Daourie [Dauria, Amur]”)

Ssp. *splendens* Murayama, 1941

PLATE 18, Figs. 87–88; PLATE 80, Fig. 431; PLATE 117, Fig. 580

Neptis philyra splendens Murayama, 1941: Zephyrus 9 (2): 76, f. 1-2. (Type locality: “Baikei [Meixi], Taichushu, Formosa”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Kuaishan, 9. III. 2002, reared from *Acer serrulatum*, emgd. 29. III. 2002, HSU 02C5 (C. C. Lu, J. R. Chen & W. J. Chang); 1♀, Wulai, 700m, II. 2006, reared from *A*. *serrulatum*, emgd. 8. IV. 2006 (J. R. Chen); 1♀, Xindian, Shizitoushan, 6. V. 2012 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Xuanyuan, 900m, 4. V. 1997 (S. Y. Liu); 1♂, Fuxing, Xuanyuan, 4. VI. 2018 (L. Huang) (genitalia preparation JYL964); 1♂, Fuxing, Daman, 19. IV. 1987 (P. C. Chen). **XINZHU Co.:** 2♂, 1♀, Jianshi, Mamei, 1500m, 6. IX. 2005, reared from *A*. *serrulatum*, emgd. 6. IV. /1. V. 2006, HSU 05J28 (C. C. Lu). **MIAOLI Co.:** 1♂, Taian, Henglongshan, 1400m, 4. III. 2005, reared from *A*. *serrulatum*, emgd. 14. IV. 2005, HSU 05C1 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Chunri, Dahanshan Forest Trail, 18+Km, 14/15. V. 2016 (C. W. Huang & T. Y. Liu).

Description. Adult – Forewing length 30–34 mm. Sexual dimorphism absent or weakly present. Male (PLATE 18, Fig. 87): Head dark brown. Antennae slightly enlarged distad, naked on inner surface. Proboscis brown. Labial palpus porrect, white mixed with dark brown. Thorax brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a few discal spots arranged in two groups; five spots anterior, almost touching costa; three posterior, joining elongate band in discoidal cell, forming a loop. A series of white submarginal spots along termen. On hindwing, two white bands present, with proximal band continuous, nearly straight; distal band consisted of a series of short bars. Wing undersides ground color brown ochre. White markings similar to those on upperside. A small, faint, white marking near wing base of hindwing. Sexual brand present as a small patch of gray scalings on hindwing uppersides by costa. Fringe checkered. Female (PLATE 18, Fig. 88): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 80, Fig. 431) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming sickle-shaped process with erect spine bent inwards; harpe forming long blade. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 117, Fig. 580) – Corpus bursae ovate. Ductus bursae shorter than corpus bursae, enlarged near ostium bursae. Sterigma forming arc-shaped sclerite by ostium bursae. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Far East Russia, Korea, Japan, West to East China, Taiwan (Eliot,

1969; Bozano, 2008; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Sapindaceae: *Acer serrulatum* (Hsu, 2013).

Biology. Univoltine, with adults on the wing in summer; overwintering as diapausing larva.

形態特徵：成蝶前翅長 30–34 mm。雌雄二型性略有或缺乏。雄蝶 (圖 87)：頭黑褐色。觸角末端略膨大、內側裸露。口器褐色。下唇鬚前伸、白色雜黑褐色。胸部背面褐色，腹面白色。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬闊、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列分為兩群，前側由五個斑紋組成，幾乎及於前緣，後側有三個斑紋，與中室條紋合為環紋，亞外緣有一列白色斑點；後翅有二道白色帶紋，內側者成一連續帶紋、甚直，外側者由一列短條紋組成。翅腹面底色赭褐色，白色斑紋與背面相似，後翅基部有一模糊小白斑。後翅背面前緣由灰色特化鱗組成小片性標。緣毛黑白相間。雌蝶 (圖 88)：形態特徵與雄蝶相似、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 431)：背兜背側隆起。鉤突細長，甚直，末端有下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突鐮狀，末端有朝上之內彎勾突。抱握鋏長刃狀。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端上彎。陽莖器長度短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 580)：交尾囊卵圓形。交尾囊管短於交尾囊，近交尾囊處膨大。交尾囊孔板於交尾囊孔邊形成弧形骨片。後內骨突明顯短於肛突。肛突葉狀、中度骨化、具剛毛。

世界分布：俄羅斯遠東地區、朝鮮半島、日本、華西至華東、臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：無患子科之青楓。

生物學：本種為一年一世代物種，成蝶於夏季活動，以幼蟲態休眠越冬。

Neptis philyroides Staudinger, 1887 (鑲紋環蛺蝶／朝鮮環蛺蝶／楚南三線蝶)

Neptis philyroides Staudinger, 1887: Mémoires sur les lépidoptères 3: 146. (Type locality: "Raddefka [Radde, Amur region]")

Neptis philyra fixseni Bryk, 1946: Arkiv för zoologi 38 A (3): 34. (Type locality: Korea)

Ssp. *sonani* Murayama, 1941

PLATE 18, Figs. 89–90; PLATE 80, Fig. 432; PLATE 118, Fig. 581

Neptis philyroides formosanus Sonan, 1930: Zephyrus 2 (3): 174. (Type locality: "Musha [Wushe], Formosa") (preoccupied by *Neptis nandina formosana* Fruhstorfer, 1908)

Neptis philyroides sonani Murayama, 1941: Zephyrus 9 (2): 79. (replacement name for *Neptis philyroides formosanus* Sonan, 1930)

Neptis philyroides jinhakui Naritomi, 1942: Insect World 10: 643. (replacement name for *Neptis philyroides formosanus* Sonan, 1930)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Daman, reared from *Carpinus kawakamii*, emgd. 28. III. 1987 (Y. F. Hsu); 1♂, same locality, 19. IV. 1987 (P. C. Chen). **XINZHU Co.:** 1♀, Jianshi, Xinguang, 22. II. 2006, reared from *C. kawakamii*, HSU 06B35 (Y. F. Hsu, L. H. Wang & C. C. Lu). **KAOHSIUNG CITY:** 1♀, Taoyuan, Liguan, 5. V. 2020 (C. J. Chang, C. W. Huang, W. J. Lin & S. Y. Chen). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (W. I. Chou); 1♂, Wutai, Old Dawu, 1000m, 14/16. II. 2000, reared from *C. kawakamii*, emgd. 19. III. 2000 (Y. T. Lo); 1♀, Wutai, Yichangshan, 1100m, 23. III. 2010, reared from *C. kawakamii*, emgd. 12. IV. 2010, HSU 10C26 (C. L. Huang) (genitalia preparation JYL1027). **TAIDONG Co.:** 1♂, Haiduan, Tianlong Trail, 700m, 16. IV. 2011 (L. H. Wang).

Description. Adult – Forewing length 29–33 mm. Sexual dimorphism absent or weakly present. Male (PLATE 18, Fig. 89): Head dark brown. Antennae slightly enlarged distad. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax

brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, stab-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a few discal spots arranged in three groups; three or four spots anterior, two medial, and two posterior. A prominent, elongate band in discoidal cell, with distal end blunt. Two small white spots present roughly at 1/2 to 2/3 of costal length from wing base. A series of white submarginal spots along termen. On hindwing, two white bands present, with proximal band thicker, nearly straight, slightly enlarged laterally; distal band consisted of a series of short bars. One faint, white, broken submarginal line present. Wing undersides ground color yellow ochre. White markings on forewing similar to those on upperside, edged by dark brown. A narrow gray band present between proximal and distal band of hindwing. Small, faint, white markings near wing base of hindwing. Sexual brand present as a small patch of gray scalings on hindwing uppersides proximally. Fringe checkered. Female (PLATE 18, Fig. 90): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 80, Fig. 432) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band with large, sclerotized, medial disc. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla with base swollen, with a digitate process uneven distad at caudal end, and a prominent, up-curved hook basad; harpe forming long blade with flat distal margin. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 118, Fig. 581) – Corpus bursae oblong. Ductus bursae shorter than corpus bursae, enlarged near ostium bursae, sclerotized ventrad near ostium bursae. Sterigma with antevaginalis as membranous dome, postvaginalis as sclerotized wall. Posterior apophyses longer than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Far East Russia, Korea, Central to East China, Taiwan (Eliot, 1969; Bozano, 2008; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Betulaceae: *Carpinus kawakamii* (Hsu, 1999; Lu & Chen, 2014) and *C. rankanensis*.

Biology. Univoltine, with adults on the wing in summer; overwintering as diapausing larva.

Remarks. This species resembles *Neptis philyra*, which is sometimes sympatric in occurrence. They can be separated using the following diagnostic characters: 1) Two small white spots are found near center of forewing costa in this species, whereas they are absent in *philyra*; 2) white markings of wing undersides are edged by dark brown in this species, not so in *philyra*; 3) a narrow band is present between two white bands on hindwing undersides in this species, whereas it is absent in *philyra*.

形態特徵：成蝶前翅長 29–33 mm。雌雄二型性略有或缺乏。雄蝶 (圖 89)：頭黑褐色。觸角末端略微膨大。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色。足白色，末端帶褐色調；前足跗節癒合、針狀、披毛。腹部背面褐色，腹面白色。前翅寬、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列分為三群，前側者三或四只、中間者兩只、後側者兩只，中室有鮮明長條紋，末端鈍，前緣距基部 1/2 至 2/3 長度處有二只白色小斑點，亞外緣有一列白色紋；後翅有二道白色帶紋，內側者較粗、甚直、兩端略膨大，外側者由一列短條紋組成。翅腹面底色赭黃色，白色斑紋與背面相似，鑲黑褐色邊，後翅兩帶紋間有灰色細線紋。後翅背面前緣由灰色特化鱗組成小片性標。緣毛黑白相間。雌蝶 (圖 90)：形態特徵與雄蝶相似，無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 432)：背兜背側隆起。鉤突細長，頗直，末端有下彎小勾。顎形突細

長、帶狀，中央有大型骨盤。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突粗大，末端延伸成指狀突起，其基部具一上彎鉤突。抱握鋏長刃狀，末緣圓鈍。抱器腹粗厚。陽基軛片 V 字形，背端鈍，具剛毛。陽莖末端上彎。陽莖器長度短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 581)：交尾囊長橢圓型。交尾囊管短於交尾囊，近交尾囊處膨大，交尾囊孔開口處腹面骨化。交尾囊孔板之前陰片膜質穹頂狀，後陰片形成一骨壁。後內骨突長於肛突。肛突葉狀、中度骨化、具剛毛。

世界分布：俄羅斯遠東地區、朝鮮半島、華中至華東、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：樺木科之阿里山千金榆及蘭邯千金榆。

生物學：本種為一年一世代物種，成蝶於夏季活動，以幼蟲休眠越冬。

註記：本種與部分共域之槭環蛺蝶相似，兩者可藉由以下鑑別特徵區分：1) 本種前翅前緣近中央處有二只白色小斑點，槭環蛺蝶則無；2) 本種翅腹面白色斑紋具黑褐色邊，槭環蛺蝶則無；3) 本種後翅腹面兩帶紋間具細帶紋，槭環蛺蝶則無。

Neptis ilos Fruhstorfer, 1909 (奇環蛺蝶 / 黃斑三線蝶 / 伊洛環蛺蝶)

Neptis themis ilos Fruhstorfer, 1909: Entomologische Zeitschrift 23 (8): 42. (Type locality: "Amurgebiet [Amur]")

Neptis themis kumgangsana Murayama, 1978: Tyô to Ga 29 (3): 159. (Type locality: "Mt Seol-Ak, Kang -Wong-Do, Middle Korea")

Ssp. *nirei* Nomura, 1935

PLATE 18, Figs. 91–92; PLATE 80, Fig. 433; PLATE 118, Fig. 582

Neptis themis nirei Nomura, 1935: Zephyrus 6 (1/2): 31. (Type locality: "Hori [Puli]")

Specimens examined:

XINZHU Co.: 1♂, Jianshi, Lidongshan, 1600m, 29. V. 2004 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Tunyuan, 1600m, 25. V. 2010 (C. L. Huang). **HUALIAN Co.:** 1♂, 1♀,

Xiulin, Bilu, 2200m, 20. VII. 2007 (Y. F. Hsu); 1♀, same locality, 15/16. VII. 2019 (C. W. Huang) (genitalia preparation JYL946); 1♂, same locality, 30. VII. 2019 (C. W. Huang) (genitalia preparation JYL947); 1♀, same locality, 10. IX. 2020, reared from *Acer rubescens* [= *A. morrisonense*], emgd. 24. XI. 2020, HSU 20J7 (Y. F. Hsu & Z. Y. Shen); 1♀, Xiulin, Xinbaiyang, 1600/1700m, 3. VII. 2008 (L. H. Wang); 1♂, Xiulin, Guanyuan, 2374m, 20. VIII. 2020, reared from *A. rubescens* [= *A. morrisonense*], emgd. 14. XI. 2020, HSU 20H7 (Z. L. Chen). **KAOHSIUNG CITY:** 1♀, Taoyuan, Southern Cross-Island Highway, 135Km, 3. VII. 2015 (C. W. Huang & T. Y. Liu).

Description. Adult – Forewing length 30–35 mm. Sexual dimorphism absent or weakly present. Male (PLATE 18, Fig. 91): Head dark brown. Antennae flattened and slightly enlarged distad, 2/3 of distal length naked. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white or creamy white markings. On forewing, a few discal spots arranged into three groups, two spots plus a small dot subapical, two spots medial and one spot posterior; a prominent, elongate band in discoidal cell; a few small white markings roughly forming a band touching costa. A faint, grayish, narrow submarginal band along termen. On hindwing, three bands present; one proximal, prominent, white, nearly straight, slightly enlarged laterally; other distal, narrow, white, faint, slightly curved, distal; another submarginal, gray, fine, curved. Wing undersides ground color brown ochre proximally, creamy yellow distally. White markings similar to those on upperside, but two prominent dark bands present on both wings. A prominent white band near base of hindwing. Sexual brand as a patch of grayish white scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 18, Fig. 92): Body and wing pattern similar to those of male, wings broader, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 80, Fig. 433) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band with medial, sclerotized disc. Saccus short, spoon-like. Vinculum curved. Valva elongate, with

ampulla and harpe well separated distad; ampulla forming elongate process with a dorsal and a ventral spine distally; harpe forming long blade. Juxta V-shaped, with dorsal ends blunt, setose. Phallus straight; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, sclerotized band.

Female genitalia (PLATE 118, Fig. 582) – Corpus bursae oblong. Signa as broad patch of minute spines. Ductus bursae near as long as corpus bursae. Sterigma forming arc-shaped sclerite by ostium bursae. Posterior apophyses much shorter than anal papillae, slender, straight. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Far East Russia, North, Central, West and East China, Taiwan (Bozano, 2008; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Sapindaceae: *Acer morrisonense*, Lin (2015) observed oviposition of this species on *A. caudatifolium*, but the photo shown in the work appears to be *A. morrisonense*.

Biology. Univoltine, with adults on the wing in summer; overwintering as young larva.

Remarks. *Neptis ilos* was treated as a subspecies of *N. themis* Leech, 1890 in earlier literature (e.g., Shirôzu, 1960; Eliot 1969). It is; however, considered a species distinct from *N. themis* by Yuan & Wang (1994) based on observation on wing venation, and followed by subsequent authors (e.g., Lang, 2012; Ma *et al*., 2020).

形態特徵：成蝶前翅長 30–35 mm。雌雄二型性略有或缺乏。雄蝶 (圖 91)：頭黑褐色。觸角扁平、末端略膨大、末段 2/3 長度裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色。足白色，末端泛褐色；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅近三角形，前緣近直線狀，外緣略凸，後緣

內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色或乳白色斑紋；前翅中央斑列分為三群，分別為亞翅頂二斑紋加一小斑點、中間二斑紋，及後側一斑紋，中室有鮮明長條紋。數只白色小紋排成短帶紋接觸前緣，亞外緣有一列模糊灰色窄帶紋。後翅有三條帶紋，內側者鮮明、白色、筆直、兩端略膨大，外側者細、白色、較模糊、略彎曲，亞外緣者極細、灰色、彎曲。翅腹面底色於內側呈赭褐色、外側乳黃色，白色斑紋與背面相似，但另有二道鮮明黑褐色帶紋；後翅基部有一道鮮明白條。後翅背面前緣有灰白色特化鱗組成之性標。緣毛黑白相間。雌蝶 (圖 92)：形態特徵與雄蝶相似，但翅幅較寬、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 433)：背兜背側隆起。鉤突細長，頗直，末端具一下彎小勾。顎形突細長、帶狀，中央有盤狀骨斑。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀，抱器內突與抱握鋏明顯分離。抱器內突形呈修長突起，其末端背側和腹側各具一刺。抱握鋏刃狀，末端圓鈍。陽基軛片 V 字形，背端鈍，具剛毛。陽莖甚直。陽莖器長度略短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨化帶。

雌交尾器 (圖 582)：交尾囊長橢圓型。花壁為一片寬闊、具細刺之骨帶。交尾囊管與交尾囊近乎等長。交尾囊孔板於交尾囊孔邊形成弧形骨帶。後內骨突明顯短於肛突，細長、筆直。肛突葉狀、中度骨化、具剛毛。

世界分布：俄羅斯遠東地區、華北、華中、華西、華東、臺灣。

臺灣分布：本島中至高海拔山區。

寄主植物：無患子科之臺灣紅榨槭。林 (2015) 另記錄川上氏槭 (尖葉槭) 為寄主，但其所示之產卵植物顯係臺灣紅榨槭。

生物學：本種為一年一世代物種，成蝶活動於夏季，以早齡小幼蟲越冬。

註記：本種過去被視為黃環蛺蝶 *Neptis themis* (Leech, 1890) 之亞種 (如 Shirôzu, 1960; Eliot, 1969)。Yuan & Wang (1994) 基於翅脈細部構造之差異將兩者區分為不同種，其後之研究者從其說 (如 Lang, 2012; Ma *et al*., 2020)。

Neptis pryeri Butler, 1871 (黑星環蛺蝶／鏈環蛺蝶／星三線蝶)

Neptis pryeri Butler, 1871: Transactions of the Entomological Society of London 1871 (3): 403. (Type locality: Shanghai)

Ssp. *jucundita* Fruhstorfer, 1908

PLATE 19, Figs. 93–94; PLATE 80, Fig. 434; PLATE 118, Fig. 583

Neptis pryeri jucundita Fruhstorfer, 1908: Entomologische Zeitschrift 22 (35): 141. (Type locality: "Umgebung des Sees von Lehiku, ca. 4000'")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Baling, 600m, 1. V. 2007 (Y. F. Hsu & L. H. Wang); 1♂, Fuxing, Baling, 11. V. 2010 (Y. F. Hsu). **NANTOU Co.:** 2♀, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang); 1♂, Renai, Tunyuan, 1500m, 18. V. 2009 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Lushui, 8. XI. 1997 (H. Y. Lee); 1♂, Xiulin, Huitouwan, 700m, 23. VII. 2005 (Y. F. Hsu). **JIAYI Co.:** 1♀, Alishan, Shizhuo/ Dabang, 900/1000m, 8. V. 2010 (Y. F. Hsu); 1♀, same locality, 25. IX. 2010 (Y. F. Hsu). **KAOHSIUNG CITY:** 3♂, Taoyuan, Shidong, 600m, 11. VIII. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1200m, 5. V. 2007 (Y. F. Hsu); 1♂, Wutai, Wutoushan, 1100/1200m, 11. V. 2007 (L. H. Wang); 1♂, Wutai, Ali, 1200m, 4. IV. 2011 (Y. F. Hsu); 4♂, Wutai, Ali, 1000m, 22. V. 2011 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Yanping, Hongye, 500m, 23. VI. 2009 (C. H. Lin, jr).

Description. Adult – Forewing length 25–29 mm. Sexual dimorphism slightly present. Male (PLATE 19, Fig. 93): Head dark brown. Antennae slightly enlarged distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white mixed with dark brown. Thorax brown, with metallic shine dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, stab-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum slightly produced proximally, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a zigzag band; a broken elongate band consisted of five white spots in discoidal cell; a series of postdiscal and submarginal spots present. On hindwing, two prominent bands present, with proximal band continuous, straight but bent inwards at distal end; distal band as a series of disconnected white spots. Wing undersides ground color brown. White markings

similar to those on uppersides, but submarginal spots more prominent, with two series on forewing, one on hindwing. A patch of white scalings present at base of hindwing. Small black spots present near wing base and along outer edge of proximal white band of hindwing. Sexual brand present as a patch of gray scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 19, Fig. 94): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 80, Fig. 434) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate; ampulla forming beak-like process distally, associated with a subapical prominent spine pointing downwards; harpe thick, with distal edge skirted. Juxta V-shaped, with dorsal ends blunt, setose. Phallus up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny, curved, sclerotized band.

Female genitalia (PLATE 118, Fig. 583) – Corpus bursae ovate. Signa as broad patch of small spines. Ductus bursae shorter than corpus bursae, enlarged at both ends. Sterigma forming arc-shaped sclerite by ostium bursae; lamella postvaginalis forming U-shaped funnel-like structure. Posterior apophyses much shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Korea, North to East China, Taiwan (Bozano, 2008).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Rosaceae: *Spiraea prunifolia* (Chang, 1972; Hsu, 2013; Hung, 2013).

Biology. A multivoltine species, with adults on the wing most of the year; overwintering as young larva.

Remarks. The name *jucundita* Fruhstorfer in Taiwan has been classified as a geographical race of *N. pryeri* in most literature. Fukuda & Minotani (2007) first suggested recognizing it as a distinct species based on a few minor differences in wing pattern, larval markings and genitalia. They further divided *jucundita* into several subspecies, including ssp. *sioulinensis* Fukuda & Minotani, 2009 (type locality: "Taiwan, Hualien County Sioulin-Township, Longchien") (Fukuda & Minotani, 2009) and ssp. *haiduanensis* Fukuda & Minotani, 2017 (type locality: "Taiwan, Taitung, Haiduan, Lidao") (Fukuda & Minotani, 2017) by adding ND5 barcode data. They have also recognized *iwase* Fujioka, 1998 as a species endemic to Japan, classifying it up to 11 subspecies (Fukuda & Minotani, 1999, 2017). Bozano (2008) commented that these subspecies they coined represent ecological forms rather than valid subspecies. We tentatively follow Bozano's 2008 opinion and retain *jucundita* Fruhstorfer as a subspecies of *pryeri*. The validity of names under *jucundita* are pending further evaluation.

形態特徵：成蝶前翅長 25–29 mm。略有雌雄二型性。雄蝶 (圖 93)：頭黑褐色。觸角略微膨大、頂端裸露。口器褐色。下唇鬚前伸、白色雜黑褐色。胸部背面褐色具金屬光澤，腹面白色。足白色，末端帶褐色調；前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬闊、近三角形，前緣近直線狀，外緣略凸，後緣內側略突出，翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列排為之字形，中室有由五只白色斑點組成之破碎帶紋，中央外側及亞外緣各有一列白色斑紋；後翅有兩道鮮明帶紋，內側者為連續之直帶紋，但末端內彎，外側者為一列白色斑點。翅腹面底色褐色，白色斑紋與背面相似但較鮮明，後翅基部有白紋，其內散佈黑色小斑點。後翅背面前緣有灰色特化鱗組成之性標。緣毛黑白相間。雌蝶 (圖 94)：形態特徵與雄蝶相似、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 434)：背兜背側隆起。鉤突細長，甚直，末端有下彎小勾。顎形突細長、帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀。抱器內突末端形成喙狀突起，及一朝下之尖突。抱握鋏粗厚，刃狀。陽基軛片 V 字形、背端鈍，具剛毛。陽莖末端上彎。陽莖器長度短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一具棘刺之細小彎曲骨帶。

雌交尾器 (圖 583)：交尾囊卵圓形。花壁為一片寬闊、具細刺之骨帶。交尾囊管短

於交尾囊，兩端膨大。交尾囊孔板於交尾囊孔邊形成弧形骨片；後陰片 U 字形、漏斗狀。後內骨突明顯短於肛突。肛突葉狀、中度骨化、具剛毛。

世界分布：朝鮮半島、華北至華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：薔薇科之笑靨花。

生物學：本種為一年多代物種，成蝶幾乎全年可見，並以早齡小幼蟲越冬。

註記：大部分文獻將臺灣之 *jucundita* Fruhstorfer 認為是黑星環蛺蝶 *N. pryeri* 之地理族群。Fukuda & Minotani (2007) 建議根據翅紋、幼蟲斑紋及交尾器的細微差異，將其視為不同種，而後更根據粒線體 DNA 之 ND5 生命條碼資料將 *jucundita* 分為數個亞種，包含亞種 ssp. *sioulinensis* Fukuda & Minotani, 2009(模式產地：花蓮縣秀林鄉龍澗)、亞種 ssp. *haiduanensis* Fukuda & Minotani, 2017(模式產地：臺東縣海端鄉利稻)，並將 *iwase* Fujioka, 1998 視為日本特有種，分為 11 個亞種 (Fukuda & Minotani, 1999, 2017)。Bozano (2008) 評論該等亞種應只是不同生態型。本著作暫循 Bozano (2008) 之觀點，並保持 *jucundita* Fruhstorfer 為 *pryeri* 之亞種。前述之數個學名的處理有待將來評估。

Genus *PANTOPORIA* Hübner, [1819]

Type species: *Papilio hordonia* Stoll, [1790]

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus short with tarsomeres fused in male, elongate and segmented in female; 3) forewing termen shorter than dorsum; 4) harpe and ampulla fused into simple lobe, with rounded distal end.

Larvae mainly feed on plants in Fabaceae.

Bozano (2008) listed 14 species, mainly distributed in Oriental region, but also in

southeastern Palearctic and Australian regions.

1 species occurs in Taiwan.

金環蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節短且癒合、雌蝶長而分節；3) 前翅外緣較後緣短；4) 抱握鋏及抱器內突合為末端圓鈍的片狀構造。

幼蟲主要取食豆科植物。

Bozano (2008) 將本屬分為 14 種，主要分布於東洋區，亦見於古北區東南部及澳洲區。

臺灣有 1 種。

Pantoporia hordonia (Stoll, [1790]) (金環蛺蝶／金蟠蛺蝶／金三線蝶)

Papilio hordonia Stoll, [1790]: De uitlandsche kapellen: 149, pl. 33, f. 4, 4D. (Type locality: "kust van Guiné [error, Bengal]")

Neptis plagiosa Moore, 1878: Proceedings of the Zoological Society of London 1878 (4): 830. (Type locality: "Naththoung to Paboga, [Tenasserim, India]")

Ssp. *rihodona* Moore, 1878

PLATE 19, Figs. 95–96; PLATE 81, Fig. 435; PLATE 118, Fig. 584

Neptis rihodona Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 698. (Type locality: Hainan)

Rahinda hordonia maligowa Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 597. (Type locality: Formosa)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Xindian, Sikanshui, 6. VIII. 2007 (Y. F. Hsu) (genitalia preparation JYL985); 1♂, 2♀, same locality, 6. VIII. 2007, reared from *Albizia chinensis*, emgd. 16/21. VIII. 2007, HSU 07H16 (Y. F. Hsu); 3♂, 2♀, Wulai, Fushan Botanical Garden, 700m, 4/5. VIII. 2006, reared from *A. julibrissin*, emgd. 7/11. VIII. 2006, HSU 06H14 (Y. F. Hsu & H. C. Huang); 4♀, same locality, 28. VIII. 2006,

reared from *Acacia intsia* [= *A. caesia*], emgd. 12/15. IX. 2006, HSU 06H39 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Wenshan, Xianjiyan, 19. VI. 2003 (Y. F. Hsu & C. R. Chen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, 5. VII. 1983 (C. K. Lo). **YILAN Co.:** 1♂, Suao, Wushibi, 7. XI. 2006 (L. H. Wang & L. W. Wu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 1♀, Maolin, Nanfengshan, 17. VI. 1989; 1♂, Taoyuan, Meishan, 700m, 8. XI. 2010 (H. C. Huang); 1♀, same locality, 27. X. 2016 (L. Huang) (genitalia preparation JYL986). **TAIDONG Co.:** 1♀, Beinan, Danaxi, 18. VI. 2004 (C. L. Huang).

Description. Adult – Forewing length 22–27 mm. Sexual dimorphism absent or slightly present. Male (PLATE 19, Fig. 95): Head dark brown. Antennae slightly enlarged, flattened distad, naked at distal tip. Proboscis brown. Labial palpus porrect, white mixed with dark brown. Thorax brown, with metallic green shine dorsally, white ventrally. Legs white, tinged with brown distad; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing broad, nearly triangular, costa nearly straight, termen slightly convex, dorsum with inner half produced, apex obtuse. Hindwing flabellate. Wing uppersides ground color dark brown, with prominent orange markings. On forewing, discal band divided into two bands, with one subapical and the other posterior; a prominent, elongate orange band in discoidal cell, extending to cell M_2 and M_3; a fine orange submarginal thread present. On hindwing, two prominent orange bands present, proximal band thicker. Wing undersides ground color yellow mottled with brown. Markings similar to those on uppersides. Two obscure, brown, narrow bands along termen of forewing; two similar bands on hindwing, more prominent, with one proximal and the other distal. Sexual brand present as a patch of silvery white scalings by costa of hindwing uppersides. Fringe checkered. Female (PLATE 19, Fig. 96): Body and wing pattern similar to those of male, orange bands narrower than those of male; no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 81, Fig. 435) – Tegumen convex dorsad; uncus slender, nearly straight, with a small down-curved hook at distal tip. Gnathos as elongate band. Saccus short, spoon-like. Vinculum curved. Valva elongate, tapering caudally to blunt distal end, slightly convex ventrally. Juxta V-shaped, with dorsal ends blunt. Phallus slightly up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed

tip, opening dorsal. Cornutus as a narrow, curved, spiny, sclerotized band.

Female genitalia (PLATE 118, Fig. 584) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae shorter than corpus bursae, with a sclerotized ring by ostium bursae. Sterigma forming transverse sclerotized band by ostium bursae. Posterior apophyses nearly as long as anal papillae, slender. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Throughout out the Oriental region but absent in the Philippines except Palawan; also Lesser Sunda Islands (Eliot, 1969; Tsukada, 1985).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, less common in northern Taiwan (Yamanaka, 1975; Hsu, 2006, 2013).

Larval Host plant(s). Fabaceae: *Acacia caesia*, *Albizia julibrissin*, *Al. chinensis*, and *Falcataria falcata.*

Biology. A multivoltine species, with adults on the wing throughout the year.

形態特徵：成蝶前翅長 22–27 mm。雌雄二型性略有或缺乏。雄蝶 (圖 95)：頭黑褐色。觸角末端略膨大、扁平，頂端裸露。口器褐色。下唇鬚前伸、白色雜黑褐色。胸部背面褐色，有綠色光澤；腹面白色。足白色，末端泛褐色，前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅寬闊，近三角形，前緣頗直、外緣略凸、後緣內半部突出、翅頂鈍。後翅扇形。翅背面底色黑褐色，有鮮明橙色斑紋；前翅中央帶紋一分為二，分別位於亞翅頂及後側，中室有鮮明橙色長條紋，向外延伸至 M_2 及 M_3 室，亞外緣有模糊橙色細線；後翅有兩條鮮明橙色帶紋，內側者較粗。翅腹面底色黃色，有斑駁褐色紋。斑紋與翅背面相似。前翅沿外緣有二模糊棕色細帶紋；後翅亦有類似帶紋，較鮮明。銀白色性標見於後翅背面前緣。緣毛黑白相間。雌蝶 (圖 96)：形態特徵與雄蝶相似，但橙色帶紋較細、無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 435)：背兜背側隆起。鉤突細長，甚直，末端具一向下細小彎勾。顎形突長帶狀。囊突短、勺狀。基腹弧彎曲。抱器修長、瓣狀，向後漸細，末端鈍，

腹側略凸出。陽基軛片 V 字形，背端圓鈍。陽莖末端略上曲。陽莖器長度略短於陽莖基，末端斜切，向後漸細，末端尖，開口於背側。角狀器為一細長、彎曲、具棘刺之骨化帶。

雌交尾器 (圖 584)：交尾囊卵圓形。花壁為一片寬闊具細刺骨斑。交尾囊管短於交尾囊，交尾囊孔有骨化環。交尾囊孔板於交尾囊孔邊形成橫向骨化帶。後內骨突與肛突近乎等長，甚細。肛突葉狀、中度骨化、具剛毛。

世界分布：泛東洋區分布，但在菲律賓僅見於巴拉望，小巽他群島亦有分布。

臺灣分布：本島低至中海拔地區，北部較少見。

寄主植物：豆科之藤相思、合歡、楹樹及摩鹿加合歡。

生物學：一年多代物種，全年皆可見成蝶活動。

Genus *LIMENITIS* Fabricius, 1807

Type species: *Papilio populi* Linnaeus, 1758

Diagnostic characters may include the following: 1) protarsus hairy with tarsomeres fused in male, naked and segmented in female; 2) antennal club slender and elongate; 3) forewing termen longer than or equal to dorsum in length; 4) discoidal cell closed in forewing, open in hindwing; 5) wing uppersides dark brown with white spots and bands; 6) sexes similar.

Larvae mainly feed on plants in various families, including Salicaceae, Betulaceae, Rosaceae, Fagaceae, Ulmaceae, Tiliaceae, Rhamnaceae, Aquifoliaceae, Caprifoliaceae, etc.

Gallo & Della Bruna (2013) listed 27 species, but Wu *et al*. (2019) have moved 9 species from the other genera to the genus. They are mainly distributed in Holarctic region, but also in Oriental region.

5 species are now recognized in Taiwan.

線蛺蝶屬

形態特徵如下：1) 雄蝶前足跗節被毛而癒合，在雌蝶則裸露而分節；2) 觸角錘部修長；3) 前翅外緣較後緣長或兩者等長；4) 前翅中室閉鎖、後翅開放；5) 翅背面黑褐色，綴白色斑點及帶紋；6) 雌雄形態相似。

幼蟲以多科植物為寄主，包括楊柳科、樺木科、薔薇科、殼斗科、榆科、椴樹科、鼠李科、冬青科、忍冬科等。

Gallo & Della Bruna (2013) 列出本屬種類 27 種，但 Wu *et al*. (2017) 後來從其他屬移入 9 種。本屬主要分布於全北區，亦見於東洋區。

現有 5 種。

Limenitis sulpitia (Cramer, [1779]) (殘眉線蛺蝶 / 殘鍔線蛺蝶 / 臺灣星三線蝶)

Papilio sulpitia Cramer, [1779]: De uitlandsche kapellen 3 (17-21): 37, pl. 214, f. E, F. (Type locality: “China”)

Nymphalis strophia Godart, [1824]: Encyclopédie méthodique Histoire naturelle 9 (2): 431. (Type locality:“Chine [China]”)

Athyma sulpitia var. *ningpoana* C. & R. Felder, 1862: Wiener entomologische monatschrift 6 (1): 26. (Type locality: “Ningpo, China”)

Ssp. *tricula* Fruhstorfer, 1908

PLATE 19, Figs. 97–99; PLATE 81, Fig. 436; PLATE 118, Fig. 585

Limenitis supitia [sic] *tricula* Fruhstorfer, 1908: Entomologische Wochenblatt 25 (10): 41. (Type locality: [not given, evidently Formosa])

Ssp. *sulpitia* Cramer, [1779]

PLATE 20, Figs. 100–101; PLATE 81, Fig. 437

Specimens examined:

Ssp. *tricula*: **JILONG CITY:** 1♂, Longgang Trail, 26. VIII. 2008 (C. K. Wang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Xindian, Feicui Dam, 27. VII. 1999 (Y. T. Lo); 1♂, Wanli, Lukuping, 600m, 17. VIII. 2010 (L. Huang); 1♀, Xindian, Zhitan, 21. II.

2012 (C. Y. Liao); 1♂, same locality, 21. II. 2012, reared from *Lonicera japonica*, emgd. 9. III. 2012, HSU 12B24 (C. Y. Liao). **TAIPEI CITY:** 1♂, 1♀, Beitou, Yangmingshan, 4. XI. 2005 (J. R. Chen & C. T. Chang); 1♂, Neihu, Dalunweishan, 9. IX. 2008 (L. Huang); 1♂, Wenshan, NTNU, Gongguan campus, 29. III. 2012 (L. Huang); 1♀, Shilin, Junjianyan, 10. X. 2013 (L. Huang); 1♂, Nangang, Sanchongpupi, 26. V. 2014 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Meishan, 800m, 27. VIII. 2010 (H. C. Huang).

Ssp. *sulpitia*: **LIANJIANG Co.:** 1♀, Nangan, Tree Nursery, 11. X. 2014 (H. Y. Lee & C. W. Huang); 1♂, Beigan, Qinbi/ Ankang, 21. VII. 2020 (Y. F. Hsu).

Description. Adult – Forewing length 29–33 mm. Sexual dimorphism absent. Male (PLATE 19, Figs. 97–98; PLATE 20, Fig. 100): Head dark brown. Antennae slightly enlarged at distal end, dark brown, naked distad. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white slightly tinged with blue ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum straight, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent band divided into proximal rod-like bar and distal bullet-like spot in discoidal cell; a series of small, white submarginal markings present. On hindwing, two prominent bands present, with proximal band nearly straight, broader; distal band as a series of disconnected white spots arranged into a curve. Wing undersides ground color ochre. White markings similar to those on uppersides, a dark band between two white bands of hindwing; each white marking with a dark brown dot proximally; five dark brown dots present near base of hindwing; a series of narrow white bands along termen of both wings. Fringe checkered. Female (PLATE 19, Fig. 99; PLATE 20, Fig. 101): Body and wing pattern similar to those of male, forewing broader, termen slightly convex; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 81, Figs. 436–437) – Tegumen flat; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt

distal end. Vinculum curved. Valva broad, with distal end rounded, bearing minute spines; sacculus with prominent dorsal, fin-like extension bearing minute spines. Juxta narrow, U-shaped, with dorsal tips clubbed, setose. Phallus short, stout, up-raising distad; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 119, Fig. 585) – Corpus bursae ovate. Signa as two elongate, spiny bands side by side on one side of wall. Ductus bursae shorter than corpus bursae, attenuate caudally, with a sclerotized ring at ostium bursae. Sterigma forming membranous dome. Posterior apophyses as long as anal papillae. Anal papillae lobe-like, moderately sclerotized, setose posteriorly.

Variation. Individuals with white markings reduced are usually found in the fall.

Global distribution. Northern Indochina, West to East China, Taiwan (Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Ssp. *tricula* occurs from low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013); the nominotypical subspecies is found from Mazu Islands.

Larval Host plant(s). Caprifoliaceae: *Lonicera japonica* (Chang, 1964; Hsu, 2013; Hung, 2013; Lu & Chen, 2014).

Biology. A multivoltine species, overwintering as young larva.

形態特徵：成蝶前翅長 29–33 mm。無雌雄二型性。雄蝶（圖 97–98、100）：頭黑褐色。觸角末端略膨大、黑褐色、末端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色泛藍色。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅近三角形，前緣略凸、外緣及後緣直線狀、翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，具鮮明白色斑紋；前翅中央斑列彎曲排列，

中室帶紋分為內側棒狀短紋及外側子彈形斑點，亞外緣有一列白色小紋；後翅有兩道鮮明帶紋，內側者頗直、較粗，外側者為彎曲排列之一列白斑。翅腹面底色赭色，白色斑紋與翅背面相似，但亞外緣多一列白色細帶紋；後翅白色帶紋間有一列深色帶紋，各白斑內側皆有黑褐色斑點、翅基另有五只黑褐色點。緣毛黑白相間。雌蝶(圖99、101)：形態特徵與雄蝶相似，但前翅翅幅較寬、外緣略突，前足跗節分節、具爪、無毛。

雄交尾器(圖 436–437)：背兜平坦。鉤突勾狀，末端下彎。顎形突細長、帶狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器寬闊，末端圓鈍而有小棘刺。抱器腹背側延伸成鰭狀突起，表面密生小棘刺。陽基軛片狹窄、U 字形，背端棒狀，具剛毛。陽莖短粗，挺直。陽莖器長度略與陽莖基等長，尾端漸細，末端尖，開口於背側。

雌交尾器(圖 585)：交尾囊卵圓形。花壁為一對具刺細長骨帶，並排於交尾囊一側。交尾囊管短於交尾囊，後段漸窄，交尾囊孔邊有骨化環。交尾囊孔板膜質、穹頂狀。後內骨突與肛突等長。肛突葉狀、中度骨化、後端具剛毛。

變異：白紋減退的個體多見於秋季。

世界分布：中南半島北部、華西至華東、臺灣。

臺灣分布：亞種 ssp. *tricula* 分布於本島低至中海拔地區；承名亞種見於馬祖。

寄主植物：忍冬科之忍冬。

生物學：本種為一年多代物種，以小幼蟲越冬。

Limenitis asura (Moore, [1858]) (白圈線蛺蝶／珠履帶蛺蝶／白圈三線蝶)

Athyma asura Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 171, pl. 5a, f. 1. (Type locality: “N. India”)

Ssp. *baelia* Fruhstorfer, 1908

PLATE 20, Figs. 102–104; PLATE 81, Fig. 438; PLATE 119, Fig. 586

Pantoporia asura baelia Fruhstorfer, 1908: Entomologische Zeitschrift 22 (32): 132. (Type locality: Chip-Chip [Jiji], Formosa)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Neidong, 12. VIII. 2002 (L. H. Wang); 1♂, 1♀, Wulai, Baoqing Temple, 620m, 25. VI. 2005 (J. R. Chen); 1♀, Wulai, Fushan, 3. VII. 2005 (C. L. Huang); 1♂, Wanli, Fengguizui, 650m, 26. IX. 2010 (H. C. Huang); 1♂, 1♀, Xindian, Feicui Dam, 250m, 19. VII. 2008, reared from *Ilex asprella*, emgd. 5/27. VIII. 2008, HSU 08G17 (Y. F. Hsu); 1♂, Xindian, Xiaocukeng, 18. VII. 2011 (K. W. Shiao); 1♀, Sanzhi, Datunshan, 11. VII. 2004, reared from *I. asprella*, emgd. 7. VIII. 2004, HSU 04G16 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Nangang, Sanchongpupi, 26. V. 2014 (Y. F. Hsu); 1♂, Shilin, Tianxiyuan, 21. IX. 2010 (H. C. Huang); 1♀, Beitou, Datunshan, 10. VI. 2021 (C. W. Huang & Z. L. Chen) (genitalia preparation JYL954). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Shishanxi, 18. VII. 1997 (C. Y. Hung).

Description. Adult – Forewing length 30–39 mm. Sexual dimorphism absent. Male (PLATE 20, Figs. 102–103): Head dark brown. Antennae slightly enlarged at distal end, dark brown, inner surface naked distad. Proboscis brown. Labial palpus porrect, white, with brown narrow band laterally. Thorax brown dorsally, white ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown with a transverse white band anteriorly, white ventrally. Forewing nearly triangular, costa slightly convex, termen slightly concave, dorsum straight. Hindwing hemi-circular, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a narrow proximal band and a small distal spot in discoidal cell, and a series of faint, small, white submarginal markings. On hindwing, two prominent bands present, with proximal band straight; distal band curved, consisted of white, round spots with black center. Wing undersides ground color ochre. White markings similar to those on uppersides, but a series of distal spots with black center also on forewing; a series of faint, narrow, white dashes along termen; a short, tooth-like spot near base of hindwing. Fringe white checkered with brown. Female (PLATE 20, Fig. 104): Body and wing pattern similar to those of male, forewing broader, hindwing flabellate; white markings usually more prominent; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 81, Fig. 438) – Tegumen flat; uncus as a simple hook, pointing

downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate, attenuate caudad, with distal end bearing several small teeth; sacculus with prominent dorsal, fin-like extension bearing minute spines. Juxta narrow, V-shaped, with dorsal tips clubbed, setose. Phallus short, stout, slightly down-curved; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 119, Fig. 586) – Corpus bursae as vase-like sac with spherical appendix bursae. Signa as two elongate, spiny bands side by side on one side of wall. Ductus bursae much shorter than corpus bursae, with wide ostium bursae. Sterigma forming tent-like dome. Posterior apophyses shorter than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose posteriorly.

Global distribution. Northern India, Himalayas, Indochina, Sundaland, West to East China, Taiwan (Tsukada, 1985).

Distribution in Taiwan. Low to moderate elevations in Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Aquifoliaceae: *Ilex ficoidea*, *I. micrococca*, *I. asprella*, *I. rotunda*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, overwintering as larva or pupa (Lu & Chen, 2014).

形態特徵：成蝶前翅長 30–39 mm。無雌雄二型性。雄蝶 (圖 102–103)：頭黑褐色。觸角末端略膨大、黑褐色、末端內側裸露。口器褐色。下唇鬚前伸、白色、側面具褐色細條紋。胸部背面褐色，腹面白色。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色、前端有白色橫帶，腹面白色。前翅近三角形，前緣略凸、外緣略凹、後緣直線狀。後翅半圓形，翅脈末端略凸出。翅背面底色黑褐色，上有鮮明白色斑紋；前翅中央斑列彎曲排列。中室內有白色細條紋，其末端外有小白斑，亞外緣有一列模糊白紋；後翅有兩道鮮明帶紋，內側者頗直，外側者彎曲排列，由中心黑色之白

色圈紋組成。翅腹面底色赭色，白色斑紋與翅背面相似，但前翅外側帶紋亦有白色圈紋、外緣有一列模糊白色細短紋，後翅基部有一牙狀斑。緣毛黑白相間。雌蝶 (圖 104)：形態特徵與雄蝶相似，但前翅翅幅較寬、後翅扇形、白色斑紋通常較鮮明，前足跗節分節、具爪、無毛。

雄交尾器 (圖 438)：背兜平坦。鉤突勾狀，末端下彎。顎形突細長、帶狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀，向後漸窄，末端有數只小齒突。抱器腹背側延伸成鰭狀突起，表面密布小棘刺。陽基軛片狹窄、V 字形。陽莖短粗，略下彎。陽莖器長度略與陽莖基等長，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 586)：交尾囊為瓶狀囊袋，有球形附囊。花壁為一對具刺細長骨帶，並排於交尾囊一側。交尾囊管明顯短於交尾囊，交尾囊孔寬大。交尾囊孔板帳形穹頂狀。後內骨突短於肛突。肛突葉狀、中度骨化、後端具剛毛。

世界分布：印度北部、喜瑪拉雅地區、中南半島、巽他地區、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：冬青科之臺灣糊樗、朱紅水木、燈稱花、鐵冬青等。

生物學：本種為一年多世代物種，以幼蟲或蛹態越冬。

Limenitis jina (Moore, [1858]) (寬帶線蛺蝶／玉杵帶蛺蝶／寬帶蛺蝶／寬帶三線蝶)

Athyma jina Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 172, pl. 5, f. 3. (Type locality: “Darjeeling”)

Ssp. *sauteri* Fruhstorfer, 1913

PLATE 20, Figs. 105–106; PLATE 82, Fig. 439; PLATE 119, Fig. 587

Pantoporia jina sauteri Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 626. (Type locality: “Formosa”)

Specimens examined:

TAOYUAN CITY: 1♂, Fuxing, Kayilan, 580m, 13. VII. 2016 (L. Huang & H. C. Huang) (genitalia preparation JYL995). **XINZHU Co.:** 1♂, 1♀, Jianshi, Mamei, 1550m, 6. IX. 2005, reared from *Lonicera hypoglauca*, emgd. 14/22. IX. 2005, HSU 05J22 (C.

C. Lu) (genitalia preparation JYL1028); 1♂, Jianshi, Mamei, 1600m 13. IX. 2005, reared from *L. hypoglauca*, emgd. 16. X. 2005, HSU 05J42 (C. C. Lu, L. H. Wang & H. Y. Lee). **MIAOLI Co.:** 1♂, Nanzhuang, Luhu, 11. VII. 2004 (C. C. Lu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Shangguguan, 900m, 29. VII. 2007 (Y. F. Hsu).

Description. Adult – Forewing length 28–33 mm. Sexual dimorphism absent or weakly present. Male (PLATE 20, Fig. 105): Head dark brown. Antennae slightly enlarged at distal end, dark brown, inner surface naked distad. Proboscis brown. Labial palpus porrect, white, with brown narrow band laterally. Thorax brown dorsally, white ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown with a transverse white band anteriorly, white ventrally. Forewing nearly triangular, costa slightly convex, termen slightly concave, dorsum straight. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent band with distal end blunt in discoidal cell, and several faint, small, white subapical markings present. On hindwing, two prominent bands present, with proximal band straight, broader; distal band as a series of disconnected white spots. Wing undersides ground color ochre. White markings similar to those on uppersides, but subapical spots on forewing more prominent, with spot in cell R_5 eyelike; a tooth-like spot near base of hindwing. Fringe white checkered. Female (PLATE 20, Fig. 106): Body and wing pattern similar to those of male, forewing broader, termen straight; white markings usually more prominent, creamy white; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 82, Fig. 439) – Tegumen flat; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate, triangular, with ventral margin straight, attenuate caudad, with distal end blunt; sacculus with prominent dorsal, flap-like extension bearing minute spines. Juxta narrow, V-shaped, with dorsal tips clubbed, setose. Phallus short, stout, slightly down-curved, up-raising distad; aedeagus nearly as long as phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 119, Fig. 587) – Corpus bursae bulbous. Signa as two

short, spiny bands side by side on one side of wall. Ductus bursae shorter than corpus bursae, attenuate caudally, with a sclerotized ring at ostium bursae. Sterigma forming membranous dome. Posterior apophyses longer anal papillae, with anterior ends clubbed. Anal papillae lobe-like, moderately sclerotized, setose posteriorly.

Global distribution. Northern India, Himalayas, West to East China, Taiwan (D'Abrera, 1985; Lang, 2012; Hsu, 2013). Huang & Murayama (1992) recorded *jina* also from Xinjiang of northwest China.

Distribution in Taiwan. Moderate elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Caprifoliaceae: *Lonicera hypoglauca*.

Biology. A multivoltine species, overwintering as young larva.

Remarks. This species is similar to sympatric *A. fortuna*, but the following features can be used to separate them: 1) subapical white spot in cell R_5 of forewing undersides is eyelike in *jina*, but oval in *fortuna*; 2) basal white marking on hindwing undersides reaches costa in *jina*, not so in *fortuna*.

形態特徵：成蝶前翅長 28–33 mm。雌雄二型性略有或缺乏。雄蝶 (圖 105)：頭黑褐色。觸角末端略膨大、黑褐色、末端內側裸露。口器褐色。下唇鬚前伸、白色、側面有褐色細條。胸部背面褐色，腹面白色。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色、前端有白色橫帶，腹面白色。前翅近三角形，前緣略凸、外緣略凹、後緣直線狀。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白色斑紋；前翅中央斑列彎曲排列，中室有白色條紋，其末端，亞翅頂有數只模糊小白紋；後翅有兩道鮮明帶紋，內側者頗直、較粗，外側者為一列白色斑紋。翅腹面底色赭色，白色斑紋與翅背面相似，但前翅亞翅頂斑點較鮮明、於 R_5 室者呈眼狀，後翅基部有一枚牙狀斑。緣毛黑白相間。雌蝶 (圖 106)：形態特徵與雄蝶相似，但前翅較寬、外緣直、白色斑紋通常較鮮明且呈乳白色，前足跗節分節、具爪、無毛。

雄交尾器 (圖 439)：背兜平坦。鉤突勾狀，末端下彎。顎形突細長、帶狀。囊突短桿狀，末端圓鈍。基腹弧彎曲。抱器長，三角形，腹緣平直，向後端漸窄，末端圓鈍。抱器腹背側延伸成葉狀突起，表面密生細小棘刺。陽基軛片狹窄、V 字形，背端呈棒狀，具剛毛。陽莖短粗，略下彎，末端微上勾。陽莖器長度略與陽莖基等長，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 587)：交尾囊球狀。花壁為一對具刺短骨帶，並排於交尾囊一側。交尾囊管短於交尾囊，後端漸窄，交尾囊孔邊有骨化環。交尾囊孔板膜質、穹頂狀。後內骨突長於肛突，前端成棒狀。肛突葉狀、中度骨化，後端具剛毛。

世界分布：印度北部、喜瑪拉雅地區、華西至華東、臺灣，新疆地區亦有記錄。

臺灣分布：分布於本島中海拔山區。

寄主植物：忍冬科之裡白忍冬。

生物學：本種為一年多世代物種，以小幼蟲越冬。

註記：本種與幻紫線蛺蝶相似且共域，可由下列鑑別特徵區分：1) 本種前翅腹面 R_5 室亞翅頂白色斑點呈眼狀，幻紫線蛺蝶則呈橢圓形；2) 本種後翅腹面基部白紋觸及前緣，幻紫線蛺蝶則否。

Limenitis fortuna (Leech, 1889) (幻紫線蛺蝶 / 幻紫帶蛺蝶 / 拉拉山三線蝶 / 幸福帶蛺蝶)

Athyma fortuna Leech, 1889: Transactions of the Entomological Society of London 1889 (1): 107, pl. 8, f. 1, 1a. (Type locality: “Kiukiang [Jiujiang], China”)

Athyma fortuna var. *diffusa* Leech, 1890: The Entomologist 23: 34. (Type locality: Chang Yang)

Athyma fortuna guangxiensis Wang, 1994: Monographia Rhopalocerum Sinensium 1-2: 764, 520, f. 48. (Type locality: Longsheng, Guangxi)

Ssp. *kodahirai* Sonan, 1938

PLATE 21, Figs. 107–108; PLATE 82, Fig. 440; PLATE 119, Fig. 588

Pantoporia fortuna kodahirai Sonan, 1938: Zephyrus 7 (4): 251, pl. 20, f. 6. (Type locality: “Hori [Puli], Formosa”)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Ronghua, 26. V. 1986 (Y. F. Hsu); 1♂, same locality, 13. V. 1987 (Y. F. Hsu); 1♂, 1♀, Fuxing, Baling, 11. V. 1997 (C. C. Lu); 1♀, Fuxing, Xuanyuan, emgd. 2. V. 1987 (Y. F. Hsu); 1♂, same locality, 1000m, 15. II. 2006, reared from *Viburnum luzonicum*, HSU 06B31 (Y. F. Hsu, C. C. Lu & L. W. Wu); 1♂, Fuxing, Northern Cross-Island Road, 55Km, 16. V. 2015 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL1020); 1♂, 1♀, Fuxing, Northern Cross-Island Road, 14. VI. 2021, reared from *V. luzonicum*, emgd. 20. VII. 2021, HSU 21F6 (Y. Q. Yeh). **YILAN Co.:** 1♂, Datong, Mingchi, 20. VI. 2003 (Y. F. Hsu). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, 1500m, 23. III. 2009, reared from *V. luzonicum*, emgd. 15. IV. 2009, HSU 09C37 (Y. F. Hsu).

Description. Adult – Forewing length 32–38 mm. Sexual dimorphism absent or weakly present. Male (PLATE 21, Fig. 107): Head dark brown. Antennae slightly enlarged at distal end, dark brown, inner surface naked distad. Proboscis brown. Labial palpus porrect, white, brown on inner and dorsal surfaces. Thorax brown dorsally, white ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown with a transverse white band anteriorly, white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum straight, apex obtuse. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown tinged with purple, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a prominent band with distal end blunt in discoidal cell; two small, white subapical markings present. On hindwing, two prominent bands present, with proximal band straight, broader; distal band as a series of disconnected white spots. Wing undersides ground color ochre. White markings similar to those on uppersides, but partially tinged with bluish green; a tooth-like band near base of hindwing. Fringe checkered. Female (PLATE 21, Fig. 108): Body and wing pattern similar to those of male, Wing uppersides without purple shine; white markings creamy white; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 82, Fig. 440) – Tegumen flat; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate, slender, attenuate caudad, with distal end bearing small spines and a small dorsal rounded process; sacculus with prominent dorsal, fin-like

extension bearing minute spines. Juxa narrow, U-shaped. Phallus short, stout, slightly down-curved; aedeagus nearly as long as phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 119, Fig. 588) – Corpus bursae as vase-like sac with spherical appendix bursae. Signa as two elongate, spiny bands side by side on one side of wall. Ductus bursae shorter than corpus bursae. Sterigma forming membranous dome. Posterior apophyses longer than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose posteriorly.

Global distribution. West to East China, Taiwan (Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Adoxaceae: *Viburnum luzonicum* (Uchida, 1991; Hsu, 2013; Hung, 2013).

Biology. An univoltine species, with adult on the wing in early summer; overwintering as young larva.

形態特徵：成蝶前翅長 32–38 mm。雌雄二型性略有或缺乏。雄蝶 (圖 107)：頭黑褐色。觸角末端略膨大、黑褐色、末端內側裸露。口器褐色。下唇鬚前伸、白色、內側及背面褐色。胸部背面褐色，腹面白色。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色、前端有白色橫帶，腹面白色。前翅近三角形，前緣略凸、外緣及後緣直線狀、翅頂鈍。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色泛紫色，上有鮮明白色斑紋；前翅中央斑列彎曲排列。中室有白色條紋，其末端鈍，亞翅頂有二只白色小斑紋；後翅有兩道鮮明帶紋，內側者頗直、較粗，外側者為一列白色斑紋。翅腹面底色赭色，白色斑紋與翅背面相似，但部分斑紋泛藍綠色，後翅基部有一牙狀紋。緣毛黑白相間。雌蝶 (圖 108)：形態特徵與雄蝶相似，但翅背面不泛紫色，白色斑紋色調呈乳白色，前足跗節分節、具爪、無毛。

雄交尾器 (圖 440)：背兜平坦。鉤突勾狀，末端下彎。顎形突細長、帶狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀，向末端漸縮，末端具細棘刺，其背側有一圓形小突起。抱器腹背側延伸成鰭狀凸起，上有細小棘刺。陽基軛片狹窄、U字形。陽莖粗短，略下彎。陽莖器長度略與陽莖基等長，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 588)：交尾囊為瓶狀囊袋，有球形附囊。花壁為一對具刺長骨帶，並排於交尾囊一側。交尾囊管短於交尾囊。交尾囊孔板呈膜質半圓形。後內骨突長於肛突。肛突葉狀、中度骨化，後端具剛毛。

世界分布：華西至華東、臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：五福花科之呂宋莢蒾。

生物學：本種為一年一世代物種，成蝶主要活動於初夏，以小幼蟲越冬。

Limenitis dudu Westwood, 1850 (紫俳線蛺蝶／紫俳蛺蝶／丫紋俳蛺蝶／紫單帶蛺蝶)

Limenitis dudu Westwood, 1850: The Genera of Diurnal Lepidoptera 2: 276. (Type locality: “Silhet”)

Ssp. *jinamitra* Fruhstorfer, 1908

PLATE 21, Figs. 109–110; PLATE 82, Fig. 441; PLATE 120, Fig. 589

Limenitis dudu jinamitra Fruhstorfer, 1908: Entomologische Wochenblatt 25 (10): 41. (Type locality: “Formosa, Polisha [Puli]”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Shiding, Ergeshan, 10. IV. 2001, emgd. 7. V. 2001 (Y. T. Lo); 1♂, same locality, 19. V. 2004 (C. L. Huang); 1♀, Wulai, Fushan, Kalamoji Trail, 500m, 7. IV. 2009, reared from *Lonicera* sp., emgd. 9. IV. 2009, HSU 09D16 (Y. F. Hsu); 2♀, Xindian, Zhitian, 6. III. 2011, reared from *Lonicera* sp., emgd. 6. IV. 2011, HSU 11C9.1 (C. L. Huang); 1♀, Xindian, Feicui Dam, 14. VI. 2011 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Beitou, Zhuzihu, 6. VIII. 1986 (Y. F. Hsu); 1♂, Wenshan, Muzha, Hills S. of NCCU campus, 5. III. 2009 (N. Y. Tsai); 2♂, same locality, 20. III. 2009 (N. Y. Tsai); 1♀,

Beitou, Miantianshan, 750m, 6. IV. 2009, reared from *Lonicera* sp., emgd. 3. VI. 2009, HSU 09D13 (Y. F. Hsu & C. H. Lin, jr); 1♂, Wenshan, Muzha, Dailaokengshan, 380m, 7. VI. 2010 (N. Y. Tsai). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, 1700/2000m, 8. V. 2000 (Y. T. Lo & Y. J. Chen).

Description. Adult – Forewing length 24–39 mm. Sexual dimorphism absent or weakly present. Male (PLATE 21, Fig. 109): Head dark brown. Antennae slightly enlarged at distal end, dark brown, naked distad. Proboscis brown. Labial palpus porrect, white, dark brown dorsally. Thorax brown dorsally, white ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing nearly triangular, costa slightly convex, termen slightly concave, dorsum straight, apex obtuse. Hindwing ovate, with tornus angled. Wing uppersides ground color grayish brown, with dark shade proximally, dark band and series of spots distally; a prominent white discal band on both wings, connecting with three small white spots anteriorly on forewing, forming a "Y-shaped" marking. Hindwing tornus orange. Wing undersides ground color pale grayish purple mixed with dark patches, forming nebulous pattern. White bands and markings as upperside, edged by brown. Two proximal brown bands margined by black on forewing, three white spots margined by black on hindwing. An orange spot at apex of forewing. Fringe checkered. Female (PLATE 21, Fig. 110): Body and wing pattern similar to those of male, wings broader, hindwing tornus not angled, protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 82, Fig. 441) – Tegumen flat; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end, enlarged anteriad. Vinculum curved. Valva elongate, ventral margin convex mesad, attenuate caudad, with distal end distorted, spiny; sacculus with prominent dorsal, triangular extension bearing minute spines. Juxta narrow, V-shaped, with dorsal ends clubbed, setose. Phallus short, stout, slightly down-curved, up-raising distad; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 120, Fig. 589) – Corpus bursae as vase-like sac with spherical appendix bursae. Signa as two elongate, spiny bands side by side on one

side of wall. Ductus bursae shorter than corpus bursae. Sterigma forming membranous dome. Posterior apophyses shorter than anal papillae, slender. Anal papillae reniform, moderately sclerotized, setose posteriorly.

Global distribution. North India, Himalayas, Indochina, Sumatra, West to East China, Taiwan (Tsukada, 1991; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also found from Guishan Island (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Caprifoliaceae: *Lonicera* spp., including *L. japonica*, *L. hypoglauca*, etc. (Chang, 1972; Uchida, 1991; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, overwintering as young larva.

Remarks. Although originally this taxon was described as a *Limenitis* species, it has been assigned to various genera, such as *Parasarpa* (e.g., D'Abrera, 1985; Shirôzu & Ueda, 1992; Kehimar, 2008; Lang, 2012; Hsu, 2013) or *Sumalia* (e.g., Shirôzu, 1960; Tsukada, 1991). Wu *et al*. (2019) performed a phylogenetic analysis on Limenitidini nymphalids and concluded that this species should be re-assigned to the genus *Limenitis*.

形態特徵：成蝶前翅長 24–39 mm。雌雄二型性略有或缺乏。雄蝶 (圖 109)：頭黑褐色。觸角末端略膨大、黑褐色、末端裸露。口器褐色。下唇鬚前伸、白色、背面黑褐色。胸部背面褐色，腹面白色泛藍色調。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅近三角形，前緣略凸、外緣略凹、後緣直線狀、翅頂鈍。後翅卵形，臀區角狀。翅背面底色灰褐色，外側有黑褐色帶紋及斑點，中央有鮮明白色帶紋；前翅中央帶紋前半部與三只白色小斑相連，形成 Y 字形斑紋；後翅臀區有橙色斑。翅腹面底色灰紫色雜深色斑紋形成雲狀斑，白色帶紋及斑紋與翅背面相似，但具褐色邊；前翅內側有兩條鑲黑邊之褐色帶紋，翅頂有一橙色斑點；後翅基部有三只鑲黑邊之白色斑點。緣毛黑白相間。雌蝶 (圖 110)：形態特徵與雄蝶相似，但前翅翅幅較寬、後翅臀區不呈角狀，前足跗節分節、具爪、無毛。

雄交尾器 (圖 441)：背兜平坦，中央有膜質區。鉤突勾狀，末端下彎。顎形突長、板狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀，向後端漸窄，腹側略凸起，末端扭曲，有棘刺。抱器腹背側延伸成鰭狀囊突，表面密布微小棘刺。陽基軛片狹窄、U 字形，背側棒狀。陽莖粗短，略下彎，末端略上揚。陽莖器長度略長於陽莖基，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 589)：交尾囊為瓶狀囊袋，有球形附囊。花壁為一對具刺細長骨帶，並排於交尾囊一側。交尾囊管短於交尾囊。交尾囊孔板膜質、穹頂狀。內骨突短於肛突，細長。肛突腎形、中度骨化，後端具剛毛。

世界分布：印度北部、喜瑪拉雅地區、中南半島、巽他地區、華西至華東、臺灣。

臺灣分布：本島低至中海拔山區，龜山島亦有分布。

寄主植物：忍冬科之忍冬屬植物，包括忍冬、裡白忍冬等。

生物學：本種為一年多代物種，以小幼蟲越冬。

註記：雖然本分類群原始描述為線蛺蝶屬物種，但曾被歸類於包括俳蛺蝶屬或肅蛺蝶屬等不同屬內。Wu *et al*. (2019) 進行線蛺蝶族分子親緣關係分析，結果顯示本種應仍為線蛺蝶屬成員。

Genus *ATHYMA* Westwood, [1850]

Type species: *Papilio leucothoe* Linnaeus, 1758

Diagnostic characters may include the following: 1) protarsus hairy with tarsomeres fused in male, naked and segmented in female; 2) antennal club slender and elongate; 3) forewing termen longer than or equal to dorsum in length; 4) discoidal cell closed in forewing, open in hindwing; 5) wing uppersides dark brown with white or yellow spots and bands.

Larvae feed on plants in various families, including Euphorbiaceae, Rubiaceae, Oleaceae,

Berberidaceae, Ericaceae, Caprifoliaceae, etc.

Gallo & Della Bruna (2013) listed 43 species, but Wu *et al.* (2017) have moved a few species out of the genus. They are mainly distributed in Oriental region, but also in Holarctic and Australian region.

4 species are now recognized in Taiwan.

帶蛺蝶屬

形態特徵如下：1) 雄蝶前足跗節被毛而癒合、雌蝶裸露而分節；2) 觸角錘部修長；3) 前翅外緣較後緣長或與之等長；4) 前翅中室閉鎖、後翅開放；5) 翅背面底色黑褐色，綴白色或黃色之斑點及帶紋。

幼蟲取食多科植物，包括大戟科、茜草科、木犀科、小蘗科、杜鵑花科、忍冬科等。

Gallo & Della Bruna (2013) 列出之本屬種類達 43 種，但 Wu *et al.* (2017) 已將部分種類從本屬移出。本屬主要分布於東洋區，亦見於全北區及澳洲區。

臺灣已知種類有 4 種。

Athyma perius (Linnaeus, 1758) (玄珠帶蛺蝶 / 白三線蝶)

PLATE 21, Figs. 111–112; PLATE 82, Fig. 442; PLATE 120, Fig. 590

Papilio perius Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 471. (Type locality: “Indiis” [India or Canton, China])

Papilio leucothoë Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 478. (Type locality: “Asia” [China])

Papilio polyxena Donovan, 1798: An epitome of the natural history of the insects of China: text, pl. 35, f. 4. (Type locality: “China”) (preoccupied by *Papilio polyxena* Denis & Schiffermüller, 1775)

Papilio erosine Cramer, [1779]: De uitlandsche kapellen 3 (17-21): 18, pl. 203, f. E, F. (Type locality: “China, Java”)

Pantoporia perius f. *hoso* Matsumura, 1939: Insecta Matsumurana 13 (4): 111, f. 1b. (Type locality:

"Formosa, Musha [Wuse]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Shimen, Linshanbi, 2. X. 2010 (H. C. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Xinshe, Shuijing, 25. XI. 2000, reared from *Glochidion zeylanicum*, emgd. 31. XII. 2000, HSU 00L18 (Y. T. Lo); 1♀, Dakeng, Trail # 4, 18. VIII. 2018, reared from *Glochidion* sp., emgd. 5. IX. 2018 (L. Huang). **NANTOU Co.:** 1♀, Renai, Benbuxi, 15. XII. 2015 (L. Huang). **JIAYI Co.:** 1♂, Fanlu, Chukou, 300m, 10. V. 2011 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Baihe, Zhentoushan, 500m, 17. IX. 2002 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Checheng, 200m, 7. IX. 2000, reared from *G. philippicum*, emgd. 5. X. 2000, HSU 00J9 (C. M. Wu). **LIANJIANG Co.:** 1♂, Nangan, Tree Nursery, 11. X. 2014 (H. Y. Lee & C. W. Huang). **JINMEN Co.:** 1♀, Jinshan, Wuhushan, 28/30. X. 2000 (C. C. Lu & Y. T. Lo); 1♂, Jinning, Zhongshan Forest, 29. X. 2000, reared from *G. rubrum*, emgd. 7. XII. 2000, HSU 00K86 (Y. T. Lo, C. C. Lu & M. H. Lin).

Description. Adult – Forewing length 28–33 mm. Sexual dimorphism absent. Male (PLATE 21, Fig. 111): Head orange mixed with brown on vertex, white mixed with brown on frons. Antennae slightly enlarged at distal end, dark brown, naked distad. Proboscis yellowish brown. Labial palpus porrect, white. Thorax brown dorsally, with four white spots on mesothorax and two on metathorax, transverse in arrangement; white ventrally. A white patch on patagium. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown banded with white dorsally, white with dark brown lateral dots ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum straight. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white discal band on both wings, curved on forewing, tilted and straight on hindwing. White submarginal spot series present on both wings; spots on hindwing each with black dot embedded proximally. Four prominent white markings in discoidal cell of forewing, arranged in line. Wing undersides ground color pale yellowish brown. Most white markings edged with dark brown. A series of black dots at proximal margin of distal white band on hindwing. Narrow, dark brown bands edged with white along termen of both wings. Fringe checkered. Female (PLATE 21, Fig. 112): Body and wing pattern similar to those of male; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 82, Fig. 442) – Tegumen flat, with medial membranous window, attenuate caudad; uncus as a simple hook, pointing dowbwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate, produced ventrally, tapering posteriorly to rounded caudal end; sacculus with a dorsal, fin-like extension bearing minute spines. Juxta narrow, U-shaped, with dorsal tips clubbed. Phallus moderately long, up-raising distad; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 120, Fig. 590) – Corpus bursae bulbous. Signa as two small, elongate, slender, spiny bands side by side on one side of wall. Ductus bursae much shorter than corpus bursae. Sterigma forming membranous dome. Posterior apophyses slender, with anterior end clubbed. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Global distribution. India, Indochina, Malaya, Sumatra, Java, Bali, Lombok, Sumba, South China, Taiwan (Tsukada, 1985); successfully established in some islands of southern Japan in 1960s (Shirôzu, 2006).

Distribution in Taiwan. Low to moderate elevations in Taiwan, local and uncommon in northern part of the island; also recorded from associated islands (Yamanaka, 1975; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Phyllanthaceae: various *Glochidion* species, including *G. acuminatum*, *G. philippicum*, *G. rubrum*, *G. zeylanicum*, etc. (Chang, 1964; Uchida, 1991; Hsu, 2006, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, adults on the wing throughout the year (Hsu, 2006, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 28–33 mm。缺乏雌雄二型性。雄蝶 (圖 111)：頭頂橙色雜褐色、前額白色雜褐色。觸角末端略膨大、黑褐色、頂端裸露。口器黃褐色。下唇鬚前伸、白色。胸部背面褐色、中胸有四只白斑點、後胸有兩只，排為橫列，腹面

白色；頸板有白紋。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色鑲白帶，腹面白色，兩側有黑褐色斑點。前翅近三角形，前緣略凸、外緣及後緣近直線狀。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，中央有鮮明白色帶紋，於前翅彎曲、於後翅呈直斜帶；亞外緣有一列白色斑點，於後翅者內側鑲黑點；前翅中室有四只白色斑點排為一列。翅腹面底色淡黃褐色，大部分白色斑紋鑲黑褐色邊。後翅外側白帶內緣有黑色斑點列。外緣有鑲白邊之黑褐色細帶紋。緣毛黑白相間。雌蝶 (圖 112)：形態特徵與雄蝶相似，但前足跗節分節、具爪、無毛。

雄交尾器 (圖 442)：背兜平坦，中有三角形膜質區。鉤突勾狀，末端下彎。顎形突長、帶狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀，腹側凸出，後端漸窄，尾端圓。抱器腹背側延伸成鰭狀突起，上生細小棘刺。陽基軛片細、U 字形，背端棒狀。陽莖末端略上舉。陽莖器長度略長於陽莖基，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 590)：交尾囊球狀。花壁為一對細長具刺骨帶，並排於交尾囊一側。交尾囊管明顯短於交尾囊。交尾囊孔板膜質、穹頂狀。後內骨突細長，前端棒狀。肛突葉狀、略骨化，後端有剛毛。

世界分布：印度、中南半島、馬來亞、蘇門答臘、爪哇島、峇厘島、龍目島、松峇島、華南及臺灣。1960 年代在日本南西諸島部分島嶼成功立足。

臺灣分布：本島低至中海拔地區，但北部較少見且侷限分布，離島亦有記錄。

寄主植物：多種葉下珠科之饅頭果屬植物，包括裏白饅頭果、菲律賓饅頭果、細葉饅頭果、錫蘭饅頭果等。

生物學：本種是一年多世代物種，全年皆可見成蝶活動。

Athyma selenophora (Kollar, [1844]) (異紋帶蛺蝶／新月帶蛺蝶／小單帶蛺蝶／小一文字蝶)

Limenitis selenophora Kollar, [1844]: Kaschmir und das Reich der Siek 4: 426, pl. 7, f. 1-2. (Type locality: “Himal[aya] Massuri [Mussoorie, India]”)

Pantoporia selenophora kanara Evans, 1924: Journal of the Bombay Natural History Society 30 (1): 74. (Type locality: “India”)

Ssp. *laela* Fruhstorfer, 1908

PLATE 22, Figs. 113–114; PLATE 83, Fig. 443; PLATE 120, Fig. 591

Pantoporia selenophora laela Fruhstorfer, 1908: Entomologische Wochenblatt 25 (10): 41. (Type locality: Lake Candidius [Sun Moon Lake])

Pantoporia selenophora f. *hirona* Matsumura, 1939: Insecta Matsumurana 13 (4): 112, f. j. (Type locality: "Hori [Puli], Formosa")

Tacoraea eupalia Murayama & Shimonoya, 1963: Tyô to Ga 13 (3): 52, f. 7, 10. (Type locality: "Poli, Central Taiwan")

Specimens examined:

JILONG CITY: 1♂, Xinyi, Gangziliao, 1. XII. 2019 (H. C. Huang); 1♂, 1♀, Longgang Trail, 14. I. 2010 (W. H. Chien & J. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Wulai, 500m, 9. IX. 1998, reared from *Wendlandia formosana*, emgd. 13. IX. 1998 (Y. T. Lo); 1♀, Wulai, Feicui Dam, 300m, 27. VII. 1999 (Y. T. Lo); 1♂, 1♀, Wulai, Jiajiuliao, 200m, 9. VI. 2008 (Y. F. Hsu); 4♂, 1♀, same locality, 150m, 21. VII. 2008 (Y. F. Hsu); 2♀, Sanzhi, Datunshan, 950m, 3. VII. 2008 (Y. F. Hsu); 2♀, Wanli, Lukuping, 600m, 17. VIII. 2010 (H. C. Huang); 1♀, Wanli, Fengguizui, 650m, 25. IX. 2010 (C. L. Huang); 1♀, Bali, Guanyinshan, 400/450m, 28. IV. 2011 (Z. H. Yen); 1♀, Sanzhi, Datunxi Ancient Trail, 29. VII. 2011 (H. C. Huang); 1♀, Sanzhi, Datunshan, 800m, 16. VIII. 2011 (H. C. Huang); 1♀, Danshui, Erziping, 700m, 20. VII. 2011 (Y. T. Lin). **TAIPEI CITY:** 1♀, Songshan, Xiangshan, 21. X. 2007 (K. L. Chang); 1♀, Beitou, Zhongzhengshan Trail, 1. IX. 2008, reared from *W. formosana*, emgd. 14. X. 2008, HSU 08H34 (N. Y. Tsai); 1♀, Wenshan, NTNU, Gongguan campus, 4. XII. 2008 (Y. F. Hsu); 1♂, Shilin, Tianxiyuan, 21. IX. 2010 (H. C. Huang); 2♀, Shilin, same locality, 300/400m, 20. VII. 2011 (H. C. Huang); 1♀, Shilin, Pingding Ancient Canal, 24. X. 2010 (H. C. Huang). **YILAN Co.:** 1♀, Nanao, Shenmihu, 30. VI. 2001. **XINZHU Co.:** 1♂, Guanxi, 12. II. 2003, reared from *Mussaenda pubescens*, emgd. 27. II. 2003, HSU 03B12 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Ruisui, Fuyuan, 17. VII. 2004 (H. Y. Lee). **PINGDONG Co.:** 1♀, Sandimen, 300m, 2. I. 2009 (Y. F. Hsu); 1♂, Sandimen, 19. XII. 2010 (Y. F. Hsu); 1♂, Shizi, Shuangliu, 18. XII. 2005 (Y. F. Hsu).

Description. Adult – Forewing length 27–37 mm. Sexual dimorphism prominent. Male (PLATE 22, Fig. 113): Head dark brown. Antennae slightly enlarged at distal end, naked and creamy yellow distad. Proboscis dark brown. Labial palpus porrect, white. Thorax brown dorsally, white ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, white ventrally. Forewing nearly triangular, costa slightly convex, termen

slightly convex, dorsum straight. Hindwing ovate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white discal band on both wings, disconnected into anterior, obscure spots and posterior bar on forewing, a tilted, straight band on hindwing. Margins of white band on forewing frequently bluish. Faint, gray, narrow, double submarginal bands present on both wings. Wing undersides ground color yellowish brown. White markings similar to those on uppersides. Submarginal bands white, narrow. Variegated dark markings on both wings. Fringe checkered. Female (PLATE 22, Figs. 114–115): Body similar to that of male, with four faint, white spots on tergum of mesothorax, and narrow, white, transverse band present on abdomen anteriorly. Tip of antenna orange. Markings on wing uppersides white, forming a disconnected discal band, a subapical spot, and a narrow band in discoidal cell on forewing; two bands on hindwing, with proximal band thicker; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 83, Fig. 443) – Tegumen flat, with medial membranous window, attenuate caudad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate, slightly convex ventrally, attenuate caudad to a blunt end; sacculus with a dorsal, triangular extension bearing minute spines. Juxta narrow, V-shaped, with dorsal tips clubbed. Phallus moderately long, up-raising distad; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 120, Fig. 591) – Corpus bursae bulbous. Signa as two small spiny bands side by side on one side of wall. Ductus bursae much shorter than corpus bursae. Sterigma forming membranous dome. Posterior apophyses slender, needle-like. Anal papillae lobe-like, weakly sclerotized, setose.

Variation. Markings on both wing surfaces are frequently reduced in individuals from the wet, hot seasons.

Global distribution. India, Himalayas, Indochina, Sundaland, Bali, Yaeyama Islands of Japan, West to South China, Taiwan (Tsukada, 1985).

Distribution in Taiwan. Low to moderate elevations in Taiwan, also recorded from Guishan Island of Yilan county and Penghu islands (Yamanaka, 1975; Hsu, 2013; Hsu, 2014).

Larval Host plant(s). Rubiaceae: *Mussaenda pubescens*, *Uncaria hirsuta*, *U. rhynchophylla*, *Wendlandia formosana*, *W. uvariifolia*, etc. (Uchida, 1991; Hsu, 2013; Hung, 1992; Lu & Chen, 2014)

Biology. A multivoltine species, adults on the wing throughout the year (Hsu, 2006, 2013; Lu & Chen, 2014).

Remarks. Murayama & Shimonoya (1963a) described *Tacoraea eupalia*, which was suggested to perhaps represent a spring form of *Athyma opalina hirayamai* Matsumura by Shirôzu (1986). The diagnostic characters of *eupalia*, however, are conformed to the female of *selenophora laela*: a proximal, dark spot in cell CuA_2 of forewing undersides (absent in *hirayamai*); proximal, white spot in cell M_2 of forewing uppersides blurred, irregular in shape (prominent, triangular in shape in *hirayamai*); discal white spot in cell M_3 of forewing wider than that of CuA_1 (narrower than that of CuA_1 in *hirayamai*). The name *eupalia* Murayama & Shimonoya, 1963 is treated as a junior subjective synonym of *laela* Fruhstorfer, 1908 by Hsu *et al*. (2021).

形態特徵：成蝶前翅長 27–37 mm。雌雄二型性顯著。雄蝶 (圖 113)：頭黑褐色。觸角末端略膨大、黑褐色、頂端裸露，呈乳黃色。口器黑褐色。下唇鬚前伸、白色。胸部背面褐色，腹面白色。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色，腹面白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀。後翅卵形，翅脈末端略凸出。翅背面底色黑褐色，有鮮明白紋，於前翅分為模糊前側斑點及後側短帶，於後翅則為一斜帶紋；前翅白色帶紋邊緣常泛藍色；亞外緣有兩條模糊灰色窄帶紋。翅腹面底色黃褐色，白紋與翅背面相似。亞外緣帶紋狹窄、白色。前、後翅均另有排列較紊亂之暗色紋。緣毛黑白相間。雌蝶 (圖 114–115)：軀體特徵與雄蝶相似，但中胸背側有四只模糊白色斑點、腹部前端有白色橫紋。觸角端部橙色。翅背面斑紋白色；前翅有斑紋分離之中央帶紋、亞翅頂斑點及中室細帶紋；後翅有二道白色帶紋，內側者較粗；前足跗節分節、具爪、無毛。

雄交尾器 (圖 443)：背兜平坦，中央有膜質區。鉤突勾狀，末端下彎。顎形突長、板狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器長瓣狀，腹側略凸起，後端漸窄，末端鈍。抱器腹背側延伸成三角形突起，上生細小刺棘。陽基軛片細，V 字形，背端棒狀。陽莖末端上舉。陽莖器長度略長於陽莖基，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 591)：交尾囊球狀。花壁為一對具刺小骨帶，並排於交尾囊一側。交尾囊管明顯短於交尾囊。交尾囊孔板膜質、穹頂狀。後內骨突細長、針狀。肛突葉狀、略骨化，具剛毛。

變異：翅斑紋於高溫高濕之季節常減退。

世界分布：印度、喜瑪拉雅地區、中南半島、巽他地區、峇里島、日本八重山群島、華西至華南、臺灣。

臺灣分布：本島低至中海拔地區，龜山島及澎湖亦有記錄。

寄主植物：茜草科之毛玉葉金花、臺灣鉤藤、嘴葉鉤藤、水金京及水錦樹等。

生物學：本種是一年多代物種，全年皆可見成蝶活動。

註 記：Murayama & Shimonoya (1963) 記述了名為「*Tacoraea eupalia*」的種類，曾被認為是流帶蛺蝶之春型，然而其鑑別特徵實與異紋帶蛺蝶一致：前翅腹面 CuA_2 室基部有深色斑點 (流帶蛺蝶缺此特徵)、前翅背面 M_2 室基部白色斑紋模糊、形狀不定 (在流帶蛺蝶鮮明、呈三角形)、前翅 M_3 室斑紋較 CuA_1 室者寬 (流帶蛺蝶較 CuA_1 室者窄)，因此本書初版 (Hsu *et al*., 2021) 將 *eupalia* Murayama & Shimonoya, 1963 視為異紋帶蛺蝶之次主觀同物異名。

Athyma cama Moore, [1858] (雙色帶蛺蝶／臺灣單帶蛺蝶／臺灣一文字蝶)

Athyma cama Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 174, pl. 5a, f. 5. (Type locality: “Darjeeling”)

Pantoporia cama f. *camida* Fruhstorfer, 1906: Verhandlungen der Zoologisch-Botanischen Gesellschaft in Österreich: 418. (Type locality: Sikkim)

Ssp. *zoroastres* Butler, 1877

PLATE 22, Figs. 116–118; PLATE 83, Fig. 444; PLATE 120, Fig. 592

Athyma zoroastres Butler, 1877: Proceedings of the Zoological Society of London 1877: 811. (Type locality: "Northern Formosa")

Pantoporia cama zoroastes Fruhstorfer, 1906: Verhandlungen der Zoologisch-Botanischen Gesellschaft in Österreich: 419. (subsequent incorrect spelling)

Tacoraea tayalica Murayama & Shimonoya, 1966: Tyô to Ga 16 (3/4): 60, f. 25, 28. (Type locality: "Poli [Puli], Formosa")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Datongshan, 7. VII. 2004 (J. R. Chen); 1♂, Wulai, 9. VII. 2004, reared from *Glochidion rubrum*, emgd. 13. VIII. 2004, HSU 04G8 (J. R. Chen & C. T. Chang); 1♂, same locality, 25. VI. 2005, reared from *G. acuminatum*, emgd. 8. VII. 2005, HSU 05F58 (C. L. Huang, J. R. Chen & C. T. Chang); 2♀, same locality, reared from *G. rubrum*, emgd. 3. II. 2008 (J. R. Chen); 1♂, Wulai, Jiajiuliao, 200m, 9. VI. 2008 (Y. F. Hsu); 1♂, Wulai, Jiajiuliao, 150m, 10. IX. 2008 (Y. F. Hsu); 2♀, same locality, 10. IX. 2008, reared from *G. rubrum*, emgd. 14. X. 2008, HSU 08J31 (Y. F. Hsu); 1♀, Wulai, Jiajiuliao, 22. XI. 2008, reared from *Glochidion* sp., emgd. 25. XI. 2008, HSU 08L8 (Y. F. Hsu & C. H. Yen). **TAIPEI CITY:** 1♂, Shilin, Dalunweishan, 25. IX. 2006 (H. C. Huang); 1♂, Bali, Guanyingshan, 400/450m, 28. IV. 2011 (Z. H. Yen). **XINZHU Co.:** 1♂, Zhudong, 7. VIII. 2006 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Wanrong, Wanrong Forest Trail, 29. VIII. 2010 (Z. H. Yen). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Mudan, Gaoshifoshan, 4. II. 2010 (L. H. Wang); 1♀, same locality, 4. II. 2010, reared from *G. rubrum*, emgd. 19. II. 2010, HSU 10B10 (L. H. Wang); 1♂, Sandimen, 200m, 5. XI. 2011 (J. H. Lin).

Description. Adult – Forewing length 28–34 mm. Sexual dimorphism prominent. Male (PLATE 22, Figs. 116–117): Head dark brown. Antennae slightly enlarged at distal end, dark brown banded with white, naked distad. Proboscis brown. Labial palpus porrect, white. Thorax brown dorsally, white ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown dorsally, with a transverse white band anteriorly, white ventrally. Forewing nearly triangular, costa slightly convex, termen slightly convex, dorsum straight. Hindwing ovate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white discal band on both wings, disconnected into anterior spot and posterior bar on forewing, a tilted, straight band on hindwing. Margins of white band on forewing frequently bluish. Faint, gray, narrow, double

submarginal bands present on both wings. An orange subapical spot on forewing. Wing undersides ground color yellowish brown. White discal bands as those on upperside. Pale, purplish white bands present on both wings; one in discoidal cell of forewing, two along termen of both wings. Additional variegated dark markings on both wings. Fringe white checkered with brown. Female (PLATE 22, Fig. 118): Body similar to that of male, with a faint, white spot on mesothorax; additional orange scalings on dorsum of abdomen. Termen of forewing straight, hindwing flabellate; markings on wing uppersides orange, forming a disconnected discal band, a subapical spot, and a narrow band in discoidal cell on forewing; two bands on hindwing, with proximal band slightly thicker; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 83, Fig. 444) – Tegumen flat, with medial membranous window, attenuate caudad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate, slightly convex ventrally, attenuate caudad to a pointed end; sacculus with a dorsal, fin-like extension bearing minute spines. Juxta narrow, V-shaped, with dorsal tips clubbed. Phallus moderately long, up-raising distad; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 120, Fig. 592) – Corpus bursae bulbous. Signa as two small, slender, spiny bands side by side on one side of wall. Ductus bursae much shorter than corpus bursae. Sterigma forming membranous dome. Posterior apophyses slender, needle-like. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Variation. Markings on both wing surfaces are frequently reduced in individuals from the dry seasons.

Global distribution. Northern India, Himalayas, Indochina, Borneo, West to South China, Taiwan (Tsukada, 1985).

Distribution in Taiwan. Low to moderate elevations in Taiwan, also recorded from Guishan Island of Yilan county (Yamanaka, 1975; Hsu, 2013; Hsu, 2014).

Larval Host plant(s). Phyllanthaceae: various *Glochidion* species, including *G. acuminatum*, *G. philippicum*, *G. rubrum*, *G. zeylanicum*, etc. (Uchida, 1991; Hsu, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, adults on the wing throughout the year (Hsu, 2006, 2013; Lu & Chen, 2014).

Remarks. The subspecific name has been misspelt as *zoroastes* in some literature (e.g., Fruhstorfer, 1906; Hamano, 1987; Hsu, 2013).

Shirôzu (1986) suggested that *Tacoraea tayalica* Murayama & Shimonoya, 1966 should be a seasonal form of *A. cama zoroastres* in a bibliographical note, without explicitly synonymizing the name. It appears that the sole type of *tayalica* (Murayama & Shimonoya, 1966: Figs. 25, 28) possesses diagnostic characters of the male *zoroastres*, merely with broader white bands. We agree with Shirôzu's viewpoint, and synonymize *tayalica* with *zoroastres* here in (Hsu *et al*., 2021).

形態特徵：成蝶前翅長 28–34 mm。雌雄二型性顯著。雄蝶 (圖 116–117)：頭黑褐色。觸角末端略膨大、黑褐色間細白帶、頂端裸露。口器褐色。下唇鬚前伸、白色。胸部背面褐色、腹面白色。足白色，前足跗節癒合、針狀、背毛。腹部背面褐色、前端有白色橫紋，腹面白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀。後翅卵形，翅脈末端略凸出。翅背面底色黑褐色，中央有鮮明白色斑紋，於前翅分為前側斑點及後側短條紋，於後翅則為一斜帶紋；前翅白色帶紋邊緣常泛藍色；亞外緣有兩條模糊灰色細帶紋；前翅亞翅頂有橙色斑點。翅腹面底色黃褐色，白紋與翅背面相似。有淡紫色帶紋，兩道沿外緣分布、一道於前翅中室。前、後翅均另有排列較紊亂之暗色紋。緣毛黑白相間。雌蝶 (圖 118)：軀體特徵與雄蝶相似，但中胸有模糊白紋、腹部背面有橙色鱗。翅背面斑紋橙色，包括前翅中央分離帶紋、亞翅頂斑點及中室細條紋；後翅有二帶紋，內側者略粗；前足跗節分節、具爪、無毛。

雄交尾器 (圖 444)：背兜平坦，中央有間膜質區。鉤突勾狀，末端下彎。顎形突長、板狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀，腹側具略微凸起，向後漸細，尾端尖。抱器腹背側延伸成鰭狀囊突，具微小刺棘。陽基軛片窄 V 形，背

側棒狀。陽莖末端向上舉。陽莖器長度略長於陽莖基，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 592)：交尾囊泡狀。花壁呈兩小刺帶，並排位於交尾囊一側。交尾囊管明顯短於交尾囊。交尾囊孔板呈膜質半圓形。後內骨突細長，針狀。肛突葉狀，輕度骨化，後端具剛毛。

變異：乾季型個體斑紋常減退。

世界分布：印度北部、喜瑪拉雅地區、中南半島、婆羅洲、華西至華南、臺灣。

臺灣分布：分布於本島低至中海拔地區，龜山島亦有記錄。

寄主植物：多種葉下珠科饅頭果屬植物，包括裏白饅頭果、菲律賓饅頭果、細葉饅頭果、錫蘭饅頭果等。

生物學：本種是一年多代物種，全年均可見成蝶活動。

註記：本種亞種名常被誤拼為 *zoroastes* (如 Fruhstorfer, 1906; Hamano, 1986; Hsu, 2013)。

Shirôzu (1986) 於臺灣蝶類生態大圖鑑「文獻題解」中認為泰雅帶蛺蝶 *Tacoraea tayalica* Murayama & Shimonoya, 1966 是雙色帶蛺蝶之季節型，但並未明確地視為其同物異名。所謂的“泰雅帶蛺蝶”之唯一模式標本除了白色帶紋較寬外，具備雙色帶蛺蝶之所有鑑別特徵，本書贊同 Shirôzu 之論點，於本書初版 (Hsu *et al*., 2021) 將 *tayalica* 處理為 *zoroastres* 之同物異名。

Athyma opalina (Kollar, [1844]) (流帶蛺蝶／虬眉帶蛺蝶／平山三線蝶)

Limenitis opalina Kollar, [1844]: Kaschmir und das Reich der Siek 4: 427. (Type locality: “Himaleya [Himalaya], Massuri [Mussoorie, India]”)

Ssp. *hirayamai* Matsumura, 1935

PLATE 23, Figs. 119–120; PLATE 83, Fig. 445; PLATE 121, Fig. 593

Pantoporia hirayamai Matsumura, 1935: Insecta Matsumurana 10 (1-2): 42. (Type locality: "Sankakuho near Hori, Formosa")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, 1♀, Fuxing, Sileng, 1000m, 23. IX. 2014, emgd. 28. X./5. XI. 2014, HSU 14J48 (Y. M. Hsu). **XINZHU Co.:** 2♂, Jianshi, Zhenxibao, 1600m, 15. V. 2015 (L. H. Wang); 1♂, Jianshi, Zhenxibao, 18. V. 2018 (C. W. Huang); 1♂, same locality, 4. V. 2021 (C. W. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Guguan, 5. VII. 1998 (C. C. Lu); 1♂, Heping, Wuling, 5. VI. 2005 (C. C. Lu). **NANTOU Co.:** 1♂, Renai, Beidongyanshan, 20. III. 2005 (Y. F. Hsu); 1♀, Renai, Tunyuan, 1500m, 6. V. 2012 (T. H. Lin); 1♂, same locality, 1600m, 14. V. 2015 (L. Huang). **HUALIAN Co.:** 1♂, Xiulin, Huoranting, 3. IV. 2019 (C. W. Huang) (genitalia preparation JYL968). **TAIDONG Co.:** 1♀, Haiduan, Liyuan, 1800m, 18/19. VI. 2020 (Y. F. Hsu & C. W. Huang) (genitalia preparation JYL969).

Description. Adult – Forewing length 26–29 mm. Sexual dimorphism absent. Male (PLATE 23, Fig. 119): Head dark brown on vertex. Antennae slightly enlarged at distal end, dark brown, inner surface naked distad. Proboscis brown. Labial palpus porrect, white, with brown narrow band laterally. Thorax brown dorsally, white ventrally. Legs white; protarsi fused, pin-shaped, hairy. Abdomen brown with a transverse white band anteriorly, white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum straight. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with prominent white markings. On forewing, a series of discal spots arranged into a curve, a narrow band in discoidal cell, a triangular, proximal spot in cell M_2, and a series of faint, small, white submarginal markings. On hindwing, two prominent straight bands present, with proximal band attenuate inwards. Wing undersides ground color ochre, usually with a patch of purple scalings on hindwing distally. White markings similar to those on uppersides, but a faint, narrow, purple band along termen, and a short, tooth-like spot near base of hindwing. Fringe checkered. Female (PLATE 23, Fig. 120): Body and wing pattern similar to those of male, forewing broader; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 83, Fig. 445) – Tegumen flat, with medial membranous window, attenuate caudad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate, slightly produced ventrally, attenuate caudad to a blunt end; sacculus with a dorsal, fin-like extension bearing minute spines in inner half. Juxta narrow, V-shaped, with dorsal tips clubbed. Phallus moderately long, up-raising distad; aedeagus slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 121, Fig. 593) – Corpus bursae bulbous. Signa as two short, spiny bands side by side on one side of wall. Ductus bursae shorter than corpus bursae. Sterigma forming membranous dome. Posterior apophyses slender, nearly straight. Anal papillae lobe-like, weakly sclerotized, setose posteriorly.

Global distribution. Northern India, Himalayas, northern Indochina, West to South China, Taiwan (Gallo & Della Bruna, 2013).

Distribution in Taiwan. Moderate elevations in montane areas of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Not yet formally published.

Biology. Voltinism yet to be determined, but probably more than one generation a year.

Remarks. Shirôzu (1986) regards the name *eupalia* Murayama & Shimonoya, 1963 as a seasonal form of *hirayamai*, but it should be a synonym of *Athyma selenophora laela* Fruhstorfer, 1908 instead (see remarks under *Athyma selenophora*).

形態特徵：成蝶前翅長 26–29 mm。缺乏雌雄二型性。雄蝶 (圖 119)：頭頂黑褐色。觸角末端略膨大、黑褐色、頂端內側裸露。口器褐色。下唇鬚前伸、白色、側面有褐色細紋。胸部背面褐色，腹面白色。足白色，前足跗節癒合、針狀、被毛。腹部背面褐色、前端有白色橫帶，腹面白色。前翅近三角形，前緣略凸、外緣及後緣近

直線狀。後翅扇形，翅脈末端略凸出。翅背面底色黑褐色，具鮮明白色斑紋；前翅中央斑列彎曲排列，中室有窄帶紋，M_2 室內側有三角形斑紋，亞外緣有模糊白色小紋；後翅有兩道鮮明直帶紋，內側者後端較窄。翅腹面底色赭色，後翅外側常有一片紫色鱗，白色斑紋與翅背面相似；後翅外緣有模糊的紫色細帶紋，翅基有一牙狀短紋。緣毛黑白相間。雌蝶 (圖 120)：形態特徵與雄蝶相似，但前翅翅幅較寬，前足跗節分節、具爪、無毛。

雄交尾器 (圖 445)：背兜平坦，中央具膜質區。鉤突勾狀，末端下彎。顎形突長、板狀。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀，腹側略凸，後端漸窄，末端圓。抱器腹背側延伸成鰭狀突起，上生細小棘刺。陽基軛片細、U 字形，背端棒狀。陽莖末端略上舉。陽莖器長度略長於陽莖基，尾端漸細，末端尖，開口於背側。

雌交尾器 (圖 593)：交尾囊球狀。花壁為一對具刺短骨帶，並排於交尾囊一側。交尾囊管短於交尾囊。交尾囊孔板膜質、穹頂狀。後內骨突細長，甚直。肛突葉狀、略骨化，後端具剛毛。

世界分布：北印度、喜瑪拉雅地區、中南半島北部、華西至華南、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：尚未發表。

生物學：本種化數尚不確定，但一年可能不只一代。

註記： Shirôzu (1987) 將 *eupalia* Murayama & Shimonoya, 1963 視為本種之季節型，然而該學名應為異紋帶蛺蝶之同物異名 (詳見異紋帶蛺蝶說明之註記)。

Genus *ABROTA* Moore, 1857

Type species: *Abrota ganga* Moore, 1857

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus hairy with tarsomeres fused in male, naked and segmented in female; 3) antennal club slender and elongate; 4) body stout; 5) discoidal cell closed in forewing, open in

hindwing; 6) sexual dimorphism prominent, Wing uppersides yellow ochre with brown markings in male, dark brown with white markings in female.

Larvae feed on plants in Fagaceae and Hamamelidaceae.

Monotypic genus, distributed in Oriental region, including Taiwan.

瑙蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節被毛而癒合，在雌蝶則裸露而分節；3) 觸角錘部修長；4) 軀體肥碩；5) 前翅中室閉鎖、後翅開放；6) 雌雄二型性明顯，雄蝶翅背面赭黃色綴褐色斑紋，在雌蝶則黑褐色綴白紋。

幼蟲取食殼斗科及金縷梅科植物。

本屬為單種屬，分布於東洋區，包括臺灣。

Abrota ganga Moore, 1857 (瑙蛺蝶／婀蛺蝶／雄紅三線蝶)

Abrota ganga Moore, 1857: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 178, pl. 6a, f. 1. (Type locality: "Darjeeling, India")

Abrota jumna Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 764. (Type locality: "Darjeeling, [India]")

Ssp. *formosana* Fruhstorfer, 1909

PLATE 23, Figs. 121–122; PLATE 83, Fig. 446; PLATE 121, Fig. 594

Abrota ganga formosana Fruhstorfer, 1909: Entomologische Zeitschrift 22 (49): 209. (Type locality: Formosa)

Abrota pratti var. *candidii* Wileman, 1909: Annotationes Zoologicae Japonenses 7 (2): 80. (Type localities: "Lake Suisha, (Candidius), 3000 feet; Karapin, (Arisan district), 3,500 feet; Gahözan, Suisha, 4000 feet; Shūshū, (Chip-chip)")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, Fushan, 3. VIII. 2006 (L. W. Wu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Daman, 15. VI. 1986 (Z. L. Li); 1♂, same locality, 21. X. 2000 (C. C. Lu); 1♀, Fuxing, Sileng, 4. VII. 2000 (C. C.

Lu); 1♂, same locality, 6. VII. 2000 (C. C. Lu); 2♂, 3♀, same locality, 2. XI. 2003, reared from *Quercus gilva*, HSU 03L1 (J. M. Wu); 1♂, Fuxing, Northern Cross-Island Highway, 12. VII. 2005; 1♀, same locality, 3. VII. 2005; 1♀, Fuxing, 6. II. 2007, reared from *Q. gilva*, HSU 07B10 (L. H. Wang, L. W. Wu & T. W. Cheng). **XINZHU Co.:** 1♀, Jianshi, Lidongshan, 6. XI. 2005 (C. C. Lu). **YILAN Co.:** 3♂, Yuanshan, Fushan Botanicl Garden, 28. VIII. 2007 (Y. F. Hsu); 1♀, Jianshi, Lidongshan, 6. XI. 2005 (C. C. Lu). **NANTOU Co.:** 1♂, Renai, Aowanda, 5. VII. 2008 (T. W. Chen & N. Y. Tsai). **HUALIAN Co.:** 1♂, 1♀, Xiulin, Lushui, 24. VIII. 2007 (L. W. Wu); 1♀, Xiulin, Bilu, 2150m, 9. VII. 2018 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Yanping, Hongye, 500m, 25. VI. 2012 (Y. T. Lo).

Description. Adult – Forewing length 31–44 mm. Sexual dimorphism prominent. Male (PLATE 23, Fig. 119): Head brown tinged with orange. Antennae slightly enlarged distally, naked ventrally. Proboscis brown. Labial palpus porrect, creamy white, dark brown distad. Thorax brown tinged with orange dorsally, creamy white tinged with orange ventrally. Legs creamy white proximally, yellowish brown distally; protarsi fused, stab-shaped, hairy. Abdomen brown tinged with orange dorsally, creamy white tinged with orange ventrally. Forewing nearly triangular, costa convex, termen, dorsum nearly straight. Hindwing flabellate. Wing uppersides ground color dark brown, overlaid with extensive orange scalings. On forewing, a brown zigzag discal band abruptly bent in cell M_2; a narrow, brown submarginal band present; a series of faint spots between these bands. A few variegated brown markings present in discoidal cell. On hindwing, three brown bands present, roughly parallel to termen. A brown dot and a bar in discoidal cell. Two prominent orange bands present, proximal band thicker. Wing undersides ground color creamy yellow, with ochre shade around forewing apex and hindwing distally. A narrow, dark, straight band present proximally, a wavy band present distally on both forewing and hindwing. Additional irregular proximal dark bands present near discoidal cells. Hollow spots present, two in discoidal cell of forewing, three near base of hindwing. Fringe checkered. Female (PLATE 23, Fig. 122): Generally larger than male in size. Body similar to that of male in appearance. Wing uppersides ground color dark brown, with creamy white markings; a proximal, thicker white band and narrower distal white band present on both wings. A white band in discoidal cell of forewing, extending into cell M_2. Wing undersides ground color brown tinged with purple, with creamy white

patches. Markings similar to those of male in pattern. Protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 83, Fig. 446) – Tegumen convex dorsad; uncus as a hook with distal end abruptly narrowed, down-curved distad. Gnathos as elongate band. Saccus slender, elongate, rod-like. Vinculum curved. Valva elongate, tapering caudad; harpe forming long blade with distal end tilted, spiny. Juxta with a pair of fin-shaped dorsal processes, setose. Phallus stout, up-raising distad; aedeagus nearly as long as phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a narrow, spiny sclerite.

Female genitalia (PLATE 121, Fig. 594) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae shorter than corpus bursae. Sterigma forming weakly sclerotized dome. Posterior apophyses nearly as long as anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Northeast India, Himalayas, Southwest to East China, Taiwan (Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate elevations of montane zone in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Hamamelidaceae: *Eustigma oblongifolium*; Fagaceae: *Quercus glauca*, *Q. gilva*, etc. (Hsu, 2002, 2013; Lu & Chen, 2013)

Biology. Univoltine, with adults on the wing mainly in summer.

形態特徵：成蝶前翅長 31–44 mm。雌雄二型性顯著。雄蝶 (圖 121)：頭橙褐色。觸角末端略膨大、腹面裸露。口器褐色。下唇鬚前伸、乳白色，末端黑褐色。胸部背面褐色、腹面乳白色，均略帶橙色。足後半部乳白色、前半部黃褐色，前足跗節癒合、刺狀、被毛。腹部背面褐色、腹面乳白色，均帶橙色。前翅近三角形，前緣凸、

外緣及後緣近直線狀。後翅扇形。翅背面底色黑褐色，翅面大部分覆橙色鱗；前翅中央有褐色之字形帶紋、於 M_2 室折彎，亞外緣有褐色細帶紋、帶紋兩側有一列模糊斑點，中室雜有褐色斑紋；後翅有三道褐色帶紋，略與外緣平行，中室有一褐色斑點及短條。翅面有兩道橙色帶紋、內側者較粗。翅腹面底色乳黃色，前翅翅頂及後翅外半部暗赭色，翅內側有褐色狹窄直帶紋、外側有波狀紋，中室附近有不規則深色帶紋，前翅中室有兩只鏤空斑紋、後翅近翅基部則有三只。緣毛黑白相間。雌蝶(圖 122)：體型通常較雄蝶大。軀體特徵與雄蝶相似。翅背面底色黑褐色，上綴乳白色斑紋，有兩條白色帶紋，內側者較粗、外側者較細；前翅中室內有白色帶紋，延伸至 M_2 室。翅腹面底褐色泛紫色，上有白斑，斑紋與雄蝶相似。前足跗節分節、具爪、無毛。

雄交尾器 (圖 446)：背兜背側隆起，中央有膜質區。鉤突勾狀，向後漸窄、下彎。顎形突長、帶狀。囊突細長、桿狀。基腹弧彎曲。抱器修長、瓣狀，向後漸窄。抱握鋏長刃狀，末端斜切、多棘刺。陽基軛片背側成一對鰭狀突起，具剛毛。陽莖粗壯，末端略上揚。陽莖器長度略等於陽莖基，向後漸窄，末端尖，開口於背側。角狀器為一狹長、有棘刺之骨帶。

雌交尾器 (圖 594)：交尾囊卵圓形。花壁為具細刺寬骨斑。交尾囊管短於交尾囊。交尾囊孔板輕度骨化、穹頂狀。後內骨突與肛突近乎等長。肛突葉狀、中度骨化，具剛毛。

世界分布：印度東北部、喜瑪拉雅地區、華西南至華東、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：金縷梅科之秀柱花；殼斗科之青剛櫟、赤皮櫟等。

生物學：本種為一年一世代物種，成蝶主要活動於夏季。

Genus *EUTHALIA* Hübner, [1819]

Type species: *Papilio lubentina* Cramer, [1777]

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus

hairy with tarsomeres fused in male, naked and segmented in female; 3) antennal club slender and elongate; 4) body stout; 5) discoidal cell open or closed in forewing, open in hindwing; 6) several hollow markings present near base of hindwing undersides.

Larvae feed on plants in various families, including Fagaceae, Euphorbiaceae, Arecaceae, Loranthaceae, Anacardiaceae, Ebenaceae, etc.

More than 100 species have been described in *Euthalia* sensu lato (Yokochi, 2010), distributed in Oriental region.

6 species occur in Taiwan, including a species recently established.

翠蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節癒合而被毛、在雌蝶則裸露而分節；3) 觸角錘部修長；4) 軀體肥碩；5) 前翅中室開放或閉鎖、後翅開放；6) 後翅腹面基部有鏤空紋。

幼蟲取食多科植物，包括殼斗科、大戟科、棕櫚科、桑寄生科、漆樹科、柿樹科等。

廣義之翠蛺蝶屬超過 100 種，分布於東洋區。

臺灣有 6 種，包含近期移入定居 1 種。

Euthalia irrubescens Grose-Smith, 1893 (紅玉翠蛺蝶／閃電蝶／紅裙邊翠蛺蝶)

Euthalia irrubescens Grose-Smith, 1893: The annals and magazine of natural history; zoology, botany, and geology, series 6, 11: 216. (Type locality: “Omei-shan, North-west China”)

Ssp. *fulguralis* Matsumura, 1909

PLATE 23, Figs. 123–124; PLATE 84, Fig. 447; PLATE 121, Fig. 595

Sasakia fulguralis Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: “Formosa (Horisha [Puli])”)

Euthalia irrubescens gustavi Fruhstorfer, 1913: Entomologische Rundschau 30 (16): 91. (Type locality: Formosa)

Specimens examined:

HUALIAN Co.: 1♂, 1♀, Xiulin, Huitouwan, Lianhuachi, 6. IX. 2004, reared from *Taxillus* sp., emgd. 9/17. XI. 2004, HSU 04J2 (J. L. Jean). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 12. VII. 1987 (H. Y. Lee); 1♀, Yuchi, Lianhuachi, 16. VII. 1990 (H. Y. Lee); 1♀, same locality, 18. IX. 2008 (C. C. Huang); 2♂, 1♀, Renai, Huisun, 4. IV. 2021, reared from *Taxillus* sp., emgd. 5/15. VI. 2021, HSU 21D14 (Z. L. Chen, G. Y. Chen, M. H. Wu & Y. Q. Yeh) (genitalia preparation JYL1040); 3♂, 3♀, same locality, reared from *Taxillus* sp., emgd. 28. X./3. XI. 2021 (Z. C. Hung & M. H. Liu).

Description. Adult – Forewing length 29–40 mm. Sexual dimorphism absent or slightly present. Male (PLATE 23, Fig. 123): Head dark brown, with rim behind compound eye red. Antennae slightly enlarged, naked on inner surface near tip. Proboscis brown. Labial palpus porrect, dark brown dorsally, red ventrally. Thorax dark brown dorsally, brown ventrally. Legs brown; protarsi fused, stab-shaped, hairy. Abdomen dark brown dorsally, brown ventrally. Forewing nearly triangular, costa convex, termen concave, dorsum nearly straight. Hindwing ovate, with tornus somewhat acute; distal ends of veins slightly produced. Wing uppersides ground color dark brown proximally, gray distally, slightly tinged with greenish blue hue. Dark striae present in cells, forming radiate pattern; those on hindwing enlarged distad. Two faint, red bars in discoidal cell of forewing. Prominent red marking at tornus of hindwing. Wing undersides ground color paler than that of upperside. Red bars on forewing prominent. Several red markings edged by black near base of hindwing. Red marking near distal end of cells of hindwing. Fringe checkered. Female (PLATE 23, Fig. 124): Generally larger than male in size. Body similar to that of male in appearance. Wing pattern as that of male. Hindwing tornus not acute. Protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 84, Fig. 447) – Tegumen convex dorsad; uncus short, as a simple hook, strongly down-curved distad. Gnathos as elongate plate with a medial, spiny ditch. Saccus as a club-like protrusion. Vinculum curved. Valva elongate, with sacculus slightly convex ventrally, distal end bearing teeth, with dorsal ones larger. Juxta U-shaped, with a pair of fin-shaped dorsal processes, setose. Phallus stout, up-raising distad; aedeagus

slightly longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a sclerite with several up-raising spines.

Female genitalia (PLATE 121, Fig. 595) – Corpus bursae ovate. Signa as two elongate, spiny bands side by side on one side of wall. Ductus bursae shorter than corpus bursae, partially sclerotized posteriorly. Posterior apophyses shorter than anal papillae. Anal papillae sclerotized basally, weakly sclerotized distally, setose posteriorly.

Global distribution. West to East China, Taiwan (Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate elevations of montane zone in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Loranthaceae: *Taxillus liquidambaricolus*, *T. lonicerifolius*, *T. tsaii*, etc. (Uchida, 1991; Hsu, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing in all season except winter (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 29–40 mm。雌雄二型性略有或缺乏。雄蝶 (圖 123)：頭褐色。複眼後側輪緣紅色。觸角端部略膨大、內側裸露。口器褐色。下唇鬚前伸、背面黑褐色、腹面紅色。胸部背面黑褐色，腹面褐色。足褐色，前足跗節癒合、刺狀、被毛。腹部背面黑褐色，腹面褐色。前翅近三角形，前緣凸、外緣凹、後緣近直線狀。後翅卵形，臀區略尖，翅脈末端略凸出。翅背面底色內側黑褐色、外側灰色，略泛藍綠色，翅室內有黑褐色條紋，作輻射狀，於後翅者末端變粗；前翅中室內有二道模糊紅色短條紋；後翅臀區有鮮明紅色斑紋。翅腹面底較淺，前翅紅色短條紋鮮明，後翅基部有數只帶黑色邊之紅紋、翅室末端有紅紋。緣毛黑白相間。雌蝶 (圖 124)：體型較大。形態特徵與雄蝶相似，但後翅臀區較鈍，前足跗節分節、具爪、無毛。

雄交尾器 (圖 447)：背兜背側隆起。鉤突短、勾狀，末端明顯下彎。顎形突細長、帶狀，中央有具刺溝槽。囊突為棒狀突起。基腹弧彎曲。抱器修長、瓣狀，抱器腹

腹側略凸起，末端具齒突，位於背側者較大型。陽基軛片 U 字形，其背側具一對鰭狀突起，具剛毛。陽莖粗壯，末端上揚。陽莖器長度略長於陽莖基，向後漸窄，末端尖，開口於背側。角狀器為一生有數只朝上小刺之骨片。

雌交尾器 (圖 595)：交尾囊卵圓形。花壁為一對具刺細長骨斑，並排於交尾囊一側。交尾囊管短於交尾囊，後端部分骨化。後內骨突短於肛突。肛突基部骨化，前端輕度骨化，後端具剛毛。

世界分布：華西至華東、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：桑寄生科之大葉桑寄生、忍冬桑寄生、蓮華池寄生等。

生物學：本種為一年多代物種，成蝶活動於冬季以外之季節。

Euthalia phemius (Doubleday, [1848]) (尖翅翠蛺蝶)

PLATE 24, Figs. 125–126; PLATE 84, Fig. 448; PLATE 121, Fig. 596

Itanus phemius Doubleday, [1848]: The Genera of Diurnal Lepidoptera 1: pl. XLI, f. 4. (Type locality: Sylhet)

Adolias sancara Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 195. (Type locality: “N. India, Darjeeling”)

Euthalia phemius seitzi Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 675. (Type locality: Hong Kong)

Euthalia phemius ipona Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 675. (Type locality: “Ipoh, Perak”, [Malaysia])

Euthalia phemius corbeti Pendlebury, 1939: Journal of the Federated Malay States Museums 18: 389–390, pl. 6, fig. 15. (Type locality: Langkawi)

Specimens examined:

JILONG CITY: 2♀, Nuannuan, 17. X. 2019, reared from *Mangifera indica*, emgd. 11. XII. 2019 (J. F. Shen) (genitalia preparation JYL1006); 2♂, Zhongshan, Wuqiaotou, 1. XI. 2019, reared from *M. indica*, emgd. 26. XI./7. XII. 2019, HSU 19L2 (K. L. Chen, H. C. Huang, Y. F. Hsu & C. C. Lu, jr.) (genitalia preparation JYL1005); 1♂, same locality, 28. XII. 2019, reared from *M. indica*, emgd. 22. I. 2020 (C. C. Lu, jr.). **XINBEI CITY:** 1♂, 1♀, Xindian, Guishan, 22. XII. 2020, reared from *M. indica*, emgd. 30. XII. 2020.

/1. I. 2021, HSU 20M12 (Y. F. Hsu). **TAIPEI CITY:** 3♂, 2♀, Neihu, 11. XI. 2019, reared from *M. indica*, emgd. 11. XI. 2019/16. I. 2020, HSU 19L24 (H. C. Huang); 2♂, Neihu, Dagouxi, 2. I. 2020, reared from *M. indica*, emgd. 25. II. 2020, HSU 20A19 (H. C. Huang); 1♂, same locality, 2. II. 2020, reared from *M. indica*, emgd. 14. III. 2020, HSU 20B12 (Y. F. Hsu, H. C. Huang & C. C. Lu, jr.); 1♂, Nangang, Yucheng Park, 26. XII. 2020, reared from *M. indica*, emgd. 30. XII. 2020, HSU 20M17 (K. L. Chen, H. C. Huang, Y. F. Hsu & C. C. Lu, jr.); 2♂, Wenshan, Jingmei, 24. XI. 2020, reared from *M. indica*, emgd. 10/30. XII. 2020, HSU 20L12 (Y. F. Hsu); 1♂, 2♀, Wenshan, NTNU, Gongguan campus, 26. XI. 2020, reared from *M. indica*, emgd. 10/22. XII. 2020, HSU 20L13 (Y. F. Hsu); 1♀, Wenshan, Wanlong, 17. XII. 2020, reared from *M. indica*, emgd. 27. XII. 2020, HSU 20M10 (Y. F. Hsu).

Description. Adult – Forewing length 24–40 mm. Sexual dimorphism prominent. Male (PLATE 24, Fig. 125): Head dark brown, with rim behind compound eye grayish white. Antennae slightly enlarged, naked ventrally near tip. Proboscis grayish white. Labial palpus porrect, dark brown dorsally, grayish white ventrally. Thorax dark brown dorsally, yellowish white ventrally. Legs brown dorsally, yellowish white ventrally; protarsi fused, stab-shaped, hairy. Abdomen dark brown dorsally, creamy white ventrally. Forewing nearly triangular, costa convex, termen concave, dorsum nearly straight. Hindwing ovate, with tornus acute; distal ends of veins slightly produced. Wing uppersides ground color brown, darkened proximally. A few fine, white striae present immediately outside of discoidal cell of forewing. Three dark spots in discoidal cell of forewing. A prominent light blue patch present distally on hindwing. Wing undersides ground color pale brown, a dark brown discal band and pale blue margins present on both wings. Hollow spots present, two in discoidal cell of forewing, four near base of hindwing. Fringe white. Female (PLATE 24, Fig. 126): Body similar to that of male in appearance, wings broader, hindwing tornus not acute. Ground color of wing uppersides paler, a prominent white, tilted band on forewing, with two minute white spots near forewing apex. No blue patch on hindwing. Wing pattern of underside as that of male but white band and spots present on forewing as upperside. Protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 84, Fig. 448) – Tegumen convex dorsad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate, narrow band. Saccus elongate,

tapering anteriorly, with blunt distal end. Vinculum curved. Valva elongate, tapering caudad to pointed distal end; sacculus heavily sclerotized, stout at base. Juxta as a pair of sclerotized spiny, setose, columnar processes, setose. Phallus elongate, slightly down-curved distad; aedeagus approximately 1.5X length of phallobase, with a blunt, left extension at caudal end. Cornutus as elongate, slender, spiny band.

Female genitalia (PLATE 121, Fig. 596) – Corpus bursae ovate. Signa as two elongate, spiny bands side by side on one side of wall. Ductus bursae shorter than corpus bursae, weakly sclerotized posteriorly. Anal papillae large, lobe-like, moderately sclerotized, setose posteriorly.

Global distribution. Himalayas, India, Indochina, Malaya, Borneo, South China (Yago *et al*., 2012), recently introduced to Taiwan.

Distribution in Taiwan. Lowland in northern and central Taiwan, including urban areas, for the present but spreading southwards.

Larval Host plant(s). Anacardiaceae: *Mangifera indica*.

Biology. Multivoltine, with adults on the wing throughout the year.

Remarks. Matsumura (1919) mentioned that this species occurred in Taiwan but rare. No subsequent record of this species in Taiwan existed, and the species was subsequently excluded in all checklists or catalogues on Taiwan butterflies (e.g., Shirôzu, 1960; Shirôzu & Ueda, 1992; Hsu, 1999). Nevertheless, this species has recently invaded Taiwan, with the first reliable observation made near Jilong (Keelung) Harbor of northern Taiwan in October of 2019. It has been spreading southwards since then.

形態特徵：成蝶前翅長 24–40 mm。雌雄二型性顯著。雄蝶 (圖 125)：頭黑褐色。複眼後側輪緣灰白色。觸角略膨大、近端部腹面裸露。口器灰白色。下唇鬚前伸，背面黑褐色、腹面灰白色。胸部背面黑褐色，腹面黃白色。足背面褐色，腹面黃白色，

前足跗節癒合、刺狀、被毛。腹部背面黑褐色，腹面乳白色。前翅近三角形，前緣凸、外緣凹、後緣近直線狀。後翅卵形，臀區尖，翅脈末端略凸出。翅背面底色褐色，內側顏色較深；前翅中室有三只深色斑點，中室外側有數道白色細紋；後翅外側有鮮明亮藍色斑塊。翅腹面底色淡褐色，中央有黑褐色帶紋及淡藍色邊；前翅中室有兩只鏤空斑紋；後翅基部則有四只鏤空斑紋。緣毛白色，翅脈末端黑褐色。雌蝶 (圖 126)：軀體特徵與雄蝶相似，但翅幅較寬、後翅臀區較鈍。翅背面底色較淺；前翅有鮮明白色斜帶紋，近翅頂處有二只小白斑；後翅無藍色斑紋。翅腹面斑紋與雄蝶相似，但前翅背面有白色帶紋及斑點。前足跗節分節、具爪、無毛。

雄交尾器 (圖 448)：背兜背側隆起。鉤突勾狀，向後漸窄，下彎。顎形突細長、帶狀。囊突細長，向前漸窄，末端鈍。基腹弧彎曲。抱器修長、瓣狀，向後漸窄，末端尖。抱器腹高度骨化，基部粗壯。陽基軛片為一對具有許多小刺棘的柱狀骨化突起，具剛毛。陽莖細長，略下彎。陽莖器長度約陽莖基 1.5 倍，後端左側漸窄，末端鈍。角狀器為一細長帶狀具刺骨帶。

雌交尾器 (圖 596)：交尾囊卵圓形。花壁為一對具刺細長骨斑，並排於交尾囊一側。交尾囊管短於交尾囊，後端輕度骨化。肛突大型、葉狀、中度骨化，後端具剛毛。

世界分布：喜瑪拉雅地區、印度、中南半島、馬來亞、婆羅洲、華南。近年已入侵臺灣。

臺灣分布：目前分布於本島中部和北部之低海拔地區，並有南下趨勢。

寄主植物：漆樹科之檬果。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：Matsumura (1919) 提及本種分布於臺灣，數量稀少，但其後並無任何其他關於本種的臺灣記錄，且往後的臺灣蝴蝶名錄中本種被剔除 (如 Shirôzu, 1960; Shirôzu & Ueda, 1992; Hsu, 1999)。然而，本種業已於近年入侵臺灣，首筆可靠目擊記錄見於 2019 年 10 月，位北臺灣基隆港附近，隨即向南擴張。

Euthalia kosempona Fruhstorfer, 1908 (甲仙翠蛺蝶／甲仙綠蛺蝶／黃翅翠蛺蝶)

PLATE 24, Figs. 127–128; PLATE 84, Fig. 449; PLATE 122, Fig. 597

Euthalia sahadeva kosempona Fruhstorfer, 1908: Entomologische Zeitschrift 22 (29): 118. (Type locality: "Kosempo, Formosa [Jiaxian, Taiwan]")

Euthalia hebe shinnin Fruhstorfer, 1908: Entomologische Zeitschrift 22 (29): 119. (Type locality: "Kanshirei, Formosa [Guanzhiling, Taiwan]")

Euthalia shinshin Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 570. (subsequent incorrect spelling)

Euthalia pyrrha var. *daitoensis* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 572. (Type locality: "Formosa (Daito) [Taidong, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, 1. XI. 2005, reared from *Quercus glauca*, emgd. 25. III. 2006, HSU 05L1 (C. C. Lu, L. W. Wu & H. Y. Lee); 1♂, Wulai, Badaoershan, 21. VII. 2011 (L. H. Wang) (genitalia preparation JYL989). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sileng, 1000m, 29. X. 2013, reared from *Q. gilva*, emgd. 3. II. 2014, HSU 13K35 (W. J. Lin & Y. H. Lin); 1♂, Fuxing, Daman/Xuanyuan, 23. VI. 1999 (Y. T. Lo); 1♂, Fuxing, Daman, 6. VII. 2000 (C. C. Lu); 1♂, Fuxing, Xuanyuan, 29. VI. 2017 (L. Huang); 1♂, same locality, 27. VI. 2018 (C. W. Huang & S. Y. Chen). **YILAN Co.:** 7♂, Nanao, Shenmi Lake, 1. VII. 2001 (C. C. Lu & L. W. Wu); 1♀, Yuanshan, Fushan Botanical Garden, 800m, 28. VIII. 2007 (Y. F. Hsu). **TAIZHONG CITY:** 1♀, Heping, Guguan, 1000m, 17. VI. 2012 (Y. C. Lin). **NANTOU Co.:** 1♂, Puli, Benbuxi, 12. X. 2005, reared from *Q. pachyloma*, 25. III. 2006, HSU 05K14 (C. C. Hsieh); 1♂, Renai, Qinglu, 9. VIII. 2006 (C. C. Lu). **HUALIAN Co.:** 1♀, Zhuoxi, Zhongping Forest Trail, 500/1000m, 16. VII. 2004 (C. C. Lu). **TAIDONG Co.:** 2♂, Yanping, Hongye, 15. V. 1988 (Y. F. Hsu); 1♀, same locality, 22. IX. 2001 (L. W. Wu) (genitalia preparation JYL988).

Description. Adult – Forewing length 35–43 mm. Sexual dimorphism prominent. Male (PLATE 24, Fig. 127): Head brown tinged with olive-green, with rim behind compound eye creamy yellow. Antennae slightly enlarged near tip, naked ventrally and at tip. Proboscis brown. Labial palpus porrect, creamy yellow, dark brown dorsally and distally. Thorax brown tinged with olive-green dorsally, creamy yellow ventrally. Legs creamy yellow, turning brown distad; protarsi fused, stab-shaped, hairy. Abdomen brown tinged with olive-green dorsally, creamy yellow ventrally. Forewing nearly triangular, costa

convex; termen nearly straight, with distal ends of veins slightly produced; dorsum straight. Hindwing flabellate, termen wavy. Wing uppersides ground color brown tinged with olive-green, partially darkened. A prominent, yellow discal band present. Dark, blurred distal bands present on both wings. Three small yellowish white spots by anterior end of dark band, near apex of forewing. Two hollow bars in discoidal cell of forewing; a short, hollow bar at distal end of discoidal cell of hindwing. Two small hollow spots at base of cell CuA_1 and CuA_2 of forewing. Wing undersides ground color yellow tinged with green. Markings similar to those of uppersides, but four to five hollow spots present on hindwing proximally. Distal dark band more prominent on forewing. Fringe white, dark brown at distal end of veins. Female (PLATE 24, Figs. 128–129): Body similar to that of male, but tip of antenna not naked like male, protarsi segmented, clawed, not hairy. Wing uppersides ground color deep olive-green, partially with purple shine. Markings white instead of yellow. A prominent white discal band on forewing, tilted, from costa to vein CuA_2.Two subapical spots of forewing present, white. Discal band of hindwing reduced to two small white spots in cell $Sc+R_1$ and M_1. Wing undersides ground color pale olive-green tinged with yellow, markings of forewing as those of upperside, discal band of hindwing broken, represented as a series of small white spots.

Male genitalia (PLATE 84, Fig.449) – Tegumen convex dorsad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate with a medial, spiny ditch. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate; harpe forming long blade with distal end bent downwards, spiny. Juxta shield-like, with a pair of digitate dorsal processes, setose. Phallus stout, up-raising distad; aedeagus longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 122, Fig. 597) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae shorter than corpus bursae, forming a tubular, sclerotized ring at ostium bursae. Sterigma forming membranous dome, with lamella postvaginalis forming oval, setose sclerite. Posterior apophyses longer than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Vietnam, West to East China, Taiwan (Hsu, 2002, 2013; Yokochi,

2011).

Distribution in Taiwan. Lowland to moderate elevations in montane areas of main island of Taiwan (Hsu, 2002; Hung, 2013; Lu & Chen, 2014).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. gilva*, *Q. pachyloma*, etc. (Hsu, 2002; Lu & Chen, 2014)

Biology. Univoltine, with adults on the wing from early summer to autumn; overwintering as non-diapausing larvae (Hsu, 2002; Lu & Chen, 2014).

Remarks. The profound difference between sexes in wing pattern led Fruhstorfer to describe each sex as subspecies of different species in the same article (Fruhstorfer, 1908b).

Yokochi (2011) pointed out that the figure presumably associated with the holotype of *daitoensis* in Matsumura (1919) erroneously showing a female individual of *Limenitis dudu*, and suggested the type of this taxon may be lost or destroyed. This holotype, however, was retrieved in the Matsumura collection located in the Systematic Entomology Laboratory of Hokkaido University (SEHU). It is shown in Fig. 127 for the reference to readers of this book. This holotype is conformed to the description by Matsumura (1919) and diagnosis of the female of *kosempona*, thus *daitoensis* undoubtedly ought to be treated as a junior subjective synonym of *kosempona*.

形態特徵：成蝶前翅長 35–43 mm。雌雄二型性顯著。雄蝶 (圖 127)：頭呈帶橄欖綠之褐色。複眼後側輪緣乳黃色。觸角近端部略膨大、腹面及頂端裸露。口器褐色。下唇鬚前伸、乳黃色、背面及末端黑褐色。胸部背面帶橄欖綠之褐色，腹面乳黃色。足乳黃色、末端褐色，前足跗節癒合、刺狀、被毛。腹部背面帶橄欖綠褐色，腹面乳黃色。前翅近三角形，前緣凸、外緣近直線狀、翅脈末端略凸出、後緣直線狀。後翅扇形，外緣波狀。翅背面底色帶橄欖綠之褐色，部分深色，中央有鮮明黃色帶紋，外側有深色模糊帶紋；前翅中央帶紋前半部近翅頂有三枚黃白色小斑點，中室

有二只鏤空短條紋，CuA_1 及 CuA_2 室基部各有一鏤空小斑點；後翅中室末端有鏤空短條紋。翅腹面底色黃色泛綠色，斑紋與背面相似，但後翅內側有四至五只鏤空斑紋、前翅外側深色帶紋較鮮明。緣毛白色，翅脈末端黑褐色。雌蝶 (圖 128–129)：軀體特徵與雄蝶相似，但觸角頂端不裸露。前足跗節分節、具爪、無毛。翅背面底色深橄欖綠，部分泛紫色，斑紋白色；前翅有由前緣延伸至 CuA_2 脈之鮮明白色中央斜帶紋，翅頂有二白色小斑點；後翅中央帶紋減退為二只白色小斑點，分別位於 $Sc+R_1$ 室及 M_1 室。翅腹面底淡橄欖綠泛黃色，前翅斑紋與背面相似，後翅中央帶紋破碎為一列白色小斑點。

雄交尾器 (圖 449)：背兜背側隆起。鉤突勾狀，向後漸窄、下彎。顎形突細長、帶狀，中央有具細刺之溝槽。囊突短桿狀，末端圓鈍。基腹弧彎曲。抱器修長、瓣狀。抱握鋏長刃狀，末端下彎，上具許多刺棘。陽基軛片盾狀，背側有一對指狀突起，具剛毛。陽莖粗壯，末端上指。陽莖器長度長於陽莖基，向後漸窄，末端尖，開口於背側。

雌交尾器 (圖 597)：交尾囊卵圓形。花壁為具細刺寬骨斑。交尾囊管短於交尾囊，交尾囊孔邊有管狀骨化環。交尾囊孔板膜質、穹頂狀，後陰片形成橢圓形、具刺毛之骨片。後內骨突長於肛突。肛突葉狀、中度骨化，具剛毛。

世界分布：越南、華西至華東、臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：殼斗科之青剛櫟、赤皮櫟、捲斗櫟等。

生物學：本種為一年一代物種，成蝶主要活動於初夏至秋季，以非休眠幼蟲越冬。

註記：本種差異甚大之雌雄二型性使得 Fruhstorfer (1908b) 將本種雌雄分別描述為兩不同蝶種之亞種。

Yokochi (2011) 指出 Matsumura (1919) 圖示之 *daitoensis* 正模標本圖有問題，誤植為紫俳線蛺蝶之雌性個體，並推測該分類單元之模式標本可能已遺失或損壞。然而我等於北海道大學昆蟲分類研究之松村收藏中尋獲該正模標本，圖示於圖 127 供本書讀者參考。該正模標本與 Matsumura (1919) 之描述一致，亦與甲仙翠蛺蝶雌蝶鑑

別特徵相同，因此 *daitoensis* 無疑應被視為甲仙翠蛺蝶之次主觀異名。

***Euthalia malapana* Shirôzu & Chung, 1958 (馬拉巴翠蛺蝶／仁愛綠蛺蝶／馬拉巴綠一文字蝶)**

PLATE 24, Fig. 130; PLATE 25, Fig. 131; PLATE 84, Fig. 450; PLATE 122, Fig. 598

Euthalia malapana Shirôzu & Chung, 1958: Tyô to Ga 9 (2): 17, f. 1-4. (Type locality: "Malapa near Musha, Central Formosa [Lixing near Wushe, Central Taiwan]")

Specimens examined:

TAIZHONG CITY [= TAICHUNG Co.]: 1♀, Heping, Guguan, VII. 1988; 1♂, Heping, Shishanxi, VIII. 1988 (C. K. La) (genitalia preparation JYL1030); 1♂, same locality, 21. VII. 1997 (C. Y. Hung); 1♀, same locality, 5. IX. 2003 (J. L. Jan) (genitalia preparation YFH1581); 1♂, Heping, Baxianshan, 11. VII. 1992 (R. L. Tang).

Description. Adult – Forewing length 41–49 mm. Sexual dimorphism not prominent. Male (PLATE 24, Fig. 130): Head brown tinged with olive-green, with rim behind compound eye creamy white. Antennae slightly enlarged near tip, naked ventrally and at tip. Proboscis brown. Labial palpus porrect, creamy white, dark brown dorsally and distally. Thorax brown tinged with olive-green dorsally, creamy white tinged with green ventrally. Legs creamy white tinged with green; protarsi fused, stab-shaped, hairy. Abdomen brown tinged with olive-green dorsally, creamy white ventrally. Forewing nearly triangular, costa convex; termen slightly concave, with distal ends of veins slightly produced; dorsum straight, apex acute. Hindwing flabellate, termen wavy. Wing uppersides ground color brown tinged with olive-green. A prominent, creamy yellow discal band present, as a prominent, tilted band on forewing; as a short band attenuate posteriorly on hindwing. Dark distal bands present on both wings. Two small white spots by anterior end of dark band, near apex of forewing. Two hollow bars in discoidal cell of forewing; a short, hollow bar at distal end of discoidal cell of hindwing. Two medial white spots and two proximal hollow spots in cell CuA_2 of forewing. Wing undersides ground color pale olive-green. Markings similar to those of uppersides, but four hollow spots present on hindwing proximally. Dark distal band prominent on forewing, reduced or vestigial on hindwing. Discal band of hindwing more prominent, as a continuous white band tapering posteriorly. Fringe white, dark brown at distal end of veins. Female (PLATE 25, Fig. 131): Body and wing pattern similar to those of male; wings broader, markings

on wings white instead of creamy white, discal band of hindwing more prominent; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 84, Fig. 450) – Tegumen convex dorsad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate with a medial, spiny ditch. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate; ventral surface of costa uneven; harpe forming long blade with distal end bearing small teeth. Juxta shield-like, with a pair of fin-shaped dorsal processes, setose. Phallus stout, straight; aedeagus shorter than phallobase, tapering to fine caudal end with pointed tip, opening dorsal.

Female genitalia (PLATE 122, Fig. 598) – Corpus bursae elongate, cylindrical. Signa as two elongate bands of small spines. Ductus bursae shorter than corpus bursae, enlarged posteriorly. Sterigma forming membranous dome, with lamella postvaginalis forming a pair of thin, lobe-like sclerites with irregular margins. Posterior apophyses longer than anal papillae. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. Endemic to Taiwan (Shirôzu & Chung, 1958; Shirôzu, 1960; Yokochi, 2011; Hsu, 2013).

Distribution in Taiwan. Up to the present, only small montane areas at around 1000 m in elevation in central Taiwan (Shirôzu & Chung, 1958; Shirôzu, 1960; Yokochi, 2011; Hsu, 2013).

Larval Host plant(s). Unknown.

Biology. Univoltine, with adults on the wing from early summer to autumn (Hsu, 2013).

Remarks. This species is superficially similar to the female of *E. kosempona*, which may occur sympatrically in central Taiwan. They can be identified by the following diagnostic characters: 1) Two small white spots are present in cell CuA_2 of forewing uppersides in *malapana*, but absent in female *kosempona*. 2) Discal band of hindwing undersides

is continuous in *malapana*, but broken into a few white spots in female *kosempona*. 3) Forewing apex is acute in *malapana*, obtuse in *kosempona*.

形態特徵：成蝶前翅長 41–49 mm。雌雄二型性不顯著。雄蝶 (圖 130)：頭呈帶橄欖綠之褐色。複眼後側輪緣乳白色。觸角端部略膨大、腹面及頂端裸露。口器褐色。下唇鬚前伸、乳白色、背面及末端黑褐色。胸部背面帶橄欖綠褐色，腹面乳白色泛綠色。足乳白色泛綠色，前足跗節癒合、刺狀、被毛。腹部背面帶橄欖綠褐色，腹面乳白色。前翅近三角形，前緣凸、外緣略凹、翅脈末端略凸出、後緣直線狀、翅頂尖。後翅扇形，外緣波狀。翅背面底色帶橄欖綠褐色，中央有鮮明乳黃色帶紋，於前翅呈斜帶、於後翅則為後端減退之短帶紋。翅外側有深色帶紋；前翅深色帶紋前端近翅頂處有二只白色小斑點，中室內有二只鏤空短條。CuA_2 室中央有二只白色斑點、內側有二鏤空斑點；後翅中室末端有一鏤空短條。翅腹面底色呈淺橄欖綠色，斑紋與背面相似，但後翅內側有四只鏤空斑紋、前翅深色外側帶紋較鮮明、後翅深色帶紋減退或消失，後翅中央帶紋較鮮明，為連續白色帶紋，其末端變細。緣毛白色，翅脈末端黑褐色。雌蝶 (圖 131)：形態特徵與雄蝶相似，但翅幅較寬、翅斑紋白色，而非乳白色、後翅中央帶紋較鮮明。前足跗節分節、具爪、無毛。

雄交尾器 (圖 450)：背兜背側隆起。鉤突勾狀，末端下彎。顎形突細長、帶狀，中央有具棘刺溝槽。囊突短棍狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀。抱握鋏長刃狀，末端有棘刺。陽基軛片盾狀，背側有一對鰭狀突起，具剛毛。陽莖粗壯、挺直。陽莖器長度較陽莖基短，向後漸窄，末端尖，開口於背側。

雌交尾器 (圖 598)：交尾囊長柱狀形；花壁為一對修長具刺骨斑。交尾囊管短於交尾囊。交尾囊孔板膜質、穹頂狀，後陰片形成一對薄板狀骨板。後內骨突長於肛突。肛突葉狀、中度骨化，具剛毛。

世界分布：臺灣特有種。

臺灣分布：目前已知分布於中臺灣海拔約 1000 公尺之窄小範圍山區。

寄主植物：未知。

生物學：本種為一年一世代物種，成蝶主要活動於初夏至秋季。

註記：甲仙翠蛺蝶棲地部份與本種共域，其雌蝶與本種斑紋相似。兩者可依以下鑑別特徵區分：1) 本種前翅背面 CuA_2 室有二白色小斑點，甲仙翠蛺蝶雌蝶則無；2) 本種後翅腹面中央帶紋連續而不間斷，甲仙翠蛺蝶雌蝶則破碎為數只白斑點；3) 本種前翅翅頂尖銳，甲仙翠蛺蝶則圓鈍。

Euthalia formosana Fruhstorfer, 1908 (臺灣翠蛺蝶 / 臺灣綠蛺蝶 / 臺灣綠一文字蝶)

PLATE 25, Figs. 132–133; PLATE 85, Fig. 451; PLATE 122, Fig. 599

Euthalia formosana Fruhstorfer, 1908: Entomologische Zeitschrift 22 (25): 102. (Type locality: "Kosempo, Formosa [Jiaxian, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, 22. VII. 1985 (Y. F. Hsu); 1♀, same locality, 5. X. 1987 (Y. F. Hsu); 1♀, same locality, 30. X. 2002, reared from *Quercus glauca*, emgd. 2/9. III. 2003, HSU 02K78 (C. L. Huang); 2♂, same locality, 30. X. 2002, reared from *Q. glauca*, emgd. 3/13. III. 2003, HSU 02K80 (L. W. Wu); 1♂, same locality, 200m, 5. VI. 2005 (Y. F. Hsu); 1♀, Wulai, Fushan, Kalamoji Trail, 500m, 13. VII. 2004 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 7♂, Fuxing, Baling/ Xuanyuan, 26. VI. 1988 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Xiaoguanshan, 24. X. 2005 (L. W. Wu & L. H. Wang); 1♂, same locality, 24. X. 2005, reared from *Q. glauca*, emgd. 13. II. 2006, HSU 05K39 (L. W. Wu & L. H. Wang). **HUALIAN Co.:** 2♂, 1♀, Xiulin, Huoranting/ Xuejiachang, 9. VII. 1991 (Y. F. Hsu); 1♂, Xiulin, Longxi/ Longjian, 10. VII. 1991 (Y. F. Hsu). **TAIDONG Co.:** 6♂, Yanping, Hongye, 15. V. 1988 (Y. F. Hsu); 1♂, 1♀, Haiduan, Lidao, 18/19. VI. 2020 (C. W. Huang).

Description. Adult – Forewing length 37–50 mm. Sexual dimorphism absent. Male (PLATE 25, Fig. 132): Head brown tinged with olive-green, with rim behind compound eye creamy white. Antennae slightly enlarged near tip, naked ventrally. Proboscis brown. Labial palpus porrect, creamy white, dark brown dorsally and distally. Thorax brown tinged with olive-green dorsally, creamy white ventrally. Legs creamy white; protarsi fused, stab-shaped, hairy. Abdomen brown tinged with olive-green dorsally, creamy white ventrally. Forewing nearly triangular, costa slightly convex; termen nearly straight, with distal ends of veins slightly produced; dorsum straight. Hindwing flabellate, with distal ends of veins produced. Wing uppersides ground color brown tinged with olive-

green, with deep green or purple hue at various portions, darkened along termen. A prominent, creamy white discal band present, outer margin diffused on hindwing. Dark, distal bands present on both wings. Three small white spots at anterior end of dark band, near apex of forewing. Two hollow bars in discoidal cell of forewing; a short, hollow bar at distal end of discoidal cell of hindwing. Wing undersides ground color yellowish white tinged with olive-green. Markings similar to those of uppersides, but four hollow spots present on hindwing proximally. Distal dark band more prominent on forewing. Fringe white, dark brown at distal end of veins. Female (PLATE 25, Fig. 133): Body and wing pattern similar to those of male; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 85, Fig. 451) – Tegumen convex dorsad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate with a medial, spiny ditch. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate; harpe forming long blade with distal end blunt, spiny. Juxta shield-like, with a pair of digitate dorsal processes, setose. Phallus stout, up-raising distad; aedeagus longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a sclerotized, spiny band.

Female genitalia (PLATE 122, Fig. 599) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae nearly as long as corpus bursae. Sterigma forming membranous dome. Posterior apophyses nearly as long as anal papillae, with anterior ends beveling. Anal papillae lobe-like, moderately sclerotized, setose.

Global distribution. This species is endemic to Taiwan (Shirôzu, 1960; Yokochi, 2012; Hsu, 2002, 2013).

Distribution in Taiwan. Lowland to moderate elevations in montane areas of main island of Taiwan (Hsu, 2002; Lu & Chen, 2014).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. longinux*, *Lithocarpus hancei*; Euphorbiaceae: *Mallotus philippensis* (Uchida, 1991; Hsu, 2002; Hung, 2013; Lu & Chen, 2014).

Biology. Univoltine, with adults on the wing from early summer to autumn; overwintering as non-diapausing larvae (Hsu, 2002; Lu & Chen, 2014).

Remarks. This species resembles *E. insulae*, which is partially sympatric in occurrence. This species usually inhabits forests lower in elevations compared to the latter. They may be identified using the following features: 1) The white discal band on hindwing undersides is straight along inner margin in *insulae*, uneven in *formosana*; 2) The white discal band on hindwing undersides is well defined and clearly margined with dark brown in *insulae*, poorly defined and only partially margined in *formosana*; 3) The white discal band on hindwing extends well into cell CuA_2 of hindwing in *insulae*, barely so in *formosana*; 4) The white discal band of *insulae* is narrower than that of *formosana*.

形態特徵：成蝶前翅長 37–50 mm。無雌雄二型性。雄蝶 (圖 132)：頭呈帶橄欖綠之褐色。複眼後側輪緣乳白色。觸角端部略膨大、腹面裸露。口器褐色。下唇鬚前伸、乳白色、背面及末端黑褐色。胸部背面帶橄欖綠之褐色，腹面乳白色。足乳白色，前足跗節癒合、刺狀、被毛。腹部背面帶橄欖綠之褐色，腹面乳白色。前翅近三角形，前緣略凸、外緣近直線狀、翅脈末端略凸出、後緣直線狀。後翅扇形，翅脈末端凸出。翅背面底色帶橄欖綠之褐色，並常有程度不同之深綠或紫色光澤，外緣色深，中央有鮮明乳白色帶紋，於後翅者外側界限模糊，翅外側有暗色帶紋；前翅中央帶紋前半部末端近翅頂處有三枚白色小斑，中室內有二只鏤空短條紋；後翅中室末端有鏤空短條紋。翅腹面底色帶橄欖綠之黃白色，斑紋與背面相似，但後翅內側有四只鏤空斑紋、前翅外側暗色帶紋較鮮明。緣毛白色，翅脈末端黑褐色。雌蝶 (圖 133)：形態特徵與雄蝶相似，但前足跗節分節、具爪、無毛。

雄交尾器 (圖 451)：背兜背側隆起。鉤突勾狀，末端下彎。顎形突細長、帶狀，中央有具刺溝槽。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀。抱握鋏長刃狀，末端鈍、具棘刺。陽基軛片盾狀，背側有一對指狀突起，具剛毛。陽莖粗壯，末端上舉。陽莖器長度較陽莖基長，向後漸窄，末端尖，開口於背側。角狀器為一具細刺之骨片。

雌交尾器 (圖 599)：交尾囊卵圓形。花壁為一具刺寬骨斑。交尾囊管與交尾囊近乎等長。交尾囊孔板膜質、穹頂狀。後內骨突與肛突近乎等長，前端斜切。肛突葉狀、中度骨化，具剛毛。

世界分布：臺灣特有種。

臺灣分布：本島低至中海拔山區。

寄主植物：殼斗科之青剛櫟、毽子櫟、阿里山三斗石櫟；大戟科之粗糠柴。

生物學：本種為一年一世代物種，成蝶主要活動於初夏至秋季，以非休眠幼蟲越冬。

註記：本種與窄帶翠蛺蝶相似且部分共域。本種之棲息海拔通常較後者低，兩者可依以下特徵區分：1) 窄帶翠蛺蝶後翅腹面中央白色帶紋內側邊緣呈直線狀，在臺灣翠蛺蝶則不平整；2) 窄帶翠蛺蝶後翅腹面中央白色帶紋鑲鮮明黑褐色細邊，在臺灣翠蛺蝶則界限模糊，僅部分有黑邊；3) 窄帶翠蛺蝶後翅中央白色帶紋明顯延伸入 CuA_2 室，臺灣翠蛺蝶則否；4) 窄帶翠蛺蝶翅面白色帶紋通常較臺灣翠蛺蝶為窄。

Euthalia insulae Hall, 1930 (窄帶翠蛺蝶)

PLATE 25, Figs. 134–135; PLATE 85, Fig. 452; PLATE 122, Fig. 600

Euthalia thibetana insulae Hall, 1930: The Entomologist 63: 159. (Type locality: "Horisha, Formosa [Puli, Taiwan]")

Euthalia thibetana uraiana Murayama & Shimonoya, 1963: Tyô to Ga 13 (4): 89, f. 9-10. (Type locality: "Urai, Formosa [Wulai, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, 500m, 10. VII. 1998 (Y. T. Lo). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, 1500m, 3. IX. 2005, reared from *Quercus longinux*, emgd. 16. I. 2006, HSU 05J3 (Y. F. Hsu). **YILAN Co.:** 1♀, Nanao, Jinchaoshan, 1100m, 29. VI. 2001 (Y. F. Hsu & C. C. Lu); 2♂, Nanao, same locality, 1200m, 29. VI. 2002 (L. W. Wu); 1♂, same locality, 1. VII. 2002 (L. W. Wu); 1♀, Yuanshan, Fushan Botanical Garden, 10. VIII. 2001 (M. L. Jeng); 1♀, same locality, 800m, 28. VIII. 2007 (Y. F. Hsu) (genitalia preparation JYL987); 1♀, Datong, Tuleng, 1600m, 11. VIII. 2009 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Guguan, Bojinjiashan, emgd. 17. III. 2001 (C. C. Lu); 1♂, 1♀, Heping, Anmashan, 28. VII. 2003 (H. C. Huang). **NANTOU Co.:** 1♀, Renai, Meifeng, 20. VIII. 1998 (C. M. Wu); 1♂, Xinyi, Zizhong, 2000m, 10. VII. 2004 (R. K. Dong). **HUALIAN Co.:** 1♀, Xiulin, Guanyuan, 2300m, reared from *Q. spinosa*, emgd. 13. VIII. 2003 (H. C. Huang); 1♂, Xiulin, Bilu, 2150m,

29. VI. 2018, emgd. 5. VII. 2018 (H. C. Huang).

Description. Adult – Forewing length 36–48 mm. Sexual dimorphism absent. Male (PLATE 25, Fig. 134): Head brown tinged with olive-green, with rim behind compound eye creamy white. Antennae slightly enlarged near tip, naked ventrally. Proboscis brown. Labial palpus porrect, creamy white, dark brown dorsally and distally. Thorax brown tinged with olive-green dorsally, creamy white ventrally. Legs creamy white; protarsi fused, stab-shaped, hairy. Abdomen brown tinged with olive-green dorsally, creamy white ventrally. Forewing nearly triangular, costa slightly convex; termen nearly straight, with distal ends of veins slightly produced; dorsum straight. Hindwing flabellate, termen wavy. Wing uppersides ground color brown tinged with olive-green, darkened along termen. A prominent, creamy white discal band present, outer margin well-defined, on hindwing. Dark, distal bands present on both wings. Two small white spots at anterior end of dark band, near apex of forewing. Two hollow bars in discoidal cell of forewing; a short, hollow bar at distal end of discoidal cell of hindwing. Wing undersides ground color yellowish white tinged with olive-green. Markings similar to those of uppersides, but four hollow spots present on hindwing proximally. Distal dark band more prominent on forewing. Fringe white, dark brown at distal end of veins. Female (PLATE 25, Fig. 135): Body and wing pattern similar to those of male; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 85, Fig. 452) – Tegumen convex dorsad; uncus as a simple hook, pointing downwards distad. Gnathos as elongate plate with a medial, spiny ditch. Saccus as short rod with blunt distal end. Vinculum curved. Valva elongate; harpe forming long blade with distal end rounded, spiny. Juxta shield-like, with a pair of digitate dorsal processes, setose. Phallus stout, up-raising distad; aedeagus longer than phallobase, tapering to fine caudal end with pointed tip, opening dorsal. Cornutus as a sclerotized, spiny band.

Female genitalia (PLATE 122, Fig. 600) – Corpus bursae ovate. Signa as broad patch of minute spines. Ductus bursae nearly as long as corpus bursae. Sterigma forming membranous dome. Posterior apophyses nearly as long as anal papillae. Anal papillae

lobe-like, moderately sclerotized, setose.

Global distribution. South China and Taiwan (Hsu, 2002, 2013; Yokochi, 2012).

Distribution in Taiwan. Lowland to moderate elevations in montane areas of main island of Taiwan (Hsu, 2002; Lu & Chen, 2014).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. longinux*, *Q. gilva*, *Q. stenophylloides*, *Q. spinosa*, *Castanopsis formosana*, etc. (Hsu, 2002; Hung, 2013; Lu & Chen, 2014)

Biology. Univoltine, with adults on the wing from early summer to autumn; overwintering as non-diapausing larvae (Hsu, 2002; Lu & Chen, 2014).

Remarks. This species was considered an insular race of continental *E. thibetana* for a long time (e.g., Shirôzu, 1960; Hamano, 1987; Shirôzu & Ueda, 1992) until Koiwaya (1996) pointed out that these two taxa occur sympatrically in continental China and differ considerably in male genitalia, thus representing two distinct species. Koiwaya's treatment was followed by subsequent researchers (e.g., Yokochi, 2012; Hsu, 2013).

形態特徵：成蝶前翅長 36–48 mm。無雌雄二型性。雄蝶 (圖 134)：頭呈帶橄欖綠之褐色。複眼後側輪緣乳白色。觸角端部略膨大、腹面裸露。口器褐色。下唇鬚前伸、乳白色、背面及末端黑褐色。胸部背面帶橄欖綠之褐色，腹面乳白色。足乳白色，前足跗節癒合、刺狀、被毛。腹部背面帶橄欖綠之褐色，腹面乳白色。前翅近三角形，前緣略凸、外緣近直線狀、翅脈末端略凸出、後緣直線狀。後翅扇形，外緣波狀。翅背面底色帶橄欖綠之褐色，外緣色深，中央有鮮明乳白色帶紋，於後翅者外側界限明顯，翅外側有暗色帶紋；前翅中央帶紋前半部末端近翅頂處有二只白色小斑，中室內有二只鏤空短條紋；後翅中室末端有鏤空短條紋。翅腹面底色帶橄欖綠之黃白色，斑紋與背面相似，但後翅內側有四只鏤空斑紋、前翅外側深色帶紋較鮮明。緣毛白色，翅脈末端黑褐色。雌蝶 (圖 135)：形態特徵與雄蝶相似，但前足跗節分節、具爪、無毛。

雄交尾器 (圖 452)：背兜背側隆起。鉤突勾狀，末端下彎。顎形突細長、帶狀，中央有具刺溝槽。囊突短桿狀，末端鈍。基腹弧彎曲。抱器修長、瓣狀。抱握鋏長刃狀，末端圓形、具棘刺。陽基軛片盾狀，背側有一對指狀突起，具剛毛。陽莖粗壯，末端上揚。陽莖器長度較陽莖基長，向後漸窄，末端尖，開口於背側。角狀器為一具細刺之骨片。

雌交尾器 (圖 600)：交尾囊卵圓形。花壁為一具刺寬骨斑。交尾囊管與交尾囊近乎等長。交尾囊孔板膜質、穹頂狀。後內骨突與肛突近乎等長。肛突葉狀、中度骨化，具剛毛。

世界分布：華南及臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：殼斗科之青剛櫟、毽子櫟、赤皮櫟、狹葉櫟、高山櫟、臺灣苦櫧等。

生物學：本種為一年一世代物種，成蝶主要活動於初夏至秋季，以非休眠幼蟲越冬。

註記：本種長期被認為是大陸性物種西藏翠蛺蝶 *E. thibetana* 的島嶼亞種 (如 Shirôzu, 1960; Hamano, 1986; Shirôzu & Ueda, 1992)。Koiwaya (1996) 指出兩者在中國大陸共域且雄蝶交尾器有差異，因而將其分為不同種，其後研究者均從其說 (如 Yokochi, 2012; Hsu, 2013)。

Subfamily PSEUDERGOLINAE Jordan, 1898

This subfamily was often recognized as a tribe, Pseudergolini, within Limenitidinae (e.g., Ackery *et al*., 1999; Wahlberg *et al*., 2003), but recent phylogenetic studies mostly recognize it as a subfamily (Wahlberg *et al*., 2009; Espeland *et al*., 2018).

This subfamily is mainly distributed in the Oriental region.

In Taiwan, 1 species in 1 genus is known.

秀蛺蝶亞科

本亞科過去常被視為線蛺蝶亞科下之一族，但近期親緣關係研究多認為應單獨成一亞科。

本亞科成員主要分布於東洋區。

臺灣有 1 屬 1 種。

Genus *DICHORRAGIA* Butler, [1869]

Type species: ***Adolias nesimachus*** **Boisduval, [1846]**

Diagnostic characters may include the following: 1) labial palpus with 3rd segment 1/2 length of 2nd segment; 2) protarsus hairy, clawless in male, naked, spiny, with claws in female; 3) wings dark brown, with white dots and striae.

Larval hostplants are plants in Sabiaceae.

Tsukada (1991) recognized 3 species, distributed in the Oriental region, eastern Palearctic and western Australian regions.

1 species occurs in Taiwan.

流星蛺蝶屬

形態特徵如下：1) 下唇鬚第三節長度僅為第二節之一半；2) 雄蝶前足跗節被毛、無爪，雌蝶則裸露、有棘刺、具爪；3) 翅黑褐色，綴白色斑點及條紋。

幼蟲取食清風藤科植物。

Tsukada (1991) 將本屬分為 3 種，分布於東洋區、古北區東部及澳洲區西部。

臺灣有 1 種。

Dichorragia nesimachus **(Doyère, [1840]) (流星蛺蝶／電蛺蝶／流墨蛺蝶／墨蝶)**

Adolias nesimachus Doyère, [1840]: Le règne animal distribué d'après son organisation, Insectes Atlas 2: pl. 139, f. 1. (Type locality: “Himalayas”)

Ssp. *formosanus* Fruhstorfer, 1909

PLATE 25, Fig. 136; PLATE 26, Fig. 137; PLATE 85, Fig. 453; PLATE 123, Fig. 601

Dichorragia nesimachus formosanus Fruhstorfer, 1909: Entomologische Zeitschrift 22 (41): 167.

(Type locality: “Polisha [Puli], Formosa”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Shiding, Ergeshan, V. 2007, reared from *Meliosma squamulata*, emgd. 17. VI. 2007, HSU 07E49 (C. L. Huang); 1♂, Bali, Guanyinshan, 400/450m, 28. IV. 2011 (Z. H. Yen) (genitalia preparation JYL1045). **TAIPEI CITY:** 1♀, Neihu, Dagouxi, 30. X. 2018, emgd. 21. XI. 2018 (L. Huang) (genitalia preparation JYL1046). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Daman, 7. VIII. 2007, reared from *M. pinnata* [= *M. rhoifolia*], emgd. 1. IX. 2007, HSU 07H10 (C. L. Huang). **JIAYI Co.:** 1♂, Alishan, Dabang, 29. X. 2011, reared from *M. rhoifolia*, emgd. 21. XI. 2011, HSU 11K35 (C. Y. Liao).

Description. Adult – Forewing length 31–44 mm. Sexual dimorphism absent. Male (PLATE 25, Fig. 136): Head dark brown, rim behind compound eyes white. Antennae slightly enlarged at distal end, dark brown. Proboscis reddish brown. Labial palpus porrect, hairy, dark brown, with lateral white band. Thorax dark brown. Legs dark brown, with white band on foreleg; protarsi fused, stab-shaped, hairy. Abdomen brown. Forewing triangular; costa convex; termen, dorsum nearly straight. Hindwing flabellate, with termen wavy. Wing uppersides ground color dark brown tinged with blue. A series of discal spots on both wings, mostly white on forewing, bluish purple on hindwing. A series of similar, proximal markings present, with those near forewing costa elongate, those on hindwing reduced. A series of dark postdiscal spots on hindwing. A series of V-shaped, white, submarginal markings on both wings, sometimes decorated with additional, faint, V-shaped markings on forewing. Two inconspicuous bars in discoidal cell of forewing. A series of small white dots present along termen of both wings. Wing undersides ground color paler than that of upperside. White markings and postdiscal spots more prominent. Two bars in discoidal cell conspicuous, purple. Fringe white, checkered with brown. Female (PLATE 26, Fig. 137): Body and wing pattern similar to those of male, usually larger in size; protarsi segmented, clawed.

Male genitalia (PLATE 85, Fig. 453) – Tegumen convex dorsad; uncus with base broad, forming strongly down-curved beak distally. Gnathos as elongate band with prominent nail-like, sclerotized, medial disc. Saccus broad at base, nipple-shaped.

Vinculum strongly curved dorsally. Valva ligulate, with ventral rough, wrinkled. Juxta as a plate with a pair of dorsal, fin-like lobes. Phallus elongate, straight, with caudal end membranous; aedeagus longer than phallobase, with distal end beveling, opening dorsal. Cornutus as a narrow sclerite with a few spines.

Female genitalia (PLATE 123, Fig. 601) – Corpus bursae bulbous. Signa as a pair of spiny sclerites on opposite walls. Ductus bursae shorter than corpus bursae, sclerotized. Sterigma forming funnel-like chamber. Posterior apophyses shorter than anal papillae, slender, curved. Anal papillae semi-circular, with margin heavily sclerotized, setose posteriorly.

Global distribution. Northeast India, Indochina, Southeast Asia, Korea, Japan, West to East China, Taiwan (Tsukada, 1991; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Sabiaceae: *Meliosma rhoifolia*, *M. squamulata*, *M. simplicifolia*, *M. callicarpifolia*, etc. (Chang, 1972; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, with adults on the wing in all seasons except winter (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 31–44 mm。無雌雄二型性。雄蝶 (圖 136)：頭黑褐色。複眼後方輪緣白色。觸角末端略膨大、黑褐色。口器紅褐色。下唇鬚前伸、被毛、黑褐色、側面有白條。胸部黑褐色。足黑褐色，前足有白條帶；前足跗節癒合、刺狀、被毛。腹部褐色。前翅三角形，前緣凸、外緣及後緣近直線狀。後翅扇形，外緣波狀。翅背面底色黑褐色泛藍色，中央有一列斑點，前翅者大致呈白色、後翅者藍紫色，內側有一列與中央斑點相似之斑紋，前翅近前緣者長形、後翅者減退，亞外緣有 V 字形白紋，前翅者有時另飾以模糊 V 字形紋，外緣有一列白色小點；前翅中室

內有二只不鮮明短紋；後翅中央後側有一列深色斑點。翅腹面底色較淺，白色斑紋與中央後側斑點較鮮明，前翅中室短條紋明顯呈紫色。緣毛白色鑲褐色。雌蝶 (圖 137)：形態特徵與雄蝶相似，但體型通常較大，前足跗節分節、具爪。

雄交尾器 (圖 453)：背兜背側隆起。鉤突基部寬，末端形成明顯下彎之喙狀。顎形突細長、帶狀，中央有骨化指甲狀骨盤。囊突基部寬、乳頭狀。基腹弧背側明顯彎曲。抱器舌狀，腹側粗糙、有皺紋。陽基軛片板狀，背側有一對鰭狀突起。陽莖細長、筆直，末端膜質。陽莖器長度長於陽莖基，末端斜切，開口於背側。角狀器為一有棘刺之細長骨片。

雌交尾器 (圖 601)：交尾囊球狀。花壁為一對具刺骨斑，位於交尾囊壁對側。交尾囊管骨化，短於交尾囊。交尾囊孔板形成漏斗狀腔室。後內骨突短於肛突，細長、彎曲。肛突半圓形，邊緣高度骨化，後端具剛毛。

世界分布：印度東北部、中南半島、東南亞、朝鮮半島、日本、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：清風藤科之山豬肉、綠樟、單葉泡花樹、紫珠葉泡花樹等。

生物學：本種為一年多世代物種，成蝶除冬季外皆可見。

Subfamily APATURINAE Boisduval, 1840

This subfamily can be recognized by distinctive male genitalia: aedeagus long, saccus very long, occupying most of the length of abdomen (Ackery *et al*., 1999). Although Ackery *et al*. (1999) state that it shares many characters with Charaxinae, recent phylogenetic studies, such as Wahlberg *et al*. (2009) and Espeland *et al*. (2018) recognize Biblidinae as its sister group.

This subfamily is nearly cosmopolitan in distribution, but lacking in Australia and New Zealand.

In Taiwan, 12 species in 8 genera have been recorded, including 2 species merely doubtfully recorded.

閃蛺蝶亞科

本亞科可由雄蝶特殊之交尾器辨識：陽莖器修長；囊突極長，幾乎與腹部等長。雖然 Ackery *et al*. (1999) 指出本亞科與螯蛺蝶亞科有許多共同特徵，但近期親緣關係研究多表明苾蛺蝶亞科為本亞科之姊妹群。

本亞科近乎呈泛世界性分布，但不見於澳洲及紐西蘭。

臺灣有 8 屬 12 種之記錄，其中有 2 種為疑問種。

Genus *TIMELAEA* Lucas, 1883

Type species: *Melitaea* (?) *maculata* Bremer & Grey, [1852]

Diagnostic characters may include the following: 1) thorax and abdomen slender; 2) antennal club slender; 3) compound eyes naked; 4) discoidal cells open on both wings; 5) humeral vein of hindwing sharply curved, not bifurcate; 6) wings yellow ochre with black markings.

Larvae feed on plants in the genus *Celtis* of Cannabaceae.

Masui *et al*. (2011) recognized 2 species, distributed in eastern Palearctic and northern Oriental regions.

1 species occurs in Taiwan.

貓蛺蝶屬

形態特徵如下：1) 胸部及腹部纖細；2) 觸角錘部纖細；3) 複眼裸露；4) 前、後翅中室開放；5) 後翅肩脈明顯彎曲、不分岔；6) 翅黃赭色綴黑色斑紋。

幼蟲取食大麻科朴屬植物。

Masui *et al*. (2011) 將本屬分為 2 種，分布於古北區東部及東洋區北部。

臺灣有 1 種。

Timelaea albescens (Oberthür, 1886) (白裳貓蛺蝶／豹紋蝶)

Argynnis maculata var. *albescens* Oberthür, 1886: Études d'Entomologie 11: 18. (Type locality: "Châpa" [Luding, Sichuan, China])

Timelaea albescens obscurior Hall, 1935: The Entomologist 68: 226. (Type locality: "S. China, Canton [Guangdong]")

T[*imelaea*] *albescens orientalis* Belter, 1942: Entomologische Zeitschrift 56: 149. (Type locality:

"Provinz Cheking, West-Tien-Mu-Shan [Xitianmushan, Zhejiang Province, China]")

Timelaea aformis Chou, 1994: Monographia Rhopalocerorum Sinensium: 437, 760. (Type locality: Wuhan, Hubei, China)

Timelaea radiata Chou & Wang, 1994: Monographia Rhopalocerorum Sinensium: 437, 761. (Type locality: Wenxian, Gansu, China)

Timelaea albescens longshenensis Yoshino, 1998: Neo Lepidoptera 3: 4. (Type locality: "Longshen county, Guan[g]xi zhuan prov., China")

Ssp. *formosana* Fruhstorfer, 1908

PLATE 26, Figs. 138–139; PLATE 85, Fig. 454; PLATE 123, Fig. 602

Timelaea maculata formosana Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: Kagi [Jiayi], Kanshirei [Guanzhiling], Formosa)

Timelaea formosana var. *confluana* Niepelt, 1916: Lepidoptera Niepeltiana 2: 8, pl. 14, f. 4. (Type locality: Tainan, Formosa)

Timelaea albescens f. *reticulata* Matsumura, 1939: Insecta Matsumurana 13 (4): 113. (Type locality: "Formosa, Hokusanko")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Jiajiuliao, 200m, 9. VI. 2008 (Y. F. Hsu); 1♀, same locality, 9. VI. 2008, reared from *Celtis formosana*, emgd. 11. VI. 2008, HSU 08F11 (Y. F. Hsu); 1♂, 2♀, same locality, 150m, 10. IX. 2008 (Y. F. Hsu); 1♂, Wulai, 29. VI. 2019 (L. Huang); 1♂, Bali, Guanyinshan, 400/450m, 28. IV. 2011 (Z. H. Yen); 2♂, Xindian, Shitoushan, 22. V. 2009, reared from *C. formosana*, emgd. 28. V. 2009, HSU 09E35 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Shilin, Tianxiyuan, 27. VII. 2011 (H. C. Huang); 1♂, Neihu, Yuanjue Fall, 26. II. 2020, reared from *C. formosana*, emgd. 15. III. 2020, HSU 20B32 (L. Huang); 2♀, Beitou, Hengling Ancient trail, 27. VIII. 2021, reared from *C. formosana*, emgd. 24. IX. 2021, YMS 21H47 (L. Huang). **XINZHU Co.:** 1♂, Zhudong, Beipu, ca 450m, 30. X. 2021 (Y. F. Hsu). **HUALIAN Co.:** 1♂, 1♀, Xiulin, Taroko/ Lushui, 18. III. 2007, reared from *C. biondii*, emgd. 31. III./9. IV. 2007, HSU 07C31 (C. K. Wang). **JIAYI Co.:** 1♂, Alishan, Chashan, 27. IX. 2019, reared from *C. formosana*, emgd. 17/21. X. 2019, HSU 19J47 (L. Huang). **PINGDONG Co.:** 3♂, 3♀, Wutai, Old Dawu, 1000m, 14/16. II. 2000 (Y. T. Lo). **TAIDONG Co.:** 1♂, Yanping, Hongye, reared from *Celtis* sp., emgd. 20. V. 2000 (L. W. Wu).

Description. Adult – Forewing length 22–31 mm. Sexual dimorphism not prominent. Male (PLATE 26, Fig. 138): Head orange, with areas surrounding antennae dark brown. Antennae dark brown with two broken white lines; distal end clubbed, flattened, naked.

Proboscis brown. Labial palpus porrect, dark brown dorsally, creamy yellow ventrally. Thorax brown dorsally, white ventrally. Legs white in femur, orange in tibia and tarsus; Protarsi fused, stab-like, densely hairy. Abdomen brown, with orange scalings dorsally, white with medial dark band ventrally. Forewing nearly triangular, costa slightly convex, termen and dorsum straight, apex obtuse. Hindwing rounded, with distal ends of veins slightly produced. Wing uppersides ground color orange, decorated with four series of dark brown markings. Four dark brown spots present in discoidal cells of both wings. A white area sometimes present between discal and subbasal series. Wing undersides with ground color and markings similar to those of uppersides, but a prominent white area present on hindwing proximally. Female (PLATE 26, Fig. 139): Body and general wing patterns similar to those of male; Protarsi segmented, clawed, not hairy; forewing termen slightly convex; white area of hindwing uppersides usually prominent.

Male genitalia (PLATE 85, Fig. 454) – Tegumen broad, flat; uncus abruptly narrowed, tapering caudad, with distal portion forming down-curved hook. Gnathos with medial portion membranous, forming two separate sclerotized pieces. Saccus very long, approximately 5X height of vinculum, bent at base, with anterior end enlarged, club-like. Vinculum narrow, Valva elongate, slightly narrowed caudad; ampulla lobe like, slightly produced distally; harpe tapering caudad, with a small dorsal tooth neat distal end. Juxta as a simple plate. Phallus sclerotized, very long and slender, nearly straight; aedeagus much longer than phallobase, with caudal opening dorsal, heavily sclerotized distad, bearing minute teeth at caudal end.

Female genitalia (PLATE 123, Fig. 602) – Corpus bursae cordiform, with posterior end abruptly narrowed, joining with membranous pouch leading to ductus seminalis. Ductus bursae very long and slender, sclerotized, swollen near posterior end, with a sclerotized cone around ostium bursae. Sterigma with antevaginalis forming a sclerotized ring; postvaginalis forming broad sclerotized shield. Posterior apophyses nearly as long as anal papillae, weakly sclerotized. Anal papillae lobe-like, thickened along caudal margin, setose posteriorly.

Global distribution. West, South and East China, Taiwan (Masui *et al*., 2011; Lang, 2012).

Distribution in Taiwan. Low to moderate elevations in Taiwan (Yamanaka, 1975; Hsu, 1999; Lu & Chen, 2014).

Larval Host plant(s). Cannabaceae: *Celtis sinensis*, *C. formosana*, and *C. biondii* (Muroya *et al*., 1967; Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014).

Biology. Multivoltine (Hsu, 2002, 2013), overwintering as diapausing larva (Hsu, 1999; Lu & Chen, 2014).

Remarks. Although Miyake (1906) originally identified the *Timelaea* species inhabiting Taiwan as *T. albescens*, it was later recognized as a race of *T. maculata* (Bremer & Grey, [1853]) by Fruhstorfer (1908a) when he described *formosana*, and the treatment was followed by subsequent authors until Okano & Okano (1984) examined male genitalia and determined that *formosana* should belong to *T. albescens*.

形態特徵：成蝶前翅長 22–31 mm。雌雄二型性不顯著。雄蝶 (圖 138)：頭橙色，觸角基部周圍黑褐色。觸角黑褐色，上有二道白色虛線，末端棒狀、扁平、裸露。口器褐色。下唇鬚前伸、背面黑褐色，腹面乳黃色。胸部背面褐色，腹面白色。足之腿節白色、脛節及跗節橙色；前足跗節癒合、刺狀、密被毛。腹部背面褐色，散佈橙色鱗、腹面白色，中央有黑色條紋。前翅近三角形，前緣略凸、外緣及後緣直線狀、翅頂鈍。後翅圓，翅脈末端略突出。翅背面底色橙色，上綴四列黑褐色斑紋，中室內有四只黑褐色斑點，中央及亞基部帶紋間時呈白色。翅腹面底色及斑紋與翅背面相似，但後翅內側有鮮明白色區塊。雌蝶 (圖 139)：形態特徵與雄蝶相似，但前翅外緣略凸、後翅腹面白紋通常較鮮明，前足跗節分節、具爪、無毛。

雄交尾器 (圖 454)：背兜寬闊且平坦。鉤突向後驟縮、細長，末端下彎、鉤狀。顎形突中央膜質，兩端骨化。囊突甚長，長度約為基腹弧的 5 倍長，基部彎曲，前端膨大成棒狀。基腹弧狹窄。抱器修長、瓣狀，末端略窄。抱器內突葉狀，末端背側略凸。抱握鋏後端漸窄，末端背側具一小齒。陽基軛片盤狀。陽莖極細長，長度超過囊突，筆直、骨化。陽莖器長度超過陽莖基，末端開口於背側，後端高度骨化，具小齒。

雌交尾器 (圖 602)：交尾囊心型，後端驟窄，與連接導精管之膜囊相連。交尾囊管

非常細長、骨化，近後端處膨大，交尾孔周圍有骨化錐。交尾囊孔板之前陰片形成骨環；後陰片形成寬闊之骨盾。後內骨突和肛突近乎等長，略骨化。肛突葉狀，尾端邊緣厚，後端具剛毛。

世界分布：華西、華南、華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：大麻科之朴樹、石朴、沙楠子樹等。

生物學：本種為一年多世代物種，會以幼蟲休眠越冬。

註記：Miyake (1906) 最初將分布於臺灣之貓蛺蝶鑑定為白裳貓蛺蝶 *T. albescens*，但後來 Fruhstorfer (1908) 將其鑑定為貓蛺蝶 *T. maculata* (Bremer & Grey, [1853]) 之族群並描述為亞種 ssp. *formosana*，此處理為後來研究人員沿用，直至 Okana & Okano (1984) 依據雄蟲交尾器特徵，認為 *formosana* 仍應屬於白裳貓蛺蝶。

Genus *CHITORIA* Moore, [1896]

Type species: *Apatura sordida* Moore, [1866]

Diagnostic characters may include the following: 1) antennal club slightly flattened; 2) compound eyes naked; 3) discoidal cells open on both wings; 4) humeral vein of hindwing sharply curved, not bifurcate.

Larvae feed on plants in the genus *Celtis* of Cannabaceae.

Masui *et al*. (2011) recognized 9 species, distributed in eastern Palearctic and northern Oriental regions.

2 species occur in Taiwan.

鎧蛺蝶屬

形態特徵如下：1) 觸角錘部略扁平；2) 複眼裸露；3) 前、後翅中室開放；4) 後翅肩脈明顯彎曲，不分岔。

幼蟲取食大麻科朴屬植物。

Masui *et al*. (2011) 將本屬分為 9 種，分布於古北區東部及東洋區北部。

臺灣有 2 種。

Chitoria chrysolora (Fruhstorfer, 1908) (金鎧蛺蝶／臺灣小紫蛺蝶)

PLATE 26, Figs. 140–143; PLATE 86, Fig. 455; PLATE 123, Fig. 603

Apatura chrysolora Fruhstorfer, 1908: Entomologische Zeitschrift 22 (25): 102. (Type locality: "Kosempo, Formosa [Jiaxian, Taiwan]")

Apatura una Wileman, 1908: Annotationes Zoologicae Japonenses 6 (5): 320. (Type locality: "Koshun, Formosa [Hengchun, Taiwan]")

Apatura fulva chrysolora f. *principalis* Fruhstorfer, 1909: Entomologische Zeitschrift 23 (8): 40. (Type locality: "Kosempo, Formosa [Jiaxian, Taiwan]")

Apatura fulva chrysolora f. *pseudopallas* Fruhstorfer, 1909: Entomologische Zeitschrift 23 (8): 40. (Type locality: "Kosempo, Formosa [Jiaxian, Taiwan]")

Apatura subcaerulea var. *formosana* Moltrecht, 1909: Entomologische Zeitschrift 23 (29): 131. (Type locality: "Formosa")

Apatura fulva chrysolora f. *pseudofasciola* Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 700. (Type locality: "Formosa")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, 27. X. 1999 (Y. F. Hsu); 1 gynandomorph, same locality, 25. I. 2018, reared from *Celtis formosana*, emgd. 20. III. 2018, HSU 18A26 (L. Huang); 1♀, Xindian, Guangxing, 5. VIII. 2004 (J. H. Chen); 1♂, Bali, Guanyinshan, 500m, 13. VIII. 2011 (Z. H. Yen); 1♂, same locality, 400m, 26. VIII. 2011 (Z. H. Yen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Daxi, Houcihu, 22. V. 2008 (C. L. Huang). **NANTOU Co.:** 1♀, Renai, Nanshanxi, 2. VII. 1999 (C. C. Lu); 1♀, Renai, Chunyang, 1200m, 25. X. 2009 (L. H. Wang); 1♂, Renai, Huisun, 700m, 8. X. 2011 (C. S. Chung); 1♂, same locality, 11. X. 2018 (J. H. Lin & Y. T. Lin); 1♂, Renai, Tunyuan, 1600m, 14. V. 2015 (C. W. Huang). **TAINAN CITY:** 1♀, Dongshan, Kantoushan, 600m,

28. X. 2017 (Y. F. Hsu). **PINGDONG Co.:** 3♀, Chunri, Dahanshan, 25. XI. 2014, reared from *C. formosana*, emgd. 8/23. II. 2015, HSU 14L30 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Yanping, Hongye, 27. II. 2000 (H. S. Chuen); 1♀, same locality, 500m, 4. VIII. 2009 (C. H. Lin, jr); 1♀, same locality, 700m, 25/26. VI. 2012 (Y. T. Lo).

Description. Adult – Forewing length 31–39 mm. Sexual dimorphism prominent. Male (PLATE 26, Fig. 140): Head dark brown with brown chaetosemata; small white patch near base of antenna. Antennae dark brown, with inner surface naked. Proboscis creamy white. Labial palpus porrect, dark brown dorsally, creamy white ventrally. Thorax brown dorsally, creamy white ventrally. Legs creamy white in femur, creamy yellow in tibia and tarsus; Protarsi fused, stab-like, densely hairy. Abdomen brown dorsally, creamy white ventrally. Forewing nearly triangular, costa slightly convex, termen produced near apex, dorsum straight. Hindwing nearly triangular, with distal ends of veins slightly produced. Wing uppersides orange, with brown margin along termen and around apex of forewing; marginal and submarginal brown band along termen of hindwing. A prominent dark brown spot in cell CuA_1 of both forewing and hindwing. A brown marking present at distal end of discoidal cell of forewing. Wing undersides with ground color pale yellowish brown. A faint discal white band edged with brown on hindwing. A narrow, brown band at distal end of discoidal cell of forewing. Dark brown spot in cell CuA_1 of both wings prominent, with additional white dot in center and an orange ring surrounding spot on hindwing. Female (PLATE 26, Figs. 141–142): Body similar to those of male; Protarsi segmented, clawed, not hairy. Ground color of wing uppersides brown instead of orange; prominent white or yellow band on both wings. Ground color of wing undersides olive or olive-green; prominent white bands edged with brown proximally.

Male genitalia (PLATE 86, Fig. 455) – Tegumen broad, flat; uncus abruptly narrowed posteriorly, with distal portion beak-like, tapering caudad, with down-curved tip. Gnathos broad, with medial portion membranous, forming two separate sclerotized pieces. Saccus very long, approximately 3.0X height of vinculum, with anterior end enlarged with blunt tip. Vinculum narrow, Valva nearly oblong, tapering distad, bearing a prominent distal tooth. Juxta as broad band. Phallus very long, with length over that of saccus; aedeagus much longer than phallobase, slightly down-curved, with caudal opening ventral.

Female genitalia (PLATE 123, Fig. 603) – Corpus bursae ovate, with a short membranous sac leading to ductus seminalis. Ductus bursae much longer than length of corpus bursae, membranous. Signa as two small, rounded, sclerotized patches with uneven surface. Anterior apophyses as small triangular lobes; posterior apophyses nearly as long as anal papillae, weakly sclerotized. Anal papillae lobe-like, sclerotized, thickened along caudal margin, setose.

Global distribution. West, South and East China, Taiwan (Masui *et al*., 2011; Lang, 2012).

Distribution in Taiwan. Low to moderate elevations in Taiwan (Yamanaka, 1975; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Cannabaceae: *Celtis sinensis*, *C. formosana*, and *C. biondii* (Muroya *et al*., 1967; Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014).

Biology. Multivoltine (Hsu, 2002, 2013), overwintering as non-diapausing larva (Lu & Chen, 2014).

Remarks. The taxon *chrysolora* was long considered a species endemic to Taiwan until Yoshino (1997) described a subspecies, ssp. *eitschbergeri* from southern China. Whether these two taxa are conspecific may require further clarification.

形態特徵：成蝶前翅長 31–39 mm。雌雄二型性顯著。雄蝶 (圖 140)：頭灰色，褐毛隆色，觸角基部邊有白色小斑。觸角黑褐色，內側裸露。口器乳白色。下唇鬚前伸，背面黑褐色、腹面乳白色。胸部背面褐色，腹面乳白色。足之腿節乳白色、脛節及跗節乳黃色；前足跗節癒合、刺狀、密被毛。腹部背面褐色、腹面乳白色。前翅近三角形，前緣略凸、外緣近翅頂處突出、後緣直線狀。後翅近三角形，翅脈末端略突出。翅背面底色橙色，前翅外緣、翅頂及後翅外緣、亞外緣有褐色帶紋，CuA_1 室內有黑褐色斑點；前翅中室末端有褐色斑紋。翅腹面底色淺黃褐色，CuA_1 室有黑褐色斑點，但後翅另有中央有白點之橙色圈紋；前翅中室端有褐色窄帶紋；後翅中央有帶褐色邊之模糊白色帶紋。雌蝶 (圖 141–142)：軀體特徵與雄蝶相似，但前足跗

節分節、具爪、無毛。翅背面底色褐色，綴鮮明白色或黃色帶紋。翅腹面底色橄欖至橄欖綠色，有內側鑲褐色邊之鮮明白色帶紋。

雄交尾器 (圖 455)：背兜寬闊、平坦。鉤突向後驟窄，末端明顯下彎曲、喙狀。顎形突寬帶狀，中央膜質，兩側形成骨板。囊突甚長，長度約為基腹弧 3 倍，前端略膨大、圓鈍。基腹弧狹窄。抱器近橢圓形，向後端略窄，末端有一向上之尖齒突。陽基軛片為寬骨板。陽莖甚長，長度超過囊突。陽莖器長度遠長於陽莖基，略下彎，末端開口於腹側。

雌交尾器 (圖 603) : 交尾囊橢圓形，有一短膜囊延伸至導精管。交尾囊遠長於交尾囊，膜質。花壁為一對圓形小骨斑，表面不平整。前內骨突為三角形小片；後內骨突和肛突近乎等長，略骨化。肛突葉狀、骨化，尾端邊緣厚，具剛毛。

世界分布：華西、華南、華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：大麻科之朴樹、石朴、沙楠子樹。

生物學：本種為一年多代物種，以非休眠幼蟲越冬。

註記：本種在 Yoshino (1997) 記述產自華南之亞種 ssp. *eitschbergeri* 之前，長期被認為是臺灣特有種，但兩者是否為同種尚須進一步釐清。

Chitoria ulupi (Doherty, 1889) (武鎧蛺蝶 / 荒木小紫蛺蝶)

Potamis (or *Apatura*) *ulupi* Doherty, 1889: Journal of the Asiatic Society of Bengal 58, pt 2 (1): 125, pl. 10, f. 2. (Type locality: “on the Dikrang near Sadiya, Kobong between Sadiya and Margherita, Assam, [India]”)

Apatura florenciae Tytler, 1911: Journal of the Bombay Natural History Society 21 (1): 56. (Type locality: Naga Hills, [India])

Apatura florenciae var. *albopunctata* Tytler, 1915: Journal of the Bombay Natural History Society 23 (3): 503. (Type locality: Naga Hills, [India])

Apatura ulupi kalaurica Tytler, 1926: Journal of the Bombay Natural History Society 31 (3): 580, pl. 2, f. 9. (Type locality: Kalam, Southern Shan States, at 5,000 ft., [Myanmar])

Apatura ulupi mai Tytler, 1940: Journal of the Bombay Natural History Society 42: 111. (Type locality: Loimwe, S. Shan States, [Myanmar])

Ssp. *arakii* Naritomi, 1959

PLATE 27, Figs. 144–145; PLATE 86, Fig. 456; PLATE 123, Fig. 604

Chitoria ulupi arakii Naritomi, 1959: Tyô to Ga 10 (1): 4. (Type locality: Mt. Morrison, Central Formosa [Yushan, Taiwan])

Chitoria ulupi esakii Shirôzu, 1959: Kontyû 27 (1): 91, pl. 7, f. 1-4, pl. 8, 11-12. (Type locality: Makabubu, Central Formosa [Cuiluan, Taiwan])

Chitoria ulupi arakii f. *horai* Murayama & Shimonoya, 1966: Tyô to Ga 16 (3/4): 59. (Type locality: Poli, Formosa [Puli, Taiwan])

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Northern Cross-Island Road, 3. VII. 2005; 1♂, 1♀, Fuxing, Xuewunao, 17. VI. 2016 (C. W. Huang). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, 1550m, 16. VII. 2005 (H. C. Huang); 4♂, 2♀, Jianshi, Lidongshan, 19. IX. 2014, reared from *Celtis sinensis*, emgd. 7. XII. 2014/3. I. 2015, HSU 14J82 (C. W. Huang, C. L. Huang & L. H. Wang). **YILAN Co.:** 1♂, Datong, Tuleng, 11. VII. 2008 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Beidongyanshan, 1500m, 1. IX. 2006 (L. H. Wang) (genitalia preparation JYL974). **HUALIAN Co.:** 1♂, Xiulin Xinbaiyang, 1600m, 30. VI. 2010 (N. Y. Tsai); 1♂, Xiulin, Bilu, 15/16. VII. 2019 (C. W. Huang) (genitalia preparation JYL975).

Description. Adult – Forewing length 31–39 mm. Sexual dimorphism prominent. Male (PLATE 27, Fig. 144): Head gray with brown chaetosemata; small white patch near base of antenna. Antennae dark brown, with inner surface naked. Proboscis creamy white. Labial palpus porrect, creamy white, dark brown distally. Thorax brown dorsally, creamy white ventrally. Legs creamy white in femur, creamy yellow in tibia and tarsus; Protarsi fused, stab-like, densely hairy. Abdomen brown dorsally, creamy white ventrally. Forewing nearly triangular, costa slightly convex, termen produced near apex, dorsum straight. Hindwing nearly triangular, with distal ends of veins slightly produced. Wing uppersides with ground color orange tinged with green, brown margin along termen and around apex of forewing; marginal and submarginal brown band along termen of hindwing. Prominent dark brown markings at distal end of discoidal cell and subapical area on forewing. A dark patch present along basal half of dorsum of forewing and throughout dorsum of hindwing. A prominent dark brown spot in cell CuA_1 of both forewing and hindwing. Wing undersides with ground color olive-green except orange on forewing proximally. A narrow, brown discal band on hindwing. Dark brown spot in

cell CuA_1 of both wings present. Female (PLATE 27, Fig. 145): Body similar to those of male; Protarsi segmented, clawed, not hairy. Ground color of wing uppersides dark brown instead of orange; prominent white band on both wings. Ground color of wing undersides pale silvery white tinged with green; prominent white bands edged with brown proximally.

Male genitalia (PLATE 86, Fig. 456) – Tegumen broad, flat; uncus abruptly narrowed posteriorly, with distal portion beak-like, tapering caudad, with distal tip strongly down-curved. Saccus very long, approximately 3.5X height of vinculum, with anterior end enlarged with blunt tip. Gnathos reduced, with medial portion membranous, forming two separate sclerotized pieces. Vinculum narrow, Valva oval, tapering distad, bearing a prominent distal tooth. Juxta as broad band. Phallus very long, with length over that of saccus; aedeagus much longer than phallobase, slightly down-curved, with caudal opening ventral.

Female genitalia (PLATE 123, Fig. 604) – Corpus bursae ovate, with a short membranous sac leading to ductus seminalis. Ductus bursae much longer than length of corpus bursae, membranous. Signum absent. Anterior apophyses as small triangular lobes; posterior apophyses nearly as long as anal papillae, weakly sclerotized. Anal papillae lobe-like, sclerotized, thickened along caudal margin, setose.

Global distribution. North India, northern Indochina, South, West, Central, and Northeast China, Taiwan (Masui *et al*., 2011; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations in montane areas in Taiwan (Shirôzu, 1959; Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Cannabaceae: *Celtis sinensis*.

Biology. Probably univoltine (Hsu, 2013).

Remarks. In Taiwan, two *Chitoria* species occur, and they are sometimes found

sympatrically in montane forests (Shirôzu, 1959). They can be discriminated by the following characteristics: 1) The discal band on hindwing undersides deviated outwards anteriorly in *chrysolora*, not so in *ulupi*; 2) the ground color of wing undersides is tinged with green in male of *ulupi*, whereas it is uniformly orange in male of *chrysolora*; 3) the wing undersides is with silver shine in female of *ulupi*, not so in that of *chrysolora* 4) a pair of signa are present on corpus bursae of *chrysolora*, absent in that of *ulupi*.

形態特徵：成蝶前翅長 31–39 mm。雌雄二型性顯著。雄蝶 (圖 144)：頭灰色，毛隆褐色，觸角基部邊有白色小斑。觸角黑褐色，內側裸露。口器乳白色。下唇鬚前伸、乳白色，末端黑褐色。胸部背面褐色，腹面乳白色。足之腿節乳白色、脛節及跗節乳黃色；前足跗節癒合、刺狀、密被毛。腹部背面褐色、腹面乳白色。前翅近三角形，前緣略凸、外緣近翅頂處突出、後緣直線狀。後翅近三角形，翅脈末端略突出。翅背面底色泛綠色之橙色，前翅外緣、翅頂及後翅外緣、亞外緣有褐色帶紋，前翅後緣內半段及後翅內緣有黑紋，CuA_1 室內有黑褐色斑點；前翅中室末端及亞翅頂有黑褐色斑紋。翅腹面底色除前翅內側橙色外呈橄欖綠色，CuA_1 室內有黑褐色斑點，後翅中央有褐色窄帶紋。雌蝶 (圖 145)：軀體特徵與雄蝶相似，但前足跗節分節、具爪、無毛。翅背面底色黑褐色，有白色帶紋。翅腹面底色為泛綠色之銀白色，有內側鑲褐色邊之鮮明白色帶紋。

雄交尾器 (圖 456)：背兜寬闊、平坦。鉤突向後驟窄，末端明顯下彎曲、喙狀。顎形突寬帶狀，中央膜質，兩側形成骨板。囊突甚長，長度約為基腹弧 3.5 倍，前端略膨大、圓鈍。基腹弧狹窄。抱器近橢圓形，向後端略窄，末端有一向上之尖齒突。陽基軛片為寬骨板。陽莖甚長，長度超過囊突。陽莖器長度遠長於陽莖基，略下彎，末端開口於腹側。

雌交尾器 (圖 604)：交尾囊橢圓形，有一短膜囊延伸至導精管。交尾囊遠長於交尾囊，膜質。花壁闕如。前內骨突為三角形小片；後內骨突和肛突近乎等長，略骨化。肛突葉狀、骨化，尾端邊緣厚，具剛毛。

世界分布：印度北部、中南半島北部、華南、華西、華中、華東北、臺灣。

臺灣分布：分布於本島中至高海拔山區。

寄主植物：大麻科之朴樹。

生物學：可能為一年一世代物種。

註記：臺灣兩種鎧蛺蝶部分棲地共域，兩者可從由下列鑑別特徵區別：1) 金鎧蛺蝶後翅腹面中央帶紋前端向外偏移，武鎧蛺蝶則否；2) 武鎧蛺蝶雄蝶翅腹面底色帶綠色調，金鎧蛺蝶無綠色調；3) 武鎧蛺蝶雌蝶翅腹面有銀色光澤，金鎧則否；4) 金鎧蛺蝶雌蝶之交尾囊上有一對花壁，武鎧蛺蝶則無。

Genus *HELCYRA* Felder (C.), 1860

Type species: *Helcyra chionippe* Felder (C.), 1860

Diagnostic characters may include the following: 1) antennal club swollen, spatulate; 2) compound eyes naked; 3) discoidal cells open on both wings; 4) humeral vein of hindwing sharply curved, not bifurcate; 5) ground color of wing undersides white or silvery white.

Larvae feed on plants in the genus *Celtis* of Cannabaceae.

Masui *et al*. (2011) recognized 8 species, distributed in eastern Palearctic and Oriental regions.

2 species occur in Taiwan.

白蛺蝶屬

形態特徵如下：1) 觸角錘部膨大、匙狀；2) 複眼裸露；3) 前、後翅中室均開放；4) 後翅肩脈明顯彎曲、不分岔；5) 翅腹面底色白色或銀白色。

幼蟲取食大麻科朴屬植物。

Masui *et al*. (2011) 將本屬分為 8 種，分布於古北區東部及東洋區。

臺灣有 2 種。

Helcyra plesseni (Fruhstorfer, 1913) (普氏白蛺蝶／國姓小紫蛺蝶／臺灣白蛺蝶)

PLATE 27, Figs. 146–147; PLATE 86, Fig. 457; PLATE 124, Fig. 605

Apatura plesseni Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 699. (Type locality: Formosa)

Specimens examined:

XINZHU Co.: 1♀, Jianshi, Zhenxibao, 1600m, 15. V. 2015 (L. H. Wang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Guguan, 900m, 27. V. 2007, reared from *Celtis biondii*, emgd. 17. VI. 2007, HSU 07E37.1 (C. C. Lu); 1♀, Heping, Guguan, Shaolai, 2. VIII. 2016 (Z. L. Chen). **NANTOU Co.:** 1♀, Renai, Huisun, 23. VI. 1988 (Y. F. Hsu); 1♀, Renai, Huisun, 700m, 24. IV. 2010, reared from *C. biondii*, emgd. 27. V. 2010 (C. C. Lu, jr.). **KAOHSIUNG CITY:** 1♀, Taoyuan, Meishan, 700m, 8. XI. 2011 (H. C. Huang) (genitalia preparation JYL1037). **PINGDONG Co.:** 1♂, Wutai, 16. III. 2020, emgd. 10. IV. 2020 (G. Y. Chen); 1♂, 1♀, Chunri, Dahanshan, 30. IX. 2021 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Yanping, Hongye, 450/550m, 28. VIII. 1998 (W. I. Chou); 1♀, Yanping, Hongye, 23. IV. 2000 (Y. T. Lo).

Description. Adult – Forewing length 28–32 mm. Sexual dimorphism absent or weakly present. Male (PLATE 27, Fig. 146): Head brown with white chaetosemata, small white patch near base of antenna. Antennae dark brown with a series of white dots; ventral surface naked; distal end abruptly enlarged, club-like. Proboscis brown. Labial palpus porrect, white ventrally, dark brown dorsally. Thorax dark brown dorsally, silvery white tinged with green ventrally. Legs silvery white in femur, silvery white with dark brown bands in tibia and tarsus; Protarsi fused, stab-like, hairy. Abdomen dark brown dorsally, silvery white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum straight. Hindwing lobe-like, with distal ends of veins slightly produced. Wing uppersides with ground color brown. Prominent white discal bands present on both forewing and hindwing. A series of white markings present distal to discal band. One subapical white spot present. Wing undersides with ground color silvery white tinged with green shine. White discal bands present, edged by dark brown line, orange band,

and black spots distally. Female (PLATE 27, Fig. 147): Body and wing patterns similar to those of male, white markings usually more prominent than those in male; Protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 86, Fig. 457) – Tegumen broad, flat; uncus abruptly narrowed posteriorly, with distal portion beak-like, tapering caudad, with down-curved tip. Saccus very long, approximately 3.5X height of vinculum, with anterior end blunt. Gnathos protruding posterioad into heavily sclerotized sac. Vinculum narrow, bent dorsally, Valva nearly triangular, tapering distad, bearing a prominent distal tooth. Juxta narrow. Phallus very long, with length over that of saccus; aedeagus longer than phallobase, up-curved, with caudal opening dorsal. Cornutus as elongate, slender sclerite with caudal portion spoon-like.

Female genitalia (PLATE 124, Fig. 605) – Corpus bursae ovate, abruptly narrowed posteriorly. Ductus bursae very long, approximate 2.3X length of corpus bursae, weakly sclerotized, narrowed and membranous with elongate, granulate, sclerotized band posteriorly; ductus seminalis at junction of corpus bursae and ductus bursae. Signa as two elongate, spiny, sclerotized bands side by side on one wall of corpus bursae. Sterigma forming broad, depressed, sclerotized shield, bearing a few setae. Anterior apophyses as small hooks; posterior apophyses slightly longer than anal papillae. Anal papillae lobe-like, sclerotized, thickened along caudal margin, setose.

Global distribution. This species is considered endemic to Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Mainly low to moderate elevations in central and southern Taiwan (Shirôzu, 1960; Yamanaka, 1975).

Larval Host plant(s). Cannabaceae: *Celtis biondii* (Uchida, 1991; Hung, 2013; Lu & Chen, 2014).

Biology. Multivoltine, overwintering as diapausing larva (Lu & Chen, 2014).

Remarks. This species is closely related to *H. subalba* (Poujade, 1885) from southern China and northern Vietnam and *H. miyamotoi* Koiwaya, 2003 from Laos (Masui *et al*., 2011).

形態特徵：成蝶前翅長 28–32 mm。雌雄二型性略有或缺乏。雄蝶 (圖 146)：頭褐色，具白色毛隆，觸角基部邊有白色小斑點。觸角黑褐色，上有一列白點、腹面裸露，末端膨大、錘狀。口器褐色。下唇鬚前伸、腹面白色、背面黑褐色。胸部背面黑褐色、腹面銀白色泛綠色。足之腿節銀白色，脛節及跗節銀白色綴黑褐色帶紋；前足跗節癒合、刺狀、被毛。腹部背面黑褐色、腹面銀白色。前翅近三角形，前緣略凸、外緣及後緣直線狀。後翅葉狀，翅脈末端略凸出。翅背面底色褐色，中央有鮮明白色帶紋，中央帶紋外側有一列白紋；前翅亞翅頂有一白色斑點。翅腹面底色銀白色泛綠色，翅面中央有白色帶紋，其外側鑲黑褐色邊、橙色帶紋及黑色斑點。雌蝶 (圖 147)：形態特徵與雄蝶相似，但白色斑紋常較雄蝶鮮明，前足跗節分節、具爪、無毛。

雄交尾器 (圖 457)：背兜寬闊、平坦。鉤突後漸窄，下彎、喙狀。顎形突向後伸出，形成高度骨化之囊狀突起。囊突甚長，長度約為基腹弧的 3.5 倍、前端鈍。基腹弧狹窄，背側彎曲。抱器近三角形，向末端漸窄，末端形成尖鉤狀突起。陽基軛片狹窄。陽莖修長，長度超過囊突。陽莖器長度長於陽莖基，上彎，末端開口於背側。角狀器為一細長骨片，末端匙狀。

雌交尾器 (圖 605)：交尾囊卵圓形，後端驟細。交尾囊管長，長度約為交尾囊 2.3 倍，略骨化，後端細長、膜質，具表面顆粒狀之細長骨化帶。導精管位於交尾囊及交尾囊管連接處。花壁為一對細長具刺骨帶，並排於交尾囊一側。交尾囊孔板為寬大、凹陷之盾狀骨板，上生數根剛毛。前內骨突小鉤狀；後內骨突略長於肛突。肛突葉狀、骨化，尾端邊緣增厚，具剛毛。

世界分布：臺灣特有種。

臺灣分布：主要見於臺灣本島中、南部低至中海拔地區。

寄主植物：大麻科之沙楠子樹。

生物學：本種為一年多代物種，以休眠幼蟲越冬。

註記：本種與分布於華南及越南北部之 *H. subalba* (Poujade, 1885) 及分布於寮國之 *H. miyamotoi* Koiwaya, 2003 近緣。

Helcyra superba Leech, 1890 (白蛺蝶 / 傲白蛺蝶)

Helcyra superba Leech, 1890: The Entomologist 23 (325): 189. (Type locality: Chia-Kou-Ho [Jinkouhe, Leshan Shi, Sichuan, China])

Helcyra superba wiensis Yoshino, 1997: Neo Lepidoptera 2: 5, f. 30-33. (Type locality: "Lishui, South of Zhejinang prov. [Lishui, Southern Zhejiang], China")

Ssp. *takamukui* Matsumura, 1919

PLATE 27, Figs. 148–149; PLATE 86, Fig. 458; PLATE 124, Fig. 606

Helcyra hemina var. *takamukui* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 705, pl. 52, f. 7. (Type locality: "Formosa (Horisha)")

Helcyra hemina var. *takamukui* Matsumura, 1919: Entomological Magazine, Kyoto 3 (3-4): 148, pl. 4, f. d. (Type locality: "Formosa (Horisha)")

Specimens examined:

TAIZHONG CITY [= TAIZHONG Co.]: 1♀, Heping, Guguan, 900m, 27. V. 2007, reared from *Celtis biondii*, emgd. 18. VI. 2007, HSU 07E37 (C. C. Lu); 1♂, Heping, Shangguguan, 900/1200m, 28. VII. 2007, reared from *C. biondii*, emgd. 14. VIII. 2007, HSU 07G42 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Huisun, 700m, 22. IV. 2007, reared from *C. biondii*, emgd. 1. VII. 2007, HSU 07D24 (C. L. Huang); 1♂, Renai, Nanshanxi, 23. IV. 2014, reared from *C. biondii*, emgd. 4. VI. 2014, HSU 14D34 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Lushui, 450m, 20. X. 2007 (M. H. Sun); 1♀, Xiulin, Shikongzai, 25. IV. 2008, reared from *C. biondii*, emgd. 2. V. 2008, HSU 08D35 (C. K. Wang); 1♂, Xiulin, Shikongzai, 60m, 24. VII. 2008, reared from *C. biondii*, emgd. 15. VIII. 2008, HSU 08G20 (L. H. Wang). **TAINAN CITY:** 1♀, Nanhua, Caoshan, 17. XI. 2020, reared from *C. biondii*, emgd. 25. I. 2021, HSU 20L8 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Chunri, Dahanshan, 30. IX. 2021 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Taidong Cycad Nature Reserve, 500m, 1. X. 2000, reared from *C. biondii*, emgd. 21. X. 2000 (L. W. Wu).

Description. Adult – Forewing length 28–37 mm. Sexual dimorphism absent. Male (PLATE 27, Fig. 148): Head brown mottled with white. Antennae dark brown with a series of white dots; ventral surface naked; distal end abruptly enlarged, club-like.

Proboscis ivory white. Labial palpus porrect, white, dark brown dorsally near distal end. Thorax silvery white. Legs silvery white; Protarsi fused, stab-like, densely hairy. Abdomen silvery white. Forewing nearly triangular, costa slightly convex, termen, dorsum straight. Hindwing lobe-like, with distal ends of veins slightly produced. Wing uppersides with ground color white. Forewing dark brown distally, faint dark patch present proximally; two subapical white spots present. Two dark brown spots at distal end of discoidal cell. Hindwing with prominent dark brown submarginal band and a series of discal spots. Wing undersides with ground color white tinged with silvery shine. Fine, dark brown, wavy submarginal lines present on both wings. Prominent discal band consisted of orange or yellow spots sandwiched by proximal dark brown bars and black dots present on hindwing, such band greatly reduced or obsolete on forewing. Female (PLATE 27, Fig. 149): Body and wing patterns similar to those of male, but Protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 86, Fig. 458) – Tegumen broad, flat; uncus abruptly narrowed posteriorly, with distal portion beak-like, tapering caudad, with down-curved tip. Gnathos protruding posterioad into heavily sclerotized sac. Saccus very long, approximately 4.5X height of vinculum, with anterior end blunt. Vinculum narrow, bent dorsally, Valva nearly triangular, tapering distad, bearing a prominent distal tooth. Juxta narrow. Phallus very long, with length over that of saccus; aedeagus longer than phallobase, up-curved, with caudal opening dorsal. Cornutus as elongate, slender sclerite flattened caudad.

Female genitalia (PLATE 124, Fig. 606) – Corpus bursae ovate, abruptly narrowed posteriorly. Ductus bursae very long, approximate 2X length of corpus bursae, mostly sclerotized, narrowed and membranous with elongate, granulate, sclerotized band posteriorly; ductus seminalis at junction of corpus bursae and ductus bursae. Signa as two elongate, spiny, sclerotized bands side by side on one wall of corpus bursae. Sterigma forming broad, depressed, sclerotized shield, bearing a few setae. Anterior apophyses vestigial; posterior apophyses short. Anal papillae lobe-like, sclerotized, thickened along caudal margin, setose.

Global distribution. Northern Vietnam, West, South, Central, and East China, Taiwan

(Masui *et al*., 2011; Lang, 2012; Hsu, 2013; Monastyrskii, 2019).

Distribution in Taiwan. Low to moderate elevations in Taiwan (Yamanaka, 1975; Hsu, 2013; Lu & Chen, 2014), rare in northern part of the island.

Larval Host plant(s). Cannabaceae: *Celtis biondii* (Uchida, 1991; Hung, 2013; Lu & Chen, 2014).

Biology. Multivoltine, overwintering as diapausing larva (Lu & Chen, 2014).

Remarks. Only two *Helcyra* species are known to occur in Taiwan, and there is no problem on identification of them as the ground color of wing uppersides are white, whereas the other species, *H. plesseni*, is dark brown.

形態特徵：成蝶前翅長 28–37 mm。雌雄二型性缺乏。雄蝶 (圖 148)：頭褐色，雜白斑。觸角黑褐色，上有一列白點、腹面裸露，末端膨大、錘狀。口器象牙色。下唇鬚前伸、白色、近末端處背面黑褐色。胸部銀白色。足銀白色，前足跗節癒合、刺狀、密被毛。腹部銀白色。前翅近三角形，前緣略凸、外緣及後緣直線狀。後翅葉狀，翅脈末端略凸出。翅背面底色白色；前翅外側黑褐色、翅基有模糊黑紋，亞翅頂有二只白色斑點，中室末端有二只黑褐色斑點；後翅亞外緣有黑褐色帶紋，中央有一列黑褐色斑點。翅腹面底色白色泛銀色，亞外緣有窄細黑褐色波紋，中央帶紋由內側黑褐色短條紋、中央橙色或黃色斑點及外側黑色小點組成，但於前翅減退或消失。雌蝶 (圖 149)：形態特徵與雄蝶相似，但前足跗節分節、具爪、無毛。

雄交尾器 (圖 458)：背兜寬闊、平坦。鉤突後漸窄，下彎、喙狀。顎形突向後伸出，形成高度骨化之囊狀突起。囊突甚長，長度約為基腹弧的 4.5 倍、前端鈍。基腹弧狹窄，背側彎曲。抱器近三角形，向末端漸窄，末端形成尖鉤狀突起。陽基軛片狹窄。陽莖修長，長度超過囊突。陽莖器長度長於陽莖基，上彎，末端開口於背側。角狀器為一細長骨片，末端扁平。

雌交尾器 (圖 606)：交尾囊卵圓形，後端驟細。交尾囊管長，約為交尾囊兩倍長，

大部分骨化，後端窄、膜質，具表面顆粒狀之細長骨化帶。導精管位於交尾囊及交尾囊管連接處。花壁為一對細長具刺骨帶，並排於交尾囊一側。交尾囊孔板為寬大、凹陷之盾狀骨板，上生數根剛毛。前內骨突退化；後內骨突短。肛突葉狀、骨化，尾端邊緣增厚，具剛毛。

世界分布：越南北部、華西、華南、華中、華東、臺灣。

臺灣分布：分布於本島低至中海拔地區，北臺灣少見。

寄主植物：大麻科之沙楠子樹。

生物學：本種為一年多代物種，以休眠幼蟲越冬。

註記：臺灣有兩種白蛺蝶屬成員，但本種翅背面底色白色，普氏白蛺蝶則為黑褐色，不難區分。

Genus *SEPHISA* Moore, 1882

Type species: *Limenitis dichroa* Kollar, 1844

Diagnostic characters may include the following: 1) 3rd segment of labial palpus small in size; 2) compound eyes naked; 3) discoidal cells open on both wings; 4) humeral vein of hindwing slightly curved, not bifurcate; 5) anales papillae of female produced.

Larvae feed on plants in Fagaceae.

Masui *et al*. (2011) recognized 4 species, distributed in eastern Palearctic and Oriental regions.

2 species occur in Taiwan.

燦蛺蝶屬

形態特徵如下：1) 下唇鬚第三節細小；2) 複眼裸露；3) 前、後翅中室開放；4) 後翅肩脈明顯彎曲、不分岔；5) 雌蝶肛突突出。

幼蟲取食殼斗科植物。

Masui *et al*. (2011) 將本屬分為 4 種，分布於古北區東部及東洋區。

臺灣有 2 種。

Sephisa chandra **(Moore, [1858]) (燦蛺蝶 / 黃斑蛺蝶 / 帥蛺蝶)**

Castalia chandra Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 200, pl. 6a, f. 4. (Type locality: “Darjeeling, India”)

Sephisa chandra f. *albina* Evans, 1912: Journal of the Bombay Natural History Society 21 (2): 574. (Type locality: “Kum[aon]-B[urma]”)

Sephisa chandra f. *chandrana* Evans, 1912: Journal of the Bombay Natural History Society 21 (2): 574. (Type locality: “Kum[aon]-B[urma]”)

Sephisa chandra f. *atiya* Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 701. (Type locality: “Sikkim”)

Sephisa chandra f. *djalia* Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 701. (Type locality: “Sikkim”)

Sephisa chandra f. *veria* Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 701. (Type locality: “Sikkim”)

Ssp. *androdamas* Fruhstorfer, 1908

PLATE 28, Figs. 150–151; PLATE 87, Fig. 459; PLATE 124, Fig. 607

Sephisa chandra androdamas Fruhstorfer, 1908: Entomologische Zeitschrift 22 (29): 119. (Type locality: “Kosempo, Formosa [Jiaxian, Taiwan]”)

Sephisa rex Wileman, 1908: Annotationes Zoologicae Japonenses 6 (5): 317. (Type locality: “Lake Suisha, Formosa [= Shishe, Nantou, Taiwan]”)

Sephisa chandra f. *horishana* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 93, pl. 4, f. 11; TL: Formosa. (Type locality: “Formosa; Hori [Puli, Taiwan]”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Shiding, Ergeshan, 500/650m, 26. V. 2000 (Y. T. Lo); 1♂, same locality, 25. V. 2004 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Shilin, Bixi Road,

13. IV. 2014, reared from *Quercus glauca*, emgd. 11. V. 2014, HSU 14D12 (Y. M. Hsu); 5♀, Shilin, Tianxiyuan, 250m, reared from *Q. glauca*, emgd. 2. XI./7. XII. 2014, HSU 14G42 (Y. M. Hsu); 1♀, Shilin, Dalunweishan, 13. IV. 2020, reared from *Q. glauca*, emgd. 15. V. 2020, HSU 20D29 (H. C. Huang); 1♀, Shilin, Bixi Industrial Rd., 19. III. 2015, reared from *Q. glauca*, emgd. 5. V. 2015, HSU 15C19 (Y. M. Hsu); 1♂, Shilin, Wanxi Industrial Rd., Right Branch Line, 13. IV. 2020, reared from *Q. glauca*, emgd. 29. IV. 2020, HSU 20D01 (Y. M. Hsu); 1♂, Shilin, Fenglin Bridge, 19. IV. 2020, reared from *Q. glauca*, emgd. 17. V. 2020, HSU 20D29 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Northern Cross-Island Road, 6. V. 2005; 1♀, Fuxing, Baling, 700m, 27. V. 2015 (Y. F. Hsu); 1♂, Fuxing, Xuewunao, 500m, 14. V. 2018 (Y. F. Hsu & C. W. Huang). **NANTOU Co.:** 1♂, Renai, Beidongyanshan, 1500m, 28. X. 2006 (Y. F. Hsu). **HUALIAN Co.:** 1♂, 1♀, Xiulin, Lushui, 410m, 13. IX. 2007 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Wutai, Wutoushan, 1000/1200m, 7/8. V. 2006 (Y. F. Hsu).

Description. Adult – Forewing length 34–47 mm. Sexual dimorphism prominent. Male (PLATE 28, Fig. 150): Head dark brown decorated with white spots; chaetosemata brown mixed with white. Antennae dark brown, with distal end enlarged, flattened. Proboscis creamy yellow. Labial palpus porrect, white ventrally, dark brown dorsally and apically. Thorax dark brown dorsally, dark brown with white spots ventrally. Legs dark brown with white stripes; Protarsi fused, hairy. Abdomen dark brown, with three series of white spots, one ventral and two lateral. Forewing roughly triangular, costa slightly convex, termen strongly concave, dorsum straight. Hindwing lobe-like, with distal ends of veins produced, wavy in appearance. Wing uppersides with ground color dark brown. Three series of prominent markings on forewing, including proximal orange spots, discal white spots, and two subapical white dots. A series of faint submarginal spots also present. A prominent distal series of orange spots and large area of orange proximal patch present on hindwing. Wing undersides with patterns similar to those of uppersides but markings more extensive, with additional bluish white markings proximally, along termen, and in discoidal cell. Female (PLATE 28, Fig. 151): Body with pattern similar to that of male. Wing broad, with forewing termen only slightly concave. On Wing uppersides, orange marking present only in discoidal cell of forewing, other markings replaced by blue or white markings. On Wing undersides, orange spots represented by a series of distal spots and a few proximal spots. Blue and white markings more extensive than those of

uppersides. Protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 87, Fig. 459) – Tegumen broad, flat; uncus tapering caudad, forming a beak, down-curved at tip. Saccus slightly longer than height of vinculum, with anterior end blunt. Gnathos posterioad into heavily sclerotized sac. Vinculum narrow, curved, Valva broad; ampulla forming a distal tooth with subapical lobe; harpe as a lobe with rounded margin; sacculus thick at base, tapering distad. Juxta as broad, sclerotized band. Phallus elongate, heavily sclerotized distally; aedeagus much longer than phallobase, slightly distorted distad, with caudal end divided.

Female genitalia (PLATE 124, Fig. 607) – Corpus bursae oblong. Ductus bursae shorter than corpus bursae, membranous, attenuate posteriorly to sclerotized funnel at ostium bursae. Sterigma forming broad sclerotized shield, bearing a few setae. Posterior apophyses slender, shorter than anal papillae, weakly sclerotized. Anal papillae forming enormous, heavily sclerotized shovel with thickened caudal margin, densely setose posteriorly.

Variation. Extensive individual variation is found in wing markings of females of this species (Shirôzu, 1960).

Global distribution. Himalayas, Indochina, Malaya, South and Southwest China, and Taiwan (Igarashi & Fukuda, 2000; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in Taiwan (Yamanaka, 1975; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. morii*, *Q. gilva* and *Q. globosa* (Uchida, 1991; Hsu, 2013; Hung, 2013; Lu & Chen, 2014).

Biology. Multivoltine, overwintering as non-diapausing larva (Lu & Chen, 2014).

Remarks. The females of this species oviposit in the leaf shelters produced by weevils

or moths (Lu & Chen, 2014).

形態特徵：成蝶前翅長 34–47 mm。雌雄二型性顯著。雄蝶 (圖 150)：頭黑褐色，綴白色斑點；毛隆褐色雜白色。觸角黑褐色，末端膨大、扁平。口器乳黃色。下唇鬚前伸，背面及端部黑褐色、腹面白色。胸部黑褐色，腹面有白色斑點。足黑褐色，上有白色條紋；前足跗節癒合、被毛。腹部黑褐色，有三列白色斑點，腹面及兩側各一條。前翅略呈三角形，前緣略凸、外緣明顯內凸、後緣直線狀。後翅葉狀，翅脈末端突出，呈波狀。翅背面底色黑褐色；前翅有三列鮮明斑紋，包括內側橙色斑點、中央白色斑點及亞翅頂二只白點，亞外緣亦有一列模糊斑點；後翅外側有一列鮮明橙色斑點、內側有大範圍橙色斑塊。翅腹面斑紋與背面相似，但斑紋更鮮明，內側、中室及外緣另有藍白色斑紋。雌蝶 (圖 151)：軀體特徵與雄蝶相似。翅幅較寬，前翅外緣僅略凹。前翅背面橙色斑紋僅見於中室，其餘則由藍色或白色斑紋取代。翅腹面橙色斑點僅有一列外側斑點及少數內側斑紋，藍色及白色斑紋較翅背面明顯。前足跗節分節、具爪、毛。

雄交尾器 (圖 459)：背兜寬闊、平坦。鉤突向後漸窄，末端下彎、喙狀。顎形突向腹側延伸成高度骨化之舌狀突起。囊突長，長度約為基腹弧 2 倍，前端鈍。基腹弧狹窄、彎曲。抱器寬、瓣狀。抱器內突背側有小突起，末端有一齒突。抱握鋏葉狀，邊緣弧形。抱器腹基部粗厚，向後漸細。陽基軛片為一寬骨帶。陽莖細長，末端明顯骨化。陽莖器長於陽莖基，末端略扭曲、開裂。

雌交尾器 (圖 607)：交尾囊橢圓形。交尾囊管短於交尾囊，膜質，後端略膨大，於交尾孔處形成漏斗狀骨化構造。交尾囊孔板為寬闊骨盾，生有數根剛毛。後內骨突細長，短於肛突，略骨化。肛突形成大型、明顯骨化之鏟狀構造，尾端邊緣增厚，後端密生剛毛。

變異：雌蝶翅面斑紋多變異。

世界分布：喜瑪拉雅地區、中南半島、馬來亞、華南及華西南、臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：殼斗科之青剛櫟、森氏櫟、赤皮櫟、圓果青剛櫟等。

生物學：本種為一年多代物種，以非休眠之幼蟲越冬。

註記：本種雌蝶產卵於蛾類或象鼻蟲利用葉片所建造之蟲巢內。

Sephisa daimio Matsumura, 1910 (臺灣燦蛺蝶／白裙黃斑蛺蝶／臺灣帥蛺蝶)

PLATE 28, Figs. 152–153; PLATE 87, Fig. 460; PLATE 124, Fig. 608

Sephisa daimio Matsumura, 1910: Entomologische Zeitschrift 23 (47): 209. (Type locality: "Formosa (Horisha) [Puli, Taiwan]")

Sephisa taiwana Wileman, 1910: The Entomologist 43: 92. (Type locality: "Lalachi, Formosa [Laiji, Jiayi, Taiwan]")

Specimens examined:

XINBEI CITY: 1♂, Wulai, Fushan, Hapen, 3Km, 6. VII. 2015 (C. W. Huang). **TAOYUAN CITY:** 1♂, Fuxing, Northern Cross-Island Road, 20. VI. 2015 (W. J. Lin) (genitalia preparation JYL940). **YILAN Co.:** 1♀. Datong, Tuleng, 8. VIII. 2018 (L. H. Wang & C. W. Huang) (genitalia preparation JYL909). **XINZHU Co.:** 1♂, 2♀, Jianshi, Yulao, 1200m, 14. II. 2006, reared from *Quercus gilva*, emgd. 1/14. V. 2006, HSU 06B24 (L. H. Wang). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 30. VII. 2019 (C. W. Huang).

Description. Adult – Forewing length 33–37 mm. Sexual dimorphism prominent. Male (PLATE 28, Fig. 152): Head dark brown, with small white patch near antenna. Antennae dark brown, with inner surface naked; distal end slightly enlarged. Proboscis creamy yellow. Labial palpus porrect, white ventrally, dark brown dorsally. Thorax dark brown dorsally, dark brown with white spots ventrally. Legs white with dark brown stripe in foreleg, dark brown with white stripe in mesofemur and metafemur; Protarsi fused, hairy. Abdomen dark brown dorsally, white ventrally. Forewing triangular, costa slightly convex, termen concave, dorsum straight. Hindwing lobe-like, with distal ends of veins slightly produced. Wing uppersides with ground color orange, decorated with dark brown markings, forming wavy bands distally and markings of various sizes proximally. Wing undersides with extensive white markings, notably on hindwing, including a series of distal arrow-shaped spots and a prominent proximal patch. Female (PLATE 28, Fig. 153): Body and wing pattern similar to those of male, but a prominent proximal white patch present on hindwing uppersides; Protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 87, Fig. 460) – Tegumen broad, flat; uncus tapering caudad, forming a beak, down-curved at tip. Saccus slightly longer than height of vinculum, with anterior end blunt. Gnathos posterioad into heavily sclerotized cone. Vinculum narrow, curved, Valva broad; ampulla forming a distal tooth with subapical lobe; harpe as a lobe with rounded margin; sacculus thick at base, tapering distad. Juxta as broad, sclerotized band. Phallus elongate, heavily sclerotized distally; aedeagus much longer than phallobase, slightly distorted distad, with caudal end divided.

Female genitalia (PLATE 124, Fig. 608) – Corpus bursae oblong. Ductus bursae shorter than corpus bursae, sclerotized, slightly enlarge posteriorly to sclerotized funnel at ostium bursae. Sterigma forming broad sclerotized shield, bearing a few setae. Posterior apophyses slender, shorter than anal papillae, weakly sclerotized. Anal papillae forming enormous, heavily sclerotized shovel with thickened caudal margin, densely setose posteriorly.

Global distribution. This species is endemic to Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Mainly moderate to higher elevations in montane zone of Taiwan (Shirôzu, 1960; Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus gilva*.

Biology. Univoltine, overwintering as larva.

形態特徵：成蝶前翅長 33–37 mm。雌雄二型性顯著。雄蝶 (圖 152)：頭黑褐色，觸角基部邊有白色小斑。觸角黑褐色，內側裸露，末端略膨大。口器乳黃色。下唇鬚前伸，背面黑褐色、腹面白色。胸部黑褐色，腹面有白色斑點。足白色，前足有黑褐色條紋；中足腿節及後足腿節黑褐色而有白色條紋；前足跗節癒合、被毛。腹部背面褐色、腹面白色。前翅三角形，前緣略凸、外緣凸出、後緣直線狀。後翅葉狀，翅脈末端略突出。翅背面底色橙色，綴黑褐色斑紋，於外側形成波狀帶紋、於內側為大小不一斑紋。翅腹面有白紋較鮮明，尤其在後翅，包括外側一列箭紋及內側鮮

明斑紋。雌蝶 (圖 153)：形態特徵與雄蝶相似，但後翅背面內側有鮮明白紋，前足跗節分節、具爪、無毛。

雄交尾器 (圖 460)：背兜寬闊、平坦。鉤突向後漸窄，末端下彎、喙狀。顎形突向腹側延伸成高度骨化之錐狀突起。囊突長，長度約為基腹弧 2 倍，前端鈍。基腹弧狹窄、彎曲。抱器寬、瓣狀。抱器內突背側有丘狀突起，末端有一齒突。抱握鋏刃狀。抱器腹基部粗厚，向後漸細。陽基軛片為一寬骨帶。陽莖細長，末端明顯骨化。陽莖器長於陽莖基，末端略扭曲、開裂。

雌交尾器 (圖 608)：交尾囊橢圓形。交尾囊管短於交尾囊，骨化，後端略膨大，於交尾孔處形成漏斗狀骨化構造。交尾囊孔板為寬闊骨盾，生有數根剛毛。後內骨突細長，短於肛突，略骨化。肛突形成大型、明顯骨化之鏟狀構造，尾端邊緣增厚，後端密生剛毛。

世界分布：臺灣特有種。

臺灣分布：基本見於本島中至高海拔山區。

寄主植物：殼斗科之赤皮櫟。

生物學：本種為一年一世代物種，以幼蟲態越冬。

Genus *HESTINA* Westwood, [1850]

Type species: *Papilio assimilis* Linnaeus, 1758

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus fused, hairy in male, naked, segmented in female; 3) discoidal cells open on both wings; 4) veins darkened on both wings.

Larvae feed on plants in the genus *Celtis* of Cannabaceae.

Masui *et al*. (2011) recognized 3 species, distributed in eastern Palearctic and northern

Oriental regions.

1 species occurs in Taiwan.

脈蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節癒合、被毛，雌蝶則分節、裸露；3) 前、後翅中室均開放；4) 翅脈均黑化。

幼蟲取食大麻科朴屬植物。

Masui *et al*. (2011) 將本屬分為 3 種，分布於古北區東部及東洋區北部。

臺灣有 1 種。

Hestina assimilis **(Linnaeus, 1758) (紅斑脈蛺蝶／紅星斑蛺蝶)**

Papilio (*Nymphalis*) *assimilis* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 479. (Type locality: "Asia" [Canton, China])

Hestina mena Moore, 1858: The annals and magazine of natural history; zoology, botany, and geology, series 3, 1 (1): 48. (Type locality: "N. India", error.)

Diadema mena Butler, 1865: The annals and magazine of natural history; zoology, botany, and geology, series 3, 16 (96): 398. (Type locality: "North India", error.)

Hestina nigrivena Leech, 1890: The Entomologist 23: 31. (Type locality: "Chang Yang" [Hubei, China])

Parhestina mena subdecorata Fruhstorfer, 1903: Deutsche entomologische Zeitschrift "Iris" 16: 25. (Type locality: "Vielleicht Süd- oder West-China — Nord-Birma ?" [perhaps South or West China, Northern Myanmar])

Hestina assimilis coreana Kishida & Nakamura, 1936: Insect World 29/31: 537. (nomen nudum)

Hestina assimilis imperfecta Bryk, 1946: Arkiv för zoologi 38A: 33. (Type locality: "Korea")

Ssp. *formosana* Moore, [1896]

PLATE 29, Figs. 154–156; PLATE 87, Fig. 461; PLATE 125, Fig. 609

Parhestina formosana Moore, [1896]: Lepidoptera Indica 3: 38. (Type locality: "Formosa".)

Hestina assimilis f. *hirayamai* Matsumura, 1936: Insecta Matsumurana 10 (4): 127, f. 1. (Type locality: Musha, Formosa)

Ssp. *assimilis* Linnaeus, 1758

PLATE 29, Fig. 157; PLATE 30, Fig. 158; PLATE 87, Fig. 462; PLATE 125, Fig. 610

Specimens examined:

Ssp. *formosana*: **XINBEI CITY [= TAIPEI Co.]:** 1♀, Wulai, 27. X. 1999 (Y. F. Hsu); 1♂, Xindian, Liziyuan, 12. IV. 2006 (Y. F. Hsu); 1♂, Xindina, Sikanshui, 10. VI. 2005, reared from *Celtis formosana*, emgd. 13. VI. 2005, HSU 05F23 (C. L. Huang & C. M. Wu); 1♂, Xindian, Zhitan, 22. X. 2011 (C. Y. Yen). **TAIPEI CITY:** 2♀, Wenshan, Hills behind NCCU campus, 1. VI. 2005 (Y. F. Hsu); 1♂, Wenshan, Muzha, Hills S. of NCCU campus, 20. III. 2009 (N. Y. Tsai); 1♀, Wenshan, NTNU, Gongguan campus, 24. II. 2008 (Y. F. Hsu); 1♀, Neihu, 16. I. 2015 (H. C. Huang); 1♂, Wenshan, Chanchushan, 7. VI. 2019 (L. Huang); 1♀, same locality, 10. VII. 2019 (L. Huang); 1♂, same locality, 23. III. 2020, reared from *C. sinensis*, emgd. 9. V. 2020, HSU 20C36 (L. Huang); 1♀, Shilin, Huagang, 22. IX. 2020 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Baling, 30. IX. 2014, reared from *C. sinensis*, emgd. 9. X. 2014 (Y. M. Hsu). **TAINAN CITY:** 1♂, 1♀, Nanxi, Meiling, 22. XII. 2015, reared from *C. formosana*, emgd. 17/20. I. 2016, HSU 15M22 (C. W. Huang & T. Y. Liu).

Ssp. *assimilis*: **LIANJIANG Co.:** 1♀, Nangan, Shengli Dam, 9/11. XII. 2006, reared from *C. sinensis*, emgd. 12. IV. 2007, HSU 06M5 (H. C. Huang); 1♂, Nangan, Niujiaoling, 20. VII. 2020 (Y. F. Hsu); 1♂, Beigan, Qinbi, 26. VI. 2019 (Y. Y. Lu). **JINMEN Co.:** 1♀, Jinsha, Wuhushan, 20. VI. 2010 (C. K. Wang); 1♀, Jinhu, Shenshiqiao, 27/28. V. 2011, reared from *C. sinensis*, emgd. 16. VI. 2011, HSU 11E24 (Y. F. Hsu & H. C. Huang); 1♀, Lieyu (= Xiaojinmen), 26. X. 2011 (C. L. Huang); 1♂, same locality, 26. X. 2011, reared from *C. sinensis*, emgd. 8. XII. 2011, HSU 11K47 (C. L. Huang); 1♀, Jinning, Zhongshan Forest, 29. X. 2014 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, Jincheng, Shuitou, 20. XI. 2013, reared from *C. sinensis*, emgd. 1/2. IV. 2014, HSU 13L50 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 36–48 mm. Sexual dimorphism not prominent. Male (PLATE 29, Figs. 154–155, 157): Head grayish white with dark brown chaetosemata. Antennae dark brown with distal end clubbed, flattened. Proboscis brown. Labial palpus porrect, dark brown, with white patches near base. Thorax brown with medial obscure white band dorsally, dark brown decorated with white markings ventrally.

Legs brown, with white striae and markings; Protarsi fused, stab-like. Abdomen brown dorsally, creamy white with two dark bands ventrally. Forewing nearly triangular, costa slightly convex, termen slightly produced near apex, dorsum straight. Hindwing lobe-like, slightly indented near tornus along termen, with distal ends of veins slightly produced. Wing uppersides ground color dark brown. Creamy yellow, slightly tinged with green, stripes and spots present in cells on both wings. Red spots or circles in cell M_2, M_3, CuA_1, CuA_2, arranged into an arc on hindwing. Wing undersides with markings and stripes similar to those of uppersides. Female (PLATE 29, Fig. 156; PLATE 30, Fig. 158): Body and general wing patterns similar to those of male; Protarsi segmented, clawed.

Male genitalia (PLATE 87, Figs. 461–462) – Tegumen broad, flat; uncus short, setose basad, abruptly narrowed, tapering caudad, with tip down-curved, beak-like. Saccus long, approximately 1.6 to 2X height of vinculum, with anterior end club-like. Gnathos extending ventrad into heavily sclerotized cone. Vinculum narrow, bent, Valva nearly parallelogram, with distal end forming a small tooth, with a subapical lobe-like extension. Juxta as a transverse plate. Phallus heavily sclerotized, longer than saccus; aedeagus longer than phallobase, slightly bent distad, with caudal opening dorsal.

Female genitalia (PLATE 125, Figs. 609–610) – Corpus bursae ovate, with a sclerotized band at posterior end. Ductus bursae elongate, sclerotized, slightly enlarged posteriorly; ductus seminalis at junction of corpus bursae and ductus bursae. Signa as two elongate, curved, spiny, sclerotized bands. Sterigma forming broad, depressed, sclerotized shield, bearing a few setae. Anterior apophyses and posterior apophyses vestigial. Anal papillae lobe-like, heavily sclerotized basad, thickened along caudal margin, setose posteriorly.

Variation. A white form with dark brown ground color and red markings both reduced are found in individuals produced in cold spell in the nominotypical subspecies, but not in ssp. *formosana* (Masui *et al*., 2011).

Global distribution. Korea, Northern to southwest China, northern Vietnam, Amami islands of Japan, Taiwan (Masui *et al*., 2011; Lang, 2012; Monastyrskii, 2019); recently

introduced to Honshu of Japan (Shirôzu, 2006).

Distribution in Taiwan. The nominotypical subspecies occurs in Jinmen and Mazu islands (Lee & Wang, 1995; Hsu, 2013). Subspecies *formosana* occurs from low to moderate elevations in Taiwan, uncommon in southern Taiwan (Yamanaka, 1975; Hsu, 2002).

Larval Host plant(s). Cannabaceae: *Celtis sinensis* and *C. formosana* (Uchida, 1991; Hsu, 2002; Hung, 2013; Lu & Chen, 2014). Uchida (1991) also recorded *C. nervosa* and *Trema orientalis* without details given.

Biology. Multivoltine (Hsu, 2002, 2013), overwintering as larva (Lee & Wang, 1995; Hsu, 2002).

Remarks. The nominotypical subspecies and ssp. *formosana* may be distinguished using the following features: 1) the red markings on hindwings of the former are smaller, with small or no brown area inside, whereas those of ssp. *formosana* are larger, with prominent brown area inside; 2) the submarginal series of creamy yellow spots in cell M_2, M_3, CuA_1, CuA_2 of hindwings are prominent in ssp. *formosana*, whereas they are reduced or obsolete in the nominotypical subspecies; 3) distal tooth on valva is robust with subapical extension triangular, whereas that of ssp. *formosana* is slender, with subapical extension lobe-like.

形態特徵：成蝶前翅長 36–48 mm。雌雄二型性不顯著。雄蝶 (圖 154–155、157)：頭灰白色，毛隆黑褐色。觸角黑褐色，末端棒狀、扁平。口器褐色。下唇鬚前伸、黑褐色，近基部有白斑。胸部背面褐色，中央有模糊白色帶紋，腹面黑褐色綴白色斑紋。足褐色，有白色條紋及斑紋，前足跗節癒合、刺狀。腹部背面褐色、腹面乳白色，上有二道黑色條紋。前翅近三角形，前緣略凸、外緣近翅頂處略凸、後緣直線狀。後翅葉狀，外緣近臀區處內縮，翅脈末端略突出。翅背面底色黑褐色，翅室內有泛綠色之淡黃色條紋及斑點；後翅 M_2 室、M_3 室、CuA_1 及 CuA_2 室有紅色斑點或圈紋呈弧形排列。翅腹面斑紋及條紋與翅腹面相似。雌蝶 (圖 156、158)：形態特徵與雄蝶相似，但前足跗節分節、具爪。

雄交尾器 (圖 461–462)：背兜寬闊、平坦。鉤突短，基部具剛毛，向後驟縮，下彎、喙狀。顎形突向腹側延伸為高度骨化之錐狀突起。囊突甚長，長度約為基腹弧 1.6 至 2 倍，前端棒狀。基腹弧狹窄、彎曲。抱器近平行四邊形，末端有一小齒，近末端背側具一葉狀突起。陽基軛片橫板狀。陽莖甚長，長度超過囊突，高度骨化。陽莖器長度長於陽莖基，末端略彎曲，末端開口於背側。

雌交尾器 (圖 609–610)：交尾囊卵圓形，後端有骨化帶。交尾囊管細長、骨化，後端略膨大；導精管開口位於交尾囊及交尾囊管連接處。花壁為一對細長、彎曲之骨帶。交尾囊孔板為寬大、凹陷之盾狀骨板，上生數根剛毛。前內骨突及後內骨突退化。肛突葉狀，基部骨化明顯，尾端邊緣增厚，後端具剛毛。

變異：承名亞種低溫時會產生黑褐色底色及紅色斑紋退縮減之白色型，但臺灣亞種 ssp. *formosana* 缺乏此種季節型。

世界分布：朝鮮半島、華北至華西南、越南北部、日本奄美大島、臺灣。

臺灣分布：承名亞種分布於金門及馬祖列嶼；亞種 ssp. *formosana* 分布於本島低至中海拔地區，南臺灣不常見。

寄主植物：大麻科之朴樹、石朴，Uchida (1991) 亦列舉小葉朴、山黃麻為寄主，但缺少詳細資料。

生物學：本種為一年多代物種，以幼蟲越冬。

註記：承名亞種與臺灣亞種 ssp. *formosana* 可依下列鑑別特徵區分：1) 前者後翅紅色斑紋較小、斑紋內具褐色紋缺乏或很小，後者紅色斑紋大，且紅紋內褐色紋大而明顯；2) 前者後翅 M_2 室、M_3 室、CuA_1 及 CuA_2 室亞外緣淺黃色斑點減退或消失，後者則鮮明；3) 前者抱器末端有大型齒突，近末端處延伸成三角形，後者末端齒突較纖細，近末端處呈葉狀。

Genus *SASAKIA* Moore, [1896]

Type species: *Diadema charonda* Hewitson, [1863]

Diagnostic characters may include the following: 1) thorax robust; 2) compound eyes naked; 3) protarsus hairy, fused in male, naked, segmented in female; 4) discoidal cells open on both wings.

Larvae feed on plants in the genus *Celtis* of Cannabaceae.

Masui *et al*. (2011) recognized 2 species, distributed in eastern Palearctic and northern Oriental regions.

1 species occurs in Taiwan.

紫蛺蝶屬

形態特徵如下：1) 胸部粗壯；2) 複眼裸露；3) 雄蝶前足跗節被毛、癒合，雌蝶則裸露、分節；4) 前、後翅中室均開放。

幼蟲取食大麻科朴屬植物。

Masui *et al*. (2011) 將本屬分為 2 種，分布於古北區東部及東洋區北部。

臺灣有 1 種。

Sasakia charonda (Hewitson, 1863) (大紫蛺蝶)

Diadema charonda Hewitson, 1863: Illustrations of new species of exotic butterflies [3]: [20], pl. [10], f. 2-3. (Type locality: “Japan”)

Ssp. *formosana* Shirôzu, 1963

PLATE 30, Figs. 159–160; PLATE 88, Fig. 463; PLATE 125, Fig. 611

Sasakia charonda formosana Shirôzu, 1963: Kontyû 31: 74, f. 1-2. (Type locality: “Gohôgô (五峰鄉), Shinchiku Pref. (新竹県), N. Formosa”)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 2♂, Baling/ Xuanyuan, 2. VI. 1986 (Y. F. Hsu);

1♀, Fuxing, Xuanyuan, 1000m, 26. V. 1988 (H. Y. Lee); 1♀, Fuxing, Xuanyuan, 1. VI. 1997 (C. Y. Hung); 1♂, Fuxing, Daman, reared from *Celtis sinensis*, emgd. 12. V. 2000 (C. Y. Hung); 1♂, 2♀, Fuxing, Xuanyuan, 600m, 7. VI. 2015, reared from *C. sinensis*, emgd. 20. IX./23. XI. 2015, HSU 15F6 (C. C. Lu, jr.); 1♂, same locality, 15. I. 2019, reared from *C. sinensis*, emgd. 10. V. 2019 (L. Huang).

Description. Adult – Forewing length 46–61 mm. Sexual dimorphism prominent. Male (PLATE 30, Fig. 159): Head grayish white with dark brown chaetosemata. Antennae dark brown with distal end naked, yellowish brown. Proboscis brown. Labial palpus porrect, dark brown dorsally, creamy white ventrally. Thorax grayish brown dorsally, lead gray ventrally. Legs creamy white, partially brown; Protarsi fused, stab-like. Abdomen grayish brown dorsally, creamy white with two dark bands ventrally. Forewing triangular, costa slightly convex, termen slightly concave, dorsum straight. Hindwing lobe-like, with distal ends of veins slightly produced. Wing uppersides ground color dark brown, with metallic purple patches present proximally on both wings. A series of creamy yellow discal spots on both wings, outside of purple patches. A few white spots within purple patches on both wings. A series of small, creamy yellow, submarginal dots on both forewing and hindwing. A prominent red marking at tornus of hindwing. Wing undersides with ground color olive-yellow with dark markings and stripes; a dark brown proximal area present on forewing. Spots of pale color present on both wings, with red marking also at tornus. Female (PLATE 30, Fig. 160): Body and general wing patterns similar to those of male, but without purple patches on wing uppersides; Protarsi segmented, clawed.

Male genitalia (PLATE 88, Fig. 463) – Tegumen broad, flat; uncus setose basad, abruptly narrowed, tapering caudad, with tip down-curved, beak-like. Saccus elongate, nearly as long as height of vinculum, with anterior end club-like. Gnathos extending ventrad into heavily sclerotized shovel with truncate end. Vinculum narrow, Valva oval, with dorsal margin slightly convex, distal end bearing a prominent spine. Juxta as a transverse plate. Phallus heavily sclerotized, longer than saccus, straight; aedeagus longer than phallobase, with caudal opening dorsal. Cornutus as a small, flat sclerite.

Female genitalia (PLATE 125, Fig. 611) – Corpus bursae ovate, with a sclerotized band

at posterior end. Ductus bursae elongate, heavily sclerotized, enlarged posteriorly; ductus seminalis at junction of corpus bursae and ductus bursae. Signa as two sclerotized bands with robust teeth. Sterigma forming broad, depressed, sclerotized shield. Anterior apophyses short, lobe-like; posterior apophyses longer than anal papillae, weakly sclerotized. Anal papillae lobe-like, heavily sclerotized basad, thickened along caudal margin, setose posteriorly.

Global distribution. Japan, Korea, Northeast to Southwest China, Vietnam, Taiwan. (Masui *et al*., 2011; Lang, 2012; Monastyrskii, 2019).

Distribution in Taiwan. Montane areas in northern and central Taiwan (Yamanaka, 1975; Hsu *et al*., 2007).

Larval Host plant(s). Cannabaceae: *Celtis sinensis* (Uchida, 1991; Hsu, 2013; Hung, 2013).

Biology. This species is univoltine, with adult on the wing in early summer. Larva overwinters in debris (Hsu, 2013).

Remarks. This species is currently listed as a category I (endangered species) protected species in Taiwan (COA, 2019).

形態特徵：成蝶前翅長 46–61 mm。雌雄二型性顯著。雄蝶 (圖 159)：頭灰白色，毛隆黑褐色。觸角黑褐色，末端黃褐色、裸露。口器褐色。下唇鬚前伸、背面黑褐色，腹面乳白色。胸部背面灰褐色，腹面鉛灰色。足乳白色、部分褐色，前足跗節癒合、刺狀。腹部背面灰褐色、腹面乳白色具二黑色帶紋。前翅三角形，前緣微凸、外緣微凹、後緣筆直。後翅葉狀，翅脈末端微突出。翅背面底色黑褐色，內側具帶金屬光澤之紫色斑塊，紫色斑塊外側具一列乳黃色中央斑點、內部具少許白色斑點，亞外緣具一列乳黃色小點；後翅臀區具鮮明紅色斑紋。翅腹面底色橄欖色至黃色，斑點顏色較淡，前翅內側具由黑色斑紋及條紋組成之黑色區塊，後翅臀區亦具紅色斑紋。雌蝶 (圖 160)：形態特徵與雄蝶相似，但翅背面不具紫色斑塊，前足跗節分節、

具爪。

雄交尾器 (圖 463)：背兜寬闊、平坦。鉤突基部具剛毛，向末後急縮，末端下彎、喙狀。顎形突向腹側延伸成高度骨化之鏟狀突起，末端截狀。囊突細長，長度略與基腹弧等長，前端棒狀。基腹弧狹窄、彎曲。抱器橢圓形，背側緣略凸，末端具一尖刺突。陽基軛片橫板狀。陽莖甚長，長度超過囊突，挺直、高度骨化。陽莖器長度長於陽莖基，末端開口於背側。角狀器為一小而扁平之骨片。

雌交尾器 (圖 611)：交尾囊卵圓形，後端有骨化帶。交尾囊管細長、明顯骨化，後端膨大；導精管開口位於交尾囊及交尾囊管連接處。花壁為一對有明顯齒突之骨化帶。交尾囊孔板為寬大、凹陷之盾狀骨板。前內骨突短、葉狀；後內骨突長於肛突，略骨化。肛突葉狀，基部明顯骨化，尾端邊緣增厚，具剛毛。

世界分布：日本、朝鮮半島、華東北至華西南、越南、臺灣。

臺灣分布：本島中、北部山區。

寄主植物：大麻科之朴樹。

生物學：本種為一年一世代物種，成蝶於夏天活動，幼蟲於落葉堆內越冬。

註記：本種現為行政院農業委員會公告之一級保育類野生動物。

Genus *Rohana* Moore, [1880]

Type species: *Papilio parisatis* Westwood, 1850

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus fused, hairy in male, naked, segmented in female; 3) discoidal cells open on both wings; 4) humeral vein of hindwing angled, not bifurcate; 5) sexual dimorphism prominent, with males darker than females.

Larvae feed on plants in the genus *Celtis* of Cannabaceae.

7 species are known (Masui *et al*., 2011), distributed in the Oriental region.

1 species was recently found from Jinmen islands.

羅蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節癒合、被毛，雌蝶則分節、裸露；3) 前、後翅中室均開放；4) 後翅肩脈彎曲成直角、不分岔；5) 雌雄二型性明顯，雄蝶色彩較雌蝶深。

幼蟲取食大麻科朴屬植物。

本屬有 7 種，分布於東洋區。

最近於金門地區發現 1 種。

***Rohana parisatis* (Westwood, 1850) (羅蛺蝶)**

Apatura parisatis Westwood, 1850; The genera of diurnal lepidoptera 2: 305, n20. (Type locality: Assam)

Ssp. *staurakius* Fruhstorfer, 1913

PLATE 30, Figs. 161–162; PLATE 88, Fig. 464; PLATE 125, Fig. 612

(*Rohana*) *parisatis staurakius* Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 698 (Type locality: Hong Kong)

Specimens examined:

JINMEN Co.: 1♀, Jinhu, Taiwushan, 7. I. 2024 (G. Y. Huang); 2♂,1♀, Jinsha, Wuhushan, 22. VIII. 2024 (Y. D. He); 2♂, same locality, 22. VIII. 2024, reared from *Celtis biondii*, emgd. 2. IX. 2024, HSU 24H31 (Y. D. He); 1♀, same locality, 10. XI. 2024, reared from *C. biondii*, emgd. 21. XI. 2024 (C. M. Chen); 6♂, 1♀, same locality, 10. XI. 2024, reared from *C. biondii*, emgd. 12/27. XII. 2024, HSU 24L25 (H. C. Huang).

Description. Adult – Forewing length 22–31 mm. Sexual dimorphism prominent.

Male (PLATE 30, Fig. 161): Head dark brown. Antennae dark brown dorsally, brown ventrally; distal end clubbed, naked. Proboscis brown. Labial palpus porrect, dark brown. Thorax dark brown dorsally, gray ventrally. Legs gray; foretarsi fused, stab-like, densely hairy distally. Abdomen dark brown dorsally, gray ventrally. Forewing nearly triangular, costa slightly convex, termen slightly concave, with margin wavy, dorsum straight, apex angled. Hindwing triangular, with distal ends of veins slightly produced. Wing uppersides ground color uniformly dark brown tinged with indigo, with a silvery white dot sometimes in cell R_3. Wing undersides with ground color paler than that of uppersides, tinged with purple shine. A dark discal band and a series of dark submarginal spots present. Basal area darkened, with a bar at distal end and two spots within discoidal cell. Female (PLATE 30, Fig. 162): Body and ground color of wings paler than male, brown tinged with yellow. Wing shape more rounded. Wing patterns similar to those of undersides of male, with a few prominent silvery dots near apex of forewing; foretarsi segmented, clawed, not hairy.

Male genitalia (PLATE 88, Fig. 464) –Tegumen broad, flat; uncus abruptly narrowed, digitate, pointing downward, with blunt caudal end. Gnathos strongly curved upwards, with medial portion forming sclerotized, bifid rode. Saccus elongate, approximately 2.5 X height of vinculum, bent at base, with anterior end enlarged, club-like. Vinculum narrow, Valva elongate, slightly narrowed caudad, with a minute spine at distal end; ampulla produced dorsally; harpe lobe-like, with a small tooth at distal end. Juxta as a simple plate. Phallus sclerotized, very long and slender, nearly straight; aedeagus much longer than phallobase, with caudal opening ventral, heavily sclerotized.

Female genitalia (PLATE 125, Fig. 612) – Corpus bursae bulbous, joining with ductus seminalis near ductus bursae. Ductus bursae very long and slender, weakly sclerotized caudally, heavily sclerotized surronding ostium bursae. Sterigma with lamella antevaginalis forming a sclerotized dome; lamella postvaginalis forming broad sclerotized shield. Posterior apophyses nearly as long as anal papillae, sclerotized. Anal papillae lobe-like, thickened along caudal margin, setose posteriorly.

Global distribution. South India, Himalayas, Indochina, Southeast Asia, West, South

and East China (Masui *et al*., 2011; Lang, 2012).

Distribution in Taiwan. Found from Jinmen islands.

Larval Host plant(s). Cannabaceae: *Celtis biondii*.

Biology. Multivoltine.

Remarks. The species was recently recorded from Jinmen islands, with a stable population already established now.

形態特徵：成蟲前翅長 22–31mm。雌雄二型性顯著。雄蝶 (圖 161)：頭黑褐色。觸角背面黑褐色，腹面褐色，末端棒狀、裸露。口器褐色。下唇鬚前伸、黑褐色。胸部背面黑褐色，腹面灰色。足灰色；前足跗節癒合、刺狀、末端密被毛。腹部背面黑褐色，腹面灰色。前翅近三角形，前緣略凸；外緣略凹、波浪狀；後緣直線狀、翅頂角狀。後翅三角形，翅脈末端略突出。翅背面底色呈泛靛色之暗褐色，R_3 室偶有銀白色小點。翅腹面底色較淺，有紫色光澤。翅面中央有暗色帶紋，亞外緣有暗色斑列。翅基部暗色，中室末端有一短紋及兩小斑。雌蝶 (圖 162)：軀體及翅底色色調較雄蝶淺，呈黃褐色。翅形較圓。翅面花紋與雄蝶腹面類似，前翅翅頂附近常有數只銀白色小斑點，前足跗節分節、具爪、無毛。

雄交尾器 (圖 464)：背兜寬、平。鉤突向後驟縮、指狀，下指、末端鈍。顎形突明顯上彎，中央形成骨化、末端分岔短棒。囊突長，長度約為基腹弧的 2.5 倍，基部彎曲，前端膨大成棒狀。基腹弧狹窄。抱器修長，後側略窄。抱器內突背側略凸。抱握鋏葉狀，末端具一小齒。陽基軛片板狀。陽莖細長，長度超過囊突，筆直、骨化。陽莖器長度超過陽莖基，末端開口於腹側，後端高度骨化。

雌交尾器 (圖 612)：交尾囊球狀，與連接導精管相會於交尾囊管旁。交尾囊管非常細長、後側略骨化，交尾孔周圍明顯骨化。交尾囊孔板之前陰片形成骨化圓頂；後陰片形成寬闊骨盾。後內骨突和肛突近乎等長，略骨化。肛突葉狀，尾端邊緣厚，後端具剛毛。

世界分布：南印度、喜瑪拉雅地區、中南半島、東南亞、華西、華南及華東。

臺灣分布：金門地區。

寄主植物：大麻科之沙楠子樹。

生物學：本種為一年多世代物種。

註記：本種於近年始見於金門地區，現已有穩定族群棲息。

Subfamily BIBLIDINAE Boisduval, 1833

This subfamily was often recognized as a tribe, Biblidini, within Limenitidinae (e.g., Ackery *et al*., 1999; Wahlberg *et al*., 2003), but recent phylogenetic studies mostly recognize it as a subfamily (e.g., Wahlberg *et al*., 2009; Espeland *et al*., 2018).

This subfamily is most diverse in Neotropical region, but there are some species in the Old World tropics.

In Taiwan, 1 species in 1 genus is known.

苾蛺蝶亞科

本亞科過去常被視為線蛺蝶亞科下之一族，稱為苾蛺蝶族，但近期親緣關係研究多認為應為一獨立亞科。

本亞科於新熱帶區最為繁盛，種類最多，但有部分種類棲息在舊世界熱帶地區。

臺灣有 1 屬 1 種。

Genus *ARIADNE* Horsfield, [1829]

Type species: *Papilio coryta* Cramer, [1776]

Diagnostic characters may include the following: 1) compound eyes naked; 2) labial palpus with 3rd segment elongate; 3) wings brown or ochre, with dark, wavy linear bands; 4) Sc of forewing swollen basad.

Larval hostplants are plants in Euphorbiaceae.

About 15 species, mainly distributed in the Oriental region, but also in Afrotropical region. (Bascombe *et al*., 1999).

1 species occurs in Taiwan.

波蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 下唇鬚第三節延長；3) 翅底色褐色或赭色，綴黑色波紋或帶紋；4) 前翅 Sc 脈基部膨大。

幼蟲取食大戟科植物。

本屬約有 15 種，主要分布於東洋區，亦見於非洲區。

臺灣有 1 種。

Ariadne ariadne (Linnaeus, 1763) (波蛺蝶／樺蛺蝶／篦麻蝶)

Papilio (*Nymphalis*) *ariadne* Linnaeus, 1763: Amoenitates academicae 6: 407. (Type locality: "Java")

Papilio coryta Cramer, [1776]: De uitlandsche kapellen 1 (8): 136, pl. 86, f. E, F. (Type locality: "Batavia [Jakarta], [Java]")

Ssp. *pallidior* Fruhstorfer, 1899

PLATE 31, Figs. 163–164; PLATE 88, Fig. 465; PLATE 126, Fig. 613

Ergolis ariadne pallidior Fruhstorfer, 1899: Berliner Entomologische Zeitschrift 44 (1/2): 90. (Type locality: "Yunan, Agra. [uncertain, possibly Nepal, Sikkim or Assam]")

Specimens examined:

XINBEI CITY: 1♂, Danshui, Guandu, 2. I. 2017, reared from *Ricinus communis*, emgd. 19. I. 2017, HSU 17B50 (L. Huang). **TAIPEI CITY:** 1♂, Beitou, Fenglizhai, 5. VIII. 2021 (L. Huang). **JIAYI Co.:** 1♀, Xingang, 10. VIII. 2007, reared from *R. communis*, emgd. 20. VIII. 2007, HSU 07H20 (Y. F. Hsu). **TAINAN CITY:** 2♂, 4♀, Xinhua, 20m, 20. XI. 2011 (Y. F. Hsu); 2♂, same locality, 20. XI. 2011, reared from *R. communis*, emgd. 29/30. XI. 2011, HSU 11L14 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♂, Tianliao, 30. I. 2009, reared from *R. communis*, emgd. 13. II. 2009, HSU 09A40 (C. K. Wang). **JINMEN Co.:** 3♀, Jinning, Zhongshan Forest, 16. VIII. 2001, reared from *R. communis*, emgd. 10/14. IX. 2001, HSU 01H20 (Y. T. Lo, L. W. Wu, Y. C. Yang & Y. C. Su); 1♂, 4♀, Jincheng, Oucuo, 23. I. 2019, reared from, *R. communis*, emgd. 6/11. II. 2019, HSU 19A17 (H. C. Huang & Y. F. Hsu).

Description. Adult – Forewing length 26–29 mm. Sexual dimorphism weakly present. Male (PLATE 31, Fig. 163): Head brown, tinged with ochre dorsally. Antennae slightly enlarged at distal end, dark brown. Proboscis brown. Labial palpus porrect, hairy, dark brown. Thorax ochre dorsally, brown ventrally. Legs brown; protarsi fused, stab-shaped, hairy. Abdomen ochre dorsally, grayish white ventrally. Forewing somewhat elongate, with termen indented and wavy; costa, dorsum nearly straight. Hindwing flabellate, with termen wavy. Wing uppersides ground color ochre. A discal and a proximal hollow band with dark brown margins present on both wings. A dark brown, wavy, submarginal line present on both wings. Small hollow spots in discoidal cells of both wings. A narrow, dark brown band at distal end of discoidal cell of both wings. A minute white dot present near apex of forewing. Wing undersides ground color brown ochre, with distal areas paler; three dark bands present on both wings. Sexual brand as a large, prominent deep gray patch near costa of hindwing undersides and white scalings on veins and area near costa of hindwing uppersides. Fringe brown. Female (PLATE 31, Fig. 164): Body and wing pattern similar to those of male, no sexual brand; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 88, Fig. 465) – Tegumen nearly flat dorsad; uncus with base broad, forming down-curved beak distally. Gnathos as elongate band with medial portion strongly produced posteriad into a blunt process. Saccus elongate, longer than height of vinculum, tail-like. Vinculum strongly curved. Valva elongate, narrowed distally, distal end blunt with a prominent dorsal tooth-like process. Juxta as V-shaped plate. Phallus elongate, slender, slightly down-curved; aedeagus approximately 2X of length of phallobase, heavily sclerotized, with distal end beveling, shallowly divided; opening ventral.

Female genitalia (PLATE 126, Fig. 613) – Corpus bursae oblong. Signa as elongate, spiny sclerite. Ductus bursae shorter than corpus bursae, forming heavily sclerotized, vase-like tube. Sterigma with antevaginalis forming sclerotized dome; postvaginalis forming a prominent sclerite tapering laterally. forming funnel-like chamber. Posterior apophyses nearly as long as anal papillae, straight. Anal papillae semi-circular, heavily sclerotized, setose posteriorly.

Global distribution. India, Sri Lanka, Indochina, Sundaland, Lesser Sunda Islands, West to East China, Taiwan (Tsukada, 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low elevations in main island of Taiwan, seldom seen in northern Taiwan (Yamanaka, 1975; Hsu, 2013), also recorded from some associated islands (Hsu, 2014).

Larval Host plant(s). Euphorbiaceae: *Ricinus communis* (Hamano, 1987; Hung, 2013; Lu & Chen, 2014).

Biology. A multivoltine species, with adults on the wing throughout the year (Lu & Chen, 2014).

形態特徵：成蝶前翅長 26–29 mm。略具雌雄二型性。雄蝶 (圖 163)：頭褐色，背面泛赭色。觸角黑褐色，末端略膨大。口器褐色。下唇鬚前伸、黑褐色、被毛。胸

部背面赭色，腹面褐色。足褐色，前足跗節癒合、刺狀、被毛。腹部背面赭色，腹面灰白色。前翅略長，外緣波狀、前緣及後緣近直線狀。後翅扇形，外緣波狀。翅背面底色赭色，有帶黑邊之中央及內側鏤空帶紋，亞外緣有黑褐色波狀線紋，中室內有鏤空小斑，中室末端有黑褐色細帶紋；前翅近翅頂處有一白色小點。翅腹面底色赭褐色、外側色調較淺，有三道黑色帶紋。後翅前緣有鮮明深灰色性標，白色特化鱗覆於後翅近前緣處及翅脈上。緣毛褐色。雌蝶 (圖 164)：形態特徵與雄蝶相似，無性標，前足跗節分節、具爪、無毛。

雄交尾器 (圖 465)：背兜背側近乎平坦。鉤突向後漸窄，末端下彎、喙狀。顎形突長帶狀，中央向後突出形成高度骨化之錐狀突起。囊突修長、尾狀，長度超過基腹弧。基腹弧明顯彎曲。抱器修長、瓣狀，向後略窄，末端鈍，背側具一齒突。陽基軛片 V 字形、板狀。陽莖細長，略下彎。陽莖器長度約為陽莖基 2 倍，高度骨化，末端淺裂且斜切，開口於腹側。

雌交尾器 (圖 613)：交尾囊橢圓形。花壁為細長、具刺骨片。交尾囊管短於交尾囊，形成明顯骨化之瓶狀管。交尾囊孔板之前陰片骨化、穹頂狀；後陰片兩側較窄，形成漏斗狀腔室。後內骨突與肛突近乎等長、甚直。肛突半圓形、骨化明顯，後端具剛毛。

世界分布：印度、斯里蘭卡、中南半島、巽他地區、小巽他群島、華西至華東、臺灣。

臺灣分布：本島低海拔地區，北部較少見，部分離島亦有記錄。

寄主植物：大戟科之蓖麻。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Subfamily CYRESTINAE Behr, 1864

This subfamily was long recognized as a tribe Cyrestini within various subfamilies, especially in Limenitidinae (e.g., Ackery *et al*., 1999), but recent phylogenetic studies revealed that it ought to form a subfamily for itself (Wahlberg *et al*., 2003; Wahlberg *et al*., 2009; Espeland *et al*., 2018). The larvae of the subfamily possess peculiar large median dorsal spine (Ackery *et al*., 1999).

This subfamily is tropical in distribution, found in the Neotropical, Afrotropical, and Oriental regions. Major larval hostplants are plants in Moraceae.

In Taiwan, 1 species in 1 genus is known.

絲蛺蝶亞科

本亞科過去常被置於其他亞科內，特別是線蛺蝶亞科，而被稱為絲蛺蝶族，但近期親緣關係研究顯示這類蝴蝶應自成一獨立亞科。本亞科幼蟲背部中央具有獨特的刺突。

本亞科分布於熱帶，可見於新熱帶區、舊熱帶區及東洋區。主要寄主植物為桑科。

臺灣有 1 屬 1 種。

Genus *CYRESTIS* Boisduval, 1832

Type species: ***Papilio thyonneus*** **Cramer, [1779]**

Diagnostic characters may include the following: 1) compound eyes naked; 2) labial palpus elongate, with 3rd segment longer than 1/2 of 2nd segment, and a hair tuft present on dorsum of 2nd segment; 3) a digitate projection at distal end of vein M_3 of hindwing; a prominent lobate extension at hindwing tornus.

Larvae feed on plants in the genus *Ficus* of Moraceae.

Mainly Indo-Australian in distribution, with about 20 species (Bascombe *et al*., 1999).

1 species occurs in Taiwan.

絲蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 下唇鬚長，其第三節超過第二節 1/2；第二節背側具毛叢；3) 後翅 M_3 脈末端有指狀突起，臀區有明顯葉狀突起。

幼蟲取食桑科榕屬植物。

本屬約 20 種，主要分布於印澳地區。

臺灣有 1 種。

Cyrestis thyodamas Doyerè, 1840 (網絲蛺蝶／石牆蝶／地圖蝶)

Cyrestis thyodamas Doyerè, 1840: Le règne animal distribué d'après son organisation, Insectes Atlas 2: pl. 138, f. 4. (Type locality: N. India)

Cyrestis (*Sykophages*) *thyodamas afghana* Martin, 1903: Deutsche entomologische Zeitschrift “Iris” 16: 86. (Type locality: “Afghanistan”)

Ssp. ***formosana*** **Fruhstorfer, 1898**

PLATE 31, Figs. 165–168; PLATE 32, Figs. 169–170; PLATE 88, Fig. 466; PLATE 126, Fig. 614

Cyrestis thyodamas formosana Fruhstorfer, 1898: Societas Entomologica 13 (10): 74. (Type locality: "Formosa")

Cyrestis thyodamas f. *tappana* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 93. (Type locality: "Tappan, Formosa [Dabang, Jiayi, Taiwan]")

Ssp. *chinensis* Martin, 1903

PLATE 32, Figs. 171–172; PLATE 89, Fig. 467; PLATE 126, Fig. 615

Cyrestis (*Sykophages*) *thyodamas chinensis* Martin, 1903: Deutsche entomologische Zeitschrift "Iris" 16: 87. (Type locality: "West und Südchina (Chia Kou Ho, Omei Shan, Chang Yang, Ta Tsien Lu, Moupin, Huang Mu Cheng, Chung Ting (Mt. Omi), Ta Lou und Tien Tsuen (beide Yun Kin), Siao Lou, Ta Tong Kiao)")

Specimens examined:

Ssp. *formosana*: JILONG CITY: 1♀, Longgang Trail, 9. XI. 2010 (C. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Wulai, Fushan Botanical Garden, 700m, 4/5. VIII. 2006 (Y. F. Hsu & H. C. Huang); 8♂, 9♀, Wulai, 2. III. 2007, reared from *Ficus microcarpa*, emgd. 21/27. III. 2007, HSU 07C2 (Y. F. Hsu); 1♂, Wulai, Fushan, 9. VI. 2009 (N. Y. Tsai); 2♂, 1♀, Wulai, Jiajiuliao, 200m, 24. X. 2011 (Y. C. Lin); 1♀, Shiding, Ergeshan, 600m, 8. VII. 2010 (N. Y. Tsai); 1♀, Sanzhi, Datunshan, 800m, 7. VI. 2011 (H. C. Huang); 1♀, Wanli, reared from *F. microcarpa*, emgd. 9. VI. 2012 (H. C. Huang); 1♂, Xindian, Feicui Dam, 21. XI. 2018 (L. Huang). **TAIPEI CITY:** 1♂, Wenshan, Jinghua Park, 29. XII. 2007 (Y. F. Hsu); 1♂, Neihu, Neigou, 3. I. 2009 (H. C. Huang); 1♂, Wenshan, Xianjiyan, 1. II. 2009 (Y. F. Hsu); 1♂, same locality, 16. III. 2011, reared from *Ficus* sp., emgd. 9. IV. 2011 (C. L. Huang); 1♂, same locality, 7. XII. 2011 (C. S. Chuang); 1♀, Wenshan, Muzha, Taipei City Zoo, 17. IV. 2011, reared from *F. microcarpa*, emgd. 24. IV. 2011, HSU 11D23 (Y. F. Hsu); 1♀, Wenshan, Chanchushan, 17. II. 2009, reared from *F. microcarpa*, emgd. 21. II. 2009, HSU 09B17 (Y. F. Hsu); 1♂, Wenshan, NTNU, Gongguan campus, 15. III. 2010 (Y. F. Hsu); 1♀, Shilin, Tianxiyuan, 600m, 27. VII. 2011 (H. C. Huang); 1♀, Beitou, Datunshan, 1. VI. 2016 (L. Huang); 1♂, 1♀, Neihu, Dagouxi, 26. II. 2020, reared from *F. superba*, emgd. 9/12. III. 2020, HSU 20B33 (L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 1000m, 9. IX. 2009 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Meinong, Shuangxi, 150m, 16. I. 2006 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Lanyu, Sidaogou, 15. IV. 2021 (H. C. Huang).

Ssp. *chinensis*: **LIANJIANG Co.:** 1♂, Nangan, Jinsha, 18. XI. 2013 (L. H. Wang & H. Y. Lee); 1♂, Nangan, Shentian Park, 17. X. 2020, reared from *F. pumila*, emgd. 17. XI. 2020, HSU 20K12 (Y. F. Hsu & R. J. Lin); 1♂, 2♀, Beigan, Leishan, 22. VII. 2020 (Y. F. Hsu); 1♂, 1♀, Beigan, Disposal Area, 20. X. 2020 (Y. F. Hsu).

Description. Adult – Forewing length 26–34 mm. Sexual dimorphism absent or weakly present. Male (PLATE 31, Figs. 165–167; PLATE 32, Fig. 171): Head dark brown with white bands on vertex, rim behind compound eyes white. Antennae slightly enlarged at distal end, dark brown, banded with white ventrally. Proboscis brown. Labial palpus porrect, dark brown mixed with yellow dorsally, white ventrally. Thorax dark brown with white bands dorsally, white ventrally; patagium elongate, with white marking. Legs white; protarsi fused, stab-shaped, hairy. Abdomen dark brown with orange or white bands dorsally, white ventrally. Forewing nearly right triangular, with tornus indebted; costa convex; termen nearly straight but slightly wavy; dorsum slightly concave distally. Hindwing somewhat triangular, with distal end of costa indented; a horn-shaped process at distal end of M_3. A prominent lobe at tornus. Wing uppersides ground color white or creamy yellow. Multiple narrow striae present on both wings, most dark brown. A postdiscal band consisted of dark brown, deep blue, red ochre, brown ochre or yellow ochre markings present, associated with additional dark markings of various extent near forewing apex and along hindwing termen. Complicated pattern around tornal lobe of hindwing. Wing undersides ground color and pattern similar to those of upperside, markings less extensive. Fringe white, partially brown and orange. Female (PLATE 31, Fig. 168; PLATE 32, Figs. 169–170, 172): Body and wing pattern similar to those of male; protarsi segmented, clawed, not hairy.

Male genitalia (PLATE 88, Fig. 466; PLATE 89, Fig. 467) – Tegumen narrowed posteriad; uncus as simple, down-curved beak. Gnathos vestigial, Saccus as elongate rod, with anterior end blunt. Vinculum strongly curved. Valva forming complicated structure, including costa with distal, perpendicular, flat lobe with serrate margins on inner surface, a robust heavily sclerotized sacculus, and a broad ampulla + harpe with dorsal fold; a membrane present proximally on inner wall of valva. Juxta slender, elongate, with dorsal end broadened. Phallus elongate, lance-shaped, slightly up-raising; aedeagus much

longer than phallobase, tapering to acute caudal end, with dorsal opening.

Female genitalia (PLATE 126, Figs. 614–615) – Corpus bursae bulbous. Ductus bursae elongate, nearly as long as corpus bursae, partially sclerotized. Sterigma elaborated into broad dorsal sclerotized wall, recurved into heavily sclerotized bi-lobed sheet with medial invagination. Anterior apophyses short. Posterior apophyses slightly longer than anal papillae, weak sclerotized, nearly straight, with distal end enlarged. Anal papillae lobe-like, sclerotized, setose posteriorly, with a medial sclerotized band.

Variation. Dark markings are more extensive in wet season. A yellow form exists, with the ground color of wings creamy yellow instead of white. It is usually less common than the regular white form.

Global distribution. India, Himalayas, Indochina, Japan, West to East China, Taiwan (Tsukada, 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013), occasionally found in Lanyu. Populations found in Mazu Islands are regarded as ssp. *chinensis* (Hsu, 2014).

Larval Host plant(s). Moraceae: Various *Ficus* species, including *Ficus caulocarpa*, *F. formosana*, *F. irisana*, *F. microcarpa*, *F. pumila*, *F. sarmentosa*, *F. superba*, *F. virgata*, *F. tinctoria*, *F. ampelos*, *F. erecta*, *F. septica*, etc. (Uchida, 1991; Hsu, 1999; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, with adults on the wing throughout the year (Hsu, 1999; Lu & Chen, 2014).

形態特徵：成蝶前翅長 26–34 mm。雌雄二型性略有或缺乏。雄蝶 (圖 165–167、171)：頭黑褐色，頭頂有白條紋，複眼後側輪緣白色。觸角黑褐色，末端略膨大，側面有白條紋。口器褐色。下唇鬚前伸，背面黑褐色雜黃色、腹面白色。胸部背面

黑褐色，上有白條紋、腹面白色；頸板長，有白紋。足白色，前足跗節癒合、刺狀、被毛。腹部背面黑褐色，上有橙色或白色條紋，腹面白色。前翅近直角三角形，臀區凹入；前緣凸、外緣頗直，略呈波狀、後緣外側略凹。後翅略呈三角形，前緣末端凹入，M_3 脈末端有角狀尾突，臀區有明顯葉狀突。翅背面底色白色或乳黃色，上有許多細帶紋，大多數黑褐色，另有由黑褐色、深藍色、赭紅色、赭褐色或赭黃色紋組成之圖案。前翅近翅頂有範圍多變之黑色紋相，於後翅沿外緣分布；後翅臀區葉狀突斑紋複雜。翅腹面底色及斑紋與翅背面相似，但斑紋較減退。緣毛白色，但部分褐色或橙色。雌蝶 (圖 168–170、172)：形態特徵與雄蝶相似，前足跗節分節、具爪、無毛。

雄交尾器 (圖 466–467)：背兜向後漸窄。鉤突下彎、喙狀。顎形突退化。囊突甚長、桿狀，前端鈍。基腹弧明顯彎曲。抱器結構複雜，內側膜質。抱器背明顯骨化，末端形成垂直且帶有鋸齒緣的鰭狀突起。抱器內突和抱握鋏合成瓣狀，背側摺疊。抱器腹高度骨化、囊狀。陽基軛片細長、背側寬。陽莖細長，末端略下彎。陽莖器長度遠超過陽莖基，末端漸細而呈尖矛狀，開口斜切。

雌交尾器 (圖 614–615)：交尾囊球狀。交尾囊管細長，與交尾囊近乎等長，部分骨化。交尾囊孔板背側形成寬闊骨化壁，並向內反曲形成骨化明顯之雙葉狀骨片。前內骨突短。後內骨突略長於肛突，輕度骨化，頗直，遠端膨大。肛突葉狀、骨化，後端具剛毛，中央具骨化帶。

變異：雨季型個體黑色斑紋較為明顯。翅面底色乳黃色而非白色之黃色型個體時可發現，一般較白色型少見。

世界分布：印度、喜瑪拉雅地區、中南半島、日本、華西至華東、臺灣。

臺灣分布：分布於本島低至中海拔地區，蘭嶼亦有記錄。見於馬祖之族群屬於亞種 ssp. *chinensis*。

寄主植物：多種桑科榕屬之植物，包括大葉雀榕、天仙果、澀葉榕 、榕樹、薜荔、珍珠蓮、匍莖榕、島榕、山豬枷、菲律賓榕、假枇杷、大冇榕等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Subfamily NYMPHALINAE Swainson, 1827

Wahlberg *et al*. (2005) stated that this subfamily is the type of the family Nymphalidae, but Scoble (1992) and Ackery *et al*. (1999) addressed that this subfamily probably is not monophyletic, representing an unnatural assemblage. Phylogenetic studies in recent years such as Freitas & Brown (2004), Wahlberg *et al*. (2005), Wu *et al*. (2014), and Espeland *et al*. (2018) have made the definition of this subfamily more stable, but further changes of its containing tribes is still possible. Ackery *et al*. (1999) and Wahlberg *et al*. (2005) stated that no morphological character is known to be unique to this subfamily, except for dorsolateral scoli on A9 of larva is more ventral when compared with Heliconiinae.

This subfamily is cosmopolitan in distribution (Scoble, 1992; Ackery *et al*., 1999). The larvae feed on many families of plants, including many Asteraceae, Urticaceae, Acanthaceae, Lamiaceae, Scrophulariaceae, etc. (Ackery *et al*., 1999)

In Taiwan, 20 species in 10 genera have been recorded, but 2 of them are so far only represented by accidental strays.

蛺蝶亞科

Wahlberg *et al*. (2005) 稱本亞科為蛺蝶科之模式，但 Scoble (1992) 及 Ackery *et al*. (1999) 指出本亞科可能並非單系群，而僅是一非自然群集。近年之親緣關係研究如 Freitas & Brown (2004)、Wahlberg *et al*. (2005)、Wu *et al*. (2014) 及 Espeland *et al*. (2018) 使本亞科之定義較為穩定，但其包含之成員仍有變動的可能。Ackery *et al*. (1999) 及 Wahlberg *et al.* (2005) 指出本亞科獨特特徵僅有幼蟲第九腹節側背面棘刺較毒蝶亞科位置更偏腹面。

本亞科呈泛世界分布。幼蟲取食多科植物，包括菊科、蕁麻科、爵床科、唇形科及玄參科等。

臺灣約有 10 屬 20 種之記錄，其中 2 種是稀有的偶產迷蝶。

Genus *JUNONIA* Hübner, [1819]

Type species: *Papilio lavinia* Cramer, [1775]

Diagnostic characters may include the following: 1) compound eyes naked; 2) antennal club enlarged, covered by scales; 3) distal end of forewing M_1 produced.

Larvae feed on plants in various families, including Plantaginaceae, Scrophulariaceae, Verbenaceae, Gentianaceae, Asteraceae, Portulacaceae, Convolvulaceae, Goodeniaceae, Acanthaceae, etc.

Bozano & Floriani (2012) recognized 28 species, widespread in the world, best represented in the Oriental and Afrotropical regions.

6 species have been recorded from Taiwan; at least one is a rare stray from the Philippines.

眼蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 觸角錘部膨大、被鱗；3) 前翅 M_1 脈末端突出。

幼蟲取食多科植物，包括車前科、玄參科、馬鞭草科、龍膽科、菊科、馬齒莧科、旋花科、草海桐科、爵床科等。

Bozano & Floriani (2012) 列出 28 種本屬蝶種，廣泛分布世界各地，但以東洋區及非洲區種類最多。

臺灣有 6 種之記錄，其中至少有 1 種為源自菲律賓之稀有偶產迷蝶。

***Junonia almana* (Linnaeus, 1758) (眼蛺蝶／擬蛺蝶／孔雀蛺蝶／美眼蛺蝶)**

PLATE 32, Figs. 173–174; PLATE 33, Figs. 175–176; PLATE 89, Fig. 468; PLATE 126, Fig. 616

Papilio (*Nymphalis*) *almana* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 472. (Type locality: "Asia" [Canton, China])

Papilio (*Nymphalis*) *asterie* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 472. (Type locality: "India" [Canton, China])

Alcyoneis almane Hübner, [1819]: Verzeichniss bekannter Schmettlinge (3): 35. (unjustified emendation)

Cynthia acanthi Fabricius (in Bryk), 1938: Systema Glossatorum: 92. (Type locality: "Acantho Spinoso Indiae")

Junonia almana f. *nigriata* Chou, Yuan, Yin, Zhang & Chen, 2002: Entomotaxonomia 24 (1): 54, f. 16a-b. (Type locality: "[Guangzhou], Guangdong Province, China")

Specimens examined:

JILONG CITY: 1♂, 1♀, NTOU campus, 26. IX. 2006, reared from *Phyla nodiflora*, emgd. 12/20. XI. 2006, HSU 06J44 (Y. F. Hsu, H. C. Huang & L. H. Wang); 1♂, Bisha Harbor, 9. XI. 2010 (J. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 2♂, Ruifang, Nanya, Sea Level, 5. IX. 2008 (C. K. Wang); 1♀, Danshui, FAB Green Village, reared from *Hygrophila difformis*, emgd. 27. X. 2020 (B. C. Lin). **TAIPEI CITY:** 1♀, Wenshan, NTNU, Gongguan campus, 1. XI. 2000 (Y. F. Hsu); 1♂, 4♀, same locality, 5. VII. 2002, reared from *Lindernia ruelloides* [= *Bonnaya ruelloides*], emgd. 2/6. VIII. 2002, HSU 02G5 (H. S. Chuen & F. Z. Lin). **YILAN Co.:** 1♂, Toucheng, 22. IX. 2008 (Y. H. Cheng). **NANTOU Co.:** 2♀, Lugu, Fenghuanggu, 600m, 11. XII. 2004 (Y. F. Hsu). **ZHANGHUA Co.:** 1♀, Zhanghua City, 1. XI. 1996 (Y. F. Hsu). **JIAYI Co.:** 1♀, Xingang, 16. II. 2008 (Y. F. Hsu); 1♂, 1♀, Xingang, Yuemei, 15m, 11. VI. 2007 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Liujia, 20m, 20. XI. 2011 (Y. F. Hsu); 1♂, Wushantou, 80m, 24. X. 2005 (Y. F. Hsu); 1♂, Xinhua, 20m, 20. XI. 2011 (Y. F. Hsu).

Description. Adult – Forewing length 26–31 mm. Sexual dimorphism absent. Male (PLATE 32, Figs. 173–174): Head brown mixed with orange. Antennae slightly enlarged at distal end, dark brown dorsally, creamy white ventrally, naked on inner surface and at apical tips. Proboscis brown. Labial palpus porrect, brown dorsally, creamy white ventrally. Thorax brown tinged with ochre dorsally, creamy white ventrally. Legs creamy white; protarsi fused, stab-shaped, hairy. Abdomen dark brown tinged with orange dorsally, creamy white ventrally. Forewing nearly triangular; costa slightly convex, termen produced at distal ends of vein M_1 and CuA_2; dorsum straight. Hindwing ovate; tornus produced. Wing uppersides ground color orange, darkened along termen. Eye-like spots present on both wings; three on forewing, with centers in cell R_5, M_1 and CuA_1;

two on hindwing, anterior one large, posterior one small. Double, narrow, dark brown, submarginal striae present on both wings. Four dark bars present along costa of forewing. Wing undersides ground color varied according to season, brighter, pale yellow ochre in wet season, duller, yellow ocher in dry season. A narrow discal band present on both wings, straight on hindwing, bent inwards anteriorly on forewing. Eye-like markings, bars and submarginal bands prominent in wet season, reduced in dry season. Fringe ochre. Female (PLATE 33, Figs. 175–176): Body and wing pattern similar to those of male; protarsi segmented, not hairy, spiny.

Male genitalia (PLATE 89, Fig. 468) – Tegumen broad, triangular; uncus forming down-curved beak with blunt distal end. Gnathos broad, with medial lobe protruding anteriad. Saccus elongate, narrow, enlarged anteriorly. Vinculum strongly curved. Valva elongate, attenuate posteriorly; ampulla bearing two prominent hooks at distal end; harpe with distal end rounded, bearing a few small spines along margin. Juxta fused with valvae, with a pair of dorsal arms. Phallus elongate, lance-shaped, slightly up-raising; aedeagus approximately 3.3X of phallobase, tapering to fine caudal end with pointed tip; slender spiny sclerite attached ventrally.

Female genitalia (PLATE 126, Fig. 616) – Corpus bursae bulbous. Ductus bursae elongate, more than 2X of length of corpus bursae, enlarged posteriorly, forming a sclerotized ring at ostium bursae. Sterigma forming a sclerotized shield. Anterior and posterior apophyses as straight, slender rod-like sclerites. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose posteriorly.

Variation. Prominent seasonal variation is known for this species, with the wet season form possessing prominent eye-like spots on wing undersides, presumably with better threatening effect against predatory natural enemies, which may be more active in warmer seasons. By contrast, the dry season form has it wing shape more angled with no eye-like spots on wing undersides, making the wings resembling dry leave, presumably with better camouflage in the vegetation of the dry season.

Global distribution. Widespread in the Oriental region, excluding Borneo; also in

southern Japan, Sulsawesi and Lesser Sunda Islands (Tsukada, 1985).

Distribution in Taiwan. Low elevations in main island of Taiwan and many associated islands (Yamanaka, 1975; Hsu, 2013, 2014).

Larval Host plant(s). Linderniaceae: *Bonnaya ruellioides*, *B. ciliata*, *B. antipoda*; Acanthaceae: *Hygrophila pogonocalyx*, *Hy. difformis*, *Hemigraphis repanda*; Verbenaceae: *Phyla nodiflora*, etc. (Hsu, 1999, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

Remarks. The remarkable seasonal differences may have resulted in description of different seasonal forms of this species as different species on the same page in "Systema Naturae" by Linnaeus (1758), *almana* for the dry season form, and *asterie* wet season form (Bozano & Floriani, 2012).

形態特徵：成蝶前翅長 26–31 mm。無雌雄二型性。雄蝶 (圖 173–174)：頭褐色雜橙色。觸角背面黑褐色、腹面乳白色，末端略膨大，內側及頂端裸露。口器褐色。下唇鬚前伸，背面褐色、腹面乳白色。胸部背面褐色泛赭色、腹面乳白色。足乳白色；前足跗節癒合、刺狀、被毛。腹部背面黑褐色泛橙色、腹面乳白色。前翅近三角形，前緣略凸、外緣 M_1 脈及 CuA_2 脈末端突出、後緣直線狀。後翅卵形，臀區突出。翅背面底色橙色，沿外緣深色，眼狀斑於前翅有三只，中心位於 R_5 室、M_1 室及 CuA_1 室，於後翅兩只，前方者較大，亞外緣有兩道黑褐色細線紋；前翅有四只黑色短紋沿前緣分布。翅腹面斑紋依季節變化，雨季型個體色彩較明亮，呈淡赭黃色，乾季型個體色彩較暗，呈赭黃色。前、後翅中央有細帶紋，於後翅直線狀，於前翅前側內彎。眼狀斑、短條紋及亞外緣帶紋均於雨季較鮮明，於乾季則減退。緣毛赭色。雌蝶 (圖 175–176)：形態特徵與雄蝶相似，但前足跗節分節、具刺、不被毛。

雄交尾器 (圖 468)：背兜寬闊、三角形。鉤突細長，形成向下彎曲之喙狀突起，末端鈍。顎形突寬大，其中央形成葉狀突起。囊突窄細，前端膨大。基腹弧明顯彎曲。抱器修長、瓣狀，向尾端漸細。抱器內突末端有 2 只鉤狀突起。抱握鋏末端圓弧狀，

邊緣有數只小棘刺。陽基軛片與抱器癒合，其背側形成一對骨臂。陽莖細而直。陽莖器長度約為陽莖基 3.3 倍，尾端漸細，末端鈍，腹面生有細小具刺骨片。

雌交尾器 (圖 616)：交尾囊球狀。交尾囊管細長，長度超過交尾囊長度之 2 倍，後端膨大，於交尾囊孔處形成一骨環。交尾囊孔板形成一骨盾。前內骨突及後內骨突挺直、細長、棒狀。肛突葉狀，其基部及後緣骨化，後端具剛毛。

變異：本種季節變異明顯，雨季型個體翅腹面眼狀斑紋鮮明，可能對於活動於溫暖季節之獵食者具有較佳嚇阻效能。反之，乾季型個體翅形較具稜角、翅腹面眼狀斑紋消失，使之形似枯葉，可能在乾季對應環境植被狀況可提供較佳偽裝。

世界分布：除婆羅洲外，廣泛分佈於東洋區；日本南部、蘇拉威西、小巽他群島亦有分布。

臺灣分布：本島低海拔地區及許多離島。

寄主植物：母草科之旱田草、水丁黃、泥花草；爵床科之大安水蓑衣、異葉水蓑衣、易生木；馬鞭草科之鴨舌癀等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種差異顯著的季節型使 Linnaeus (1758) 在其奠定現代分類學基礎之名著「自然體系」中，在同一頁被記述為不同種，乾季型稱為 *almana*，雨季型則作 *asterie*。

Junonia lemonias (Linnaeus, 1758) (鱗紋眼蛺蝶／眼紋擬蛺蝶／蛇眼蛺蝶)

Papilio (*Nymphalis*) *lemonias* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 473. (Type locality: “Indiis [Canton, China]”)

Papilio (*Nymphalis*) *aonis* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 472. (Type locality: “Asia”)

Precis lemonias f. *persicaria* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 520. (Type locality: “Kaschmir, Ceylon, Siam und Süd-Annam”)

Precis lemonias vaisya Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 520. (Type locality: [not explicitly stated, probably India])

Ssp. *aenaria* Fruhstorfer, 1912

PLATE 33, Figs. 177–180; PLATE 89, Fig. 469; PLATE 127, Fig. 617

Precis lemonias aenaria Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 520. (Type locality: "Formosa")

Specimens examined:

TAIZHONG CITY [= TAIZHONG Co.]: 1♂, Heping, Shuangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **JIAYI Co.:** 1♀, Alishan, Shizhuo/ Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Liujia, Jianshan, 24. X. 2000 (Y. F. Hsu); 1♀, Dongshan, Kantoushan, 24. XII. 2019 (C. W. Huang & S. Y. Chen). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♂, 1♀, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu); 1♀, Liugui, 23. X. 2005 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Chunri, Dahanshan, 850m, 4. I. 2003 (Y. F. Hsu); 2♂, same locality, 30. IX. 2021, reared from *Lepidagathis formosensis*, emgd. 5/6. X. 2021, HSU 21J16 (Y. F. Hsu); 2♂, 1♀, Shizi, Shuangliu, 18. XII. 2005 (Y. F. Hsu); 1♀, Shizi, Lilongshan, 500m, 1. III. 2008 (Y. F Hsu); 1♂, Sandimen, 300m, 2. I. 2009 (Y. F. Hsu); 2♂, same locality, 20. II. 2009 (Y. F. Hsu); 1♂, Checheng, Xiaojianshan, 4. IX. 2010 (Y. F. Hsu); 2♂, Chunri, Dahanshan, 27. IV. 2011 (J. H. Lin); 1♂, Mudan, Gaoshifushan, 18. VIII. 2011 (Y. H. Lin).

Description. Adult – Forewing length 24–31 mm. Sexual dimorphism not prominent. Male (PLATE 33, Figs. 177–178): Head brown. Antennae enlarged at distal end, dark brown dorsally, creamy white ventrally, naked on inner surface. Proboscis brown. Labial palpus porrect, brown dorsally, creamy white ventrally. Thorax brown dorsally, creamy white ventrally. Legs creamy white; protarsi fused, stab-shaped. Abdomen dark brown dorsally, creamy white ventrally. Forewing nearly triangular; costa slightly convex, termen wavy, slightly produced at distal ends of vein M_1; dorsum straight. Hindwing broad; termen wavy, produced at distal tip of M_3. Wing uppersides ground color brown. Eye-like spots constantly present in cell CuA_1 of forewing and M_1 of hindwing, but additional ones sometimes in other cells. A series of creamy white discal and another series of submarginal spots present on forewing, with three additional spots present proximally. Two hollow bars in discoidal cell of forewing. Double, narrow, dark brown, submarginal striae present on both wings. Wing undersides markings varied according to season, variegated in wet season, more uniform in dry season. In wet season, ground color of wings creamy white with multiple dark bands proximally. A dark, straight, postdiscal band present, more prominent on hindwing. Eye-like spots mainly in cell M_1

and CuA_1 of both wings. In dry season, ground color of wings grayish white, yellow ochre or red ochre, multiple dark bands reduced. Fringe white, brown at distal tips of veins. Female (PLATE 33, Figs. 179–180): Body and wing pattern similar to those of male; protarsi segmented, spiny.

Male genitalia (PLATE 89, Fig. 469) – Tegumen broad, triangular; uncus forming robust, down-curved beak with acute distal end. Gnathos broad, densely covered by long setae. Saccus elongate, rode-like, with distal tip blunt. Vinculum curved. Valva slender, bifid distally; ampulla bearing two small hooks at distal end; harpe internal to ampulla, not extending beyond ampulla, with a few teeth at distal end. Juxta fused with valvae, forming bi-lobed sclerite with minute teeth along dorsal margin. Phallus elongate, lance-shaped; aedeagus approximately 3.5X of phallobase, slightly recurved distally, tapering to fine caudal end with acute tip; slender spiny sclerite attached ventrally.

Female genitalia (PLATE 127, Fig. 617) – Corpus bursae ovate. Ductus bursae long, thick, mostly membranous, forming sclerotized tube near posterior end, Sterigma forming a bell-shaped sclerite. Anterior and posterior apophyses as straight, elongate. slender rod-like sclerites, with distal ends paddle-like. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose posteriorly.

Variation. Seasonal variation present, with individuals of wet season possessing rounder wing shape and more prominent in patter of wing undersides.

Global distribution. Most areas in the Oriental region, excluding Sumatra, Java, Borneo and southern Philippines (Tsukada, 1985).

Distribution in Taiwan. Mainly low elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Acanthaceae: *Lepidagathis formosensis* (Hsu, 2013; Hung, 2013; Lu & Chen, 2014).

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 24–31 mm。雌雄二型性不顯著。雄蝶 (圖 177–178)：頭褐色。觸角背面黑褐色、腹面乳白色，末端略膨大，內側裸露。口器褐色。下唇鬚前伸，背面褐色、腹面乳白色。胸部背面褐色、腹面乳白色。足乳白色；前足跗節癒合、刺狀。腹部背面黑褐色、腹面乳白色。前翅近三角形，前緣略凸、外緣波狀、M_1 脈末端略突出、後緣直線狀。後翅寬大，外緣波狀、M_3 脈末端突出。翅背面底色褐色，有眼狀斑位於前翅 CuA_1 室及後翅 M_1 室，但有時其他翅室也出現額外眼狀斑點，亞外緣有兩道黑褐色細線紋；前翅中央及亞外緣有乳白色斑列，翅內側另有三只乳白色斑點，中室內有二只鏤空短紋。翅腹面斑紋依季節而不同，雨季時花紋較斑駁、乾季時則較單純。雨季型個體底色乳白色，內側有數道暗色帶紋，外側有深色直帶紋，於後翅較鮮明，眼狀斑主要位於 M_1 室及 CuA_1 室；乾季型個體底色呈灰白色、赭黃色或赭紅色，內側暗色帶紋減退。緣毛白色，翅脈末端褐色。雌蝶 (圖 179–180)：形態特徵與雄蝶相似，但前足跗節分節、具刺。

雄交尾器 (圖 469)：背兜寬闊、三角形。鉤突基部粗壯，形成向下彎曲之喙狀突起，末端尖銳。顎形突寬大，密被長剛毛。囊突長、棒狀，末端鈍。基腹弧彎曲。抱器細長，末端分叉。抱器內突末端有 2 只小鉤突。抱握銨位於抱器內突內側，末端長度不超出抱器內突，末端有少數小齒突。陽基軛片與抱器癒合形成雙股骨板，背緣有小齒。陽莖細長。陽莖器長度約為陽莖基 3.5 倍，尾端漸細，末端尖銳，腹側有具細長棘刺之小骨片。

雌交尾器 (圖 617)：交尾囊卵圓形。交尾囊管粗而長，大部分膜質，近尾端處形成骨化管。交尾囊孔板形成一啞鈴狀骨片。前內骨突及後內骨突直、細長、棒狀，前端呈槳狀。肛突葉狀，其基部及後緣骨化，後端具剛毛。

變異：有季節變異，雨季型個體翅幅較寬，翅腹面斑紋較明顯。

世界分布：廣泛分佈於東洋區，但不見於蘇門答臘、爪哇、婆羅洲及菲律賓南部。

臺灣分布：主要分布於本島低海拔地區。

寄主植物：爵床科之臺灣鱗球花。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Junonia orithya (Linnaeus, 1758) (青眼蛺蝶／孔雀青蛺蝶／翠藍眼蛺蝶)

PLATE 34, Figs. 181–182; PLATE 89, Fig. 470; PLATE 127, Fig. 618

Papilio (*Nymphalis*) *orithya* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 472. (Type locality: "Indiis" [China])

Junonia orithya isocratia Hübner, [1819]: Verzeichniss bekannter Schmettlinge (3): 34. (nomen nudum)

Junonia orthyia [sic] var. *leechi* Alphéraky, 1897: Mémoires sur les lépidoptères 9: 103. (Type locality: "Chine [China]")

Specimens examined:

JILONG CITY: 1♂, 1♀, NTOU campus, 2. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= TAIPEI Co.]:** 2♂, Wulai, Fushan Botanical Garden, 700m, 4/5. VIII. 2006 (Y. F. Hsu & H. C. Huang); 1♂, Ruifang, Nanya, 3. IX. 2010 (Y. F. Hsu); 1♂, 1♀, Danshui, FAB Green Village, reared from *Angelonia salicariifolia*, emgd. 25. IX. 2020 (B. C. Lin). **TAIPEI CITY:** 1♂, Shilin, Tianxiyuan, 300m, 21. IX. 2010 (W. H. Chien); 1♀, Shilin, Neishuangxi, 450m, 7. X. 2006 (H. C. Huang, L. Huang & Y. F. Hsu). **YILAN Co.:** 1♂, 1♀, Yuanshan, Fushan Botanical Garden, 800m, 28. VIII. 2007 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Heping, Wushikeng, 800m, 16. VII. 2009 (C. H. Yen). **HUALIAN Co.:** 1♀, Yuli, Chikeshan, 4. V. 2019 (J. Y. Liang).

Description. Adult – Forewing length 24–30 mm. Sexual dimorphism prominent. Male (PLATE 34, Fig. 181): Head brown, pale in frons. Antennae slightly enlarged at distal end, white banded with dark brown ventrally, dark brown at apical tip ventrally. Proboscis brown. Labial palpus porrect, brown dorsally, creamy white ventrally. Thorax brown, creamy white ventrally. Legs creamy white; protarsi fused, stab-shaped. Abdomen dark brown dorsally, creamy white ventrally. Forewing nearly triangular; costa slightly convex, termen slightly produced at distal ends of vein M_1; dorsum straight. Hindwing rounded; termen wavy. Wing uppersides ground color dark brown, but most area of hindwing covered by metallic deep blue or purplish blue patch. Eye-like spots present on both wings; two on forewing, with centers in M_1 and CuA_1; two on hindwing, anterior one smaller than posterior one. Double, narrow, dark brown, submarginal striae present on both wings. White markings present near apex of forewing. Wing undersides with

pattern variegated, ground color creamy white; dark bands and spots present; eye-like spots more prominent on forewing. Three orange bands present proximally on forewing, margined with dark brown. Fringe white, brown at distal tips of veins. Female (PLATE 34, Fig. 182): Body similar to that of male, but antennae dark brown instead of white. Eye-like spots of wing uppersides more prominent, with anterior one larger than posterior one on hindwing. Two prominent orange bars present in discoidal cell of forewing. Hindwing uppersides without blue scalings or present only in distal portion. Pattern of wing undersides with more dark markings, more prominent; protarsi segmented, spiny.

Male genitalia (PLATE 89, Fig. 470) – Tegumen broad, triangular; uncus forming slender, down-curved beak with acute distal end. Gnathos broad, densely covered by long setae. Saccus short, flattened. Vinculum curved. Valva broad at base, bifid distally; ampulla bearing a few teeth along ventral margin at distal end; harpe internal to ampulla, extending beyond ampulla, with a few teeth at distal end. Juxta fused with valvae, forming broad wall with small dorsal invagination. Phallus short, lance-shaped, straight; aedeagus approximately 3.0X of phallobase, tapering to fine caudal end with blunt tip.

Female genitalia (PLATE 127, Fig. 618) – Corpus bursae as elongate sac. Ductus bursae short, less than 0.25X of length of corpus bursae, Sterigma forming a pair of oblong sclerites connected by medial bridge. Anterior and posterior apophyses as straight, slender rod-like sclerites, with distal ends paddle-like. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose posteriorly.

Variation. Seasonal variation is weakly present, with individuals of wet season possessing rounder wing shape and more prominent in patter of wing undersides.

Global distribution. Widespread in Afrotropical, Oriental, and Australian regions, also southern islands of Japan (Tsukada, 1985).

Distribution in Taiwan. Low elevations in main island of Taiwan and many associated islands (Yamanaka, 1975; Hsu, 2013, 2014).

Larval Host plant(s). Acanthaceae: various *Justicia* species including *J. procumbens*; Plantaginaceae: *Plantago asiatica*, *Angelonia salicariifolia*; Verbenaceae: *Phyla nodiflora* (Hsu, 1999, 2013; Lu & Chen, 2014).

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 24–30 mm。雌雄二型性顯著。雄蝶 (圖 181)：頭黑褐色，前額灰白色。觸角白色，腹面有黑褐色紋，末端略膨大，端部腹面黑褐色。口器褐色。下唇鬚前伸，背面褐色、腹面乳白色。胸部背面褐色、腹面乳白色。足乳白色；前足跗節癒合、刺狀。腹部背面黑褐色、腹面乳白色。前翅近三角形，前緣略凸、外緣 M_1 脈末端略突出、後緣直線狀。後翅圓，外緣波狀。翅背面底色黑褐色，後翅大部分覆有具金屬光澤之深藍色或藍紫色鱗，翅面上各有兩只眼狀斑，在前翅中心位於 M_1 室及 CuA_1 室，後翅眼紋前方者較小，亞外緣有兩道黑褐色細線紋；前翅近翅頂處有白色斑紋。翅腹面斑紋多變，底色乳白色，上綴深色帶紋及斑點，前翅眼狀斑較鮮明，前翅內側有三道鑲黑邊之橙色帶紋。緣毛白色，翅脈末端褐色。雌蝶 (圖 182)：軀體特徵與雄蝶相似，但觸角呈黑褐色，翅背面眼狀斑較鮮明，後翅眼狀斑點前方者較大型，後翅不具藍色鱗或僅見於外側，翅腹面深色斑紋較多、較鮮明，前足跗節分節、具刺。

雄交尾器 (圖 470)：背兜寬闊、三角形。鉤突細長，形成向下彎曲之喙狀突起，末端尖銳。顎形突寬大，密被長剛毛。囊突短、扁平。基腹弧彎曲。抱器基部寬，末端分叉。抱器內突末端腹緣具細齒，抱握鋏末端長度超出抱器內突，末端具數只齒突。陽基軛片與抱器癒合形成寬板，背側有小凹陷。陽莖短而直。陽莖器長度約為陽莖基 3 倍，尾端漸細，末端鈍。

雌交尾器 (圖 618)：交尾囊細長、袋狀。交尾囊管短於交尾囊長度之 0.25 倍。交尾囊孔板形成一對由內橋相連之橢圓形骨片。前內骨突及後內骨突直、細長、棒狀，前端呈槳狀。肛突葉狀，其基部及後緣骨化，後端具剛毛。

變異：季節型不顯著。雨季型個體翅形較圓，翅腹面斑紋較鮮明。

世界分布：廣泛分佈於非洲區、東洋區、澳洲區之熱帶地區，以及日本南部島嶼。

臺灣分布：本島低海拔地區，亦見於許多離島。

寄主植物：多種爵床科爵床屬之植物包括爵床；車前科之車前草、天使花；馬鞭草科之鴨舌癀。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

***Junonia iphita* (Cramer, [1779]) (黯眼蛺蝶 / 鉤翅眼蛺蝶 / 黑擬蛺蝶)**

PLATE 34, Figs. 183–186; PLATE 90, Fig. 471; PLATE 127, Fig. 619

Papilio iphita Cramer, [1779]: De uitlandsche kapellen 3 (17-21): 30, pl. 209, f. C, D. (Type locality: "China; coromandel")

Precis iphita siccata Fruhstorfer, 1900: Berliner Entomologische Zeitschrift 45 (1/2): 22. (Type locality: "Nord-Indien [N. India]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Ruifang, Nanyashan, 23. VIII. 2002 (Y. F. Hsu). **TAIPEI CITY:** 4♂, 4♀, Wenshan, Muzha, 31. XII. 2008, reared from *Strobilanthes formosanus*, emgd. 10/14. I. 2009, HSU 08M39 (L. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sanmin, Bianfudong, 500m, 8. IX. 2008 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Huisun Forestry Station, 16. X. 2010 (Y. F. Hsu). **JIAYI Co.:** 1♀, Alishan, Shanmei, 500m, 31. III. 2007 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Dongshan, Kantoushan, 600/800m, 4. II. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu). **PINGDONG Co.:** 4♂, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu); 1♀, Shizi, Lilongshan, 500m, 1. III. 2008 (Y. F. Hsu); 1♀, Mudan, Xuhai, 4. IX. 2010 (Y. F. Hsu); 1♀, Chunri, Dahan Forest Trail, 21+Km, 20. VII. 2020 (C. W. Huang, C. J. Cheng & J. Y. Liang).

Description. Adult – Forewing length 28–35 mm. Sexual dimorphism not prominent. Male (PLATE 34, Figs. 183–184): Head brown. Antennae slightly enlarged at distal end, dark brown dorsally, banded with white ventrally, naked on inner surface. Proboscis brown. Labial palpus porrect, brown. Thorax dark brown dorsally, brown ventrally. Legs brown; protarsi fused, stab-shaped. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular; costa convex, termen produced at distal

ends of vein M_1; dorsum straight. Hindwing broad; termen produced at tornus. Wing uppersides ground color brown, with proximal portion darkened. A series of small, eye-like postdiscal spots present on hindwing. Two hollow bars in discoidal cell of forewing. Double, narrow, dark brown, submarginal striae present on both wings. Wing undersides ground color paler than that of upperside, with several dark bands, especially on forewing. A dark, straight, discal band present, more prominent on hindwing. Grayish white scalings present, more prominent in dry season. Fringe white. Female (PLATE 34, Figs. 185–186): Body and wing pattern similar to those of male; protarsi segmented, spiny.

Male genitalia (PLATE 90, Fig. 471) – Tegumen broad, triangular; uncus forming robust, down-curved beak with acute distal end. Gnathos broad, with narrow sclerotized, medial bridge. Saccus thick, flattened. Vinculum strongly curved. Valva broad, elongate; ampulla with distal end forming serrate disc and a small subapical tooth; harpe with distal end beyond ampulla, with distal margin rounded, serrate. Juxta as prominent V-shaped sclerite. Phallus short, lance-shaped, straight; aedeagus approximately 2.3X of phallobase, tapering to fine caudal end with acute tip.

Female genitalia (PLATE 127, Fig. 619) – Corpus bursae bulbous, with no clear delimitation with ductus bursae. Ductus bursae mostly membranous, forming sclerotized tube near posterior end. Sterigma forming a transverse sclerotized band with small medial notch. Anterior and posterior apophyses as straight, elongate, slender rod-like sclerites, with distal ends paddle-like. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose posteriorly.

Variation. Seasonal variation present, with individuals of wet season possessing rounder wing shape, and grayish white scalings less prominent.

Global distribution. Widespread in the Oriental region, excluding the Philippines; also found in western part of Lesser Sunda Islands (Tsukada, 1985).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan

(Yamanaka, 1975; Hsu, 1999, 2013; Lu & Chen, 2014).

Larval Host plant(s). Acanthaceae: *Strobilanthes formosanus*, *S. rankanensis*, *S. flexicaulis*, *S. longespicatus*, *Hygrophila pogonocalyx*, *Hemigraphis repanda*, etc. (Hsu, 1999, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

Remarks. This species was regarded as a forest species, utilizing *Strobilanthes* spp. growing on forest bed as larval hosts, but Tan *et al*. (2014) found it has adapted to open habitats due to extensive anthropogenic plantation of *Hygrophila pogonocalyx* in Taiwan.

形態特徵：成蝶前翅長 28–35 mm。雌雄二型性不顯著。雄蝶 (圖 183–184)：頭褐色。觸角背面黑褐色、腹面有白紋，末端略膨大，內側裸露。口器褐色。下唇鬚前伸，褐色。胸部背面黑褐色、腹面褐色。足褐色；前足跗節癒合、刺狀。腹部背面黑褐色、腹面灰白色。前翅近三角形，前緣凸、外緣 M_1 脈末端突出、後緣直線狀。後翅寬大，臀區突出。翅背面底色褐色，內側色調深，亞外緣有兩道黑褐色細線紋；前翅中室內有兩只鏤空短紋；後翅外側有一列眼狀小斑。翅腹面底色較淺，上綴數道深色帶紋、前翅較多。翅面中央有暗色直帶紋，於後翅較明顯。翅面上散佈灰白色鱗，於乾季較明顯。緣毛白色。雌蝶 (圖 185–186)：形態特徵與雄蝶相似，但前足跗節分節、具刺。

雄交尾器 (圖 471)：背兜寬闊、三角形。鉤突基部粗壯，尾端形成向下彎曲之喙狀突起，末端尖。顎形突寬大，中央形成窄細骨橋。囊突粗厚、扁平。基腹弧明顯彎曲。抱器寬闊、長瓣狀。抱器內突末端形成具齒圓盤及一小齒突。抱握鋏末端長度超出抱器內突，其末端圓形、有鋸齒。陽基軛片形呈 V 字形骨板。陽莖短而直。陽莖器長度約為陽莖基 2.3 倍，尾端漸細，末端尖。

雌交尾器 (圖 619)：交尾囊球狀，與交尾囊管間無明顯界限。交尾囊管大部分膜質，近尾端處形成骨化管。交尾囊孔板形成一橫向，中間有小缺口之骨帶。前內骨突及後內骨突挺直、細長、棒狀，前端呈槳狀。肛突葉狀，其基部及後緣骨化，後端具

剛毛。

變異：有季節變異，雨季型個體翅幅較寬、灰白色鱗較不鮮明。

世界分布：除菲律賓除外，廣泛分佈於東洋區；亦見於小巽他群島西部。

臺灣分布：本島低至中海拔地區。

寄主植物：爵床科之臺灣馬藍、蘭崁馬藍、曲莖馬藍、長穗馬藍、大安水蓑衣、易生木等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種原被認為是森林性物種，幼生期取食生長在森林林床上之馬藍屬植物，但 Tan *et al*. (2014) 發現本種在臺灣由於寄主之一大安水蓑衣被廣泛人為栽種，已可適應開闊之環境。

***Junonia atlites* (Linnaeus, 1763) (波紋眼蛺蝶／紫擬蛺蝶)**

PLATE 35, Figs. 187–188; PLATE 90, Fig. 472; PLATE 127, Fig. 620

Papilio (*Nymphalis*) *atlites* Linnaeus, 1763: Centuria Insectorum Rariorum: 24. (Type locality: "Asia [? Canton]")

Papilio (*Nymphalis*) *laomedia* Linnaeus, 1767: Systema Naturae (Edn. 12) 1 (2): 772. (Type locality: " India orientali") (unnecessary replacement name of *atlites*)

Specimens examined:

PINGDONG Co.: 1♀, Mudan, Xuhai, 23. X. 2009 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Ludao, 11. VIII. 2010 (L. Huang). **JINMEN Co.:** 1♂, Jinsha, Wuhushan, 30. IX. 2000 (Y. T. Lo).

Description. Adult – Forewing length 30–36 mm. Sexual dimorphism present. Male (PLATE 35, Fig. 187): Head grayish brown. Antennae slightly enlarged at distal end, brown, banded with white ventrally, naked on inner surface. Proboscis brown. Labial palpus porrect, brown dorsally, white ventrally. Thorax grayish brown dorsally, white ventrally. Legs white proximally, brown distally; protarsi fused, stab-shaped. Abdomen

brown dorsally, white ventrally. Forewing nearly triangular; costa convex, termen wavy, produced at distal ends of vein M_1; dorsum straight. Hindwing ovate; termen wavy, produced at tornus. Wing uppersides ground color grayish buff, with a series of prominent eye-like postdiscal spots present on both wings. A prominent dark, discal band present, relatively straight on hindwing, serpentine on forewing. Two hollow bars in discoidal cell of forewing. Double, narrow, dark brown, submarginal striae present on both wings. Wing undersides ground color paler than that of upperside, grayish white. Markings less prominent. Eye spots reduced, faint. Fringe brown. Female (PLATE 35, Fig. 188): Body and wing pattern similar to those of male; wing pattern on uppersides darker; ground color of wing undersides partially ochre; markings on underside more prominent, with several prominent hollow bands; protarsi segmented, spiny.

Male genitalia (PLATE 90, Fig. 472) – Tegumen broad, triangular; uncus forming robust, down-curved beak with acute distal end. Gnathos broad, with sclerotized medial bridge. Saccus thick, attenuate anteriad. Vinculum curved. Valva elongate, tapering posteriorly; ampulla with distal end forming serrate lobe; harpe with distal end beyond ampulla, with distal margin rounded, serrate. Jutxa as broad sclerite with prominent V-shaped dorsal opening. Phallus short, lance-shaped, straight; aedeagus approximately 2.7X of phallobase, slightly down-curved, tapering to fine caudal end with acute tip.

Female genitalia (PLATE 127, Fig. 620) – Corpus bursae as elongate sac, with no clear delimitation with ductus bursae. Ductus bursae mostly membranous, forming sclerotized funnel near posterior end. Sterigma forming a transverse sclerotized wall. Anterior and posterior apophyses as straight, elongate rod-like sclerites. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose posteriorly.

Variation. Individuals found in dry season shows a tendency to have markings on wings paler and obscurer.

Global distribution. Most areas in the Oriental regions, also Sulawesi and Lesser Sunda Islands (Tsukada, 1985).

Distribution in Taiwan. Found from Jinmen Islands (Hsu, 2014); occasionally found from southern Taiwan.

Larval Host plant(s). *Limnophila aromatica* (Plantaginaceae) is recorded as a larval hostplant in Taiwan (Lee, 2013).

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2014).

Remarks. This species is seldom seen in southern Taiwan, and believed to represent strays or temporary colonies from the Philippines.

形態特徵：成蝶前翅長 30–36 mm。具雌雄二型性。雄蝶 (圖 187)：頭灰褐色。觸角褐色，腹面有白紋，末端略膨大，內側裸露。口器褐色。下唇鬚前伸，背面褐色、腹面白色。胸部背面黑褐色、腹面乳黃色。足基部白色，端部褐色；前足跗節癒合、刺狀。腹部背面褐色，腹面白色。前翅近三角形，前緣凸、外緣波狀、M_1 脈末端突出、後緣直線狀。後翅卵形，外緣波狀，臀區突出。翅背面底色淺黃灰色，外側有一列鮮明眼狀斑，中央有深色線紋，於前翅彎曲蜿蜒、於後翅則較直，亞外緣有兩道黑褐色細線紋；前翅中室內有兩只鏤空短條紋。翅腹面底色較淡、灰白色，斑紋較不鮮明，眼狀斑點減退、模糊。緣毛褐色。雌蝶 (圖 188)：形態特徵與雄蝶相似，但翅背面顏色較深，翅腹面底色部分呈赭色、斑紋較鮮明、有數道鏤空帶紋，前足跗節分節、具刺。

雄交尾器 (圖 472)：背兜寬闊、三角形。鉤突向尾端形成下彎喙狀突起，末端尖銳。顎形突寬大，中央形成骨橋。囊突粗，向前漸細，末端鈍。基腹弧彎曲。抱器修長、瓣狀，向末端漸窄。抱器內突末端鋸齒狀，抱握鋏末端長度超出抱器內突，末端圓鈍並具細鋸齒。陽基軛片寬，向背側延伸成 V 形骨片。陽莖短而直，尾端漸尖、矛狀。陽莖器長度約為陽莖基 2.7 倍，略下彎。

雌交尾器 (圖 620)：交尾囊修長、袋狀，與交尾囊管間無明顯界限。交尾囊管大部分膜質，近後端處形成骨化漏斗狀構造。交尾囊孔板形成一橫向之骨壁。前內骨突及後內骨突挺直、細長、棒狀。肛突葉狀，其基部及後緣骨化，末端具剛毛。

變異：本種在乾季有翅紋顏色較淺、較模糊之傾向。

世界分布：東洋區大部分地區、蘇拉威西、小巽他群島。

臺灣分布：見於金門，偶見於南臺灣。

寄主植物：本種於臺灣之寄主植物記錄為車前科之紫蘇草。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種偶見於臺灣南部，但十分罕見，可能為源自菲律賓之偶產「迷蝶」或暫時性發生之族群。

Genus *KALLIMA* Doubleday, [1849]

Type species: *Paphia paralekta* Horsfield, [1928]

The members of this genus is famous for their perfect camouflage by wing shape and pattern resembling dried leaves.

Diagnostic characters may include the following: 1) compound eyes naked; 2) antennal club slender, covered by scales; 3) forewing apex (distal end of R_3) pointed; 4) distal end of hindwing 1A+2A produced.

Larvae mainly feed on plants in Acanthaceae.

Bozano & Floriani (2012) recognized 10 species, mainly distributed in the Oriental region.

1 species occurs in Taiwan.

枯葉蝶屬

本屬成員以外觀酷似枯葉而著名。

形態特徵如下：1) 複眼裸露；2) 觸角錘部纖細、覆鱗；3) 前翅翅頂 (R_3 脈末端) 尖銳；4) 後翅 1A+2A 脈末端突出。

幼蟲取食爵床科植物。

Bozano & Floriani (2012) 將本種分為 10 種，主要分布於東洋區。

臺灣有 1 種。

Kallima inachus (Doyerè, 1840) (枯葉蝶／枯葉蛺蝶／木葉蝶)

Paphia inachus Doyerè, 1840: Le règne animal distribué d'après son organisation, Insectes Atlas 2: pl. 139, f. 3. (Type locality: “Népaul [Nepal]”)

Ssp. *formosana* Fruhstorfer, 1913

PLATE 35, Figs. 189–190; PLATE 90, Fig. 473; PLATE 128, Fig. 621

Kallima inachus formosana Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 565. (Type locality: “Taihanroku [Nanwan, Hengchun, Taiwan]”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, Fushan Botanical Garden, 4/5. VIII. 2006 (Y. F. Hsu & H. C. Huang). **YILAN Co.:** 1♀, Yuanshan, Fushan Botanical Garden, 800m, 28. VIII. 2007 (Y. F. Hsu). **HUALIAN Co.:** 2♂, Xiulin, Lushui, 410m, 21/23. VIII. 2007 (M. H. Sun); 1♂, Xiulin, Huoranting, 900m, 23. VII. 2007 (M. H. Sun); 3♂, 1♀, same locality, 13. IX. 2007 (M. H. Sun); 1♀, Xiulin, Shikongzai, 60m, 25. VII. 2008 (M. H. Sun); 1♂, Xiulin, Huide Tunnel, 30m, 25. VII. 2008 (M. H. Sun). **TAIDONG Co.:** 1♂, Lanyu, Sidaogou, 17. I. 2009 (J. H. Lin); 1♂, 1♀, Lanyu, Datianchi, 18. V. 2021, reared from *Strobilanthes lanyuensis*, emgd. 15. VI. 2021 (Y. F. Hsu).

Description. Adult – Forewing length 44–52 mm. Sexual dimorphism not prominent. Male (PLATE 35, Fig. 189): Head dark brown. Antennae slightly enlarged at distal

end, dark brown, naked ventrally. Proboscis brown. Labial palpus porrect, dark brown dorsally, grayish white mixed with black scalings ventrally. Thorax dark brown dorsally, grayish yellow ventrally. Legs brown, mottled with yellow; protarsi fused, stab-shaped, hairy. Abdomen dark brown dorsally, brown tinged with yellow ventrally. Forewing produced anteriorly, with apex pointed. Hindwing produced posteriorly, with a digitate projection at distal end of vein 1A+2A. Wing uppersides ground color brown with indigo blue shine. A prominent, tilted, orange band on forewing. An eyelike, medial spot in cell CuA_1 of forewing, with center translucent. A small, subapical white dot on forewing. Dark, wavy submarginal band present on both wing. A row of obscure, discal, dark circles present on hindwing. Wing undersides ground color variegated, often brown mottled with dark brown or ochre, sometimes with blue shine. A narrow, discal dark band present on both wings. Fringe brown. Female (PLATE 35, Fig. 190): Body and wing pattern similar to those of male; protarsi segmented, clawed; forewing apex more produced than that of male.

Male genitalia (PLATE 90, Fig. 473) – Tegumen flat, produced with truncated margin cephalically; uncus tapering posteriad, with distal end forming a pair of prominent down-curved hooks. Gnathos as a pair of slender, elongate sclerites. Saccus broad at base, rod-like with distal end blunt anteriorly. Vinculum strongly curved dorsally. Valva broad, elongate, with distal end bifid; ampulla as setose, clubbed lobe, with a small distal spine dorsally; harpe as setose, ligulate lobe; sacculus robust at base, heavily sclerotized. Juxta forming V-shaped sclerite at base, with extremely long, slender arms curved distally with tips book-like. Phallus very long, slender, down-curved but re-curved at distal end, tapering posteriorly; aedeagus much longer than phallobase, distal tip pointed, opening ventral.

Female genitalia (PLATE 128, Fig. 621) – Corpus bursae bulbous. Ductus bursae much longer than corpus bursae, membranous anteriorly, forming sclerotized tube posteriorly with a medial, ventral slit at caudal end. Sterigma forming a broad, transverse, sclerotized wall. Anterior apophyses short, weakly sclerotized, bent; posterior apophyses longer than anal papillae, straight, rod-shaped. Anal papillae lobe-like, sclerotized along posterior margin, setose posteriorly.

Variations. Pattern of wing undersides is highly variable regardless of sexes.

Global distribution. Himalayas, Northeast India, northern Indochina, Yaeyama and Okinawa Islands of Japan, West to East China, Taiwan (Shirôzu, 2006; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan; also Guishan Island and Lanyu (Yamanaka, 1975; Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Acanthaceae: *Strobilanthes formosanus*, *S. penstemonoides*, *S. flexicaulis*, *S. lanyuensis*, etc. (Uchida, 1991; Hsu, 1999, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing in all seasons (Hsu, 2013; Lu & Chen, 2014).

Remarks. The wing shape and pattern of this species resemble dry leaves in resting posture, providing perfect camouflage in forest. This morphology has earned the butterfly with the name of the “Dead Leaf” or “Oakleaf”.

形態特徵：成蝶前翅長 44–52 mm。雌雄二型性不顯著。雄蝶 (圖 189)：頭黑褐色。觸角黑褐色，末端略膨大、腹面裸露。口器褐色。下唇鬚前伸，背面黑褐色、腹面灰白色雜黑色鱗。胸部背面黑褐色，腹面灰黃色。足褐色，上綴黃紋；前足跗節癒合、刺狀、被毛。腹部背面黑褐色、腹面黃褐色。前翅前半部突出，翅頂尖。後翅後半部突出，1A+2A 脈末端有指狀突起。翅背面底色褐色，有靛藍色光澤，亞外緣有波狀黑色線紋；前翅有鮮明橙色斜帶紋，CuA_1 室中央有中心半透明之眼狀斑點，亞翅頂有白色小點；後翅中央有一列模糊深色圓圈。翅腹面底色斑駁，常呈褐色，綴黑褐色及赭色紋，有時帶藍色光澤，翅面中央有黑色細帶紋。緣毛褐色。雌蝶 (圖 190)：形態特徵與雄蝶相似，但前翅翅頂更突出，前足跗節分節、具爪。

雄交尾器 (圖 473)：背兜平坦，前端邊緣平截。鉤突向後漸窄，末端形成一對下彎鉤突。顎形突形成一對細長的骨板。囊突基部寬闊、桿狀，前端鈍。基腹弧背側明

顯彎曲。抱器修長，末端分叉。抱器內突杵狀，具剛毛，末端背側有一小棘刺。抱握鋏舌狀，具剛毛。抱器腹粗壯，明顯骨化。陽基軛片基部形成 V 字形骨片，背側延伸成極細長臂之骨臂，其末端彎曲成鉤狀。陽莖修長、纖細，向下彎曲，末端略上彎。陽莖器長度遠超過陽莖基長，末端漸細，開口於腹側。

雌交尾器 (圖 621)：交尾囊球狀。交尾囊管長度明顯超過交尾囊，前端膜質，後端形成骨化管，其尾端腹側有凹裂。交尾囊孔板形成寬闊，橫向骨壁。前內骨突短、輕度骨化、彎曲；後內骨突長於肛突、挺直、棒狀。肛突葉狀，後端邊緣骨化，後端具剛毛。

變異：雌、雄蝶之翅腹面斑紋均多變化。

世界分布：喜瑪拉雅地區、印度東北部、中南半島北部、日本八重山群島及沖繩、華西至華東、臺灣。

臺灣分布：分布於本島低至中海拔地區，龜山島及蘭嶼亦有記錄。

寄主植物：爵床科之臺灣馬藍、腺萼馬藍、曲莖馬藍、蘭嶼馬藍等。

生物學：本種為一年多世代物種，全年皆可見成蝶活動。

註記：翅膀形狀及斑紋使本種停棲時外型仿彿枯葉，可在森林裡完美偽裝，此種外觀為其獲得「Dead Leaf」或「Oakleaf」之英文名，因而被稱為「枯葉蝶」。

Genus *YOMA* Doherty, [1886]

Type species: *Yoma vasuki* Doherty, [1886]

Diagnostic characters may include the following: 1) compound eyes naked; 2) distal end of forewing M_1 produced; 3) distal end of hindwing M_3 produced; 4) humeral vein bifurcate; 5) hindwing tornus lobate; 6) discoidal cells closed on both wings.

Larvae feed on plants in Acanthaceae and Malvaceae.

Tsukada (1985) recognized 2 species, distributed in the Oriental and Australian regions.

1 species occurs in Taiwan.

隱蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 前翅 M_1 脈末端突出；3) 後翅 M_3 脈末端突出；4) 肩脈分岔；5) 後翅臀區具片狀突；6) 前後翅中室均封閉。

幼蟲取食爵床科及錦葵科植物。

Tsukada (1985) 將本屬分為 2 種，分布於東洋區及澳洲區。

臺灣有 1 種。

Yoma sabina **(Cramer, [1780]) (黃帶隱蛺蝶 / 黃帶枯葉蝶)**

Papilio sabina Cramer, [1780]: De uitlandsche kapellen 4 (25-26a): 1, pl. 289, f. A, B, C, D. (Type locality: “Amboina”)

Yoma sabina vasilia Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 541. (Type locality: “Nordmolukken [northern Moluccas]”)

Ssp. *podium* Tsukada, 1985

PLATE 36, Figs. 191–192; PLATE 90, Fig. 474; PLATE 128, Fig. 622

Yoma sabina podium Tsukada, 1985: Butterflies of the South East Asian Islands. Vol. IV, Nymphalidae (I): 201-202, pl. 55, f. 1-8. (Type locality: “Marinduque, [Philippines]”)

Specimens examined:

PINGDONG Co.: 3♂, 1♀, Shizi, Lilongshan, 500m, 23. VI. 2007, reared from *Ruellia prostrata*, emgd. 27. VII. 2007, HSU 07F40 (C. C. Lu, L. W. Wu & L. H. Wang) (genitalia preparation JYL1049); 3♂, 1♀, Chunri, Dahanshan, 18. IX. 2021, reared from *R. prostrata*, emgd. 3/6. X. 2021, HSU 21J11 (C. C. Lu, jr.); 1♀, same locality, 30. IX. 2021, reared from *R. prostrata*, emgd. 6. X. 2021, HSU 21J16 (Y. F. Hsu). **TAIDONG**

Co.: 1♂, Daren, Dazhuxi, 17/22. VII. 2002 (C. L. Huang).

Description. Adult – Forewing length 36–42 mm. Sexual dimorphism weakly present. Male (PLATE 36, Fig. 191): Head dark brown. Antennae slightly enlarged at distal end, dark brown, naked on inner surface. Proboscis brown. Labial palpus porrect, dark brown dorsally, creamy white ventrally. Thorax dark brown dorsally, creamy white ventrally. Legs creamy white; protarsi fused, stab-shaped, hairy. Abdomen dark brown dorsally, creamy white ventrally. Forewing produced at apex, axe-shaped; costa convex, dorsum straight. Hindwing slightly produced at tornus, with short projection at distal end of vein M_3; termen slightly wavy. Wing uppersides ground color dark brown, with faint bands along termen of both wing. Prominent yellow discal band on both wings, with distal margin mingled with a reddish purple band on hindwing. Two small yellow spots near apex of forewing. Small, medial, white dot in cell M_2 and M_3 of forewing. Wing undersides ground color pale brown, mottled with brown, dark brown and gray scalings. Prominent creamy white or yellow discal bands on both wings. Fringe white, checkered with brown. Female (PLATE 36, Fig. 192): Body and wing pattern similar to those of male, ground color usually more uniform, darker; discal band reduced; protarsi segmented, clawed.

Male genitalia (PLATE 90, Fig. 474) – Tegumen convex dorsally, broad, produced with cephalic margin forming shallow V-shaped invagination; uncus as a stout, down-curved beak. Gnathos forming a pair of large square sclerites bearing minute spines distally. Saccus as elongate rod with distal end blunt. Vinculum strongly curved dorsally. Valva fused with vinculum, forming heavily sclerotized lobe with two distal processes; dorsal process digitate, short, setose; ventral process long, rod-like, with truncate distal end. Juxta vestigial. Phallus slender, aedeagus approximately 1.7X of phallobase, up-curved and tapering posteriorly, with distal tip pointed.

Female genitalia (PLATE 128, Fig. 622) – Corpus bursae as elongate sac. Ductus bursae much shorter than corpus bursae, membranous anteriorly, forming sclerotized tube posteriorly. Sterigma forming a pair of large sclerite connected by narrow bridge, surrounded by ostium bursae. Anterior apophyses elongate, paddle-shaped; posterior apophyses longer than anal papillae, slightly curved, paddle-shaped at anterior end. Anal

papillae lobe-like, sclerotized basally and along posterior margin, setose posteriorly.

Global distribution. Indochina, Southeast Asia excluding Malaya and Sumatra, New Guinea, northern Australia, South China, Taiwan (Tsukada, 1985; Hsu, 2013).

Distribution in Taiwan. Mainly low elevations in southern Taiwan (Yamanaka, 1975; Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Acanthaceae: *Blechum pyramidatum*, *Ruellia repens*, *R. prostrata*, etc. (Uchida, 1991; Hsu, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing in all seasons (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 36–42 mm。略具雌雄二型性。雄蝶 (圖 191)：頭黑褐色。觸角黑褐色，末端略膨大，內側裸露。口器褐色。下唇鬚前伸，背面黑褐色、腹面乳白色。胸部背面黑褐色、腹面乳白色。足乳白色；前足跗節癒合、刺狀、被毛。腹部背面黑褐色、腹面乳白色。前翅翅頂突出，呈斧狀，前緣凸、後緣直線狀。後翅臀區略突出，M_3 脈末端具小尾突、外緣略呈波狀。翅背面底色黑褐色，沿外緣有模糊帶紋，中央有鮮明黃色帶紋，於後翅者外側交織藍紫色帶紋。前翅近翅頂處有兩只黃色小斑點，M_2 室及 M_3 室中央有白色小點。翅腹面底色淡褐色，上有斑駁之褐色、黑褐色及灰色鱗，中央有鮮明乳白色或黃色帶紋。緣毛白色嵌褐色。雌蝶 (圖 192)：形態特徵與雄蝶相似，但翅腹面底色較深、較均勻，中央帶紋減退，前足跗節分節、具爪。

雄交尾器 (圖 474)：背兜寬，背側隆起，前端邊緣形成淺 V 字形內陷。鉤突粗壯，形成下彎鉤狀突起。顎形突形成一對大型之方形骨片，末端有細齒。囊突細長、桿狀，末端鈍。基腹弧背側明顯彎曲。抱器與基腹弧癒合成葉狀，末端形成二突起，背側突起短而呈指狀、具剛毛，腹側突起短較長、桿狀，末端截狀。陽基軛片缺失。陽莖纖細。陽莖器長度約為陽莖基 1.7 倍，向上彎曲，向尾端漸縮，末端尖。

雌交尾器 (圖 622)：交尾囊呈細長囊袋。交尾囊管明顯短於交尾囊，前端膜質，後端形成骨化管。交尾囊孔板形成一對大骨片，以交尾囊孔周圍之窄橋相連。前內骨

突細長、槳狀；後內骨突較肛突長，略彎曲，前端槳狀。肛突葉狀，其基部及後緣骨化，後端具剛毛。

世界分布：中南半島、除馬來亞及蘇門答臘外之東南亞、新幾內亞、澳洲北部、華南及臺灣。

臺灣分布：主要分布於臺灣南部低海拔地區。

寄主植物：爵床科之賽山藍、蘆利草、匍蘆利草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Genus *VANESSA* Fabricius, 1807

Type species: *Papilio atalanta* Linnaeus, 1758

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus densely hairy in male, sparsely hairy in female; 3) distal end of forewing M_1 more or less produced; 4) discoidal cells closed on both wings.

Larvae mainly feed on plants in many families, including Asteraceae, Malvaceae, Urticaceae, Boraginaceae, Amaranthaceae, Hydroleaceae, Lamiaceae, Solanaceae, Convolvulaceae, Brassicaceae, Cucurbitaceae, Apiaceae, Rhamnaceae, Ulmaceae, Rutaceae, Plantaginaceae, Verbenaceae, Rosaceae, Polygonaceae, Fabaceae, etc.

Bozano & Floriani (2012) recognized 20 species, cosmopolitan in distribution.

2 species occur in Taiwan.

紅蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節密被毛、雌蝶疏被毛；3) 前翅

M_1 脈末端多少突出；4) 前、後翅中室均封閉。

幼蟲取食多科植物，包括菊科、錦葵科、蕁麻科、紫草科、莧科、田基麻科、唇形科、茄科、旋花科、十字花科、葫蘆科、繖形科、鼠李科、榆科、芸香科、車前科、馬鞭草科、薔薇科、蓼科、豆科等。

Bozano & Floriani (2012) 將本屬分為 20 種，呈泛世界性分布。

臺灣有 2 種。

Vanessa indica (Herbst, 1794) (大紅蛺蝶／紅蛺蝶)

PLATE 36, Figs. 193–194; PLATE 91, Fig. 475; PLATE 128, Fig. 623

Papilio atlanta indica Herbst, 1794: Natursystem aller bekannten in- und ausländischen Insekten 7: pl.180. f. 1, 2. (Type locality: “Der indisnische Atlanta [India]”)

Pyrameis indica var. *asakurae* Matsumura, 1908: Entomologische Zeitschrift 22 (39): 158. (Type locality: “Formosa (Horisha [Puli])”)

Cynthia stephania Fabricius (in Bryk), 1938: Systema Glossatorum 1: 102. (Type locality: “Bengalia [Bangladesh]”)

Specimens examined:

JILONG CITY: 1♀, Longgang Trail, 3. XII. 2008, reared from *Boehmeria nivea*, HSU 08M5 (C. K. Wang, W. H. Chien & C. H. Lin); 1♀, NTOU campus, 5. XI. 2009 (Z. H. Yen). **XINBEI CITY:** 1♀, Bali, Guanyinshan, 500m, 15. IV. 2011 (Z. H. Yen). **TAIPEI CITY:** 1♂, 1♀, Beitou, Shipai, 20. XII. 2018, reared from *B. nivea*, emgd. 8. I. 2019, HSU 18M34 (L. Huang). **YILAN Co.:** 1♀, Yuanshan, Fushan Botanical Garden, 28. II. 2012, reared from *Urtica thunbergiana*, emgd. 11. III. 2012, HSU 12B29 (Y. C. Lin). **XINZHU Co.:** 1♀, Wufeng, E. branch Dalu Forest Trail, 2000m, 20. X. 2009 (L. H. Wang & C. H. Huang). **HUALIAN Co.:** 1♂, Xiulin, Qilaizhushan, 3600m, 25. VII. 2003 (C. L. Huang); 1♂, Xiulin, N. Peak of Qilaizhushan, 3600m, 25. VII. 2003 (C. L. Huang); 1♂, Xiulin, Guanyuan, 5. IX. 2018 (C. W. Huang). **PINGDONG Co.:** 1♀, Wutai, 8. II. 2007 (C. C. Lu).

Description. Adult – Forewing length 29–33 mm. Sexual dimorphism absent. Male (PLATE 36, Fig. 193): Head dark brown. Antennae enlarged at distal end, dark brown banded with white, apical tip creamy yellow, naked ventrally. Eyes hairy. Proboscis

dark brown. Labial palpus porrect, hairy, dark brown dorsally, creamy yellow ventrally. Thorax brown tinged with ochre dorsally, brown covered by creamy yellow hairs ventrally. Foreleg densely hairy, creamy yellow with dark brown band ventrally; protarsi fused, stab-shaped. Mesoleg and metaleg not hairy, dark brown proximally, creamy white distally. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular, with termen produced at tips of veins, especially at M_1; costa, dorsum nearly straight. Hindwing nearly triangular, with tornus angled. Wing uppersides with most area of hindwing and posterior area of forewing forming extensive dark bronze-colored patches. An orange, tilted, transverse band with three dark brown spots on forewing. Distal portion of forewing dark brown with white markings; five subapical spots or dots and three proximal spots conjoined into a bar. An orange band with dark brown spots along termen of hindwing. Wing undersides with pattern of forewing similar to that of upperside, but apical area pale yellow ochre, and a metallic blue band present at center of costa. Hindwing ground color complicated, as pattern mingled of brown, dark brown, and deep blue scalings; some hollow spots with white margins present. Obscure postdiscal eye-spots and submarginal band composed of a series of deep blue spots present. Fringe orange, checkered with brown. Female (PLATE 36, Fig. 194): Body and wing pattern similar to those of male; protarsi segmented, less hairy, spiny.

Male genitalia (PLATE 91, Fig. 475) – Tegumen narrow, elongate; uncus tapering to bifid distal tip. Gnathos divided to a pair of horn-shaped sclerites pointing posteriad. Saccus short, flattened. Vinculum strongly curved dorsally. Valva broad, bifurcate distally; ampulla with distal end triangular, with a dorsal lobe and a spine near distal end; harpe flattened, bent, with distal end uneven, serrate; sacculus bearing large, elongate spike with distal end divided to a few small spines. Juxta as V-shaped sclerite. Phallus stout, short; aedeagus approximately 2.5X of phallobase, abruptly narrow and strongly up-raised distally.

Female genitalia (PLATE 128, Fig. 623) – Corpus bursae ovate. Signa as two groups of double, side-by-side, invaginated, spiny sclerotized bars one side of wall of corpus bursae. Ductus bursae elongate, slender, membranous. Sterigma forming a sclerotized wall with medial invagination and notch surrounding ostium bursae. Anterior apophyses lobe-like, short; posterior apophyses longer than anal papillae, nearly straight, clubbed at

anterior ends. Anal papillae lobe-like, sclerotized along posterior margin, setose.

Global distribution. Widely distributed in eastern Palearctics and Oriental regions, from Himalayas, India, most areas of China, reaching Japan, Transbaikalia and South Kamchatka, south to Taiwan and northern Philippines (Bozano & Floriani, 2012).

Distribution in Taiwan. Moderate to higher elevations in main island of Taiwan, including associated islands (Yamanaka, 1975; Hsu, 2013, 2014).

Larval Host plant(s). Urticaceae: *Boehmeria nivea*, *Urtica thunbergiana*, etc. (Hsu, 2006, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing in most seasons (Hsu, 2006, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 29–33 mm。無雌雄二型性。雄蝶 (圖 193)：頭黑褐色。觸角黑褐色，有白紋，末端略膨大、頂端乳黃色、腹面裸露。複眼被毛。口器褐色。下唇鬚前伸、被毛，背面黑褐色、腹面乳黃色。胸部褐色，背面泛赭色，腹面覆乳黃色毛。前足密被毛，乳黃色，腹面有黑褐色條紋；前足跗節癒合、刺狀。中足及後足無毛，內側黑褐色、外側乳白色。腹部背面黑褐色、腹面灰白色。前翅近三角形，外緣翅脈末端突出，以 M_1 脈末端最為突出，前緣及後緣近直線狀。後翅近三角形，臀區角狀。翅背面底色除前翅前半部外，其餘深銅色；前翅有橙色斜帶紋，附帶三只黑褐色斑點。翅面外側黑褐色，亞翅頂有五只白色斑點，偏內側則有三只相連成短帶。後翅沿外緣有橙色帶紋，其內有黑褐色斑點。前翅腹面斑紋與背面相似，但翅頂處呈淡赭黃色，前緣中央有帶金屬光澤之藍色帶紋；後翅腹面底色複雜，混雜褐色、黑褐色及深藍色鱗，另有數枚帶白邊之鏤空斑點，外側有一列模糊眼狀斑點，亞外緣帶紋由一列深藍色斑點組成。緣毛橘色鑲褐色。雌蝶 (圖 194)：形態特徵與雄蝶相似，但前足跗節分節、無毛、具刺。

雄交尾器 (圖 475)：背兜狹長。鉤突向後漸窄，末端二分。顎形突二分，形成一對後指角狀骨突。囊突短、扁平。基腹弧背側明顯彎曲。抱器寬闊、瓣狀，後端二分。抱器內突末端三角狀，背側葉狀，近末端有一錐狀小刺。抱握鋏扁平、彎曲，後端

不平整、有鋸齒。抱器腹形成大型長釘，頂端有數只細刺。陽基軛片為 V 字形骨片。陽莖粗短壯。陽莖器長度約為陽莖基 2.5 倍，後端細，明顯上舉。

雌交尾器 (圖 623)：交尾囊卵圓形。花壁為一對內陷具刺骨斑，並排位於交尾囊一側。交尾囊管膜質、細長。交尾囊孔板環繞交尾囊孔處形成中央內陷、凹入之骨壁。前內骨突短、葉狀；後內骨突較肛突長，甚直，前端棒狀。肛突葉狀，後端邊緣骨化，具剛毛。

世界分布：廣泛分佈於古北區東部和東洋區，從喜瑪拉雅地區、印度、中國大陸，至日本、外貝加爾、南堪察加半島，南至臺灣和菲律賓北部。

臺灣分布：本島中至高海拔地區，亦見於離島。

寄主植物：蕁麻科之苧麻、咬人貓 (蕁麻) 等。

生物學：本種為一年多代物種，幾乎全年可見成蝶活動。

Vanessa cardui (Linnaeus, 1758) (小紅蛺蝶 / 姬紅蛺蝶)

PLATE 37, Figs. 195–196; PLATE 91, Fig. 476; PLATE 128, Fig. 624

Papilio (*Nymphalis*) *cardui* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 475. (Type locality: "Carduo Europae, Africae [Sweden]")

Papilio (*Nymphalis*) *belladonna* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 475. (nomen nudum)

Papilio carduelis Cramer, 1775: De uitlandsche kapellen 1: 40, pl. 26, f. E, F. (Type locality: "Cap de Bonne Espérance, [S. Africa]")

Vanessa elymi Rambur, 1829: Annales des sciences d'observation 2: 256. (Type locality: "Montpellier, France")

Pyrameis var. *leachiana* Doubleday, 1849: The genera of diurnal lepidoptera 1: 205. (nomen nudum)

Vanessa cardui var. *pallida* Schøyen, 1881: Tromsø museums aarshefter 4: 77. (Type locality: "Praestegaarden, [Norway]")

Pyrameis cardui f. *minor* Cockerell, 1890: The Canadian entomologist 22: 57. (Type locality: Near Micawber Mine, Custer County, Colorado)

Pyrameis cardui var. *huntera* Lowe, 1902: The Entomologist's record and journal of variation: 333. (Type locality: Certosa di Pesio, [Italy])

Pyrameis cardui japonica Stichel, 1908: Die Gross-Schmetterlinge der Erde 1: 200. (Type locality:

"Japan, Ost-China (Tsintau [Qingdao])")

Pyrameis cardui f. *brunnea-albimaculata* Reuss, 1916: Internationale entomologische Zeitschrift 09: 131. (Type locality: Biesental, [Germany])

Pyrameis cardui f. *rosacea* Reuss, 1916: Internationale entomologische Zeitschrift 09: 131. (Type locality: Biesental, [Germany])

Pyrameis cardui f. *ochracea* Reuss, 1918: Societas Entomologica 33 (11): 41. (Type locality: Not stated [Germany])

Pyrameis cardui race *universa* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 197. (Type locality: Florence, [Italy])

Pyrameis cardui f. *conjuncta* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 197. (Type locality: "north of Europe")

Pyrameis cardui f. *emielymi* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (Type locality: Vallonbrosa [Vallombrosa, Italy] 1000m)

Pyrameis cardui inops Verity, 1919: 198. The Entomologist's record and journal of variation 31 (11): 198. (Type locality: Cape of Good Hope, [South Africa])

Pyrameis cardui f. *infrabrunnea* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (nomen nudum)

Pyrameis cardui f. *infraflava* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (nomen nudum)

Pyrameis cardui f. *infragrisea* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (nomen nudum)

Pyrameis cardui f. *infranigrans* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (nomen nudum)

Pyrameis cardui f. *infaochracea* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (nomen nudum)

Pyrameis cardui f. *sexispupillata* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (Type locality: Not stated [Italy])

Pyrameis cardui f. *septiespupillata* Verity, 1919: The Entomologist's record and journal of variation 31 (11): 198. (Type locality: Not stated [Italy])

Pyrameis cardui litoralis de Souza, 1926: Duas nuovas subsp. dos Lepidópteros Portugal: 3. (Type locality: "Foz do Douro, Mathosinhos e Vila do Conde, [Portugal]")

Vanessa cardui ushuwaia Bryk, 1944: Arkiv för zoologi 36A: 10. (Type locality: "Argentina")

Vanessa cardui f. *albipuncta* Lempke, 1956: Tijdschrift voor entomologie 99: 188. (Type locality: Krimpen aan de Lek, [Netherlands])

Vanessa cardui f. *nigripuncta* Lempke, 1956: Tijdschrift voor entomologie 99: 188. (Type locality: Breda, [Netherlands])

Vanessa pulchra Chou, Yuan, Yin, Zhang & Chen, 2002: Entomotaxonomia 24: 54, f. 15a-b. (Type locality: "Ganzi, Sichuan Province, China")

Vanessa cardui stictus Wu & Ma, 2016: Records of Butterflies in Anhui Province: 136, fig. 520, 521. (Type locality: Ma On Shan, Anhui, China) (unavailable name)

Specimens examined:

JILONG CITY: 2♀, Mianhuayu, 8/9. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu); 1♀,

same locality, 17. X. 2009 (H. C. Huang); 1♂, Pengjiayu, 17. X. 2009 (H. C. Huang); 1♂, Jilongyu, 25. IX. 2011 (H. C. Huang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Sanzhi, Datunshan, 950m, 3. VII. 2008 (Y. F. Hsu); 1♂, Guanyinshan, 100/150m, 23. X. 2000, reared from *Boehmeria nivea*, emgd. 3. XI. 2000 (J. M. Wu & J. R. Chen). **TAIPEI CITY:** 1♂, Neihu, Dagouxi, 7. XI. 2017 (L. Huang) (genitalia preparation JYL996); 1♀, Wenshan, NTNU, Gongguan campus, 20. VIII. 2019 (L. Huang); 1♂, 2♀, same locality, 18. X. 2019, reared from *Artemisia indica*, emgd. 4/8. XI. 2019, HSU 19K16 (L. Huang) (genitalia preparation JYL997). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Daxi/ Dingliao, 200m, 21. IX. 2009 (Y. F. Hsu). **NANTOU Co.:** 1♂, 1♀, Renai, Songquangang, 2500m, 2/4. IV. 2006, reared from *Gnaphalium luteoalbum*, emgd. 18. IV. 2006, HSU 06D77 (C. C. Lu & J. R. Chen); 1♂, Renai, Nanshanxi, 900m, 23. I. 2008 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♀, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Lanyu, Sidaogou, 28. III. 2010 (Y. F. Hsu & J. H. Lin). **JINMEN Co.:** 1♂, Taiwushan, 12. V. 2014 (C. L. Huang).

Description. Adult – Forewing length 25–32 mm. Sexual dimorphism absent. Male (PLATE 37, Fig. 195): Head orange mixed with dark brown. Antennae enlarged at distal end, dark brown banded with white, apical tip creamy yellow, naked ventrally. Eyes hairy. Proboscis dark brown. Labial palpus porrect, hairy, dark brown dorsally, white ventrally. Thorax brown tinged with ochre dorsally, grayish white ventrally. Foreleg densely hairy, white; protarsi fused, stab-shaped. Mesoleg and metaleg not hairy, creamy yellow. Abdomen dark brown with orange scalings dorsally, white ventrally. Forewing nearly triangular, apex produced; costa, dorsum nearly straight. Hindwing nearly triangular, with tornus angled. Wing uppersides with proximal area of hindwing and posterior area of forewing forming dark bronze-colored patches. A prominent orange patch with several dark brown spots present on forewing. Distal portion of forewing dark brown with white markings; four subapical spots or dots in a curve and three proximal spots conjoined into a bar. Distal portion of hindwing orange, with a series of discal and submarginal dark brown spots on hindwing. Wing undersides with pattern of forewing similar to that of upperside, but apical area pale yellow ochre; dark markings reduced. Hindwing ground color complicated, as pattern mingled of pale brown ochre, brown, and white scalings. Some hollow spots with white margins present. A series of postdiscal eye-spots and submarginal band composed of a series of blue spots present. Fringe white,

checkered with brown. Female (PLATE 37, Fig. 196): Body and wing pattern similar to those of male; protarsi segmented, less hairy, spiny.

Male genitalia (PLATE 91, Fig. 476) – Tegumen narrow, elongate; uncus tapering to blunt distal tip. Gnathos divided to a pair of beak-shaped sclerites. Saccus short, flattened. Vinculum strongly curved dorsally. Valva broad; ampulla + harpe forming prominent lobe with a dorsal and a distal spine; sacculus bearing a curved spine pointing caudad. Juxta as narrow sclerite with a pair of slender, dorsal processes. Phallus stout, short; aedeagus approximately 2.2X of phallobase, abruptly narrow distally, straight.

Female genitalia (PLATE 128, Fig. 624) – Corpus bursae ovate. Signa as two elongate, invaginated, spiny, sclerotized bands on one side of wall of corpus bursae. Ductus bursae elongate, slender, membranous, nearly as long as corpus bursae. Sterigma forming a sclerotized wall with W-shaped depression, and medial invagination surrounding ostium bursae. Posterior apophyses nearly as long as anal papillae, straight. Anal papillae lobe-like, sclerotized caudally, setose.

Global distribution. Cosmopolitan in distribution except South America and polar regions (Tsukada, 1985; Bozano & Floriani, 2012).

Distribution in Taiwan. Low to higher elevations in main island of Taiwan, including associated islands (Yamanaka, 1975; Hsu, 2013, 2014).

Larval Host plant(s). Asteraceae: *Artemisia indica*, *Gnaphalium luteoalbum*; Malvaceae: *Malva cathayensis*; Urticaceae: *Boehmeria nivea*, etc. (Hsu, 2002, 2013)

Biology. Multivoltine, with adults on the wing in most seasons (Hsu, 2002, 2013).

Remarks. This species is considered as the most cosmopolitan butterfly in the world, with mass migration observed in many places. In Taiwan, it is seldom seen in lowland during hot seasons, suggesting vertical seasonal migration of this highly mobile species.

Field (1971) performed an extensive revision of *Vanessa* and divided it to three genera, i. e. *Bassaris*, *Cynthia* and *Vanessa* [*s. str.*]. Of them, *cardui* belonged to *Cynthia*. These genera; however, were later re-synonymized (Wahlberg *et al*., 2005; Wahlberg & Rubinoff, 2011).

形態特徵：成蝶前翅長 25–32 mm。無雌雄二型性。雄蝶 (圖 195)：頭橙色，雜黑褐色。觸角黑褐色，有白紋，末端略膨大、頂端乳黃色、腹面裸露。複眼被毛。口器黑褐色。下唇鬚前伸、被毛，背面黑褐色、腹面白色。胸部背面褐色泛赭色，腹面灰白色。前足密被毛，白色；前足跗節癒合、刺狀。中足及後足無毛，乳黃色。腹部背面黑褐色，上有橙色鱗、腹面灰白色。前翅近三角形，翅頂突出，前緣及後緣近直線狀。後翅近三角形，臀區角狀。前翅背面後側及後翅背面內側底色深銅色；前翅有鮮明橙色斑塊，內有數只黑褐色斑點，翅面外側黑褐色，四枚亞翅頂白色斑點排成弧形，偏內側則有三只相連成短帶。後翅外側橙色，中央及亞外緣各有一列黑褐色斑點。前翅腹面斑紋與背面相似，但翅頂為淡赭黃色，黑褐色斑紋減退；後翅腹面底色複雜，混雜淡赭褐色、褐色及白色鱗，另有數枚帶白邊之鏤空斑點，外側有一列眼狀斑點，亞外緣帶紋由一列藍色斑點組成。緣毛白色鑲褐色。雌蝶 (圖 196)：形態特徵與雄蝶相似，但前足跗節分節、疏披毛且具刺。

雄交尾器 (圖 476)：背兜狹長。鉤突向尾端漸細，末端鈍尖。顎形突分裂成一對向後的喙狀骨化突起。囊突短，扁平。基腹弧於背側強烈彎曲。抱器寬闊、瓣狀。抱器內突和抱握鋏葉狀，其背側和後端有刺突。抱器腹形成指向後端之彎曲刺突。陽基軛片基部形成具一對細長突起之骨片。陽莖粗短。陽莖器長度約為陽莖基 2.2 倍，挺直，向後驟細。

雌交尾器 (圖 624)：交尾囊卵圓形。花壁為一對細長、內陷之具刺骨斑，並排位於交尾囊一側。交尾囊管膜質、細長，與交尾囊近乎等長。交尾囊孔板形成 W 形凹陷之骨化壁，交尾囊孔周圍內陷。後內骨突與肛突近乎等長，甚直。肛突葉狀，尾端骨化，具剛毛。

世界分布：除了南美洲與極地地區以外，廣泛分佈於世界各地。

臺灣分布：見於本島低至高海拔地區，離島亦有記錄。

寄主植物：菊科之艾、鼠麴草；錦葵科之華錦葵；蕁麻科之苧麻等。

生物學：本種為一年多代物種，成蝶幾乎全年可見。

註記：本種被認為是世界上分布最為廣泛之蝶種，在許多地方能觀察到數量龐大之遷徙行為。本種在臺灣氣候炎熱的季節低地少見，從而本種可能在島內會進行季節性垂直移動。

Field (1971) 將本屬分為 *Bassaris*、*Cynthia* 及狹義 *Vanessa* 三屬，而本種被置於 *Cynthia* 屬內。然而，這些屬被後來的研究者視為同物異名。

Genus *POLYGONIA* Hübner, [1819]

Type species: *Papilio c-aureum* Linnaeus, 1758

Diagnostic characters may include the following: 1) compound eyes densely hairy; 2) antennal club long, thick; 3) distal end of forewing M_1 and CuA_2 produced; 4) distal end of hindwing M_3 with a projection; 5) hindwing costa indented at distal end; 6) small, silvery white marking at posterior corner of proximal end of cell M_2 of hindwing undersides.

Larvae feed on plants in Ulmaceae, Salicaceae, Urticaceae, and Cannabaceae.

Bozano & Floriani (2012) recognized 14 species, mainly distributed in the Holarctic region.

2 species occur in Taiwan.

鉤蛺蝶屬

形態特徵如下：1) 複眼密被毛；2) 觸角錘部粗長；3) 前翅 M_1 脈及 CuA_2 脈末端突出；4) 後翅 M_3 脈末端具尾突；5) 後翅前緣外端內凹；6) 後翅腹面 M_2 室內側後方邊角有銀白色小紋。

幼蟲取食榆科、楊柳科、蕁麻科及大麻科植物。

Bozano & Floriani (2012) 將本屬分為 14 種，主要分布於全北區。

臺灣有 2 種。

Polygonia c-album (Linnaeus, 1758) (突尾鉤蛺蝶 / 白鉤蛺蝶 / 白鐮紋蛺蝶)

Papilio (*Nymphalis*) *c. album* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 477. (Type locality: "Grossularia, Humulo, Urtica [Sweden]")

Papilio Nymphalis f album Esper, 1783: Die Schmetterlinge in Abbildungen nach der Natur Th. I, Bd. 2 (8): 168, pl. 87. (Type locality: "Sebastianofka, [Russia]")

P[*apilio*] *g album* Geoffroy, 1785: Entomologia Parisiensis 2: 235. (Type locality: [Paris, France])

Vanessa c-album var. *obscurior* Selys-Longchamps, 1837: Catalogue Des Lépidoptères Ou Papillons De La Belgique: 18. (Type locality: "Belgique")

Grapta c-album var. *melanosticta* Stephens, 1856: List of the specimens of British animals in the collection of the British Museum 5: 11. (Type locality: [not stated]) (nomen nudum)

Grapta marsyas Edwards, 1870: Transactions of the American Entomological Society 3 (1): 16. (Type locality: "California") (mislabeled specimens)

Grapta c-album var. *hutchinsoni* Robson, 1881: The Young naturalist 2: 110. (Type locality: British, [England])

Vanessa c-album f. *lutescens* Harcourt-Bath, 1896: The Entomologist 29 (399): 257. (Type locality: "Shropshire, [U. K.]")

Polygonia c-album f. *pictior* Verity, 1919: The entomologist's record and journal of variation 31 (11): 200. (Type locality: "Petrograd [Saint Petersburg]")

Ssp. *asakurai* Nakahara, 1920

PLATE 37, Figs. 197–198; PLATE 91, Fig. 477; PLATE 129, Fig. 625

Polygonia asakurai Nakahara, 1920: The Canadian Entomologist 52 (6): 138. (Type locality: Horisha, Formosa [Puli, Taiwan])

Specimens examined:

YILAN Co.: 1♀, Datong, Siyuan, 11. VII. 2004 (C. L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 21. II. 1987 (Y. F. Hsu); 1♀, same locality, reared from *Zelkova serrata*, emgd. 24. VI. 2005 (L. H. Wang). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, 1500m, 31. III. 2009, reared from *Z. serrata*, emgd. 12. IV. 2009, HSU 09C56 (C. L. Huang); 1♂, 1♀, same locality, 11. VI. 2018, reared from *Z. serrata*, emgd. 23. VI. 2018 (L. Huang) (genitalia preparation JYL990, JYL967); 1♂, Jianshi, Zhenxibao, 1600m, 4. V. 2011 (L. H. Wang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Lishan, 23. XI. 2015, reared from *Ulmus uyematsui*, emgd. 15. XII. 2015, 15L44 (Y. F. Hsu). **HUALIAN Co.:** 2♂, 1♀, Xiulin, Bilu, 3. VII. 1989 (Y. F. Hsu); 1♀,

same locality, 31. X. 1999 (Y. F. Hsu); 1♂, same locality, 2300m, 24. VII. 2005 (Y. F. Hsu); 2♀, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai); 1♀, Xiulin, Cien, 15. VII. 2007, reared from *U. uyematsui*, emgd. 27. VII. 2007, HSU 07G6 (C. C. Lu & L. H. Wang); 1♀, Xiulin, Tailugedashan, 3200m, 31. VII. 2003 (C. L. Huang); 1♂, Xiulin, Xiaofengkou, 3000m, 8. VII. 2018 (Y. F. Hsu).

Description. Adult – Forewing length 22–30 mm. Sexual dimorphism absent. Male (PLATE 37, Fig. 197): Head dark brown. Antennae slightly enlarged at distal end, dark brown mixed with white scalings, naked ventrally and at distal tip. Eyes hairy. Proboscis brown. Labial palpus porrect, hairy, creamy white with dark brown bands. Thorax dark brown tinged with orange dorsally, brown ventrally. Legs creamy white; protarsi fused, stab-shaped, hairy. Abdomen dark brown tinged with orange dorsally, creamy white ventrally. Wings bearing bristles on undersides proximally, notably on hindwing. Forewing nearly triangular, with termen produced at tips of veins, especially at M_1 and CuA_2; costa slightly convex; dorsum concave distally. Hindwing broad, with termen produced at tips of veins, especially at M_3, forming a digitate projection. Wing uppersides ground color yellow ochre, with prominent dark brown markings; a series of discal and postdiscal spots on both wings, but postdiscal series on forewing reduced to a single spot in CuA_2. Dark margins present along termen of both wings. Two dark brown spots in discoidal cell. Prominent dark brown bar present at distal end of discoidal cell of both wings. Wing undersides ground color ochre or brown, with fine, dark striae; proximal areas darkened. A pale patch present by costa of forewing; a dark band along termen of forewing. A small, C- or L-shaped, silvery white spot at posterior corner of proximal end of cell M_2 of hindwing. Fringe white, checkered with brown. Female (PLATE 37, Fig. 198): Body and wing pattern similar to those of male; protarsi segmented, less hairy, spiny.

Male genitalia (PLATE 91, Fig. 477) – Tegumen broad, short; uncus tapering to a bifid distal end. Gnathos setose, extending ventrad into broad sclerotized band. Saccus short, with distal tip club-like. Vinculum bent dorsally. Valva roughly rectangular; ampulla with prominent, large horn-shaped process pointing downwards; harpe as rounded extension; sacculus broad at base, with elongate, prominent, up-raising and recurved hook. Juxta broad, forming V-shaped opening dorsally. Phallus elongate; aedeagus approximately

3.0X of phallobase, tapering caudad, with posterior portion abruptly up-raising, heavily sclerotized, distal tip pointed.

Female genitalia (PLATE 129, Fig. 625) – Corpus bursae ovate. Signa as two oval patched of minute spines. Ductus bursae much shorter than corpus bursae, membranous, slender. Sterigma forming a pair of square sclerites connecting by narrow bridge, surrounding ostium bursae. Anterior apophyses as small, triangular lobes; posterior apophyses shorter than anal papillae, weakly sclerotized, flattened, with anterior ends truncate. Anal papillae lobe-like, sclerotized along posterior margin, setose posteriorly.

Global distribution. Widely distributed across Eurasian continent, from West Europe to Far East Russia, Japan, south to Himalayas, West China, Taiwan (Bozano & Floriani, 2012; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Ulmaceae: *Zelkova serrata* and *Ulmus uyematsui* (Chang, 1973; Hsu, 1999, 2013; Lu & Chen, 2014).

Biology. Multivoltine, with adults on the wing in most seasons except winter (Hsu, 1999, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 22–30 mm。無雌雄二型性。雄蝶 (圖 197)：頭黑褐色。觸角黑褐色雜白色鱗，末端略膨大，腹面及端部裸露。複眼被毛。口器褐色。下唇鬚前伸、被毛，乳白色，有黑褐色條紋。胸部背面赭褐色泛橙色、腹面褐色。足乳白色；前足跗節癒合、刺狀、被毛。腹部背面黑褐色泛橙色、腹面乳白色。翅背面內側生有硬毛，後翅尤多。前翅近三角形，前緣略凸、外緣翅脈末端突出、以 M_1 脈及 CuA_2 末端最為顯著、後緣外側內凹。後翅寬，外緣翅脈末端突出、以 M_3 脈末端最為顯著，形成指狀尾突。翅背面底色赭黃色，有鮮明黑褐色斑紋，中央及外側各有一列斑紋，但前翅外側僅於 CuA_2 室內有一黑斑；外緣有黑邊，中室末端有鮮明黑褐色短紋；前翅中室內有二只黑褐色斑點。翅腹面底色赭色或褐色，有細密深色條

紋，翅內側色彩較深，前翅前緣有一淡色斑塊、外緣有深色帶紋，後翅 M_2 室後側邊角有 C 或 L 字形銀白色小斑點。緣毛白色嵌褐色。雌蝶 (圖 198)：形態特徵與雄蝶相似，但前足跗節分節、疏披毛、具刺。

雄交尾器 (圖 477)：背兜寬短。鉤突尾端漸細，末端有小分叉。顎形突基部有剛毛，向腹側延伸為寬骨板。囊突短，末端棒狀。基腹弧背側彎曲。抱器近矩形。抱器內突形成大型、向下之角狀突起。抱握鋏圓形。抱器腹基部寬，具細長、向上反曲之大型彎鉤。陽基軛片寬，背側開口呈 V 字形。陽莖長。陽莖器長度約為陽莖基 3 倍，後端驟縮，末端明顯上揚，高度骨化。

雌交尾器 (圖 625)：交尾囊卵圓形。花壁為一對橢圓形、具細刺之骨斑。交尾囊管明顯短於交尾囊，膜質、細長。交尾囊孔板形成一對方形骨板交尾囊孔，中央以窄橋相連。前內骨突細小、三角形、葉狀；後內骨突短於肛突，輕度骨化、扁平，前端鈍。肛突葉狀，其基部及後緣骨化，後端具剛毛。

世界分布：廣泛分佈於歐亞大陸，從西歐到俄羅斯遠東地區、日本，南至喜瑪拉雅地區、華西、臺灣。

臺灣分布：本島中至較高海拔山區。

寄主植物：榆科之櫸木、阿里山榆。

生物學：本種為一年多代物種，成蝶可見於冬季以外之季節。

Polygonia c-aureum (Linnaeus, 1758) (黃鉤蛺蝶 / 黃蛺蝶)

Papilio (*Nymphalis*) *c. aureum* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 477. (Type locality: "Asia, [Canton China]")

Papilio angelica Stoll, [1782]: De uitlandsche kapellen 4 (32-32): 204, pl. 388, f. G, H. (Type locality: "China")

Polygonia c-aureum coreana Bryk, 1946: Arkiv för zoologi 38A: 40. (Type locality: "Korea")

Ssp. *lunulata* Esaki & Nakahara, 1924

PLATE 37, Figs. 199–200; PLATE 38, Figs. 201–202; PLATE 91, Fig. 478; PLATE 129, Fig. 626

Polygonia c-aureum lunulata Esaki & Nakahara, 1924: Insector Inscitiae Menstruus 12: 55, pl. 3, f.

1. (Type locality: Musha, Formosa [Wushe, Taiwan])

Ssp. *c-aureum* Linnaeus, 1758

PLATE 38, Figs. 203–204; PLATE 92, Fig. 479; PLATE 129, Fig. 627

Specimens examined:

Ssp. *lunulata*: **JILONG CITY:** 1♂, Longgang Trail, 9. XI. 2010 (C. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♂, 1♀, Xindian, 50/100m, 27. X. 2000, reared from *Humulus scandens*, emgd. 13. XI. 2000 (C. C. Lu). **TAIPEI CITY:** 1♂, Wenshan, NTNU, Gongguan campus, 15. I. 2003 (Y. F. Hsu); 1♂, 1♀, Wenshan, Jingmei, 18. IX. 2008 (Y. F. Hsu). **MIAOLI Co.:** 1♂, Sanyi, 250m, 10. V. 2001 (Y. T. Lo). **HUALIAN Co.:** 1♀, Xiulin, Huitouwan, 700m, 30. I. 2007 (Y. F. Hsu). **JIAYI Co.:** 1♂, 1♀, Xingang, Yuemei, 12. II. 2006 (Y. F. Hsu); 1♂, 3♀, same locality, 29. XI. 2008, reared from *H. scandens*, emgd. 13. XII. 2008, HSU 08L29 (Y. F. Hsu); 1♂, same locality, 1. XII. 2008 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 2♀, Yongkang, Sankandian, 23. I. 2010, reared from *H. scandens*, emgd. 23/26. I. 2010, HSU 10A8 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, Sidaogou, 14/16. X. 2006 (Y. F. Hsu & H. C. Huang).

Ssp. *c-aureum*: **LIANJIANG Co.:** 1♀, Beigan, Tangqi, 21. VII. 2020 (Y. F. Hsu) (genitalia preparation JYL951); 3♂, Beigan, Leishan, 22. VII. 2020 (Y. F. Hsu) (genitalia preparation JYL952). **JINMEN Co.:** 1♂, Jinhu, Jinmen Botanical Garden, 5. XI. 2015 (H. C. Huang); 1♀, Jinsha, Tianpu Dam, 6. XI. 2015 (C. W. Huang).

Description. Adult – Forewing length 24–30 mm. Sexual dimorphism absent. Male (PLATE 37, Figs. 199–200; PLATE 38, Fig. 203): Head orange. Antennae slightly enlarged at distal end, dark brown mixed with white scalings, naked ventrally and at distal tip. Eyes densely hairy. Proboscis brown. Labial palpus porrect, hairy, orange dorsally, creamy white ventrally, darkened distad. Thorax brown tinged with yellow dorsally, creamy yellow ventrally. Legs creamy white; protarsi fused, stab-shaped, hairy. Abdomen brown tinged with yellow dorsally, creamy yellow ventrally. Wings bearing bristles on undersides proximally, notably on hindwing. Forewing nearly triangular, with termen produced at tips of veins, especially at M_1, serrate in appearance; costa slightly convex; dorsum slightly concave distally. Hindwing broad, with termen produced at tips of veins, especially at M_3, serrate in appearance. Wing uppersides ground color

yellow ochre, with prominent dark brown markings; a series of discal and postdiscal spots on both wings, but postdiscal series on forewing reduced to a single spot in CuA_2. Submarginal band as wavy brown line. Dark brown spots in discoidal cell, three on forewing, two on hindwing. Dark brown bar present at distal end of discoidal cell of both wings. Wing undersides ground color pale yellow ochre or ochre, with brown ochre discal bands. A few dark hollow markings present along costa of forewing. A small, C-shaped, silvery white spot at posterior corner of proximal end of cell M_2 of hindwing. Fringe creamy yellow. Female (PLATE 38, Figs. 201–202, 204): Body and wing pattern similar to those of male; protarsi longer, segmented.

Male genitalia (PLATE 91, Fig. 478; PLATE 92, Fig. 479) – Tegumen broad, short; uncus tapering to a blunt distal end. Gnathos setose, extending ventrad into sclerotized band with medial depression. Saccus short, attenuate to a blunt tip. Vinculum bent dorsally. Valva roughly rectangular; ampulla with prominent, large horn-shaped process pointing downwards; harpe as angled, setose extension; sacculus robust at base, forming elongate, up-raising arm bearing small spines on dorsal surface distally. Juxta broad, fused with valvae laterally, forming V-shaped opening dorsally. Phallus elongate; aedeagus approximately 2.7X of phallobase, tapering caudad, with posterior portion abruptly up-raising, distal tip pointed, with a small, subapical, dorsal wart.

Female genitalia (PLATE 129, Figs. 626–627) – Corpus bursae ovate. Ductus bursae shorter than corpus bursae, membranous, slender, with posterior end enlarged to a bell-like sac connecting to sclerotized ring surrounding ostium bursae. Sterigma forming a membranous fold with posterior margin sclerotized, with small medial extension. Anterior apophyses as small, triangular lobes; posterior apophyses nearly as long as anal papillae, weakly sclerotized, nearly straight. Anal papillae lobe-like, sclerotized along posterior margin, setose posteriorly.

Variation. Individuals occurring in dry and cool seasons possesses darker wings, more serrate wing margins, and less extensive dark brown markings on wing uppersides.

Global distribution. Far East Russia, Korea, Japan, northern Indochina, West, Northeast,

North to East China, Taiwan (Bozano & Floriani, 2012; Hsu, 2013).

Distribution in Taiwan. Low elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013). Populations of Jinmen and Mazu Islands are regarded as the nominotypical subspecies (Hsu, 2014).

Larval Host plant(s). Cannabaceae: *Humulus scandens* (Hsu, 1999, 2013; Lu & Chen, 2014).

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

Remarks. Bozano & Floriani (2012) regarded ssp. *lunulata* as a junior synonym of the nominotypical subspecies, but Kato *et al*. (2019) have demonstrated that the population of *lunulata* is not only different from the nominotypical subspecies in seasonal variation of wing pattern. They also differ considerably in seasonal form-determining factors such as temperature and photoperiod.

形態特徵：成蝶前翅長 24–30 mm。無雌雄二型性。雄蝶（圖 199–200、203）：頭橙色。觸角黑褐色雜白色鱗，末端略膨大，腹面及端部裸露。複眼密被毛。口器褐色。下唇鬚前伸、被毛，背面橙色、腹面乳白色，端部暗色。胸部背面褐色泛黃色、腹面乳黃色。足乳白色；前足跗節癒合、刺狀、被毛。腹部背面褐色泛黃色、腹面乳黃色。翅背面內側生有硬剛毛，後翅尤多。前翅近三角形，前緣略凸、外緣翅脈末端突出呈鋸齒狀、以 M_1 脈最為顯著、後緣外側略凹。後翅寬，外緣翅脈末端突出呈鋸齒狀、以 M_3 脈末端最為顯著。翅背面底色赭黃色，具鮮明黑褐色斑紋，中央及外中側各具一列斑點，但前翅外側僅於 CuA_2 室內有一黑斑；亞外緣有褐色波浪狀線紋，中室內有黑褐色斑點，前翅三只、後翅兩只，中室末端有黑褐色短紋。翅腹面底色淡赭黃色或赭色，中央有赭褐色帶紋，前翅前緣有鏤空黑色斑紋，後翅 M_2 室內後側邊角有 C 或 L 字形銀白色小斑點。緣毛乳黃色。雌蝶（圖 201–202、204）：形態特徵與雄蝶相似，但前足跗節較長、分節。

雄交尾器（圖 478–479）：背兜寬短。鉤突尾端漸細，末端鈍。顎形突基部有剛毛，

向中央延伸成凹陷骨帶。囊突短，末端鈍。基腹弧背側彎曲。抱器近矩形。抱器內突形成大型向下之角狀突起。抱握鋏邊緣角狀。抱器腹基部寬，具細長、向上之臂狀突起，其末端背側具小棘刺。陽基軛片寬，兩側與抱器癒合，其背側開口呈 V 字形。陽莖甚長。陽莖器長度約為陽莖基 2.7 倍，尾端漸細，末端尖，尾端上抬，背側有一小瘤突。

雌交尾器 (圖 626–627)：交尾囊卵圓形。交尾囊管短於交尾囊，膜質、細長，後端膨大形成啞鈴狀囊袋，與交尾囊孔周圍之骨化環相連。交尾囊孔板形成一膜質褶，其後緣骨化，中央有小突起。前內骨突細小、三角形、葉狀；後內骨突與肛突近乎等長，輕度骨化，頗直。肛突葉狀，其基部及後緣骨化，後端具剛毛。

變異：乾季／低溫型個體翅面色彩較深，邊緣稜角較明顯，翅腹面黑褐色斑紋較不明顯。

世界分布：俄羅斯遠東地區、朝鮮半島、日本、中南半島北部、華西、華東北、華北至華東、臺灣。

臺灣分布：本島低海拔地區。金門及馬祖之族群屬於承名亞種。

寄主植物：大麻科之葎草。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：Bozano & Floriani (2012) 將臺灣亞種 ssp. *lunulata* 視為承名亞種之次同物異名，但 Kato *et al*. (2019) 指出兩者不僅季節型斑紋變化迥異，兩者對於季節型決定因子 (如光照及溫度) 之反應也有明顯差異。

Genus *KANISKA* Moore, [1899]

Type species: *Papilio canace* Linnaeus, 1763

The systematic position of this monotypic genus has changed in different studies. In Wahlberg & Nylin (2003), it emerged as a taxon sister to *Polygonia*. However, in Wahlberg *et al*. (2005), it became the sister group of *Nymphalis*. Due to the inconstancy

of these results, Bozano & Floriani (2012) retained *Kaniska* as a separate genus, and the treatment is followed herein.

Diagnostic characters may include the following: 1) compound eyes densely hairy; 2) distal end of forewing M_1 and CuA_2 produced; 3) distal end of hindwing M_3 with a projection; 4) bristles present along costa of forewing undersides and on hindwing undersides; 5) wing uppersides dark brown with blue bands.

Larvae feed on plants in Smilacaceae and Liliaceae.

One species only, distributed in eastern Palearctic and Oriental regions, including Taiwan.

琉璃蛺蝶屬

本單種屬之系統分類地位因不同研究而異。Wahlberg & Nylin (2003) 將本屬視為鉤蛺蝶屬之姊妹群，然在 Wahlberg *et al*. (2005) 的研究中卻成為蛺蝶屬之姊妹群。由於研究結果尚未有共識，Bozano & Floriani (2012) 保留本屬為獨立屬，本著作沿用之。

形態特徵如下：1) 複眼密被毛；2) 前翅 M_1 脈及 CuA_2 脈末端突出；3) 後翅 M_3 脈末端突出；4) 前翅腹面沿前緣及後翅有硬毛；5) 翅背面黑褐色綴藍色帶紋。

幼蟲取食菝葜科及百合科植物。

本屬僅 1 種，分布於古北區東部及東洋區，包括臺灣。

Kaniska canace (Linnaeus, 1763) (琉璃蛺蝶)

Papilio (*Nymphalis*) *canace* Linnaeus, 1763: Centuria insectorum rariorum: 23. (Type locality: Not stated [India, see Honey & Scoble, 2001])

Papilio (*Nymphalis*) *charonia* Drury, 1770: Illustrations of natural history 1: 28, pl. 15, f. 1. 2. (Type locality: “China”)

Papilio kolina Meerburgh, 1775: Afbeeldingen van zeldzaame gewassen: pl. 43. (Type locality: Not stated [China])

Vanessa canace himalaya Evans, 1924: Journal of the Bombay Natural History Society 30 (1): 85. (Type locality: "Chitral—Kumaon, [India]")

Vanessa canace viridis Evans, 1924: Journal of the Bombay Natural History Society 30 (1): 85. (Type locality: "S. India")

Ssp. *drilon* Fruhstorfer, 1908

PLATE 38, Figs. 205–206; PLATE 92, Fig. 480; PLATE 129, Fig. 628

Vanessa canace drilon Fruhstorfer, 1908: Entomologische Wochenblatt 25 (10): 41. (Type locality: "Lake Candidius [Sun Moon Lake, Taiwan]")

Ssp. *canace* Linnaeus, 1763

PLATE 39, Figs. 207–208; PLATE 92, Fig. 481; PLATE 130, Fig. 629

Ssp. *ishima* Fruhstorfer, 1898

PLATE 39, Fig. 209

Vanessa canace ishima Fruhstorfer, 1898: Stettiner entomologische Zeitung 59: 416. (Type locality: "Ishigaki")

Specimens examined:

Ssp. *drilon*: **JILONG CITY:** 1♂, Pengjiayu, 9/10. VII. 2008 (C. H. Yen & N. Y. Tsai); 1♂, 3♀, Bisha Harbor, 11. XII. 2009, reared from *Smilax china*, emgd. 30. XII. 2009/2. III. 2010, HSU 09M18 (J. H. Lin); 1♂, Longgang Trail, 50m, 14. I. 2010, reared from *S. china*, emgd. 3. II. 2010, HSU 10A13 (J. H. Lin & C. K. Wang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Bali, Guanyinshan, 10. I. 2010 (Y. F. Hsu); 2♂, Bali, Guanyinshan, 400/450m, 28. IV. 2011 (Z. H. Yen); 1♂, Xindian, Zhitan Elementary School, 6. III. 2011, reared from *S. china*, emgd. 9. IV. 2011 (C. L. Huang) (genitalia preparation JYL727). **TAIPEI CITY:** 1♀, Shilin, Pingding Ancient Canal, 1. XII. 2010 (genitalia preparation JYL726). **TAIZHONG CITY:** 1♀, Heping, Sikeba Trail, 6. VII. 2020 (C. W. Huang & C. J. Chang). **TAINAN CITY [= TAINAN Co.]:** 1♂, 1♀, Dongshan, Kantoushan, 600/800m, 4. II. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu). **HUALIAN Co.:** 1♂, 1♀, Xiulin, Huide Tunnel, 25. VII. 2008 (M. H. Sun). **TAIDONG Co.:** 2♂, 2♀, Lanyu, Central Transverse Road, 18. II. 2013, reared from *S. bracteata*, emgd. 23/26. III. 2013, HSU 13B20 (Y. F. Hsu).

Ssp. *canace*: **LIANJIANG Co.:** 1♀, Beigan, Nigushan, 16. IV. 2014, reared from *S. china*, emgd. 8. V. 2014, HSU 14D19 (Y. F. Hsu, H. C. Huang & C. L. Huang) (genitalia

preparation JYL956); 1♂, Nangan, Shentian Park, 18. X. 2020, reared from *S. china*, emgd. 17. XI. 2020, HSU 20K14 (Y. F. Hsu). **JINMEN Co.:** 1♀, Wuhushan, 28/30. X. 2000 (C. C. Lu & Y. T. Lo); 1♀, Jinning, Zhongshan Forest, 29. X. 2014 (Y. F. Hsu & H. C. Huang); 1♂, Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang); 1♀, Jinsha, Longling Bridge, 4. XI. 2015, reared from *S. china*, emgd. 8. XII. 2015, HSU 15L51 (L. Huang).

Ssp. *ishima*: **JILONG CITY:** 1♂, Pengjiayu, 9/10. VII. 2008 (C. H. Yen & N. Y. Tsai). **TAIDONG Co.:** 2♂, Lanyu, Sidaogou, 13/15. VI. 2003 (Y. F. Hsu).

Description. Adult – Forewing length 28–37 mm. Sexual dimorphism absent or slightly present. Male (PLATE 38, Fig. 205; PLATE 39, Figs. 207, 209): Head brown. Antennae slightly enlarged at distal end, dark brown mixed with white scalings, naked ventrally and at distal tip. Proboscis brown. Labial palpus porrect, dark brown with grayish white bands, hairy. Thorax hairy, dark brown ochre. Legs dark brown proximally, ochre distally; protarsi fused, short, bullet-shaped, hairy. Abdomen brown. Forewing nearly triangular, with termen produced at tips of veins, especially at M_1 and tornus; costa slightly convex; dorsum concave distally. Hindwing nearly ovate, with termen produced at tips of veins, especially at M_3. Wing uppersides ground color dark brown, with prominent postdiscal blue or purplish blue band on both wing, thicker on hindwing; forewing band attenuate and curved anteriorly, near a blue bar close to costa. Wing undersides ground color pale charcoal gray, partially brown, with fine dark brown striae. A discal, narrow, wavy band on both wings. A minute creamy yellow spot at posterior corner of proximal end of cell M_2 of hindwing. Several hollow spots present in discoidal cells of both wings. Fringe brown. Female (PLATE 38, Fig. 206; PLATE 39, Fig. 208): Body and wing pattern similar to those of male, blue bands on wing uppersides usually tinged with green; protarsi longer, segmented.

Male genitalia (PLATE 92, Figs. 480–481) – Tegumen flat, produced anteriorly with margin rounded; uncus broad at base, abruptly narrowed posteriad, digitate with distal end blunt. Gnathos slender, with medial, sclerotized band. Saccus short, flattened. Vinculum strongly curved dorsally. Valva broad; ampulla setose, forming down-curved

hook with distal end pointed; harpe as a setose lobe with rounded margin; sacculus as weakly sclerotized wall with a large horn-shaped dorsal process bearing minute spines at distal tip. Juxa fused with valva, forming a pair of dorsal flattened processes. Phallus stout, short; aedeagus approximately 3.5X of phallobase, abruptly narrow and strongly up-raised distally.

Female genitalia (PLATE 129, Fig. 628; PLATE 130, Fig. 629) – Corpus bursae ovate. Signa as two sclerotized patches with minute spines. Ductus bursae longer than corpus bursae, forming a sclerotized cone surrounding ostium bursae. Sterigma forming sclerotized wall. Posterior apophyses shorter than anal papillae, slender, weakly sclerotized. Anal papillae lobe-like, sclerotized basally and along margin, setose posteriorly.

Global distribution. Himalayas, India, Sri Lanka, Southeast Asia, Sulawesi, Korea, Japan, West to East China, Taiwan (Tsukada, 1985; Hsu, 2013).

Distribution in Taiwan. Low to higher elevations in mian island of Taiwan (Yamanaka, 1975; Hsu, 2013). Populations inhabiting Jinmen and Mazu Islands are regarded as the nominotypical subspecies.

Larval Host plant(s). Smilacaceae: *Smilax china* and *S. bracteata*; Liliaceae: *Tricyrtis formosana*, etc. (Uchida, 1991; Hsu, 2002, 2013; Hung, 2013)

Biology. Multivoltine, with adults on the wing in all seasons (Hsu, 2002, 2013).

Remarks. Individuals with wing markings characteristic of ssp. *ishima* Fruhstorfer, 1898, i. e. proximal spot near forewing costa being white instead of blue (Inomata, 1990; Shirôzu, 2006), were found from Lanyu and Pengjiayu, suggesting that temporary colonies from southern islands of Japan have immigrated before.

Ssp. *drilon* is difficult to be distinguished from the nominotypical subspecies, and

Tsukada (1985) treated them as synonyms. The name is tentative retained here following Bozano & Floriani (2012).

形態特徵：成蝶前翅長 28–37 mm。雌雄二型性略有或缺乏。雄蝶 (圖 205、207、209)：頭褐色。觸角黑褐色，雜有白色鱗，末端略膨大、腹面及頂端裸露。口器褐色。下唇鬚前伸、黑褐色，上有灰白色紋、被毛。胸部被毛，深赭褐色。足基部黑褐色、外側赭色；前足跗節短、癒合、子彈狀、被毛。腹部褐色。前翅近三角形，外緣翅脈突出，M_1 脈末端及臀區較明顯，前緣略凸、後緣外側凹入。後翅近卵形，外緣翅脈末端突出，M_3 脈末端格外明顯。翅背面底色黑褐色，有鮮明藍色或藍紫色帶紋，於後翅者較粗、前翅者前端減退、彎曲，形成靠近前緣之藍色短條紋。翅腹面底色淺炭灰色，部分褐色，上有黑褐色細條紋，中央有褐色細波浪紋，中室內有數只鏤空斑點，後翅 M_2 室內後側邊角有乳黃色小紋。緣毛褐色。雌蝶 (圖 206、208)：形態特徵與雄蝶相似，但翅背面藍色帶紋常泛綠色，前足跗節長、分節。

雄交尾器 (圖 480–481)：背兜平坦，前端突出，邊緣圓鈍。鉤突基部寬，向後驟縮成指狀，末端鈍。顎形突細長，中央形成骨帶。囊突短、扁平。基腹弧背側明顯彎曲。抱器寬闊、瓣狀。抱器內突下彎、鉤狀，末端尖，具剛毛。抱握鋏葉狀，末緣圓弧狀，具剛毛。抱器腹骨化程度低之骨壁，尾端形呈彎曲骨化角狀突起，其末端有微小棘刺。陽基軛片與抱器癒合，形成一對背側扁平之突起。陽莖粗短。陽莖器長度約為陽莖基 3.5 倍，向後縐縮、明顯上彎。

雌交尾器 (圖 628–629)：交尾囊卵圓形。花壁為一對具細刺之骨斑。交尾囊管較交尾囊長，於交尾囊孔處形成骨錐。交尾囊孔板形成骨壁。後內骨突短於肛突，細長、輕度骨化。肛突葉狀，基部及周圍骨化，後端具剛毛。

世界分布：喜瑪拉雅地區、印度、斯里蘭卡、東南亞、蘇拉威西、朝鮮半島、日本、華西至華東、臺灣。

臺灣分布：本島低至中高海拔地區。金門及馬祖之族群屬於承名亞種。

寄主植物：菝葜科之菝葜及糙莖菝葜；百合科之臺灣油點草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：蘭嶼及彭佳嶼曾發現特徵符合日本南西諸島亞種 ssp. *ishima* Fruhstorfer, 1898 之個體（前翅前緣內側斑紋呈白色，而非藍色），應為源自日本南部島嶼之偶產個體或族群。

臺灣亞種 ssp. *drilon* 與承名亞種斑紋難以區分，因此 Tsukada (1985) 將兩者處理為同物異名，本書暫依 Bozano & Floriani (2012) 之處理作保留。

Genus *NYMPHALIS* Kluk, 1802

Type species: *Papilio polychloros* Linnaeus, 1758

Diagnostic characters may include the following: 1) compound eyes densely hairy; 2) distal end of forewing M_1 and CuA_2 produced; 3) distal end of hindwing M_3 with a projection; 4) bristles present along costa of forewing undersides and on hindwing undersides; 5) wing uppersides ochre with dark brown markings.

Larvae feed on plants in Ulmaceae, Salicaceae, and Betulaceae, etc.

Bozano & Floriani (2012) recognized 6 species, mainly distributed in the Holarctic region.

1 species occurs in Taiwan.

蛺蝶屬

形態特徵如下：1) 複眼密被毛；2) 前翅 M_1 脈及 CuA_2 脈末端突出；3) 後翅 M_3 脈末端具尾突；4) 前翅腹面沿前緣及後翅腹面有硬毛；5) 翅背面黃色，綴有黑褐色斑紋。

幼蟲取食榆科、楊柳科及樺木科等植物。

Bozano & Floriani (2012) 將本屬分為 6 種，主要分布於全北區。

臺灣有 1 種。

Nymphalis xanthomelas (Esper, 1781) (緋蛺蝶 / 朱蛺蝶)

Papilio Nymphalis xanthomelas Esper, 1781: Die Schmetterlinge in Abbildungen nach der Natur Th. I, Bd. 2 (3): 77, pl. 63, f. 4. (Type locality: [Austria])

Papilio xanthomelas [Schiffermüller], 1775: Ankündung eines systematischen Werkes von den Schmetterlingen der Wienergegend: 175. (Type locality: [Austria]) (nom. nudum)

Eugonia pyrrhomelaena Hübner, [1819]: Verzeichniss bekannter Schmettlinge 3: 37. (Type locality: [not stated])

Vanessa xanthomelas var. *gruetzneri* Fischer, 1902: Entomologische Zeitschrift 16 (16): 61. (Type locality: [not stated])

Vanessa xanthomelas var. *cibiensis* Dannehl, 1925: Entomologische Zeitschrift 39 (2): 6. (Type locality: “Cibinsgebirgs, Süd-Karpathen”)

Vanessa xanthomelas sachalinensis Matsumura, 1925: Journal of the College of Agriculture, Hokkaido Imperial University 15 (3): 97, pl. 8, f. 10. (Type locality: “South Saghalien (Nairo); North-Saghalien (Tim, Arcovo)”)

Vanessa xanthomelas chosenessa Bryk, 1946: Arkiv för zoologi 38A: 39. (Type locality: “Myokosan, [North Korea]”)

Vanessa xanthomelas mongolica Bryk, 1946: Arkiv för zoologi 38A: 39. (nomen nudum)

Nymphalis xanthomelas anna Krzywicki, 1967: Annales Zoologici, Warszawa 25 (1): 6. (Type locality: “Bialowieżaer Urwalds, [Poland]”)

Ssp. *formosana* Matsumura, 1925

PLATE 39, Figs. 210–211; PLATE 92, Fig. 482; PLATE 130, Fig. 630

Vanessa xanthomelas formosana Matsumura, 1925: Journal of the College of Agriculture, Hokkaido Imperial University 15: 97, pl. 8, f. 12. (Type locality: “Mt. Tahke near Horisha, Formosa [near Puli, Taiwan]”)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, 3♀, Fuxing, Baling, 600m, 1. V. 2007, reared from *Zelkova serrata*, emgd. 2. V. 2007, HSU 07E1 (Y. F. Hsu & L. H. Wang); 1♀, Fuxing, Baling, 23. IV. 2017, reared from *Z. serrata*, emgd. 3. V. 2017, HSU 17D60 (L. Huang) (genitalia preparation JYL957); 1♀, Fuxing, Sileng, 1000m, 1. V. 2007, reared from *Z. serrata*, emgd. 19. V. 2007, HSU 07E2 (Y. F. Hsu & L. H. Wang); 2♂, Fuxing, Xuanyuan, 20. II. 2019 (Y. F. Hsu & J. Y. Liang) (genitalia preparation JYL724, 725); 3♂, 2♀, Fuxing, Fufushan, 1400m, 4. III. 2020, reared from *Z. serrata*, emgd. 6/9. IV. 2020, HSU 20C4 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Kunyang, 24. VI. 2016 (J. Y.

Liang). **HUALIAN Co.:** 1♀, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai).

Description. Adult – Forewing length 29–36 mm. Sexual dimorphism absent. Male (PLATE 39, Fig. 210): Head brown. Antennae slightly enlarged at distal end, dark brown mixed with white scalings, naked ventrally and at distal tip. Proboscis brown. Labial palpus porrect, brown mixed with creamy yellow, densely hairy. Thorax densely hairy, brown ochre dorsally, gray ventrally. Legs gray proximally, dull creamy yellow ventrally; protarsi fused, stab-shaped, densely hairy, bearing stiff bristles. Abdomen brown ochre. Wings bearing stiff bristles on undersides proximally, notably on hindwing. Forewing nearly triangular, with termen produced at tips of veins, especially at M_1; costa slightly convex; dorsum straight. Hindwing broad, with termen produced at tips of veins, especially at M_3. Wing uppersides ground color ochre yellow, with dark margins along termen, with a series of deep purple, submarginal markings on hindwing. Several dark brown markings on forewing and a large, dark brown, discal patch on hindwing. One dark brown band in discoidal cell of forewing, with another larger marking at its distal end. Wing undersides ground color brown, with fine, brown striae. Dark patches present proximally on both wings. A wavy, deep blue band along termen of both wings. Two pale patch along costa of forewing. Fringe brown. Female (PLATE 39, Fig. 211): Body and wing pattern similar to those of male; protarsi longer, segmented, less hairy.

Male genitalia (PLATE 92, Fig. 482) – Tegumen produced anteriorly with margin rounded; uncus broad at base, abruptly narrowed posteriad, digitate with distal end blunt. Gnathos slender, with medial, sclerotized crescent. Saccus short, flattened. Vinculum bent dorsally. Valva elongate; ampulla setose, forming down-curved beak with distal end pointed; harpe as a setose lobe with truncate margin; sacculus as sclerotized wall with a prominent blade-shaped, setose, dorsal process. Juxta fused with valva, forming a pair of dorsal arms with clubbed distal ends. Phallus stout, short; aedeagus approximately 2.5X of phallobase, abruptly narrow and up-raised distally.

Female genitalia (PLATE 130, Fig. 630) – Corpus bursae ovate. Signa as a pair of weakly sclerotized patches with minute spines. Ductus bursae longer than corpus bursae. Sterigma forming sclerotized wall with medial notch surrounding ostium bursae.

Posterior apophyses slightly longer than anal papillae, slender, nearly straight, with distal end club-like. Anal papillae lobe-like, sclerotized basally and along margin, setose posteriorly.

Global distribution. Widely spread across Eurasian continent, from Central Europe to East Asia, Taiwan representing the southernmost population of the species (Bozano & Floriani, 2012; Hsu, 2013).

Distribution in Taiwan. Low to higher elevations in montane zone of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Ulmaceae: *Zelkova serrata* (Chang, 1973; Hsu, 2013). Chang (1973) reported *Celtis formosana* (Cannabaceae) was also used.

Biology. Univoltine, with adults on the wing in early summer, diapause as adult in winter.

形態特徵：成蝶前翅長 29–36 mm。無雌雄二型性。雄蝶 (圖 210)：頭褐色。觸角黑褐色雜白色鱗、腹面乳白色，末端略膨大，腹面及端部裸露。口器褐色。下唇鬚前伸，褐色雜乳黃色、密被毛。胸部密被毛，背面赭褐色、腹面灰色。足基部灰色，腹面暗黃色；前足跗節癒合、刺狀、密被毛、生有硬毛。腹部赭褐色。翅背面內側生有硬毛，後翅尤多。前翅近三角形，前緣略凸、外緣翅脈末端突出，於 M_1 脈末端最顯著、後緣直線狀。後翅寬大，沿外緣翅脈末端突出、於 M_3 脈末端最顯著。翅背面底色赭黃色，外緣有黑邊，前翅有數只黑褐色斑塊、後翅有一較大黑褐色斑塊；前翅中室內有黑褐色帶紋、中室末端有較大黑褐色斑紋。後翅亞外緣有一列深紫色斑紋。翅腹面底色褐色，有細密褐色條紋，翅內側深色，外緣有深藍色波形帶紋，前翅前緣有二淡色斑塊。緣毛褐色。雌蝶 (圖 211)：形態特徵與雄蝶相似，前足跗節較長、分節、疏披毛。

雄交尾器 (圖 482)：背兜前端延伸，邊緣圓鈍。鉤突基部寬，向後驟縮成指狀，末端鈍。顎形突細長，中央骨化為新月狀骨。囊突短、扁平。基腹弧背側彎曲。抱器

修長、瓣狀。抱器內突形成向下彎曲之喙狀突起，末端尖，具剛毛。抱握鋏葉狀，邊緣截狀，具剛毛。抱器腹形成骨壁，背側突起呈刃片，具剛毛。陽基軛片與抱器癒合，其背側形成一對末端棒狀之骨臂。陽莖短而粗壯。陽莖器長度約為陽莖基 2.5 倍，後端窄縮，末端上舉。

雌交尾器 (圖 630)：交尾囊卵圓形。花壁為一對輕度骨化、具細刺之骨斑。交尾囊管較交尾囊長。交尾囊孔板形成圍繞交尾孔之骨壁，其中央有凹陷。後內骨突略長於肛突，細長、頗直，前端棍棒狀。肛突葉狀，其基部及後緣骨化，後端具剛毛。

世界分布：廣泛分佈於歐亞大陸，從中歐到東亞，臺灣為本種之分布南界。

臺灣分布：本島低至較高海拔山區。

寄主植物：榆科之櫸木。Chang (1973) 報告大麻科石朴也被利用。

生物學：本種一年一世代，成蝶活動於初夏，以成蝶態休眠過冬。

Genus *SYMBRENTHIA* Hübner, [1819]

Type species: *Symbrenthia hippocl*e Hübner, [1819]

Diagnostic characters may include the following: 1) compound eyes densely hairy; 2) antennal club enlarged; 3) distal end of hindwing M_3 produced; 4) wing uppersides dark brown with yellow or ochre markings, undersides yellow or ochre with brown markings.

Larvae feed on plants in Urticaceae.

Tsukada (1985) recognized 8 species, distributed in Oriental and Australian regions.

3 species are currently recognized in Taiwan, including a species recently established.

盛蛺蝶屬

形態特徵如下：1) 複眼密被毛；2) 觸角錘部膨大；3) 後翅 M_3 脈末端突出；4) 翅背面底色黑褐色，綴黃色或赭色斑紋，腹面黃色或赭色，綴褐色紋。

幼蟲取食蕁麻科植物。

Tsukada (1985) 將本屬分為 8 種，分布於東洋區及澳洲區。

臺灣目前記錄 3 種，包括一種近年立足定居種。

Symbrenthia formosanus Fruhstorfer, 1908 (臺灣盛蛺蝶 / 黃三線蝶)

PLATE 40, Figs. 212–213; PLATE 93, Fig. 483; PLATE 130, Fig. 631

Symbrenthia hyppoclus [sic] *formosanus* Fruhstorfer, 1908: Entomologische Wochenblatt 25 (10): 41. (Type locality: Lake Candidius [Sun Moon Lake])

Symbrenthia hippochus [sic] f. *unifascia* Matsumura, 1939: Insecta Matsumurana 13 (4): 113. (Type locality: "Bikei in the Prov. Taichu, Formosa [Meixi, Nantou, Taiwan]")

Symbrenthia formosanus Lin & Su, 2013. The photographic book of all butterflies in Taiwan: 176. (Type locality: not stated) **(hom. nov , syn. nov.)**

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Xindian, Sikanshui, 5. X. 2001 (H. S. Que); 1♂, Wulai, 150m, 8. XI. 2004, reared from *Boehmeria nivea*, emgd. 18. XI. 2004, HSU 04L21 (Y. F. Hsu); 1♂, Wulai, 13. II. 2005, reared from *Debregeasia orientalis*, emgd. 12. III. 2005, HSU 05B6 (L. H. Wang); 1♀, same locality, 5. VI. 2005, reared from *B. densiflora*, emgd. 23. VI. 2005, HSU 05F9 (Y. F. Hsu); 1♂, same locality, 5. VI. 2005, reared from *D. orientalis*, emgd. 5. VI. 2005, HSU 05F10 (Y. F. Hsu); 1♂, same locality, 13. VI. 2005, reared from *B. nivea*, emgd. 2. VII. 2005, HSU 05F36 (Y. F. Hsu); 1♀, same locality, 16. I. 2007 (Y. F. Hsu); 1♂, Wulai, ca 200m, 5. VI. 2005 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Daan, Baozangyan, 28. III. 2019 (L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, ca 1000m, 16. VI. 2005 (L. H. Wang); 1♀, Fuxing, Daman, 10. VI. 2005, reared from *B. nivea*, emgd. 22/23. VI. 2005, HSU 05F28 (Y. F. Hsu); 1♀, same locality, 10. VI. 2005, reared from *D. orientalis*, emgd. 23. VI. 2005, HSU 05F29 (Y. F. Hsu); 1♀, Fuxing, Gaoyi, 600m, 7. III. 2008 (Y. F. Hsu). **YILAN Co.:** 1♂, 2♀, Nanao,

14Km S. Nanao, 6. VI. 2005, reared from *B*. *nivea*, emgd. 8/17. VI. 2005, HSU 05F17 (Y. F. Hsu); 3♂, 1♀, Datong, Qilan, 1. XII. 2005, reared from *B*. *nivea*, emgd. III. 2006, HSU 05M7 (C. C. Lu & H. Y. Lee). **XINZHU Co.:** 2♂, Jianshi, Xiuluan, 800m, 21. VI. 2005 (L. H. Wang); 1♀, Jianshi, Guanwu, Dalu Forest Trail, 2. X. 2006 (L. H. Wang); 1♂, Jianshi, Yulao, ca 1500m, 25. II. 2009 (C. K. Wang). **MIAOLI Co.:** 1♂, Zhuolan, Liyutan, 300m, 2. VII. 2006 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Shangguguan, 900m, 30. X. 2006 (Y. F. Hsu); 1♂, same locality, 29. VII. 2007 (Y. F. Hsu); 1♂, Heping, Guguan, 700m, 5. VII. 1998 (Y. T. Lo); 1♂, Heping, Guguan, IV. 2005 (L. H. Wnag). **NANTOU Co.:** 1♂, Renai, Tunyuan/ Tianchi, 2000/2800m, 31. VII/ 1. VIII. 1998 (Y. T. Lo); 1♂, 1♀, Renai, Meiyuan, ca 400m, 22. XI. 2004, reared from *B*. *nivea*, emgd. 16/22. XII. 2004, HSU 04L49 (Y. F. Hsu); 1♀, Yuchi, Shiguanyin, 480m, 22. XI. 2004, reared from *B*. *densiflora*, emgd. 21. XII. 2004, HSU 04L52 (Y. F. Hsu); 1♂, Lugu, Fenghuanggu, 600m, 4. XII. 2004, reared from *B*. *densiflora*, emgd. 23. XII. 2004, HSU 04M5 (Y. F. Hsu); 1♂, 3♀, Lugu, Fenghuanggu, 4. XII. 2004, reared from *B*. *nivea*, emgd. 17/20. XII. 2004, HSU 04M4 (Y. F. Hsu); 1♀, same locality, 11. XII. 2004, reared from *B*. *densiflora*, emgd. 14. II. 2005, HSU 04M14 (Y. F. Hsu); 1♂, same locality, 12. XII. 2004 (Y. F. Hsu); 1♂, Renai, Beidongyanshan, ca 1800m, 17. XII. 2005 (L. W. Wu & Y. F. Hsu); 1♀, same locality, 17. XII. 2005, reared from *D*. *orientalis*, emgd. 4. I. 2006, HSU 05M32 (Y. F. Hsu); 3♂, Renai, Tunyuan, 1550m, 28. VII. 2006 (Y. F. Hsu); 1♀, Renai, Nanshanxi, ca 900m, 1. IX. 2007 (Y. F. Hsu); 1♂, Lugu, ca 600m, 19. VII. 2006, reared from *B*. *nivea*, emgd. 4. VIII. 2006, HSU 06G12 (Y. F. Hsu); 1♂, 2♀, Lugu, ca 500m, 1. I. 2007, reared from *B*. *nivea*, emgd. 18. I. 2007, HSU 07A7 (Y. F. Hsu); 1♀, Renai, Huisun, 600/700m, 20. II. 2010 (Y. F. Hsu & H. C. Huang). **HUALIAN Co.:** 2♂, Xiulin, Huitouwan, 23. VII. 2005 (Y. F. Hsu); 1♂, same locality, 30. I. 2007 (Y. F. Hsu); 4♂, 3♀, Xiulin, Zuocang Trail, 7. III. 2006 (Y. F. Hsu); 1♀, Xiulin, Guangbeibabiao, 2200m, 28. V. 2007 (Y. F. Hsu); 1♀, Xiulin, Huoranting, 1000m, 10. XII. 2007 (M. H. Sun); 1♂, Xiulin, Wujiabengshan, 2000m, 7. VI. 2008 (L. H. Wang); 1♀, Zhuoxi, Zhongping Forest Trail, 1. VI. 2007 (L. H. Wang). **TAINAN CITY [= TAINAN Co.]:** 1♀, Dongshan, Kantoushan, 600/800m, 4. II. 2010 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Shizi, Nunaishan, 200m, 26. III. 2006 (Y. F. Hsu); 1♂, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu); 2♂, 1♀, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu); 1♂, same locality, 1. III. 2008 (Y. F. Hsu); 1♀, Wutai, Jiudawu, 500m, 11. V. 2008 (C. L. Huang); 1♀, Sandimen, ca 300m, 2. I. 2009 (Y. F. Hsu). **TAIDONG Co.:** 1♀,

Yanping, Hongye, 11. I. 2009 (C. H. Lin, jr); 1♀, Taidong, Pipa Lake, 4. VI. 2006 (Y. F. Hsu); 1♀, Haiduan, Liyuan, 7. VI. 2020 (Y. F. Hsu) (genitalia preparation JYL1036).

Description. Adult – Forewing length 19–28 mm. Sexual dimorphism weakly present. Male (PLATE 40, Fig. 212): Head dark brown; frons orange. Antennae slightly enlarged at distal end, dark brown, banded with white ventrally, naked at distal tip. Eyes hairy. Proboscis ivory yellow. Labial palpus porrect, dark brown dorsally, creamy white ventrally. Thorax dark brown dorsally, creamy yellow ventrally. Legs creamy yellow; protarsi fused, stab-shaped, hairy. Abdomen dark brown scattered with yellow scalings dorsally, creamy white ventrally. Forewing nearly triangular, costa slightly convex, termen straight or slightly concave, dorsum straight. Hindwing flabellate, with termen wavy, produced at tips of vein M_3 into a small projection. Wing upperside ground color dark brown; a series of orange postdiscal markings arranged into a curve on forewing, with an orange bar distal to discoidal cell. An elongate orange band from wing base to base of cell M_2 and M_3, broken near distal end of discoidal cell. Two prominent orange bands on hindwing; proximal one short, straight, distal one longer, curved. A narrow orange submarginal thread along termen. Wing undersides ground color orange, decorated with variegated brown bands and lines; dark, prominent brown bands present on both wing, roughly V-shaped on forewing, and inverse V-shaped on hindwing. A patch of purplish gray scalings on hindwing distally, with a blue marking at distal end of cell M_3. A small, medial, white patch by dorsum of forewing. Fringe white, checkered with brown. Female (PLATE 40, Fig. 213): Body and wing pattern similar to those of male, but markings on upperside and ground color of underside paler; protarsi longer, segmented, not hairy.

Male genitalia (PLATE 93, Fig. 483) –Tegumen narrow, elongate, with anterior margin rounded; uncus tapering posteriorly; distal end bifid with deep medial slit. Gnathos narrow, with broad, sclerotized, medial band. Saccus as large rod with distal end blunt. Vinculum strongly curved dorsally. Valva broad, lobe-like, angled ventrally, with a slender, distal beak bent downwards. Juxta as sclerotized band with dorsal extension. Phallus elongate, stout at base, tapering caudad; aedeagus approximately 2.0 X of phallobase, with small spines on ventral surface, slightly down-curved.

Female genitalia (PLATE 130, Fig. 631) – Corpus bursae ovate. Ductus bursae elongate, slender, mostly membranous, forming sclerotized tube near caudal end, leading to heavily sclerotized circle surrounding ostium bursae. Sterigma forming a sclerotized sheet, with posterior margin truncate. Posterior apophyses longer than anal papillae, nearly straight. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose.

Global distribution. This species is endemic to Taiwan (Hsu *et al*., 2023b).

Distribution in Taiwan. This species occurs from low to moderate elevations in main island of Taiwan (Yamanaka, 1975).

Larval Host plant(s). Urticaceae: *Boehmeria nivea*, *B. densiflora*, *B. formosana*, *B. wattersii*, *Debregeasia orientalis*, *Pouzolzia elegans*, etc. (Uchida, 1991; Hsu, 2002).

Biology. Multivoltine, with adults on the wing most of the year (Hsu, 2002), overwintering as larva in diapause within a shelter constructed by withered leaf in winter.

Remarks. This species was long considered a subspecies of *Symbrenthia hippoclus* (Cramer, [1779]) (e.g., Shirozu, 1960; Chen, 1974), *S. javanus* Staudinger, [1897] (e.g., Hamano, 1987), or *S. lilaea* (e.g., Shirozu & Ueda, 1992; Fric *et al*., 2022; Hsu *et al*., 2021). Lin & Su (2013) suggested that *formosanus* may be distinct from *lilaea*. Hsu *et al.* (2023b) subsequently confirmed that *formosanus* represents a distinct biological species from similar forms.

The name *formosanus* Lin & Su, 2013 represents a junior primary homonym and junior subjective synonym to *formosanus* Fruhstorfer, 1908 **(hom. nov , syn. nov.)**.

形態特徵：成蝶前翅長 19–28mm。略具雌雄二型性。雄蝶 (圖 212)：頭黑褐色，前額橙色。觸角黑褐色，腹面有白紋，末端略膨大、頂端裸露。複眼被毛。口器象牙黃色。下唇鬚前伸，背面黑褐色、腹面乳白色。胸部背面黑褐色、腹面乳黃色。足乳黃色，前足跗節癒合、刺狀、被毛。腹部背面黑褐色，散佈有黃色鱗、腹面乳白色。前翅近三角形，前緣略凸、外緣直線狀或略凹、後緣直線狀。後翅扇形，外緣波狀，

M_3 脈末端有小尾突。翅背面底色黑褐色；前翅外側有一列橙色斑紋彎曲排列，有一橙色條由翅基延伸至 M_2 及 M_3 室基部，並於近中室末端處分斷；後翅有兩道鮮明橙色帶紋，內側者短而直，外側者長而彎曲，亞外緣有橙色細線紋。翅腹面底色橙黃色，綴以多變褐色帶紋及線紋，有明顯黑褐色帶紋於前翅形成 V 字形、於後翅則為倒 V 字形，前翅後緣中央有白色小斑塊，後翅外側有一片紫灰色鱗組成之斑塊、M_3 室末端有藍紋。緣毛白色嵌褐色。雌蝶 (圖 213)：形態特徵與雄蝶相似，但翅背面斑紋及翅腹面底色較淺，前足跗節較長、分節、不被毛。

雄交尾器 (圖 483)：背兜狹窄，向前延伸，邊緣圓鈍。鉤突向後漸細，末端二分叉且、中間深裂。顎形突狹窄，中央有寬骨帶。囊突大型、桿狀，末端鈍。基腹弧背側明顯彎曲。抱器寬闊、瓣狀、腹側方形，末端有細長下彎喙狀突起。陽基軛片為向背側延伸之骨帶。陽莖基部粗壯，末端漸細。陽莖器長度約為陽莖基 2 倍，腹側有小刺棘，略向下彎曲。

雌交尾器 (圖 631)：交尾囊卵圓形。交尾囊管細長，大部分膜質，尾端形成骨化管，與交尾囊孔周圍之骨環相連。交尾囊孔板形成一片後緣平整之骨壁。後內骨突長於肛突，甚直。肛突葉狀，基部及邊緣骨化，具剛毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：蕁麻科之苧麻、密花苧麻、臺灣苧麻、長葉苧麻、水麻、水雞油等。

生物學：本種為一年多代物種，幾乎全年可見成蝶活動，但在冬季以枯葉製作越冬巢進行滯育度冬。

註記：本種長期被視為盛蛺蝶 *Symbrenthia hippoclus* (Cramer, [1779]) 或散紋盛蛺蝶 *S. lilaea* 之亞種。Lin & Su (2013) 認為 *formosanus* 可能為獨立種，Hsu *et al.* (2023b) 驗證其與類似之盛蛺蝶物種為不同生物種。分類單元 *formosanus* Lin & Su, 2013 為 *formosanus* Fruhstorfer, 1908 之次級原異物同名及次級主觀同物異名 **(hom. nov., syn. nov.)**。

Symbrenthia lilaea (Hewitson, 1864) (散紋盛蛺蝶 / 黃三線蝶)

PLATE 40, Figs. 214–215; PLATE 93, Fig. 484; PLATE 130, Fig. 632

Laogona lilaea Hewitson, 1864: Transactions of the Entomological Society of London, series 3, 2: 246, pl. 15, f. 5-6. (Type locality: East India)

Symbrenthia khasiana Moore, [1875]: Proceedings of the Zoological Society of London 1874 (4): 569. (Type locality: "Khasia Hills, [India]")

Symbrenthia daruka Moore, [1875]: Proceedings of the Zoological Society of London 1874 (4): 570. pl.66, fig.10. (Type locality: "N. India")

Papilio lucina Stoll, [1781]: De uitlandsche kapellen 4: 82, pl. 330, f. E, F. (Type locality: East India) (preoccupied by *Papilio lucina* Linnaeus, 1758)

Symbrenthia lilaea lunica Bascombe, Johnston & Bascombe, 1999: The Butterflies of Hong Kong: 315. (replacement name for *lucina* Stoll, [1781])

Specimens examined:

JILONG CITY: 1♀, Longgang Trai, 26. IX. 2006 (Y. F. Hsu); 2♀, same locality, 2. X. 2006 (Y. F. Hsu);1♀, same locality, 7. II. 2007 (C. K. Wang); 1♂, Shenao, Sea Level, 20. VI. 2006, reared from *B*. *nivea*, emgd. 2. VII. 2006, HSU 06F17 (Y. F. Hsu); 2♂, Haimentianxian, 26. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= TAIPEI Co.]:** 7♂, 7♀, Wulai, 150m, 8. XI. 2004, reared from *B*. *nivea*, emgd. 29. XI/5. XII. 2004, HSU 04L20 (Y. F. Hsu); 1♂, Wulai, 11. III. 2005 (C. R. Chen); 1♀, same locality, 5. VI. 2005 (Y. F. Hsu); 1♂, 1♀, same locality, 11. VIII. 2005, reared from *B*. *densiflora*, emgd. 25. VIII. /1. IX. 2005, HSU 05H8 (Y. F. Hsu); 3♀, same locality, 6. X. 2006, reared from *B*. *nivea*, emgd. 3/15. XI. 2006, HSU 06L3 (Y. F. Hsu); 1♂, Wulai, Fushan, 700m, 4. VII. 2005, reared from *B*. *nivea*, emgd. 15. VII. 2005 (C. L. Huang); 1♀, Wulai, Fushan, 16. VI. 2005 (C. L. Huang); 1♂, Wulai, Baoqing Temple, ca 620m, 4. VIII. 2005 (J. R. Chen); 1♀, Xindian, Yinhedong, 250m, 14. VI. 2005 (Y. F. Hsu); 8♂, 1♀, Pinglin, Yuguang, 2. XI. /11. XII. 2005, reared from *B*. *formosana*, emgd. 29. XI. /18. XII. 2005, HSU 05L5 (C. C. Lu); 1♀, Pinglin, Zhongxinlun, 2. XI. 2005 (C. C. Lu). **TAIPEI CITY:** 1♀, Beitou, Guizikeng, 24. X. 2004 (H. C. Huang & P. Lo); 2♀, Wenshan, Xianjiyan, 16. V. 2005 (Y. F. Hsu); 2♀, Daan, NTNU campus, 9. VI. 2005, reared from *B*. *nivea*, emgd. 23/24. VI. 2005, HSU 05F18 (Y. F. Hsu); 5♀, Wenshan, NTNU, Gongguan campus, 9. VI. 2005, reared from *B*. *nivea*, emgd. 21/24. VI. 2005, HSU 05F18 (Y. F. Hsu); 3♀, same locality, 15. I. 2007, reared from *B*. *nivea*, emgd. 31. I. 2007, HSU 07A20 (Y. F. Hsu); 1♂, Shilin, Tianxiyuan, 17. VII. 2011 (H. C. Huang); 1♂, Neihu, Dagouxi, 25. I. 2014 (L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 2♀, Fuxing, Kapu, 800m, 14. X. 2007, reared from *B*. *densiflora*, emgd. 29. XI. 2007, HSU 07K7 (Y. F. Hsu & H. C. Huang). **YILAN**

Co.: 1♂, Yuanshan, Fushan Botanical Garden, ca 700m, 4/5. VIII. 2006 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, Toucheng, Guishan Is., 4/5. III. 2006 (H. C. Huang & C. L. Huang); 3♀, same locality, 24. VI. 2006 (H. C. Huang); 1♀, same locality, 24. VI. 2006 (C. L. Huang); 2♀, same locality, 4. VIII. 2007 (H. C. Huang). **XINZHU Co.:** 1♂, Qionglin, Feifengshan, ca 80m, 19. I. 2005, reared from *B*. *densiflora*, emgd. 14. II. 2005, HSU 05A4 (Y. F. Hsu); 1♂, Qionglin, Feifengshan, 10/80m, 19. I. 2005, reared from *B*. *nivea*, emgd. 8. II. 2005, HSU 05A3 (Y. F. Hsu); 1♀, Zhudong, 11. IV. 2006 (Y. F. Hsu); 2♀, Zhudong, 100m, 28. III. 2008 (Y. F. Hsu). **MIAOLI Co.:** 8♂, 2♀, Nanzhuang, 200m, 28. XI. 2004, reard from *B*. *densiflora*, emgd. 11/20. XII. 2004, HSU 04L68 (Y. T. Lo); 1♂, Touwu, Xiangshan Village, Jinshui, 60m, 27. II. 2005, reared from *B*. *nivea*, emgd. 7. III. 2005, HSU 05B36 (Y. F. Hsu); 5♂, 4♀, Sanwan, Emei Bridge, 14. I. 2006, reared from *B*. *nivea*, emgd. 3/7. II. 2006, HSU 06A12 (Y. F. Hsu); 1♂, Zhuolan, Liyutan, 2. VII. 2006 (Y. F. Hsu). **NANTOU Co.:** 2♂, 3♀, Lugu, 500m, 1. I. 2007, reared from *B*. *nivea*, emgd. 17/31. I. 2007, HSU 07A6 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Wanrong, Wanrong Forest Trail, 29. VIII. 2010 (Z. H. Yen). **TAINAN CITY [= TAINAN Co.]:** 2♀, Xinhua, Dakeng, 80m, 10/11. II. 2006 (Y. F. Hsu); 2♂, Xinhua, 20. I. 2007 (Y. F. Hsu). **LIANJIANG Co.:** 1♂, 1♀, Nangan, 10. VII. 2003, reared from *B*. *nivea*, emgd. 25. VII. 2003, HSU 03G20 (L. W. Wu); 1♂, Nangan, Shengli Dam, 9/10. XII. 2006, reared from *B*. *nivea*, emgd. 6. I. 2007, HSU 06M2 (H. C. Huang); 1♂, 1♀, Beigan, Qinbi, 22. IV. 2007 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 19–28 mm. Sexual dimorphism weakly present. Male (PLATE 40, Fig. 214): Head dark brown; frons orange. Antennae slightly enlarged at distal end, dark brown, banded with white ventrally, naked at distal tip. Eyes hairy. Proboscis ivory yellow. Labial palpus porrect, dark brown dorsally, creamy white ventrally. Thorax dark brown dorsally, creamy yellow ventrally. Legs creamy yellow; protarsi fused, stab-shaped, hairy. Abdomen dark brown scattered with yellow scalings dorsally, creamy white ventrally. Forewing nearly triangular, costa slightly convex, termen straight or slightly concave, dorsum straight. Hindwing flabellate, with termen wavy, produced at tips of vein M_3 into a small projection. Wing upperside ground color dark brown; a series of orange postdiscal markings arranged into a curve on forewing, with an orange bar distal to discoidal cell. An elongate orange band from wing base to base of cell M_2 and M_3. Two prominent orange bands on hindwing; proximal one

stout, short, straight, distal one longer, curved. A narrow orange submarginal thread along termen. Wing undersides ground color orange, decorated with variegated brown bands and lines; dark, prominent brown bands present on both wing, roughly V-shaped on forewing, and inverse V-shaped on hindwing. A patch of purplish gray scalings on hindwing distally, with a blue marking at distal end of cell M_3. A small, medial, white patch by dorsum of forewing. Fringe white, checkered with brown. Female (PLATE 40, Fig. 215): Body and wing pattern similar to those of male; protarsi longer, segmented, not hairy.

Male genitalia (PLATE 93, Fig. 484) –Tegumen narrow, elongate, with anterior margin rounded; uncus tapering posteriorly; distal end bifid with deep medial slit. Gnathos narrow, with broad, sclerotized, medial band. Saccus as large rod with distal end blunt. Vinculum strongly curved dorsally. Valva broad, lobe-like, rounded ventrally, with a stout, distal beak bent downwards. Juxta as sclerotized band with dorsal extension. Phallus elongate, stout at base, tapering caudad; aedeagus approximately 2.0 X of phallobase, with small spines on ventral surface, slightly down-curved.

Female genitalia (PLATE 130, Fig. 632) – Corpus bursae ovate. Ductus bursae elongate, slender, mostly membranous, forming sclerotized tube near caudal end, leading to heavily sclerotized circle surrounding ostium bursae. Sterigma forming a sclerotized sheet, with posterior margin concave. Posterior apophyses longer than anal papillae, nearly straight. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose.

Global distribution. Himalayas, North India, Indochina, Sundaland, Sulawesi, Philippines, West to East China, Taiwan (Tsukada, 1985; Hsu, 2013).

Distribution in Taiwan. Restricted to Mazu islands in the past (Hsu, 2014), but has been successfully established in main island of Taiwan now (Hsu, 2013; Hsu *et al*., 2023a, b).

Larval Host plant(s). Urticaceae: *Boehmeria nivea*, *B. densiflora*, *B. formosana*, *B. wattersii*, *Debregeasia orientalis*, *Pouzolzia elegans*, etc. (Uchida, 1991; Hsu, 2002, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing most of the year (Hsu, 2002, 2013; Lu & Chen, 2014), overwintering as aggregate larvae in diapause within a shelter constructed by withered leaf in winter.

Remarks. The earliest evidence of introduction of this species to the main island of Taiwan was a photograph of a living specimen taken at Guangxi, Xinzhu of northern Taiwan in 2004 by Mr. Chen-Chih Lu, a prominent photographer of butterflies. It was successfully established and rapidly expanded throughout lowland Taiwan (Hsu *et al*., 2023b). This species has also appeared in the Yaeyama islands of southern Japan since 2005 (Saitou, 2009; Suda *et al*., 2019), likely via Taiwan (Hsu *et al*., 2023a).

形態特徵：成蝶前翅長 19–28mm。略具雌雄二型性。雄蝶 (圖 214)：頭黑褐色，前額橙色。觸角黑褐色，腹面有白紋，末端略膨大、頂端裸露。複眼被毛。口器象牙黃色。下唇鬚前伸，背面黑褐色、腹面乳白色。胸部背面黑褐色、腹面乳黃色。足乳黃色，前足跗節癒合、刺狀、被毛。腹部背面黑褐色，散佈有黃色鱗、腹面乳白色。前翅近三角形，前緣略凸、外緣直線狀或略凹、後緣直線狀。後翅扇形，外緣波狀，M_3 脈末端有小尾突。翅背面底色黑褐色；前翅外側有一列橙色斑紋彎曲排列，有一橙色條由翅基延伸至 M_2 及 M_3 室基部；後翅有兩道鮮明橙色帶紋，內側者粗短、直，外側者長、彎曲，亞外緣有橙色細線紋。翅腹面底色橙黃色，綴以多變褐色帶紋及線紋，有明顯黑褐色帶紋於前翅形成 V 字形、於後翅則為倒 V 字形，前翅後緣中央有白色小斑塊，後翅外側有一片紫灰色鱗組成之斑塊、M_3 室末端有藍紋。緣毛白色嵌褐色。雌蝶 (圖 215)：形態特徵與雄蝶相似，前足跗節較長、分節、不被毛。

雄交尾器 (圖 484)：背兜狹窄，向前延伸，邊緣圓鈍。鉤突向後漸細，末端二分叉且、中間深裂。顎形突狹窄，中央有寬骨帶。囊突大型、桿狀，末端鈍。基腹弧背側明顯彎曲。抱器寬闊、瓣狀、腹側弧形，末端有粗壯、下彎喙狀突起。陽基軛片為向背側延伸之骨帶。陽莖基部粗壯，末端漸細。陽莖器長度約為陽莖基 2 倍，腹側有小刺棘，略向下彎曲。

雌交尾器 (圖 632)：交尾囊卵圓形。交尾囊管細長，大部分膜質，尾端形成骨化管，與交尾囊孔周圍之骨環相連。交尾囊孔板形成一片後側內凹之骨壁。後內骨突長於肛突，甚直。肛突葉狀，基部及邊緣骨化，具剛毛。

世界分布：喜瑪拉雅地區、印度北部、中南半島、巽他地區、蘇拉威西、菲律賓、華西至華東、臺灣。

臺灣分布：原先僅見於馬祖，但近年已於臺灣本島成功立足。

寄主植物：蕁麻科之苧麻、密花苧麻、臺灣苧麻、長葉苧麻、水麻、水雞油等。

生物學：本種為一年多代物種，幾乎全年可見成蝶活動，但在冬季以枯葉製作越冬巢進行滯育度冬。

註記：本種於臺灣本島最早的觀察記錄是由出色的蝴蝶生態攝影家呂晟智在 2004 年於新竹關西攝得成蝶生態照。其後本種於本島成功立足並在低地快速分布擴大。本種在日本八重山群島亦於 2005 年現蹤，可能係經由臺灣抵達。

Symbrenthia brabira Moore, 1872 (黃豹盛蛺蝶／姬黃三線蝶)

Symbrenthia brabira Moore, 1872: Proceedings of the Zoological Society of London 1872 (2): 558. (Type locality: “N. India”)

Ssp. *scatinia* Fruhstorfer, 1908

PLATE 40, Figs. 216–217; PLATE 93, Fig. 485; PLATE 131, Fig. 633

Symbrenthia brabira scatinia Fruhstorfer, 1908: Entomologische Zeitschrift 22 (31): 127. (Type locality: “Chip-Chip [Jiji, Taiwan]”)

Specimens examined:

JILONG CITY: 1♂, 1♀, Ruifang, Yuemeishan, 7. V. 2001, reared from *Elatostema lineolatum*, emgd. 13/14. VI. 2001, HSU 01E23 (M. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Wulai, 150m, 9. XI. 2004 (Y. F. Hsu); 1♂, Wulai, 200m, 3. VI. 2005 (Y. F. Hsu); 1♀, Wulai, Jiajiuliao, 100m, 4. IV. 2005 (P. H. Huang); 1♂, Wulai, Fushan, 21. III. 2009 (C. H. Yen); 1♀, Wulai, Fushan, Kalamoji Trail, 550m, 25. V. 2012 (Y. F. Hsu); 1♂, Shiding, Ergeshan ,650m, 7. III. 2014 (L. Huang). **TAIPEI CITY:** 1♂, Wenshan, Xianjiyan, 7. XII. 2011 (C. S. Chuang). **TAOYUAN CITY:** 1♀, Fuxing, Xuanyuan, 1000m, 5. IV. 2017 (L. Huang) (genitalia preparation JYL1000). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, 1♀, Heping, Shangguguan, 900m, 30. X. 2006 (Y. F. Hsu).

NANTOU Co.: 2♂, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang). **JIAYI Co.:** 1♀, Fanlu, Chukou, 350m, 10. X. 2005 (Y. F. Hsu); 1♀, same locality, 30. VIII. 2008 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Dongshan, Kantoushan, 600/800m, 18. XI. 2011 (Y. F. Hsu).

Description. Adult – Forewing length 20–23 mm. Sexual dimorphism weakly present. Male (PLATE 40, Fig. 216): Head dark brown, with a pair of creamy yellow patches on frons. Antennae slightly enlarged at distal end, dark brown, banded with white ventrally. Eyes hairy. Proboscis ivory yellow. Labial palpus porrect, dark brown dorsally, creamy white ventrally. Thorax dark brown dorsally, creamy yellow ventrally. Legs creamy yellow; protarsi fused, stab-shaped, hairy. Abdomen dark brown scattered with orange scalings dorsally, creamy white with two series of dark brown spots ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum straight. Hindwing flabellate, with termen wavy, slightly produced at tips of vein M_3 into a small projection. Wing uppersides ground color dark brown; On forewing, orange postdiscal bands broken into anterior and posterior one . An elongate orange band from wing base to base of cell M_2 and M_3. Two prominent orange bands on hindwing Wing undersides ground color orange, partially darkened. Spotted band (leopard pattern) present on both wings, with a series of eye-like, postdiscal spots forming a linear band on hindwing. Narrow, dark brown submarginal bands present on both wings. Metallic blue scalings in some eye-like spots and near tornus. Fringe orange, checkered with brown. Female (PLATE 40, Fig. 217): Body and wing pattern similar to those of male, but markings on upperside and ground color of underside paler, creamy yellow instead of orange; protarsi longer, segmented, not hairy.

Male genitalia (PLATE 93, Fig. 485) – Tegumen broad, with anterior margin rounded; uncus tapering posteriorly, abruptly narrowed to a digitate process with distal end forming shallow V-shaped invagination. Gnathos narrow, with broad, sclerotized, bi-lobed medial band. Saccus nearly as long as height of vinculum, as large rod with distal end blunt. Vinculum strongly curved dorsally. Valva broad, as oval lobe, with a large, curved hook at distal end. Juxta as sclerotized band with dorsal extension. Phallus elongate, slender, tapering caudad; aedeagus approximately 1.8X of phallobase, up-

curved posteriorly.

Female genitalia (PLATE 131, Fig. 633) – Corpus bursae ovate. Ductus bursae elongate, slender, mostly membranous, forming sclerotized tube near caudal end, leading to heavily sclerotized circle surrounding ostium bursae. Sterigma forming a sclerotized sheet. Posterior apophyses longer than anal papillae, nearly straight. Anal papillae lobe-like, sclerotized basally and along posterior margin, setose.

Global distribution. Himalayas, North India, Indochina, West to East China, Taiwan (Bozano & Floriani, 2012).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Urticaceae: *Elatostema lineolatum*, *E. platyphylloides* [= *E. platyphyllum*], *Pellionia radicans*, etc. (Hsu, 2013)

Biology. Multivoltine, with adults on the wing throughout the year (Uchida, 1991; Hsu, 2002, 2013; Hung, 2013; Lu & Chen, 2014).

Remarks. The taxon *scatinia* was originally described as a subspecies of *Symbrenthia brabira* by Fruhstorfer (1908), but transferred to *S. hypselis* Godart, [1824] in later literature (e.g., Shirôzu, 1960; Tsukada, 1985; Hamano, 1987). The structure of male genitalia of *scatinia* is conformed to *brabira* rather than *hypselis* (illustrated in Tsukada, 1985: pp. 319), and recently literature have re-assigned it to *brabira* (e.g., Bozano & Floriani, 2012; Wu & Hsu, 2017).

形態特徵：成蝶前翅長 20–23 mm。略具雌雄二型性。雄蝶 (圖 216)：頭黑褐色，前額有一對乳黃色斑紋。觸角黑褐色，腹面有白紋，末端略膨大。複眼被毛。口器象牙黃色。下唇鬚前伸，背面黑褐色、腹面乳白色。胸部背面黑褐色、腹面乳黃色。足乳黃色，前足跗節癒合、刺狀、被毛。腹部背面黑褐色，散佈有橙色鱗、腹面乳

白色，上有兩列黑褐色斑點。前翅近三角形，前緣略凸、外緣及後緣直線狀。後翅扇形，外緣波狀，M_3 脈末端有小尾突。翅背面底色黑褐色；前翅外側帶紋分為前半部及後半部，有一橙色條紋由翅基延伸至 M_2 及 M_3 室基部；後翅有兩道鮮明橙色帶紋。翅腹面底色橙黃色，部分色調深，上綴碎斑組成之帶紋 (豹紋狀)，亞外緣有黑褐色細帶紋，後翅外側有一列眼狀斑點組成之帶紋，部分眼狀斑點及近臀區處有具金屬光澤之藍色鱗。緣毛橙色嵌褐色。雌蝶 (圖 217)：形態特徵與雄蝶相似，但翅背面斑紋及翅腹面底色較淺，呈乳黃色，前足跗節較長、分節、不被毛。

雄交尾器 (圖 485)：背兜寬，向前延伸，邊緣圓鈍。鉤突形成指狀突起，末端有 V 字形淺裂。顎形突狹窄，中央形成雙股骨帶。囊突長度約與基腹弧等長，桿狀，末端鈍。基腹弧背側明顯彎曲。抱器寬闊，橢圓形瓣狀，末端有一個大型、彎曲之鉤突。陽基軛片為向背側延伸之骨帶。陽莖細長，後端漸細。陽莖器長度約為陽莖基 1.8 倍，尾端向上彎曲。

雌交尾器 (圖 633)：交尾囊卵圓形。交尾囊管細長，大部分膜質，尾端形成骨化管，與交尾囊孔周圍之骨環相連。交尾囊孔板形成一片骨壁。後內骨突長於肛突，甚直。肛突葉狀，基部及邊緣骨化，具剛毛。

世界分布：喜瑪拉雅地區、印度北部、中南半島、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：蕁麻科之冷清草、巒大冷清草 (闊葉樓梯草)、赤車使者等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：Fruhstorfer (1908) 最初將本分類單元 *scatinia* 記述為黃豹盛蛺蝶之亞種，但後來的研究者將其調整為花豹盛蛺蝶 *Symbrenthia hypselis* Godart, [1824] 之亞種 (如 Shirôzu, 1960; Tsukada, 1985; Hamano, 1987)。然而，*scatinia* 之雄蝶交尾器結構符合黃豹盛蛺蝶，而非花豹盛蛺蝶 (參照 Tsukada, 1985: 319 頁)，因此近期文獻已將其重新歸屬於黃豹盛蛺蝶 (如 Bozano & Floriani, 2012; Wu & Hsu, 2017)。

Genus *HYPOLIMNAS* Hübner, [1819]

Type species: ***Papilio pipleis*** **Linnaeus, 1758**

Diagnostic characters may include the following: 1) compound eyes naked; 2) antennal club obovate, terminated by minute, acute point; 3) forewing apex slightly produced; 4) body dark brown with white markings.

Larvae feed on plants in various families, including Convolvulaceae, Malvaceae, Asteraceae, Urticaceae, Portulacaceae, Amaranthaceae, Acanthaceae, Plantaginaceae, Polygonaceae, Rubiaceae, etc.

Bozano & Floriani (2012) recognized 28 species, widely distributed in Oriental and Afrotropical regions, also Pacifics; one species reaches Australia, southern Palearctic region, and was introduced to Americas.

3 species are known from Taiwan, but one as a frequent visitor from the Philippines, with populations intermittently present.

幻蛺蝶屬

形態特徵如下：1) 複眼裸露；2) 觸角錘部倒卵形，末端尖細；3) 前翅翅頂略突出；4) 軀體黑褐色綴白紋。

幼蟲取食多科植物，包括旋花科、錦葵科、菊科、蕁麻科、馬齒莧科、莧科、爵床科、車前科、蓼科、茜草科等。

Bozano & Floriani (2012) 羅列本屬種類有 28 種，廣泛分布於東洋區及非洲區，亦見於太洋洲。其中有 1 種分布遠及澳洲及古北區南部，並入居美洲。

臺灣有 3 種，但其中 1 種為源自菲律賓之經常性偶產迷蝶，其族群間歇性出現。

Hypolimnas misippus (Linnaeus, 1764) (雌擬幻蛺蝶／雌紅紫蛺蝶／金斑蛺蝶)

PLATE 41, Figs. 218–219; PLATE 93, Fig. 486; PLATE 131, Fig. 634

Papilio misippus Linnaeus, 1764: Museum s:æ r:æ m:tis Ludovicæ Ulricæ reginæ: 264. (Type locality: "America [probably Java]")

Papilio diocippus Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 44, pl. 28, f. B, C. (Type locality: "Batavia")

Papilio inaria Cramer, [1779]: De uitlandsche kapellen 3 (17-21): 36, pl. 214, f. A. B. (Type locality: "Amboina; Java")

Hypolimnas alcippoides Butler, 1883: The annals and magazine of natural history; zoology, botany, and geology, series 5, 12 (68): 102. (Type locality: "Victoria Nyanza")

Hypolimnas misippus f. *immima* Bernardi, 1959: Bulletin de l'Institut Française d'Afrique Noire 1959 (A) 21: 1023. (Type locality: "Mauritius, Madagascar, Central Africa")

Specimens examined:

TAIPEI CITY: 1♂, Wenshan, NTNU, Gongguan campus, 2. XII. 2002 (Y. F. Hsu); 1♂, Shilin, Jinshan, 500m, 1. VII. 2011 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Longjing, Dadushan, 10. X. 2007 (Y. F. Hsu). **JIAYI Co.:** 1♂, 2♀, Xingang, Yuemei, 15m, 11. VI. 2007 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 4♂, 3♀, Xinhua, 26. VII. 2007, reared from *Portulaca oleracea*, emgd. 2/4. IX. 2007, HSU 07G35 (Y. F. Hsu). **KAOHSIUNG CITY:** 1♂, Tianliao, 80m, 3. XII. 2011 (Y. F. Hsu).

Description. Adult – Forewing length 31–40 mm. Sexual dimorphism prominent. Male (PLATE 41, Fig. 218): Head dark brown, with white dots on vertex, rim behind compound eyes white. Antennae enlarged at distal end, bulbous, dark brown, with a white patch near apical end. Proboscis dark brown. Labial palpus porrect, dark brown, with white hair tuft dorsally; a white band present ventrally. Thorax dark brown dorsally, with a pair of white dots on prothroracic tergum, dark brown with white spots and orange hairs ventrally. Legs dark brown proximally, creamy white distally; protarsi fused, stab-shaped, covered by white hairs, with a dark brown band distally. Abdomen brown, with two rows of white spots ventrally. Forewing triangular; costa slightly convex; termen slightly convex anteriorly; dorsum nearly straight; apex slightly truncate. Hindwing flabellate, with tornus slightly angled; distal ends of veins slightly produced. Wing uppersides ground color dark brown; a prominent discal white marking present on both wings; ovate on forewing, rounded on hindwing. A short, subapical white band near apex of forewing. Wing undersides ground color yellow ochre, white markings of forewing

similar to those on upperside; white marking expanded into a broad band from costa to dorsum in hindwing. A series of distal, minute white dots on both wing. White, double, submarginal bands on both wings. An additional medial dark brown spot in cell $Sc+R_1$ of hindwing. A narrow, elongate dark brown patch with white scalings and spots along costa of forewing. Fringe dark brown checkered with white. Female (PLATE 41, Fig. 219): Body similar to that of male; protarsi segmented, clawed. Wing patter dissimilar to that of male. Wing uppersides ground color orange; distal half of forewing dark brown with a prominent white, tilted band and a small, white, subapical spot. Black margin with white, double submarginal bands present on both wings. Veins darkened by dark brown scalings. A medial, dark brown marking in cell $Sc+R_1$ of hindwing. Wing undersides similar to upperside in wing patter, but paler in ground color. A dark brown spot present at distal end of discoidal cell of hindwing.

Male genitalia (PLATE 93, Fig. 486) – Tegumen broad, short; uncus tapering caudad, with distal end blunt. Gnathos broad, extending posteriad, with medial portion sclerotized. Saccus elongate, shorter than height of vinculum, with distal end blunt. Vinculum curved. Valva broad, with dorsal margin strongly concave; ampulla + harpe forming flattened lobe with posterior margin rounded, produced ventrad to a beak; sacculus robust, with a distal, down-curved hook. Juxta narrow, U-shaped. Phallus short, with distal end beveling, nearly straight; aedeagus approximately 1.5X length of phallobase.

Female genitalia (PLATE 131, Fig. 634) – Corpus bursae ovate. Ductus bursae sclerotized, shorter than length of corpus bursae. Sterigma with lamella antevaginalis forming a pair of sclerotized discs connected by a narrow bridge surrounding ostium bursae; lamella postvaginalis forming a wrinkled, membranous dome. Anterior papillae as robust rods; posterior apophyses elongate, slender, longer than anal papillae, nearly straight. Anal papillae lobe-like, sclerotized anteriorly, setose posteriorly.

Global distribution. Vast areas of Tropical and subtropical Oriental, Australia, and Afrotropical regions; also Florida, West Indies and costal South America (Tsukada, 1985; Eliot, 1992).

Distribution in Taiwan. Mainly lowlands, including associated islands (Hsu, 2013).

Larval Host plant(s). Mainly *Portulaca oleracea* (Portulaceae), also *Plantago asiatica* (Plantaginaceae) and *Asystasia gangetica micrantha* (Acanthaceae) (Uchida, 1991; Hsu, 2013; Hung, 2013; Lu & Chen, 2014).

Biology. A multivoltine species, with adults on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014). This species prefers open habitats.

Remarks. The wing pattern of the female of this species resembles that of *Danaus* spp., and have been considered a mimic of the latter (Tsukada, 1985; Eliot, 1992).

This species was considered “common” by Shirôzu (1960). It is; however, seldom seen today, possibly due to extensive habitat loss by fast urbanization in the past few decades in Taiwan.

形態特徵：成蝶前翅長 31–40 mm。雌雄二型性顯著。雄蝶 (圖 218)：頭黑褐色，頭頂有白色斑點，複眼後側輪緣白色。觸角黑褐色，末端略膨大、球狀，近端部有白斑。口器黑褐色。下唇鬚前伸、黑褐色，背面有白色毛叢、腹面有白條。胸部背面黑褐色，前胸背板有一對白色斑點、腹面黑褐色，上有白色斑點及橙色毛。足內側黑褐色、外側乳白色；前足跗節癒合、刺狀、被白毛、末端有黑褐色條紋。腹部褐色，腹面有兩列白色斑點。前翅三角形，前緣略凸、外緣前段略突出、後緣近直線狀、翅頂略呈截狀。後翅扇形，臀區略呈角狀，翅脈末端略突出。翅背面底色黑褐色，中央有鮮明白斑，前翅者卵形、後翅者圓形；前翅亞翅頂有一白色短紋。翅腹面底色赭黃色，中央有白色紋，於前翅與背面相似、於後翅向前緣及後緣擴大成寬帶紋。前、後翅外側均有一列白色小點，亞外緣有兩道白紋列，沿前翅前緣有修長黑褐色斑紋、白紋及斑點，後翅 $Sc+R_1$ 室中央有黑褐色斑點。緣毛黑褐色鑲白色。雌蝶 (圖 219)：軀體特徵與雄蝶相似，但前足跗節分節、具爪。翅膀背面底色橙色，前翅外半部黑褐色，內有鮮明白色斜帶紋及亞翅頂小白斑。外緣黑色，附有兩道亞外緣白色紋列，翅脈有黑褐色鱗覆蓋而呈黑褐色，後翅 $Sc+R_1$ 室中央有黑褐色斑紋。翅腹面斑紋與背面相似，但底色較淺，後翅中室末端有黑褐色斑點。

雄交尾器 (圖 486)：背兜寬短。鉤突向尾端漸細，末端鈍。顎形突寬闊，向後延伸，中央骨化。囊突頗長，長度短於基腹弧，前端鈍。基腹弧彎曲。抱器寬闊、瓣狀，背側緣明顯內凹。抱器內突和抱握鋏合成扁平葉狀構造，末緣圓弧狀，向腹側突出呈喙狀。抱器腹粗壯，末端有一下彎鉤狀突起。陽基軛片狹窄、U 字形。陽莖短而直，末端斜切。陽莖器長度約為陽莖基 1.5 倍。

雌交尾器 (圖 634)：交尾囊卵圓形。交尾囊管細長，略長於交尾囊。交尾囊孔板之前陰片形成一對骨盤，由狹窄內橋相連，後陰片形成有皺褶之膜質穹頂。前內骨突棒狀；後內骨突細長，長度超過肛突，甚直。肛突葉狀，前端骨化，後端具剛毛。

世界分布：東洋區、澳洲區、非洲區之熱帶與亞熱帶地區，以及美洲之佛羅里達、西印度群島、南美洲沿海地區。

臺灣分布：本島低海拔地區，離島亦有記錄。

寄主植物：主要為馬齒莧科之馬齒莧。車前科之車前草及爵床科之小花寬葉馬偕花亦有利用記錄。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種雌蝶翅斑紋與斑蝶屬成員相似，並被認為擬態後者。本種過去被認為是常見種，但時至今日已屬少見種類，可能與臺灣過去數十年迅速都市化所造成的棲地消失有關。

Hypolimnas bolina (Linnaeus, 1758) (幻蛺蝶 / 琉球紫蛺蝶 / 幻紫斑蛺蝶)

Papilio (*Nymphalis*) *bolina* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 479. (Type locality: “India” [Java?])

Papilio melita Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 44, pl. 28, f. D, E. (Type locality: “Batavia”)

Papilio antigone Cramer, [1775]: De uitlandsche kapellen1 (1-7): 105, pl. 67, f. C. (Type locality: “Batavia”)

Papilio alcithoe Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 126, pl. 80, f. A, B. (Type locality: “Amboina”)

Papilio auge Cramer, [1777]: De uitlandsche kapellen 2 (9-16): 141, pl. 190, f. A, B. (Type locality: "Amboina")
Papilio manilia Cramer, [1780]: De uitlandsche kapellen 3 (22): p. 109, pl. 255, f. A, B. (Type locality: "Amboina")
Papilio eriphile Stoll, [1782]: De uitlandsche kapellen 4 (32-32): 169, pl. 376, f. A, B. (Type locality: "Amboina")
Papilio (*Nymphalis*) *liria* Fabricius, 1793: Entomologia Systematica 3 (1): 126. (Type locality: "Indiae orientalis")
Hypolimnas bolina f. *subviolacea* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 549.
Hypolimnas bolina f. *ornamentalis* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 549.
Hypolimnas bolina f. *egna* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 549.
Hypolimnas bolina f. *luctuosa* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 549.
Hypolimnas bolina f. *chrysonicans* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 550. (Type locality: Engano)
Hypolimnas bolina f. *micromalayana* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 551. (Type locality: "Mikromalayana [Micromalayan Islands]")
Hypolimnas bolina f. *discalis* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 551. (Type locality: "Südmolukken [southern Moluccas]")
Hypolimnas bolina f. *astra* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 551. (Type locality: "Lombok")
Hypolimnas bolina f. *ivena* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 552. (Type locality: "Engano")
Hypolimnas bolina f. *pelva* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 553.
Hypolimnas bolina f. *maeza* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 553.
Hypolimnas bolina f. *crexa* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 553.

Ssp. *kezia* Butler, 1877

PLATE 41, Figs. 220–221; PLATE 94, Fig. 487; PLATE 131, Fig. 635

Diadema kezia Butler, 1877: Proceedings of the Zoological Society of London 1877: 812. (Type locality: "northern Formosa")
Diadema priscilla Butler, 1877: Proceedings of the Zoological Society of London 1877: 812. (Type locality: "northern Formosa")

Ssp. *philippensis* Butler, 1874

PLATE 41, Figs. 222–223

Diadema philippensis Butler, 1874: Cistula entomologica 1: 243. (Type locality: Philippines)
Hypolimnas bolina f. *viriliformis* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 549. (Type locality: "Philippinen [Philippines]")
Hypolimnas bolina f. *subucula* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 549. (Type locality: "Palawan")
Hypolimnas bolina f. *cyanecula* Fruhstorfer, 1912: Die Gross- Schmetterlinge der Erde 9: 549. (Type locality: Luzon)

Hypolimnas bolina joloana Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 549. (Type locality: “Jolo, Sula Archipel”)

Ssp. *iacintha* Drury, 1773

PLATE 42, Fig. 224

Papilio (*Nym. Ph.*) *iacintha* Drury, 1773: Illustrations of natural history of Exotic Insects 2: pl. 21, f. 1-2, Index, XXI, 1, 2. (Type locality: “Bombay”)

Nymphalis jacintha Westwood, 1837: Illustrations of Exotic Entomology 2: 39, Pl. 21, f. 1-2. (subsequent incorrect spelling)

Hypolimnas bolina euphonoides Poulton, 1924: Transactions of the Entomological Society of London 1923: 643. (Type locality: Chagos Islands)

Specimens examined:

JILONG CITY: 1♀, Pengjia Is., 17. X. 2009 (H. C. Huang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Wulai, Jiajiuliao, 200m, 9. VI. 2008 (Y. F. Hsu); 1♀, Wulai, 26. X. 2009 (J. H. Lin); 1♀, Wanli, Fengguizui, 600m, 27. X. 2009 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Wenshan, NTNU, Gongguan campus, 15. X. 2016 (L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Xuanyuan, 1100m, 21. X. 2008 (Y. F. Hsu & L. H. Wang). **YILAN Co.:** 1♀, Toucheng, Guishan Is., 4/5. III. 2006 (H. C. Huang & C. L. Huang); 1♂, same locality, 30. VI. 2006 (H. C. Huang); 1♂, same locality, 24. V. 2007 (H. C. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Wushikeng, 3. VIII. 2014 (L. Huang). **JIAYI Co.:** 4♂, 5♀, Fanlu, Chukou, 11. X. 2004, reared from *Synedrella nodiflora*, emgd. 30. XI/5. XII. 2004, HSU 04K15 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, Hutoupi, 12. VII. 1987 (J. D. Lu); 1♀, Xinhua, 21. X. 2014, reared from *Ipomoea triloba*, emgd. 17. XI. 2014, HSU14K49 (Y. F. Hsu); 1♀, Baihe, Zhentoushan, 27. VIII. 2004 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♂, 3♀, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu); 1♀, Niaosong, Chengqing Lake, 31. VII. 2019 (Y. H. Ou). **PINGDONG Co.:** 1♀, Chunri, Dahanshan, 18. IX. 2021, reared from *Cyathula prostrata*, emgd. 8. X. 2021, HSU 21J10 (C. C. Lu, jr.); 1♂, same locality, 30. IX. 2021, reared from *C. prostrata*, emgd. 13. X. 2021, HSU 21J15 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Haiduan, Liyuan, Southern Cross-Island Highway, 163Km, 20/21. V. 2017 (C. W. Huang); 1♂, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 2♀, Lanyu Storage Unit/ Longmen, 27. VIII. 1989 (M. L. Jeng); 1♂, Lanyu, Qingrendong, 20. I. 1990; 1♂, Lanyu, Sidaogou, 28/29. IX. 2003 (Y. F. Hsu); 1♂, same locality, 18. IV. 2006 (Y. F. Hsu); 1♂, Lanyu, 8. VIII. 2008 (C. H. Wang); 3♂, same locality, 21/23. IX. 2008 (H. C. Huang & C. H. Lin, jr); 1♂, 1♀, Lanyu, Xiaotianchi,

8. IX. 2008 (C. H. Yen); 4♂, 5♀, Lanyu, Qiwei, 16. III. 2012, reared from *Achyranthes aspera* var. *rubro-fusca* [= *Achyranthes aspera var. rubrofusca*], emgd. 28. IV/4. V. 2012, HSU12C16 (Y. F. Hsu). **LIANJIANG Co.:** 1♂, Nangan, Niujiling, 19. VII. 2014 (S. L. Lu); 1♂, Beigan, Daqiu, 22. VII. 2020 (Y. F. Hsu). **JINMEN Co.:** 1♂, Jinning, Zhongshan Forest, 29. X. 2014 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 33–53 mm. Sexual dimorphism prominent. Male (PLATE 41, Figs. 220, 222): Head dark brown, with white dots on vertex, rim behind compound eyes white. Antennae slightly enlarged at distal end, dark brown, with distal tip naked. Proboscis dark brown. Labial palpus porrect, dark brown, with white hair tuft dorsally; a white band present ventrally. Thorax dark brown dorsally, with a pair of white dots on prothoracic tergum, brown with white spots ventrally. Legs dark brown, with white bands; protarsi fused, stab-shaped, hairy. Abdomen brown, with two rows of white spots ventrally. Forewing triangular; costa convex; termen slightly concave; dorsum nearly straight. Hindwing flabellate, with distal ends of veins slightly produced. Wing uppersides ground color dark brown; prominent metallic purple patch with centric white and blue markings on both wings, normally a tilted band on forewing, rounded on hindwing. A series of white, minute, postdiscal dots present on both wing. A short white bar present subapically on forewing. Wing undersides ground color paler than that of upperside, ochre brown. White discal bands on both wings, as a prominent, tilted band on forewing, as less conspicuous, sometimes reduced band on hindwing. Postdiscal spots more prominent. White submarginal and marginal bands along termen of both wings. Fringe white, checkered with brown. Female (PLATE 41, Figs. 221, 223–225): Highly polymorphic: Body similar to that of male; protarsi segmented, clawed. Dominant form found in Taiwan similar to males in wing pattern, but with a broad and diffused metallic purplish blue patch on forewing uppersides instead of discal purple markings on both wings. Addition forms addressed in “Variation” paragraph.

Male genitalia (PLATE 94, Fig. 487) – Tegumen narrow, short; uncus tapering distad. Gnathos extending posteriad, with medial portion sclerotized, setose. Saccus elongate, shorter than height of vinculum, with distal end blunt. Vinculum nearly straight. Valva broad, with dorsal margin strongly concave; ampulla + harpe forming flattened lobe with posterior margin serrate; sacculus robust, with a distal, down-curved spine. Juxta narrow,

U-shaped. Phallus short, with distal end beveling, nearly straight; aedeagus more than 2X of phallobase.

Female genitalia (PLATE 131, Fig. 635) – Corpus bursae ovate. Ductus bursae elongate, narrow, slightly longer than length of corpus bursae. Sterigma with lamella antevaginalis forming a pair of heavily sclerotized rectangular bands connected by narrow medial bridge, lamella postvaginalis forming a wrinkled, membranous dome. Anterior papillae as robust rods; posterior apophyses elongate, slender, longer than anal papillae, nearly straight. Anal papillae lobe-like, sclerotized anteriorly, setose posteriorly.

Variation. Individuals with wing patterns showing features usually found from the other areas are found in Taiwan from time to time. They may include individuals with prominent white patches on forewing uppersides (Fig. 222), a feature characteristic of ssp. *philippensis* or prominent white submarginal band in female (Fig. 224), a feature more commonly in ssp. *iacintha*, and individuals with red spots on forewing in female (Fig. 225), a trait that may be found in ssp. *iacintha* and the nominotypical subspecies.

Global distribution. Madagascar, entire Oriental region, northern part of Australian region, and West Pacifics (Tsukada, 1985; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan and nearly all associated islands (Yamanaka, 1975; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Convolvulaceae: *Ipomoea batatas*, *I. aquatica*, *I. littoralis*; Malvaceae: *Sida rhombifolia*, *Malvastrum coromandelianum*; Asteraceae: *Synedrella nodiflora*; Amaranthaceae: *Achyranthes bidentata*, *Cyathula prostrata*, etc. (Hsu, 2006; Hung, 2013; Lu & Chen, 2014)

Biology. A multivoltine species, with adults on the wing in all seasons (Hsu, 2013; Lu & Chen, 2014).

Remarks. Individuals possessing wing patterns characteristic of the other geographical

races suggest individuals originated from areas surrounding Taiwan may visit Taiwan by means of seasonal wind or typhoons. On the other hand, individuals characteristic of Taiwan race are sometimes found in southern islands of Japan (Shirôzu, 2006; Fukuda *et al*., 2009), suggesting this species is highly mobile.

The name *iacintha* Drury, 1773 is frequently spelt as *jacintha* in literature, but the spelling *jacintha* did not appear until Westwood (1837), by whom Drury' 3-volume works were revised and republished, thus the name *jacintha* is regarded as a subsequent incorrect spelling herein according to the article 33.3 of ICZN.

The genetics of the species has been well-studies (e.g., Clarke & Sheppard, 1975) and the introgression involving *Wolbachia*-infection of the species has been extensively investigated (e.g., Dyson *et al*., 2002; Charlat *et al*., 2009; Sahoo *et al*., 2018).

形態特徵：成蝶前翅長 33–53 mm。雌雄二型性顯著。雄蝶 (圖 220、222)：頭黑褐色，頭頂有白色斑點，複眼後側輪緣白色。觸角黑褐色，末端略膨大，頂端裸露。口器黑褐色。下唇鬚前伸、黑褐色，背面有白色毛叢、腹面有白條。胸部背面黑褐色，前胸背板有一對白色斑點、腹面褐色，有白色斑點。足黑褐色，有白色條紋，前足跗節癒合、刺狀、被毛。腹部褐色，腹面有兩列白色斑點。前翅三角形，前緣凸、外緣略凹、後緣近直線狀。後翅扇形，翅脈末端略突出。翅背面底色黑褐色，綴具紫色金屬光澤之斑塊，其內有白色、藍色紋，於前翅常呈斜帶紋、於後翅則呈圓形，外側有一列白色小點；前翅亞翅頂有一白色短紋。翅腹面底色較淺，赭褐色，中央有白色帶紋，於前翅為鮮明斜帶紋、於後翅不鮮明，甚至減退，外側斑點較鮮明，有白色亞外緣帶紋及外緣帶紋。緣毛白色鑲褐色。雌蝶 (圖 221、223–225)：軀體特徵與雄蝶相似，但前足跗節分節、具爪。臺灣常見型之翅膀特徵與雄蝶相似，但僅前翅背面有較寬且界線模糊之紫色斑塊。其他型請參閱「變異」項下之敘述。

雄交尾器 (圖 487)：背兜短而狹窄。鉤突向後漸窄。顎形突向後方延伸，中央部分骨化，具剛毛。囊突長，略與基腹弧等長，前端鈍。基腹弧甚直。抱器寬闊、瓣狀，背側邊緣明顯內凹。抱器內突和抱握鋏合成扁平葉狀構造，後緣鋸齒狀。抱器腹粗壯，末端有一下彎棘刺。陽基軛片狹窄、U 字形。陽莖短，甚直，末端斜切。陽莖器長度超過陽莖基 2 倍。

雌交尾器 (圖 635)：交尾囊卵圓形。交尾囊管細長，略長於交尾囊。交尾囊孔板之前陰片形成一對高度骨化之矩形骨帶，由狹窄內橋相連，後陰片形成有皺褶之膜質穹頂。前內骨突棒狀；後內骨突細長，長度超過肛突，甚直。肛突葉狀，前端骨化，後端具剛毛。

變異：在臺灣時可發現翅紋特徵為分布於其他地區之翅紋型的個體，包括前翅背面具鮮明白色斑塊 (圖 222)，特徵屬於菲律賓亞種 ssp. *philippensis* 之個體、雌蝶亞外緣白色帶紋鮮明 (圖 224)，常見於大陸亞種 ssp. *iacintha* 之個體，及雌蝶前翅有紅色斑點 (圖 225)，可見於大陸亞種 ssp. *iacintha* 及承名亞種之個體。

世界分布：馬達加斯加、東洋區、澳洲區北部、西太平洋。

臺灣分布：見於本島低至中海拔地區，多數離島亦有記錄。

寄主植物：旋花科之甘藷、甕菜、海牽牛；錦葵科之金午時花、賽葵；菊科之金腰箭；莧科之牛膝、假川牛膝 (杯莧) 等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：臺灣本島常可發現特徵屬於其他地理族群之個體，顯示臺灣周圍地區之個體可能藉由颱風或季風造訪臺灣。另一方面，特徵屬於臺灣族群之個體有時也見於日本南部島嶼，可見本種移動能力甚強。

大陸亞種 *iacintha* Drury, 1773 常被拼為 *jacintha*。然而，*jacintha* 直至 Westwood (1837) 修訂並再版 Drury 之著作時才首度出現，依國際動物命名法規之法條 33.3 之規定，應視為「不正確後拚寫」。

幻蛺蝶的遺傳已有深入研究，沃爾巴克氏體 (*Wolbachia*) 所導致的基因滲漏近年來有許多深入探討。

Hypolimnas anomala (Wallace, 1869) (端紫幻蛺蝶／八重山紫蛺蝶／畸紋紫斑蛺蝶)

Diadema anomala Wallace, 1869: Transactions of the Entomological Society of London 1869 (4): 285. (Type locality: "Malacca; Java")

Hypolimnas anomala f. *nivas* Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 543. (Type locality: "Java; Lombok")

Ssp. *truentus* Fruhstorfer, 1912

PLATE 42, Figs. 226–227; PLATE 43, Figs. 228–229; PLATE 94, Fig. 488; PLATE 131, Fig. 636

Hypolimnas anomala truentus Fruhstorfer, 1912: Die Gross-Schmetterlinge der Erde 9: 543. (Type locality: "Nord-Philippinen; Liukiu-Inseln")

Specimens examined:

XINBEI CITY: 1♂, Jinshan, 30. IX. 2013 (H. C. Huang). **JIAYI Co.:** 1♂, 1♀, Zhongpu, Wangtan, 31. X. 2024, reared from *Pipturus arborescens*, emgd. 1. XI. 2024 (J. R. Zhang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 3♂, 2♀, Qijin, Nansha Is. (Itu Aba Is.), 5. II. 2005 (T. Y. Chang). **PINGDONG Co.:** 1♀, Hengchun, Kending, 15. XII. 1987 (C. F. Li). **TAIDONG Co.:** 1♀, Ludao, 18. X. 2003 (Y. C. Hsu); 11♂, 4♀, same locality, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL992); 4♂, 4♀, same locality, 12. VIII. 2010, reared from *P. arborescens*, emgd. 5/6. IX. 2010, HSU 10H49 (H. C. Huang); 1♂, Lanyu, 19. VIII. 2008 (C. H. Lin, jr); 1♀, same locality 20. IX. 2009, reared from *P. arborescens*, emgd. 13. I. 2010 (J. H. Lin); 1♂, same locaity, 17. XII. 2009, reared from *P. arborescens*, emgd. 12. I. 2010, HSU 09M15 (J. H. Lin); 1♂, Lanyu, Shuangshiyan, 21. VII. 2008 (C. H. Lin, jr); 1♀, Lanyu, Sidaogou, 27/30. III. 2010 (Y. F. Hsu).

Description. Adult – Forewing length 29–46 mm. Sexual dimorphism prominent. Male (PLATE 42, Fig. 226; PLATE 43, Fig. 228): Head dark brown, with white dots on vertex, rim behind compound eyes white. Antennae slightly enlarged at distal end, dark brown, with distal tip naked. Proboscis dark brown. Labial palpus porrect, dark brown, with white hair tuft dorsally; a white band present ventrally. Thorax dark brown dorsally, with a pair of white dots on prothoracic tergum, brown with white spots ventrally. Legs dark brown, sparsely with white hairs; protarsi fused, stab-shaped, hairy. Abdomen brown, with two rows of white spots ventrally. Forewing triangular; costa slightly convex; termen slightly concave anteriorly; dorsum nearly straight; apex slightly truncate. Hindwing flabellate, with tornus slightly angled; distal ends of veins slightly

produced. Wing uppersides ground color brown; a series of small discal white spots on both wing. A series of submarginal white spots on both wings, but obscure on forewing. Additional white markings sometimes present near apex of forewing; a white band sometimes present on hindwing distally. Wing undersides ground color slightly paler than that of upperside. White markings more prominent, with double submarginal bands and an additional medial white spot in cell $Sc+R_1$ of hindwing. A narrow, elongate dark brown patch with white scalings and spots along costa of forewing. Fringe dark brown checkered with white. Female (PLATE 42, Fig. 227; PLATE 43, Fig. 229): Body similar to that of male; protarsi segmented, clawed. Wing pattern similar to that of male, but ground color of upperside with prominent metallic purplish blue shine. White subapical marking on forewing and distal band on hindwing sometimes present.

Male genitalia (PLATE 94, Fig. 488) – Tegumen broad, short; uncus abruptly tapering caudad, with distal end blunt. Gnathos broad, extending posteriad, with medial portion forming sclerotized band. Saccus elongate, shorter than height of vinculum, with distal end blunt. Vinculum curved. Valva broad, with dorsal margin slightly concave; ampulla + harpe forming flattened lobe with flattened dorsal, serrate process and posterior process with margin serrate and a large ventral tooth; sacculus robust, with a distal up-raising spine. Juxta narrow, U-shaped. Phallus short, with aedeagus approximately 2.5X of phallobase; distal end beveling, with opening ventral, nearly straight.

Female genitalia (PLATE 131, Fig. 636) – Corpus bursae ovate. Ductus bursae elongate, narrow, slightly longer than length of corpus bursae. Sterigma with lamella antevaginalis forming a pair of heavily sclerotized reniform plates, lamella postvaginalis forming a wrinkled, membranous dome. Anterior papillae as robust rods; posterior apophyses elongate, slender, longer than anal papillae, nearly straight. Anal papillae lobe-like, sclerotized anteriorly, setose posteriorly.

Variation. The white spot near apex of forewing is prominent in some individuals, absent in others. White stripes are sometimes present distally on both sides of hindwings in male.

Global distribution. Sundaland, Lesser Sunda Islands, Sulawesi, Philippines (Tsukada, 1985). Intermittent colonies are sometimes found in southern islands of Japan and Taiwan.

Distribution in Taiwan. Mostly found from southern Taiwan, such as Lanyu, Ludao, Nansha Islands, etc. (Hsu, 2013)

Larval Host plant(s). Urticaceae: *Pipturus arborescens* (Hsu, 2013).

Biology. A multivoltine species (Hsu, 2013).

Remarks. This species shows up, sometimes in good number, in some localities of southern Taiwan. However, it appears to be colonial, following by expirations and recolonizations. Similar pattern is seen in southern islands of Japan, such as in Yaeyama Islands (Shirôzu, 2006).

This species is famous for parental care behavior demonstrated by its females, which stay with the egg mass they deposit until its death (Fukuda *et al*., 1983).

形態特徵：成蝶前翅長 29–46 mm。雌雄二型性顯著。雄蝶 (圖 226、228)：頭黑褐色，頭頂有白色斑點，複眼後側輪緣白色。觸角黑褐色，末端略膨大，頂端裸露。口器黑褐色。下唇鬚前伸、黑褐色，背面有白色毛叢、腹面有白條。胸部背面黑褐色，前胸背板有一對白色斑點、腹面褐色，具白色斑點。足黑褐色，疏被白毛，前足跗節癒合、刺狀、被毛。腹部褐色，腹面有兩列白色斑點。前翅三角形，前緣略凸、外緣略凹、後緣近直線狀、翅頂略呈截狀。後翅扇形，臀區略呈角狀、翅脈末端略突出。翅背面底色褐色，中央有一列白色小斑點，亞外緣具一列白色斑點、但於前翅較模糊；前翅翅頂有時有白紋；後翅外側有時具白帶。翅腹面底色較淺，但白紋較鮮明，前翅沿前緣有修長黑紋、白紋及斑點，後翅亞外緣有兩道帶紋、Sc+R_1 室中央有白色斑點。緣毛黑褐色鑲白色。雌蝶 (圖 227、229)：軀體特徵與雄蝶相似，但前足跗節分節、具爪。翅膀背面閃鮮明之藍紫色金屬光澤，前翅亞翅頂白紋及後翅外側帶紋有時出現。

雄交尾器 (圖 488)：背兜短而狹窄。鉤突向後漸窄，末端鈍。顎形突寬闊，向後方延伸，中央部分骨化，具剛毛。囊突長，長度短於基腹弧，前端鈍。基腹弧彎曲。抱器寬闊、瓣狀，背側邊緣略內凹。抱器內突和抱握鋏合成扁平葉狀構造，後緣鋸齒狀，腹側有一大型齒突。抱器腹粗壯，末端有一上彎棘刺。陽基軛片狹窄、U 字形。陽莖短，甚直，末端斜切。陽莖器長度超過陽莖基 2.5 倍。

雌交尾器 (圖 636)：交尾囊卵圓形。交尾囊管細長，略長於交尾囊。交尾囊孔板之前陰片形成一對高度骨化之腎形骨板，後陰片形成有皺褶之膜質穹頂。前內骨突棒狀；後內骨突細長，長度超過肛突，甚直。肛突葉狀，前端骨化，後端具剛毛。

變異：有的個體前翅翅頂白紋明顯，有的欠缺。有些雄蝶個體在後翅有白條。

世界分布：巽他地區、小巽他群島、蘇拉威西、菲律賓。日本南部島嶼及臺灣間歇性出現族群。

臺灣分布：大多於南臺灣，如綠島、蘭嶼、南沙群島等地出現。

寄主植物：蕁麻科之落尾麻。

生物學：本種為一年多世代物種。

註記：本種有時於南臺灣部分地區大量出現，然而呈現移入、滅絕、再移入之模式。日本南部島嶼如八重山群島的發生情形亦見相同情形。

本種以其護幼行為著名，其雌蝶產卵結束後會停留於產下之卵塊護卵，直至死亡。

Subfamily CALINAGINAE Moore, 1895

This subfamily contains only one genus, *Calinaga* (Scoble, 1992; Ackery *et al*., 1999). Ackery *et al*. (1999) list two synapomorphies for this subfamily: presence of a superuncus and absence of a gnathos, and mention two additional unusual features: thorax clothed in golden, orange or red hairs, and antennae naked with two circular depressions between carinae on every flagellar segment. A preliminary molecular phylogeny was provided by Todisco *et al*. (2017) and a species-level treatment based on wing pattern is given by Tshikolovets (2020). The head of larva bears a pair of setose horns, and the caudal end of abdomen is bifid (Ackery *et al*., 1999).

This subfamily is basically Sino-Himalayan in distribution (Scoble, 1992; Ackery *et al*., 1999; Todisco *et al*., 2017; Tshikolovets, 2020). The larvae feed on *Morus* spp. (Scoble, 1992; Ackery *et al*., 1999).

In Taiwan, 1 species in the sole representative genus is known.

絹蛺蝶亞科

本亞科僅含絹蛺蝶屬一屬。Ackery *et al*. (1999) 指出本亞科有兩個明確的共衍徵：具有上鉤突及缺少顎形突。另有兩個不尋常特徵；胸部被有金色、橙色或紅色毛，觸角裸露，在每小鞭節稜脊間有兩個環形凹陷。Todisco *et al*. (2017) 提出本亞科初步之分子親緣關係樹，Tshikolovets (2020) 則根據翅紋進行了種級處理。幼蟲頭部具一對布滿細毛的角狀突起，腹部末端分岔。

本亞科主要分布於喜瑪拉雅地區至中國大陸。幼生期取食桑屬植物。

臺灣有 1 屬 1 種。

Genus *CALINAGA* Moore, 1857

Type species: *Calinaga buddha* Moore, 1857

As just the genus *Calinaga* is included in the subfamily Calinaginae (Scoble, 1992; Ackery *et al*., 1999), the characters of the genus are identical to those of the subfamily.

Larvae feed on plants in the genus *Morus* of Moraceae.

The number of species in the genus varies among different authors. Tshikolovets (2020) recognized 16 species.

1 species occurs in Taiwan.

絹蛺蝶屬

因絹蛺蝶亞科僅包含絹蛺蝶屬，因此本屬之形態特徵與絹蛺蝶亞科相同。

幼蟲取食桑科桑屬植物。

本屬種類數目依研究者而有不同意見，Tshikolovets (2020) 將本屬分為 16 種。

臺灣有 1 種。

Calinaga formosana Fruhstorfer, 1908 (臺灣絹蛺蝶／黃頸蛺蝶／首環蝶)

PLATE 43, Figs. 230–231; PLATE 94, Fig. 489; PLATE 132, Fig. 637

Calinaga budda [sic] *formosana* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (35): 140. (Type locality: “Formosa”)

Calinaga formosanus Oberthür, 1908: Bulletin de la Société entomologique de France 1908: 330. (Type locality: “Karaping (Central Formosa; district Kagi)”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, 700m, 7. IV. 2006 (J. R. Chen); 2♂, Wulai,

Fushan, 21. III. 2009 (C. H. Lin & C. H. Yen); 2♂, same locality, 19. III. 2010 (Y. F. Hsu); 3♂, same locality, 22. III. 2010 (Z. H. Yen); 1♀, same locality, 19. IV. 2017 (L. Huang) (genitalia preparation JYL999); 1♂, Wulai, Laka, 11. VI. 2018, reared from *Morus australis*, emgd. 22. VI. 2019, HSU 18F20 (L. Huang). **TAIPEI CITY:** 1♂, Wenshan, Muzha, Hills S. of NCCU campus, 5. III. 2009 (N. Y. Tsai). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Sileng, 1000m, 4. V. 2011 (Y. F. Hsu); 1♀, Fuxing, Ronghua, 9. IV. 2016 (L. Huang); 1♀, same locality, 26. III. 2021 (C. W. Huang); 1♂, Fuxing, Gaoyi, 600m, 5. IV. 2017 (L. Huang) (genitalia preparation JYL998).

Description. Adult – Forewing length 40–47 mm. Sexual dimorphism absent. Male (PLATE 43, Fig. 230): Head dark brown, with white patch on frons. Antennae naked, with flagellomeres ridged, dark brown. Eyes densely hairy. Proboscis dark brown. Labial palpus porrect, dark brown, with 3rd segment ovate, Thorax dark brown, with orange hairs on tergum of prothorax and pleura of mesothorax. Legs dark brown; protarsi fused, stab-shaped, hairy. Abdomen dark brown, banded with white. Forewing broad, nearly triangular, costa slightly convex, termen, dorsum nearly straight, apex rounded. Hindwing broad, flabellate, with termen round. Wing uppersides ground color brown, with prominent, creamy white tinged with blue, translucent patches and bands proximally. Band in discoidal cell of forewing interrupted by a short, dark bar distad. Multiple series of small spots present distally on both wings. Wing undersides ground color paler, with forewing apex and hindwing yellow ochre. Fringe brown. Female (PLATE 43, Fig. 231): Body and wing pattern similar to those of male, but markings on upperside and ground color of underside paler; protarsi longer, segmented, spiny.

Male genitalia (PLATE 94, Fig. 489) – Tegumen broad, convex dorsad; uncus tapering posteriad to a down-curved beak with pointed distal end, with additional elongate process perpendicular to beak. Gnathos narrow. Saccus short, with distal end blunt. Vinculum elongate, broad. Valva oblong, with ventral margin slightly concave near distal end; harpe forming spoon-shaped sclerite attached on inner surface of valva, with distal portion bearing minute spines. Juxta as a pair of oval sclerites. Phallus short, nearly straight; aedeagus more than 2X of phallobase, with opening dorsal and large.

Female genitalia (PLATE 132, Fig. 637) – Corpus bursae ovate. Signa as two granulate

sclerotized bands. No delimitation between ductus bursae and corpus bursae. Sterigma with lamella antevaginalis forming a broad, sclerotized wall with medial notch. Anterior apophyses as small triangular lobes, posterior apophyses as short rods with broad bases. Anal papillae semi-circular, with heavily sclerotized proximal rims, densely setose.

Global distribution. This species is considered endemic to Taiwan (D'Abrera, 1985; Tshikolovets, 2020).

Distribution in Taiwan. Low to moderate elevations in montane areas of Taiwan (Yamanaka, 1975; Hsu, 2013; Hsu & Chen, 2014).

Larval Host plant(s). Moraceae: *Morus australis* (Muroya *et al*., 1967; Uchida, 1991; Hsu, 2002, 2013; Hung, 2013; Lu & Chen, 2014).

Biology. Univoltine, with adults on the wing in late spring and early summer (Hsu, 2002, 2013; Lu & Chen, 2014); overwintering as pupa in diapause.

Remarks. The taxon *formosana* Fruhstorfer, 1908 has long been regarded as a subspecies of *buddha* Moore, 1857 since the original description. Adopting a classification of *Calinaga* in the Natural History Museum, London (HNM) by Vane-Wright, D'Abrera (1985) changed the status of *formosana* to a species endemic to Taiwan, and the treatment was followed by Tshikolovets (2020).

形態特徵：成蝶前翅長 40–47 mm。無雌雄二型性。雄蝶 (圖 230)：頭黑褐色，前額有白紋。觸角裸露、黑褐色、鞭節有稜。複眼密被毛。口器黑褐色。下唇鬚前伸、黑褐色，第三節卵圓形。胸部黑褐色，前胸背板及中胸側板生有橙色毛。足黑褐色；前足跗節癒合、刺狀、被毛。腹部黑褐色具白色帶紋。前翅寬、近三角形，前緣微凸、外緣及後緣近筆直、翅頂鈍。後翅寬大、扇形，外緣圓。翅背面底色褐色，內側有鮮明帶藍色色調之乳白色半透明斑塊及帶紋，外側有數列小斑點；前翅中室帶紋外端為一暗色短紋截斷。翅腹面底色較淺，前翅翅頂及後翅赭黃色。緣毛褐色。雌蝶 (圖 231)：形態特徵與雄蝶相似，但翅背面班紋及翅腹面底色較淺，前足跗節較長、分節、具刺。

雄交尾器 (圖 489)：背兜寬，背側隆起。鉤突長，向尾端漸細，形成下彎喙狀突起，末端尖。顎形突狹窄。囊突短，末端鈍。基腹弧寬。抱器橢圓形，近末端腹緣略凹。抱握鋏成一匙狀骨附於抱器內側表面，其末端具小棘刺。陽基軛片為一對橢圓形骨片。陽莖短，頗直。陽莖器長度約為陽莖基 2 倍，末端開口於背側、大型。

雌交尾器 (圖 637)：交尾囊卵圓形。花壁為一對顆粒狀骨帶。交尾囊管與交尾囊間無界限。交尾囊孔板之前陰片形成一具中央有凹陷之寬骨壁。前內骨突小型、三角形，後內骨突短棒狀，其基部膨大。肛突半圓形，內側邊緣明顯骨化，密生剛毛。

世界分布：臺灣特有種。

臺灣分布：本島低至中海拔地區。

寄主植物：桑科之小桑樹。

生物學：本種為一年一世代物種，成蝶活動於晚春至初夏，以蛹態滯育越冬。

註記：分類單元 *formosana* Fruhstorfer, 1908 自命名記載以來長期被視為是絹蛺蝶 *Calinaga buddha* Moore, 1857 之亞種。D'Abrera (1985) 採用倫敦自然史博物館之 Vane-Wright 博士對於絹蛺蝶屬之分類，將臺灣之族群視為特有種，Tshikolovets (2020) 沿用該處理，本書在此採用之。

Subfamily CHARAXINAE Doherty, 1886

Ackery *et al*. (1999) list two synapomorphies for this subfamily: parapatagia partly or entirely sclerotized and R_3+R_4 of forewing shortly stalked. The head of larvae is distinctive, bearing one or two pairs of horns (Scoble, 1992). Based on molecular phylogeny, Aduse-Poku *et al*. (2009) suggest that the Indo-Australian *Polyura* and Afrotropical *Euxanthe* should be synonymized with *Charaxes*.

This subfamily is tropical in distribution, with a few species extending into temperate regions (Scoble, 1992; Ackery *et al*., 1999). A total of 300 to 400 species are known (Scoble, 1992; Ackery *et al*., 1999). A wide range of plant families are used as larval hosts of the subfamily (Ackery *et al*., 1999).

In Taiwan, 3 species in 1 genus are known, but 2 were regarded as *Polyura* species.

螯蛺蝶亞科

Ackery *et al*. (1999) 列舉本亞科兩個共衍徵：副頸板部分或全部骨化、前翅 R_3+R_4 脈短距離共柄。幼蟲頭部形狀獨特，具一至二對角。根據分子親緣關係樹，Aduse-Poku *et al*. (2009) 認為印澳分布之尾蛺蝶屬 *Polyura* 及非洲分布之圓蛺蝶屬 *Euxanthe* 應為螯蛺蝶屬 *Charaxes* 之同物異名。

本亞科分布於熱帶，少數種類擴及溫帶。本亞科共有 300–400 種，寄主植物包含很多科植物。

臺灣有 1 屬 3 種，其中 2 種原置於尾蛺蝶屬。雖然屬級分類異動，由於外觀差異顯著，本書仍保持尾蛺蝶之稱呼。

Genus *CHARAXES* Ochsenheimer, 1816

Type species: *Papilio jasius* Linnaeus, 1767

Diagnostic characters may include the following: 1) thorax stout, heavily sclerotized; 2) parapatagium at least partially sclerotized; 3) protarsus of female spineless; 4) discoidal cell closed in forewing, open in hindwing.

Larvae feed on plants in a variety of the broad-leaved trees.

Aduse-Poku *et al*. (2009) suggested that there are approximately 280 species distributed in the Afrotropical and Oriental regions.

3 species occur in Taiwan, including one only found from Jinmen and Mazu Islands.

螯蛺蝶屬

形態特徵如下：1) 胸部壯碩、高度骨化；2) 副頸板部分骨化；3) 雌蝶前足跗節無刺；4) 前翅中室封閉，後翅開放。

幼蟲取食多種闊葉樹。

Aduse-Poku *et al*. (2009) 認為本屬約有 280 種，分布於非洲區及東洋區。

臺灣有 3 種，其中 1 種僅分布於金門及馬祖。

Charaxes eudamippus Doubleday, 1843 (雙尾蛺蝶／雙尾蝶／大二尾蛺蝶)

Charaxes eudamippus Doubleday, 1843: Annales de la Société entomologique de France, série 2, 1 (3): 218, pl. 8. (Type locality: “De Silhet. Indes orientales”)

Ssp. *formosanus* Rothschild, 1899

PLATE 44, Figs. 232–233; PLATE 94, Fig. 490; PLATE 132, Fig. 638

Eulepis eudamippus formosanus Rothschild, 1899: Novitates Zoologicae 6 (2): 268. (Type locality:

"North Formosa, Keelung")

Eriboea eudamippus f. *noko* Matsumura, 1939: Insecta Matsumurana 13 (4): 111, f. 1e. (Type locality: "Hokujoko, in the Prov. Taichu, Formosa")

Specimens examined:

JILONG CITY: 1♂, Longgang Trail, 50m, 20. VII. 2006, reared from *Derris laxiflora*, emgd. 2. IX. 2003, HSU 06G22 (K. L. Chen). **XINBEI CITY [= TAIPEI Co.]:** 1♂, 1♀, Xindian, Sikanshui, 30. IV. 2010, reared from *Millettia reticulata* [= *Wisteriopsis reticulata*], emgd. 23. VI. 2010, HSU 10D40 (C. L. Huang & C. Y. Liao). **TAIPEI CITY:** Shilin, Bixi Trail, 20. IX. 2013, reared from *M. reticulata* [= *W. reticulata*], emgd. 30. X. 2013 (Y. M. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Baling, 23. IV. 2004 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Dongshi, Zhongzheng Park, 9. V. 2005, reared from *M. reticulata* [= *W. reticulata*], emgd. 20. VI. 2005, HSU 05E39 (C. L. Huang & C. M. Wu). **PINGDONG Co.:** 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14/17. III. 2008 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL1008).

Description. Adult – Forewing length 36–46 mm. Sexual dimorphism absent or weakly present. Male (PLATE 44, Fig. 232): Head dark brown, with two pairs of white dots dorsally. Antennae slightly enlarged at distal end, naked, dark brown with distal tip ochre. Rim behind compound eyes dark brown with medial white band. Proboscis yellow ochre. Labial palpus porrect, dark brown dorsally, white ventrally. Thorax dark brown dorsally, white with dark brown bands ventrally. Legs white, partially dark brown; protarsi fused, stab-shaped, densely hairy, dark brown with white tip. Abdomen dark brown, with some white scalings ventrally. Forewing nearly triangular, costa convex, termen slightly concave, dorsum straight. Hindwing broad, with prominent digitate projection at distal tips of vein M_3 and CuA_2, nearly parallel. Wing uppersides ground color creamy white, with extensive dark brown areas along costa and termen of forewing and termen of hindwing. Dark patch present proximally on both wings, forming a digitate extension into cell M_3 of forewing. A series of prominent, white, postdiscal spots on both wings. A series of small, white, submarginal dots on forewing. Postdiscal spots of hindwing sandwiched by purplish blue markings. Tornus of hindwing forming round lobe, white with two dark spots. Wing undersides ground color creamy white, with silvery white shine. Prominent yellow ochre band with dark brown margins on both wings proximally, forming Y-shaped marking on forewing, as curved band on hindwing. Ochre postdiscal

band with dark markings by outer margin on both wings. Olive-colored marginal bands present on both wings. A series of small, dark brown, submarginal dots on hindwing. A pair of small, dark brown dots in discoidal cell of forewing. A short, dark brown bar near base of cell R_4 and R_5. Female (PLATE 44, Fig. 233): Body and wing pattern similar to those of male, but forewing broader, nearly right triangular in shape; proximal dark area of hindwing uppersides usually less extensive; projections of hindwing pointing angles more separate, not parallel; protarsi segmented, not hairy.

Male genitalia (PLATE 94, Fig. 490) – Tegumen broad, extending caudad, with posterior margin forming a process with shallow V-shaped notch, setose; uncus vestigial. Gnathos as a narrow, weakly sclerotized belt. Saccus linked with vinculum in a wide angle, stout and elongate, as long as height of vinculum, with distal end blunt. Vinculum relatively straight, Valva as a broad oval lobe, with a distal hook and a small subapical process on dorsal margin; sacculus thickened. Juxta peculiar, forming prominent elongate structure with paired shoe-like sacs at base and a medial sclerotized distal beak. Phallus elongate, slender, lance-shaped, slightly bent downwards; aedeagus slightly longer than phallobase, tapering caudad, with opening dorsal.

Female genitalia (PLATE 132, Fig. 638) – Corpus bursae ovate with posterior portion abruptly narrowed. Signa as a pair of elongate sclerotized bands with small spines arranged in transverse rows. Ductus bursae elongate, slightly shorter than corpus bursae, membranous but with a sclerote near junction of ductus seminalis, slightly sclerotized near ostium bursae. Sterigma forming a transverse, sclerotized band. Anterior and posterior apophyses as small, weakly sclerotized, triangular processes. Anal papillae enormous, hood-shaped, bearing long setae.

Global distribution. Himalayas, North India, Indochina, Malaya, Okinawa, West to East China, Taiwan (Igarashi & Fukuda, 1997; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Fabaceae: *Archidendron lucidum*, *Wisteriopsis reticulata*, *Cassia*

fistula; Rhamnaceae: *Ventilago leiocarpa*, *Rhamnus parvifolia*; Ulmaceae: *Zelkova serrata*; Rosaceae: *Prunus phaeosticta*, etc. (Uchida, 1991; Hsu, 2006, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing most of the year except winter (Hsu, 2006, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 36–46 mm。雌雄二型性略有或缺乏。雄蝶 (圖 232)：頭黑褐色，背面具兩對白色小點。觸角裸露、末端略膨大、黑褐色、頂端赭色。複眼後方輪緣黑褐色、其中央有白色條紋。口器赭黃色。下唇鬚前伸，背面黑褐色、腹面白色。胸部背面黑褐色，腹面白色，綴黑褐色條紋。足白色，部分黑褐色；前足跗節癒合、刺狀、密被毛、黑褐色、頂端白。腹部黑褐色、腹面部分白色。前翅近三角形，前緣凸、外緣略凹、後緣直線狀、翅頂尖。後翅寬闊，M_3 脈及 CuA_2 脈末端有指狀尾突，兩者近乎平行。翅背面底色乳白色，前翅前緣、外緣及後翅外緣有黑褐色紋，內側有暗色紋，於前翅伸入 M_3 室成指狀。前翅外側有一列鮮明白色斑點；亞外緣有一列白色小點；後翅外側斑列夾於藍紫色斑紋間。臀區有圓形葉狀突、白色而有一對黑色斑點。翅腹面底色乳白色泛銀白色，內側有帶黑邊之鮮明赭黃色帶紋，於前翅形成 Y 字形紋、於後翅為彎曲帶紋，外側帶紋赭色，其外側鑲黑邊，翅緣有橄欖色帶紋。前翅中室有一對黑褐色小點、R_4 室及 R_5 室基部有黑褐色短紋，後翅亞外緣有一列黑褐色小點。雌蝶 (圖 233)：形態特徵與雄蝶相似，但前翅翅幅較寬、翅形近直角三角形，後翅背面內側黑色紋範圍較小，後翅尾突分離、不平行，前足跗節分節、無毛。

雄交尾器 (圖 490)：背兜寬，後緣有淺 V 字形凹陷，具剛毛。鉤突缺失。顎形突狹窄、帶狀，低度骨化。囊突粗長，末端鈍，與基腹弧相接處呈廣角，長度約略與基腹弧等長。基腹弧較直。抱器寬橢圓形，背側近末端處有小尖突，末端鉤狀。抱器腹厚。陽基軛片形成細長突起，基部靴狀，內側延伸成一粗壯、骨化之喙狀突起。陽莖細長、長矛狀，末端略下彎。陽莖器略長於陽莖基，末端漸細，開口於背側。

雌交尾器 (圖 638)：交尾囊卵圓形，後端驟細。花壁為一對由橫向排列小刺組成之骨帶。交尾囊管細長，略短於交尾囊，膜質，但與導精管連接處具小骨片，近交尾囊孔處輕度骨化。交尾囊孔板形成一橫向骨化帶，後緣圓形。前內骨突及後內骨突小型、輕度骨化、三角形。肛突巨大、僧帽狀，具長剛毛。

世界分布：喜瑪拉雅地區、印度北部、中南半島、馬來亞、沖繩、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：豆科之頷垂豆、老荊藤、阿勃勒；鼠李科之光果翼核木、小葉鼠李；榆科之櫸；薔薇科之墨點櫻桃等。

生物學：本種為一年多代物種，成蝶見於冬季以外之季節。

Charaxes narcaeus (Hewitson, 1854) (小雙尾蛺蝶／姬雙尾蝶／二尾蛺蝶)

Nymphalis narcaeus Hewitson, 1854: Illustrations of new species of exotic butterflies 3: [85], pl. [45], f. 1, 4. (Type locality: “Chekiang [Zhejiang], north of China”)

Charaxes mandarinus C. & R. Felder, [1867]: Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorf-Urbair, pt. 9, Bd. 2, Abt. 2 (3): 437. (Type locality: Shanghai)

Charaxes narcaeus var. *thibetanus* Oberthür, 1891: Études d'entomologie15: 11, pl. 2, f. 10. (Type locality: “Tâ-Tsien-Loû [Kangding, Sichuan, China]”)

Eriboea narcaea var. *aemiliani* Fernández, 1912: Boletín de la Sociedad Española de Historia Natural 12: 304, f. 2. (Type locality: “Ya-lan, Hu-nan, [China]”)

Eriboea narcaeus richthofeni Fruhstorfer, 1915: Deutsche entomologische Zeitschrift “Iris” 29 (1): 38. (Type locality: “Kiautschou [Jiaozhouwan, Qingdao, China]”)

Eriboea narcaeus richthofeni f. *arna* Fruhstorfer, 1915: Deutsche entomologische Zeitschrift “Iris” 29 (1): 38. (Type locality: “Kiautschou [Jiaozhouwan, Qingdao, China]”)

Eriboea narcaea abrupta Röber, 1925: Stettiner entomologische Zeitung 86 (1): 168. (Type locality: “Mongolei, [China]”)

Ssp. *meghadutus* Fruhstorfer, 1908

PLATE 44, Fig. 234; PLATE 45, Fig. 235; PLATE 95, Fig. 491; PLATE 132, Fig. 639

Eriboea narcaeus meghaduta Fruhstorfer, 1908: Entomologische Zeitschrift 22 (31): 127. (Type locality: “Chip-Chip [Jiji], Formosa”)

Eriboea narcaea var. *formosana* Moltrecht, 1909: Entomologische Zeitschrift 23 (29): 132. (Type locality: “Central -Formosa”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, Fushan Botanical Garden, 700m, 5. VIII. 2006, reared from *Maackia taiwanensis*, emgd. 1. IX. 2006 (Y. F. Hsu & H. C. Huang); 1♂, Danshui, Erziping, 20. IX. 2011, reared from *M. taiwanensis*, emgd. 31. X. 2011, HSU 11J6 (H. C. Huang); 1♀, same locality, 20. IX. 2011, reared from *M. taiwanensis*,

emgd. 18. X. 2011, HSU 11J6.3 (C. Y. Yen); 1♂, same locality, 11. IX. 2019, reared from *M. taiwanensis*, emgd. 8. X. 2019, HSU 19J46 (L. Huang); 1♂, Zhonghe, Waiwazishan, 1. X. 2019, reared from *Trema orientalis*, emgd. 5. X. 2019, HSU 19K2 (C. C. Lu, jr). **XINZHU Co.:** 1♂, Baoshan, Baoshan Dam, 4. VII. 2010 (C. K. Wang). **NANTOU Co.:** 1♀, Renai, Nenggao Fall, 600m, 9. X. 2011 (J. H. Lin).

Description. Adult – Forewing length 38–45 mm. Sexual dimorphism absent or weakly present. Male (PLATE 44, Fig. 234): Head dark brown, with two pairs of creamy yellow dots dorsally. Antennae slightly enlarged at distal end, naked, dark brown with distal tip ochre. Rim behind compound eyes dark brown with medial creamy yellow band. Proboscis yellow ochre. Labial palpus porrect, dark brown dorsally, white ventrally. Thorax dark brown dorsally, white with dark brown bands ventrally. Legs white, partially dark brown; protarsi fused, stab-shaped, densely hairy, dark brown with white tip. Abdomen dark brown dorsally, white ventrally. Forewing nearly triangular, costa convex, termen concave, dorsum straight, apex acute. Hindwing broad, with prominent digitate projection at distal tips of vein M_3 and CuA_2, nearly parallel. Wing uppersides ground color creamy white, with extensive dark brown areas along costa and termen of forewing and termen of hindwing. Small dark patch present proximally on both wings, forming a prominent Y-shape band on forewing. A series of prominent, white, postdiscal spots on forewing, and a band on hindwing. Tornus of hindwing forming round lobe, orange with two dark spots. Wing undersides ground color creamy white tinged with greenish blue, with silvery white shine. Prominent yellow ochre band with dark brown margins on both wings proximally, forming Y-shaped marking on forewing, as curved band on hindwing. Postdiscal band deep red ochre with inner margin purple on hindwing, ochre with outer margin dark brown on forewing. Marginal band pale ochre with dark outer margin on hindwing, ochre on forewings. A series of small, dark brown, submarginal dots on hindwing. A pair of small, dark brown dots in discoidal cell of forewing. Female (PLATE 45, Fig. 235): Body and wing pattern similar to those of male, but forewing broader, nearly right triangular in shape; proximal dark area of hindwing uppersides usually less extensive; projections of hindwing pointing angles more separate, not parallel; protarsi segmented, not hairy.

Male genitalia (PLATE 95, Fig. 491) – Tegumen broad, extending caudad, with posterior

margin forming shallow V-shaped notch, setose; uncus vestigial. Gnathos as a narrow, weakly sclerotized belt. Saccus roughly perpendicular to vinculum, stout and elongate, shorter than height of vinculum, with distal end blunt. Vinculum relatively straight. Valva as a broad oval lobe, with a distal hook; sacculus thickened. Juxta forming prominent elongate structure with paired small sacs at base and a medial, stout, sclerotized distal beak. Phallus elongate, slender, lance-shaped, with distal end up-raised; aedeagus shorter than phallobase, tapering caudad, with opening dorsal.

Female genitalia (PLATE 132, Fig. 639) – Corpus bursae ovate with posterior portion abruptly narrowed. Signa as a pair of elongate sclerotized bands with small spines arranged in transverse rows. Ductus bursae elongate, slightly shorter than corpus bursae, membranous but with a sclerite near junction of ductus seminalis, slightly sclerotized near ostium bursae. Sterigma forming a transverse, sclerotized band with rounded posterior margin. Anterior and posterior apophyses as small, weakly sclerotized, triangular processes. Anal papillae enormous, hood-shaped, bearing long setae.

Global distribution. Northeast India, northern Indochina, Southwest, West, Central, North and East China, Taiwan (Igarashi & Fukuda, 1997; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1975; Hsu, 2013).

Larval Host plant(s). Cannabaceae: *Trema orientalis*, *Celtis formosana*; Fabaceae: *Albizia julibrissin*, *Maackia taiwanensis*, etc. (Uchida, 1991; Hsu, 1999, 2013; Hung, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing most of the year except winter (Hsu, 1999, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 38–45 mm。雌雄二型性略有或缺乏。雄蝶 (圖 234)：頭黑褐色，背面有兩對乳黃色小點。觸角裸露、末端略膨大、黑褐色、頂端赭色。複眼

後方輪緣黑褐色、其中央有乳黃色條紋。口器赭黃色。下唇鬚前伸，背面黑褐色、腹面白色。胸部背面黑褐色，腹面白色，綴黑褐色條紋。足白色，部分黑褐色；前足跗節癒合、刺狀、密被毛、黑褐色、頂端白。腹部背面黑褐色、腹面白色。前翅近三角形，前緣凸、外緣凹、後緣直線狀、翅頂尖。後翅寬闊，M_3 脈及 CuA_2 脈末端具指狀尾突，兩者近乎平行。翅背面底色乳白色，前翅前緣、外緣及後翅外緣有黑褐色紋，內側有暗色紋，於前翅者形成 Y 字形帶紋，外側斑紋於前翅為一列鮮明白色斑點、於後翅為一帶紋；後翅臀區有圓形葉狀突，橙色而有二黑色斑點。翅腹面底色乳白色帶藍綠色、泛銀白色，內側有帶黑邊之鮮明赭黃色帶紋，於前翅形成 Y 字形紋、於後翅為彎曲帶紋。外側帶紋於前翅呈赭色，其外側鑲黑褐色邊、於後翅呈深赭紅色，其內側鑲紫色邊。前翅中室內有一對黑褐色小點。後翅亞外緣有一列黑褐色小點。雌蝶 (圖 235)：形態特徵與雄蝶相似，但前翅翅幅較寬、翅形近直角三角形，後翅背面內側黑色紋範圍較小，後翅尾突分離、不平行，前足跗節分節、無毛。

雄交尾器 (圖 491)：背兜寬，後緣有淺 V 字形凹陷，具剛毛。鉤突缺失。顎形突狹窄、帶狀，低度骨化。囊突粗長，末端鈍，約略與基腹弧垂直，長度短於基腹弧。基腹弧較直。抱器寬、橢圓形，末端鉤狀。抱器腹厚。陽基軛片形成細長突起，基部一對小囊，內側延伸成粗壯、骨化之喙狀突起。陽莖細長、長矛狀，末端上舉。陽莖器長度短於陽莖基，末端漸細，開口於背側。

雌交尾器 (圖 639)：交尾囊卵圓形，後端驟細。花壁為一對由橫向排列小刺組成之骨帶。交尾囊管細長，略短於交尾囊，膜質，但與導精管連接處具小骨片，近交尾囊孔處輕度骨化。交尾囊孔板形成一橫向骨化帶，後緣圓形。前內骨突及後內骨突小型、輕度骨化、三角形。肛突巨大、僧帽狀，具長剛毛。

世界分布：印度北部、中南半島北部、華西南、華西、華中、華北、華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：大麻科之山黃麻、石朴；豆科之合歡、臺灣馬鞍樹等。

生物學：本種為一年多代物種，成蝶見於冬季以外之季節。

Charaxes bernardus (Fabricius, 1793) (玉帶鳖蛱蝶)

PLATE 45, Figs. 236–237; PLATE 95, Fig. 492; PLATE 132, Fig. 640

Papilio bernardus Fabricius, 1793: Entomologia Systematica 3 (1): 71, no. 223. (Type locality: China)

Papilio polyxena Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 85, pl. 54, f. A, B. (Type locality: China) (homonym of *Papilio polyxena* [Denis & Schiffermüller], 1775)

Charaxes polyxena polyxena f. *sinensis* Rothschild, 1900: Novitates Zoologicae 7 (3): 335. (Type locality: "Hong-Kong, Mupin, Omei-shan (W. China)")

Specimens examined:

LIANJIANG Co.: 2♂, 1♀, Beigan, Jinsha, 18. XI. 2013, reared from *Cinnamomum camphora* [= *Camphora officinarum*], emgd. 30. XII. 2013 (L. H. Wang & H. Y. Lee) (genitalia preparation JYL1047, JYL1048); 1♂, 2♀, Nangan, 22. VII. 2021, reared from *Ci. camphora* [= *Ca. officinarum*], emgd. 18/22. IX. 2021 (D. C. Chen). **JINMEN Co.:** 1♀, Sangyi Airport, 8. XI. 2021 (H. C. Huang); 1♂, Leiyu, 9. XI. 2021, reared from *Ci. camphora* [= *Ca. officinarum*], emgd. 20. XI. 2021 (H. C. Huang).

Description. Adult – Forewing length 37–48 mm. Sexual dimorphism present. Male (PLATE 45, Fig. 236): Head ochre. Antennae slightly enlarged at distal end, dark brown, naked on inner surface and distal tip. Proboscis brown. Labial palpus porrect, dark brown dorsally, white ventrally. Thorax brown ochre dorsally, yellow ochre with white medial band ventrally. Legs yellow ochre; protarsi fused, stab-shaped, densely hairy, dark brown with white tip. Abdomen brown ochre dorsally, yellow ochre ventrally. Forewing nearly triangular, costa convex, termen concave, dorsum straight, apex acute. Hindwing with termen somewhat serrate; a small projection present at distal end of M_3. Wing uppersides ground color yellow ochre, darken on forewing. Distal portion of forewing dark brown. A dark brown postdiscal band on hindwing, attenuate posteriad. A prominent, white, discal band on forewing; a narrow, serpentine, dark brown, short band on hindwing anteriorly. Minute white dots present distal to discal white band of forewing and in the postdiscal band of hindwing. Wing uppersides ground color pale yellow ochre tinged with purple, glossy. Narrow, dark brown, serpentine striae present on both wings. A series of small, dark dots with white scalings along termen of hindwing. Female (PLATE 45, Fig. 237): Body similar to that of male; wings broader, with forewing apex obtuse, hindwing projection more prominent, digitate. White bands and markings on wing uppersides more prominent, also present on undersides. Protarsi segmented, not hairy.

Male genitalia (PLATE 95, Fig. 492) – Tegumen broad, extending caudad, with posterior margin forming a pair of prominent teeth with deep medial invagination, setose; uncus vestigial. Gnathos as a sclerotized belt with medial sclerotized disc. Saccus stout, conical, with distal end blunt. Vinculum relatively straight, Valva as a broad oval lobe; ampulla with distal end forming a blade; distal end of harpe bearing an erect tooth; sacculus thickened. Juxta forming prominent elongate structure with paired tail-like sacs at base and a medial, stout, conical process. Phallus elongate, slender, lance-shaped, with distal end down-curved; aedeagus approximately 2X length of phallobase, with a band of small spines, opening dorsal.

Female genitalia (PLATE 132, Fig. 640) – Corpus bursae ovate with posterior portion abruptly narrowed. Signa as a pair of elongate sclerotized bands with small spines arranged in transverse rows. Ductus bursae elongate, shorter than corpus bursae, sclerotized, with a sclerite near junction of ductus seminalis. Anterior and posterior apophyses as small, weakly sclerotized, triangular processes. Anal papillaelobe-like, bearing long setae.

Global distribution. Himalayas, North India, Indochina, Sundaland, West to East China (Tsukada, 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Found from Mazu Islands (Lee, 2000) and Jinmen Islands.

Larval Host plant(s). Lauraceae: *Camphora officinarum* (Lee, 2000).

Biology. Multivoltine, with adults on the wing most of the year except winter.

Remarks. Lee (2000) speculated that this species did not occur in Mazu Islands prior to 1990s, it may have successfully established with cultivation of camphor trees on there; however, this species is widespread across southern China (Boscombe *et al*., 1999), thus it may be aboriginal to these islands. This species was recently found from Jinmen Islands.

形態特徵：成蝶前翅長 37–48 mm。具雌雄二型性。雄蝶 (圖 236)：頭赭色。觸角黑褐色、末端略膨大、內側及頂端裸露。口器褐色。下唇鬚前伸，背面黑褐色、腹面白色。胸部背面赭褐色，腹面赭黃色，中央有白色帶紋。足赭黃色；前足跗節癒合、刺狀、密被毛、黑褐色、頂端白。腹部背面赭褐色、腹面赭黃色。前翅近三角形，前緣凸、外緣凹、後緣直線狀、翅頂尖。後翅外緣略呈鋸齒狀，M_3 脈末端有小尾突。翅背面底色赭黃色，前翅較暗，前翅外側黑褐色；前翅中央有鮮明白色帶紋；後翅前側有黑褐色彎曲細紋，外側帶紋黑褐色、向後減退；前翅中央帶紋及後翅外側帶紋外側有白色小點。翅腹面底色淡赭黃色泛紫色光澤，有彎曲黑褐色線紋，後翅外緣有一列帶白色鱗片之黑色小斑。雌蝶 (圖 237)：軀體特徵與雄蝶相似，但前翅翅幅較寬、翅頂鈍，後翅尾突較明顯、呈指狀。翅背面白色帶紋及斑紋較鮮明，亦見於腹面。前足跗節分節、無毛。

雄交尾器 (圖 492)：背兜寬，後緣有一對尖齒狀突起，其間有深凹陷、具剛毛。鉤突缺失。顎形突為中央呈盤狀之骨帶。囊突粗壯、圓錐形，末端鈍。基腹弧頗直。抱器寬橢圓形。抱器內突末端刃狀。抱握鋏末端有一直立向上之尖齒突。抱器腹厚。陽基軛片形成細長突起，基部為一對尾狀囊，內側延伸出一粗壯之圓錐狀突起。陽莖細長、長矛狀，末端下彎。陽莖器長度為陽莖基 2 倍，具一條細小棘刺帶，末端開口於背側。

雌交尾器 (圖 640)：交尾囊卵圓形，後端驟窄。花壁為一對由橫向排列小刺組成之骨帶。交尾囊管細長，略短於交尾囊，骨化，與導精管連接處具小骨片。前內骨突及後內骨突小型、輕度骨化、三角形。肛突巨大、僧帽狀，具長剛毛。

世界分布：喜瑪拉雅地區、印度北部、中南半島、巽他地區、華西至華東。

臺灣分布：見於金門及馬祖。

寄主植物：樟科之樟樹。

生物學：本種為一年多代物種，成蝶可見於冬季以外之季節。

註記：Lee (2000) 推測本種 1990 年代以前馬祖無分布，可能由於人為栽種之樟樹而成功建立族群。然而，本種廣泛分布於華南，因此不能排除馬祖原已有本種棲息。本種近期也已於金門發現。

Subfamily SATYRINAE Boisduval, 1833

The members in the subfamily are usually called the ringlets, browns, satyrs, arctics, heaths, etc. They were often regarded as a family Satyridae, but recent works suggest to place it within Nymphalidae as a subfamily Satyrinae (e.g., Scoble, 1992; Freitas & Brown, 2004; Ackery *et al*., 1999; Heikkilä *et al*., 2012; Espeland *et al*., 2018). Some researchers suspect that Satyrinae represent a polyphyletic assemblage (e.g., Scoble, 1992; Peña *et al*., 2006), but the most recent phylogenetic work by Espeland *et al*. (2018) recovered it as a monophyletic group. Ackery *et al*. (1999), however, argued that there is no single derived character that defines Satyrinae, but in practice the members of the subfamily can be recognized by inflated veins, a small anepisternum, and closed hindwing discoidal cell.

This subfamily is cosmopolitan in distribution, with high diversity in both temperate and tropical regions (Ackery *et al*., 1999). Larvae of the family basically feed on monocotyledons, but some groups are known to use Selaginellaceae as larval hosts (Igarashi & Fukuda, 2000; Freitas *et al*., 2019).

In Taiwan, 47 species in 14 genera are known, containing 4 species doubtfully recorded or as rare accidental strays.

眼蝶亞科

本亞科成員的英文俗名包括 ringlets、browns、satyrs、arctics、heaths 等。本亞科常被單獨視為一科，稱為眼蝶科或蛇目蝶科，但近期研究認為應作為一亞科置於蛺蝶科內，稱為眼蝶亞科。有些研究者懷疑眼蝶亞科可能為複系群，但 Espeland *et al.* (2018) 最新之親緣關係研究表明牠是一單系群。然而，Ackery *et al.* (1999) 指出並無單一衍徵可定義眼蝶亞科，但在實務上本亞科成員可藉由膨大的翅脈、細小之前側片及後翅中室封閉等特徵辨識之。

本亞科呈泛世界分布，溫帶區及熱帶區皆具高度多樣性。幼蟲主要取食單子葉植物，但部分類群已知利用卷柏科植物。

臺灣有 14 屬 47 種之記錄，其中有 4 種係疑問種或偶產迷蝶。

Genus *STICHOPHTHALMA* Felder (C.) & Felder (R.), 1862

Type species: ***Thaumantis howqua*** **Westwood, 1851**

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus densely hairy with tarsomeres fused in male, not hairy, segmented in female; 3) antennal club slender and elongate; 4) discoidal cell closed in forewing, open in hindwing; 5) R_2 and R_3 of forewing completely anastomosed; 6) a hair pencil present near base of discoidal cell of hindwing uppersides.

Larvae feed on plants in Poaceae and Arecaceae.

About 10 species, distributed in Oriental region.

1 species occurs in Taiwan.

箭環蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足密被毛、跗節癒合，雌蝶前足無毛、跗節平滑；3) 觸角錘部細長；4) 前翅中室封閉、後翅開放；5) 前翅 R_2 及 R_3 脈完全癒合；6) 後翅背面中室近基部處具毛束。

幼蟲取食禾本科及棕櫚科植物。

本屬約 10 種，分布於東洋區。

臺灣有 1 種。

Stichophthalma howqua **(Westwood, 1851) (箭環蝶 / 環紋蝶)**

Thaumantis howqua Westwood, 1851: Transactions of the Entomological Society of London, series 2, 1 (5): 174. (Type locality: “Shanghai, China”)

Ssp. ***formosana*** **Fruhstorfer, 1908**

PLATE 46, Figs. 238–239; PLATE 95, Fig. 493; PLATE 133, Fig. 641

Stichophthalma howqua formosana Fruhstorfer, 1908: Entomologische Wochenblatt 25 (9): 38. (Type locality: "Lake Candidius [Sun Moon Lake, Nantou, Taiwan]")

Specimens examined:

XINBEI CITY: 1♂, Shiding, Ergeshan Nature Center, 400m, 21. IV. 2012, ex. pupa, emgd. 2. V. 2012, HSU 12D30 (H. C. Huang). **TAIZHONG CITY:** 1♀, Heping, Malunshan, 30. X. 2016, reared from bamboo, emgd. 4. VI. 2017, HSU16K33 (H. C. Huang). **NANTOU Co.:** 2♂, Lugu, Fenghuanggu Bird Park, 8. VII. 2012 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Huitouwan, 750m, 6. VI. 2005 (Y. F. Hsu); 1♀, Xiulin, Huoranting, 900m, 23. VIII. 2007 (M. H. Sun). **PINGDONG Co.:** 1♂, 1♀, Shizhi, Shouka, 8. V. 2020 (J. Y. Liang & Y. F. Hsu).

Description. Adult – Forewing length 50–63 mm. Sexual dimorphism weakly present. Male (PLATE 46, Fig. 238): Head yellow ochre. Antennae naked, dark brown, paler on inner surface. Proboscis brown. Labial palpus porrect, dark brown dorsally, creamy white ventrally. Thorax brown ochre dorsally, creamy yellow ventrally. Legs creamy yellow; protarsi fused, stab-shaped, hairy. Abdomen brown ochre dorsally, yellow ochre ventrally. Forewing nearly triangular, costa slightly convex, termen nearly straight, dorsum straight, apex obtuse. Hindwing flabellate, with termen slightly wavy. Wing uppersides ground color yellow ochre, paler distally on forewing. Apex of forewing dark brown. A series of peculiar arrow-head like, dark brown markings present along termen of both wings. Wing undersides ground color creamy yellow. A series of prominent, brown ochre, eye-like discal spots on both wings. A broad yellow ochre band with dark brown margins on both wings proximally. Two dark brown, submarginal bands present on both wings. A dark brown narrow bar at distal end of discoidal cell of forewing. A faint, brown strip present along inner edge of discal eyespots. A dark brown spot at tornus of hindwing. Sexual brands as an oval orange patch associated with a hair tuft near base of hindwing uppersides. Female (PLATE 46, Fig. 239): Body similar to that of male; wing undersides with ground color paler; dark markings more extensive, with outer submarginal band enlarged but paler; discal brown band more prominent; no sexual brands; protarsi segmented, not hairy.

Male genitalia (PLATE 95, Fig. 493) – Tegumen narrow, short, with medial notch on

anterior margin; uncus forming stout, down-curved beak. Brachium as large hook with stout base, distal tip pointed. Saccus elongate, stout, digitate, with distal end blunt. Vinculum nearly straight. Valva stout basad, elongate, slender, up-raised with distal end bent, setose. Juxta small, V-shaped, weakly sclerotized. Phallus elongate, thick, straight; aedeagus approximately 1.8X of phallobase, with left wall abruptly narrowed to a pointed process at distal end.

Female genitalia (PLATE 133, Fig. 641) – Corpus bursae bulbous, with large ovate appendix bursae. Signa as a pair of elongate sclerotized bands with small spines arranged in transverse rows. Ductus bursae short, wrinkled. Sterigma with antevaginalis forming sclerotized dome, postvaginalis forming a sclerotized wall. Anal papillae lobe-like, sclerotized basad, setose posteriorly.

Global distribution. Northern Indochina, West to East China, Taiwan (Igarashi & Fukuda, 2000; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone of main island of Taiwan (Igarashi & Fukuda, 2000; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Arecaceae: *Calamus formosanus*; Poaceae: *Miscanthus sinensis*, *Bambusa multiplex*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Univoltine, with adults on the wing from late spring to summer.

形態特徵：成蝶前翅長 50–63 mm。略具雌雄二型性。雄蝶 (圖 238)：頭赭黃色。觸角裸露、黑褐色、內側裸露。口器褐色。下唇鬚前伸，背面黑褐色、腹面乳白色。胸部背面赭褐色，腹面乳黃色。足乳黃色；前足跗節癒合、刺狀、被毛。腹部背面赭褐色、腹面赭黃色。前翅近三角形，前緣略凸、外緣頗直、後緣直線狀、翅頂鈍。後翅扇形，外緣略呈波狀。翅背面底色赭黃色、前翅外側較淺色、前翅翅頂黑褐色，外緣有一列黑褐色箭形斑紋。翅腹面底色乳黃色，中央有一列鮮明赭褐色眼狀斑，前、後翅內側均有鑲黑邊之寬帶紋。亞外緣有兩道黑褐色細帶紋。前翅中室末端有

一黑褐色細短紋。後翅臀區具黑褐色斑點。後翅背面近基部處具橙色橢圓形斑塊及毛叢組成之性標。雌蝶 (圖 239)：軀體特徵與雄蝶相似，但翅腹面底色較淺、深色斑紋擴大、外側亞外緣帶紋較粗、色彩較淡、中央褐色帶紋較鮮明、無性標，前足跗節分節、無毛。

雄交尾器 (圖 493)：背兜短而狹窄，前緣中央內凹。鉤突粗壯，形成下彎喙狀突起，末端鈍。顎形突基部粗壯、鉤狀，末端尖。囊突長、指狀，末端鈍。基腹弧頗直。抱器基部較粗，細長，向末端漸細、上彎，末端鈍，具剛毛。陽基顎片細小，V 字形，弱骨化。陽莖粗長、挺直。陽莖器長度約為陽莖基 1.8 倍，末端左側驟縮，末端尖。

雌交尾器 (圖 641)：交尾囊球狀，具大型卵圓形附囊。花壁為一對具橫向排列小刺之細長骨化帶。交尾囊管短，有摺皺。交尾囊孔板之前陰片形成骨化穹頂，後陰片形成一骨壁。肛突葉狀，基部骨化，後側有剛毛。

世界分布：中南半島北部、華西至華東、臺灣。

臺灣分布：本島低至中海拔山區。

寄主植物：棕櫚科之臺灣黃藤 (五脈剛毛省藤)；禾本科之芒、蓬萊竹等。

生物學：本種為一年一代物種，成蝶於春末至夏季活動。

Genus *FAUNIS* Hübner, [1819]

Type species: *Papilio eumeus* Drury, [1770]

Diagnostic characters may include the following: 1) compound eyes sparely hairy; 2) protarsus densely hairy with tarsomeres fused in male, not hairy, segmented in female; 3) antennal club slender and elongate; 4) discoidal cell closed in forewing, open in hindwing; 5) wing undersides brown with a series of creamy white spots.

Larvae feed on plants in a few monocotyledonous families, including Smilacaceae, Poaceae, Arecaceae, Hypoxidaceae, Musaceae and gymnospermous Cycaceae.

About 12 species, distributed in Oriental region.

1 species now occurs in Taiwan, as a recent addition to the fauna from mainland China or Indochina near the end of the last millennium.

串珠環蝶屬

形態特徵如下：1) 複眼疏被毛；2) 雄蝶前足跗節癒合、密被毛，雌蝶分節、不被毛；3) 觸角錘部細長；4) 前翅中室封閉、後翅開放；5) 翅腹面底色褐色，上有一列乳白色斑點。

幼蟲取食單子葉植物之菝葜科、禾本科、棕櫚科、仙茅科、芭蕉科及裸子植物之蘇鐵科等植物。

本屬約有 12 種，分布於東洋區。

臺灣有 1 種，於上世紀末從中國大陸或中南半島入居。

Faunis eumeus (Drury, 1770) (串珠環蝶)

PLATE 47, Figs. 240–241; PLATE 95, Fig. 494; PLATE 133, Fig. 642

Papilio (*Danaus*) *eumeus* Drury, 1770: Illustrations of natural history 1: 4, pl. 2, f. 3. (Type locality: China)

Papilio Danaus decempunctatus Goeze, 1779: Entomologische Beyträge zu des ritter Linné zwölften Ausgabe des Natursystems 3 (1): 212. (Type locality: “Chine [China]”)

Faunis eumeus wangi Lee, 1999: Butterflies of Taiwan: 258. (Type locality: “Keelung, Taiwan”)

Specimens examined:

JILONG CITY: 1♂, Zhongzhen, Haimentianxian, 9. IV. 1998 (K. L. Chen); 2♀, same locality, 19. VI. 1998 (Y. T. Lo); 3♂, same locality, 25. VI. 1998 (C. C. Lu & C. Y. Hung); 1♂, same locality, 9. X. 1998 (Y. F. Hsu); 1♂, same locality, 13. X. 1998 (Y. F. Hsu); 1♂, same locality, 29. X. 1999; 1♀, same locality, 26. VIII. 2000 (M. H. Lin); 1♂, same locality, 13. I. 2001 (M. H. Lin); 2♀, same locality, 15. I. 2001 (M. H. Lin); 1♀, same locality, 16. I. 2001 (M. H. Lin); 2♀, Xinyi, Yuemeishan, 2. XI. 2000 (M. H. Lin).

XINBEI CITY [= TAIPEI Co.]: 1♂, Ruifang, Wucaoshan, 1. IX. 2002 (Y. F. Hsu).

Description. Adult – Forewing length 33–39 mm. Sexual dimorphism weakly present. Male (PLATE 47, Fig. 240): Head brown. Antennae dark brown, naked ventrally. Proboscis brown. Labial palpus porrect, flattened, orange with distal tip brown. Thorax, legs brown ochre; protarsi fused, stab-shaped, hairy. Abdomen brown ochre dorsally, creamy yellow ventrally. Forewing nearly triangular, costa convex; termen nearly straight, dorsum straight but slightly produced near base, apex obtuse. Hindwing rounded. Wing uppersides ground color brown ochre, with spots on wing undersides visible from upperside. A curved orange band present near apex of forewing. Wing undersides ground color brown ochre, paler on anterior portion of forewing. A series of creamy white, discal spots on both wings, in a straight line on forewing, in a curve on hindwing. Three dark brown, narrow bands on both wing. Sexual brands as a dark brown, oval patch and a creamy yellow hair tuft near base of hindwing uppersides. Female (PLATE 47, Fig. 241): Body and wing pattern similar to those of male; orange band on forewing uppersides more prominent; forewing termen not produced at base; no sexual brands; protarsi segmented, not hairy.

Male genitalia (PLATE 95, Fig. 494) – Tegumen broad, convex dorsad; uncus forming strongly down-curved beak. Brachium as up-curved hook with distal tip blunt. Saccus short, rod-like, with distal end capitate. Vinculum narrow, nearly straight. Valva broad basad, extending to elongate arms, with ditsal end forming spiny palm. Juxta as a sclerite with lateral wings and paired dorsal walls with medial slit. Phallus elongate, slightly up-raising; aedeagus approximately 2.5X of phallobase, tapering caudad to a pointed distal end.

Female genitalia (PLATE 133, Fig. 642) – Corpus bursae ovate. Signa as a pair of elongate sclerotized bands with small spines arranged in transverse rows. Ductus bursae shorter than corpus bursae, wrinkled, forming a sclerotized cup at ostium bursae. Sterigma with antevaginalis forming heavily sclerotized, setose, claw-like strictures, postvaginalis forming a broad sclerotized hood. Anal papillae with basal portion fused into large sac, posterior portion lobe-like, sclerotized, setose.

Global distribution. Northeast India, northern Indochina, Southwest, South to East China (Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low elevation foothills in northern Taiwan (Hsu, 2006, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Mainly Smilacaceae: *Smilax planipedunculata* and Hypoxidaceae: *Molineria capitulata* in Taiwan (Hsu, 2006; Lu & Chen, 2014).

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2006; Lu & Chen, 2014).

Remarks. This species was found from Taiwan for the first time in June, 1997 near the harbor of Keelung (Jilong) (Huang, 1997; Hsu *et al*., 2007). Although the population was described as ssp. *wangi* by Lee & Wang (1999), Shirôzu (2001) pointed out that it is unnecessary as this species is evidently a recent immigration from southern China.

形態特徵：成蝶前翅長 33–39 mm。略具雌雄二型性。雄蝶 (圖 240)：頭褐色。觸角黑褐色、腹面裸露。口器褐色。下唇鬚前伸、扁平、橙色，端部褐色。胸部及足赭褐色；前足跗節癒合、刺狀、被毛。腹部背面赭褐色、腹面乳黃色。前翅近三角形，前緣凸、外緣頗直、後緣直線狀，但近基部處略突出、翅頂鈍。後翅圓。翅背面底色赭褐色，可透視翅腹面斑點，前翅近翅頂處有彎曲橙色帶紋。翅腹面底色赭褐色、前翅前半部顏色常較淺，中央有一列乳白色斑點，於前翅直線排列、於後翅則為曲線，前、後翅翅面均有三道黑褐色細線紋。後翅背面近基部處具黑褐色橢圓形性標及乳黃色毛叢。雌蝶 (圖 241)：形態特徵與雄蝶相似，但前翅橙色帶紋較鮮明、前翅後緣基部不突出、無性標，前足跗節分節、無毛。

雄交尾器 (圖 494)：背兜寬，背側隆起。鉤突明顯下彎、喙狀。顎形突為一對上彎鉤突，末端鈍。囊突短桿形，末端棒狀。基腹弧狹窄、頗直。抱器基部寬，向尾端延伸成長臂，末端掌狀、有棘刺。陽基軛片為兩側具翼狀突起之寬骨片，背側中央有狹縫。陽莖修長，略上舉。陽莖器長度約為陽莖基 2.5 倍，向後漸細，末端尖。

雌交尾器 (圖 642)：交尾囊卵圓形。花壁為一對由橫向排列小刺組成之細長骨帶。

交尾囊管短於交尾囊，有皺褶，於交尾囊孔處形成一杯狀骨化結構。交尾囊孔板之前陰片骨化明顯，具剛毛，形成螯狀結構，後陰片形成一寬闊骨罩。肛突基部融合為大型囊袋，後半部葉狀、骨化，具剛毛。

世界分布：印度東北部、中南半島北部、華西南、華南至華東。

臺灣分布：目前見於臺灣北部低海拔郊山。

寄主植物：在臺灣主要利用菝葜科之平柄菝葜及仙茅科之船仔草。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種於 1997 年 6 月在基隆港附近首度在臺發現。雖然該族群被 Lee & Wang (1999) 記述為亞種 ssp. *wangi*，但 Shirôzu (2001) 指出在臺灣發現的族群顯然是從華南移入之族群，無必要另立亞種。

Genus *DISCOPHORA* Boisduval, [1836]

Type species: *Papilio menetho* Fabricius, 1793

Diagnostic characters may include the following: 1) compound eyes naked; 2) protarsus densely hairy with tarsomeres fused in male, not hairy, segmented in female; 3) antennal club slender and elongate; 4) discoidal cell closed in forewing, open in hindwing; 5) R_1 of forewing anastomosed with Sc and R_2; 6) forewing apex and hindwing tornus sharply angled; 7) prominent sexual brand approximately at center of hindwing uppersides.

Larvae mainly feed on plants in Bambusoideae of Poaceae.

About 12 species, distributed in Oriental region.

1 species now occurs in Taiwan, as a recent addition to the fauna from mainland China or Indochina near the end of the last millennium.

方環蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足跗節癒合、密被毛，雌蝶則分節、不被毛；3) 觸角錘部細長；4) 前翅中室封閉、後翅開放；5) 前翅 R_1 脈與 Sc 脈及 R_2 脈癒合；6) 前翅翅頂及後翅臀區呈銳角；7) 後翅中央具性標。

幼蟲主要取食禾本科竹亞科植物。

本屬約 12 種，分布於東洋區。

臺灣有 1 種，於上世紀末從中國大陸或中南半島入居。

Discophora sondaica Boisduval, 1836 (方環蝶／鳳眼方環蝶)

Discophora sondaica Boisduval, 1836: Histoire naturelle des insectes; species général des lépidoptères 1: pl. 12, f. 3, explication 4. (Type locality: “Java”)

Ssp. *tulliana* Stichel, 1905

PLATE 47, Figs. 242–243; PLATE 96, Fig. 495; PLATE 133, Fig. 643

Papilio tullia Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 127, pl. 81, f. A, B. (Type locality: “China”) (preoccupied by *Papilio tullia* Müller, 1764)

Discophora sondaica tulliana Stichel, 1905: Genera insectorum 31: 10. (Type locality: “S. China”)

Specimens examined:

JILONG CITY: 1♂, Zhongzhen, Haimentianxian, 17. VI. 1998 (C. C. Lu); 2♂, same locality, 1. VII. 2000 (M. H. Lin & Y. T. Lo); 1♂, NTOU campus, 15. XI. 2000 (Y. T. Lo & M. H. Lin); 1♂, same locality, 17. XI. 2000 (Y. T. Lo & M. H. Lin); 11♂, 4♀, same locality, 25/29. XI. 2000 (Y. T. Lo & M. H. Lin); 1♂, 1♀, Xinyi, Yuemeishan, 7. V. 2001, reared from *Bambusa* sp., emgd. 9/15. VI. 2001, HSU 01E22 (M. H. Lin); 1♀, Qidu, 11. VII. 2001 (M. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Pingxi, 15. XII. 1999 (S. Y. Cheng). **TAIPEI CITY:** 3♀, Wenshan, NTNU, Gongguan campus, 5. VI. 2003 (Y. F. Hsu); 1♀, same locality, 30. VI. 2003 (Y. F. Hsu); 2♀, same locality, 30. V. 2007 (Y. F. Hsu); 1♀, Wenshan, Xinajiyan, 14. VII. 2003 (Y. F. Hsu); 1♂, Wenshan, Jingmei, 1. IV. 2009 (Y. F. Hsu); 2♂, 4♀, Shilin, Zhishanyan, 12. I. 2007, reared from *Bambusa* sp., emgd. 16. I. /23. III. 2007, HSU 07A19 (Y. F. Hsu). **YILAN Co.:** 1♀, Yuanshan, Shuanglianpi, 450m, 4. VIII. 2006, reared from *B. oldhamii*, emgd. 25. IX. 2006, HSU

06H10 (Y. F. Hsu, H. C. Huang, Y. C. Hsu & C. K. Wang). **MIAOLI Co.:** 1♀, Toufen, Mingde Dam, 11. X. 2021 (Y. F. Hsu & Y. M. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Taroko, 60m, 20. V. 2007 (L. H. Wang); 1♂, Yuli, Yuancheng, 9. II. 2016 (J. Y. Liang). **JINMEN Co.:** 1♀, Jinning, Zhongshan Forest, 28. XI. /1. X. 2000, reared from *Bambusa* sp., emgd. 18. X. 2000 (C. C. Lu & Y. T. Lo); 1♂, same locality, 10. X. 2000 (C. C. Lu & C. Y. Lo); 4♂, same locality, 14/15. X. 2000 (C. C. Lu & Y. T. Lo); 1♂, same locality, 29. X. 2000 (Y. T. Lo); 7♂, 6♀, same locality, 6/10. XI. 2000 (C. C. Lu & Y. T. Lo); 41♂, 36♀, same locality, 5/27. XII. 2000 (C. C. Lu, Y. T. Lo & M. H. Lin); 1♀, same locality, 6. I. 2001 (C. C. Lu, Y. T. Lo & M. H. Lin).

Description. Adult – Forewing length 33–44 mm. Sexual dimorphism weakly present. Male (PLATE 47, Fig. 242): Head brown. Antennae dark brown, naked ventrally and at apical tip. Proboscis brown. Labial palpus porrect, brown dorsally, creamy yellow ventrally. Thorax brown dorsally, creamy yellow ventrally. Legs creamy yellow; protarsi fused, stab-shaped, hairy. Abdomen brown dorsally, creamy yellow ventrally. Forewing nearly triangular, costa convex, termen nearly straight, dorsum straight. Hindwing flabellate, with termen slightly produced at distal tip of vein M_3. Wing uppersides ground color brown. Three rows of small spots present on forewing; proximal one white, as small dots; discal one purplish white, as arrowhead-like markings; postdiscal one purplish white, as small dots. Wing undersides ground color pale brown to yellow ochre, with fine dark striae. A faint, dark band present on both wings. Proximal area of wings often darkened. Small, obscure eye-like spot in cell Rs and CuA_1 of hindwing. Sexual brands as a dark brown patch at center of hindwing uppersides. Female (PLATE 47, Fig. 243): Body similar to that of male; wings with termen of hindwing further produced at distal tip of vein M_3. White markings on forewing uppersides more prominent. Three rows of orange spots present on hindwing uppersides; no sexual brands; protarsi segmented, not hairy.

Male genitalia (PLATE 96, Fig. 495) – Tegumen broad, produced caudad, with elongate medial, projection (uncus anticus) tapering with distal end truncate; uncus beneath tegumen, forming digitate, distal projection with blunt distal end. Saccus short, conical, with distal end blunt. Gnathos broad, with medial portion beak-like. Vinculum narrow, curved. Valva lobe-shaped basally, bearing up-raising arm with distal end as spiny club

at caudal end. Juxta as broad sclerite with dorsal invagination. Phallus elongate, thick, straight; aedeagus approximately 1.8X of phallobase, with distal end beveling, opening ventral.

Female genitalia (PLATE 133, Fig. 643) – Corpus bursae bulbous. Signa as a pair of slender, elongate sclerotized bands with small spines arranged in transverse rows. Ductus bursae slightly longer than corpus bursae. Sterigma with antevaginalis forming sclerotized band with shallow medial notch, postvaginalis forming a weakly sclerotized fold. Posterior apophyses longer than anal papillae, attenuate anteriorly, needle-like. Anal papillae short, as sclerotized semi-rings, densely setose.

Global distribution. Himalayas, Northeast and Southwest India, Indochina, Sundaland, Mindanao, West to East China (Aoki *et al*., 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also Jinmen Islands (Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: various species of bamboos, including *Bambusa ventricosa*, *B*. *multiplex*, *B*. *stenostachya*, *B*. *vulgaris*, etc. (Hsu, 2006; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2006; Lu & Chen, 2014).

Remarks. This species is a recent addition to the butterfly fauna of Taiwan. The first observation of the butterfly was made at the harbor of Keelung (Jilong) in June of 1998 (Huang, 1998), following by rapid population expansion throughout Taiwan (Hsu, 2013). This butterfly is assumed to invade Taiwan by means of boats, and the source of locality may be southern China (Hsu *et al*., 2007).

形態特徵：成蝶前翅長 33–44 mm。略具雌雄二型性。雄蝶 (圖 242)：頭褐色。觸角黑褐色、腹面及頂端裸露。口器褐色。下唇鬚前伸，背面褐色、腹面乳黃色。胸

部背面褐色，腹面乳黃色。足乳黃色；前足跗節癒合、刺狀、被毛。腹部背面褐色、腹面乳黃色。前翅近三角形，前緣凸、外緣頗直、後緣直線狀。後翅扇形，外緣 M_3 脈末端略突出。翅背面底色褐色，前翅具三列小斑點，內側者為白色小點、居中者為泛紫色之白色箭形紋、外側者為泛紫色之白色小點。翅腹面底色淡褐色或赭黃色、內側顏色通常較深，具黑色細條紋及一模糊深色帶紋，後翅 Rs 及 CuA_1 室有模糊眼狀斑點。後翅背面中央具黑褐色斑塊狀性標。雌蝶 (圖 243)：軀體特徵與雄蝶相似，但後翅 M_3 脈末端更突出，前翅背面白色斑紋較鮮明，後翅背面具三列橙色斑點、無性標，前足跗節分節、無毛。

雄交尾器 (圖 495)：背兜寬，向尾端延伸為長突起，漸細，末端截狀。鉤突下彎、指狀，末端鈍。顎形突骨化、帶狀，中央有盤狀骨。囊突短、圓錐狀，末端鈍。基腹弧狹窄、彎曲。抱器基部瓣狀，末端上舉、臂狀，端部具多數小棘刺。陽基軛片為背側具內陷之寬骨片。陽莖粗長、挺直。陽莖器長度約為陽莖基 1.8 倍，末端斜切，開口於腹側。

雌交尾器 (圖 643)：交尾囊球狀。花壁為一對由橫向排列小刺組成之細長骨帶。交尾囊管略長於交尾囊。交尾囊孔板之前陰片形成中央有淺凹之骨帶，後陰片形成骨化褶。後內骨突長於肛突，前端漸細，針狀。肛突短，呈骨化之半圓形，密生剛毛。

世界分布：喜瑪拉雅地區、印度東北部及西南部、中南半島、巽他地區、民答那峨、華西至華東。

臺灣分布：現分布於本島全島低至中海拔地區以及金門。

寄主植物：多種禾本科之竹子，包括佛竹、蓬萊竹、刺竹、泰山竹等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種是晚近才加入臺灣蝴蝶名錄之蝶種。首筆觀察記錄係於 1998 年 6 月之基隆港，隨後迅速擴散至全臺灣。本種可能藉由船隻入侵臺灣，來源應為華南地區。

Genus *YPTHIMA* Hübner, 1818

Type species: *Ypthima huebneri* Kirby, 1871

Diagnostic characters may include the following: 1) compound eyes nearly naked; 2) labial palpus with 2nd segment densely hairy, 3rd segment slender, smooth; 3) proleg of male reduced, with tarsus usually vestigial; 4) base of forewing Sc swollen; 5) discoidal cell closed on both wings; 6) wing undersides with numerous dark, fine striae.

Larvae feed on plants in Poaceae and Cyperaceae.

More than 100 species are known, distributed in Oriental, eastern Palearctic. Afrotropical and Australian regions.

13 species are known from Taiwan.

波眼蝶屬

形態特徵如下：1) 複眼近乎裸露；2) 下唇鬚第二節密被毛，第三節細小、平滑；3) 雄蝶前足退化，跗節常消失；4) 前翅 Sc 脈基部膨大；5) 前、後翅中室封閉；6) 翅腹面密布深色細紋。

幼蟲取食禾本科及莎草科植物。

本屬超過 100 種，分布於東洋區、古北區東部、非洲區及澳洲區。

臺灣已知 13 種。

Ypthima baldus (Fabricius, 1775) (小波眼蝶／小波紋蛇目蝶／瞿眼蝶)

Papilio baldus Fabricius, 1775: Systema Entomologiae: 829, no. 202-3. (Type locality: “India”)
Ypthima baldus scota Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 289. (Type locality: “Hongkong”)

Ssp. *zodina* Fruhstorfer, 1911

PLATE 48, Figs. 244–247; PLATE 96, Fig. 496; PLATE 133, Fig. 644

Ypthima baldus f. *zodina* Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 289. (Type locality: "Formosa, Ishigaki (Japan)")

Specimens examined:

JILONG CITY: 1♀, Longgang Trail, 19. IX. 2006 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Beitou, Zhonghu, 28. IX. 2021 (C. W. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Longtan, 7. IV. 2002 (Y. F. Hsu). **NANTOU Co.:** 2♂, Renai, Huisun, 25. III. 1996 (Y. F. Hsu); 4♂, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Wuchagou, 17. XII. 2002 (Y. F. Hsu); 1♂, 1♀, Xinhua, Dakeng, 80m, 25. II. 2006 (Y. F. Hsu); 1♀, Danei, Erxi, 13. II. 2012 (Y. F. Hsu); 1♂, Guantian, Wushantou, 100m, 22. I. 2007 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Baoshan/ Erjituan, 1250m, 25. XI. 2007 (Y. F. Hsu); 1♂, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Chunri, Dahan Forest Trail, 23km, 1270m, 6. V. 2002 (C. L. Li); 1♀, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu); 1♀, Chunri, Dahan Forest Trail, 27. IV. 2011 (J. H. Lin). **TAIDONG Co.:** 1♀, Lanyu, 27. VI. 1986 (Y. F. Hsu); 1♀, same locality, 24. VIII. 1999 (C. Y. Hung); 1♀, Lanyu, Qiwei, 27. III. 2010 (J. H. Lin); 1♂, 1♀, Lanyu, Sidaogou, 16/18. III. 2012 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 17–22 mm. Sexual dimorphism weakly present. Male (PLATE 48, Figs. 244–245): Head dark brown mixed with yellow ochre. Antennae dark brown banded with creamy white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with yellow ochre. Thorax brown dorsally, grayish white ventrally. Legs brown with creamy white bands, foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present; usually a large one near apex on forewing, and usually two small ones in cell M_3 and CuA_1 of hindwing respectively. Wing undersides ground color brown with fine, white or grayish white striae. Prominent, double, dark discal bands present on both wings. Eyespot on forewing normally single, six in three groups on hindwing. Fringe brown. Sexual brand as a dark patch of specialized scalings on forewing uppersides. Female (PLATE 48, Figs. 246–247): Body similar to that of male; foreleg normal. Wings with ground color paler, with termen of forewing more rounded.

No sexual brand on forewing.

Male genitalia (PLATE 96, Fig. 496) – Tegumen narrow, convex dorsally; uncus abruptly narrowed caudad, with distal tip blunt. Saccus short, bullet-like. Vinculum narrow, slightly curved. Valva broad at base, narrowed distally, with caudal end bifid, serrate. Juxta as a pair of slender sclerites. Phallus re-curved, S-shaped, with distal end up-raising.; aedeagus longer than phallobase, with invagination caudally.

Female genitalia (PLATE 133, Fig. 644) – Corpus bursae short, pill-shaped. Ductus bursae short, thick. Sterigma forming moderately sclerotized dome. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Variation. Eyespots and markings on hindwing undersides reduced or vestigial in dry/cold season.

Global distribution. Himalayas, India, Indochina, Sundaland, West to East China, Taiwan (Aoki *et al*., 1985; Lang, 2012; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also Lanyu (Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: various species of grasses, including *Paspalum conjugatum*, *Digitaria radicosa*, etc. (Hsu, 2006; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2006; Lu & Chen, 2014).

形態特徵：成蝶前翅長 17–22 mm。略具雌雄二型性。雄蝶 (圖 244–245)：頭黑褐色雜白色。觸角黑褐色，有乳白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜赭黃色。胸部褐色。足褐色，上有乳白色條紋，前足退化。腹部背面褐色、腹面乳白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀、翅頂鈍，R

脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，外側有眼狀紋，於前翅者一只、近翅頂而較大型，於後翅通常兩只而較小，位於 M_3 室及 CuA_1 室。翅腹面底色褐色，上有白或灰白色細紋，翅面中央有兩道暗色帶紋，近翅頂處有一鮮明眼狀紋；後翅則有六只眼狀紋，分為三群。緣毛褐色。前翅背面有特化鱗組成深色片狀性標。雌蝶 (圖 246–247)：軀體特徵與雄蝶相似，但前足正常。翅幅較寬，前翅外緣較圓、無性標。

雄交尾器 (圖 496)：背兜窄，背側隆起。鉤突尾端驟細，末端鈍。囊突短，子彈狀。基腹弧窄，略彎曲。抱器基部寬，向後端漸窄，尾端二分，有鋸齒。陽基軛片為一對細長骨片。陽莖反曲、S 形，末端上舉。陽莖器長度長於陽莖基，末端有凹陷。

雌交尾器 (圖 644)：交尾囊短，彈丸狀。交尾囊管粗短。交尾囊孔板形成略骨化之穹頂。肛突基部骨化、平滑，其尾端葉狀，具剛毛。

變異：乾季／低溫型個體後翅腹面眼狀紋及其他斑紋常減退、消失。

世界分布：喜瑪拉雅地區、印度、中南半島、巽他地區、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區及蘭嶼。

寄主植物：多種禾本科之草本植物，包括兩耳草、小馬唐等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Ypthima argus Butler, 1868 (北方小波眼蝶/大藏波眼蝶/大藏波紋蛇目蝶/阿矍眼蝶)

Ypthima argus Butler, 1868: The Journal of the Linnean Society of London 9 (34): 56; (Type locality: “Hakodadi [Hakodate, Hokkaido]”, North Japan”)

Ssp. *okurai* Okano, 1962

PLATE 48, Figs. 248–251; PLATE 96, Fig. 497; PLATE 134, Fig. 645

Ypthima argus okurai Okano, 1962: Tyô to Ga 12 (3): 52, f. 1-7. (Type locality: “Sankakuhô [三角峰], ca 2370 m, Central Formosa”)

Specimens examined:

XINZHU Co.: 1♂, Jianshi, Dalu Forest Trail, 2. X. 2006 (L. H. Wang); 1♂, same

locality, 25. III. 2008 (C. H. Lin, jr). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Daxueshan, 30. VII. 2008 (C. H. Lin, jr). **NANTOU Co.:** 1♀, Renai, Songgang, 27. VII. 1986 (Y. F. Hsu); 1♂, Renai, Beidongyanshan, 1500m, 1. IX. 2005 (L. H. Wang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 3♀, Taoyuan, Tengzhi/ Shishan, 7. VI. 1989 (Y. F. Hsu); 1♂, 1♀, Taoyuan, Shishan, 18. VI. 1989 (Y. F. Hsu); 1♀, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su); 2♂, same locality, 30. IX. 2007 (Y. F. Hsu); 1♂, 6♀, same locality, 30. IX. 2007, reared from *Oplismenus* sp., emgd. 21. XI. /17. XII. 2007, HSU 07J63 (Y. F. Hsu); 1♂, same locality, 29. IX. 2020, reared from *Oplismenus* sp., emgd. 12. XI. 2020, HSU 20J26 (Y. F. Hsu). **PINGDONG Co.:** 2♂, 4♂, Wutai, Wutoushan, 1200m, 4. IV. 2002 (Y. F. Hsu, C. C. Lu & C. L. Huang); 1♂, same locality, 1000/1200m, 7/8. V. 2006 (Y. F. Hsu); 1♂, same locality, 1100/1200m, 5. V. 2007 (Y. F. Hsu); 5♂, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu); 1♂, Wutai, Old Dawu, 500/900m, 21. III. 2010 (J. H. Lin & N. Y. Tsai).

Description. Adult – Forewing length 17–21 mm. Sexual dimorphism weakly present. Male (PLATE 48, Figs. 248–249): Head dark brown mixed with creamy white. Antennae dark brown banded with creamy white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with creamy white. Thorax brown dorsally, grayish white ventrally. Legs brown with creamy white bands, foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present; usually a large one near apex on forewing, and two prominent, small ones in cell M_3 and CuA_1 of hindwing respectively, sometimes with additional ones in cell M_1 and CuA_2. Wing undersides ground color brown with fine, white striae, extensive along termen of hindwing. Eyespot on forewing normally single, six in three groups on hindwing. Fringe brown. Female (PLATE 48, Figs. 250–251): Body similar to that of male; foreleg normal. Wings with ground color paler, with termen of forewing more rounded.

Male genitalia (PLATE 96, Fig. 497) – Tegumen narrow, convex dorsally; uncus abruptly narrowed caudad, with distal tip blunt. Saccus short, bullet-like. Vinculum narrow, slightly curved. Valva broad at base, narrowed distally, with caudal end bifid, serrate,

with dorsal lobe larger. Juxta as a pair of slender sclerites. Phallus straight; aedeagus longer than phallobase, with invagination caudally.

Female genitalia (PLATE 134, Fig. 645) – Corpus bursae bulbous. Ductus bursae longer than corpus bursae, with a medial sclerite. Sterigma with lamella antevaginalis forming weakly sclerotized funnel, lamella antevaginalis a sclerotized disc. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Variation. Eyespots and markings on hindwing undersides reduced or vestigial in dry/cold season.

Global distribution. Japan, Korea, Far East Russia, Northeast to South and Southwest China, Taiwan (Uémura, 2022).

Distribution in Taiwan. Moderate to higher elevations in main island of Taiwan, mostly in montane zone over 1000 m in elevation (Hsu, 2013).

Larval Host plant(s). Unknown in nature; various grasses in the family Poaceae are accepted in cavity.

Biology. Multivoltine, with adults on the wing most of the season except winter (Hsu, 2013).

Remarks. The taxon *okurai* Okano was considered as a seasonal form of *Ypthima baldus* by Shirôzu (1960), whereas Okano (1962) described it as a subspecies of *Y. argus* Butler, 1868, a species previously considered distributed in Japan, Korea, Northeast China and Far East Russia (e.g., Fukuda *et al*., 1972). Shirôzu & Ueda (1992) recognized it as a species endemic to Taiwan, and the treatment was followed by some subsequent authors (e.g., Lee & Wang, 1999; Hsu, 2013; Hsu *et al*., 2021). Uémura (2022) published a revision for the *philomela*-group of the genus *Ypthima*, in which names previously assigned to *Y. zodia* Butler, 1871, *Y. melli* Forster, 1948 are regarded as infraspecific taxa within *Y. argus*, and *Y. okurai* was reinstated as a subspecies of *Y. argus*.

形態特徵：成蝶前翅長 17–21 mm。略具雌雄二型性。雄蝶 (圖 248–249)：頭黑褐色雜白色。觸角黑褐色，有乳白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜乳白色。胸部褐色。足褐色，上有乳白色條紋，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀、翅頂鈍，R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，外側有眼狀紋，於前翅者一只、近翅頂而較大型，於後者兩只而較小，位於 M_3 室及 CuA_1 室，有時 M_1 室及 CuA_2 室有額外眼紋。翅腹面底色褐色，上有白色細紋，沿後翅外緣格外鮮明。前翅近翅頂處有一鮮明眼狀紋；後翅則有六只眼狀紋，分為三群。緣毛褐色。前翅背面有特化鱗組成深色片狀性標。雌蝶 (圖 250–251)：軀體特徵與雄蝶相似，但前足正常。翅底色較淺，前翅外緣較圓。

雄交尾器 (圖 497) : 背兜窄，背側隆起。鉤突向尾端漸細，末端鈍。囊突短，子彈狀。基腹弧窄，略彎曲。抱器基部寬，向後端漸窄，近末端之背側有葉狀突起，上有鋸細齒。陽基軛片為一對細長骨片。陽莖挺直。陽莖器長度長於陽莖基，末端有凹陷。

雌交尾器 (圖 645)：交尾囊球狀。交尾囊管長於交尾囊，中央有小骨片。交尾囊孔板之前陰片形成略骨化之漏斗狀構造，後陰片為一盤狀骨。肛突基部骨化、平滑，其尾端葉狀，具剛毛。

變異：乾季／低溫型個體後翅腹面眼狀紋及其他斑紋常減退、消失。

世界分布：日本、朝鮮半島、俄羅斯遠東地區、華東北至華南及華西南、臺灣。

臺灣分布：本島中、高海拔以上地區，大多在海拔 1000m 以上之山區。

寄主植物：自然狀態之寄主未知，但飼養時可利用多種禾本科之草本植物。

生物學：本種為一年多代物種，成蝶於冬季以外之季節活動。

註記：本分類單元曾被 Shirôzu (1960) 認為是小波眼蝶 *Ypthima baldus* 之季節型，而 Okano (1962) 則將其記述為分布於日本、朝鮮半島、華東北及俄羅斯遠東地區之北方小波眼蝶 *Y. argus* Butler, 1868 的亞種。Shirôzu & Ueda (1992) 將 *okurai* 列為臺灣特有種，此處理為後來研究者沿用。Uémura (2022) 針對波眼蝶屬 *philomela* 種群進行分類修訂，文中將 *Y. zodia* Butler, 1871 及 *Y. melli* Forster, 1948 視為 *Y.*

argus 的種內分類單元，並將 *Y. okurai* 也恢復為 *Y. argus* 的亞種。

Ypthima tappana Matsumura, 1909 (達邦波眼蝶／達邦波紋蛇目蝶／大波瞿眼蝶)

PLATE 48, Figs. 252–253; PLATE 96, Fig. 498; PLATE 134, Fig. 646

Ypthima tappana Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: "Formosa (Tappan [Dabang], 4000 Fuss hoch)")

Specimens examined:

JILONG CITY: 1♂, Longgang Trail, 19. IX. 2006 (Y. F. Hsu); 1♀, same locality, 13. X. 2009 (Y. F. Hsu); 1♂, same locality, 12. X. 2010 (J. H. Lin); 1♂, same locality, 5. XI. 2009 (C. K. Wang); 2♀, same locality, 11. IV. 2010 (C. L. Huang). **XINBEI CITY:** 1♀, Wulai, Fushan, 2. IX. 2011 (L. H. Wang); 1♀, Wulai, Fushan, Kalamoji Trail, 550m, 25. V. 2012 (Y. F. Hsu). **PINGDONG Co.:** 2♂, 1♀, Shizi, Shuangliu, 200/400m, 30. IV. 2006 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Dawu/ Xinhua, 3. III. 1999 (C. C. Lu).

Description. Adult – Forewing length 20–25 mm. Sexual dimorphism weakly present. Male (PLATE 48, Fig. 252): Head dark brown. Antennae dark brown banded with grayish white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with white. Thorax brown dorsally, grayish white ventrally. Legs brown, whitish basad. foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa, termen slightly convex, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present, single on forewing, near apex; usually two on hindwing, in cell M_3 and CuA_1, frequently with additional minute one in cell CuA_2. Wing undersides ground color brown with fine, white striae. Three prominent dark bands present on forewing, with two proximal, one submarginal; two dark brown bands on hindwing, proximal. Eyespot on forewing single, prominent; four on hindwing, with centers in cell Rs, M_3, CuA_1 and CuA_2, arranged in two groups, Rs spots in front, remaining ones posteriorly, with CuA_2 spot deviated outwards. Fringe brown. Sexual brand as a patch of specialized scalings on forewing uppersides, slightly darker than ground color. Female (PLATE 48, Fig. 253): Body similar to that of male; foreleg normal. Wings broader, with ground color paler, dark bands visible from uppersides. No sexual brand on forewing.

Male genitalia (PLATE 96, Fig. 498) – Tegumen triangular; uncus abruptly narrowed caudad, with distal tip blunt. Saccus short, with blunt distal end. Vinculum narrow, slightly curved. Valva elongate, thick proximally, narrowed distally, with caudal end rounded, with a prominent ridge on inner surface. Juxta as a pair of slender sclerites. Phallus moderately long, with distal end up-raising; aedeagus longer than phallobase, with dorsal and ventral depressions distally.

Female genitalia (PLATE 134, Fig. 646) – Corpus bursae bulbous. Ductus bursae short, enlarged posteriorly. Sterigma with lamella antevaginalis forming weakly sclerotized dome, lamella postvaginalis forming a sclerite with setose oval fins. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Northwest India, Myanmar, West to East China, Taiwan (Uémura, 2019).

Distribution in Taiwan. Low elevations in main island of Taiwan (Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: various species of grasses, including *Brachypodium sylvaticum*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 20–25 mm。略具雌雄二型性。雄蝶 (圖 252)：頭黑褐色。觸角黑褐色，有白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜白色。胸部背面褐色、腹面灰白色。足褐色，基部泛白，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀、翅頂鈍；R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，外側有具眼狀紋，於前翅者一只、近翅頂，於後者通常兩只，位於 M_3 室及 CuA_1 室，但 CuA_2 室內常有一額外小眼紋。翅腹面底色褐色，上有白色細紋。前翅有三道深色帶紋，於內側二道，於亞

外緣一道，後翅內側有兩道黑褐色帶紋。眼狀紋於前翅有一只、鮮明，於後翅有四只，分為前後兩群，前者一只，位於 Rs 室，後者中心位於 M_3 室、CuA_1 室及 CuA_2 室，於 CuA_2 室之眼紋外偏。緣毛褐色。前翅背面有特化鱗組成片狀性標，色彩略較底色深。雌蝶 (圖 253)：軀體特徵與雄蝶相似，但前足正常。翅幅較寬，底色較淺，翅腹面深色帶紋可從背面透視，前翅無性標。

雄交尾器 (圖 498)：背兜三角形。鉤突向後漸窄，末端鈍。囊突短，末端鈍。基腹弧窄，略彎曲。抱器修長、瓣狀，基部寬，後端窄，末端圓形，內側表面有稜脊。陽基軛片為一對細長骨片。陽莖略長，末端上舉。陽莖器長度超過陽莖基長，末端背側和腹側具凹陷。

雌交尾器 (圖 646)：交尾囊球狀。交尾囊管短，後端膨大。交尾囊孔板之前陰片形成輕度骨化之穹頂，後陰片形成有橢圓形翼狀突起之骨片。肛突基部骨化、平滑；尾端葉狀，具剛毛。

世界分布：印度西北部、緬甸、華西至華東、臺灣。

臺灣分布：本島低海拔地區。

寄主植物：多種禾本科之草本植物，包括基隆短柄草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Ypthima atra Cantlie & Norman, 1959 (大波眼蝶 / 寶島波眼蝶 / 大波紋蛇目蝶 / 臺灣瞿眼蝶)

Ypthima atra Cantlie & Norman, 1959: The Journal of the Bombay Natural History Society: 69, f. 9. (Type locality: “Kangpokpi (Manipur, 4000 feet), [India]”)

Ssp. *taiwana* Lamas, 2010

PLATE 49, Figs. 254–255; PLATE 97, Fig. 499; PLATE 134, Fig. 647

Ypthima taiwana Lamas, 2010: SHILAP Revista de Lepidopterología 38 (150): 201. (replacement name)

Ypthima methora formosana Fruhstorfer, 1908: Entomologische Zeitschrift 22 (29): 119. (Type locality: “Formosa”) (Preoccupied by *Ypthima formosana* Matsumura, 1907)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, 4. X. 1987 (Y. F. Hsu); 1♂, Wulai, Fushan, 15. IV. 2005 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Xinyi, Xiangshan, 16. XI. 2021 (C. W. Huang & S. Y. Chen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Daman/ Xuanyuan, 30. VIII. 1987 (Y. F. Hsu); 1♂, Fuxing, Gaoyi, 5. IX. 1987 (Y. F. Hsu); 1♂, Fuxing, Dongyanshan, 20. V. 1996 (Y. F. Hsu). **NANTOU Co.:** 1♂, Puli, 14. V. 1984 (Y. F. Hsu); 2♂, Renai, Nanshanxi, 23. III. 1996 (Y. F. Hsu); 2♂, Renai, Tunyuan, 1500m, 11. V. 2011 (Y. F. Hsu); 3♂, 2♀, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang); 1♂, Renai, Jiuxianxi, 700m, 14/15. IV. 2012 (Y. F. Hsu); 1♂, Renai, Nanshanxi, 800m, 30. III. 2014 (Y. F. Hsu). **HUALIAN Co.:** 2♂, Xiulin, Luoshao, 1. V. 1987 (T. H. Li); 1♂, same locality, 1. V. 1987 (M. Y. Lin); 1♂, Xiulin, Shikongzai, 100/300m, 11. X. 2008 (M. H. Sun). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Zhentoushan, 29. III. 2003 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Baolai, 28. III. 2003 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Old Dawu/ Bayouxi, 500/900m, 14. III. 2009 (Y. F. Hsu & H. C. Huang); 1♀, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, Chunri, Dahanshan, 900m, 2. VII. 2010 (J. H. Lin); 1♂, Sandimen, 200m, 26. III. 2011 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Haiduan, Xinwu, 412m, 18. II. 2000 (Y. F. Hsu); 1♂, Jinfeng, Heihe, 8. XII. 2000 (C. C. Lu); 1♂, Jinfeng/ Daren, Duyayuanshan/ Paotai, 850m, 3/6. V. 2002 (C. L. Huang); 1♂, Donghe, Donghe Farm, 31. VIII. 2006 (Y. F. Hsu); 1♂, 1♀, Haiduan, Tianlong Trail, 700m, 16. IV. 2011 (L. H. Wang).

Description. Adult – Forewing length 23–27 mm. Sexual dimorphism weakly present. Male (PLATE 49, Fig. 254): Head dark brown mixed with white. Antennae dark brown banded with creamy white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with creamy white. Thorax brown dorsally, brown ventrally. Legs brown. foreleg reduced. Abdomen brown dorsally, creamy white ventrally. Forewing nearly triangular, costa, termen slightly convex, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate. Wing uppersides ground color brown. Postdiscal eye-like spots present, single on forewing, near apex; usually two on hindwing, in cell M_3 and CuA_1. Wing undersides ground color brown with fine, white striae, more prominent on hindwing. Two prominent dark bands present on forewing; one proximal, one submarginal. Eyespot on forewing

single, prominent; five on hindwing, with center in cell Rs, M_1, M_3, CuA_1 and CuA_2, arranged in two groups, spots in cell Rs and M_1 in front, remaining ones posteriorly, with CuA_2 spot slightly deviated outwards. Fringe brown. Female (PLATE 49, Fig. 255): Body similar to that of male; foreleg normal. Wings broader, with ground color paler; distal pale patches present on uppersides of both wings.

Male genitalia (PLATE 97, Fig. 499) – Tegumen moderately broad, convex dorsally; uncus tapering caudad, with distal tip blunt. Saccus short, bullet-shaped. Vinculum narrow, slightly curved. Valva elongate, with a dorsal angled extension and distal spoon, both serrate. Juxta as a pair of slender sclerites. Phallus elongate, strongly up-raising; aedeagus much longer than phallobase, with caudal end uneven.

Female genitalia (PLATE 134, Fig. 647) – Corpus bursae spherical. Ductus bursae short, thick. Sterigma with lamella antevaginalis forming broad bell-shaped sclerotized wall; lamella postvaginalis forming a pair of lung-shaped sclerites connected by a narrow bridge. Posterior apophyses very short, spine-like. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Northwest India, northern Indochina, Southwest to South China, Taiwan (Uémura, 2020).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: various species of grasses, including *Miscanthus sinensis*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014).

Remarks. The population of this species has long regarded as a species endemic to

Taiwan with the name *Ypthima formosana* Fruhstorfer, 1908, which is unfortunately a junior primary homonym of *Ypthima formosana* Matsumura, 1907 (Lamas, 2010). Lamas (2010) subsequently gave a replacement name *taiwana* Lamas, 2010. Eliot (1967) pointed out that *Y. formosana* Fruhstorfer, 1908 is probably conspecific with *atra* Cantlie & Norman, 1959 distributed from northwest India, Myanmar, Yunnan and Hainan. Uémura (2020) subsequently treated *taiwana* Lamas, 2010 as a subspecies of *Y. atra*.

形態特徵：成蝶前翅長 23–27 mm。略具雌雄二型性。雄蝶 (圖 254)：頭黑褐色雜白色。觸角黑褐色，有乳白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜乳白色。胸部褐色。足褐色，前足退化。腹部背面褐色、腹面乳白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀、翅頂鈍，R 脈基部膨大為紡錘形囊狀構造。後翅扇形。翅背面底色褐色，外側有眼狀紋，於前翅者一只、近翅頂，於後者通常兩只，位於 M_3 室及 CuA_1 室。翅腹面底色褐色，上有白色細紋，於後翅較明顯；前翅有二暗色帶紋，分別位於內側及亞外緣，近翅頂處有一鮮明眼狀紋；後翅有五只眼狀紋，中心分別位於 Rs 室、M_1 室、M_3 室、CuA_1 室及 CuA_2 室，分為兩群，前兩者一群、後三者一群，其中 CuA_2 室者略向外偏。緣毛褐色。雌蝶 (圖 255)：軀體特徵與雄蝶相似，但前足正常。翅幅較寬，底色較淺，翅背面外側有淡色區域。

雄交尾器 (圖 499)：背兜背側隆起。鉤突向尾端漸細，末端鈍。囊突短、子彈狀。基腹弧狹窄，略彎曲。抱器修長、瓣狀，背側有角狀突起，端部則有杓狀突起，其背緣均具小鋸齒。陽基軛片為一對細長骨片。陽莖修長，明顯上舉。陽莖器長度遠長於陽莖基，末端不平整。

雌交尾器 (圖 647)：交尾囊球形。交尾囊管粗短。交尾囊孔板之前陰片形成寬闊啞鈴狀之骨壁，後陰片形成一對以窄橋相連之肺狀骨片。後內骨突非常短、刺狀。肛突基部骨化、平滑，其尾端葉狀，具剛毛。

世界分布：印度西北部、中南半島北部、華西南至華南、臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：多種禾本科之草本植物，包括芒等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種長期被視為臺灣特有種，並使用 *Ypthima formosana* Fruhstorfer, 1908 之學名，不幸的是 Lamas (2010) 指出該學名實為 *Ypthima formosana* Matsumura, 1907 之次原異物同名並提出替代名 *taiwana* Lamas, 2010。Eliot (1967) 指出 *Y. formosana* Fruhstorfer, 1908 可能與分布於印度西北部、緬甸、雲南及海南島之 *Y. atra* Cantlie & Norman, 1959 同種。Uémura (2020) 隨後將 *taiwana* Lamas, 2010 處理為 *Y. atra* 之亞種。

Ypthima yamanakai Sonan, 1938 (白漪波眼蝶 / 山中波紋蛇目蝶 / 山中瞿眼蝶)

PLATE 49, Figs. 256–257; PLATE 97, Fig. 500; PLATE 134, Fig. 648

Ypthima yamanakai Sonan, 1938: Zephyrus 7: 250, pl. 20, f. 8. (Type locality: " 臺中州東勢郡太保久 [Taichu Shu, Tousei Gun, Taihouku](5,500 尺)")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 2♂, Fuxing, Lalashan, 24. VI. 1987 (Y. F. Hsu); 1♂, same locality, 12. VI. 1988 (Y. F. Hsu). **XINZHU Co.:** 1♀, Jianshi, Yulao, 1500m, 25. VI. 2009 (L. H. Wang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, 1♀, Heping, Anmashan, 2000m, 28. VII. 2003 (H. C. Huang & Y. C. Hsu). **NANTOU Co.:** 1♂, Renai, Nenggaoshan, 10. X. 1981 (H. W. Lu). **HUALIAN Co.:** 1♂, Xiulin, Xinbaiyang, 1700m, 19. VI. 2009 (L. H. Wang). **TAIDONG Co.:** 1♂, Haiduan, Liyuan/ Xiangyang, 18/19. VI. 2020 (C. W. Huang).

Description. Adult – Forewing length 25–28 mm. Sexual dimorphism weakly present. Male (PLATE 49, Fig. 256): Head dark brown mixed with white. Antennae dark brown banded with creamy white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with creamy white. Thorax brown dorsally, brown ventrally. Legs brown. foreleg reduced. Abdomen brown dorsally, creamy white ventrally. Forewing nearly triangular; costa slightly convex; termen dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate. Wing uppersides ground color brown. Postdiscal eye-like spots present, single on forewing, near apex; usually two on hindwing, in cell M_3 and CuA_1, but additional small eyespot frequently present in CuA_2. Wing undersides ground color brown with fine, creamy yellow striae, turning white posteriorly on hindwing. Two prominent dark

bands present on forewing; one proximal, one submarginal. Eyespot on forewing single, prominent; five on hindwing, with center in cell Rs, M_1, M_3, CuA_1 and CuA_2, arranged in two groups, spots in cell Rs and M_1 in front, remaining ones posteriorly, with CuA_2 spot slightly deviated outwards. Fringe grayish white. Female (PLATE 49, Fig. 257): Body similar to that of male; foreleg normal. Wings broader, with ground color paler; distal pale patches present on uppersides of both wings.

Male genitalia (PLATE 97, Fig. 500) – Tegumen moderately broad, convex dorsally; uncus tapering caudad, with distal tip blunt. Saccus short, bullet-shaped. Vinculum narrow, slightly curved. Valva elongate, with a dorsal lobed extension and distal spoon, both serrate. Juxta as a pair of slender sclerites. Phallus elongate, strongly up-raising; aedeagus much longer than phallobase, with caudal end uneven.

Female genitalia (PLATE 134, Fig. 648) – Corpus bursae spherical. Ductus bursae short, thick. Sterigma with lamella antevaginalis forming broad bell-shaped sclerotized wall; lamella postvaginalis forming a pair of sac-shaped sclerites connected by a broad bridge. Posterior apophyses very shortm spine-like. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Endemic to Taiwan (Takahashi, 2000; Uémura, 2020).

Distribution in Taiwan. Moderate elevations in montane zone in main island of Taiwan (Takahashi, 2000; Hsu, 2013).

Larval Host plant(s). Poaceae: *Oplismenus hirtellus* (W. J. Lin, personal communication).

Biology. Probably multivoltine, with adults recorded from spring to autumn (Hsu, 2013).

Remarks. The taxon *yamanakai* Sonan, 1938 has been regarded as a race of continental *conjuncta* Leech, 1891 distributed in western and central China (e.g., Eliot, 1967;

Shirôzu, 1960; Hamano, 1987; Hsu, 2013). Murayama (1980) pointed out that the sexual brand and the wing pattern of is considerably different from *conjuncta*, arguing that these two taxa may be not conspecific. Takahashi (2000) subsequently treated *yamanakai* as a distinct species, and followed by Uémura (2020).

形態特徵：成蝶前翅長 25–28 mm。略具雌雄二型性。雄蝶 (圖 256)：頭黑褐色雜白色。觸角黑褐色，有乳白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜乳白色。胸部褐色。足褐色，前足退化。腹部背面褐色、腹面乳白色。前翅近三角形，前緣略凸，外緣及後緣近直線狀、翅頂鈍，R 脈基部膨大為紡錘形囊狀構造。後翅扇形。翅背面底色褐色，外側有眼狀紋，於前翅者一只、近翅頂，於後者通常兩只，位於 M_3 室及 CuA_1 室，但 CuA_2 室常具額外小眼紋。翅腹面底色褐色，上有乳黃色細紋，於後翅端轉白色；前翅有二暗色帶紋，分別位於內側及亞外緣，近翅頂處有一鮮明眼狀紋；後翅有五只眼狀紋，中心分別位於 Rs 室、M_1 室、M_3 室、CuA_1 室及 CuA_2 室，分為兩群，前兩者一群、後三者一群，其中 CuA_2 室者略向外偏。緣毛灰白色。雌蝶 (圖 257)：軀體特徵與雄蝶相似，但前足正常。翅幅較寬，底色較淺，翅背面外側有淡色區域。

雄交尾器 (圖 500)：背兜背側隆起。鉤突向尾端漸細，末端鈍。囊突短、子彈狀。基腹弧狹窄，略彎曲。抱器修長、瓣狀，背側有葉狀突起，端部則有杓狀突起，其背緣均具小鋸齒。陽基軛片為一對細長骨片。陽莖修長，明顯上舉。陽莖器長度遠長於陽莖基，末端不平整。

雌交尾器 (圖 648)：交尾囊球形。交尾囊管粗短。交尾囊孔板之前陰片形成寬闊啞鈴狀之骨壁，後陰片形成一對以寬橋相連之囊狀骨片。後內骨突非常短、針狀。肛突基部骨化、平滑，其尾端葉狀，具剛毛。

世界分布：臺灣特有種。

臺灣分布：本島中海拔山區。

寄主植物：禾本科之求米草。

生物學：本種可能為一年多代物種，從春季至秋季均有成蝶記錄。

註記：本分類單元 *yamanakai* Sonan, 1938 過去被視為是分布於華西及華中之物種 *conjuncta* Leech, 1891 的亞種（如 Eliot, 1967; Shirôzu, 1960; Hamano, 1987; Hsu, 2013）。Murayama (1980) 指出兩者性標及翅紋迥異，應為不同種。隨後 Takahashi (2000) 將 *yamanakai* 處理為獨立種，Uémura (2020) 從其說。

Ypthima angustipennis Takahashi, 2000 (狹翅波眼蝶／狹翅波紋蛇目蝶／狹翅瞿眼蝶)

PLATE 49, Figs. 258–259; PLATE 97, Fig. 501; PLATE 135, Fig. 649

Ypthima angustipennis Takahashi, 2000: Tyô to Ga 51 (1): 4, f. 9-14. (Type locality: "Taiwan, Kaohsiung, Tengzhi")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Daman, 26. V. 2002 (Y. F. Hsu); 1♂, Fuxing, Xuanyuan, 1000m, 31. V. 2011 (J. H. Lin). **YILAN Co.:** 1♀, Nanao, Lankanshan, 4. X. 2016 (L. Huang). **XINZHU Co.:** 1♀, Jianshi, Lidongshan, 30. V. 2004 (Y. F. Hsu, H. C. Huang & K. L. Chen). **MIAOLI Co.:** 1♂, Taian, Henglongshan, ca 1350m, 20. IV. 2003 (Y. F. Hsu). **NANTOU Co.:** 3♂, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang); 1♂, Renai, Beidongyanshan, ca 1600m, 17. IX. 2018. **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♂, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & J. P. Su); 1♂, same locality, 30. IX. 2007 (Y. F. Hsu); 2♂, same locality, 18. XI. 2020 (Y. F. Hsu); 1♂, Taoyuan, Liguan, 9. V. 2021 (Y. F. Hsu & H. C. Huang). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1100/1300m, 9. IV. 2000 (Y. F. Hsu); 1♂, same locality, 1200m, 4. IV. 2002 (Y. F. Hsu, C. C. Lu, C. L. Huang). **TAIDONG Co.:** 2♂, Beinan, Lijia Forest Trail, 1100-1300m, 9. IX. 1999 (Y. F. Hsu).

Description. Adult – Forewing length 23–25 mm. Sexual dimorphism weakly present. Male (PLATE 49, Fig. 258): Head dark brown mixed with white. Antennae dark brown banded with creamy white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with creamy white. Thorax brown dorsally, brown ventrally. Legs brown. foreleg reduced. Abdomen brown dorsally, creamy white ventrally. Forewing nearly triangular; costa slightly convex; termen, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate. Wing uppersides ground color brown. Postdiscal eye-like spots present, single on forewing, near apex; usually two on hindwing, in cell M_3 and CuA_1, but additional small eyespot frequently present in CuA_2. Wing undersides ground color brown with

fine, white striae, more prominent on hindwing. Two prominent dark bands present on forewing; one proximal, one submarginal. Eyespot on forewing single, prominent; five on hindwing, with center in cell Rs, M_1, M_3, CuA_1 and CuA_2, arranged in two groups, spots in cell Rs and M_1 in front, remaining ones posteriorly, arranged in line. Fringe grayish white. Female (PLATE 49, Fig. 259): Body similar to that of male; foreleg normal. Wings broader, with ground color paler; distal pale patches present on uppersides of both wings.

Male genitalia (PLATE 97, Fig. 501) – Tegumen moderately broad, convex dorsally; uncus tapering caudad, with distal tip blunt. Saccus short, bullet-shaped. Vinculum narrow, slightly curved. Valva elongate, with a dorsal angled extension and distal fan, both serrate. Juxta as a pair of slender sclerites. Phallus elongate, strongly up-raising; aedeagus much longer than phallobase, with caudal end uneven.

Female genitalia (PLATE 135, Fig. 649) – Corpus bursae spherical. Ductus bursae short, thick. Sterigma with lamella antevaginalis forming broad bell-shaped sclerotized wall; lamella postvaginalis forming a pair of club-shaped sclerites connected by a broad bridge. Posterior apophyses very short, spine-like. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Endemic to Taiwan (Takahashi, 2000; Hsu, 2013; Uémura, 2020).

Distribution in Taiwan. Moderate elevations in montane zone in main island of Taiwan (Takahashi, 2000; Hsu, 2013).

Larval Host plant(s). Poaceae: various species of grasses, including *Miscanthus sinensis*, *Arundo formosana* etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing most of the year except in winter (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 23–25 mm。略具雌雄二型性。雄蝶 (圖 258)：頭黑褐色雜

白色。觸角黑褐色，有乳白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜乳白色。胸部褐色。足褐色，前足退化。腹部背面褐色、腹面乳白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀、翅頂鈍，R 脈基部膨大為紡錘形囊狀構造。後翅扇形。翅背面底色褐色，外側有眼狀紋，於前翅者一只、近翅頂，於後者通常兩只，位於 M_3 室及 CuA_1 室，但 CuA_2 室常具額外小眼紋。翅腹面底色褐色，上有白色細紋，於後翅較明顯；前翅有二暗色帶紋，分別位於內側及亞外緣，近翅頂處有一鮮明眼狀紋；後翅有五只眼狀紋，中心分別位於 Rs 室、M_1 室、M_3 室、CuA_1 室及 CuA_2 室，分為兩群，前兩者一群、後三者一群，排成一直線。緣毛褐色。雌蝶 (圖 259)：軀體特徵與雄蝶相似，但前足正常。翅幅較寬，底色較淺，翅背面外側有淡色區域。

雄交尾器 (圖 501)：背兜背側隆起。鉤突向尾端漸細，末端鈍。囊突短、子彈狀。基腹弧狹窄，略彎曲。抱器修長、瓣狀，背側有角狀突起，端部則有扇狀突起，其背緣均具小鋸齒。陽基軛片為一對細長骨片。陽莖修長，明顯上舉。陽莖器長度遠長於陽莖基，末端不平整。

雌交尾器 (圖 649)：交尾囊球形。交尾囊管粗短。交尾囊孔板之前陰片形成寬闊啞鈴狀之骨壁，後陰片形成一對以骨橋相連之錘狀骨片。後內骨突非常短、針狀。肛突基部骨化、平滑，其末端葉狀，具剛毛。

世界分布：臺灣特有種。

臺灣分布：本島中海拔地區。

寄主植物：多種禾本科之草本植物，包括芒、臺灣蘆竹等。

生物學：本種為一年多代物種，除冬季外均可見成蝶活動。

Ypthima multistriata Butler, 1883 (密紋波眼蝶／臺灣波紋蛇目蝶／密紋瞿眼蝶)

PLATE 50, Figs. 260–261; PLATE 97, Fig. 502; PLATE 135, Fig. 650

Ypthima multistriata Butler, 1883: The annals and magazine of natural history; zoology, botany, and geology, series 5, 12 (67): 50. (Type locality: “N. Formosa”)

Ypthima arcuata Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 699, pl. 53, f. 17. (Type locality: “Formosa (Horisha [Puli])”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Fushan, 10. IV. 2005 (H. C. Huang); 1♂, same locality, 15. IV. 2005 (Y. F. Hsu); 1♂, Xindian, Feicui Dam, 15. III. 2000 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Shilin, Shuangxigou, 26. IX. 2007 (Y. F. Hsu); 1♂, Songshan, Hushan, 10. IV. 2010 (C. K. Wang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Dongyanshan, 20. V. 1996 (Y. F. Hsu); 1♀, Daxi, Dingliao, 200m, 21. IX. 2009 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Anmashan, 18/19. V. 1996 (Y. F. Hsu). **NANTOU Co.:** 2♀, Huisun Forest Station, 16. X. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 4♂, Taoyuan, Fenggangshan, 1300m, 13. IX. 2007 (Y. F. Hsu & G. P. Su); 1♂, same locality, 30. IX. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Old Dawu, 13/15. II. 2000 (C. Y. Hung); 2♂, Wutai, Aliaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 14/17. III. 2008, reared from *Microstegium ciliatum*, emgd. 8. IV. 2008, HSU 08C15 (Y. F. Hsu & H. C. Huang); 2♂, Wutai, Ali, 1200m, 4. IV. 2011 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Dawu/ Xinhua, 3. III. 1999 (C. C. Lu); 1♀, Beinan, Lijia Forest Trail ,1200m, 1. X. 2000 (Y. F. Hsu); 1♂, Donghe, Donghe Farm, 400m, 25. I. 2007 (Y. F. Hsu).

Description. Adult – Forewing length 16–22 mm. Sexual dimorphism weakly present. Male (PLATE 50, Fig. 260): Head dark brown mixed with grayish white. Antennae dark brown banded with grayish white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with yellow ochre. Thorax brown dorsally, grayish white ventrally. Legs brown with creamy white bands, foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present, but obscure or vestigial on forewing; usually one on hindwing, in cell CuA_1. Wing undersides ground color brown with fine, grayish white striae. Prominent, double, dark bands present on forewing, roughly V-shaped. Eyespot on forewing normally single, prominent; normally three on hindwing, with center in cell Rs, CuA_1 and CuA_2, largest in Rs. Fringe grayish white. Sexual brand as a dark patch of specialized scalings on forewing uppersides. Female (PLATE 50, Fig. 261): Body similar to that of male; foreleg normal. Wings with ground color paler; eyespot of forewing

uppersides prominent. No sexual brand on forewing.

Male genitalia (PLATE 97, Fig. 502) – Tegumen broad, triangular; uncus abruptly narrowed posteriad, tapering posteriorly, with distal tip blunt. Saccus short, with dital end blunt. Vinculum narrow, slightly curved. Valva broad proximally, narrowed distally into elongate, up-raising arm, with caudal end bent downwards, forming flattened, serrate terminal edge. Juxta as a pair of slender sclerites, with dorsal ends enlarged. Phallus nearly straight, with shallow, ventral depression near caudal end; aedeagus approximately 1.6X length of phallobase, with distal end narrowed, ligulate.

Female genitalia (PLATE 135, Fig. 650) – Corpus bursae ovate. Signa as two elongate, spiny sclerotized bands. Ductus bursae much shorter than corpus bursae. Sterigma with lamella antevaginalis forming large setose, sclerotized plate with a pair of lateral lobes; anterior margin rounded, posterior margin with wide U-shaped notch. Lamella postvaginalis forming sclerotized disc with lateral folds. Posterior apophyses as small, flattened lobes. Anal papillae small, with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Korea, Japan, mainland China, Taiwan (Uémura & Koiwaya, 2000; Uémura, 2021).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: various species of grasses, including *Setaria palmifolia*, *Miscanthus sinensis*, *Microstegium ciliatum* etc. (Hsu, 1999; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 1999; Lu & Chen, 2014).

Remarks. This species was also recorded from Guishan Island and Lanyu (Uémura &

Koiwaya, 2000). The former record evidently refers to "*Ypthima wangi*", which was synonymized with *Y. multistriata* by Uémura & Koiwaya (2000) (see relevant pages on *Y. esakii* of this book). The later requires clarification as recent surveys on the fauna of Lanyu fail to find this species there (Hsu, 2014).

形態特徵：成蝶前翅長 16–22 mm。略具雌雄二型性。雄蝶 (圖 260)：頭黑褐色雜灰白色。觸角黑褐色，有灰白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜赭黃色。胸部背面褐色、腹面灰白色。足褐色，有乳白色條紋，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀、翅頂鈍；R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，外側有眼狀紋，於前翅模糊或消失，於後翅通常一只、位於 CuA_1 室。翅腹面底色褐色，上有灰白色細紋；前翅有兩道明顯深色帶紋，大致呈 V 字形；眼狀紋於前翅通常一只、鮮明，於後翅通常三只、中心位於 Rs 室、CuA_1 室及 CuA_2 室，Rs 室者最大型。緣毛灰白色。前翅背面有特化鱗組成深色片狀性標。雌蝶 (圖 261)：軀體特徵與雄蝶相似，但前足正常。翅底色較淺，翅背面眼狀紋明顯、無性標。

雄交尾器 (圖 502)：背兜寬、三角形。鉤突尾端驟細，末端鈍。囊突短，端部鈍。基腹弧窄，略彎曲。抱器基部寬，向後漸窄，細長、上舉、呈臂狀，末端略下彎，邊緣扁平、有鋸齒。陽基軛片為一對細長骨片，背端較粗。陽莖甚直，中間近末端處腹側有淺凹陷。陽莖器長度約陽莖基 1.6 倍，末端窄縮，呈舌狀。

雌交尾器 (圖 650)：交尾囊卵圓形。花壁為一對細長、具刺之骨帶。交尾囊管明顯短於交尾囊。交尾囊孔板之前陰片形成大型、具剛毛之骨板，兩側具葉狀突，前緣圓，後緣有寬大 U 字形缺口。後陰片形成具側摺之骨盤。後內骨突小型、扁平、葉狀。肛突小型，基部骨化、平滑；尾端葉狀，具剛毛。

世界分布：朝鮮半島、日本、中國大陸、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：多種禾本科之草本植物，包括棕葉狗尾草、芒、剛莠竹等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種於龜山島及蘭嶼亦有記錄。前者顯然應是曾被當成密紋波眼蝶同物異名之江崎波眼蝶北部亞種 (參照「江崎波眼蝶」之說明)；後者則因近期之蘭嶼蝴蝶調查並無發現，是否真有分布尚須進一步釐清。

Ypthima esakii Shirôzu, 1960 (江崎波眼蝶／江崎波紋蛇目蝶／江崎瞿眼蝶)

Ypthima esakii Shirôzu, 1960: Butterflies of Formosa in Colour: 128. (Type locality: "Hori [Puli], Central Formosa")

Ssp. *esakii* Shirôzu, 1960

PLATE 50, Figs. 262–265; PLATE 98, Fig. 503; PLATE 135, Fig. 651

Ssp. *wangi* Lee, 1998

PLATE 50, Figs. 266–267; PLATE 98, Fig. 504; PLATE 135, Fig. 652

Ypthima wangi Lee, 1998: Lepidoptera of Guisandao Islet: 49. (Type locality: "Ilan, Guishandao Is., [Taiwan]")

Specimens examined:

Ssp. *esakii*: **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Daman, 13. VII. 1986 (Y. F. Hsu); 2♂, same locality, 20. VII. 1999 (Y. F. Hsu & C. M. Wu); 1♂, same locality, 26. V. 2002 (Y. F. Hsu); 1♂, Fuxing, Daman, 680m, 9. VIII. 2002 (C. C. Hsieh); 1♂, Fuxing, Daman/ Xuanyuan, 5. VI. 1988 (Y. F. Hsu); 1♀, Fuxing, Gaopo, 30. VIII. 1987 (Y. F. Hsu); 1♂, Fuxing, Ronghua, 1. XI. 1987 (M. Y. Lin); 1♂, Fuxing, Ronghua, 500m, 9. VIII. 2002 (C. C. Hsieh); 1♂, Fuxing, Baling, 500m, 25. III. 2008 (Y. F. Hsu). **XINZHU Co.:** 2♂, Jianshi, Lidongshan, 1500m, 3. IX. 2005 (Y. F. Hsu); 2♂, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, 2♀, Heping, Shangguguan, 900m, 29. VII. 2007 (Y. F. Hsu); 4♂, Heping, Shishanxi, 1200m, 20. V. 1998 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Huisun, 4. V. 1990 (C. L. Li); 1♀, same locality, 24. II. 1996 (Y. F. Hsu); 2♂, same locality, 25. II. 1996 (Y. F. Hsu); 1♀, same locality, 29. IV. 2006 (Y. F. Hsu); 1♂, same locality, 770m, 1. XII. 1997 (Y. F. Hsu); 1♂, Renai, Huisun, 700m, 24. IX. 2005 (Y. F. Hsu); 5♂, 2♀, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, Renai, Nanshanxi, 1000m, 21. XI. 2001 (Y. F. Hsu); 5♂, Xinyi, Dongpu, 1500/1600m, 2. IX. 2007 (Y. F. Hsu); 3♂, Renai, Tunyuan, 1500m, 18. V. 2009 (Y. F. Hsu); 1♂, Xinyi, Dongpu, 1200m, 31. VII. 2009 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Lushui, 450m, 20. V. 2007 (L. H. Wang). **JIAYI Co.:** 2♂, Alishan, Shizhuo/ Dabang, 900/1000m, 25. IX. 2010 (Y. F.

Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Liguan, 1600m, 5. V. 2000 (Y. F. Hsu & C. Y. Hung); 2♂, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu); 1♂, Taoyuan, Shidong, 600m, 11. VIII. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 26. IV. 1999 (Y. F. Hsu); 3♂, Wutai, same locality, 1200m, 4. IV. 2002 (Y. F. Hsu, C. C. Lu & C. L. Huang); 1♂, same locality, 1100/1200m, 5. V. 2007 (Y. F. Hsu); 4♂, Wutai, Old Dawu, 13/15. II. 2000 (C. Y. Hung); 1♂, 1♀, same locality, 500/900m, 17. III. 2009 (Y. F. Hsu & H. C. Huang); 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 20. III. 2010 (N. Y. Tsai); 1♂, Wutai, Ali, 1200m, 4. IV. 2011 (Y. F. Hsu); 1♂, Chunri, Dahanshan, 850m, 4. I. 2003 (Y. F. Hsu); 1♂, 1♀, Shizi, Lilongshan, 27. IV. 2008 (R. K. Dong). **TAIDONG Co.:** 1♀, Yanping, Taoyuan, 17. V. 1987 (Y. F. Hsu); 1♀, Luyexi, 3. I. 1988 (Y. F. Hsu); 1♀, Donghe, Donghe Farm, V. 2000 (W. C. Tsai); 1♂, Yanping, Hongye, 8. IX. 2000 (Y. F. Hsu); 1♂, same locality, 30. IX. 2000 (Y. F. Hsu).

Ssp. *wangi*: **JILONG CITY:** 1♂, Zhongzhen, Haimentianxian, 26. IX. 2006 (Y. F. Hsu); 2♂, 1♀, Zhongzhen, Gangziliaoshan, 160m, 2. VII. 2011, reared from *Ischaemum indicum* [= *I. ciliare*], emgd. 15. VIII. 2011 (Y. F. Hsu); 1♂, Xinyi, Longgang Trail, 26. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= TAIPEI Co.]:** 3♂, Ruifang, Nanya, 9. X. 1998 (Y. F. Hsu) (genitalia preparation JYL978); 9♂, 1♀, same locality, 26. IX. 1999 (Y. F. Hsu); 3♂, 1♀, same locality, 12. X. 1999 (Y. F. Hsu); 4♂, Ruifang, Nanyashan, 30/200m, 23. VIII. 2002 (Y. F. Hsu); 3♀, Ruifang, Jiufen, 300m, 4. XI. 2011 (Y. F. Hsu); 2♂, 1♀, Beitou, Qixingshan, 1100m, 3. VIII. 2009 (Y. F. Hsu & H. C. Huang); 1♂, Beitou, Qixingshan, 1000m, 14. VI. 2011 (C. Y. Lin); 1♂, same locality, 1. VIII. 2011 (Y. F. Hsu); 3♂, same locality, 800m, 8. VIII. 2011 (H. C. Huang); 2♂, Wanli, Yeliu, 21. IV. 2010 (H. C. Huang). **YILAN Co.:** 1♂, 1♀, Toucheng, Guishan Is., 25. III. 2001 (H. C. Hsu); 2♂, same locality, 4/5. III. 2006 (H. C. Huang & C. L. Huang); 1♂, same locality, 24. VI. 2006 (H. C. Huang); 1♂, same locality, 15. VI. 2007 (H. C. Huang); 2♂, 1♀, same locality, 28. III. 2009, reared from "grass", emgd. 28/30. V. 2009 (H. C. Huang).

Description. Adult – Forewing length 19–25 mm. Sexual dimorphism weakly present. Male (PLATE 50, Figs. 262–263, 266): Head dark brown mixed with grayish white. Antennae dark brown banded with grayish white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with yellow ochre.

Thorax brown dorsally, grayish white ventrally. Legs brown, foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present, single, prominent on forewing, near apex; usually single on hindwing, in cell CuA_1. Wing undersides ground color brown or dark brown, with fine, grayish white or white striae, forming white discal band on hindwing, in form like a double ended wrench. Prominent, double, dark bands present on forewing, roughly V-shaped. Eyespot on forewing normally single, prominent; normally three on hindwing, with center in cell Rs, CuA_1 and CuA_2. Fringe grayish white or white. Sexual brand as a dark patch of specialized scalings on forewing uppersides. Female (PLATE 50, Figs. 264–265, 267): Body similar to that of male; foreleg normal. Wings broader, with ground color paler; eyespot of forewing uppersides more prominent. No sexual brand on forewing.

Male genitalia (PLATE 98, Figs. 503–504) – Tegumen broad, triangular; uncus abruptly narrowed posteriad, tapering posteriorly, with distal tip pointed. Saccus short, with distal end blunt. Vinculum narrow, slightly curved. Valva broad proximally, narrowed distally into elongate, up-raising arm, with caudal end bent downwards, forming flattened, flabellate, serrate terminal edge. Juxta as a pair of slender sclerites, with dorsal ends enlarged. Phallus nearly straight, with shallow, ventral depression near caudal end; aedeagus approximately 1.9X length of phallobase, with distal end narrowed, ligulate.

Female genitalia (PLATE 135, Figs. 651–652) – Corpus bursae ovate. Signa as two spiny sclerotized bands, with one significantly shorter. Ductus bursae much shorter than corpus bursae. Sterigma with lamella antevaginalis forming large setose, sclerotized plate with a pair of lateral lobes; anterior margin rounded, posterior margin with wide U-shaped notch. Lamella postvaginalis forming sclerotized disc with elongate anterior process. Posterior apophyses as small, flattened lobes. Anal papillae small, with base sclerotized, smooth; lobe-like distally, setose.

Variation. Geographical variation on wing pattern exists, with populations in northern Taiwan darker on wing uppersides and paler on wing undersides compared to those in central and southern Taiwan.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Uémura, 2021).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan and Guishan Island (Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: various species of grasses, including *Arundo formosana*, *Miscanthus sinensis*, *Ischaemum ciliare*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2013; Lu & Chen, 2014).

Remarks. This species is superficially similar to *Y. multistriata*, frequently sympatric in occurrence, but the latter tends to inhabit shady habitats (Hsu, 2013). They can be diagnosed using the following features: 1) the eyespot of forewing uppersides in male is prominent in *esakii*, whereas it is reduced or vestigial in *multistriata*; 2) eyespot in cell Rs is usually smaller or equal to the one in cell CuA_1 in size in *esakii*, whereas it is larger than the one in cell CuA_1 in size in *multistriata*.; 3) teeth at distal end of valva in *esakii* are slightly larger and less numerous than those in *multistriata*.

Lee (1998) described *Ypthima wangi* from Guishan Island, based on a diagnostic feature of conjunction of eyespots in cell CuA_1 and CuA_2 of hindwing undersides. Uémura & Koiwaya (2000) recognized the feature as individual variation of *Y. multistriata* and synonymized *wangi* with *multistriata*. Takahashi & Kiuchi (2011) pointed out that the male genitalia and immature morphology of *wangi* are conformed to those of *Y. esakii*, and treated it as a subspecies of the latter.

形態特徵：成蝶前翅長 19–25 mm。略具雌雄二型性。雄蝶 (圖 262–263、266)：頭黑褐色雜灰白色。觸角黑褐色，有灰白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜赭黃色。胸部背面褐色、腹面灰白色。足褐色，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀、翅頂鈍；R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，外側有眼狀紋，於前翅一只、近翅頂、鮮明，於後翅通常一只、位於 CuA_1 室。腹面底色褐色或暗

褐色，上有灰白色或白色細紋，於後翅形成白色中央帶紋、形似雙頭扳手；前翅有兩道鮮明深色帶紋，大致呈 V 字形；眼狀紋於前翅通常一只、鮮明，於後翅通常三只、中心位於 Rs 室、CuA_1 室及 CuA_2 室。緣毛灰白色或白色。前翅背面有特化鱗組成深色片狀性標。雌蝶 (圖 264–265、267)：軀體特徵與雄蝶相似，但前足正常。翅幅較寬，底色較淺，前翅背面眼狀紋較鮮明、無性標。

雄交尾器 (圖 503–504)：背兜寬、三角形。鉤突尾端驟細，末端尖。囊突短，端部鈍。基腹弧窄，略彎曲。抱器基部寬，向後漸窄，細長、上舉、呈臂狀，末端略下彎，邊緣扁平、扇狀，有鋸齒。陽基軛片為一對細長骨片，背端較粗。陽莖甚直，中間近末端處腹側有淺凹陷。陽莖器長度約陽莖基 1.9 倍，末端窄縮，呈舌狀。

母交尾器 (圖 651–652)：交尾囊卵圓形。花壁為一對具刺之骨帶，其一明顯較短。交尾囊管明顯短於交尾囊。交尾囊孔板之前陰片形成大型、具剛毛之骨板，兩側具葉狀突，前緣圓，後緣有寬大 U 字形缺口。後陰片形成具側摺之骨盤。後內骨突小型、扁平、葉狀。肛突小型，基部骨化、平滑；尾端葉狀，具剛毛。

變異：地理變異明顯，臺灣北部族群與中、南部族群相比，翅背面底色較深、腹面底色較淺。

世界分布：臺灣特有種。

臺灣分布：本島低至中海拔地區及龜山島。

寄主植物：多種禾本科之草本植物，包括臺灣蘆竹、芒、細毛鴨嘴草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種與經常共域之密紋波眼蝶極其相似，但後者偏好較陰暗之環境。兩者可藉由以下鑑別特徵區分：1) 本種雄蝶前翅背面眼狀紋鮮明、而在密紋波眼蝶則減退或消失；2) 本種後翅腹面 Rs 室眼狀紋通常較 CuA_1 室者小型或與之等大，而密紋波眼蝶 Rs 室者則較 CuA_1 者大型；3) *esakii* 抱器末端的齒突較 *multistriata* 大型，且數量較少。

Lee (1998) 依據後翅腹面 CuA_1 室及 CuA_2 室眼狀紋相連之特徵記述了產自龜山島

之「王氏波眼蝶」(*Ypthima wangi*)，Uémura & Koiwaya (2000) 認為該特徵為密紋波眼蝶之個體變異，而將 *wangi* 視為密紋波眼蝶之同物異名。Takahashi & Kiuchi (2011) 指出 *wangi* 之雄蝶交尾器及幼生期形態與江崎波眼蝶吻合，改其為江崎波眼蝶之亞種。

Ypthima akragas Fruhstorfer, 1911 (白帶波眼蝶／臺灣小波紋蛇目蝶)

PLATE 51, Figs. 268–269; PLATE 98, Fig. 505; PLATE 136, Fig. 653

Ypthima perfecta akragas Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 291. (Type locality: "Formosa")

Ypthima akragas var. *takamukuana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 526, pl. 37, fig. 4, 4a. (Type locality: "Formosa (Mt. Sakuragamine, 8,500 ft high near Horisha)")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Lalashan, 25. VI. 1988 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Wuling, 31. VII. 1985 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Songgang, 15. IX. 1998 (C. Y. Hung); 1♂, Renai, Songgang, 1900m, 17. IX. 2003 (Y. F Hsu). **HUALIAN Co.:** 2♂, Xiulin, Bilu, 2200m, 29. VII. 2005 (Y. F. Hsu); 1♀, same locality, 9. VII. 2018 (Y. F. Hsu); 1♀, Xiulin, Guanyuan, 2300m, 29. VI. 2006 (L. H. Wang); 1♀, Xiulin, Cien, 2000m, 19. VIII. 2006, reared from *Brachypodium kawakamii*, emgd. 22. X. 2006, HSU 06H44 (L. H. Wang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 1♀, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su); 2♂, same locality, 30. IX. 2007, reared from *Oplismenus* sp., emgd. 7/13. XII. 2007, HSU 07J64 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (Y. F. Hsu); 2♂, same locality, 26. IV. 1999 (Y. F. Hsu); 2♂, same locality, 1100/1300m, 9. IV. 2000 (Y. F. Hsu); 3♂, same locality, 4. IV. 2002 (Y. F. Hsu, C. C. Lu & C. L. Huang); 2♂, 1♀, same locality, 1100/1200m, 5. V. 2007 (Y. F. Hsu); 2♂, Chunri, Dahan Forest Trail, 23km, 1270m, 6. V. 2002 (C. L. Li). **TAIDONG Co.:** 1♂, Beinan, Lijia Forest Trail, 1200m, 1. X. 2000 (Y. F. Hsu).

Description. Adult – Forewing length 21–25 mm. Sexual dimorphism weakly present. Male (PLATE 51, Fig. 268): Head dark brown mixed with grayish white. Antennae dark brown banded with grayish white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with yellow ochre. Thorax brown dorsally, grayish white ventrally. Legs brown, foreleg reduced. Abdomen brown dorsally, grayish

white ventrally. Forewing nearly triangular, costa slightly convex, termen, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present, single on forewing, obscure, near apex; usually single on hindwing, in cell CuA_1. Wing undersides ground color brown, with fine white striae, forming prominent white discal band on hindwing. Prominent, double, dark bands present on forewing. Eyespot on forewing normally single, prominent; normally three on hindwing, with center in cell Rs, CuA_1 and CuA_2, largest in cell Rs. Fringe white. Sexual brand as a dark patch of specialized scalings on forewing uppersides. Female (PLATE 51, Fig. 269): Body similar to that of male; foreleg normal. Wings with ground color paler; eyespot of forewing uppersides more prominent. No sexual brand on forewing.

Male genitalia (PLATE 98, Fig. 505) – Tegumen broad, triangular; uncus abruptly narrowed posteriad, tapering posteriorly, with distal tip blunt. Saccus short, with dital end blunt. Vinculum narrow, slightly curved. Valva broad proximally, narrowed distally into elongate, up-raising arm, with caudal end bent downwards, forming flattened, flabellate, serrate terminal edge. Juxta as a pair of slender sclerites, with dorsal ends enlarged. Phallus nearly straight; aedeagus approximately 2.0X length of phallobase, with distal end narrowed, ligulate.

Female genitalia (PLATE 136, Fig. 653) – Corpus bursae ovate. Signa as two spiny sclerotized bands, with one significantly shorter. Ductus bursae much shorter than corpus bursae. Sterigma with lamella antevaginalis forming large setose, sclerotized plate with a pair of lateral lobes; anterior margin rounded, posterior margin with wide V-shaped notch. Lamella postvaginalis forming sclerotized disc. Posterior apophyses as small, flattened lobes. Anal papillae small, with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. West China and Taiwan (Uémura & Koiwaya, 2001; Uémura, 2021).

Distribution in Taiwan. Moderate to higher elevations in montane zone of main island of Taiwan (Shirôzu, 1960; Hsu, 2013).

Larval Host plant(s). Various grasses in the family Poaceae, including *Brachypodium kawakamii* and *Oplismenus* spp.

Biology. At least two generations a year (Hsu, 2013).

Remarks. The taxon *akragas* Fruhstorfer, 1911 was described as a subspecies of *Y. perfecta*, a species distributed in West and Central China (Uémura & Koiwaya, 2001; Uémura, 2021). Matsumura (1919) already recognized *akragas* as a distinct species, but later authors retained it under *Y. perfecta* (e.g., Shirôzu, 1960; Shirôzu & Shima, 1979; Hamano, 1987). Shirôzu & Ueda (1992) again regarded *akragas* as a distinct species in a catalogue. Uémura & Koiwaya (2001) subsequently discovered population of *Y. akragas* from West China and revised *akragas* as a species distinct from *perfecta*, and both *Y. akragas* and *Y. perfecta* are now known to inhabit western China.

Matsumura (1907) described "*Ypthima formosana*" based on specimen(s) collected from "Niitaka" [Yushan], a mountain over 3000 m in elevation. Matsumura (1929) considered that *formosana* Matsumura, 1907 was preoccupied by *Ypthima methora formosana* Fruhstorfer, 1908 and proposed a replacement name *formosicola* Matsumura, 1929, but *formosana* Matsumura, 1907 actually predated *formosana* Fruhstorfer, 1908, so the replacement name was not necessary (Lamas, 2010).

Ypthima formosana Matsumura, 1907 was not listed in comprehensive catalogues on Taiwan butterflies by Shirôzu (1960) and Shirôzu & Ueda (1992), and its identity has not been verified. Matsumura (1907) described it as a species with three eyespots on hindwing, which does not match the six-eyespots diagnosis of *Y. formosana* Fruhstorfer, 1908. Considering the locality of the type locality of *formosana* Matsumura, 1907, it seems quite likely it is conspecific with *akragas* Fruhstorfer, 1911 as both possess three eyespots on hindwing undersides and inhabit subalpine habitats in Taiwan. If this turns out to be the case, *formosana* Matsumura, 1907 will take nomenclatural priority over *akragas* Fruhstorfer, 1911. Taxonomic decision of this issue is pending for discovery and examination of the type(s) of *formosana* Matsumura, 1907.

形態特徵：成蝶前翅長 21–25 mm。略具雌雄二型性。雄蝶 (圖 268)：頭黑褐色雜

灰白色。觸角黑褐色，有灰白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜赭黃色。胸部背面褐色、腹面灰白色。足褐色，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀、翅頂鈍；R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，外側有眼狀紋，於前翅僅一只、近翅頂、模糊，後翅通常一只，位於 CuA_1 室。翅腹面底色褐色，上有白色細紋，於後翅中央形成明顯白色帶紋；前翅有兩道深色帶紋。眼狀紋於前翅通常一只、鮮明，於後翅通常三只、中心位於 Rs 室、CuA_1 室及 CuA_2 室，於 Rs 室者最大型。緣毛白色。前翅背面有特化鱗組成深色片狀性標。雌蝶 (圖 269)：軀體特徵與雄蝶相似，但前足正常。翅底色較淺，前翅背面眼狀紋較明顯、無性標。

雄交尾器 (圖 505)：背兜寬、三角形。鉤突尾端驟細，末端鈍。囊突短，端部鈍。基腹弧窄，略彎曲。抱器基部寬，向後漸窄，細長、上舉、呈臂狀，末端略下彎，邊緣扁平、扇狀，有鋸齒。陽基軛片為一對細長骨片，背端較粗。陽莖甚直，中間近末端處腹側有淺凹陷。陽莖器長度約陽莖基 2 倍，末端窄縮，呈舌狀。

雌交尾器 (圖 653)：花壁為一對具刺之骨帶，其一明顯較短。交尾囊管明顯短於交尾囊。交尾囊孔板之前陰片形成大型、具剛毛之骨板，兩側具葉狀突，前緣圓，後緣有寬大 V 字形缺口。後陰片形成具側摺之骨盤。後內骨突小型、扁平、葉狀。肛突小型，基部骨化、平滑；尾端葉狀，具剛毛。

世界分布：華西、臺灣。

臺灣分布：本島中至較高海拔山區。

寄主植物：多種禾本科之草本植物，包括川上短柄草、求米草屬等。

生物學：本種一年至少兩世代。

註記：本分類單元 *akragas* Fruhstorfer, 1911 原被記述為分布於華西及華中之 *Y. perfecta* (完璧波眼蝶) 的亞種。Matsumura (1919) 已將 *akragas* 視為獨立種，但其他研究者仍視之為 *Y. perfecta* 之亞種 (如 Shirôzu, 1960; Shirôzu & Shima, 1979; Hamano, 1987)。Shirôzu & Ueda (1992) 在其臺灣蝶類名錄中再度將 *akragas* 視為獨立種。Uémura & Koiwaya (2001) 隨後於華西發現 *Y. akragas* 之族群，並將其修訂為與完璧波眼蝶相異之獨立種，因此白帶波眼蝶 *Y. akragas* 及完璧波眼蝶 *Y.*

perfecta 均棲息於華西地區。

Matsumura (1907) 根據採自海拔超過 3000 公尺玉山之標本，記述了 *Ypthima formosana*。Matsumura (1929) 認為 *formosana* Matsumura, 1907的學名為*Ypthima methora formosana* Fruhstorfer, 1908 所先佔，因此提出替代名 *formosicola* Matsumura, 1929，但 *formosana* Matsumura, 1907 之發表日期事實上早於 *formosana* Fruhstorfer, 1908，因此該替代名並無必要。

Ypthima formosana Matsumura, 1907 不見於 Shirôzu (1960) 及 Shirôzu & Ueda (1992) 之臺灣蝴蝶名錄中，因此該物分類單元是哪一種有待查證。Matsumura (1907) 描述該種後翅具三枚眼狀紋，與大波眼蝶 ("*Y. formosana* Fruhstorfer, 1908" [即 *Y. atra taiwana* Lamas, 2010]) 六只眼狀紋之形態特性不符。然而，*formosana* Matsumura, 1907 之模式標本產自高海拔地點，與本種相符。另外，兩者後翅皆具三枚眼狀紋且棲息於亞高山帶，因此兩者極有可能同種。若果真如此，則 *formosana* Matsumura, 1907 將對於 *akragas* Fruhstorfer, 1911 有命名法上之優先權。相關分類決定有待 *formosana* Matsumura, 1907 模式標本之發現與詳查。

Ypthima praenubila Leech, 1891 (巨波眼蝶 / 鹿野波紋蛇目蝶 / 前霧瞿眼蝶)

Ypthima praenubila Leech, 1891: Entomologist 24 (Supplement): 66. (Type locality: "Ta-chien-lu, Chia-Kow-Ho, Moupin; Omei-Shan; Wa-Shan; Kiukiang, [West and Central China]")

Ssp. *kanonis* Matsumura, 1929

PLATE 51, Figs. 270–271; PLATE 98, Fig. 506; PLATE 136, Fig. 654

Ypthima praenubila kanonis Matsumura, 1929: Insecta Matsumurana 3 (4): 141. (Type locality: "Sozan in the Prov. Taihoku, Formosa [Yangmingshan, Taipei, Taiwan]")

Ssp. *neobilia* Murayama, 1980

PLATE 51, Figs. 272–273; PLATE 99, Fig. 507; PLATE 136, Fig. 655

Ypthima praenubila neobilia Murayama, 1980: New Entomologist 29 (2): 23, fig. 7. (Type locality: "Musha [Wushe], Central Taiwan")

Specimens examined:

Ssp. *kanonis*: **JILONG CITY:** 2♂, Longgang Trail, 60m, 20. V. 2010 (C. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Wanli, Fengguizui, 60m, 24. VI. 2010 (N. Y. Tsai); 1♂, Sanzhi, Datunshan, 26. III. 2021, reared from *Carex tristachya*, emgd. 7. VI. 2021, YMS 21C1 (Y. M. Hsu). **TAIPEI CITY:** 1♀, Beitou, Datunshan, 15. VII. 1985 (Y. F.

Hsu); 2♀, same locality, 18. VII. 1985 (Y. F. Hsu); 1♂, same locality, 23. VI. 1986 (Y. F. Hsu); 4♂, 1♀, same locality, 18. VI. 2007 (Y. A. Lin); 2♂, same locality, 16. VI. 2008 (Y. F. Hsu); 1♀, same locality, 3. VII. 2008 (Y. F. Hsu); 1♀, same locality, 3. VII. 2008, reared from *Brachypodium sylvaticum*, emgd. 12. XI. 2008, HSU 08G10 (Y. F. Hsu); 1♂, Beitou, Menghuan Lake, 15. VI. 2016, reared from undet. Poaceae, emgd. 2. VI. 2016 (L. Huang).

Ssp. *neobilia*: **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Baling/ Xuanyuan, 26. VI. 1988 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Guandaoxi, 23. VI. 1988 (Y. F. Hsu); 1♂, Puli, Guandaoshan, 1500m, 16. VII. 2011 (L. H. Wang). **HUALIAN Co.:** 1♂, Xiulin, Qilai, 1500m, 7. VI. 2008 (L. H. Wang); 1♂, Xiulin, Bilu/ Guanyuan, 125/125.5km, 2100m, 2. VII. 2008 (C. C. Lu, jr). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Liugui, Shanping/ Nanfengshan, 6. VI. 1989 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Wutai, Ali, 1000m, 31. V. 2006 (L. H. Wang & C. C. Lu); 1♂, Chunri, Dahanshan, 14. VII. 2007 (C. H. Lin). **TAIDONG Co.:** 1♂, Yanping, Hongye, 15. V. 1988 (Y. F. Hsu); 1♂, Haiduan, Wulu, 800m, 1. VII. 2014 (C. W. Huang); 1♂, Haiduan, Lidao, 1000m, 16. VI. 2016 (C. W. Huang); 6♂, 1♀, Haiduan, Tianlong, 750m, 5. VI. 2020 (Y. F. Hsu); 1♂, Haiduan, Liyuan, 1750/1800m, 18/19. VI. 2020 (Y. F. Hsu & C. W. Huang); 1♀, same locality, 27. VI. 2020, emgd. 25. VI. 2021, HSU 20F18 (Y. Q. Yeh & Z. L. Chen).

Description. Adult – Forewing length 26–33 mm. Sexual dimorphism weakly present. Male (PLATE 51, Figs. 270, 272): Head dark brown. Antennae dark brown banded with grayish white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with white. Thorax brown dorsally, grayish white ventrally. Legs brown, whitish basad. foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa, termen slightly convex, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present, single on forewing, near apex; one to three on hindwing, in cell M_3, CuA_1, CuA_2 of hindwing, but those of M_3 and CuA_2 sometimes reduced or vestigial, largest in CuA_1 if all present. Wing undersides ground color brown with fine, white striae, tinged with yellow except distal portion of hindwing, forming a tilted white band on hindwing. Prominent, double,

dark bands present on forewing, forming roughly parallel bands but sometimes joining into H-shaped marking. Eyespot on forewing normally single, prominent; usually four eyespots on hindwing, with center in cell Rs, M_3, CuA_1 and CuA_2, arranged in two groups, Rs spot in front, remaining ones posteriorly, in a row; Rs spot largest. Fringe white. Sexual brand as a dark patch of specialized scalings on forewing uppersides. Female (PLATE 51, Figs. 271, 273): Body similar to that of male; foreleg normal. Wings with ground color paler, with a pale patch surrounding eyespot on forewing uppersides; eyespot of forewing uppersides more prominent. No sexual brand on forewing.

Male genitalia (PLATE 98, Fig. 506; PLATE 99, Fig. 507) – Tegumen broad, triangular; uncus broad at base, abruptly narrowed posteriad, tapering posteriorly, ligulate with distal tip blunt. Saccus rod, with distal end blunt. Vinculum narrow, slightly curved. Valva elongate, slender, with distal tip bent upwards, serrate; distal half armed with teeth of various sizes; sacculus thickened, densely scattered with minute spines. Juxta as a pair of blade-shaped sclerites. Phallus narrow anteriorly, straight; aedeagus approximately 1.7X length of phallobase, tapering posteriorly, with distal end divided.

Female genitalia (PLATE 136, Figs. 654–655) – Corpus bursae ovate. Signa as two spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae nearly as long as corpus bursae. Sterigma forming large sclerites, with anterior end flabellate, bi-lobed; posterior ends of dorsal sclerite with wide, U-shaped opening, that of ventral sclerite enlarged to broad membranous sheet with medial, rounded notch surrounded by sclerotized band. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Vietnam, West to East China, Taiwan (Monastyrskii, 2005; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: *Brachypodium sylvaticum*; Cyperaceae: *Carex tristachya* etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Univoltine, with adults on the wing in summer, from May to July.

Remarks. Two subspecies have been recognized for the populations of this species in Taiwan, with those of northern Taiwan referring to ssp. *kanonis* and those of central and southern Taiwan ssp. *neobilia*. Murayama (1980) separated ssp. *neobilia* from ssp. *kanonis* merely based on body size, without additional diagnostic features. The validity of ssp. *neobilia* may require clarification. Lang (2022) reconized both *kanonis* and *neobilia* as distinct species with no explicit explanation and no specimens examined, thus the treatments require further examination.

形態特徵：成蝶前翅長 26–33 mm。略具雌雄二型性。雄蝶 (圖 270、272)：頭黑褐色。觸角黑褐色，有灰白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜白色。胸部背面褐色、腹面灰白色。足褐色，基部處淺色，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀、翅頂鈍，R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，外側有眼狀紋，前翅一只、近翅頂，後翅一至三只，位於 M_3 室、CuA_1 室及 CuA_2 室，但於 M_3 室及 CuA_2 室者有時消失或減退，若三只皆有，則 CuA_1 室者最大型。翅腹面底色褐色，上有白色細紋，除後翅外側以外泛黃色，後翅有一白色斜帶紋。前翅有兩道明顯深色帶紋，大致平行，有時連接形成 H 字形，眼狀紋於前翅常一只且明顯，於後翅四只，分為前後兩群，前方者僅一只，位於 Rs 室、最大型，後方者三只，位於 M_3 室、CuA_1 室及 CuA_2 室中央，排為一列。緣毛白色。前翅背面有由特化鱗組成之深色片狀性標。雌蝶 (圖 271、273)：軀體特徵與雄蝶相似，但前足正常。翅底色較淺，前翅背面眼狀紋較鮮明且周圍有淺色區域，無性標。

雄交尾器 (圖 506–507)：背兜寬闊，三角狀。鉤突基部寬，尾端漸窄，末端呈舌狀、鈍。囊突棒狀，末端圓鈍。基腹弧狹窄、彎曲。抱器修長，末端向上彎曲，近尾端之背側有大小不一之鋸齒。抱器粗厚，密布細刺。陽基軛片為一對刃狀骨片。陽莖前端細而直。陽莖器長度約陽莖基 1.7 倍，尾端漸細，末端開裂。

雌交尾器 (圖 654–655)：交尾囊卵圓形。花壁為一對由橫向排列刺突組成之骨帶。交尾囊管與交尾囊近乎等長。交尾囊孔板形成大型骨片，前端扇形、中分；背側骨片後端具寬大 U 形開口，腹側骨片形成寬大膜片，中央有圓形凹陷，周圍環繞骨化帶。肛突基部骨化、平滑，其尾端葉狀，具剛毛。

世界分布：越南、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：禾本科之基隆短柄草及莎草科之抱鱗宿柱薹等。

生物學：本種為一年一世代物種，成蝶於夏季出現 (五月至七月)。

註記：本種在臺灣目前被分成兩亞種，臺灣北部亞種稱為 ssp. *kanonis*，臺灣中南部亞種則為 ssp. *neobilia*。然而，Murayama (1980) 僅依體型大小將亞種 ssp. *neobilia* 自亞種 ssp. *kanonis* 中分離，其有效性須進一步釐清。Lang (2022) 將兩亞種均視為獨立種，但未檢查實物標本，亦未明白陳述依據，因此其說尚有待驗證。

Ypthima norma Westwood, 1851 (罕波眼蝶 / 無紋波紋蛇目蝶)

Ypthima norma Westwood, 1851: The genera of diurnal lepidoptera 2: 395. (Type locality: “China [“Foochow, Fukien, S. China”]” [Fuzhou, Fujian, China])

Ypthima iris hygrophilus Mell, 1942: Archiv für Naturgeschichte (N. F.) 11: 261. (Type locality: “Lofaoshan, Tingwushan, Linping, Kwantung, S. China”)

Ypthima norma matsuensis Lee, 2000: Butterflies of Matsu Islands: 237. (Type locality: “Nankan [南竿福澳]”)

Ssp. *posticalis* Matsumura, 1909

PLATE 51, Figs. 274–275

Ypthima posticalis Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: “Formosa, Horisha [Puli]”)

Ypthima minuta Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: “Formosa, Hokulo [probably Hokuto] [Beitou]”)

Ssp. *norma* Westwood, 1851

PLATE 52, Figs. 276–277; PLATE 99, Fig. 508; PLATE 136, Fig. 656

Specimens examined:

Ssp. *posticalis*: **TAIPEI CITY:** 1♂, “Formosa Matsumura, 13/01/VII 1906 Hokuto [Beitou], *Ypthima minuta* Matsumura LECTOTYPE det. Y. Uémura l983” (SEHU); 1♀, “Formosa Matsumura, Type Matsumura, *Ypthima posticalis* Matsumura HOLOTYPE det. Y. Uémura l983” (SEHU); 1♂, “13. 11. 3. 烏尖連峯 [3. XI. 1938. TAIPEI CITY: Beitou, Wujianlianfeng]” (TARI); 1♀, [No label, data presumably same as Fig. 267] (TARI).

Ssp. *norma*: **LANJIANG Co.:** 9♂, 1♀, Beigan, Daqiu, 11/13. VII. 2003 (L. W. Wu & Y. A. Lin); 1♂, 2♀, same locality, 20. IV. 2007 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL937); 1♂, 1♀, same locality, 31. VII. 2008, reared from *Panicum* sp., emgd. 21/29. X. 2008, HSU 08H32 (D. C. Chen); 7♂, same locality, 2. IX. 2014 (C. L.Huang & H. Y. Lee); 15♂, same locality, 6. IX. 2014 (C. L. Huang & H. Y. Lee) (genitalia preparation JYL934).

Description. Adult – Forewing length 14–16 mm. Sexual dimorphism absent or weakly present. Male (PLATE 51, Fig. 274; PLATE 52, Fig. 276): Head dark brown mixed with grayish white. Antennae dark brown banded with grayish white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with yellow ochre. Thorax brown dorsally, grayish white ventrally. Legs brown with creamy white bands, foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular; costa, termen slightly convex, dorsum nearly straight, apex obtuse; Anterior and posterior vein surrounding discoidal cell of forewing both with bases swollen into spindle-shaped sacs. Hindwing flabellate, slightly angled at tornus. Wing uppersides ground color brown, with a pale patch distally. Postdiscal eye-like present on forewing, prominent, near apex; present or absent on hindwing, in cell CuA_1 if present, small. Wing undersides ground color grayish white with fine, brown striae. Prominent, double, dark bands present on forewing, roughly V-shaped. Eyespot on forewing single, prominent; three on hindwing, with center in cell Rs, CuA_1 and CuA_2, largest in Rs. Fringe grayish white. Female (PLATE 51, Fig. 275; PLATE 52, Fig. 277): Body similar to that of male; foreleg normal.

Male genitalia (PLATE 99, Fig. 508) – Tegumen triangular; uncus tapering posteriorly, with distal tip pointed. Saccus short, bullet-like. Vinculum narrow, slightly curved. Valva broad proximally, narrowed distally into elongate arm, with caudal end slightly bent upwards, forming small, flattened, serrate process. Juxta as a pair of slender sclerites. Phallus nearly straight.; aedeagus approximately 1.5X length of phallobase, beveling at caudal end.

Female genitalia (PLATE 136, Fig. 656) – Corpus bursae oval. Ductus bursae short.

Sterigma forming large, moderately sclerotized dome. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Indochina, Lesser Sunda Islands, Sulawesi, Philippines, mainland China, Taiwan (Vane-Wright & de Jong, 2003; Uémura, 2024).

Distribution in Taiwan. Hillsides of lowland in northern Taiwan and Mazu Islands (Uémura, 1984; Hsu, 2013, 2014).

Larval Host plant(s). Unknown in nature; various grasses in the family Poaceae were accepted by larvae in cavity.

Biology. Probably multivoltine, with adults found from late spring to autumn (Hsu, 2013).

Remarks. The population found from Mazu Islands was described as a distinct subspecies *matsuensis* Lee, 2000, but the type locality of *norma* Westwood, 1851 is "Foochow, Fukien [Fuzhou, Fujian], S. China" (Uémura, 1985), and Mazu Islands are geographically very close to Fuzhou, separated by a short distance merely about 15 kilometers apart. No conceivable difference can be detected between samples of Mazu and those from mainland China or Hong Kong, accordingly *matsuensis* was regarded as a junior subjective synonym of *norma* (Hsu *et al*., 2021).

The population in Taiwan has not been observed or collected after 1930s, so it is generally believed extinct, possibly due to urbanization as its habitats were at northern hillside of Taipei Basin, where the biggest and most populous city in Taiwan locates. The population of Mazu islands has not been observed after 2014. The decline may be related to the deer population introduced for animal husbandry and tourism.

形態特徵：成蝶前翅長 14–16 mm。雌雄二型性略有或缺乏。雄蝶 (圖 274、276)：頭黑褐色雜灰白色。觸角黑褐色，有灰白色紋，末端部分裸露。口器褐色。下唇鬚

前伸、密被毛、黑褐色雜赭黃色。胸部背面褐色、腹面灰白色。足褐色，有乳白色條紋，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀、翅頂鈍；前翅中室前側及後側脈基部膨大為紡錘形囊狀構造。後翅扇形，臀區略呈角狀。翅背面底色褐色，外側有淺色區域，外側有眼狀紋，於前翅鮮明、近翅頂，於後翅常減退，若有則位於 CuA_1 室且小型。翅腹面底色灰白色，上有褐色細紋。前翅有兩道明顯暗色帶紋，大致呈 V 字形；眼狀紋於前翅一只、鮮明，於後翅三只、中心分別位於 Rs 室、CuA_1 室及 CuA_2 室，Rs 室者最大型。緣毛灰白色。雌蝶 (圖 275、277)：軀體特徵與雄蝶相似，但前足正常。

雄交尾器 (圖 508)：背兜三角形。鉤突後端漸細，末端尖。囊突短、圓錐狀。基腹弧窄，略彎曲。抱器基部寬，向後驟縮，細長、臂狀，末端略上彎、形成小而扁平，具齒突之突起。陽基軛片為一對細長骨片。陽莖甚直。陽莖器長度約陽莖基 1.5 倍，末端斜切狀。

雌交尾器 (圖 656)：交尾囊橢圓形。交尾囊管短。交尾囊孔板形成巨大，中度骨化之穹頂。肛突基部骨化、平滑，其尾端葉狀，具剛毛。

世界分布：中南半島、小巽他群島、蘇拉威西、菲律賓、中國大陸、臺灣。

臺灣分布：本島北部低山地區及馬祖。

寄主植物：自然狀態之寄主未知，但飼養時可利用多種禾本科之草本植物。

生物學：應為一年多世代物種，成蝶見於春末至秋季。

註記：分布於馬祖之族群曾被記述為亞種 ssp. *matsuensis* Lee, 2000，但本種模式產地位於福建省福州市，而馬祖與福州地裡上非常接近，相距僅約 15 公里。馬祖與中國大陸及香港之樣本並無可辨識之差異，Hsu *et al*. (2021) 將 *matsuensis* 視為 *norma* 之次主觀同物異名。

分布於臺灣之族群於 1930 年代後便無觀察或採集記錄，咸信已滅絕，滅絕原因可能是臺北盆地都市化所造成之棲地破壞。馬祖族群於 2014 年以後亦缺乏觀察記錄，其族群衰退或與梅花鹿的引入相關。

Ypthima wenlungi Takahashi, 2007 (文龍波眼蝶 / 文龍波紋蛇目蝶)

PLATE 52, Figs. 278–279; PLATE 99, Fig. 509; PLATE 137, Fig. 657

Ypthima wenlungi Takahashi, 2007: Tyô to Ga 58 (3): 277, f. 1-4. (Type locality: "Feng Gang Shan, Kaohsiung Pref., Taiwan")

Specimens examined:

KAOHSIUNG CITY [= KAOHSIUNG Co.]: 1♂, 1♀, Taoyuan, Fenggangshan, 1300m, 13. IX. 2007 (G. P. Su); 11♂, 2♀, same locality, 24. IX. 2007 (Y. F. Hsu & G. P. Su) (genitalia preparation JYL977, JYL976); 1♂, same locality, 30. IX. 2007 (Y. F. Hsu); 3♂, same locality, 30. IX. 2007, reared from *Oplismenus* sp., emgd. 26. XI. /4. XII. 2007, HSU 07J61 (Y. F. Hsu); 1♂, Taoyuan, Tengzhi, Erjituan, emgd. 12. I. 2008 (M. Takahashi).

Description. Adult – Forewing length 17–19 mm. Sexual dimorphism weakly present. Male (PLATE 52, Fig. 278): Head dark brown mixed with grayish white. Antennae dark brown banded with grayish white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with yellow ochre. Thorax brown dorsally, grayish white ventrally. Legs brown, foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa, termen slightly convex, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown. Postdiscal eye-like spots present, single on both wings, near apex on forewing, in cell CuA_1 on hindwing. Wing undersides ground color brown or dark brown, with fine, grayish white striae, forming white discal band on hindwing, in form like a double ended wrench. Prominent, double, dark bands present on forewing, roughly V-shaped. Eyespot on forewing normally single, prominent; three on hindwing, with center in cell Rs, CuA_1 and CuA_2, largest in cell Rs. Fringe grayish white or white. No conceivable sexual brand. Female (PLATE 52, Fig. 279): Body similar to that of male; foreleg normal. Wings broader, with pale patch on distal part of forewing uppersides.

Male genitalia (PLATE 99, Fig. 509) – Tegumen broad, triangular; uncus tapering posteriorly, with distal tip pointed. Saccus short, bullet-like. Vinculum narrow, slightly curved. Valva broad at base, narrowed distally into elongate arm, with caudal end

forming small, flattened, serrate process. Juxta as a pair of slender sclerites. Phallus straight.; aedeagus approximately 1.5X length of phallobase, slightly enlarged caudally.

Female genitalia (PLATE 137, Fig. 657) – Corpus bursae oval. Signa as a pair of elongate, spiny sclerotized bands. Ductus bursae shorter than corpus bursae. Sterigma forming moderately sclerotized dome. Anal papillae with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Endemic to Taiwan (Takahashi, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of southern Taiwan (Takahashi, 2007; Hsu, 2013).

Larval Host plant(s). Unknown in nature; various kinds of grasses in the family Poaceae are accepted in cavity (Takahashi, 2008).

Biology. Voltinism yet to be fully understood; adults were observed in autumn (Takahashi, 2007, 2008; Hsu, 2013).

Remarks. This species is superficially similar to *Y. multistriata*, which may fly sympatrically in the same habitats. They can be distinguished using the following features: 1) no conceivable sexual brand exists on forewing uppersides of *wenlungi*, whereas it is prominent in *multistriata*; 2) the eyespot of forewing uppersides in male is prominent in *wenlungi*, whereas it is reduced or vestigial in *multistriata*; 3) size of *wenlungi* is smaller than *multistriata*.

形態特徵：成蝶前翅長 17–19 mm。略具雌雄二型性。雄蝶 (圖 278)：頭黑褐色雜灰白色。觸角黑褐色，有灰白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜赭黃色。胸部背面褐色、腹面灰白色。足褐色，前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀、翅頂鈍，R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色，前、後翅外側各具一眼狀紋，

於前翅近翅頂，於後翅位於 CuA_1 室。翅腹面底色褐色或暗褐色，上有灰白色細紋，於後翅形成白色帶紋、形似雙頭扳手；前翅具兩道明顯深色帶紋，略呈 V 字形；眼狀紋於前翅一只，於後翅三只，中心位於 Rs 室、CuA_1 室及 CuA_2 室，Rs 室者最大型。緣毛灰白色或白色。缺可見性標。雌蝶 (圖 279)：軀體特徵與雄蝶相似，但前足正常。翅幅較寬，前翅背面外側有淺色區域。

雄交尾器 (圖 509)：背兜寬，三角狀。鉤突向後端漸細，末端尖。囊突短，子彈狀。基腹弧窄，略彎曲。抱器基部寬，後端窄、細長，末端形成小而扁平之鋸齒狀突起。陽基軛片為一對細長骨片。陽莖挺直。陽莖器長度約陽莖基 1.5 倍，末端略膨大。

雌交尾器 (圖 657)：交尾囊橢圓形。花壁為一對細長、具刺之骨帶。交尾囊管短於交尾囊。交尾囊孔板形成中度骨化穹頂。肛突基部骨化、平滑，其尾端葉狀，具剛毛。

世界分布：臺灣特有種。

臺灣分布：本島南部中海拔山區。

寄主植物：自然狀態之寄主未知，但飼養時可利用多種禾本科之草本植物。

生物學：化性尚未明瞭，目前之記錄成蝶均見於秋季。

註記：本種與共域之密紋波眼蝶頗為相似，兩者可藉由以下鑑別特徵區分：1) 本種前翅背面性標不可見，密紋波眼蝶則鮮明；2) 本種雄蝶前翅背面眼狀紋明顯，密紋波眼蝶則減退或消失；3) 本種體型較密紋波眼蝶小。

Ypthima lisandra (Cramer, [1780]) (圓翅波眼蝶 / 黎桑矍眼蝶)

PLATE 52, Figs. 280–281; PLATE 99, Fig. 510; PLATE 137, Fig. 658

Papilio lisandra Cramer, [1780]: De uitlandsche kapellen 4 (25-26a): 11, pl. 293, f. G, H. (Type locality: “China”)

Yphthima [sic] *micrommatus* Holland, 1887: Transactions of the American Entomological Society 14: 115, pl. 2, f. 3. (Type locality: “Hainan”)

Specimens examined:

JINMEN Co.: 1♂, Jinsha, Tianpu, VII. 2008 (W. T. Chen); 1♀, Jinhu, Jianhua, 20. VI. 2010 (C. K. Wang); 4♂, 4♀, same locality, 20. VI. 2010, reared from *Paspalum*

conjugatum, emgd. 24/28. VII. 2010, HSU 10F29 (C. K. Wang) (genitalia preparation JYL936, JYL935).

Description. Adult – Forewing length 16–19 mm. Sexual dimorphism present. Male (PLATE 52, Fig. 280): Head dark brown mixed with white. Antennae dark brown banded with creamy white, partially naked distad. Proboscis brown. Labial palpus porrect, densely hairy, dark brown mixed with creamy white. Thorax brown dorsally, brown ventrally. Legs brown. foreleg reduced. Abdomen brown dorsally, creamy white ventrally. Forewing nearly triangular; costa, termen convex; dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate. Wing uppersides ground color brown. Postdiscal eye-like spots present on hindwing, in cell M_3 and CuA_1, frequently reduced. Wing undersides ground color brown with fine, white striae. Two prominent dark bands present on forewing; one proximal, one submarginal. Eyespot on forewing single, prominent; five on hindwing, with center in cell Rs, M_1, M_3, CuA_1 and CuA_2, arranged in two groups, spots in cell Rs and M_1 in front, remaining ones posteriorly, arranged in line. Fringe brown. Female (PLATE 52, Fig. 281): Body similar to that of male; foreleg normal. Wings with ground color paler; eyespots on wing uppersides prominent, one on forewing; usually two on hindwing, in cell M_3 and CuA_1.

Male genitalia (PLATE 99, Fig. 510) – Tegumen narrow, trapezoid; uncus small, short, triangular, with distal tip blunt. Saccus short, with dital end blunt. Vinculum narrow, slightly curved. Valva broad, narrowed near posterior end, forming a rounded disc at distal end; dorsal margin slightly convex near base, with a prominent triangular, subapical process. Juxta as a pair of slender sclerites, with dorsal ends enlarged. Phallus narrowed anteriorly, up-raising posteriorly, with shallow, dorsal depression near caudal end; aedeagus nearly as long as phallobase, with distal end truncate.

Female genitalia (PLATE 137, Fig. 658) – Corpus bursae bulbous. Ductus bursaenearly as long as corpus bursae, partially sclerotized. Sterigma with lamella antevaginalis as a pair of large setose, sclerotized plates with posterior margin forming medial notch, lamella postvaginalis as a weakly sclerotized dome. Posterior apophyses small, short, slende. Anal papillae small, with base sclerotized, smooth; lobe-like distally, setose.

Global distribution. Himalayas, North India, Indochina, Java, South China (Aoki *et al*., 1985).

Distribution in Taiwan. Found from Jinmen Islands (Hsu *et al*., 2013b).

Larval Host plant(s). Unknown in nature; various grasses in the family Poaceae were accepted in cavity (Hsu *et al*., 2013b).

Biology. Probably multivoltine.

Remarks. This species was observed from Jinmen Islands from 2009 to 2010 (Hsu *et al*., 2013b), with no further records afterwards.

形態特徵：成蝶前翅長 16–19 mm。具雌雄二型性。雄蝶 (圖 280)：頭黑褐色雜白色。觸角黑褐色，有乳白色紋，末端部分裸露。口器褐色。下唇鬚前伸、密被毛、黑褐色雜乳白色。胸部褐色。足褐色，前足退化。腹部背面褐色、腹面乳白色。前翅近三角形，前緣及外緣凸出、後緣近直線狀、翅頂鈍；R 脈基部膨大為紡錘形囊狀構造。後翅扇形。翅背面底色褐色，後翅外側有眼狀紋，位於 M_3 室及 CuA_1 室、常減退。翅腹面底色褐色有白色細紋，於後翅較鮮明。前翅有二道深色帶紋，位於內側及亞外緣，近翅頂處有一只明顯眼狀紋；後翅則有五只中心位於 Rs 室、M_1 室、M_3 室、CuA_1 室及 CuA_2 室之眼狀紋，分為兩群，前二者一群、後三者一群，排為一列。緣毛褐色。雌蝶 (圖 281)：軀體特徵與雄蝶相似，但前足正常。翅底色較淺，翅背面眼狀斑紋較明顯，於前翅一枚、於後翅通常兩枚，位於 M_3 室及 CuA_1 室。

雄交尾器 (圖 510)：背兜窄，梯形。鉤突短小、三角狀，末端鈍。囊突短，末端鈍。基腹弧窄，略彎曲。抱器寬、瓣狀，後端窄，末端部盤狀，背側基部呈凸，近末端之背側有三角形突起。陽基軛片為一對細長骨片，背側較粗。陽莖前端窄，尾端背側有淺凹陷，末端上舉。陽莖器長度與陽莖基略等長，末端截狀。

雌交尾器 (圖 658)：交尾囊球狀。交尾囊管與交尾囊近乎等長，部分骨化。交尾囊孔板之前陰片呈一對具剛毛之骨盤，後緣形成內側缺口，後陰片呈輕度骨化之穹頂。後內骨突短小、細長。肛突小型，基部骨化、平滑；尾端葉狀，具剛毛。

世界分布：喜瑪拉雅地區、印度北部、中南半島、爪哇、華南。

臺灣分布：見於金門。

寄主植物：野外族群未知，但飼養時可利用多種禾本科之草本植物。

生物學：本種可能為一年多世代物種。

註記：本種 2009 年至 2010 年時於金門有觀察記錄，但其後未有更多記錄。

Genus *PALAEONYMPHA* Butler, 1871

Type species: *Palaeonympha opalina* Butler, 1871

Diagnostic characters may include the following: 1) compound eyes sparely covered by short hairs; 2) labial palpus hairy in 2nd segment, smooth in 3rd segment; 3) prolegs hairy, reduced in male; 4) Sc of forewing swollen at base; 5) discoidal cell closed on both wings; 6) silvery scalings present in eyespots of wing undersides.

Larvae feed on plants in Cyperaceae and Poaceae.

Palaeonympha is a monotypic genus belonging to the largely American Euptychiina (Peña *et al*., 2010). The sole representative species, *P. opalina*, is distributed in East Asia, including Taiwan.

古眼蝶屬

形態特徵如下：1) 複眼疏被短毛；2) 下唇鬚第二節被毛、第三節平滑；3) 前足被毛，雄蝶前足退化；4) 前翅 Sc 脈基部膨大；5) 前、後翅中室封閉；6) 翅腹面眼狀紋內有銀色鱗。

幼蟲取食莎草科及禾本科植物。

本屬為主要分布於美洲的 Euptychiina 之成員，而為一單種屬。唯一代表種古眼蝶分布於東亞，包括臺灣。

Palaeonympha opalina Butler, 1871 (古眼蝶／銀蛇目蝶)

Palaeonympha opalina Butler, 1871: Transactions of the Entomological Society of London 1871: 401. (Type locality: “Shanghai”)

Ssp. *macrophthalmia* Fruhstorfer, 1911

PLATE 52, Figs. 282–283; PLATE 100, Fig. 511; PLATE 137, Fig. 659

Palaeonympha opalina macrophthalmia Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 360. (Type locality: “Formosa”)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Daman, 20. V 1987 (Y. F. Hsu); 1♂, Fuxing, Baling, 25. III. 2008 (Y. F. Hsu); 1♂, Fuxing, Baling Ancient Trail, 5. IV. 2017 (L. Huang). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 11. IV. 1996 (Y. F. Hsu); 1♂, Renai, Tunyuan, 1700m, 5. V. 2010 (C. L. Huang); 1♂, Renai, Jiuxianxi, 700m, 14/15. IV. 2012 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 20. III. 2010 (N. Y. Tsai); 1♀, Chunri, Danhanshan, 26. IV. 2008 (R. K. Dong); 5♂, Wutai, Old Dawu/ Bayouxi, 500/900m, 17. III. 2009 (Y. F. Hsu & H. C. Huang); 2♂, 1♀, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu).

Description. Adult – Forewing length 24–28 mm. Sexual dimorphism weakly present. Male (PLATE 52, Fig. 282): Head dark brown, creamy yellow mesad. Antennae dark brown banded with creamy white, partially naked distad. Proboscis dark brown. Labial palpus porrect, densely hairy, dark brown mixed with creamy white. Thorax brown dorsally, grayish white ventrally. Legs grayish white proximally, brown ochre distally; foreleg reduced. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular, costa, dorsum nearly straight; termen convex, apex obtuse; surface densely hairy, R veins with base swollen into a spindle-shaped sac. Hindwing rounded. Wing uppersides ground color brown, paler distally. Postdiscal eye-like spots present, single on forewing, near apex; usually two on hindwing, in cell M_1 and CuA_1, with former frequently reduced. Double, narrow, dark brown, submarginal bands on both wings. Wing undersides ground color grayish white tinged with brown; postdical spots on both

wings, as eyespots in cell M_1 on forewing, M_1, CuA_1 and CuA_2 on hindwing, as small brown spots with silver center in other cells. Double, brown proximal bands on both wings. Fringe brown. Sexual brand present, as dark patches of specialized scales along posterior vein of discoidal cell, M and CuA cells on forewing. Female (PLATE 52, Fig. 283): Body and wing pattern similar to those of male; foreleg normal. Wings broader, with ground color paler; no sexual brands.

Male genitalia (PLATE 100, Fig. 511) – Tegumen large, strongly produced cephalically, with anterior margin folded, rounded; uncus forming elongate, straight, medial process tapering caudad, with distal end narrow, truncate. Brachia as slender, up-raising blades, tapering to fine, acute distal tips. Saccus narrow, rod-like, with blunt distal tip. Vinculum strongly bent dorsally. Valva broad proximally, attenuate distally; costa and sacculus thickened, tapering caudally; ampulla forming prominent lobe with spiny margin; harpe with distal end flattened, serrate. Juxta small, as a pair of pea-shaped sclerites. Phallus short, straight, elongate; aedeagus approximately 1.6X of phallobase, depressed ventrally, with distal end beveling.

Female genitalia (PLATE 137, Fig. 659) – Corpus bursae ovate. Signa as two slender linear bands of minute spines. Ductus bursae much shorter than corpus bursae. Sterigma forming a pair of sclerotized disc with lateral tails, serrate along posterior margins Posterior apophyses as small, weakly sclerotized lobes. Anal papillae sclerotized basally, smooth, lobe-like, setose posterioly.

Global distribution. West to East China, Taiwan (Igarashi & Fukuda, 1997).

Distribution in Taiwan. Low to moderate elevations in montane habitats of main island of Taiwan (Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Cyperaceae: *Carex baccans* (Hsu, 2013; Lu & Chen, 2014). Igarashi and Fukuda reported observation of oviposition of this species on *Lepturus repens* (Poaceae), but that plant is a species on coral rocks of seashores according to Yang *et al*. (2001), quite unlikely to be encountered by this butterfly.

Biology. Univoltine, with adults on the wing from spring to early summer, March to June (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 24–28 mm。略具雌雄二型性。雄蝶 (圖 282)：頭黑褐色，中段乳黃色。觸角黑褐色，有乳白色紋，末端部分裸露。口器黑褐色。下唇鬚前伸、密被毛、黑褐色雜乳白色。胸部背面褐色，腹面灰白色。足基半部灰白色，前半部赭褐色；前足退化。腹部背面褐色、腹面灰白色。前翅近三角形，前緣及後緣近直線狀、外緣凸、翅頂鈍，翅面密被毛，R 脈基部膨大為紡錘形囊狀構造。後翅圓。翅背面底色褐色、外側色彩較淡，外側眼狀斑於前翅一只、近翅頂，於後翅通常兩只、於 M_1 室及 CuA_1 室中央、前者常減退。亞外緣有兩道黑褐色細線紋。翅腹面底色灰白色泛褐色、外側斑紋於前翅 M_1 室及後翅 M_1 室、CuA_1 室、CuA_2 室呈眼狀，於其他翅室則為中央有銀紋之褐色斑點，前、後翅內側均具兩道褐色線紋。緣毛褐色。特化鱗於前翅中室、M 室及 CuA 室後側形成深色片狀性標。雌蝶 (圖 283)：形態特徵與雄蝶相似，但翅膀較寬、底色較淡、無性標，前足正常。

雄交尾器 (圖 511)：背兜大型，明顯向前突出，前緣有摺、圓弧狀。鉤突細長，挺直，向尾端漸細，末端截狀。顎形突為一對細長、上揚之刃狀突起，向後漸細，末端尖銳。囊突細桿狀，末端鈍。基腹弧背側明顯彎曲。抱器基部寬，向後漸窄。抱器背和抱器腹粗厚，向尾端漸細。抱器內突形成葉狀突起，邊緣鋸齒狀。抱握鋏末端扁平，具鋸齒。陽基軛片為一對豌豆狀小骨。陽莖細、短，甚直。陽莖器長度約為陽莖基 1.6 倍，腹側有凹陷，末端斜切。

雌交尾器 (圖 659)：交尾囊卵圓形。花壁為一對具細刺之細長骨帶。交尾囊管明顯短於交尾囊。交尾囊孔板形成一對具側尾之骨盤，後緣具鋸齒。後內骨突小型、略骨化、葉狀。肛突基部骨化、光滑，葉狀，後側具剛毛。

世界分布：華西至華東、臺灣。

臺灣分布：本島低至中海拔山區。

寄主植物：莎草科之紅果薹，另有在禾本科細穗草之產卵觀察記錄，但細穗草生長在珊瑚礁岩岸，古眼蝶接觸該種植物之機會頗低。

生物學：本種為一年一世代物種，成蝶活動於春季至初夏 (三月至六月)。

Genus *ZOPHOESSA* Doubleday, [1849]

Type species: *Zophoessa sura* Doubleday, [1849]

The members of the genus are included in the more collective genus *Lethe* in some literature (e.g., Bozano, 1999; Lang, 2017). We tentatively follow Shirôzu (2006), treating *Zophoessa* as a separate genus.

Diagnostic characters may include the following: 1) compound eyes hairy; 2) labial palpus densely hairy ventrally, with 3rd segment minute; 3) protarsus densely hairy with tarsomeres fused in male, less hairy, segmented in female; 4) discoidal cell closed on both wings.

Larvae mainly feed on plants in Poaceae.

About 30 species, distributed in Oriental and eastern Palearctic regions.

3 species occur in Taiwan.

幽眼蝶屬

本屬成員於部分文獻中被歸類於廣義黛眼蝶屬。本書暫沿用 Shirôzu (2006) 之處理，將本屬視為獨立屬。

形態特徵如下：1) 複眼被毛；2) 下唇鬚腹面密被毛、第三節細小；3) 雄蝶前足跗節癒合、密被毛，雌蝶則分節、疏被毛；4) 前、後翅中室封閉。

幼蟲主要取食禾本科植物。

本屬約有 30 種，分布於東洋區及古北區東部。

臺灣有 3 種。

Zophoessa dura Marshall, 1882 (大幽眼蝶 / 白尾黑蔭蝶)

Zophoessa dura Marshall, 1882: Journal of the Asiatic Society of Bengal 51, pt 2 (2): 38, pl. 4, f. 2. (Type locality: "Upper Tenasserim")

Ssp. *neoclides* Fruhstorfer, 1909

PLATE 52, Fig. 284; PLATE 53, Fig. 285; PLATE 100, Fig. 512; PLATE 137, Fig. 660

Lethe dura neoclides Fruhstorfer, 1909: Societas Entomologica 24 (16): 121. (Type locality: "Formosa")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Lalashan, 1600/1700m, 18. IV. 2003 (Y. F. Hsu). **XINZHU Co.:** 1♂, Wufeng, E. branch Dalu Forest Trail, 2000m, 20. X. 2009 (L. H. Wang & C. H. Huang). **MIAOLI Co.:** 1♂, Taian, Henglongshan, 1350m, 27. II. 2003 (Y. F. Hsu); 2♂, Taian, Xishishan Forest Trail, 8Km, 28. VIII. 2021 (C. W. Huang); 2♂, same locality, 28. IX. 2021 (Y. M. Hsu). **NANTOU Co.:** 1♂, Renai, Huisun, 700m, 25. X. 2013 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Guanyuan, 2200m, 7. VII. 2006 (L. H. Wang) (genitalia preparation JYL1032). **TAIDONG Co.:** 1♂, Haiduan, Southern Cross-Island Highway, 160Km, 20/21. V. 2017 (C. W. Huang). **PINGDONG Co.:** 1♂, Chunri, Dahanshan, 1300/1400m, 4. IV. 2000 (Y. F. Hsu); 1♂, Wutai, Wutoushan, 1200m, 9. IV. 2001 (Y. F. Hsu); 1♂, same locality, 4. IV. 2002 (Y. F. Hsu, C. C. Lu & C. L. Huang).

Description. Adult – Forewing length 33–38 mm. Sexual dimorphism present. Male (PLATE 52, Fig. 284): Head dark brown. Antennae dark brown banded with white, partially naked distad. Compound eyes densely hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, hairy, dark brown with white bands laterally. Thorax brown. Legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown dorsally, white ventrally. Forewing nearly triangular, with apex somewhat acute; costa slightly convex; termen, dorsum nearly straight. Hindwing ovate with termen slightly serrate; a tail-like projection present at distal end of M_3. Wing uppersides ground color dark brown, with a dusky creamy yellow band along termen of hindwing; a dark brown dot present in each cell within band. Wing undersides ground color brown ochre with purple hue. A broad, dark discal band on both wing, hollow on hindwing with pale purple striae. A bar in discoidal cell, as dark marking on forewing, a hollow spot on hindwing. A series of postdiscal eyespots present; prominent on hindwing, obscure and reduced to faint spots in cell M_1 and M_2 of forewing. Small white marking

present near apex of forewing. Female (PLATE 53, Fig. 285): Body similar to those of male; foreleg normal, less hairy, with protarsi segmented, spiny. Wing uppersides ground color brown, with distal half of forewing pale; pale band on hindwing more prominent. Wing undersides with pattern similar to that of male but paler; additional yellow markings on hindwing proximally.

Male genitalia (PLATE 100, Fig. 512) – Tegumen broad; uncus as a laterally flattened beak pointing downwards. Brachia as elongate spikes pointing upwards. Saccus short, bulbous. Vinculum bent dorsally, Valva broad proximally, tapering posteriad, with a fin-shaped process armed with a few small terminal spines. Juxta as small flattened sclerite with shallow dorsal invagination. Phallus short, up-raising; aedeagus longer than phallobase, with prominent membranous area ventrally.

Female genitalia (PLATE 137, Fig. 660) – Corpus bursae ovate. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae shorter than corpus bursae, membranous, thick but tapering caudad. Sterigma with lamella antevaginalis forming membranous dome with folds, lamella postvaginalis forming a lobe with rounded posterior margin. Posterior apophyses as small, triangular lobes. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Himalayas, Indochina, West to East China, Taiwan (Bozano, 1999; Igarashi & Fukuda, 1997).

Distribution in Taiwan. Mainly moderate elevations in montane habitats of main island of Taiwan (Hsu, 2006, 2013; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: *Miscanthus sinensis*, *Sinobambusa kunishii*, *Yushania niitakayamensis*, etc. (Hsu, 2006, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing from spring to autumn, overwintering as non-diapausing larvae (Hsu, 2006, 2013; Lu & Chen, 2014).

Remarks. *Zophoessa dataensis* Semper, 1887 distributed in Luzon of the Philippines is regarded as a subspecies of *Z. dura* by some authors (e.g., Fruhstorfer, 1911; Bozano, 1999).

形態特徵：成蝶前翅長 33–38 mm。具雌雄二型性。雄蝶 (圖 284)：頭黑褐色。觸角黑褐色，有白色紋，末端部分裸露。複眼密被毛，後側輪緣白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面有白色條紋。胸部褐色。足褐色，前足密被毛、刷狀；前足跗節減退、刺狀。腹部背面褐色、腹面白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀、翅頂略尖。後翅卵形，外緣略呈鋸齒狀、M_3 脈末端有尾突。翅背面底色黑褐色，後翅外緣有暗乳黃色帶紋，帶紋中各翅室均有一黑褐色斑點。翅腹面底色赭褐色泛紫色，中央有暗色寬帶紋、於後翅者鏤空，線紋淡紫色；中室有短條紋，於前翅者為黑褐色斑紋、於後翅者為鏤空斑點。外側有一列眼狀紋，前翅者位於 M_1 及 M_2 室，且減退為小斑點，後翅者鮮明；前翅近翅頂處有白色小紋。雌蝶 (圖 285)：軀體特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺。翅背面底色褐色、前翅外半部較淺色、後翅外緣帶紋較鮮明。翅腹面斑紋與雄蝶相似但色調較淡，後翅內側有額外黃紋。

雄交尾器 (圖 512)：背兜寬。鉤突兩側扁平，形成下指之喙狀構造。顎形突為一對上揚之細長尖突。囊突短，末端球狀。基腹弧背側彎曲。抱器修長、瓣狀，基部寬，向後漸細；末端翼狀，端部有許多小棘刺。陽基軛片為小型扁平骨片，背側有淺凹。陽莖短，末端上舉。陽莖器長度超過較陽莖基，腹側有明顯膜質區。

雌交尾器 (圖 660)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管短於交尾囊，膜質，粗大但向尾端漸細。交尾囊孔板之前陰片形成膜質穹頂，具皺褶；後陰片葉狀，後緣圓形。後內骨突小型、三角形、葉狀。肛突輕度骨化，後緣具剛毛。

世界分布：喜瑪拉雅地區、中南半島、華西至華東、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：禾本科之芒、臺灣矢竹、玉山箭竹等。

生物學：本種為一年多代物種，成蝶活動於春季至秋季，以非休眠幼蟲越冬。

註記：部分學者認為分布於菲律賓呂宋島之 *Zophoessa dataensis* Semper, 1887 為本種之亞種 (如 Fruhstorfer, 1911; Bozano, 1999)。

Zophoessa siderea (Marshall, 1881) (圓翅幽眼蝶／鹿野黑蔭蝶)

Lethe siderea Marshall, 1881: Journal of the Asiatic Society of Bengal 49, pt 2 (4): 246. (Type locality: "Sikkim")

Lethe sidonis f. *gelduba* Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 312. (Type locality: "Sikkim, Bhutan, Assam")

Ssp. *kanoi* Esaki & Nomura, 1937

PLATE 53, Figs. 286–287; PLATE 100, Fig. 513; PLATE 138, Fig. 661

Lethe siderea kanoi Esaki & Nomura, 1937: Zephyrus 7: 107, pl. 10, f. 3-4. (Type locality: " 臺灣臺北州文山郡ララ山 [Lalasan, Bunsan Gun, Taihoku Shu, Formosa] [Lalashan, Taoyuan, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Wulai, Kuaishan, 4. VI. 1988 (Y. F. Hsu); 3♂, Sanxia, Beichatianshan, 1500/1700m, 2/4. VI. 2000 (C. C. Lu); 1♂, 2♀, same locality, 7/10. VI. 2001 (Y. T. Lo) (genitalia preparation JYL1017); 2♂, Sanxia, Beichatianshan, 1500/1727m, 25/26. V. 2002 (C. L. Huang, L. H. Wang & C. R. Chen) (genitalia preparation JYL1018). **YILAN Co.:** 1♀, Datong, Taipingshan, 1700m, 13. VI. 2007 (L. H. Wang). **HUALIAN Co.:** 2♂, Xiulin, Tongmen, Nenggao Trail, 1700m, 29. V. 2007 (L. H. Wang); 1♂, 2♀, Xiulin, Nenggao Trail, 25Km, 1800m, 1. I. 2007, reared from *Yushania niitakayamensis*, emgd. 4. II. /4. III. 2007, HSU 07A10 (L. H. Wang); 3♂, Xiulin, Kuailin, 2100m, 14. I. 2007, reared from *Y. niitakayamensis*, emgd. 13/14. III. 2007, HSU 07A22.2 (L. H. Wang).

Description. Adult – Forewing length 22–26 mm. Sexual dimorphism weakly present. Male (PLATE 53, Fig. 286): Head dark brown. Antennae dark brown banded with white, partially naked distad. Compound eyes densely hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, hairy, dark brown with white bands laterally. Thorax brown. Legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown dorsally, white ventrally. Forewing nearly right triangular, with apex

obtuse; costa slightly convex; termen, dorsum nearly straight. Hindwing rounded. Wing uppersides ground color uniformly brown, with a narrow, purplish white submarginal band on hindwing. Wing undersides ground color brown. A narrow, orange, submarginal band margined with purple present both wings, more prominent on hindwing. Discal band represented as double, serpentine, purple bands on hindwing. Additional purple subbasal bands present on hindwing. A series of postdiscal eyespots present on hindwing, dark brown, circled by purple. Female (PLATE 53, Fig. 287): Body similar to those of male; foreleg normal, less hairy, with protarsi segmented, spiny. Wing uppersides ground color pale brown, with a dark patch by distal end of discoidal cell of forewing.

Male genitalia (PLATE 100, Fig. 513) – Tegumen broad; uncus elongate, tapering to a blunt tip. Brachia as elongate spikes. Saccus short, flattened. Vinculum bent dorsally, Valva broad proximally, tapering posteriad, with distal end forming up-curved beak. Juxta as slender V-shaped sclerite. Phallus narrowed anteriorly, short, slightly up-raising; aedeagus slightly longer than phallobase.

Female genitalia (PLATE 138, Fig. 661) – Corpus bursae ovate. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae nearly as long as corpus bursae, membranous, thick. Sterigma forming pod-shaped dom. Posterior apophyses as short, slender rods. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Himalayas, northern Indochina, West to South China, Taiwan (Lang, 2017).

Distribution in Taiwan. Moderate elevations in montane habitats of main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Poaceae: *Yushania niitakayamensis*.

Biology. At least two generations a year (Hsu, 2013).

形態特徵：成蝶前翅長 22–26 mm。略具雌雄二型性。雄蝶 (圖 286)：頭黑褐色。觸角黑褐色，有白色紋，末端部分裸露。複眼密被毛，後側輪緣白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面具白色帶紋。胸部褐色。足褐色，前足密被毛、刷狀；前足跗節減退、刺狀。腹部背面褐色、腹面白色。前翅近直角三角形，翅頂略尖，前緣略凸、外緣及後緣近直線狀，翅頂鈍。後翅圓。翅背面底色褐色，後翅亞外緣有一紫白色細帶紋。翅腹面底色褐色，亞外緣有鑲紫色邊之橙色細線紋，於後翅較鮮明；後翅中央有兩道彎曲紫色紋，亞基部有額外紫色帶紋，外側有一列鑲紫色圈紋之黑褐色眼狀紋。雌蝶 (圖 287)：軀體特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺。翅背面底色淺褐色，前翅中室末端有暗色紋。

雄交尾器 (圖 513)：背兜寬。鉤突細長，向後漸細，末端鈍。顎形突為一對修長釘狀突起。囊突短、扁平。基腹弧背側彎曲。抱器修長、瓣狀，基部寬，向後漸細，末端形成上彎喙狀構造。陽基軛片為 V 字形骨片。陽莖前端窄縮，短而略上揚。陽莖器長度略較陽莖基長。

雌交尾器 (圖 661)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管與交尾囊近乎等長，膜質、粗。交尾囊孔板形成莢狀艙。後內骨突短、細長、棒狀。肛突輕度骨化，後緣具剛毛。

世界分布：喜瑪拉雅地區、中南半島北部、華西至華南、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：禾本科之玉山箭竹。

生物學：本種一年至少有兩代。

Zophoessa niitakana (Matsumura, 1906) (玉山幽眼蝶／玉山蔭蝶／玉山黛眼蝶)

PLATE 53, Figs. 288–289; PLATE 100, Fig. 514; PLATE 138, Fig. 662

Pararge niitakana Matsumura, 1906: Annotationes Zoologicae Japonenses 6: 1, pl. 1, f. 6. (Type locality: “auf dem Gipfel des Berges Niitaka, Formosa [top of Yushan, Taiwan]”)

Zophoessa insularis Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: “Polisha, Formosa [Puli, Taiwan]”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Sanxia, Beichatianshan, 1500/1700m, 24. V. 2000 (Y. T. Lo); 1♂, Wulai, Lalashan, 1600/1700m, 18. IV. 2003 (Y. F. Hsu). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, 1900m, 30. V. 2004 (Y. F. Hsu, H. C. Huang & K. L. Chen); 1♂, 1♀, Wufeng, Luoshan Forest Trail, 2000m, 21. X. 2009 (L. H. Wang & C. H. Huang). **YILAN Co.:** 2♂, Nanao, Tongshan, 1800m, 9. V. 1998 (C. C. Lu); 1♂, Datong, Siji Forest Trail, 9. VIII. 2005 (L. H. Wang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Xiaoxueshan, 2600m, 17. VII. 2009 (Z. H. Yen). **NANTOU Co.:** 1♂, 3♀, Renai, Shimenshan, 3100m, 14. IX. 2005 (C. C. Lu & C. L. Huang); 1♂, Renai, Yunhai, 2400m, 13. I. 2007, reared from *Yushania niitakayamensis*, emgd. 19. III. 2007, HSU 07A21.1 (L. H. Wang); 1♂, same locality, 2300m, 5. VI. 2008 (L. H. Wang); 1♂, 4♀, Renai, Yunhai/ Tianchi, 2600/2700m, 13. XII. 2007 (L. H. Wang); 3♀, Renai, Tianchi, 2800m, 13. XII. 2007 (L. H. Wang); 1♂, Renai, Xiaofengkou, 3000m, 8. VII. 2018 (Y. F. Hsu); 1♂, Renai, Hehuanxi, 1. VIII. 2018 (H. C. Huang). **HUALIAN Co.:** 2♂, Xiulin, Guanyuan, 2300m, 29. VIII. 2006 (C. C. Lu); 1♀, Xiulin, Guangbeibabiao, 2800m, 16. X. 2007 (L. H. Wang); 1♂, Xiulin, Kuailin, 2100m, 15. VII. 2008 (L. H. Wang); 1♂, same locality, 10. IX. 2008 (L. H. Wang); 1♀, Xiulin, near Xiaofengkou, ca 3000m, 5. IX. 2018 (C. J. Chang).

Description. Adult – Forewing length 21–24 mm. Sexual dimorphism weakly present. Male (PLATE 53, Fig. 288): Head dark brown with a brown tuft on frons. Antennae dark brown banded with white, partially naked distad. Compound eyes densely hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, hairy, dark brown mixed with orange, with white bands laterally. Thorax brown dorsally, white mixed with orange ventrally. Legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown dorsally, grayish white ventrally. Forewing nearly right triangular; costa, termen slightly convex; dorsum nearly straight. Hindwing ovate, with termen wavy. Wing uppersides ground color brown, with a series of dull, pale ochre, discal spots on forewing, two small pale ochre dots near apex of forewing, in cell R_5 and M_2. A series of dark brown postdiscal spots on hindwing. Wing undersides ground color brown ochre, tinged with olive-green. Markings of forewing similar to those of upperside, but more prominent, white, with additional short, white, proximal band. Discal band represented as white double bands on hindwing. A series of dark brown postdiscal eyespots present on hindwing. A small white spot at tornus. Sexual brands present, as dark patches of

specialized scales along posterior vein of discoidal cell, cell M_3, CuA_1, CuA_2, and 1A+2A on forewing. Female (PLATE 53, Fig. 289): Body similar to that of male; foreleg normal, less hairy, with protarsi segmented, spiny. Wing broader; no sexual brand.

Male genitalia (PLATE 100, Fig. 514) – Tegumen broad, bi-lobed posteriorly; uncus elongate, with pointed distal end, pointing downwards. Brachia as elongate hooks pointing posteriad. Saccus short, flattened. Vinculum strongly bent dorsally, Valva broad proximally, tapering posteriad, with distal end forming up-curved beak. Juxta as a V-shaped sclerite. Phallus narrowed anteriorly, short, straight; aedeagus approximately 1.75X length of phallobase.

Female genitalia (PLATE 138, Fig. 662) – Corpus bursae ovate. Signa as two elongate, spiny, weakly sclerotized bands, with spines arranged in transverse rows. Ductus bursae longer than corpus bursae, membranous, thick. Sterigma forming a sac with concentric wrinkles. Posterior apophyses as short, flattened, digitate bands. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations in montane habitats of main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Poaceae: *Yushania niitakayamensis*.

Biology. At least two generations a year (Hsu, 2013).

形態特徵：成蝶前翅長 21–24 mm。微具雌雄二型性。雄蝶 (圖 288)：頭黑褐色，前額有褐色毛叢。觸角黑褐色，有白色紋，末端部分裸露。複眼密被毛，後側輪緣白色。口器褐色。下唇鬚前伸、被毛、黑褐色雜橙色、側面有白色條紋。胸部褐色，腹面白色雜橙色。足褐色，前足密被毛、刷狀；前足跗節減退、刺狀。腹部背面褐色、腹面灰白色。前翅近三角形，前緣及外緣略凸、後緣近直線狀。後翅卵形，外緣波狀。

翅背面底色褐色；前翅中央有一列淡赭色斑點，近翅頂處之 R_5 室及 M_2 室有淡赭色小紋；後翅外側有一列黑褐色眼狀紋。翅腹面底色赭褐色泛橄欖綠，前翅斑紋與背面相似但較鮮明，呈白色，內側有額外白色短帶紋。後翅內側有兩道白色帶紋，外側有一列黑褐色眼狀紋，臀區有一小斑點。特化鱗沿中室、M_3 室、CuA_1 室、CuA_2 室及 1A+2A 室後側脈分布，形成深色性標。雌蝶 (圖 289)：軀體特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺。翅幅較寬、無性標。

雄交尾器 (圖 514)：背兜寬，後側呈雙瓣狀。鉤突細長，末端尖、下指。顎形突為一對細長鉤突。囊突短、扁平。基腹弧背側明顯彎曲。抱器修長、瓣狀，基部寬，向後漸細，末端形成上彎喙狀構造。陽基軛片為 V 字形骨片。陽莖前端窄縮，短而直。陽莖器長度約陽莖基 1.75 倍。

雌交尾器 (圖 662)：交尾囊卵圓形。花壁呈亮細長、具橫向排列刺之輕度骨化帶。交尾囊管長於交尾囊，膜質，厚。交尾囊孔板形成一具有同心皺褶之囊袋。後內骨突呈小、扁平之指狀帶。肛突輕度骨化，後緣具剛毛。

世界分布：臺灣特有種。

臺灣分布：分布於本島中至較高海拔山區。

寄主植物：禾本科之玉山箭竹。

生物學：本種一年至少有兩代。

Genus *LETHE* Hübner, [1819]

Type species: *Papilio europa* Fabricius, 1775

Diagnostic characters may include the following: 1) compound eyes densely hairy; 2) labial palpus densely hairy ventrally, with 3rd segment small; 3) protarsus densely hairy with tarsomeres fused in male, less hairy, segmented in female; 4) discoidal cell closed on both wings.

Larvae mainly feed on plants in Poaceae and Cyperaceae.

More than 60 species, distributed in Oriental, eastern Palearctic and Nearctic regions.

12 species have been recorded from Taiwan, but occurrence of three of them is skeptical.

黛眼蝶屬

形態特徵如下：1) 複眼密被毛；2) 下唇鬚腹面密被毛、第三節細小；3) 雄蝶前足跗節密被毛、小跗節癒合，雌蝶則疏被毛、分節；4) 前、後翅中室封閉。

幼蟲主要取食禾本科及莎草科植物。

本屬成員超過 60 種，分布於東洋區、古北區東部及新北區。

臺灣有記錄之種類達 12 種，但其中 3 種存疑。

Lethe europa (Fabricius, 1775) (長紋黛眼蝶／玉帶蔭蝶／白帶蔭蝶)

Papilio europa Fabricius, 1775: Systema Entomologiae: 500. (Type locality: "America [error, should be S. India]")

Ssp. *pavida* Fruhstorfer, 1908

PLATE 53, Figs. 290–292; PLATE 54, Fig. 293; PLATE 101, Fig. 515; PLATE 138, Fig. 663

Lethe europa pavida Fruhstorfer, 1908: Entomologische Zeitschrift 22 (35): 141. (Type locality: "Kagi, Formosa [Jiayi, Taiwan]")

Ssp. *beroe* Cramer, [1775]

PLATE 54, Fig. 294

Papilio beroë Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 125, pl. 79, f. C, D. (Type locality: "China")

Specimens examined:

Ssp. *pavida*: **XINBEI CITY [= TAIPEI Co.]:** 1♂, Danshui, Pingding, 250m, 1. VIII. 2011 (H. C. Huang). **TAIPEI CITY:** 1♀, Wenshan, NTNU, Gongguan campus, 5. VIII. 2005 (Y. F. Hsu); 1♂, Wenshan, Muzha, Hills S. of NCCU campus, 5. III. 2009 (N. Y. Tsai). **XINZHU Co.:** 1♀, Baoshan, Shanhu, 27. XII. 2008 (Y. F. Hsu). **MIAOLI**

Co.: 1♀, Touwu, Mingde Dam, 11. X. 2021, reared from *Bambusa vulgaris*, emgd. 30. X. 2021, HSU 21K14 (Y. F. Hsu). **YUNLIN Co.:** 1♂, Douliu, Hushan Dam, 12. XII. 2015 (L. Huang & H. C. Huang). **TAINAN CITY [= TAINAN Co.]:** 1♂, Guantian, Wushantou, 40m, 24. X. 2009 (Y. F. Hsu); 6♂, 1♀, same locality, 24. XI. 2009 (Y. F. Hsu); 3♀, same locality, 24/30. XI. 2009, reared from *Bambusa* sp., emgd. 29. XI. 2009, HSU 09L10 (Y. F. Hsu); 3♀, same locality, 24. XI. 2009, reared from *Bambusa* sp., emgd. 18/21. I. 2010, HSU 09L27 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Tianliao, 100m, 13. XI. 2010, reared from *Bambusa* sp., emgd. 23. XI. 2010, HSU 10L24 (Y. F. Hsu).

Ssp. *beroe*: **LIANJIANG Co.:** 1♂, Beigan, Leishan, 20. XI. 2013 (L. H. Wang & H. Y. Lee).

Description. Adult – Forewing length 29–35 mm. Sexual dimorphism present. Male (PLATE 53, Figs. 290–291; PLATE 54, Fig. 294): Head dark brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes densely hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, hairy, dark brown with creamy white bands laterally. Thorax brown. Legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular, with apex somewhat obtuse; costa convex; termen slightly concave; dorsum straight. Hindwing ovate, with termen slightly wavy, a short, tail-like projection at distal end of M_3. Wing uppersides ground color brown, with a narrow, checkered submarginal band. Two small white spots near apex of forewing. A series of dark brown spots on hindwing, attenuate toward tornus. Wing undersides ground color olive-green. A series of postdiscal eyespots on both wings, with dark brown markings in center ameboid in shape; arranged into an inward curve on forewing, outward curve on hindwing. Narrow, white, linear proximal band present on both wings. A white, oblique band on forewing. Fringe creamy white, checkered with brown. Female (PLATE 53, Fig. 292; PLATE 54, Fig. 293): Body similar to that of male; foreleg normal, less hairy, with protarsi segmented, spiny. Forewing uppersides with prominent oblique band on forewing.

Male genitalia (PLATE 101, Fig. 515) – Tegumen broad, triangular; uncus short, flattened, ligulate, down-curved. Brachia vestigial. Saccus large, elongate, broad at base, tapering to blunt distal end. Vinculum nearly straight. Valva elongate, tapering posteriorly with distal end blunt, densely spiny. Juxta as transverse sclerite with both ends bent upwards. Phallus elongate, nearly straight, with a few minute spines on external wall; aedeagus approximately 2.2X of phallobase.

Female genitalia (PLATE 138, Fig. 663) – Corpus bursae oblong. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, slender, slightly shorter than length of corpus bursae, wrinkled, with anterior portion enlarged. Sterigma with lamella antevaginalis forming sclerotized dome, lamella postvaginalis forming hood-like sclerite with lateral margins folded, and a medial, tongue-shaped process. Posterior apophyses as small, weakly sclerotized rod. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Wing ground color becomes paler, with pattern of undersides obscurer in dry and cooler spells.

Global distribution. Nearly entire Oriental region, also Sulawesi, Lesser Sundaland, Yaeyamas of Japan (Igarashi & Fukuda, 1997).

Distribution in Taiwan. Ssp. *pavida* mainly occurs in low elevations of main island of Taiwan (Hsu, 1999, 2013; Lu & Chen, 2014); ssp. *beroe* occurs in Jinmen and Mazu Islands (Hsu, 2014).

Larval Host plant(s). Poaceae: *Phyllostachys pubescens*, *Bambusa oldhamii*, *B. ventricosa* (Hsu, 1999, 2013; Lu & Chen, 2014).

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

Remarks. Ssp. *beroe* from Jinmen and Mazu Islands is smaller in size, with eyespots less prominent compared to ssp. *pavida* from main island of Taiwan and Yaeyama Islands of Japan.

形態特徵：成蝶前翅長 29–35 mm。具雌雄二型性。雄蝶 (圖 290–291、294)：頭黑褐色。觸角黑褐色，有乳白色紋、末端部分裸露。複眼密被毛，後側輪緣白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面有乳白色條紋。胸部褐色。足褐色，前足密被毛、刷狀、跗節減退、刺狀。腹部背面黑褐色、腹面灰白色。前翅近三角形，翅頂略鈍，前緣凸、外緣略凹、後緣筆直。後翅卵形，外緣略呈波狀，M_3 脈末端有短尾突。翅背面底色褐色，亞外緣有明暗相間之細帶紋，前翅近翅頂有兩只白色小斑；後翅有一列黑褐色斑紋、大小向後漸小。翅腹面底色呈橄欖綠色，外側有眼狀紋，於前翅作內凹排列，於後翅者中央為阿米巴形黑褐色斑紋而作外凸排列。翅內側有白色細線紋；前翅有一白色斜帶紋。緣毛白色嵌褐色。雌蝶 (圖 292–293)：軀體特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺，前翅背面有鮮明斜帶紋。

雄交尾器 (圖 515)：背兜寬、三角形。鉤突短、扁平、舌狀，下彎。顎形突缺失。囊突大型、修長，基部寬，向端部漸細，末端鈍。基腹弧甚直。抱器基部較寬，向後漸窄，末端鈍頭，密布小棘刺。陽基顎片形成兩端向上彎曲之橫向骨片。陽莖修長、甚直，外壁上有一些小刺棘。陽莖器長度約為陽莖基 2.2 倍。

雌交尾器 (圖 663)：交尾囊呈橢圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管細長，略短於交尾囊，有褶皺，前半部膨大。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成罩狀骨片，側緣有褶，中央並具一舌狀突起。後內骨突小型、輕度骨化、棒狀。肛突輕度骨化，後緣具剛毛。

變異：乾季及低溫期翅底色較淺、翅腹面斑紋較模糊。

世界分布：幾乎涵蓋整個東洋區，也見於蘇拉威西、小巽他群島及日本八重山群島。

臺灣分布：亞種 ssp. *pavida* 分布於本島低海拔地區；亞種 ssp. *beroe* 見於金門及馬祖。

寄主植物：禾本科之孟宗竹、綠竹、佛竹等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：與分布於臺灣本島及日本八重山群島之亞種 ssp. *pavida* 相較，金門及馬祖的亞種 ssp. *beroe* 體型較小、眼狀紋較不鮮明。

Lethe rohria (Fabricius, 1787) (波紋黛眼蝶／波紋白帶蔭蝶／波紋玉帶蔭蝶)

Papilio rohria Fabricius, 1787: Mantissa Insectorum 2: 45. (Type locality: "India")

Debis dyrta C. & R. Felder, [1867]: Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorf-Urbai, pt. 9, Bd. 2, Abt. 2 (3): 497. (Type locality: "Bengalia, [Bangladesh]")

Ssp. *daemoniaca* Fruhstorfer, 1908

PLATE 54, Figs. 295–296; PLATE 101, Fig. 516; PLATE 138, Fig. 664

Lethe dyrta daemoniaca Fruhstorfer, 1908: Entomologische Zeitschrift 22 (35): 141. (Type locality: "Formosa")

Ssp. *permagnis* Fruhstorfer, 1911

Lethe dyrta permagnis Fruhstorfer, 1911: Die Gross-Schmetterlinge der Erde 9: 317. (Type locality: "Foochow [Fuzhou, Fujian]")

Specimens examined:

Ssp. *daemoniaca*: **XINBEI CITY [= TAIPEI Co.]:** 1♀, Ruifang, Houdong, 28. III. 2001 (C. C. Lu); 1♂, Wulai, Minigu, 20. X. 2005, reared from *Miscanthus* sp., emgd. 24. X. 2005 (H. C. Huang); 1♂, 1♀, Xindian, Dailaokengshan, 12. II/25. III. 2016, reared from *Miscanthus* sp., emgd. 25. II. 2016, HSU 16B5 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Wenshan, Hills behind NCCU campus, 1. VI. 2005 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Daxi, Weiliaoshan, 29. XI. 2005, reared from *Phragmites vallatoria* [= *Phragmites karka*], emgd. 26. XII. 2005, HSU 05L43 (Y. F. Hsu); 1♂, 1♀, Fuxing, Baling Ancient Trail, 1. IV. 2015, reared from *Miscanthus sinensis*, emgd. 14. V. 2015, HSU 15D01 (L. Huang) (genitalia preparation JYL928).

Description. Adult – Forewing length 30–34 mm. Sexual dimorphism present. Male (PLATE 54, Fig. 295): Head dark brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes densely hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, hairy, dark brown with creamy white bands

laterally. Thorax brown. Legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular, with apex somewhat obtuse; costa convex; termen slightly concave; dorsum straight. Hindwing ovate, with termen slightly wavy, a short, tail-like projection at distal end of M_3. Wing uppersides ground color brown. Two small white spots near apex of forewing. Wing undersides ground color brown, paler distally. A series of postdiscal eyespots on both wings; some with dark brown markings in circle ameboid in shape; arranged into an inward curve on forewing, outward curve on hindwing. Double, narrow, white, discal band present on both wings. A white bar present in discoidal cell of forewing. An oblique white band intercepted by dark veins present on forewing. An orange straight band associated with white margin present submarginally on both wings. Fringe white, checkered with brown. Female (PLATE 54, Fig. 296): Body similar to that of male; foreleg normal, less hairy, with protarsi segmented, spiny. A prominent, oblique, white band present on forewing uppersides.

Male genitalia (PLATE 101, Fig. 516) – Tegumen broad, flat dorsally; uncus as slightly down-curved beak. Brachia as slender spikes. Saccus relatively short, rod-like, with distal tip blunt. Vinculum bent. Valva broad proximally, narrowed to elongate blade posteriad, with distal end pointed with small flat area dorsally, densely spiny. Juxta as narrow transverse sclerite with both ends bent upwards. Phallus nearly straight; aedeagus longer than phallobase.

Female genitalia (PLATE 138, Fig. 664) – Corpus bursae ovate. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, nearly as long as corpus bursae, wrinkled, enlarged anteriorly. Sterigma with lamella antevaginalis forming weakly sclerotized dome, lamella postvaginalis forming square sclerite with anterior margin truncate and lateral margins folded. Posterior apophyses as small, weakly sclerotized rod. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Himalaya, India, Sri Lanka, Indochina, Java, Lesser Sunda Islands, West to East China, Taiwan (Aoki *et al.*, 1985).

Distribution in Taiwan. Ssp. *daemoniaca* mainly in low elevations of main island of Taiwan (Hsu, 2006, 2013); ssp. *permagnis* was recorded from Mazu Islands (Hsu, 2014).

Larval Host plant(s). Poaceae: *Miscanthus floridulus*, *Phragmites karka*, *Leersia hexandra*, etc. (Hsu, 2006, 2013)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2013).

Remarks. This species was generally considered a "common" species in earlier literature (e.g., Fruhstorfer, 1911; Shirôzu, 1960; Hamano, 1987), but apparently has declined considerably in recent years (Hsu, 2013).

Aoki *et al*. (1985) regard the population of this species in Hainan also under ssp. *daemoniaca*. This treatment may require further classification.

形態特徵：成蝶前翅長 30–34 mm。具雌雄二型性。雄蝶 (圖 295)：頭黑褐色。觸角黑褐色，有乳白色紋、末端部分裸露。複眼密被毛，後側輪緣白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面有乳白色條紋。胸部褐色。足褐色，前足密被毛、刷狀、跗節減退、刺狀。腹部背面黑褐色、腹面灰白色。前翅近三角形，翅頂略鈍、前緣凸、外緣略凹、後緣直線狀。後翅卵形，外緣略呈波狀，M_3 脈末端有短尾突。翅背面底色褐色，前翅近翅頂有兩只白色小斑。翅腹面底色褐色，外側色彩較淺；外側有一列眼狀紋，部分中央有阿米巴形黑褐色斑紋，於前翅作內凹排列，於後翅作外凸排列；中央有兩道白色細線紋；亞外緣有鑲白邊之橙色直線紋；前翅中室內有白色短紋，並有為深色翅脈截切之白色斜帶紋。緣毛白色嵌褐色。雌蝶 (圖 296)：軀體特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺。前翅背面有鮮明白色斜帶紋。

雄交尾器 (圖 516)：背兜寬，背側平坦。鉤突形成略下彎之喙狀構造。顎形突為細長釘狀突起。囊突較短、桿狀，末端鈍。基腹弧彎曲。抱器基部較寬，向後漸細，末端尖，背側有密布小棘刺之扁平小區域。陽基顎片形成一對上彎之橫向窄骨片。陽莖甚直。陽莖器長度超過陽莖基。

雌交尾器 (圖 664)：交尾囊呈卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管細長，與交尾囊近乎等長，有褶皺，前半部膨大。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成方形骨片，前緣截斷，後緣有褶。後內骨突小型、輕度骨化、棒狀。肛突輕度骨化，後緣具剛毛。

世界分布：喜瑪拉雅地區、印度、斯里蘭卡、爪哇、小巽他群島、華西至華東、臺灣。

臺灣分布：亞種 ssp. *daemoniaca* 主要分布於本島低海拔地區；亞種 ssp. *permagnis* 曾於馬祖有記錄。

寄主植物：禾本科之五節芒、開卡蘆、李氏禾等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：早年文獻多提及本種在臺灣屬常見種 (如 Fruhstorfer, 1908; Shirôzu, 1960; Hamano, 1987)，但近年來數量明顯減少。

Aoki *et al*. (1985) 將分布於海南島之族群亦歸於亞種 ssp. *daemoniaca*，該分類處理有待進一步釐清。

Lethe verma (Kollar, [1844]) (玉帶黛眼蝶 / 白帶黑蔭蝶)

Satyrus verma Kollar, [1844]: Kaschmir und das Reich der Siek 4: 447, pl. 16, f. 1-2. (Type locality: “Himal[aya], Simla, [India]”)

Ssp. *cintamani* Fruhstorfer, 1909

PLATE 54, Figs. 297–298; PLATE 101, Fig. 517; PLATE 139, Fig. 665

Lethe verma cintamani Fruhstorfer, 1909: Entomologische Zeitschrift 23 (8): 40. (Type locality: “See von Lehiku, Formosa”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Danshui, Erziping, 700m, 21. VII. 2011 (Y. T. Lin). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Xuewunao, 7. VI. 2017 (L. Huang) (genitalia preparation JYL983). **YILAN Co.:** 1♂, Toucheng, Guishan Is., 31. III. 2007 (H. C. Huang); 1♂, same locality, 24. V. 2007 (H. C. Huang). **XINZHU Co.:** 1♂, Wufeng, E. branch Dalu Forest Trail, 2000m, 20. X. 2009 (L. H. Wang & C. H. Huang).

NANTOU Co.: 1♂, Xinyi, Dongpu, 1200m, 31. VII. 2009 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♂, Taoyuan, Xiaoguanshan Forest Trail, 1000m, 13. XI. 2005 (Y. F. Hsu); 1♀, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su); 1♀, Taoyuan, Meishan, 700m, 8. XI. 2010 (H. C. Huang). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1100/1200m, 5. V. 2007 (Y. F. Hsu); 1♀, Wutai, Wutoushan, 1200m, 6. VI. 2009 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Beinan, Lijia Forest Trail, 1200m, 1. X. 2000 (Y. F. Hsu).

Description. Adult – Forewing length 25–31 mm. Sexual dimorphism absent. Male (PLATE 54, Fig. 297): Head dark brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes densely hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, hairy, dark brown with creamy white bands laterally. Thorax brown. Legs brown, but foreleg white with brown stripe, densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular; costa convex; termen, dorsum nearly straight. Hindwing flabellate, with termen slightly wavy. Wing uppersides ground color brown. A prominent, oblique white band on forewing. Double, narrow, grayish white submarginal bands present, more prominent on hindwing. Wing undersides ground color brown. A series of postdical eyespots on both wings; six on hindwing, arranged into a curve; two on forewing, near distal end of cell M_1 and M_2. Eyespots on hindwing circled by purple rings. Double, narrow, purple, discal bands present on hindwing. A narrow purple bar present in discoidal cell of forewing. A creamy yellow straight band associated with purple margin present submarginally on both wings. Fringe brown. Female (PLATE 54, Fig. 298): Body and wing pattern similar to those of male; foreleg normal, less hairy, with protarsi segmented, spiny.

Male genitalia (PLATE 101, Fig. 517) – Tegumen broad; uncus as stout, down-curved beak. Brachia blade-like, with a few dorsal teeth. Saccus elongate, rod-like, with distal tip blunt. Vinculum bent dorsally. Valva stout proximally, forming straight, narrow, flattened blade distally, bearing minute spines on dorsal surface distad. Juxta as transverse sclerite with both ends bent upwards. Phallus elongate, straight; aedeagus more than 2X of phallobase, tapering posteriad, with caudal end divided.

Female genitalia (PLATE 139, Fig. 665) – Corpus bursae ovate. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, longer than length of corpus bursae, wrinkled, with anterior portion enlarged. Sterigma with lamella antevaginalis forming weakly sclerotized dome, lamella postvaginalis forming disc-like sclerite with anterior and lateral margins folded. Posterior apophyses as small, weakly sclerotized rod. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Himalaya, Northeast India, Indochina, West to East China, Taiwan (Igarashi & Fukuda, 1997).

Distribution in Taiwan. Low to moderate elevations in montane zone of main island of Taiwan, also Guishan Island (Hsu, 2002, 2013).

Larval Host plant(s). Poaceae: *Cyrtococcum accrescens*. (Hsu, 2002, 2013)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2013).

形態特徵：成蝶前翅長 25–31 mm。無雌雄二型性。雄蝶 (圖 297)：頭黑褐色。觸角黑褐色，有乳白色紋、末端部分裸露。複眼密被毛，後側輪緣白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面有乳白色條紋。胸部褐色。足褐色；但前足白色，有褐色條紋、密被毛、刷狀、跗節減退、刺狀。腹部背面黑褐色、腹面灰白色。前翅近三角形，前緣凸、外緣及後緣近直線狀。後翅扇形，外緣略呈波狀。翅背面底色褐色，前翅有鮮明白色斜帶紋；亞外緣有兩道灰白色細線紋、於後翅較明顯。翅腹面底色褐色，外側眼狀紋於前翅兩只、位於 M_1 室及 M_2 室末端，於後翅六只，鑲紫色圈紋，彎曲排列，亞外緣有鑲紫色邊之乳黃色帶紋；前翅中室內有紫色短線紋；後翅中央有兩條紫色細線紋。緣毛褐色。雌蝶 (圖 298)：形態特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺。

雄交尾器 (圖 517)：背兜寬。鉤突粗壯，形成下彎之喙狀構造，末端尖。顎形突刃狀，背側具數只齒突。囊突修長、桿狀，末端鈍。基腹弧背側彎曲。抱器基部較寬，向後漸窄，形成挺直、扁平之瓣狀構造，其背側緣有小棘刺。陽基顎片形成兩側上

彎之橫向骨片。陽莖頗長、挺直。陽莖器長度超過陽莖基長度 2 倍，向後漸細，尾端開裂。

雌交尾器 (圖 665)：交尾囊呈卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管細長，長度超過交尾囊，有褶皺，前半部膨大。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成盤狀骨片，前緣及側緣有摺。後內骨突小型、輕度骨化、桿狀。肛突輕度骨化，後緣具剛毛。

世界分布：喜瑪拉雅地區、印度東北部、中南半島、華西至華東、臺灣。

臺灣分布：本島低至中海拔山區，龜山島亦有分布。

寄主植物：禾本科之散穗弓果黍等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Lethe hyrania (Kollar, [1844]) (深山黛眼蝶／深山玉帶蔭蝶)

Satyrus hyrania Kollar, [1844]: Kaschmir und das Reich der Siek 4: 449, pl. 17, f. 1-2. (Type locality: “Himaleya [Himalaya], Simla, [India]”)

Satyrus isana Kollar, [1844]: Kaschmir und das Reich der Siek 4: 448. (Type locality: “Himal[eya], Massuri [Mussoorie], [India]”)

Satyrus jsana Kollar, [1844]: Kaschmir und das Reich der Siek 4: pl. 16, f. 3–4. (subsequent incorrect spelling)

Lethe insane [sic] Bingham, 1905 (not Kollar): The Fauna of British India, including Ceylon and Burma, Butterflies I: 81. (subsequent incorrect spelling)

Lethe ihasana [sic] Hannyngton, 1910 (not Kollar): The Journal of the Bombay Natural History Society 20 (1): 134. (subsequent incorrect spelling)

Ssp. *formosana* Fruhstorfer, 1908

PLATE 55, Figs. 299–302; PLATE 101, Fig. 518; PLATE 139, Fig. 666

Lethe insana [sic] *formosana* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: “Formosa, Larachi, Mt. Morrison”)

Lethe (*Kerrata*) *ocellata bojonia* Fruhstorfer, 1913: Deutsche entomologische Zeitschrift “Iris” 27 (3): 137. (Type locality: “Formosa, Jujimichi [Shizhilu, Jiayi, Taiwan]”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Sanxia, Beichatianshan, 1500/1700m, 24. V. 2000

(Y. T. Lo); 1♀, same locality, 1500m, 26. V. 2002 (C. L. Huang & J. R. Chen); 1♂, Wulai, Lalashan, 1600/1700m, 18. IV. 2003 (Y. F. Hsu); 2♂, Wulai, Badaoershan, 900m, 14. XI. 2004, reared from *Sinobambusa kunishii*, emgd. 4. I. 2005, HSU 04L34 (L. H. Wang); 1♂, same locality, 11. XII. 2004, reared from *S. kunishii*, emgd. 17. II. 2005, HSU 04M12 (L. H. Wang); 1♀, same locality, 1100m, 5. VII. 2005, reared from *S. kunishii*, emgd. 20. VII. 2005, HSU 05G4 (L. H. Wang); 1♂, Shiding, Ergeshan, 19. V. 2004 (R. K. Dong); 1♀, Sanxia, Zhulushan, 25. V. 2004 (R. K. Dong); 1♂, Danshui, Erziping, 800m, 18. VI. 2005 (H. C. Huang); 1♀, Sanzhi, Datunshan, 850m, 16. VI. 2009 (H. C. Huang); 2♂, Sanzhi, Datunshan, 850m, 16. VI. 2009 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 1100m, 21. X. 2008 (Y. F. Hsu & L. W. Wu); 1♂, 1♀, Fuxing, Baling, 1000m, 11. VII. 2011 (H. C. Huang); 1♀, Fuxing, Xuewunao, 7. VI. 2017 (Y. F. Hsu); 1♂, Fuxing, Xuanyuan, 19. VII. 2018 (Y. F. Hsu). **YILAN Co.:** 1♂, Datong, Siyuan Forest Trail, 22. VII. 1999 (K. L. Chen); 1♂, Datong, Taipingshan, 12. VIII. 2002 (C. C. Lu); 3♂, 1♀, Datong, Taipingshan, 1700m, 15. VI. 2007 (Y. F. Hsu); 1♂, Datong, Siyuan, 2000m, 31. VII. 2007 (Y. F. Hsu). **XINZHU Co.:** 1♀, Jianshi, Zhenxibao, 1500m, 5. V. 2004 (L. H. Wang); 1♂, 1♀, same locality, 6. V. 2004 (Y. F. Hsu); 1♂, Jianshi, Lidongshan, 1600m, 15. III. 2006 (Y. F. Hsu, C. C. Lu & L. H. Wang); 2♂, Jianshi, Zhenxibao, 1600m, 23. III. 2009 (Y. F. Hsu & L. H. Wang); 1♂, same locality, 21. III. 2011 (L. H. Wang); 1♂, Wufeng, E. branch Dalu Forest Trail, 2000m, 20. X. 2009 (L. H. Wang & C. H. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Anmashan, 2000m, 28. VII. 2003 (H. C. Huang & Y. C. Hsu); 1♂, Datong, Mingchi, 18. V. 2004 (R. K. Dong); 2♂, Nanao, Tongshan, V. 2004 (L. H. Wang); 1♂, Heping, Shangguguan, 900m, 25. IX. 2006 (Y. F. Hsu); 1♂, same locality, 30. X. 2006 (Y. F. Hsu). **NANTOU Co.:** 2♂, Lugu, Fenghuanggu Bird and Ecology Park, 8. XII. 2004, reared from *S. tootsik*, emgd. 24. XII. 2004/15. I. 2005, HSU 04M22 (Y. F. Hsu); 1♂, Renai, Beidongyanshan, 1700m, 20. III. 2005, reared from *Yushania niitakayamensis*, emgd. 14. IV. 2005, HSU 05C11 (Y. F. Hsu); 1♂, Renai, Nenggao Trail, 8/9Km, 2600m, 10. II. 2007, reared from *Y. niitakayamensis*, emgd. 4. III. 2007, HSU 07B25 (L. H. Wang); 1♂, 2♀, Renai, Yunhai, 2400m, 13. I. 2007, reared from *Y. niitakayamensis*, emgd. 24/27. II. 2007, HSU 07A21.2 (Y. F. Hsu); 1♂, same locality, 29. V. 2007 (Y. F. Hsu); 1♀, Renai, Meifeng, 2100m, 2. V. 2007, reared from *Y. niitakayamensis*, emgd. 22. V. 2007, HSU 07E48 (C. L. Huang); 1♀, Renai, Guandaoshan, 1. VIII. 2020 (L. Huang & H. C. Huang). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 2200m, 29. VII. 2005 (Y. F. Hsu);

7♂, 7♀, Xiulin, Kuailin, 2100m, 14. I. 2007, reared from *Y. niitakayamensis*, emgd. 13. II. /4. III. 2007, HSU 07A22.3 (L. H. Wang). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu).

Description. Adult – Forewing length 23–33 mm. Sexual dimorphism present. Male (PLATE 55, Figs. 299–300): Head dark brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes densely hairy, rim behind eyes creamy white. Proboscis brown. Labial palpus porrect, hairy, dark brown with creamy white bands laterally. Thorax brown. Legs creamy white, brownish distally, foreleg white mixed with brown, densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular; costa convex; termen, dorsum nearly straight. Hindwing flabellate, with termen slightly wavy; distal end of M_3 slightly produced. Wing uppersides ground color brown. A series of dark brown, faint, postdiscal spots present on hindwing. An oblique, narrow, dark band on forewing. Double, narrow, faint gray submarginal bands present, more prominent on hindwing. Wing undersides ground color brown, partially tinged with purple shine. A series of postdical eyespots on both wings; six on hindwing, arranged into a curve; three on forewing, near distal end of cell M_1, M_2 and M_3. Eyespots circled by purple rings. Double, narrow, brown ochre, discal bands present on hindwing. An oblique line on forewing, with portion of wing in front paler. Two narrow, brown ochre bars present in discoidal cell of forewing, one in that of hindwing. Gray or brown straight band associated with purple margin present submarginally on both wings. Fringe white, checkered with brown. Female (PLATE 55, Figs. 301–302): Body and wing pattern similar to those of male, but ground color of wing uppersides tinged with red, and a prominent oblique white band present on forewing; two small white spots present near apex of forewing; foreleg normal, less hairy, with protarsi segmented, spiny.

Male genitalia (PLATE 101, Fig. 518) – Tegumen broad, convex dorsally; uncus straight, elongate, attenuate to truncate distal end. Brachia as elongate spikes with minute teeth dorsally. Saccus relatively short, with distal tip blunt. Vinculum bent. Valva broad proximally, narrowed to elongate blade posteriad, with distal end blunt with a dorsal spine. Juxta as narrow transverse sclerite with both ends bent upwards. Phallus nearly straight; aedeagus longer than phallobase, with an oblique ridge near caudal end.

Female genitalia (PLATE 139, Fig. 666) – Corpus bursae ovate. Signa as two elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae nearly as long as corpus bursae. Sterigma with lamella antevaginalis forming weakly sclerotized dome, lamella postvaginalis forming squared sclerite with anterior and lateral margins folded. Posterior apophyses short, weakly sclerotized. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals from lower elevations show a tendency to be larger in size and darker.

Global distribution. Himalayas, Northeast India, northern Indochina, West to East China, Taiwan (Igarashi & Fukuda, 1997).

Distribution in Taiwan. Low to moderate elevations in montane zone of main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Poaceae: *Yushania niitakayamensis*, *Sinobambusa kunishii*, *S. tootsik*, *Pseudosasa usawae*, etc. (Hsu, 2013)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2013).

Remarks. This species has been called by a misspelt name *insana* for decades until Lang & Lamas (2016) pointed out the correct valid name should be *hyrania* Kollar, [1844].

The taxon *bojonia* Fruhostorfer, 1913 was described as a subspecies of *Lethe ocellata* (Poujade, 1885), a species ranging in western China to northern Vietnam (Lang, 2017) and characteristic by absence of eyespots on forewing undersides. Shirôzu & Ueda (1992) revised *bojonia* to a species level in a catalogue, without giving explanation. The syntypes of *bojonia* (shown in D'Abrera, 1985) possess three eyespots on forewing undersides, evidently not conformed to *ocellata*. Instead, all features of the syntypes are conformed to those of *L. hyrania*, and should be regarded as a junior subjective synonym of *formosana* Fruhstorfer, 1908, as addressed by Lang (2017).

形態特徵：成蝶前翅長 23–33 mm。具雌雄二型性。雄蝶 (圖 299–300)：頭黑褐色。觸角黑褐色，有乳白色紋、末端部分裸露。複眼密被毛，後側輪緣乳白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面具乳白色條紋。胸部褐色。足乳白色，末端褐色；前足白色雜褐色、密被毛、刷狀，跗節減退、刺狀。腹部背面黑褐色、腹面灰白色。前翅近三角形，前緣凸、外緣及後緣近直線狀。後翅扇形，外緣略呈波狀，M_3 脈末端略突出。翅背面底色褐色，後翅外側有一列黑褐色、模糊之眼狀紋，前翅有一道深色斜行細帶紋；亞外緣有兩道模糊灰色細線紋、於後翅較鮮明。翅腹面底色褐色，部分泛紫色光澤，外側有一列眼狀紋，於前翅有三只、位於 M_1 室、M_2 室及 M_3 室端部，於後翅有六只、彎曲排列，眼狀紋鑲紫色圈紋。亞外緣有鑲紫色邊之灰色或褐色直線紋。前翅有斜線，其前方翅面色淺；後翅中央有兩道赭褐色細線紋。前翅中室內有兩道赭褐色短線紋，後翅中室則僅一道。緣毛白色嵌褐色。雌蝶 (圖 301–302)：形態特徵與雄蝶相似，但翅背面底色帶紅色調，前翅有一條鮮明白色斜帶紋，前翅近翅頂處有二只白色斑點；前足正常、疏被毛、跗節分節、具刺。

雄交尾器 (圖 518)：背兜寬，背側隆起。鉤突挺直、細長，向後漸細，末端截狀。顎形突長釘狀，背側具小齒。囊突較短、桿狀，末端鈍。基腹弧彎曲。抱器基部較寬，向後漸窄，末端鈍而背側具 1 尖刺。陽基顎片形成兩端上彎之橫向小骨片。陽莖挺直。陽莖器長度超過陽莖基，近尾端處背側有斜稜。

雌交尾器 (圖 666)：交尾囊呈卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管與交尾囊近乎等長。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成方形骨片，其前緣及側緣有褶。後內骨突小型、輕度骨化。肛突輕度骨化，後緣具剛毛。

變異：海拔較低之棲地出現的個體有體型較大、顏色較深的傾向。

世界分布：喜瑪拉雅地區、印度東北部、中南半島北部、華西至華東、臺灣。

臺灣分布：本島低至中海拔山區。

寄主植物：禾本科之玉山箭竹、臺灣矢竹、唐竹、包籜矢竹等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種種小名過去數十年被稱為 *insana*，但該學名實為一拼寫錯誤之學名。Lang & Lamas (2016) 指出正確有效名應作 *hyrania* Kollar, [1844]。

分類單元 *bojonia* Fruhostorfer, 1913 過去被視為分布於華西至北越之 *Lethe ocellata* (Poujade, 1885) 的亞種，後者之特徵為前翅腹面缺乏眼狀紋。Shirôzu & Ueda (1992) 於臺灣蝶類目錄中將 *bojonia* 提升至種級，但未給予解釋。分類單元 *bojonia* 之總模式標本 (參照 D'Abrera, 1985) 前翅腹面具三枚眼狀紋，顯然與 *ocellata* 並不吻合，其所有特徵卻均與 *L. hyrania* 一致，因此如 Lang (2017) 所言，應為 *formosana* Fruhstorfer, 1908 之次主觀同物異名。

Lethe chandica (Moore, [1858]) (曲紋黛眼蝶／雌褐蔭蝶)

Debis chandica Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 219. (Type locality: "Darjeeling, [India]")

Lethe chandica flanona Fruhstorfer, 1911: Die Gross-Sschmetterlinge der Erde 9: 320. (Type locality: "Assam, [India]")

Ssp. *ratnacri* Fruhstorfer, 1908

PLATE 55, Figs. 303–304; PLATE 102, Fig. 519; PLATE 139, Fig. 667

Lethe chandica ratnacri Fruhstorfer, 1908: Entomologische Wochenblatt 25 (9): 38. (Type locality: "Formosa, Kagi [Jiayi]")

Specimens examined:

JILONG CITY: 1♀, Zhongzheng, Haimentianxian, 13. III. 2001, reared from bamboo, emgd. 28. II. 2001 (M. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Xindian, Sikanshui, 24. III. 2008, reared from *Miscanthus* sp., emgd. 21. IV. 2008, HSU 08C20 (L. H. Wang); 1♀, Bali, Guanyinshan, 500m, 15. IV. 2011 (Z. H. Yen); 1♂, Ruifang, 16. V. 2010, reared from *Miscanthus* sp., emgd. 26. V. 2011 (H. C. Huang). **TAIPEI CITY:** 1♂, Shilin, Tianxiyuan, 13. XII. 2013, reared from "bamboo", emgd. 20. I. 2014, HSU 13M33 (Y. M. Hsu); 1♀, Neihu, Dagouxi, 1. I. 2016, reared from *Miscanthus* sp., emgd. 12. I. 2016, HSU 16A5 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 1100m, 21. X. 2008 (Y. F. Hsu & L. W. Wu); 1♀, Fuxing, Baling, 1. II. 2020, reared from *Miscanthus* sp., emgd. 20. III. 2020, HSU 20B4 (Y. F. Hsu). **MIAOLI Co.:** 1♀, Taian, Henglongshan, 1400m, 5. III. 2005, reared from *Sinobambusa kunishii*, emgd. 17. IV. 2005, HSU 05C2 (Y. F. Hsu); 1♂, Taian, Henglongshan, 1300m, 11. X. 2021, reared from *M. sinensis*, emgd. 28. X. 2021, HSU 21K10 (Y. F. Hsu & Y.

M. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Fengyuan, Xiaojia Garden, 28. XI. 1999, reared from *Miscanthus* sp., emgd. 25. I. 2000 (Y. T. Lo). **NANTOU Co.:** 1♂, Xinyi, Dongpu, 1200m, 31. VII. 2009 (Y. F. Hsu); 1♂, Puli, Shidunkeng, 14. XII. 2011, reared from bamboo, emgd. 15. II. 2012, HSU 11M5 (L. H. Wang). **TAINAN CITY [= TAINAN Co.]:** 1♂, 1♀, Dongshan, Kantoushan, 600/800m, 4. II. 2010 (Y. F. Hsu); 1♂, 2♀, same locality, 8. III. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Fenggangshan, 1100m, 1. X. 2021, reared from *M. sinensis*, emgd. 1. XI. 2021, HSU 21K1.1 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu).

Description. Adult – Forewing length 33–35 mm. Sexual dimorphism present. Male (PLATE 55, Fig. 303): Head dark brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes densely hairy, rim behind eyes creamy white. Proboscis brown. Labial palpus porrect, hairy, dark brown with creamy white bands laterally. Thorax brown. Legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular, with apex slightly produced, somewhat obtuse; costa convex; termen slightly concave; dorsum straight. Hindwing ovate, with termen slightly wavy, a short, tail-like projection at distal end of M_3. Wing uppersides ground color dark uniformly brown. Wing undersides ground color brown, sometimes with purplish blue hue. A series of postdiscal eyespots on both wings, with dark brown markings in center ameboid in shape on hindwing; arranged into an inward curve on forewing, outward curve on hindwing. Double, narrow, brown ochre, linear, discal bands present on both wings. Two short narrow brown ochre bands present in discoidal cell of forewing, one in that of hindwing. An orange straight band associated with a dark wavy band present submarginally on both wings. A few small creamy yellow spots usually present by distal band of discal band in cell M_1, M_3 and CuA_1 of hindwing. Fringe creamy yellow, checkered with brown. Female (PLATE 55, Fig. 304): Body similar to that of male; foreleg normal, less hairy, with protarsi segmented, spiny. Ground color of wing uppersides mostly red ochre, with prominent oblique white band on forewing; Dark brown postdiscal spots present, more prominent on hindwing.

Male genitalia (PLATE 102, Fig. 519) – Tegumen broad, convex dorsally; uncus as

larges, down-curved beak, convex dorsad. Brachia as elongate spikes. Saccus relatively short, rod-like, with distal tip blunt. Vinculum bent. Valva broad proximally, narrowed to elongate arm posteriad, with distal end slightly broadened, flat, with teeth along terminal margin. Juxta as small transverse sclerite with both ends bent upwards. Phallus nearly straight; aedeagus longer than phallobase.

Female genitalia (PLATE 139, Fig. 667) – Corpus bursae ovate. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, nearly as long as corpus bursae, wrinkled. Sterigma with lamella antevaginalis forming weakly sclerotized dome, lamella postvaginalis forming oval sclerite with anterior margin truncate and lateral margins folded. Posterior apophyses as small, weakly sclerotized rod. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Wing ground color becomes paler, with pattern of undersides obscurer in dry and colder spells.

Global distribution. Widely distributed in the Oriental region, excluding central and southern India, and Sri Lanka (Aoki *et al.*, 1985).

Distribution in Taiwan. Mainly in low to moderate elevations of main island of Taiwan (Hsu, 1999, 2013; Lu & Chen, 2014).

Larval Host plant(s). Poaceae: *Miscanthus sinensis*, *M. floridulus*, *Pseudosasa usawae*, *Sinobambusa kunishii*, *Bambusa oldhamii*, *B. ventricosa*, etc. (Hsu, 2006, 2013; Lu & Chen, 2014)

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2006, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 33–35 mm。具雌雄二型性。雄蝶 (圖 303)：頭黑褐色。觸

角黑褐色，有乳白色紋、末端部分裸露。複眼密被毛，後側輪緣乳白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面有乳白色條紋。胸部褐色。足褐色，前足密被毛、刷狀、跗節減退、刺狀。腹部背面黑褐色、腹面灰白色。前翅近三角形，翅頂略突出、鈍，前緣凸、外緣略凹、後緣直線狀。後翅卵形，外緣略呈波狀，M_3 脈末端有短尾突。翅背面底色黑褐色。翅腹面底色褐色，有時泛藍紫色，外側有眼狀紋，於前翅作內凹排列，於中央後翅者眼紋變為阿米巴狀黑褐色斑紋、外凸排列。中央有兩道赭褐色細線紋，亞外緣有橙色直帶紋鑲深色波狀紋。前翅中室有兩道赭褐色短線紋、後翅則有一道；後翅中央帶紋於 M_1、M_3 及 CuA_1 室外側有乳黃色斑點。緣毛乳黃色嵌褐色。雌蝶 (圖 304)：軀體特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺。翅背面底色大部分呈赭紅色，前翅有鮮明白色斜帶紋。翅面外中側有深褐色眼狀紋、於後翅較鮮明。

雄交尾器 (圖 519)：背兜寬，背側隆起。鉤突大型，形成下彎之喙狀構造，背側凸，末端尖。顎形突形成長釘狀突起。囊突相對較短、桿狀，末端鈍。基腹弧彎曲。抱器基部較寬，向後漸細，末端略寬、扁平，末緣具鋸齒。陽基顎片形成一對兩側上彎之橫向小骨片。陽莖頗直。陽莖器長度超過陽莖基。

雌交尾器 (圖 667)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管細長，與交尾囊近乎等長，有褶皺。交尾囊孔板之前陰片形成輕度骨化之穹頂；後陰片形成橢圓形骨片，前緣截狀，側緣有褶。後內骨突小型、輕度骨化、桿狀。肛突輕度骨化，後緣具剛毛。

變異：乾季及低溫期翅底色較淺、翅腹面斑紋較模糊。

世界分布：除印度中、南部及斯里蘭卡外呈泛東洋區分布。

臺灣分布：本島低至中海拔山區。

寄主植物：禾本科之芒、五節芒、包籜矢竹、臺灣矢竹、綠竹、佛竹等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

***Lethe mataja* Fruhstorfer, 1908 (臺灣黛眼蝶／大玉帶黑蔭蝶／馬太黛眼蝶)**

PLATE 56, Figs. 305–306; PLATE 102, Fig. 520; PLATE 139, Fig. 668

Lethe mataja Fruhstorfer, 1908: Entomologische Wochenblatt 25 (9): 38. (Type locality: "Lake Candidius [Sun Moon Lake, Nantou, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, Hapen Trail, 6. VIII. 1985 (W. J. Wu); 1♀, Sanxia, Beichatianshan, 1700/1727m, 20. V. 1996 (Y. F. Hsu). **TAOYUAN CITY:** 1♂, 1♀, Fuxing, Xuanyuan, 1. II. 2020, reared from *Miscanthus sinensis*, emgd. 17/20. II. 2020, HSU 20B7 (Y. F. Hsu); 1♂, same locality, 17. IX. 2021, reared from *M. sinensis*, emgd. 4. X. 2021, HSU 21J6 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Beidongyanshan, 1800m, 6. XII. 2005, reared from *M. sinensis*, emgd. 1. II. 2006, HSU 05M19 (Y. F. Hsu); 1♂, same locality, 17. XII. 2005, reared from *M. sinensis*, emgd. 7. II. 2006, HSU 05M20 (Y. F. Hsu); 1♀, Renai, Huisun, 600/700m, 20. II. 2012, reared from *M. sinensis*, emgd. 2. III. 2012, HSU 12B20 (Y. F. Hsu & H. C. Huang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Fenggangshan, 800m, 6. VI. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1200m, 6. VI. 2009 (Y. F. Hsu); 1♂, Chunri, Dahan Forest Trail, 20. VII. 2020 (C. W. Huang, C. J. Chang & J. Y. Liang) (genitalia preparation JYL921).

Description. Adult – Forewing length 29–36 mm. Sexual dimorphism absent or weakly present. Male (PLATE 56, Fig. 305): Head dark brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes densely hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, hairy, dark brown with creamy white bands laterally. Thorax brown. Legs brown, but foreleg white with brown stripe, densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen dark brown dorsally, grayish white ventrally. Forewing nearly triangular; costa convex; termen, dorsum nearly straight. Hindwing flabellate, with termen slightly wavy; distal end of M_3 slightly produced. Wing uppersides ground color brown. A prominent, oblique white band on forewing. Double, narrow, faint grayish white submarginal bands present, more prominent on hindwing. Wing undersides ground color brown. A series of postdical eyespots on both wings; five on hindwing, absent in cell CuA_1, arranged into a curve; two on forewing, near distal end of cell M_1 and M_2. Eyespots on hindwing circled by purple rings. Double, narrow, purple, discal bands present on hindwing. A narrow purple bar present in discoidal cell of forewing. A creamy yellow straight band associated with purple margin present

submarginally on both wings. Fringe white, checkered with brown. Sexual brand present, as a dark brown hair tuft in cell CuA_1 on hindwing uppersides. Female (PLATE 56, Fig. 306): Body and wing pattern similar to those of male; foreleg normal, less hairy, with protarsi segmented, spiny; eyespot in cell CuA_1 of hindwing undersides usually present. No sexual brand.

Male genitalia (PLATE 102, Fig. 520) – Tegumen broad, convex dorsally; uncus as large down-curved beak, convex dorsad. Brachia as elongate spikes. Saccus stout, elongate, rod-like, with distal tip blunt. Vinculum bent. Valva broad proximally, narrowed to elongate arm posteriad, with distal end forming up-raising beak. Juxta as small transverse sclerite with both ends bent upwards. Phallus straight; aedeagus approximately 2X of phallobase.

Female genitalia (PLATE 139, Fig. 668) – Corpus bursae oblong. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, nearly as long as corpus bursae, wrinkled, with anterior portion enlarged. Sterigma with lamella antevaginalis forming weakly sclerotized dome, lamella postvaginalis forming squared sclerite with anterior and lateral margins folded. Posterior apophyses as small, weakly sclerotized rod. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone of main island of Taiwan (Hsu, 2006, 2013).

Larval Host plant(s). Poaceae: *Miscanthus sinensis* (Hsu, 2006, 2013).

Biology. Multivoltine, with adults on the wing throughout the year (Hsu, 2006, 2013).

Remarks. This species is usually considered a species endemic to Taiwan. Morishita (1994) recorded *L. mataja* from Thailand, and Ek-Amnuay (2012) suggested that *Lethe philesanoides* Monastyrskii & Devyatkin, 2003 described from Vietnam is conspecific with *L. mataja*. Inayoshi (1996-2021) has pointed out that *L. philesanoides* is a species distinct from *L. mataja*, and both Morishita and Ek-Amnuay's records of "*L. mataja*" in Thailand should be referred to *L. philesanoides*, thus *L. mataja* should still be considered a species endemic to Taiwan.

形態特徵：成蝶前翅長 29–36 mm。雌雄二型性略有或缺乏。雄蝶 (圖 305)：頭黑褐色。觸角黑褐色，有乳白色紋、末端部分裸露。複眼密被毛，後側輪緣白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面有乳白色條紋。胸部褐色。足褐色，但前足白色而有褐色條紋、密被毛、刷狀、跗節減退、刺狀。腹部背面黑褐色、腹面灰白色。前翅近三角形，前緣凸、外緣及後緣近直線狀。後翅扇形，外緣略呈波狀，M_3 末端略突出。翅背面底色褐色，前翅有鮮明白色斜帶紋；亞外緣有兩道模糊灰白色細線紋、於後翅較鮮明。翅腹面底色褐色，外側眼狀紋於前翅兩只、近翅頂、位於 M_1 室及 M_2 室末端，於後翅有五只，不見於 CuA_1 室，鑲紫色圈紋，彎曲排列。亞外緣有鑲紫色邊之乳黃色帶紋。前翅中室有紫色短線紋。後翅中央有兩道紫色細線紋。緣毛白色嵌褐色。後翅背面 CuA_1 室內有黑褐色性標。雌蝶 (圖 306)：形態特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺。後翅腹面 CuA_1 室常有眼紋。無性標。

雄交尾器 (圖 520)：背兜寬，背側隆起。鉤突大型，形成下彎之喙狀構造，背側凸出。顎形突為細長釘狀突起。囊突粗、長、桿狀，末端鈍。基腹弧彎曲。抱器基部較寬，向後漸細，末端形成上舉之喙狀構造。陽基顎片形成兩端上彎曲之橫向小骨片。陽莖甚直。陽莖器長度約為陽莖基 2 倍。

雌交尾器 (圖 668)：交尾囊橢圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管細長，與交尾囊近乎等長，有褶皺，前半部膨大。交尾囊孔板之前陰片形成輕度骨化之穹頂；後陰片形成方形骨片，前緣及側緣有摺。後內骨突小型、輕度骨化。肛突輕度骨化，後緣具剛毛。

世界分布：臺灣特有種。

臺灣分布：本島低至中海拔山區。

寄主植物：禾本科之芒。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種一般被視為臺灣特有種。Morishita (1994) 曾記錄了產自泰國之本種，而 Ek-Amnuay (2012)認為產自越南之 *Lethe philesanoides* Monastyrskii & Devyatkin, 2003 與本種同種。Inayoshi (1996-2021) 指出 *L. philesanoides* 與本種為兩獨立種，且 Morishita 及 Ek-Amnuay 於泰國之本種記錄均應為 *L. philesanoides*，從而本種仍應視為臺灣特有種。

Lethe christophi Leech, 1891 (柯氏黛眼蝶／棕褐黛眼蝶／深山蔭蝶)

Lethe christophi Leech, 1891: The Entomologist 24 (Supplement): 67. (Type locality: "Omei-Shan [Sichuan], Chang-Yang [Hubei]")

Lethe christophi obscura Mell, 1942: Archiv für Naturgeschichte (N. F.) 11 (3): 276. (Type locality: "Kuatun [Guadun, Fujian]") (preoccupied by *Lethe callipteris obscura* Nakahara, 1926)

Ssp. *hanako* Fruhstorfer, 1908

PLATE 56, Figs. 307–308; PLATE 102, Fig. 521; PLATE 140, Fig. 669

Lethe christophi hanako Fruhstorfer, 1908: Entomologische Wochenblatt 25 (9): 38. (Type locality: "Lake Candidius [Sun Moon Lake, Nantou, Taiwan]")

Specimens examined:

YILAN Co.: 1♀, Nanao, Taipingshan, 28. VI. 1984 (Y. F. Hsu); 1♂, Nanao, Taiwan Beech Trail, 11. VIII. 2011 (H. C. Chuang). **MIAOLI Co.:** 1♂, Taian, Xishishan Forest Trail, 8Km, 28. VIII. 2021(C. W. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Anmashan, 2000m, 28. VII. 2003 (H. C. Huang & Y. C. Hsu). **NANTOU Co.:** 1♂, 1♀, Renai, Yunhai, 2400m, 13. I. 2007, reared from *Yushania niitakayamensis*, emgd. 21. III. /11. IV. 2007, HSU 07A21.3 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 3. VII. 1989 (Y. F. Hsu); 1♂, Xiulin, Bilu, 2200m, 24. VII. 2005 (Y. F. Hsu); 1♂, same locality, 29. VII. 2005 (Y. F. Hsu); 1♂, same locality, 20. VII. 2007 (Y. F. Hsu); 1♀, Xiulin, Guanyuan, 2200m, 7. VII. 2006 (L. H. Wang) (genitalia preparation JYL1019).

Description. Adult – Forewing length 34–40 mm. Sexual dimorphism absent or weakly

present. Male (PLATE 56, Fig. 307): Head brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes densely hairy, rim behind eyes creamy white. Proboscis brown. Labial palpus porrect, hairy, dark brown with creamy white bands laterally. Thorax, legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown tinged with yellow dorsally, creamy yellow or white ventrally. Forewing nearly triangular; costa convex; termen, dorsum nearly straight; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate, with termen wavy; distal end of M_3 produced. Wing uppersides ground color ochre brown. A series of dark brown postdiscal spots present on hindwing. Wing undersides ground color usually slightly paler and duller. A series of small postdical eyespots on both wings; six on hindwing, arranged into outward curve; three or four on forewing, arranged into inward curve. Double, narrow, reddish brown ochre, discal bands present on both wings. One narrow, reddish brown ochre bar present in discoidal cell of forewing, one at distal end of discoidal cells of both wings. Faint pale brown straight bands present submarginally on both wings. Fringe white, checkered with brown. Sexual brand as a gray specialized scalings in cell CuA_1 and CuA_2 of hindwing. Female (PLATE 56, Fig. 308): Body and wing pattern similar to those of male; but ground color of wing uppersides usually paler, with a few faint creamy yellow dots near forewing apex; foreleg normal, less hairy, with protarsi segmented, spiny. No sexual brand.

Male genitalia (PLATE 102, Fig. 521) – Tegumen broad, convex dorsally, slightly narrowed laterally; uncus as large down-curved beak, convex dorsad. Brachia as elongate spikes. Saccus stout, elongate, rod-like, with distal tip blunt. Vinculum bent. Valva broad proximally, narrowed to elongate blade, with distal end forming a dorsal tooth. Juxta as small transverse sclerite with both ends slightly bent upwards. Phallus straight; aedeagus approximately 2X of phallobase, with invagination at caudal end.

Female genitalia (PLATE 140, Fig. 669) – Corpus bursae ovate. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, nearly as long as corpus bursae, wrinkled, with anterior portion enlarged. Sterigma with lamella antevaginalis forming weakly sclerotized dome, lamella postvaginalis forming dish-like sclerite with anterior and lateral margins folded. Posterior

apophyses as small, weakly sclerotized lobe. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Northern Myanmar, West to East China, Taiwan (Lang, 2017).

Distribution in Taiwan. Higher elevations in montane zone of main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Poaceae: *Yushania niitakayamensis* (Hsu, 2013).

Biology. Probably bivoltine in occurrence, with adults observed from April to September (Hsu, 2013).

Remarks. Fruhstorfer (1908d) states that the subspecific name *hanako* was named after a Japanese actress Sada-Yakko, who was a Japanese actress famous and popular to European countries by the beginning of the 20th century (Li, 2018; Doma, 2020).

形態特徵：成蝶前翅長 34–40 mm。雌雄二型性略有或缺乏。雄蝶 (圖 307)：頭褐色。觸角黑褐色，有乳白色紋、末端部分裸露。複眼密被毛，後側輪緣乳白色。口器褐色。下唇鬚前伸、被毛、黑褐色、側面有乳白色條紋。胸部褐色。足褐色，前足密被毛、刷狀、跗節減退、刺狀。腹部背面褐色泛黃色、腹面乳黃色或白色。前翅近三角形，前緣凸、外緣及後緣近直線狀；R 脈基部膨大成紡錘狀。後翅扇形，外緣呈波狀，M_3 末端突出。翅背面底色赭褐色，後翅外側有一列黑褐色紋。翅腹面底色常略黯淡，外側有一列眼狀紋，於前翅有三或四只、作內凹排列，於後翅有六只、作外凸排列。中央有兩道紅褐色細線紋。前翅中室內有一道紅褐色短線紋，前、後翅中室端亦有一道。亞外緣有模糊淡褐色直線紋。緣毛白色嵌褐色。後翅 CuA_1 室及 CuA_2 室有由灰色特化鱗組成之性標。雌蝶 (圖 308)：形態特徵與雄蝶相似，但翅背面底色一般較淺、前翅近翅頂處有模糊乳黃色小紋，前足正常、疏被毛、跗節分節、具刺、無性標。

雄交尾器 (圖 521)：背兜寬，背側隆起。鉤突大型，形成下彎之喙狀狀構造，背側凸出。顎形突呈長釘狀。囊突粗壯、長桿狀，末端鈍。基腹弧彎曲。抱器基部較寬，向後漸細，末端背側具 1 齒突。陽基顎片形成兩端上彎之橫向小骨片。陽莖甚直。陽莖器長度約為陽莖基 2 倍，尾端有凹裂。

雌交尾器 (圖 669)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管細長，與交尾囊近乎等長，有褶皺，前半部膨大。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成盤狀骨片，其前緣及側緣有褶。後內骨突小型、輕度骨化、葉狀。肛突輕度骨化，後緣具剛毛。

世界分布：緬甸北部、華西至華東、臺灣。

臺灣分布：本島海拔較高之山區。

寄主植物：禾本科之玉山箭竹。

生物學：本種可能一年有兩世代，成蝶可見於四月至九月。

註記：Fruhstorfer (1908) 將本種臺灣亞種之亞種名獻名予 20 世紀初葉於歐洲國家擁有高人氣之日本著名演員川上貞奴。

Lethe butleri Leech, 1889 (巴氏黛眼蝶／臺灣擬黑蔭蝶／臺灣黑蔭蝶／圓翅黛眼蝶)

Lethe butleri Leech, 1889: Transactions of the Entomological Society of London 1889 (1): 99, pl. 8, f. 3. (Type locality: “Kiukiang [Jiujiang, Jiangxi, China]”)

Mycalesis turpilius Oberthür, 1890: Études d'Entomologie 13: 43, pl. 9, f. 101. (Type locality: “Moupin [Baoxing, Sichuan, China]”)

Lethe butleri kuatunensis Mell, 1942: Archiv für Naturgeschichte (N.F.) 11: 279. (Type locality: Kuatun [Guadun, Fujian])

Ssp. *periscelis* Fruhstorfer, 1908

PLATE 56, Figs. 309–310; PLATE 102, Fig. 522; PLATE 140, Fig. 670

Mycalesis periscelis Fruhstorfer, 1908: Entomologische Zeitschrift 22 (35): 141. TL: Formosa. (Type locality: “Taihanroku, Formosa [Nanwan, Hengchun, Taiwan]”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Ruifang, Nanya, 3. IX. 2010 (Y. F. Hsu); 1♀,

Wulai, Jiajiuliao, 300m, 12. VI. 2011 (Y. F. Hsu); 1♂, Xindian, Feicui Dam, 22. X. 2018, reared from *Carex baccans*, emgd. 8. I. 2019, HSU 18K33 (Z. Y. Shen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Daman, 700m, 10. VI. 2005 (Y. F. Hsu); 1♂, Fuxing, Baling, 600m, 3. VI. 2009 (L. H. Wang). **YILAN Co.:** 1♂, Jiaoxi, Paoma Trail, 9. VI. 1997 (C. L. Chang). **NANTOU Co.:** 1♂, Renai, Wushe, 18. VIII. 2018 (L. Huang) (genitalia preparation JYL965). **HUALIAN Co.:** 1♀, Xiulin, Lushui, 450m, 20. V. 2007 (L. H. Wang); 2♂, Xiulin, Lushui. 410m, 13. IX. 2007 (Y. F. Hsu); 1♂, Ruisui, Fuyuan, 300m, 20. V. 2015 (J. Y. Liang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su). **PINGDONG Co.:** 1♂, Shizi, Shuangliu, 200/400m, 30. IV. 2006 (Y. F. Hsu); 1♀, Wutai, Wutoushan, 1000/1200m, 7/8. V. 2006 (Y. F. Hsu); 1♀, Wutai, Ali, 25. V. 2006 (L. H. Wang). **TAIDONG Co.:** 1♂, Yanping, Hongye, 15. V. 1988 (Y. F. Hsu); 1♀, Yanping, Hognye, 450/480m, 30. IX. 2000 (Y. F. Hsu).

Description. Adult – Forewing length 27–32 mm. Sexual dimorphism absent or weakly present. Male (PLATE 56, Fig. 309): Head brown. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes hairy, rim behind eyes white. Proboscis brown. Labial palpus erect, white with dark brown bands dorsally and laterally. Thorax, legs brown; foreleg white with dark brown band, densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular; costa convex; termen, dorsum nearly straight; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate. Wing uppersides ground color brown. Postdiscal spots as two prominent ones on hindwing, in cell M_3 and CuA_1, one on forewing, faint, in cell M_1. Double narrow grayish white bands present submarginally on both wings. Wing undersides ground color usually pale brown. A series of postdical eyespots on both wings; six on hindwing, arranged into outward curve; four on forewing, arranged into inward curve. Narrow, brown, discal bands present on both wings, proximal band vestigial on forewing, distal band deviated outwards; proximal band nearly straight, distal band strongly bent on hindwing. One narrow brown bar present in discoidal cell of forewing, one at distal end of discoidal cells of both wings. Double narrow creamy white bands present submarginally on both wings. Fringe creamy white. Female (PLATE 56, Fig. 310): Body and wing pattern similar to those of male, wing broader; a faint pale band present near apex of forewing uppersides; foreleg normal,

less hairy, with protarsi segmented, spiny.

Male genitalia (PLATE 102, Fig. 522) – Tegumen broad, convex dorsally; uncus as a slightly down-curved beak, with distal end pointed. Brachia as stout spines. Saccus short, with distal tip blunt. Vinculum bent. Valva broad proximally, narrowed to elongate arm posteriad, with distal end blunt with a dorsal spine. Juxta V-shaped, as a pair of elongate sclerites conjoined ventrad. Phallus nearly straight; aedeagus longer than phallobase, with deep cleft and minute spines near caudal end.

Female genitalia (PLATE 140, Fig. 670) – Corpus bursae ovate. Signa as two elongate, curved, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae shorter than corpus bursae. Sterigma with lamella antevaginalis forming sclerotized dome, lamella postvaginalis forming disc-like sclerite. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. West to East China, Taiwan (Lang, 2017).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Hsu, 2006, 2013).

Larval Host plant(s). Cyperaceae: *Carex baccans* (Hsu, 2006, 2013; Lu & Chen, 2014).

Biology. Multivoltine in occurrence, with adults on the wing in most months of the year except winter (Hsu, 2006, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 27–32 mm。雌雄二型性略有或缺乏。雄蝶 (圖 309)：頭褐色。觸角黑褐色，有乳白色紋、末端部分裸露。複眼被毛，後側輪緣白色。口器褐色。下唇鬚前伸、白色、背面及側面有黑褐色條紋。胸部及足褐色；前足白色，有黑褐色條紋、密被毛、刷狀、跗節減退、刺狀。腹部背面褐色、腹面灰白色。前翅近三角形，前緣凸、外緣及後緣近直線狀；R 脈基部膨大成紡錘形囊狀構造。後翅扇形。翅背面底色褐色，外側眼狀紋於前翅一只、位於 M_1 室、模糊，於後翅有兩只、位於

M_3 室及 CuA_1 室、鮮明。亞外緣有兩道灰白色細線紋。翅腹面底色淡褐色，外側眼狀紋於前翅四只、彎曲排列、外凸，於後翅六枚、彎曲排列、內凹。中央帶紋褐色，於前翅內側帶消失、外側帶外偏，於後翅內側帶近直線狀、外側帶明顯彎曲。前翅中室內及前、後翅中室末端有褐色短紋，亞外緣有兩道乳白色線紋。緣毛乳白色。雌蝶 (圖 310)：形態特徵與雄蝶相似，但翅幅較寬、前翅背面近翅頂處有模糊淺色帶紋，前足正常、疏被毛、跗節分節、具刺。

雄交尾器 (圖 522)：背兜寬，背側隆起。鉤突形成略下彎之喙狀構造，末端尖。顎形突為粗壯刺突。囊突短，末端鈍。基腹弧彎曲。抱器基部較寬，後端漸細而呈臂狀，末端圓鈍，其背側有 1 刺突。陽基顎片 V 字形，形成一對腹側相連之細長骨片。陽莖甚直。陽莖器長度超過陽莖基，尾端有深裂口及小棘刺。

雌交尾器 (圖 670)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管短於交尾囊。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成盤狀骨片。肛突輕度骨化，後緣具剛毛。

世界分布：華西至華東、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：莎草科之紅果薹。

生物學：本種為一年多代物種，成蝶除冬季外均可見。

Lethe gemina Leech, 1891 (孿斑黛眼蝶／阿里山褐蔭蝶)

Lethe gemina Leech, 1891: Entomologist 24 (Supplement): 24. (Type locality: “Moupin [Baoxing, Sichuan, China]”)

Ssp. *zaitha* Fruhstorfer, 1914

PLATE 57, Figs. 311–312; PLATE 103, Fig. 523; PLATE 140, Fig. 671

Lethe gemina zaitha Fruhstorfer, 1914: Entomologische Rundschau 31 (5): 25. (Type locality: “Formosa, ca 2000 m”)

Specimens examined:

NANTOU Co.: 1♂, Renai, Tunyuan/ Tianchi, 2000/2800m, 31. VII. /1. VIII. 1998 (Y. T. Lo); 1♂, same locality, 2200m, 15. IX. 2010 (L. H. Wang); 7♂, 3♀, Renai, Beidongyanshan, 1500m, 28. X. 2006, reared from *Miscanthus sinensis*, emgd. 6. III. /25. IV. 2007, HSU 06L29 (Y. F. Hsu) (genitalia preparation JYL1023); 1♂, same locality, 16. IX. 2007 (C. C. Lu); 1♂, Renai, Beidongyanshan, 1600m, 17. IX. 2018 (Y. F. Hsu). **KAOHSIUNG CITY:** 2♂, Taoyuan, Fenggangshan, 1300m, 29. XII. 2020, reared from *M. sinensis*, emgd. 20/25. VI. 2021, HSU 20M21 (Y. F. Hsu).

Description. Adult – Forewing length 26–32 mm. Sexual dimorphism absent or weakly present. Male (PLATE 57, Fig. 311): Head dark brown, with medial orange tuft on vertex and frons; frons margined with white. Antennae dark brown banded with creamy white, partially naked distad. Compound eyes hairy, rim behind eyes white. Proboscis brown. Labial palpus porrect, white with dark brown bands ventrally. Thorax brown tinged with ochre yellow dorsally, white ventrally. Legs white proximally, ochre yellow distally, with dark brown bands; foreleg white, densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown tinged with ochre yellow dorsally, white ventrally. Forewing nearly triangular; costa slightly convex; termen, dorsum nearly straight, apex obtuse; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate, with termen slightly wavy. Wing uppersides ground color ochre yellow, paler distally. Postdiscal spots as four prominent dark brown spots on hindwing, in cell Rs, M_1, M_3 and CuA_1, one on forewing, small, in cell M_1. An orange narrow submarginal band on both wings, margined with dark brown and a gray fine band. Wing undersides ground color ochre yellow. Postdical eyespots on both wings; two on hindwing, prominent, in cell Rs and CuA_1; one on forewing, small, in cell M_1. Discal bands represented by single ochre narrow band on both wings; strongly bent inward anteriorly on forewing, strongly bent outwards mesad on hindwing. One narrow, short ochre bar present at distal end of discoidal cells of both wings. An orange narrow submarginal band on both wings, margined with ochre and a purple fine band. Fringe dark brown. Female (PLATE 57, Fig. 312): Body and wing pattern similar to those of male, wing broader; distal portions of wings paler; foreleg normal, less hairy, with protarsi segmented, spiny.

Male genitalia (PLATE 103, Fig. 523) – Tegumen broad, convex dorsally; uncus

peculiar, setose, forming down-curved beak with distal tip pointed, possessing subapical fins laterally. Brachia as curved spines. Saccus short, attenuate anteriorly, with distal tip blunt. Vinculum bent. Valva broad proximally, narrowed posteriorly to blunt distal end, with a prominent, subapical spine pointing caudad. Juxta as a simple sclerite with ventral margin rounded, attenuate laterally. Phallus straight; aedeagus approximately 2.5X of phallobase, with caudal end divided.

Female genitalia (PLATE 140, Fig. 671) – Corpus bursae ovate. Signa as two prominent, short, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, shorter than corpus bursae, wrinkled, with anterior portion enlarged, sclerotized near ostium bursae. Sterigma with lamella antevaginalis forming weakly sclerotized pouch, lamella postvaginalis forming hood-like sclerite with corners of anterior margin produced to rod-like processes. Posterior apophyses as triangular, weakly sclerotized lobe. Anal papillae weakly sclerotized, densely setose with long setae along posterior margin.

Global distribution. Northeast India, northern Indochina, West to East China, Hainan, Taiwan (Lang, 2017).

Distribution in Taiwan. Moderate elevations in main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Poaceae: *Yushania niitakayamensis*, *Sinobambusa kunishii*, *Miscanthus sinensis*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Voltinism yet to be confirmed; eggs are usually found in autumn, but adults have been found in both summer and autumn. Larvae are gregarious, continuing feeding in winter without diapause (Lu & Chen, 2014).

形態特徵：成蝶前翅長 26–32 mm。雌雄二型性略有或缺乏。雄蝶 (圖 311)：頭黑褐色，頭頂及額中央具橙色毛叢，額具白色邊。觸角黑褐色，有乳白色紋、末端部分裸露。複眼被毛，後側輪緣白色。口器褐色。下唇鬚前伸、白色、腹面有黑褐色

條紋。胸部背面褐色泛赭黃色，腹面白色。足基半部白色，外端赭黃色，有黑褐色條紋；前足白色、密被毛、刷狀、跗節減退、刺狀。腹部背面褐色泛赭黃色、腹面白色。前翅近三角形，前緣略凸、外緣及後緣近直線狀，翅頂鈍；R 脈基部膨大成紡錘狀。後翅扇形，外緣略呈波狀。翅背面底色赭黃色、外側色彩較淺。外側有眼狀紋，於前翅僅一只，小型，位於 M_1 室，於後翅有四只，鮮明、黑褐色，位於 Rs 室、M_1 室、M_3 及 CuA_1 室。亞外緣有鑲黑褐色邊及灰色細帶紋之橙色細帶紋。翅腹面底色赭黃色，外側眼狀紋於前翅有一只，位於 M_1 室，於後翅有兩只，位於 Rs 室及 CuA_1 室；翅面中央有一條赭色帶紋，於前翅前端明顯折向內側、於後翅中段明顯外凸。中室末端有一赭色短細紋。亞外緣有鑲赭色邊及紫色細帶紋之橙色細帶紋。緣毛黑褐色。雌蝶 (圖 312)：形態特徵與雄蝶相似，但翅幅較寬、外半部色淡，前足正常、疏被毛、跗節分節、具刺。

雄交尾器 (圖 523)：背兜寬，背側隆起。鉤突異樣，形成向下彎曲的喙狀，近末端兩側具鰭凸和被剛毛，末端尖。顎形突呈彎曲尖刺狀。囊突短，漸細，末端鈍。基腹弧彎曲。抱器基部較寬，向末端漸縮至末端鈍尖，近末端處有一向後指之刺突。陽基顎片腹側圓弧形，兩側漸窄。陽莖挺直。陽莖器長度約為陽莖基 2.5 倍。尾端開裂。

雌交尾器 (圖 671)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊館短於交尾囊，有褶皺，前半部膨大，近交尾囊孔處骨化。交尾囊孔板之前陰片形成輕度骨化穹頂；後陰片形成罩狀骨片，前緣兩側邊角形成棒狀突起。後內骨突三角形、輕度骨化、葉狀。肛突輕度骨化，後緣具長剛毛。

世界分布：印度東北部、中南半島北部、華西至華東、海南、臺灣。

臺灣分布：本島中海拔山區。

寄主植物：禾本科之玉山箭竹、臺灣矢竹、芒等。

生物學：化性尚待詳細調查。卵群多於秋季發現，但成蝶於夏、秋季均有記錄。幼蟲群居，於冬季繼續進食、不休眠。

Genus *NEOPE* Moore, [1866]

Type species: *Lasiommata* (?) *bhadra* Moore, 1857

Diagnostic characters may include the following: 1) compound eyes densely hairy; 2) labial palpus densely hairy ventrally, with 3rd segment minute; 3) protarsus densely hairy with tarsomeres fused in male, less hairy, segmented in female; 4) discoidal cell closed on both wings; 5) an eyespot present in cell $Sc+R_1$ on hindwing undersides.

Larvae mainly feed on plants in Poaceae.

Bozano (1999) listed 19 species, but among them *Neope watanabei* is now considered as a seasonal form of *N. bremeri*. They are distributed in the Oriental and eastern Palearctic regions.

4 species occur in Taiwan.

蔭眼蝶屬

形態特徵如下：1) 複眼密被毛；2) 下唇鬚腹面密被毛、第三節細小；3) 雄蝶前足跗節密被毛、小跗節癒合，雌蝶則疏被毛、分節；4) 前、後翅中室封閉；5) 後翅腹面 $Sc+R_1$ 室具眼狀紋。

幼蟲取食禾本科植物。

Bozano (1999) 列出本屬共 19 種，但其中 1 種 *N. watanabei* (渡邊蔭眼蝶) 現已被視為 *N. bremeri* (布氏蔭眼蝶) 之季節型。本屬分布於東洋區及古北區東部。

臺灣有 4 種。

Neope pulaha (Moore, [1858]) (黃斑蔭眼蝶／阿里山黃斑蔭蝶)

Lasiommata? *pulaha* Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the

Hon. East-India company 1: 227. (Type locality: "Bootan [Bhutan]")

Neope pulahoides xizangana Wang, 1994: Monographia Rhopalocerum Sinensium: 346, 756, f. 19. (Type locality: Linzhi 3000m, Xizang)

Ssp. *didia* Fruhstorfer, 1909

PLATE 57, Figs. 313–314; PLATE 103, Fig. 524; PLATE 140, Fig. 672

Lethe pulaha didia Fruhstorfer, 1909: Societas Entomologica 24 (16): 121. (Type locality: "Formosa")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Lalashan, 2. IV. 2000 (C. M. Wu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Siyuan, 2100m, 24. IV. 2009 (C. L. Huang). **NANTOU Co.:** 1♂, Renai, Hehuanxi, 2000m, 11. V. 2003 (C. C. Lu, J. R. Chen & Y. C. Yang); 1♀, Renai, Tunyuan, 5. V. 2010 (L. H. Wang). **HUALIAN Co.:** 1♂, Xiulin, Guanyuan, 2300m, 29. VII. 2006 (L. H. Wang); 1♀, Xiulin, Guanyuan, 2200m, 12. VII. 2009 (L. H. Wang) (genitalia preparation JYL1039). **KAOHSIUNG CITY:** 1♂, Taoyuan, Zhongzhiguan, 28. IV. 2020 (C. W. Huang).

Description. Adult – Forewing length 27–31 mm. Sexual dimorphism absent or weakly present. Male (PLATE 57, Fig. 313): Head brown, with medial creamy white tuft; frons creamy with medial brown band. Antennae dark brown banded with white, naked ventrally and on inner surface and at distal tip. Compound eyes hairy, rim behind eyes creamy white. Proboscis brown. Labial palpus porrect, hairy, creamy white, with dark brown bands dorsally and laterally. Thorax brown dorsally, creamy white ventrally. Legs with mesoleg and metaleg creamy yellow, densely hairy with dark brown hairs proximally, tarsus brown banded with creamy yellow; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen ochre dorsally, creamy yellow ventrally. Forewing nearly triangular; costa convex; termen, dorsum nearly straight; apex obtuse. Hindwing broad, with termen slightly wavy, produced at distal end of M_3. Wing uppersides ground color brown, with hindwing paler distally, veins yellow proximally on forewing. A series of faint postdiscal eyespots sandwiched by creamy yellow markings on both wings, more prominent on hindwing. Wing undersides with variegated pattern; creamy yellow markings prominent on forewing. Discal bands with irregular margins. Postdiscal eyespots on both wings, seven or eight on hindwing, arranged into a curve; three on forewing, in cell M_1, M_3 and CuA_1, in a line. Small white markings at middle

along costa and at base of cell M_2 and M_3 of hindwing. Fringe creamy white or yellow, checkered with brown. Sexual brand as stripes of dark brown specialized scalings along veins on forewing uppersides. Female (PLATE 57, Fig. 314): Body and wing pattern similar to those of male; creamy yellow markings more extensive on wing uppersides, with prominent yellow bar at distal end of discoidal cell of forewing; foreleg normal, less hairy, with protarsi segmented, spiny. No sexual brand.

Male genitalia (PLATE 103, Fig. 524) – Tegumen broad, slightly convex dorsally; uncus stout, straight, with prominent ventral depression near base, distal end down-curved. Brachia as elongate spines, slightly bent inwards, with distal end acute. Saccus narrow, rod-like, with distal end blunt. Vinculum bent. Valva broad proximally, narrowed to an elongate, setose rod posteriorly, bearing a prominent dorsal spine at distal tip. Juxta as small, weakly sclerotized, transverse band. Phallus relatively short, straight; aedeagus longer than phallobase, simple.

Female genitalia (PLATE 140, Fig. 672) – Corpus bursae ovate. Signa as two elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae thick, slightly shorter than corpus bursae. Sterigma with lamella antevaginalis forming sclerotized dome, lamella postvaginalis forming medial, transverse sclerite, with a pair of oval sclerites, associated with tubular sclerite surrounding ostium bursae. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. North India, Himalayas, northern Indochina, West to South China, Taiwan (Bozano, 1999; Lang, 2017).

Distribution in Taiwan. Moderate to higher elevations in main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Undetermined.

Biology. Probably bivoltine in occurrence, with adults recorded from April to September

(Hsu, 2013).

形態特徵：成蝶前翅長 27–31 mm。雌雄二型性略有或缺乏。雄蝶 (圖 313)：頭褐色，中央有乳白色毛叢，前額乳白色，中央有褐色帶紋。觸角黑褐色，有白色紋、腹面及頂端內側裸露。複眼被毛，後側輪緣乳白色。口器褐色。下唇鬚前伸、被毛、乳白色，背面及側面有黑褐色條紋。胸部背面褐色，腹面乳白色。中、後足乳黃色，基半部密被黑褐色毛，跗節褐色，有乳黃色條紋；前足密被毛、刷狀，跗節癒合、刺狀。腹部背面赭色、腹面乳黃色。前翅近三角形，前緣凸、外緣及後緣近直線狀，翅頂鈍。後翅寬闊，外緣略呈波狀、於 M_3 脈末端突出。翅背面底色褐色、後翅外側色彩較淺。前翅內側翅脈黃色，外側有一列嵌於乳黃色紋中之眼狀紋、於後翅較鮮明。翅腹面斑紋複雜，前翅有鮮明乳黃色斑紋，中央帶紋邊緣不規則，外側眼狀紋於前翅有三只、位於 M_1 室、M_3 室及 CuA_1 室、排為一列，於後翅有七或八只、彎曲排列。後翅前緣中央及 M_2 室、M_3 室基部有小白紋。緣毛乳白色或黃色嵌褐色。前翅背面有黑褐色特化鱗於沿翅脈分布，形成條狀性標。雌蝶 (圖 314)：形態特徵與雄蝶相似，但翅背面乳黃色斑紋較明顯、前翅中室末端有鮮明黃色短紋，前足正常、疏被毛、跗節分節、具刺，無性標。

雄交尾器 (圖 524)：背兜寬，背側略隆起。鉤突粗壯、挺直，近基部處腹面有凹陷，末端漸細，略下彎，末端鈍。顎形突長刺狀，略向內彎曲，末端尖。囊突細、桿狀，末端鈍。基腹弧彎曲。抱器基部寬，向後驟縮行成細長桿狀突起，具剛毛，末端背側有尖刺。陽基顎片為小型，輕度骨化之橫骨帶。陽莖較短，挺直。陽莖器長度超過陽莖基，結構簡單。

雌交尾器 (圖 672)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管粗，略短於交尾囊。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成位於中央之橫向骨片，並具一對橢圓形骨片與交尾囊孔周圍之管狀骨相連。肛突輕度骨化，後緣具剛毛。

世界分布：印度北部、喜瑪拉雅地區、中南半島北部、華西至華東、臺灣。

臺灣分布：本島中至較高海拔地區。

寄主植物：尚未確認。

生物學：本種可能一年有兩世代，成蝶四月至九月有記錄。

Neope bremeri (C. & R. Felder, 1862) (布氏蔭眼蝶／臺灣黃斑蔭蝶／布萊蔭眼蝶)

Lasiommata bremeri C. & R. Felder, 1862: Wiener entomologische Monatschrift 6 (1): 28. (Type locality: "Ning-Po [Ningbo, Zhejiang, China]")

Neope romanovi Leech, 1890: Entomologist 23 (321): 29. (Type locality: "Ichang; Chang Yang, [Hubei, China]")

Neope bremei stigmata Mell, 1923: Deutsche entomologische Zeitschrift 1923 (2): 156. (Type locality: "Norden der Provinz [Kuantung], [northern Guangdong, China]")

Neope pulata brunnescens Mell, 1923: Deutsche entomologische Zeitschrift 1923 (2): 156. (Type locality: "Bergwaldgebiete im NO der Provinz [Northeast Guangdong, China]")

Ssp. *watanabei* Matsumura, 1909

PLATE 57, Figs. 315–316; PLATE 58, Figs. 317–318; PLATE 103, Fig. 525; PLATE 141, Fig. 673

Neope watanabei Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: "Formosa (Hoppo) [Beipu, Xinzhu, Taiwan]")

Neope bremei var. *taiwana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 543, pl. 36, f. 6. (Type locality: "Formosa (Horisha, Gyochi)")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Shiding, Ergeshan, 1. VI. 2000 (Y. F. Hsu); 1♀, Shiding, Ergeshan, 600m, 26. V. 2011 (C. L. Huang); 2♀, Xindian, Sikanshui, 1. III. 2019, reared from *Miscanthus sinensis*, emgd. 18. IV. 2019, HSU 19C3 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Daman/ Xuanyuan, 21. II. 1987 (Y. F. Hsu); 1♀, Fuxing, Baling, 600m, 23. II. 2010 (Y. F. Hsu); 1♀, Fuxing, Xuewunao, 1430m, 7. VI. 2017 (L. Huang) (genitalia preparation JYL993). **YILAN Co.:** 1♂, Datong, Renze Spring [= Jiuzhize Spring], 15. II. 1987 (Y. F. Hsu); 1♂, Datong, Mingchi, 4. IX. 2001 (C. C. Lu). **XINZHU Co.:** 1♀, Jianshi, Zhenxibao, 1600m, 27. II. 2004 (C. C. Hsieh); 1♀, Jianshi, Lidongshan, 1500m, 3. IX. 2005 (Y. F. Hsu); 1♂, same locality, 21. III. 2011 (L. H. Wang). **MIAOLI Co.:** 1♂, 2♀, Taian, Henglongshan, 1350m, 27. II. 2003, reared from *M. sinensis*, emgd. 23. V. 2003, HSU 03B36 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Tunyuan/ Tianchi, 2000/2800m, 31. VII. /1. VIII. 1998 (Y. T. Lo); 1♀, Renai, Beidongyanshan, 1800m, 17. XII. 2005, reared from *M. sinensis*, emgd. 9. II. 2006, HSU 05M18 (Y. F. Hsu); 1♂, same locality, 1500m, 28. X. 2006 (Y. F. Hsu); 1♂, same locality, 28. X. 2006, reared from *M. sinensis*, emgd. 27. III. 2007,

HSU 07A44 (Y. F. Hsu); 1♂, Renai, Tunyuan, 1550m, 28. VII. 2006 (Y. F. Hsu); 1♂, same locality, 1600m, 25. IX. 2006 (Y. F. Hsu). **KAOHSIUNG CITY:** 3♂, 2♀, Taoyuan, Fenggangshan, 1300m, 29. XII. 2020, reared from *M. sinensis*, emgd. 5/15. IV. 2021, HSU 20M22 (Y. F. Hsu).

Description. Adult – Forewing length 30–37 mm. Sexual dimorphism absent or weakly present. Male (PLATE 57, Figs. 315–316): Head brown; frons creamy with medial brown band. Antennae dark brown banded with white, naked ventrally and on inner surface and at distal tip. Compound eyes hairy, rim behind eyes creamy white. Proboscis brown. Labial palpus porrect, hairy, creamy white, with dark brown bands dorsally and ventrally. Thorax brown dorsally, creamy white ventrally. Legs with mesoleg and metaleg densely hairy proximally, tarsus brown banded with creamy yellow; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen ochre dorsally, creamy yellow ventrally. Forewing nearly triangular; costa convex; termen, dorsum nearly straight; apex obtuse. Hindwing broad, with termen slightly wavy, produced at distal end of M_3. Wing uppersides ground color dark brown. A series of postdiscal eyespots sandwiched by creamy yellow markings on both wings, more prominent on forewing. Wing undersides with variegated pattern; creamy yellow or white markings prominent on forewing. Discal bands with irregular margins. Postdiscal eyespots on both wings, seven or eight on hindwing, arranged into a curve; three or four on forewing, in a line. Fringe creamy white or yellow, checkered with brown. Sexual brand as stripes of dark brown specialized scalings along veins on forewing uppersides. Female (PLATE 58, Figs. 317–318): Body and wing pattern similar to those of male; foreleg normal, less hairy, with protarsi segmented, spiny. No sexual brand.

Male genitalia (PLATE 103, Fig. 525) – Tegumen broad, slightly convex dorsally; uncus stout, nearly straight, attenuate to slightly down-curved, blunt distal end. Brachia as elongate spikes with distal end curved, acute. Saccus relatively long, rod-like, with distal end blunt. Vinculum bent. Valva broad proximally, narrowed to an elongate, setose rod posteriorly, with distal end blunt with minute spines on dorsal surface. Juxta as weakly sclerotized, transverse band with a pair of dorsal, setose processes. Phallus nearly straight; aedeagus longer than phallobase, with distal end divided, bearing numerous spines on external surface.

Female genitalia (PLATE 141, Fig. 673) – Corpus bursae ovate. Signa as two spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae thick and short, with caudal portion dilated. Sterigma with lamella antevaginalis forming sclerotized dome, lamella postvaginalis forming broad, sclerotized wall, associated with tubular sclerite surrounding ostium bursae. Posterior apophyses short, weakly sclerotized, with distal ends blunt. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. The yellow markings on wings are more prominent in dry or cold seasons, accompanying with yellow veins on forewing.

Global distribution. West to East China, Hainan, Taiwan (Bozano, 1999; Lang, 2017).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Yamanaka, 1974; Hsu, 2013).

Larval Host plant(s). Poaceae: *Miscanthus sinensis*, *M. floridulus*, *Yushania niitakayamensis*, *Sinobambusa kunishii*, *Pseudosasa usawae*, etc.

Biology. Multivoltine in occurrence, with adults recorded throughout the year (Hsu, 2013).

Remarks. The taxon *watanabei* Matsumura, 1909 is frequently treated as a species distinct from *N. bremeri* (e.g., Shirôzu, 1960; Yamanaka, 1974; Shirôzu & Ueda, 1992; Bozano, 1999), but Takahashi (1993) has demonstrated that "*watanabei*" is merely a seasonal form of *N. bremeri* produced in cold spell (spring). Lang (2017) retains it as the subspecific name for Taiwan population of *N. bremeri*, and the treatment is adopted herein.

The dry season form (spring form) of the species is superficially similar to *N. pulaha* in appearance. They can be distinguished by the following characteristics: 1) The eyespots in cell CuA_1 and CuA_2 of forewing undersides are oval in *bremeri*, square in *pulaha*. 2) The eyespot in cell M_1 of forewing uppersides is sandwiched by yellow markings in

bremeri, whereas the inner yellow marking is absent in *pulaha*. 3) sexual brands in cell CuA_2 of forewing uppersides are well separated in male *bremeri*, whereas they are in close approximation or joining together in male *pulaha*.

形態特徵：成蝶前翅長 30–37 mm。雌雄二型性略有或缺乏。雄蝶 (圖 315–316)：頭褐色，前額乳黃色，中央有褐色帶紋。觸角黑褐色，有白色紋、腹面及頂端內側裸露。複眼被毛，後側輪緣乳白色。口器褐色。下唇鬚前伸、被毛、乳白色、背面及腹面有黑褐色條紋。胸部背面褐色，腹面乳白色。中、後足基半部密披毛，跗節褐色，有乳黃色條紋；前足密被毛、刷狀，跗節減退、刺狀。腹部背面赭色，腹面赭黃色。前翅近三角形，前緣凸、外緣及後緣近直線狀、翅頂鈍。後翅寬闊，外緣略呈波狀、於 M_3 脈末端突出。翅背面底色黑褐色，外側有一列嵌入乳黃色紋內之眼狀紋、於前翅較鮮明。翅腹面斑紋複雜，前翅有鮮明乳黃色或白色斑紋，中央帶紋邊緣不規則，外側眼狀斑點於前翅有三或四只、排為一列，於後翅則有七或八只、彎曲排列。緣毛乳白色或黃色嵌褐色。前翅背面有黑褐色特化鱗沿翅脈分布，形成條狀性標。雌蝶 (圖 317–318)：形態特徵與雄蝶相似，但前足正常、疏被毛、跗節分節、具刺，無性標。

雄交尾器 (圖 525)：背兜寬，背側略隆起。鉤突粗壯，挺直，向後漸窄，略下彎，末端鈍。顎形突長釘狀，末端彎曲，末端尖。囊突較長、桿狀，末端鈍。基腹弧彎曲。抱器基部寬，向後驟縮成細長桿狀突起，末端鈍，具剛毛，背側有小棘刺。陽基顎片為輕度弱骨化之橫骨帶，背側有一對具剛毛之突起。陽莖甚直。陽莖器長度超過陽莖基，末端開裂，外壁生許多小刺。

雌交尾器 (圖 673)：交尾囊卵圓形。花壁為一對具橫向排列小刺之骨帶。交尾囊管粗短，後半部擴大。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成寬骨壁，與交尾囊孔周圍之管狀骨片相連。後內骨突短、輕度骨化，前端鈍。缸突輕度骨化，後緣具剛毛。

變異：乾季／低溫期個體黃色斑紋較鮮明、前翅翅脈呈黃色。

世界分布：華西至華東、海南、臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：禾本科之芒、五節芒、玉山箭竹、臺灣矢竹、包籜箭竹等。

生物學：本種為一年多代物種，全年皆有成蝶記錄。

註記：分類單元 *watanabei* Matsumura, 1909 常被處理為獨立種，稱為渡邊蔭眼蝶或渡邊黃斑蔭蝶 (如 Shirôzu, 1960; Shirôzu & Ueda, 1992; Bozano, 1999)，但 Takahashi (1993) 判定 *watanabei* 為低溫 (春季) 條件所產生之季節型，Lang (2017) 保留此學名作為布氏蔭眼蝶臺灣族群之亞種名，本書從其說。

本種之乾季型個體 (春型) 與黃斑蔭眼蝶頗為相似，兩者可由下列鑑別特徵區分：1) 布氏蔭眼蝶前翅 CuA_1 室及 CuA_2 室眼狀斑點橢圓形，黃斑蔭眼蝶則呈方形；2) 布氏蔭眼蝶前翅背面 M_1 室眼狀斑點嵌於黃色紋之中，黃斑蔭眼蝶則內側無黃色紋；3) 布氏蔭眼蝶雄蝶前翅背面 CuA_2 室性標分離，黃斑蔭眼蝶雄蝶則趨近或相連。

Neope armandii (Oberthür, 1876) (白斑蔭眼蝶 / 白色黃斑蔭蝶 / 阿芒蔭眼蝶)

Satyrus armandii Oberthür, 1876: Études d'Entomologie 2: 26, pl. 2, f. 5. (Type locality: "Moupin [Baoxing, Sichuan]")

Neope armandii koikei Funahashi, 2003: Wallace 8: 10, pl. 4: 14. (Type locality: Pia Oac, N. Vietnam)

Ssp. *lacticolora* Fruhstorfer, 1908

PLATE 58, Figs. 319–320; PLATE 103, Fig. 526; PLATE 141, Fig. 674

Blanaida lacticolora Fruhstorfer, 1908: Entomologische Zeitschrift 22 (35): 141. (Type locality: "Formosa")

Neope sagittata Wileman, 1908: Annotationes Zoologicae Japonenses 6: 314. (Type locality: "Jūjimichi [Shizhilu, Jiayi]; Tōzan")

Neope armandi albicans Oberthür, 1916: Études de lépidoptérologie compare 12: 40, pl. 407, fig. 3497. (Type locality: "Karaping [Jiaoliping, Jiayi, Taiwan]")

Specimens examined:

YILAN Co.: 1♂, Nanao, Dabaishan, 1260m, 21. IV. 2016 (L. Huang) (genitalia preparation JYL991). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Xueshan, Qika, 2600m, 19/21. IX. 2005 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 12. IV. 1999 (Y. F. Hsu); 2♂, Renai, Beidongyanshan, 1500m, 28. X. 2006, reared from *Miscanthus sinensis*, emgd. 12. I. 2007, HSU 06K40 (Y. F. Hsu); 1♂, Renai, Tunyuan,

1550m, 28. VII. 2006 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 2150m, 31. VIII. 2021 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Haiduan, Southern Cross-Island Highway, 160 Km, 20/21. V. 2017 (C. W. Huang).

Description. Adult – Forewing length 31–40 mm. Sexual dimorphism absent or weakly present. Male (PLATE 58, Fig. 319): Head creamy white, with medial brown band on frons. Antennae dark brown, naked ventrally and at distal tip. Compound eyes hairy, rim behind eyes creamy white. Proboscis brown. Labial palpus porrect, hairy, creamy white, with dark brown bands dorsally and laterally. Thorax brown dorsally, creamy white ventrally. Legs creamy white with brown bands; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown dorsally, creamy white ventrally. Forewing nearly triangular; costa convex; termen straight; dorsum nearly straight. Hindwing broad, with termen wavy, produced at distal end of M_3. Wing uppersides ground color brown, with extensive creamy white markings; a series of creamy white postdiscal spots on forewing, with additional spot near distal end of discoidal cell and bases of R cells. Large creamy white patch on hindwing, with dark brown areas merely along termen, near wing base, and a few discal spots. Wing undersides with variegated pattern; dark brown patches on some portion of forewing and proximal area of hindwing, with white network. A series of dark brown postdical eyespots on both wings; seven on hindwing; two on forewing. Faint pale brown bands present submarginally on both wings. Fringe creamy white, checkered with brown. Sexual brand as a pale brown patch of specialized scalings on forewing proximally. Female (PLATE 58, Fig. 320): Body and wing pattern similar to those of male; creamy white markings more extensive on forewing uppersides; foreleg normal, less hairy, with protarsi segmented, spiny. No sexual brand.

Male genitalia (PLATE 103, Fig. 526) – Tegumen broad, slightly convex dorsally; uncus stout, straight, attenuate posteriorly, distal end down-curved. Brachia as elongate spines, slightly bent inwards, with distal end acute. Saccus stout, attenuate to blunt distal end. Vinculum bent. Valva broad proximally, narrowed to an elongate, setose rod posteriorly, bearing a prominent dorsal spine at distal tip. Juxta as small, weakly sclerotized, transverse band. Phallus relatively short, slightly up-curved; aedeagus longer than

phallobase, simple.

Female genitalia (PLATE 141, Fig. 674) – Corpus bursae ovate. Signa as two short, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae thick, nearly as long as corpus bursae. Sterigma with lamella antevaginalis forming sclerotized dome, lamella postvaginalis forming medial, transverse sclerite, with a pair of prominent, fin-shaped sclerites. Posterior apophyses short, weakly sclerotized, broad at base, narrowed anteriorly, with distal ends pointed. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. North India, northern Indochina, West to East China, Taiwan (Bozano, 1999; Lang, 2017).

Distribution in Taiwan. Moderate to higher elevations in main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Poaceae: *Miscanthus sinensis* (Hsu, 2013).

Biology. Probably bivoltine in occurrence, with adults recorded from March to October (Hsu, 2013).

形態特徵：成蝶前翅長 31–40 mm。雌雄二型性略有或缺乏。雄蝶 (圖 319)：頭乳白色，前額中央有褐色帶紋。觸角黑褐色、腹面及頂端裸露。複眼被毛，後側輪緣乳白色。口器褐色。下唇鬚前伸、被毛、乳白色、背面及側面有黑褐色條紋。胸部背面褐色，腹面乳白色。足乳白色，有褐色條紋；前足密被毛、刷狀，跗節癒合、刺狀。腹部背面褐色、腹面乳白色。前翅近三角形，前緣凸、外緣直線狀、後緣甚直。後翅寬，外緣呈波狀、於 M_3 脈末端突出。翅背面底色褐色、有白色斑紋；前翅外側有一列乳白色紋，中室近末端及 R 室基部亦有斑紋；後翅有大片乳白色紋，黑褐色部分僅餘外緣及近翅基附近，以及翅面中央之少許斑點。翅腹面斑紋多變，黑褐色斑塊位於前翅部分區域及後翅內側，內有白色網紋，外側眼狀紋於前翅有兩只、後翅有七只，亞外緣有模糊淡褐色線紋。緣毛乳白色嵌褐色。前翅內側有淡褐色特化鱗形成之性標。雌蝶 (圖 320)：形態特徵與雄蝶相似，但前翅背面乳白色斑紋較明顯，

前足正常、疏被毛、跗節分節、具刺，無性標。

雄交尾器 (圖 526)：背兜寬，背側略隆起。鉤突粗壯、挺直，向後漸細、略下彎，末端鈍。顎形突長釘狀，稍向內彎曲，末端尖銳。囊突粗壯，向前漸細，末端鈍。基腹弧彎曲。抱器基部寬，向後驟縮成細長桿狀突起，具剛毛，末端背側有尖刺。陽基顎片為小型，輕度骨化之橫骨帶。陽莖較短，略上舉。陽莖器長度超過陽莖基，結構簡單。

雌交尾器 (圖 674)：交尾囊卵圓形。花壁為一對具橫向排列小刺之骨帶。交尾囊管粗，與交尾囊近乎等長。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成位於中央之橫向骨片，並具一對翼狀骨。後內骨突短，輕度骨化，基部寬，前半部細，末端尖。肛突輕度骨化，後緣具剛毛。

世界分布：印度北部、中南半島北部、華西至華東、臺灣。

臺灣分布：本島中至較高海拔地區。

寄主植物：禾本科之芒。

生物學：本種可能一年有兩世代，成蝶於三月至十月有記錄。

Neope muirheadii (C. & R. Felder, 1862) (褐翅蔭眼蝶／永澤黃斑蔭蝶／蒙鏈蔭眼蝶)

Lasiommata muirheadii C. & R. Felder, 1862: Wiener entomologische Monatschrift 6 (1): 28. (Type locality: “Tse-Kiang [Zhejiang, China]”)

Debis segonax Hewitson, 1862: Illustrations of new species of exotic butterflies [4] (Debis I): [34], pl. [18], f. 5. (Type locality: “China”)

Debis segonacia Oberthür, 1881: Études d'Entomologie 6: 14, pl. 7, f. 4. (Type locality: “Kiang-Si [Jiangxi, China]”)

Neope muirheadii var. *felderi* Leech, 1892: Butterflies from China, Japan, and Corea 1: 54, pl. 8, f. 4. (Type locality: “Omei-shan, [Sichuan, China]”)

Neope muirheadii f. *lingnami* Mell, 1942: Archiv für Naturgeschichte (N. F.) B11 (3): 254. (Type locality: “Sudgebiet Kanton [Guangdong]”)

Neope muirheadii yunnanensis Mell, 1942: Archiv für Naturgeschichte (N. F.) B11 (3): 255. (Type locality: “Yunnan”)

Neope muirheadii menglaensis Li, 1995: Entomotaxonomia 17 (1): 41. (Type locality: “Mengla, Yunnan”)

Ssp. *nagasawae* Matsumura, 1919

PLATE 58, Figs. 321–322; PLATE 59, Figs. 323–324; PLATE 104, Fig. 527; PLATE 141, Fig. 675

Neope muirheadii var. *nagasawae* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 544, pl. 40, f. 1. (Type locality: "Taimarisha [Taimali, Taidong, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Wulai, 2. III. 2007 (Y. F. Hsu); 1♀, Jinshan, Dingbayan, 19. III. 2013 (C. L. Huang); 1♀, Xindian, Yinhedong, 12. II. 2016 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Shilin, Dalunweishan, 400m, 9. III. 2013 (Y. F. Hsu); 2♂, 1♀, Shilin, Yangmingshan, 7. V. 2021, reared from "bamboo", emgd. 28. V. 2021, YMS 21E1 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 28. II. 1988 (Y. F. Hsu); 1♀, same locality, 17. IX. 2008, reared from *Sinobambusa* sp., emgd. 1. XI. 2008, HSU 08J45 (L. H. Wang); 1♀, Fuxing, Baling, 1000m, 11. VII. 2011 (H. C. Huang). **XINZHU Co.:** 2♂, Jianshi, Zhenxibao, 1600m, 2. III. 2010 (Y. F. Hsu); 1♂, same locality, 11. IV. 2012 (L. H. Wang). **YUNLIN Co.:** 1♀, Douliu, Hushan Dam, 31. III. 2016 (L. Huang). **JIAYI Co.:** 3♂, Meishan, Ruili, 1100m, 30. III. 2007 (Y. F. Hsu); 1♂, Alishan, Shizhuo/ Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu). **TAINAN CITY:** 1♂, Zuozhen, Caoshan, 16. VII. 2018 (Y. F. Hsu).

Description. Adult – Forewing length 34–40 mm. Sexual dimorphism absent or weakly present. Male (PLATE 58, Figs. 321–322): Head brown, with a medial, creamy white patch on vertex; frons margined by white. Antennae dark brown with some creamy white scalings, partially naked distad. Compound eyes hairy, rim behind eyes creamy white. Proboscis brown. Labial palpus porrect, hairy, creamy white, with dark brown bands dorsally and laterally. Thorax brown dorsally, grayish white ventrally. Legs brown; foreleg densely hairy, brush-like; protarsi reduced, stab-shaped. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular; costa convex; termen straight, slightly wavy; dorsum nearly straight; R veins with base swollen into a spindle-shaped sac. Hindwing flabellate, with termen wavy. Wing uppersides ground color brown. Postdiscal spots vestigial or barely visible on hindwing. Wing undersides ground color brown, overlaid with creamy white scalings. A series of dark brown postdical eyespots on both wings; eight or nine on hindwing; three or four on forewing. Double, narrow, brown, discal bands present on both wings, with distal ones margined with

prominent, creamy white band. Two bars filled with creamy white markings on forewing, in and at distal end of discoidal cell. A similar bar at distal end of discoidal cell and three similar spots near base of hindwing. Faint pale straight bands present submarginally on both wings. Fringe white, checkered with brown. Sexual brand as a dark patch of specialized scalings on forewing uppersides. Female (PLATE 59, Figs. 323–324): Body and wing pattern similar to those of male; but ground color of wing uppersides paler, with prominent dark brown postdiscal eyespots on both wing; foreleg normal, less hairy, with protarsi segmented, spiny. No sexual brand.

Male genitalia (PLATE 104, Fig. 527) – Tegumen broad, slightly convex dorsally; uncus stout, straight, with distal end divided into a pair of horn-like processes. Brachia as elongate spines, slightly bent inwards, with distal end acute. Saccus rod-like, with distal end truncate. Vinculum bent. Valva broad proximally, narrowed to an elongate, setose blade posteriorly, bearing a digitate process at distal tip. Juxta as weakly sclerotized, transverse band. Phallus short, stout; aedeagus longer than phallobase, bearing small spines on dorsal surface near distal end.

Female genitalia (PLATE 141, Fig. 675) – Corpus bursae ovate. Signa as two elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae thick, slightly shorter than corpus bursae. Sterigma with lamella antevaginalis forming sclerotized dome, lamella postvaginalis forming broad, sclerotized wall, associated with tubular sclerite surrounding ostium bursae. Posterior apophyses short, weakly sclerotized, with distal ends blunt. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. The ground color of wing undersides is darker, with white discal band reduced or absent in dry or cold seasons.

Global distribution. North India, northern Indochina, West to East China, Taiwan (Bozano, 1999; Lang, 2017).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also Guishan Island (Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Various species of bamboos, including *Bambusa ventricosa*, *B*.

oldhamii, *Phyllostachys makinoi*, *Dendrocalamus latiflorus*, etc. (Poaceae) (Hsu, 1999, 2013; Lu & Chen, 2014).

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 34–40 mm。雌雄二型性略有或缺乏。雄蝶 (圖 321–322)：頭褐色，頭頂中央有白紋、前額有白邊。觸角黑褐色混白色鱗、末端部分裸露。複眼被毛，後側輪緣乳白色。口器褐色。下唇鬚前伸、被毛、乳白色，背面及腹面有黑褐色條紋。胸部背面褐色，腹面灰白色。足褐色，前足密被毛、刷狀，跗節減退、刺狀。腹部背面赭色、腹面灰白色。前翅近三角形，前緣凸、外緣直而略呈波狀、後緣近直線狀；R 脈基部膨大成紡錘狀囊。後翅扇形，外緣呈波狀。翅背面底色褐色，後翅外側眼狀紋消失或不明顯。翅腹面底色褐色、覆乳白色鱗，外側眼狀紋黑褐色，於前翅有三或四只、於後翅有八或九只。中央有兩條褐色窄帶紋、靠外者有鮮明白邊。亞外緣有模糊淺色直帶紋。前翅中室內及中室末端有內部填充乳白色紋之短紋；後翅中室具一枚與前翅中室相似之短紋、近翅基處另有三只類似斑點。緣毛白色嵌褐色。前翅背面有暗色特化鱗於形成之性標。雌蝶 (圖 323–324)：形態特徵與雄蝶相似，但翅背面底色較淺，且外側具鮮明黑褐色眼狀紋，前足正常、疏被毛，跗節分節、具刺，無性標。

雄交尾器 (圖 527)：背兜寬，背側略隆起。鉤突粗壯、挺直，末端分岔，形成一對角狀突起。顎形突長釘狀，略向內彎曲，末端尖銳。囊突桿狀，末端截形。基腹弧彎曲。抱器基部寬，向後驟縮成細長桿狀突起，具剛毛，末端背側有指狀突。陽基顎片為輕度骨化之橫骨帶。陽莖粗短。陽莖器長度超過陽莖基，末端背側生有小棘刺。

雌交尾器 (圖 675)：交尾囊卵圓形。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管粗，略短於交尾囊。交尾囊孔板之前陰片形成骨化穹頂；後陰片形成寬骨壁，與交尾囊孔周圍之管狀骨片相連。後內骨突短、輕度骨化，端部鈍。缸突輕度骨化，後緣具剛毛。

變異：低溫 / 乾季型翅腹面底色較暗、中央白帶減退或消失。

世界分布：印度北部、中南半島北部、華西至華東、臺灣。

臺灣分布：本島低至中海拔地區，龜山島亦有記錄。

寄主植物：多種禾本科之竹類植物，包括佛竹、綠竹、桂竹、麻竹等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Genus *MYCALESIS* Hübner, 1818

Type species: *Papilio francisca* Stoll, [1780]

Diagnostic characters may include the following: 1) compound eyes densely hairy; 2) labial palpus densely hairy, 3rd segment short, small; 3) protarsus densely hairy in male, not hairy in female; 4) veins of forewing swollen near wing base; 5) discoidal cell closed on both wings.

Larvae feed on plants in Poaceae, Cyperaceae and Zingiberaceae.

The genus was a large collective genus with over 100 described species (Aoki *et al*., 1985), but Aduse-Poku *et al*. (2015) and Aduse-Poku *et al*. (2016) have divided it to multiple genera, so an update checklist of *Mycalesis* sensu stricto is required.

6 species are now recognized in Taiwan.

眉眼蝶屬

形態特徵如下：1) 複眼密被毛；2) 下唇鬚密被毛、第三節短小；3) 雄蝶前足跗節密被毛、雌蝶則無毛；4) 前翅近基部翅脈膨大；5) 前、後翅中室封閉。

幼蟲取食禾本科、莎草科及薑科植物。

本屬成員原先超過 100 種，但 Aduse-Poku *et al*. (2015) 及 Aduse-Poku *et al*. (2016) 已將其分拆為數個屬，因此更新狹義眉眼蝶屬物種清單有其必要性。

臺灣現已記錄 6 種。

Mycalesis francisca (Stoll, [1780]) (眉眼蝶／小蛇目蝶／擬稻眉眼蝶)

Papilio francisca Stoll, [1780]: De uitlandsche kapellen 4 (26b-28): 75, pl. 326, f. E, F. (Type locality: "China")

Mycalesis perdiccas var. *magna* Leech, [1892]: Butterflies from China, Japan, and Corea 1: 14, pl. 2, f. 6. (Type locality: "Western China")

Mycalesis penicillata Poujade, 1884: Annales de la Société entomologique de France, série 6, 4: cxxxv. (Type locality: "Mou-Pin (Thibet) [Baoxing, Sichuan, China]")

Ssp. *formosana* Fruhstorfer, 1908

PLATE 59, Figs. 325–328; PLATE 104, Fig. 528; PLATE 141, Fig. 676

Mycalesis francisca formosana Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: "Kanshirei [Guanzhiling]; Tainan")

Mycalesis francisca formosana f. *hirtia* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: "Tainan")

Mycalesis perdiccas var. *horishana* Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: "Formosa (Horisha)")

Mycalesis sanatana var. *coronensis* Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: "Formosa (Toroen, 4000 Fuss hoch)")

Mycalesis francisca arisana Sonan, 1931: Zephyrus 3 (3/4): 200. (Type locality: "Taikan (新高山對觀 [關]) (300[0] m) [Duiguanshan, Nantou, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Xindian, Shizaitoushan, 3. X. 2010 (L. Huang & H. C. Huang). **TAIPEI CITY:** 1♀, Wenshan, Hills behind NCCU campus, 1. VI. 2005 (Y. F. Hsu). **TAOYUAN CITY:** 1♂, Fuxing, Xuanyuan, 19. VII. 2018 (C. W. Huang). **YILAN Co.:** 1♂, 1♀, Toucheng, Guishan Is., 4/5. III. 2006 (H. C. Huang & C. L. Huang). **TAIZHONG CITY [= TAIZHONG Co.]:** 2♂, Heping, Qingshan, 1. X. 1995 (Y. F. Hsu); 2♂, Heping, Shaolaishan, 800m, 12. VIII. 2011 (Y. F. Hsu). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 13. V. 2004 (Y. F. Hsu); 2♂, Xinyi, Dongpu, 1100/1200m, 31. VII. 2009 (Y. F. Hsu); 1♂, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang); 2♂, 1♀, Renai, Tunyuan, 1700m, 11. V. 2011 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Huoranting, 1000m, 5. VI. 2006 (L. H. Wang). **JIAYI Co.:** 2♂, 1♀, Alishan, Shanmei, 500m, 31. III. 2007 (Y. F. Hsu); 1♂, Alishan, Shanmei, 30. III. 2008 (Y. F. Hsu); 1♀, Fanlu, Chukou, Tufeishan, 300m, 3. IV. 2011 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 2♀, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su); 1♀, Taoyuan, Meishan, 27. X. 2016 (L. Huang). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 26. IV. 1999 (Y. F. Hsu); 1♂, same locality, 1100/1300m, 9. IV. 2000 (Y. F. Hsu); 1♂, Wutai, Old Dawu/ Bayouxi, 500/900m, 20. III. 2010 (N. Y. Tsai); 1♂,

Wutai, Ali, 1200m, 4. IV. 2011 (Y. F. Hsu); 1♂, Mudan, Gaoshifoshan, 450m, 4. II. 2010 (L. H. Wang).

Description. Adult – Forewing length 21–27 mm. Sexual dimorphism absent or weakly present. Male (PLATE 59, Figs. 325–326): Head dark brown. Antennae dark brown, with creamy yellow scalings ventrally, naked distally. Compound eyes hairy. Proboscis brown. Labial palpus erect, with 3rd segment short, brown mixed with creamy yellow. Thorax dark brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, pale brown ventrally. Forewing nearly triangular; costa convex; termen straight or slightly convex, dorsum straight. Veins surrounding discoidal cell of forewing and 1A+2A swollen basad. Hindwing flabellate, with termen rounded or slightly wavy. Wing uppersides ground color dark brown. Prominent postdiscal eyespots present in cell M_1 and CuA_1 of forewing, with latter larger; one eyespot in cell CuA_1 of hindwing. Wing undersides ground color brown, paler distad in dry season. Prominent postdiscal eyespots present; usually two to four on forewing, notably in cell CuA_1, seven on hindwing, in a curve. Prominent narrow discal bands present, purplish white or grayish white. Narrow, dark brown, subbasal bands present on both wings. Two submarginal bands present along termen of both wings. Fringe brown. Sexual brands including a gray oval patch bearing black tuft on vein 1A+2A of forewing uppersides, a silvery white patch with a creamy white hair pencil near base of hindwing uppersides, and a silvery patch with dark center near base of forewing undersides. Female (PLATE 59, Figs. 327–328): Body and wing pattern similar to those of male; ground color of wings paler; foreleg with protarsi segmented. No sexual brand.

Male genitalia (PLATE 104, Fig. 528) – Tegumen broad, flat dorsally; uncus forming elongate, down-curved process caudally, with distal end blunt. Brachia elongate, slender, slightly down-curved caudad, with distal end pointed. Saccus short, rod-shaped, with distal tip blunt. Vinculum nearly straight. Valva broad, thickened ventrally, tapering posteriorly distal end slightly bent upwards, spiny, Juxta weakly sclerotized, broad. Phallus elongate; aedeagus more than 2X of phallobase, heavily sclerotized, with a few minute spines on external wall, up-raising caudally, with distal end beveling.

Female genitalia (PLATE 141, Fig. 676) – Corpus bursae ovate. Ductus bursae elongate,

slightly longer than corpus bursae. Sterigma with lamella antevaginalis forming sclerotized dome with dorsal wall forming small V-shaped medial notch; lamella postvaginalis forming prominent shield, produced laterally. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals of dry season are paler in ground color of wings, notably on the distal portions of undersides; eyespots of wing undersides reduced.

Global distribution. Himalayas, India, Indochina, Japan, Korea, Southwest to Northeast China, Taiwan (Shirôzu, 2006; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan; also Guishan Island (Hsu, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Various kinds of grasses (Poaceae), including *Panicum sarmentosum*, *Oplismenus compositus*, *O. undulatifolius*, etc. (Lu & Chen, 2014)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 21–27 mm。雌雄二型性略有或缺乏。雄蝶 (圖 325–326)：頭黑褐色。觸角黑褐色，腹面有乳黃色鱗，末端裸露。複眼被毛。口器褐色。下唇鬚前伸、第三節短小，褐色雜乳黃色。胸部背面黑褐色、腹面淡褐色。足淡褐色，前足被毛；前足跗節減退、刺狀。腹部背面褐色、腹面淡褐色。前翅近三角形，前緣凸、外緣直線狀或略凸、後緣直線狀；前翅中室周圍翅脈及 1A+2A 脈基部膨大。後翅扇形，外緣圓或略呈波狀。翅背面底色黑褐色，外側有明顯眼狀紋，於前翅有兩只，位於 M_1 及 CuA_1 室、後者較大型，於後翅有一只，位於 CuA_1 室。翅腹面底色褐色、乾季型外側色淺，外側眼狀紋於前翅通常有兩至四只、於 CuA_1 室者最明顯，後翅有七只、彎曲排列。翅面中央有鮮明紫白色或灰白色細帶紋，亞基部有黑褐色細帶紋，翅外緣有兩道亞外緣線紋。緣毛褐色。前翅背面 1A+2A 脈有灰色橢圓形斑與黑色毛叢組成之性標，後翅背面近基部有銀白色斑及乳白色毛叢組成之性標，前翅腹面近基部處有中央深色之銀色性標。雌蝶 (圖 327–328)：形態特徵與雄蝶相似，

但翅底色較淺，前足跗節分節，無性標。

雄交尾器 (圖 528)：背兜寬，背側平坦。鉤突細長、下彎，末端鈍。顎形突細長，尾端略下彎，末端尖。囊突短、桿狀，末端鈍。基腹弧甚直。抱器基部寬，向後漸細，腹側粗厚，末端略上彎，密生棘刺。陽基軛片寬，輕度骨化。陽莖修長，陽莖器長度超過陽莖基 2 倍以上，明顯骨化，外壁生有刺棘，末端上舉、斜切。

雌交尾器 (圖 676)：交尾囊卵圓形。交尾囊管細長，略長於交尾囊。交尾囊孔板之前陰片形成骨化穹頂，其背側骨壁有 V 字形小缺口；後陰片形突出盾狀片，兩側突出。肛突輕度骨化，後緣具剛毛。

變異：乾季型個體翅底色較淺，翅腹面外半部尤其明顯，眼狀紋減退。

世界分布：喜瑪拉雅地區、印度、中南半島、日本、朝鮮半島、華西南至華東北、臺灣。

臺灣分布：主要分布於本島低至中海拔地區，亦見於龜山島。

寄主植物：多種禾本科之草本植物，包括藤竹草、竹葉草、求米草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Mycalesis gotama Moore, 1857 (稻眉眼蝶／姬蛇目蝶)

Mycalesis gotama Moore, 1857: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 232. (Type locality: “China”)

Mycalesis borealis C. & R. Felder, [1867]: Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorf-Urbair, pt. 9, Bd. 2, Abt. 2 (3): 500. (Type locality: “China Septentrional, Shanghai”)

Ssp. *nanda* Fruhstorfer, 1908

PLATE 59, Figs. 329–332; PLATE 104, Fig. 529; PLATE 142, Fig. 677

Mycalesis gotana [sic] *nanda* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: “Tainan; Kagi [Jiayi]”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, 30. XI. 2004 (Y. F. Hsu); 1♀, Wulai, 200m, 25. X. 2009, reared from *Miscanthus* sp., emgd. 23. X. 2009, HSU 09J38 (Y. F. Hsu); 1♀, Xindian, Feicui Dam, 18. IV. 2012 (Y. F. Hsu); 1♂, Xindian, Dailaokengshan, 300m, 12. II. 2016, reared from *Miscanthus sinensis*, emgd. 7. III. 2016, HSU 16B7 (Y. F. Hsu); 1♂, Danshui, Pingding, 250m, 1. VIII. 2011 (H. C. Huang); 1♂, Ruifang, Jiufen, 400m, 4. XI. 2011 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Wenshan, Taipei City Zoo, emgd. 11. V. 2000 (Y. T. Lo); 1♂, Shilin, Jingshan, 500m, 8. XI. 2011, reared from *Arundo donax*, emgd. 15. XII. 2011, HSU 11L1 (Y. F. Hsu). **NANTOU Co.:** 1♀, Lugu, 500m, 20. I. 2009 (Y. F. Hsu); 1♂, Yuchi, Helongkeng, 550m, 8. X. 2002, reared from *Phragmites karka*, emgd. 11. X. 2002, HSU 02K23.2 (Y. F. Hsu); 1♀, Renai, Songboling, emgd. 20. XII. 2008 (Y. T. Lo). **HUALIAN Co.:** 1♂, Guangfu, Dafu, 1. V. 2012 (L. H. Wang). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, 22. XI. 2009, reared from *Miscanthus* sp., emgd. 15. X. 2008, HSU 09J38 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Mudan, Gaoshifoshan, 450m, 4. II. 2010 (L. H. Wang). **TAIDONG Co.:** 1♂, Donghe, Taiyuan, 31. VIII. 2006 (Y. F. Hsu).

Description. Adult – Forewing length 21–28 mm. Sexual dimorphism absent or weakly present. Male (PLATE 59, Figs. 329–330): Head brown. Antennae brown, with creamy yellow scalings ventrally, naked distally. Compound eyes hairy. Proboscis brown. Labial palpus erect, with 3rd segment short, brown mixed with creamy yellow. Thorax brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, pale brown ventrally. Forewing nearly triangular; costa convex; termen slightly convex, dorsum straight. Veins surrounding discoidal cell of forewing and 1A+2A swollen basad. Hindwing flabellate, with termen rounded. A portion of vein bordering discoidal cell of hindwing swollen. Wing uppersides ground color brown. Prominent postdiscal eyespots present in cell M_1 and CuA_1 of forewing, with latter larger. Wing undersides ground color brown. Prominent postdiscal eyespots present; usually two to four on forewing, notably in cell CuA_1, six or seven on hindwing, with spot in cell M_3 reduced or vestigial, arranged in a curve. Prominent, narrow discal bands present, creamy white. Narrow, dark brown, subbasal bands present, two on forewing, one on hindwing. Two submarginal bands present along termen of both wings, inner ones thicker. Fringe brown. Sexual brands including a silvery white patch with a dark brown hair pencil near base of hindwing uppersides, and a silvery patch with creamy white center near base of forewing undersides. Female (PLATE 59, Figs. 331–

332): Body and wing pattern similar to those of male; ground color of wings paler; vein surrounding discoidal cell of hindwing not swollen; foreleg with protarsi segmented.

Male genitalia (PLATE 104, Fig. 529) – Tegumen broad, flat dorsally; uncus forming slightly down-curved beak caudally, with distal end pointed. Brachia elongate, up-raising, serrate dorsally, with distal end pointed. Saccus with distal tip club-like. Vinculum straight. Valva broad, thickened ventrally, with caudal ending forming serrate, distorted ridge. Juxta weakly sclerotized, narrow, with dorsal invagination. Phallus elongate; aedeagus more than 3X of phallobase, heavily sclerotized, strongly up-raising caudally.

Female genitalia (PLATE 142, Fig. 677) – Corpus bursae bulbous. Ductus bursae slender, longer than corpus bursae, enlarged at ostium bursae. Sterigma with lamella antevaginalis forming membranous dome, sclerotized posteriorly and medially; lamella postvaginalis forming a pair of broad, elongate sclerites forming rounded discs caudally. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals of dry season are paler in ground color of wings, notably on the distal portions; eyespots of wing undersides reduced.

Global distribution. Northeast India, Indochina, Japan, Korea, West to East China, and Taiwan (Shirôzu, 2006; Hsu, 2013).

Distribution in Taiwan. Mainly low elevations in main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Various kinds of grasses (Poaceae), including *Miscanthus sinensis*, *M. floridulus*, *Cenchrus purpureus*, *Phragmites karka*, *Leersia hexandra*, *Echinochloa crus-galli*, *Isachne beneckei*, *Oryza sativa*, *Zizania latifolia*, etc. (Hsu, 2013)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 2013).

形態特徵：成蝶前翅長 21–28 mm。雌雄二型性略有或缺乏。雄蝶 (圖 329–330)：頭褐色。觸角褐色，腹面覆乳黃色鱗，末端裸露。複眼被毛。口器褐色。下唇鬚上舉，褐色雜乳黃色，第三節短小。胸部背面褐色、腹面淡褐色。足淡褐色，前足被毛；前足跗節減退、刺狀。腹部背面褐色、腹面淡褐色。前翅近三角形，前緣凸、外緣略凸、後緣筆直；前翅中室周圍翅脈及 1A+2A 脈基部膨大。後翅扇形，外緣圓。後翅中室有部分連接翅脈膨大。翅背面底色褐色，前翅 M_1 及 CuA_1 室外側有鮮明眼狀紋，後者較大型。翅腹面底色褐色，外側有眼狀紋，於前翅通常為兩至四只、位於 CuA_1 室者最明顯，於後翅六至七枚，於 M_3 室者減退或消失，彎曲排列。翅面中央有乳白色細帶紋，亞基部有黑褐色細線紋，於前翅兩道、後翅一道。沿翅外緣有兩道亞外緣帶紋，靠內側者較粗。緣毛褐色。後翅背面近基部有銀白色斑及深褐色毛叢組成之性標，前翅腹面近基部處有中央為乳白色之銀色塊狀性標。雌蝶 (圖 331–332)：形態特徵與雄蝶相似，但翅底色較淺，後翅中室周圍翅脈不膨大，前足跗節分節。

雄交尾器 (圖 528)：背兜寬，背側平坦。鉤突細長，末端形成下彎喙狀構造，末端尖。顎形突修長、上舉，背側有鋸齒，末端尖。囊突棒狀，末端鈍。基腹弧甚直。抱器修長、瓣狀，基部寬，後端窄，末端形成扭曲稜脊，上有鋸齒。陽基顎片輕度骨化、狹窄，背側凹陷。陽莖修長。陽莖器明顯骨化，向後明顯上舉，長度為陽莖基 3 倍以上。

雌交尾器 (圖 676)：交尾囊球狀。交尾囊管細長，長度超過交尾囊，於交尾孔處膨大。交尾囊孔板之前陰片形成膜質穹頂，中央及後側骨化；後陰片為一對寬闊長骨片，後端圓盤狀。肛突輕度骨化，後緣具剛毛。

變異：乾季型個體翅底色較淡，外半部尤其明顯；翅腹面眼狀斑點減退。

世界分布：印度東北部、中南半島、日本、朝鮮半島、華西至華東及臺灣。

臺灣分布：主要分布於本島低海拔地區。

寄主植物：多種禾本科之草本植物，包括芒、五節芒、象草、開卡蘆、李氏禾、 稗、本氏柳葉箬、稻、菰等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Mycalesis kagina Fruhstorfer, 1908 (嘉義眉眼蝶 / 嘉義小蛇目蝶)

PLATE 59, Fig. 333; PLATE 60, Fig. 334; PLATE 104, Fig. 530; PLATE 142, Fig. 678

Mycalesis suaveolens kagina Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: "Kagi [Jiayi], Formosa")

Specimens examined:

NANTOU Co.: 1♂, Lugu, Fenghuanggu Bird and Ecology Park, 24. IV. 1997 (C. C. Lu); 1♀, same locality, 13. IX. 1999 (C. Y. Hung); 1♂, same locality, 16. X. 2018 (W. J. Lin). **JIAYI Co.:** 2♂, Alishan, Danayigu, ca 500m, 31. III. /1. IV. 2007 (Y. F. Hsu); 1♂, Alishan, Shanmei, ca 500m, 31. III. 2007 (Y. F. Hsu); 1♂, same locality, 21. I. 2014, reared from *Zingiber kawagoii* [= *Z. pleiostachyum*], emgd. 25. II. 2014, HSU 14A29 (Y. F. Hsu); 1♀, same locality, 19. IV. 2015, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 24. V. 2015, HSU 15D31 (Y. F. Hsu); 1♀, Meishan, Ruili, ca 700m, 5. IV. 2009 (R. K. Dong); 1♀, Chukou, Tufeshan, 300m, 3. IV. 2011 (C. C. Lu, jr.); 1♀, Alishan, Shanmei, ca 600m, 20. I. 2014, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 14. II. 2014, HSU 14A29 (Y. F. Hsu); 1♀, same locality, 15. VIII. 2015, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 28. VIII. 2015, HSU 15H21 (Y. F. Hsu); 2♂, same locality, 12. XI. 2016, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 20. XII. 2016, HSU 16L7 (Y. F. Hsu); 1♂, Fanlu, Chukou, 280m, 30. XII. 2015, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 5. II. 2016, HSU 15M35 (Y. F. Hsu). **TAINAN CITY:** 1♂, Dongshan, Kantoushan, 6. IX. 2011, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd, 19. X. 2011, HSU 11J10 (Y. F. Hsu); 1♂, 3♀, Dongshan, Kantoushan, 600/800m, 18. XI. 2011, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd, 6. XII. 2011. /5. I. 2012, HSU 11L10 (Y. F. Hsu); 1♀, same locality, 28. IV. 2012, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 16. V. 2012, HSU 12D34 (Y. F. Hsu); 2♂, Dongshan, Kantoushan, ca 600m, 28. III. 2013 (Y. F. Hsu); 2♂, 1♀, same locality, 28. IV. 2013, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 26. V. 2013, HSU 13D42 (Y. H. Hsu); 5♂, same locality, 27. VII. 2013, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 16. IX. /6. X. 2013, HSU 13H58 (Y. F. Hsu); 2♂, same locality, 27. VIII. 2013, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 13/21. IX. 2013, HSU 13H58 (Y. F. Hsu); 1♂, 3♀, same locality, 6. XI. 2013, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 18/19. XII. 2013, HSU 13L27 (Y. F. Hsu); 2♂, 1♀, same locality, 27. XI. 2013, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 6/7. I. 2014, HSU 13L55 (Y. F. Hsu); 1♀, same locality, 6. I. 2014, reared from *Z. kawagoii*

[= *Z. pleiostachyum*], emgd. 31. I. 2014, HSU 14A4 (Y. F. Hsu); 1♂, same locality, 28. III. 2014 (Y. F. Hsu); 1♂, same locality, 21. X. 2014, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 20. XI. 2014, HSU 14K46 (Y. F. Hsu); 1♂, same locality, 26. XI. 2014, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 2. I. 2015, HSU 14L16 (Y. F. Hsu); 2♂, same locality, 18. IV. 2015, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 23/26. V. 2015, HSU 15D29 (Y. F. Hsu); 1♀, same locality, 31. X. 2015, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 18. XII. 2015, HSU 15K33 (Y. F. Hsu); 1♀, same locality, 7. X. 2017, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 24. XI. 2017, HSU 17K2 (Y. F. Hsu); 3♂, 2♀, same locality, 25. XI. 2017, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 31. XII. 2017 /13. I. 2018, HSU 17L18 (Y. F. Hsu); 1♀, same locality, 18. IX. 2018, reared from *Alpinia kawakamii* [= *A. shimadae* var. *kawakamii*], emgd. 10. X. 2018, HSU 18J12 (Y. F. Hsu); 2♀, same locality, ca 600/700m, 30. VII. 2013, reared from *Z. kawagoii* [= *Z. pleiostachyum*], emgd. 22. VIII. /16. IX. 2013, HSU 13G57 (Y. F. Hsu).

Description. Adult – Forewing length 28–31 mm. Sexual dimorphism absent or weakly present. Male (PLATE 59, Fig. 333): Head brown. Antennae brown, banded with creamy yellow scalings ventrally, naked distally. Compound eyes hairy. Proboscis brown. Labial palpus porrect, with 3rd segment short, brown. Thorax brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, creamy yellow ventrally. Forewing nearly triangular; costa convex; termen slightly convex; dorsum straight. Veins surrounding discoidal cell of forewing and 1A+2A swollen basad. Hindwing flabellate, with termen rounded or slightly wavy. Wing uppersides ground color dark brown. Prominent postdiscal eyespots present, two on forewing, in cell M_1 and CuA_1, with latter larger; up to four on hindwing, most prominent in cell CuA_1. Wing undersides ground color dark brown. Postdiscal eyespots present, prominent in cell M_1 and CuA_1 of forewing, seven on hindwing, in a curve. Prominent creamy white discal bands present. Dark, narrow, subbasal bands present on both wings. Two creamy white submarginal bands present along termen of both wings. Fringe brown. Sexual brands including a silvery gray patch with a creamy yellow hair pencil near base of hindwing uppersides and a silvery patch with creamy yellow center near base of forewing undersides. Female (PLATE 60, Fig. 334): Body and wing pattern similar to those of male; foreleg with protarsi segmented; no sexual brands.

Male genitalia (PLATE 104, Fig. 530) – Tegumen broad, flat dorsally; uncus forming elongate process, tapering with distal end blunt. Brachia elongate, slender, slightly down-curved, with distal end bent upwards, pointed. Saccus short, rod-shaped, with distal tip slightly enlarged, blunt. Vinculum nearly straight. Valva elongate, broad proximally, thickened ventrally, tapering posteriorly with distal end shallowly bifid, spiny, Juxta weakly sclerotized. Phallus elongate; aedeagus approximately 1.5X of phallobase, with a few minute spines on external wall, slightly up-raising caudally, with distal end beveling.

Female genitalia (PLATE 142, Fig. 678) – Corpus bursae ovate. Ductus bursae elongate, much longer than corpus bursae. Sterigma with lamella antevaginalis forming partially sclerotized dome; lamella postvaginalis forming bowl-shaped sclerite with large lateral alate processes. Anal papillae weakly sclerotized, setose along posterior margin.

Global distribution. Endemic to Taiwan (Hsu *et al*., 2019b).

Distribution in Taiwan. Low to moderate elevations in southern Taiwan (Hsu *et al*., 2019b).

Larval Host plant(s). Zingiberaceae: mainly *Zingiber pleiostachyum*, also *Alpinia shimadae* var. *kawakamii* and *Hedychium coronarium* (Hsu *et al*., 2019b).

Biology. Multivoltine in occurrence; overwintering as diapausing larvae in debris in winter (Hsu *et al*., 2019b).

Remarks. This species had been regarded as an insular subspecies of continental *Mycalesis suaveolens* Wood-Mason & de Nicéville, 1883 until Hsu *et al*. (2019b) recognized it as a species endemic to Taiwan based on molecular data and morphological evidence in larvae and genitalia.

形態特徵：成蝶前翅長 28–31 mm。雌雄二型性略有或缺乏。雄蝶 (圖 333)：頭褐色。觸角褐色，腹面有乳黃色紋，末端裸露。複眼被毛。口器褐色。下唇鬚前伸，褐色，

第三節短。胸部背面褐色，腹面淡褐色。足淡褐色，前足被毛；前足跗節減退、刺狀。腹部背面褐色、腹面乳黃色。前翅近三角形，前緣凸、外緣略凸、後緣直線狀；前翅中室周圍翅脈及 1A+2A 脈基部膨大。後翅扇形，外緣圓或略呈波狀。翅背面底色黑褐色，外側有鮮明眼狀紋，於前翅兩只，位於 M_1 室及 CuA_1 室、後者較大型，於後翅最多四只，於 CuA_1 室者最明顯。翅腹面底色黑褐色，外側眼狀紋於前翅 M_1 及 CuA_1 室明顯，後翅有七只、彎曲排列。翅面，具中央有乳白色細帶紋及亞基部深色細線紋，沿翅外緣有兩道乳白色亞外緣細帶紋。緣毛褐色。後翅背面近基部有銀灰色斑及乳黃色毛叢組成之性標，前翅腹面近基部處有中央為乳黃色之銀色性標。雌蝶 (圖 334)：形態特徵與雄蝶相似，但前足跗節分節，無性標。

雄交尾器 (圖 530)：背兜寬，背側平坦。鉤突細長，向後形成細長突起，末端鈍。顎形突細長、略彎曲，末端尖。囊突短、桿狀，末端稍膨大，末端鈍。基腹弧甚直。抱器修長，基部寬，向後漸細，末端淺分叉，具多數棘刺。陽基軛片輕度骨化。陽莖修長。陽莖器長度約為陽莖基 1.5 倍，外壁表面有棘刺，末端斜切、略上舉。

雌交尾器 (圖 678)：交尾囊卵圓形。交尾囊管細長，長度明顯超過交尾囊。交尾囊孔板之前陰片形成部分骨化之穹頂；後陰片形成碗形骨板，兩側有大型翼狀突起。肛突輕度骨化，後緣具剛毛。

世界分布：臺灣特有種。

臺灣分布：分布於南臺灣之低至中海拔地區。

寄主植物：主要為薑科之三奈，川上氏月桃及穗花山奈亦有取食記錄。

生物學：本種為一年多代物種，休眠幼蟲於落葉堆內蟄伏越冬。

註記：本種原被視為大陸性物種罕眉眼蝶 *Mycalesis suaveolens* Wood-Mason & de Nicéville, 1883 之島嶼性亞種，Hsu *et al*. (2019b) 根據分子資料、幼生期及交尾器之形態證據將其視為臺灣特有種。

Mycalesis perseus (Fabricius, 1775) (曲斑眉眼蝶／無紋蛇目蝶／裴斯眉眼蝶)

Papilio perseus Fabricius, 1775: Systema Entomologiae: 488. (Type locality: "Nova Hollandia [Australia]")

Coenonympha infuscata Macleay, 1866: Transactions of the Entomological Society of New South Wales 1: liii. (Type locality: "Cape York")

Mycalesis zia Butler, 1869: The Entomologist 4: 347. (Type locality: "Queensland")

Mycalesis modestus Miskin, 1890: Proceedings of the Linnean Society of New South Wales, series 2, 5 (1): 29. (Type locality: "Cooktown (N. Queensland)")

Ssp. *blasius* Fabricius, 1798

PLATE 60, Figs. 335–338; PLATE 105, Fig. 531; PLATE 142, Fig. 679

Papilio blasius Fabricius, 1798: Entomologia Systematica (Supplementum): 426. (Type locality: "India orientali [East Indies]")

Specimens examined:

HUALIAN Co.: 1♀, Guangfu, 27. XI. 2013 (L. H. Wang). **JIAYI Co.:** 1♂, Fanlu, Chukou, Tufeishan, 300m, 30. IV. 2011 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Xinhua, Dakeng, 80m, 4. II. 2006 (K. L. Chen); 1♂, same locality, 19. III. 2006 (Y. F. Hsu); 1♂, Xinhua, 20. II. 2007 (Y. F. Hsu); 1♂, Guantian, Wushantou, 24. X. 2009 (Y. F. Hsu); 1♂, same locality, 80m, 18. XI. 2011 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Tianliao, Dagangshan, 13. III. 2002 (Y. F. Hsu); 1♂, Liugui, 10. XII. 2003 (Y. F. Hsu); 1♂, 2♀, Liugui, 200m, 29. X. 2006, reared from *Panicum sarmentosum*, emgd. 23/26. XII. 2006, HSU 06K60 (Y. F. Hsu); 1♂, same locality, 31. XII. 2006 (Y. F. Hsu); 1♂, Xiaogang, Dalinpu, 0/20m, 27. XII. 2003 (Y. F. Hsu); 2♀, Meinong, Zhuzimen, 8. I. 2006, reared from *Panicum* sp., emgd. 6. III. 2006, HSU 06A2 (S. C. Chen). **PINGDONG Co.:** 1♀, Pingdong City, Pingdong Airport, reared from *Brachiaria mutica*, emgd. 12. VIII. 2000 (S. C. Chen). **TAIDONG Co.:** 1♂, Donghe, Donghe Farm, 400m, 25. I. 2007 (Y. F. Hsu); 1♂, Beinan, Danan, 100m, 27. V. 2005 (Y. F. Hsu); 1♂, Beinan, Danan, 120m, 29. VIII. 2005 (Y. F. Hsu); 1♂, 1♀, Taidong City, Pipa Lake, 25. I. 2007 (Y. F. Hsu); 1♂, 2♀, same locality, 16. X. 2007, reared from *Panicum* sp., emgd. 23/31. XII. 2007, HSU 07K32 (Y. F. Hsu).

Description. Adult – Forewing length 21–25 mm. Sexual dimorphism absent or weakly present. Male (PLATE 60, Figs. 335–336): Head brown. Antennae brown, with creamy yellow scalings ventrally, naked distally. Compound eyes hairy. Proboscis brown. Labial palpus porrect, with 3rd segment short, brown. Thorax brown dorsally, pale brown

ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, yellowish gray ventrally. Forewing nearly triangular; costa convex; termen slightly convex; dorsum straight. Veins surrounding discoidal cell of forewing and 1A+2A swollen basad. Hindwing flabellate, with termen rounded or slightly wavy. Wing uppersides ground color brown or dark brown. Prominent postdiscal eyespot present in cell CuA_1 of forewing. Wing undersides ground color brown, paler and with fine, dark striae in dry season. Prominent postdiscal eyespots present; usually four on forewing, seven on hindwing, both in a curve. Prominent, narrow discal bands present, creamy white. Proximal portion darken with discal band represented by a boundary line in dry season. Fringe brown. Sexual brands including a silvery gray patch with a creamy yellow hair pencil near base of hindwing uppersides and a silvery patch with brown center near base of forewing undersides. Female (PLATE 60, Figs. 337–338): Body and wing pattern similar to those of male; foreleg with protarsi segmented; no sexual brands.

Male genitalia (PLATE 105, Fig. 531) – Tegumen broad, flat dorsally; uncus forming down-curved beak caudally, with distal end pointed. Brachia elongate, slender, slightly curved, with distal end pointed. Saccus short, bullet-shaped, with distal tip blunt. Vinculum straight. Valva broad, elongate, thickened ventrally, forming broad lobe serrate dorsally, with distal end bearing a small apical spine and small subapical lobe, Juxta weakly sclerotized, broad. Phallus elongate; aedeagus more than 2X of phallobase, heavily sclerotized, with a few minute spines on external wall, up-raising caudally.

Female genitalia (PLATE 142, Fig. 679) – Corpus bursae ovate. Ductus bursae slightly longer than corpus bursae, enlarged poteriorly. Sterigma with lamella antevaginalis forming broad, transverse sclerite; lamella postvaginalis forming a pair of club-like sclerites. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals of dry season are paler in ground color of wings, often with fine, dark brown striae; proximal portion of wings usually darken; discal bands reduced to a boundary line; eyespots of wing undersides reduced or vestigial.

Global distribution. Nearly entire Oriental and northern Australian regions (Aoki *et al*.,

1985).

Distribution in Taiwan. Low elevations in southern Taiwan (Hsu, 2013).

Larval Host plant(s). Various kinds of grasses (Poaceae), including *Panicum sarmentosum*, *Brachiaria mutica*, etc. (Hsu, 2013)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 2013).

Remarks. *Papilio tabitha* Fabricius, 1793 may be synonymous with *blasius* Fabricius, 1798. If this turns out to be true, *tabitha* will have nomenclatural priority over *blasius*.

形態特徵：成蝶前翅長 21–25 mm。雌雄二型性略有或缺乏。雄蝶 (圖 335–336)：頭褐色。觸角褐色，腹面覆乳黃色鱗，末端裸露。複眼被毛。口器褐色。下唇鬚前伸，褐色，第三節短小。胸部背面褐色、腹面淡褐色。足淡褐色，前足被毛；前足跗節減退、刺狀。腹部背面褐色、腹面淡褐色。前翅近三角形，前緣凸、外緣略凸、後緣直線狀；前翅中室周圍翅脈及 1A+2A 脈基部膨大。後翅扇形，外緣圓或略呈波狀。翅背面底色褐色或黑褐色，前翅 CuA_1 室外側有鮮明眼狀紋。翅腹面底色褐色，乾季常綴深色細紋，乾季型色調較淡。翅面外側眼狀紋明顯，於前翅通常有四只，於後翅則有七只、均彎曲排列。翅面中央有鮮明乳白色細線紋，乾季型個體線紋以內色彩較深。緣毛褐色。後翅背面近基部有銀灰色斑及乳黃色毛叢組成之性標，前翅腹面近基部處有中央呈褐色之銀色性標。雌蝶 (圖 337–338)：形態特徵與雄蝶相似，但前足跗節分節，無性標。

雄交尾器 (圖 531)：背兜寬，背側平坦。鉤突末端形成下彎之喙狀構造，末端尖。顎形突細長，尾端略彎曲，末端尖。囊突短、子彈狀，末端鈍。基腹弧頗直。抱器基部寬，向後延伸漸細，腹側厚，端部寬，背側有細鋸齒，末端具一端刺及一小型葉狀突起。陽基軛片寬，輕度骨化。陽莖修長。陽莖器長度為陽莖基 2 倍以上，明顯骨化，末端上揚，外壁有少許棘刺。

雌交尾器 (圖 679)：交尾囊卵圓形。交尾囊管略長於交尾囊，後端膨大。交尾囊孔

板之前陰片形成橫向寬骨片；後陰片形成一對棒狀骨片。肛突輕度骨化，後緣具剛毛。

變異：乾季型個體翅底色較淺，常綴深色細條紋；翅內側色彩通常較暗；翅面中央線紋減退，僅餘一分界線；翅腹面眼狀紋減退或消失。

世界分布：幾乎涵蓋東洋區全域及澳洲區北部。

臺灣分布：本島南部低海拔地區。

寄主植物：多種禾本科之草本植物，包括藤竹草、巴拉草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：*Papilio tabitha* Fabricius, 1793 可能與 *blasius* Fabricius, 1798 為同物異名。若是如此，則 *tabitha* 有命名優先權。

Mycalesis mucianus Fruhstorfer, 1908 (切翅眉眼蝶／切翅單環蝶／平頂眉眼蝶)

Mycalesis horsfieldi mucianus Fruhstorfer, 1908: Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien 58: 157. (Type locality: “Annam, Phuc-Son”)

Ssp. *zonatus* Matsumura, 1909

PLATE 60, Figs. 339–342; PLATE 105, Fig. 532; PLATE 142, Fig. 680

Mycalesis mineus var. *zonatus* Matsumura, 1909: Entomologische Zeitschrift 23 (19): 92. (Type locality: Formosa (Horisha [Puli]))

Mycalesis horsfieldi panthaka Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116. (Type locality: “Taihanroku; Chip-Chip, Formosa [Nanwan; Jiji, Taiwan]”)

Mycalesis mineus nitobei Sonan, 1931: Zephyrus 3 (3/4): 203. (Type locality: “Koshun [Hengchun], Formosa”)

Ssp. *mucianus* Fruhstorfer, 1908

PLATE 60, Fig. 343

Specimens examined:

Ssp. *zonatus*: **XINBEI CITY [= TAIPEI Co.]:** 1♀, Xindian, Sikanshui, 200/400m, 6. VIII. 2007 (Y. F. Hsu); 1♀, Wulai, Jiajiuliao, 200m, 30. XI. 2010 (Y. F. Hsu); 1♀,

Bali, Guanyinshan, 400m, 26. VIII. 2011 (Z. H. Yen). **TAIPEI CITY:** 1♀, Songshan, Hushan, 200m, 25. XI. 2009 (C. K. Wang); 2♂, Songshan, Hushan, 10. IV. 2010 (C. K. Wang); 1♀, Wenshan, NTNU, Gongguan campus, 29. IV. 2014 (Y. F. Hsu); 1♂, 1♀, same locality, 2. V. 2014 (L. Huang); 1♀, same locality, 27. IV. 2020, reared from *Miscanthus sinensis*, emgd. 11. V. 2020, HSU 20D38 (L. Huang). **XINZHU Co.:** 1♂, Zhudong, 150m, 26. VII. 2008 (Y. F. Hsu). **MIAOLI Co.:** 1♂, Sanyi, 22. VI. 2001 (Y. T. Lo). **HUALIAN Co.:** 3♂, 1♀, Zhuoxi, Zhongping Forest Trail, 17. VII. 2004, reared from grass, emgd. 25. VIII. 2004, HSU 04G31.1 (C. C. Lu). **JIAYI Co.:** 1♀, Alishan, Shanmei, 3. I. 2003 (Y. F. Hsu); 1♀, Fanlu, Chukou, 300m, 11. X. 2004 (Y. F. Hsu); 2♀, Fanlu, Chukou, 350m, 10. X. 2005 (Y. F. Hsu); 2♂, Fanlu, Chukou, Tufeishan, 300m, 3. IV. 2011 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Guantian, Wushantou Dam, 30. X. 2000 (Y. F. Hsu); 1♂, Guantian, Wushantou, 80m, 26. IX. 2005 (Y. F. Hsu); 2♂, same locality, 100m, 22. I. 2007 (Y. F. Hsu); 1♀, same locality, 24. XI. 2009 (Y. F. Hsu); 1♂, 1♀, Dongshan, Kantoushan, 600/800m, 4. II. 2010 (Y. F. Hsu); 2♂, 2♀, same locality, 18. XI. 2011 (Y. F. Hsu); 2♂, Xinhua, Dakeng, 80m, 10/11. II. 2006, reared from *Panicum sarmentosum*, emgd. 5. IV. 2006, HSU 06B15 (Y. F. Hsu); 1♂, Xinhua, 8. XII. 2009 (Y. F. Hsu); 1♂, Baihe, Zhentoushan, 500m, 17. IX. 2002 (Y. F. Hsu); 1♀, same locality, 23. XI. 2002 (Y. F. Hsu); 1♂, same locality, 2. VII. 2003 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Liugui, 27. XII. 2003 (Y. F. Hsu); 1♂, Meinong, Zhuzimen, 100m, 16. I. 2006 (Y. F. Hsu); 2♂, Liugui, 200m, 31. XII. 2006 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Shizi, Shuangliu, 200/400m, 26. III. 2005 (Y. F. Hsu); 1♂, Fangliao, Yuquan, 22. I. 2007 (Y. F. Hsu); 1♂, Wutai, Old Dawu/ Bayouxi, 500/900m, 17. III. 2009 (Y. F. Hsu & H. C. Huang); 1♂, Mudan, Gaoshifoshan, 450m, 4. II. 2010 (L. H. Wang); 1♀, Sandimen, 200m, 26. III. 2011 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Haiduan, Xinwu, 15. IV. 2005 (C. W. Yen & R. K. Dong).

Ssp. *mucianus*: **JINMEN Co.:** 1♂, Lieyu, 10. XI. 2024 (H. C. Huang).

Description. Adult – Forewing length 22–28 mm. Sexual dimorphism absent or weakly present. Male (PLATE 60, Figs. 339–340, 343): Head brown. Antennae brown, with creamy yellow scalings ventrally, naked distally. Compound eyes hairy. Proboscis brown. Labial palpus porrect, with 3rd segment short, brown. Thorax brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen

brown dorsally, yellowish gray ventrally. Forewing nearly triangular; costa convex; termen nearly straight, dorsum straight; apex truncate. Veins surrounding discoidal cell of forewing and 1A+2A swollen basad. Hindwing flabellate, with termen slightly wavy. Wing uppersides ground color brown. Prominent postdiscal eyespot present in cell CuA_1 of forewing. Wing undersides ground color brown, paler in dry season. Prominent postdiscal eyespots present; usually two on forewing, in cell M_1 and CuA_1, seven on hindwing, in a curve. Prominent, narrow discal bands present, creamy white. Proximal portion darken with discal band represented by a boundary line in dry season. Two submarginal bands present along termen of both wings. Fringe brown. Sexual brands including a silvery patch with a creamy yellow hair pencil, near base of hindwing uppersides, associated with bronze-colored distal patch, and a silvery patch with brown center near base of forewing undersides. Female (PLATE 60, Figs. 341–342): Body and wing pattern similar to those of male; foreleg with protarsi segmented; no sexual brands.

Male genitalia (PLATE 105, Fig. 532) – Tegumen broad, flat dorsally; uncus forming down-curved beak caudally, with distal end pointed. Brachia elongate, slender, curved caudad, with distal end pointed. Saccus short, bullet-shaped, with distal tip blunt. Vinculum straight. Valva broad, elongate, thickened ventrally, forming broad lobe with dorsal margin serrate, distal end produced, slightly bifid caudad. Juxta weakly sclerotized, broad. Phallus elongate; aedeagus more than 2X of phallobase, heavily sclerotized, with a few minute spines on external wall, strongly up-raising caudally.

Female genitalia (PLATE 142, Fig. 680) – Corpus bursae slender, oblong. Ductus bursae longer than corpus bursae, with posterior half forming sclerotized tube, gradually enlarged posteriad, produced to funnel-like structure surrounding ostium bursae. Sterigma with lamella antevaginalis forming broad sclerite with rounded posterior margin, produced laterally into short wings, lamella postvaginalis forming a pair of prominent lobe-like sclerites, Posterior apophyses as minute, weakly sclerotized process. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals of dry season are paler in ground color of wings, notably on the distal portions; broad, dark area present on wing undersides proximally; eyespots of wing undersides reduced or vestigial.

Global distribution. Indochina, South to East China, Taiwan (Monastyrskii, 2005).

Distribution in Taiwan. Ssp. *zonatus* occurs from low to moderate elevations in main island of Taiwan (Hsu, 2013), whereas the nominotypical subspecies has recently been found from Jinmen.

Larval Host plant(s). Various kinds of grasses (Poaceae), including *Setaria palmifolia*, *Digitaria sanguinalis*, *Panicum sarmentosum*, *Oplismenus hirtellus*, *Miscanthus sinensis*, etc. (Hsu, 2013)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 2013).

Remarks. This species had been called by the name *zonatus* [*zonata*] Matsumura, 1909 until Monastyrskii (2005) found that it ought to be conspecific with *mucianus* Fruhstorfer, 1908. The name *zonatus* is retained as the subspecific name for the population of Taiwan.

形態特徵：成蝶前翅長 22–28 mm。雌雄二型性略有或缺乏。雄蝶 (圖 339–340、343)：頭褐色。觸角褐色，腹面覆乳黃色鱗，末端裸露。複眼被毛。口器褐色。下唇鬚前伸，褐色，第三節短小。胸部背面褐色、腹面淡褐色。足淡褐色，前足被毛；前足跗節減退、刺狀。腹部背面褐色、腹面淡褐色。前翅近三角形，前緣凸、外緣略呈直線狀、後緣直線狀，翅頂呈截狀；前翅中室周圍翅脈及 1A+2A 脈基部膨大。後翅扇形，外緣略呈波狀。翅背面底色褐色，前翅 CuA_1 室外側有鮮明眼狀紋。翅腹面底色褐色、乾季型色調較淡，外側眼狀紋於前翅通常有兩只、位於 M_1 及 CuA_1 室，於後翅則有七只、彎曲排列。翅面中央有鮮明乳白色細線紋，乾季型個體線紋以內色彩較深。沿翅外緣有兩道亞外緣帶紋。緣毛褐色。後翅背面近基部有銀色斑及乳黃色毛叢組成之性標，其外側有銅色斑塊，前翅腹面近基部處有中央呈褐色之銀色性標。雌蝶 (圖 341–342)：形態特徵與雄蝶相似，但前足跗節分節，無性標。

雄交尾器 (圖 532)：背兜寬，背側平坦。鉤突末端形成下彎之喙狀構造，末端尖。顎形突細長，尾端彎曲，末端尖。囊突短、子彈狀，末端鈍。基腹弧頗直。抱器基部寬，向後延伸漸細，腹側厚，端部寬闊、葉狀，背側有細鋸齒、末端略分叉。陽基軛片寬，輕度骨化。陽莖修長。陽莖器長度為陽莖基 2 倍以上，明顯骨化，末端

上揚，外壁有少許棘刺。

雌交尾器 (圖 680)：交尾囊狹長。交尾囊管長橢圓形。交尾囊管長度超過交尾囊，後半部形成骨化管，向後漸擴大，於交尾囊孔周圍形成漏斗狀構造。交尾囊孔板之前陰片形成後緣圓弧狀之寬骨片，兩側形成修長翼狀構造；後內骨突形成一對明顯葉狀骨片。後內骨突為輕微骨化之小突起。肛突輕度骨化，後緣具剛毛。

變異：乾季型個體翅底色較淡，外半部尤其明顯；翅腹面內側區域深色；翅背面眼狀紋減退或消失。

世界分布：中南半島、華南至華東、臺灣。

臺灣分布：亞種 ssp. *zonatus* 分布於本島低至中海拔地區，承名亞種近年已在金門發現。

寄主植物：多種禾本科之草本植物，包括棕葉狗尾草、馬唐 、藤竹草、求米草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種種小名過去常被稱為 *zonatus* [*zonata*] Matsumura, 1909， 但 Monastyrskii (2005) 發現該分類單元與 *mucianus* Fruhstorfer, 1908 應為同種。學名 *zonatus* 被保留為本種臺灣族群之亞種名。

Mycalesis mineus (Linnaeus, 1758) (小眉眼蝶 / 圓翅單環蝶 / 日月蝶)

PLATE 61, Figs. 344–351; PLATE 105, Figs. 533–534; PLATE 143, Figs. 681–682

Papilio (*Danaus*) *mineus* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 471. (Type locality: “China [Canton/ Guangdong]”

Papilio drusia Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 132, pl. 84, f. C, D. (Type locality: “China; Coromandel, [India]”)

Papilio otrea Stoll, [1780]: De uitlandsche kapellen 4 (26b-28): 50, pl. 314, f. A, B. (Type locality: “China”)

Calysisme carpenteri Butler, 1886: The annals and magazine of natural history; zoology, botany, and geology, series 5, 18 (105): 183. (Type locality: “Kabwett, on the Irrawaddy (lat. 22°44'N [Myanmar])”)

Calysisme subfasciata Moore, 1882: Proceedings of the Zoological Society of London 1882 (1): 237, pl. 12, f. 8. (Type locality: “Dharmsala, [India]”)

Mycalesis mineus var. *confucius* Leech, 1894: Butterflies from China, Japan, and Corea 1: 12, pl. 2, f. 7. (Type locality: "China")

Specimens examined:

NANTOU Co.: 1♂, Renai, Nanshanxi, 26. IX. 1987 (Y. F. Hsu). **ZHANGHUA Co.:** 1♀, NCUE campus, 18. III. 1997, reared from Poaceae, emgd. 4. V. 1997, HSU 97C31 (Y. F. Hsu). **JIAYI CITY:** 2♂, Lantan, 12. II. 2006 (Y. F. Hsu); 1♂, same locality, 20. III. 2006 (Y. F. Hsu); 1♂, 1♀, same locality, 5. VI. 2006 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Guantian, Wushantou Reservoir, 30. X. 2000 (Y. F. Hsu); 1♂, Xinhua, 20. I. 2007 (Y. F. Hsu); 1♂, same locality, 20m, 18. II. 2008 (Y. F. Hsu); 1♀, same locality, 20. XI. 2011 (Y. F. Hsu); 1♂, Xinhua, Dakeng, 80m, 10/11. II. 2006 (Y. F. Hsu); 1♂, same locality, 25. II. 2006 (Y. F. Hsu); 1♂, same locality, 19. III. 2006 (Y. F. Hsu); 1♂, Guantian, Wushantou, 24. X. 2009 (Y. F. Hsu); 1♀, same locality, 80m, 18. XI. 2011 (Y. F. Hsu). **KAOHSIUNG CITY:** 1♀, Tianliao, 80m, 3. XII. 2011 (Y. F. Hsu); 1♂, 1♀, Tianliao, Yueshijie, 80m, 3. XII. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Hengchun, Dajianshan, 15. I. 2006 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Beinan, Danan, 100m, 27. V. 2005 (Y. F. Hsu); 1♀, Taidong City, Pipa Lake, 31. VIII. 2006 (Y. F. Hsu); 6♂, 3♀, same locality, 16. X. 2007 (Y. F. Hsu). **JINMEN Co:** 1♀, Jinhua, 20. VI. 2010 (C. K. Wang); 2♂, Jinning, Zhongshan Forest, 28/29. VIII. 2011 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 5. XI. 2013 (C. L. Huang & H. C. Huang); 1♂, Jinsha, nr. Houling Park, 28/29. VIII. 2011 (Y. F. Hsu & H. C. Huang); 1♂, Jinsha, Houling, 18. XI. 2013 (Y. F. Hsu & H. C. Huang); 1♀, Jinsha, Shishan, 18. XI. 2013 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 21–24 mm. Sexual dimorphism absent or weakly present. Male (PLATE 61, Figs. 344–346): Head brown. Antennae brown, with creamy yellow scalings ventrally, naked distally. Compound eyes hairy. Proboscis brown. Labial palpus erect, with 3rd segment short, brown mixed with creamy yellow. Thorax brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, pale brown ventrally. Forewing nearly triangular; costa convex; termen slightly convex, dorsum straight. Veins surrounding discoidal cell of forewing and 1A+2A swollen basad. Hindwing flabellate, with termen slightly wavy. Wing uppersides ground color brown. Prominent postdiscal eyespot present in cell CuA_1 of forewing. Wing undersides ground color brown, paler in dry season. Prominent postdiscal eyespots present; usually two on forewing, in cell M_1 and CuA_1, seven on

hindwing, in a curve. Prominent narrow discal bands present, creamy white. Broad, dark band present proximally in dry season. Two submarginal bands present along termen of both wings. Fringe brown. Sexual brands including a silvery patch with a creamy yellow hair pencil near base of hindwing uppersides, and a silvery patch with brown center near base of forewing undersides. Female (PLATE 61, Figs. 347–350): Body and wing pattern similar to those of male; foreleg with protarsi segmented; no sexual brands.

Male genitalia (PLATE 105, Figs. 532–533) – Tegumen broad, flat dorsally; uncus forming down-curved beak caudally, with distal end pointed. Brachia elongate, slender, slightly curved caudad, with distal end pointed. Saccus short, bullet-shaped, with distal tip blunt. Vinculum straight. Valva broad, elongate, thickened ventrally, forming broad lobe with distal end produced, bifid caudad, Juxta weakly sclerotized, broad. Phallus elongate; aedeagus more than 2X of phallobase, heavily sclerotized, up-raising caudally, with a few minute spines on external wall.

Female genitalia (PLATE 143, Figs. 680–681) – Corpus bursae slender, lanceolate. Ductus bursae elongate, with no delimitation with corpus bursae, forming sclerotized tube posteriorly, produced to funnel-like structure surrounding ostium bursae. Sterigma with lamella antevaginalis forming broad sclerite with truncate posterior margin, produced laterally into elongate wings, lamella postvaginalis forming a pair of prominent lobe-like sclerites, Posterior apophyses as minute, weakly sclerotized processes. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals of dry season are paler in ground color of wings, notably on the distal portions; broad, dark band present on wing undersides proximally; eyespots of wing undersides reduced or vestigial.

Global distribution. Throughout the Oriental region; also Lesser Sunda Islands (Aoki *et al*., 1985).

Distribution in Taiwan. Mainly low elevations in main island of Taiwan (Hsu, 2013), also Jinmen Islands (Hsu, 2014).

Larval Host plant(s). Various kinds of grasses (Poaceae), including *Paspalum conjugatum*, *Panicum sarmentosum*, *Panicum maximum*, *Oplismenus hirtellus*, etc.

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 2013).

形態特徵：成蝶前翅長 21–24 mm。雌雄二型性略有或缺乏。雄蝶 (圖 344–346)：頭褐色。觸角褐色，腹面覆乳黃色鱗，末端裸露。複眼被毛。口器褐色。下唇鬚上舉、第三節短，褐色雜乳黃色。胸部背面褐色、腹面淡褐色。足淡褐色，前足被毛；前足跗節減退、刺狀。腹部背面褐色、腹面淡褐色。前翅近三角形，前緣凸、外緣略凸、後緣直線狀；前翅中室周圍翅脈及 1A+2A 脈基部膨大。後翅扇形，外緣略呈波狀。翅背面底色褐色，前翅 CuA_1 室外側有鮮明眼狀紋。翅腹面底色褐色、乾季型色調較淡，外側眼狀紋於前翅通常有兩只、位於 M_1 及 CuA_1 室，於後翅則有七只、彎曲排列。翅面中央有鮮明乳白色細線紋，乾季型翅內側有深色寬帶紋。沿翅外緣有兩道亞外緣帶紋。緣毛褐色。後翅背面近基部有銀色斑及乳黃色毛叢組成之性標，前翅腹面近基部處有中央呈褐色之銀色性標。雌蝶 (圖 347–350)：形態特徵與雄蝶相似，但前足跗節分節，無性標。

雄交尾器 (圖 532–533)：背兜寬，背側平坦。鉤突末端形成下彎之喙狀構造，末端尖。顎形突細長，尾端略彎曲，末端尖。囊突短、子彈狀，末端鈍。基腹弧頗直。抱器基部寬，向後延伸漸細，腹側厚，末端寬瓣狀、分叉。陽基軛片寬，輕度骨化。陽莖修長。陽莖器長度為陽莖基 2 倍以上，明顯骨化，末端上揚，外壁有少許棘刺。

雌交尾器 (圖 680–681)：交尾囊狹長。交尾囊管細長，與交尾囊間無界限，後端形成骨化管，於交尾囊孔周圍形成漏斗狀構造。交尾囊孔板之前陰片形成後緣截狀之寬骨片，兩側形成修長翼狀構造；後內骨突形成一對明顯葉狀骨片。後內骨突為輕微骨化之小突起。肛突輕度骨化，後緣具剛毛。

變異：乾季型個體翅底色較淺、尤其在外半部，翅腹面內側有深色寬帶紋，翅腹面眼狀紋減退或消失。

世界分布：廣泛見於東洋區及小巽他群島。

臺灣分布：在本島主要分布於低海拔地區，金門也有分布。

寄主植物：多種禾本科之草本植物，包括兩耳草、藤竹草、大黍、求米草等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

Genus *TELINGA* Moore, 1880

Type species: *Satyrus adolphei* Guérin-Méneville, 1843

This genus was separated from *Mycalesis* sensu lato by Aduse-Poku *et al*. (2016). They addressed that the most useful character to distinguish the genus from *Mycalesis* may be the distinctly irrorated pattern on wing undersides.

Larvae feed on plants in Poaceae.

The genus was recently separated, thus is uncertain how many species should be placed in the genus. It is distributed in Oriental region.

1 species occurs in Taiwan.

淺色眉眼蝶屬

Aduse-Poku *et al*. (2016) 將本屬從廣義眉眼蝶屬中分離，並指出本屬與眉眼蝶屬最明顯的區分是本屬在翅腹面密布細紋。

幼蟲取食禾本科植物。

本屬甫由眉眼蝶屬分離出來，因此無法確定本屬包含多少物種。本屬成員分布於東洋區。

臺灣有 1 種。

***Telinga mara* (Fruhstorfer, 1908) (淺色眉眼蝶／單環蝶／僧袈眉眼蝶)**

PLATE 61, Fig. 352; PLATE 62, Figs. 353–355; PLATE 106, Fig. 535; PLATE 143,

Fig. 683

Mycalesis janardana mara Fruhstorfer, 1908: Entomologische Zeitschrift 22 (29): 118. (Type locality: "Kanshirei; Taihanroku; Shinchiku und Hokuho, Formosa")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Sanmin, Bianfudong, 350m, 8. IX. 2008 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♂, Heping, Shangguguan, 900m, 30. X. 2006 (Y. F. Hsu); 1♂, Heping, Wushikeng, 800m, 16. VII. 2009 (C. H. Yen). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 27. IX. 1987 (Y. F. Hsu); 1♂, same locality, 14. III. 1996 (Y. F. Hsu); 1♂, Renai, Nanshanxi, 900m, 23. I. 2008 (Y. F. Hsu); 1♀, Renai, Huisun, 750m, 8. X. 2005 (Y. F. Hsu). **TAINAN CITY:** 1♀, Dongshan, Kantoushan, 25. III. 2020, reared from "grass", emgd. 9. V. 2020, HSU 20C61 (C. W. Huang & S. Y. Chen). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Fenggangshan, 1300m, 30. IX. 2007 (Y. F. Hsu); 1♂, Liugui, 11. X. 2007 (Y. F. Hsu); 1♂, Taoyuan, Meishan, 900m, 23. IV. 2010 (H. C. Huang); 1♀, Taoyuan, Meishan, 800m, 27. VIII. 2010 (H. C. Huang); 1♂, Taoyuan, Shidong, 600m, 11. VIII. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 26. IV. 1999 (Y. F. Hsu); 1♂, Wutai, Old Dawu/Bayouxi, 500/900m, 14. III. 2009 (Y. F. Hsu & H. C. Huang); 3♂, same locality, 17. III. 2009 (Y. F. Hsu & H. C. Huang); 2♂, same locality, 20. III. 2010 (N. Y. Tsai); 1♀, Shizi, Shuangliu, 200/400m, 26. III. 2005 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Yanping, Hongye, 5. V. 1988 (Y. F. Hsu); 1♂, Beinan, Danan, 100m, 27. V. 2005 (Y. F. Hsu); 3♂, Beinan, Danan, 120m, 29. VIII. 2005 (Y. F. Hsu); 1♀, Donghe, Taiyuan, 31. VIII. 2006 (Y. F. Hsu); 4♂, Donghe, Donghe Farm, 400m, 25. I. 2007 (Y. F. Hsu); 5♂, same locality, 350m, 16. X. 2007 (Y. F. Hsu).

Description. Adult – Forewing length 21–25 mm. Sexual dimorphism absent or weakly present. Male (PLATE 61, Fig. 352; PLATE 62, Fig. 353): Head brown. Antennae brown, with creamy yellow scalings ventrally, naked distally. Compound eyes hairy. Proboscis brown. Labial palpus porrect, with 3rd segment short, brown mixed with creamy yellow. Thorax brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, grayish white ventrally. Forewing nearly triangular; costa convex; termen slightly convex; dorsum straight. Veins surrounding discoidal cell of forewing and 1A+2A swollen basad. Hindwing flabellate, with termen rounded or slightly wavy. Proximal portion of 1A+2A swollen. Wing uppersides ground

color dark brown. Prominent postdiscal eyespots present, usually two on forewing, in cell M_1 and CuA_1, with latter larger. Wing undersides ground color dark brown, with fine, dark striae. Postdiscal eyespots present, prominent in cell M_1 and CuA_1 of forewing, seven on hindwing, in a curve. Prominent white discal bands present. Dark, narrow, subbasal bands present on both wings. Two grayish white submarginal bands present along termen of both wings. Fringe white or grayish white. Sexual brands including a silvery patch with dark brown center near base of forewing undersides; a pair of dark browm brushes at anterior margin of discoidal cell of hindwing uppersides, and a dark brown brush at proximal portion of 1A+2A of hindwing uppersides. Female (PLATE 62, Figs. 354–355): Body and wing pattern similar to those of male; foreleg with protarsi segmented; no sexual brands.

Male genitalia (PLATE 106, Fig. 535) – Tegumen broad, flat dorsally; uncus forming down-curved beak caudally, with distal end pointed. Brachia elongate, curved inwards, horn-like, with distal end pointed. Saccus short, with distal tip club-like, blunt. Vinculum curved dorsally. Valva broad proximally, abruptly narrowed to elongate arm, serrate distally on dorsal edge, with caudal margin recurved. Juxta diamond-shaped. Phallus elongate; aedeagus more than 2X of phallobase, heavily sclerotized, up-raising caudally, with a few prominent spines dorsally near distal end.

Female genitalia (PLATE 143, Fig. 683) – Corpus bursae bulbous. Ductus bursae shorter than corpus bursae. Sterigma with lamella antevaginalis forming sclerotized dome, with large sclerite with four branches and ventral flap with medial notch; lamella postvaginalis forming a pair of prominent sclerotized walls. Posterior apophyses as weakly sclerotized, triangular process. Anal papillae sclerotized, setose along posterior margin.

Variation. Individuals of dry season are paler in ground color of wings; eyespots of wing undersides reduced.

Global distribution. Endemic to Taiwan (Aduse-Poku *et al.*, 2016).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Poaceae, including *Oplismenus compositus*, *Panicum sarmentosum*, etc. (Hsu, 2013)

Biology. Multivoltine in occurrence (Hsu, 2013).

Remarks. The taxon *mara* Fruhstorfer, 1908 has long been regarded as a subspecies of *sangaica* Butler, 1877 (e.g., Shirôzu, 1960; Hamano, 1987; Shirôzu & Ueda, 1992; Hsu, 2013). Aduse-Poku *et al*. (2016) recognized it as a species endemic to Taiwan, based on molecular data and morphological evidence in male genitalia.

形態特徵：成蝶前翅長 21–25 mm。雌雄二型性略有或缺乏。雄蝶 (圖 352–353)：頭褐色。觸角褐色，腹面覆乳黃色鱗，末端裸露。複眼被毛。口器褐色。下唇鬚前伸，褐色雜乳黃色，第三節短小。胸部背面褐色、腹面淡褐色。足淡褐色，前足被毛；前足跗節減退、刺狀。腹部背面褐色、腹面灰白色。前翅近三角形，前緣凸、外緣略凸、後緣直線狀；前翅中室周圍翅脈及 1A+2A 脈基部膨大。後翅扇形，外緣圓或略呈波狀，1A+2A 脈內側膨大。翅背面底色黑褐色，前翅外側通常有兩枚鮮明眼狀紋，位於 M_1 及 CuA_1 室、後者較大型。翅腹面底色黑褐色，上有細密暗色細線紋，外側眼狀紋於前翅位於 M_1 及 CuA_1 室，於後翅有七只，彎曲排列。翅面中央有鮮明白色線紋及亞基部深色線紋，沿翅外緣有兩道灰白色亞外緣線紋。緣毛白色或灰白色。前翅腹面近基部處有中央為黑褐色之銀色性標，後翅背面中室前緣有一對黑褐色毛刷，1A+2A 脈內側有一黑褐色毛刷。雌蝶 (圖 354–355)：形態特徵與雄蝶相似，但前足跗節分節、無性標。

雄交尾器 (圖 535)：背兜寬，背側平坦。鉤突於末端形成下彎之喙狀，末端尖。顎形突長，朝內彎曲、角狀，末端尖。囊突短、棒狀，末端鈍。基腹弧背側彎曲。抱器基部寬，向後驟縮，形成細長臂狀突起，末端背緣具鋸齒，尾端略下彎。陽基顎片菱形。陽莖修長。陽莖器長度為陽莖基 2 倍以上，明顯骨化，末端上舉，近末端背側有棘刺。

雌交尾器 (圖 683)：交尾囊球狀。交尾囊管短於交尾囊。交尾囊孔板之前陰片形成骨化穹頂，具四分枝之大型骨片，其腹側有中央具缺口之片狀骨；後陰片形成一對明顯骨壁。後內骨突輕度骨化，形成三角形突起。肛突骨化，後緣具剛毛。

變異：乾季型個體翅底色較淺，眼狀紋減退。

世界分布：臺灣特有種。

臺灣分布：本島低至中海拔地區。

寄主植物：禾本科之竹葉草、藤竹草等。

生物學：本種為一年多代物種。

註記：分類單元 *mara* Fruhstorfer, 1908 多被視為上海淺色眉眼蝶 *sangaica* Butler, 1877 之亞種 (如 Shirôzu, 1960; Hamano, 1987; Shirôzu & Ueda, 1992; Hsu, 2013)，Aduse-Poku *et al*. (2016) 根據分子資料及雄蝶交尾器形態構造，將其視為臺灣特有種。

Genus *MINOIS* Hübner, [1819]

Type species: *Papilio phaedra* Linnaeus, 1764

Diagnostic characters may include the following: 1) compound eyes naked; 2) labial palpus densely hairy, with 3rd segment minute; 3) mesotibia spiny, shorter than or equal to 1st tasomere of middle leg in length; 4) Sc of forewing dilated at base; 5) discoidal cell closed on both wings; 6) eyespots always present in cell M_1 and CuA_1 of forewing.

Larvae feed on plants in Poaceae.

Sbordoni *et al*. (2018) recognized 5 species, distributed in Palearctic and northern Oriental regions.

1 species occurs in Taiwan.

蛇眼蝶屬

形態特徵如下：1) 複眼裸露；2) 下唇鬚密被毛、第三節細小；3) 中足脛節具刺、長度較中足第一小跗節短或與之等長；4) 前翅 Sc 脈基部膨大；5) 前、後翅中室封閉；

6) 眼狀紋穩定見於前翅 M_1 室及 CuA_1 室。

幼蟲取食禾本科植物。

Sbordoni *et al*. (2018) 將本屬分為 5 種，分布於古北區及東洋區北部。

臺灣有 1 種。

Minois nagasawae (Matsumura, 1906) (永澤蛇眼蝶 / 永澤蛇目蝶)

PLATE 62, Figs. 356–357; PLATE 106, Fig. 536; PLATE 143, Fig.684

Satyrus nagasawae Matsumura, 1906: Annotationes Zoologicae Japonenses 6: 10. (Type locality: "Formosa, Berge Niitaka [Yushan, Taiwan], 9141 ft.")

Oeneis pseudosatyra Nakahara, 1920: The Canadian Entomologist 52: 138. (Type locality: "Horisha, Formosa [Puli, Nantou, Taiwan]")

Specimens examined:

TAIZHONG CITY [= TAIZHONG Co.]: 1♂, Heping, Shuanshan, 3100m, 5. VIII. 2003 (C. H. Chang); 1♂, 1♀, Heping, E. Peak of Xueshan, 3200m, 25. VIII. 2003 (C. L. Huang); 2♂, 2♀, Heping, Nanhudashan, 7/11. IX. 2004 (C. Y. Kuo & C. M. Wu). **NANTOU Co.:** 1♀, Xinyi, Dashuikushan, 3600m, 8. VIII. 2007 (C. L. Huang); 1♂, Renai, Nenggao/ Tianchi, 17. IX. 2010 (C. L. Huang); 1♀, Renai, Tianchi, 17. IX. 2010 (C. L. Huang). **HUALIAN Co.:** 1♂, Zhuoxi, Lianlishan, Buxin Camp, 3100m, 14. VIII. 2003 (C. L. Huang); 1♀, Zhuoxi, Dashuikushan, 3. IX. 2008 (C. L. Huang) (genitalia preparation JYL973); 1♂, Xiulin, Shimenshan, 3200m, 24. VI. 2007, reared from *Brachypodium kawakamii*, emgd. 29. VII. 2007, HSU 07F32 (C. L. Huang & Y. T. Lin); 1♂, same locality, 4. V. 2010 (C. L. Huang & L. H. Wang); 2♂, Xiulin, W. Peak of Panshishan, 3300m, 26. VII. 2003 (C. L. Huang); 1♂, same locality, 14. XI. 2003 (C. Y. Kuo); 1♂, Xiulin, Tailugedashan, 3200m, 31. VII. 2003 (C. L. Huang); 1♂, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai). **TAIDONG Co.:** 3♂, 1♀, Haiduan, Jiaming Lake, 3300m, 13. VIII. 2003 (C. L. Huang); 1♂, Haiduan, Sanchashan, 3500m, 13. VIII. 2003 (C. L. Huang).

Description. Adult – Forewing length 25–29 mm. Sexual dimorphism absent or weakly present. Male (PLATE 62, Fig. 356): Head brown, with hair tuft on vertex and

frons. Antennae dark brown, with some white scalings, ridged. Compound eyes naked. Proboscis brown. Labial palpus porrect, with 3rd segment short, hairy, dark brown with white lateral bands. Thorax dark brown. Legs brown; mesoleg and metaleg with tibia spiny; foreleg densely hairy, brush-like; protarsi reduced. Abdomen brown. Forewing nearly triangular; costa, termen somewhat convex; dorsum straight; apex obtuse. Hindwing ovate, with termen rounded. Wing uppersides ground color dark brown. A series of black postdiscal eyespots on both wings; two on forewing, with centers in cell M_1 and CuA_1; several on hindwing, in a curve. Wing undersides paler, with fine, dark, short striae, notably on hindwing. Broad discal bands on hindwing, with irregular, dark margins. Postdiscal bands on forewing weakly developed, with inner band frequently vestigial. Postdiscal eyespots prominent on forewing, reduced or vestigial, associated with a series of V-shaped markings on hindwing. Fringe white, checkered with brown. Female (PLATE 62, Fig. 357): Body and wing pattern similar to those of male; ground color of wings paler, with pattern of wing undersides more prominent; foreleg less hairy, with protarsi segmented.

Male genitalia (PLATE 106, Fig. 536) – Tegumen broad, convex dorsally; uncus forming elongate beak slightly down-curved caudally, with distal end blunt. Brachia elongate, slightly curved caudad, with distal end blunt. Saccus short, with distal tip blunt. Vinculum nearly straight. Valva elongate; costa forming large inner wall, setose along dorsal edge; sacculus large, thickened proximally; ampulla + harpe forming club-like process bearing a few prominent teeth. Juxta as rectangular sclerite. Phallus elongate; aedeagus more than 3.5X of phallobase, heavily sclerotized, straight, slightly narrowed near caudal end, with a few minute spines on external wall.

Female genitalia (PLATE 143, Fig. 684) – Corpus bursae ovate. Signa as two elongate spiny bands. Ductus bursae shorter than 1/2 length of corpus bursae. Sterigma with lamella antevaginalis forming broad sclerotized wall with prominent lateral wrinkled pouches; lamella postvaginalis forming sclerotized wall with posterior lobes. Posterior apophyses as small triangular process. Anal papillae sclerotized basally, smooth, lobe-like, setose posterioly.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Shirôzu & Ueda, 1992; Huang

& Hsu, 2011).

Distribution in Taiwan. Open grasslands or bamboo fields of high mountains in main island of Taiwan (Huang & Hsu, 2011; Hsu, 2013).

Larval Host plant(s). Poaceae: *Brachypodium kawakamii* and *Deschampsia cespitosa* (Huang & Hsu, 2011).

Biology. Univoltine in occurrence, with adults on the wing from June to October (Huang & Hsu, 2011; Hsu, 2013).

Remarks. This species is the representative butterfly in alpine open habitats above the timber line in Taiwan.

形態特徵：成蝶前翅長 25–29 mm。雌雄二型性略有或缺乏。雄蝶 (圖 356)：頭褐色，頭頂及前額具毛叢。觸角黑褐色，覆些許白色鱗、有稜。複眼裸露。口器褐色。下唇鬚前伸、第三節短小、被毛，黑褐色、側面有白色條紋。胸部黑褐色。足褐色；中、後足之脛節具刺；前足密被毛、刷狀、跗節減退。腹部褐色。前翅近三角形，前緣及外緣略凸、後緣直線狀，翅頂鈍。後翅卵形，外緣圓。翅背面底色黑褐色，外側有黑色眼紋，於前翅有兩只、中心位於 M_1 及 CuA_1 室，於後翅有數只、彎曲排列。翅腹面底色較淺，有深色細短紋、於後翅較明顯。後翅中央有邊緣不規則之寬帶紋；前翅中央帶紋不明顯，其內側帶常消失。外側眼狀紋於前翅鮮明，於後翅則減退或消失、常伴隨一列 V 字形紋。緣毛白色嵌褐色。雌蝶 (圖 357)：形態特徵與雄蝶相似，但翅底色較淺、翅腹面斑紋較鮮明，前足疏被毛、跗節分節。

雄交尾器 (圖 536)：背兜寬，背側隆起。鉤突細長，末端形成下彎之喙狀構造，末端鈍。顎形突修長、臂狀、向內彎曲，末端鈍。囊突短，端部鈍。基腹弧甚直。抱器修長、瓣狀。抱器背形成大型內壁，背緣有剛毛。抱器腹大型，基部增厚。抱器內突及抱握鋏合成棒狀突起，上具數只明顯齒突。陽基顎片為矩形骨片。陽莖修長、挺直。陽莖器長度為陽莖基 3.5 倍以上，明顯骨化，近末端處略細，外壁有數只棘刺。

雌交尾器 (圖 684)：交尾囊卵圓形。花壁為一對細長之具刺骨帶。交尾囊短於交尾

囊長度一半。交尾囊孔板之前陰片形成有明顯側向皺褶之寬骨壁；後陰片形成後側有葉狀突之骨化壁。後內骨突為三角形小突起。肛突基部骨化、平滑、葉狀，後端具剛毛。

世界分布：臺灣特有種。

臺灣分布：本島高海拔之草原及箭竹原。

寄主植物：禾本科之川上短柄草及髮草。

生物學：本種為一年一世代物種，成蝶於七月至十月活動。

註記：本種為臺灣森林線以上高山開闊棲地之代表性蝶種。

Genus *MELANITIS* Fabricius, 1807

Type species: *Papilio leda* Linnaeus, 1758

Diagnostic characters may include the following: 1) compound eyes naked; 2) labial palpus smooth; 3) protarsus densely hairy in male, smooth in female; 4) discoidal cell closed on both wings; 5) distal end of M_2 of forewing usually produced, distal end of M_3 of hindwing with tail-like or lobe-like projection.

Larvae feed on plants in Poaceae.

Boscombe *et al*. (1999) recognized 13 species, distributed in the Oriental, Afrotropical, Australian, and eastern Palearctic regions.

2 species occur in Taiwan.

暮眼蝶屬

形態特徵如下：1) 複眼裸露；2) 下唇鬚平滑；3) 雄蝶前足跗節密被毛、雌蝶則平滑；4) 前、後翅中室封閉；5) 前翅 M_2 脈末端常突出，後翅 M_3 脈末端具尾狀突或指狀突。

幼蟲取食禾本科植物。

Bascombe *et al*. (1999) 述及本屬有 13 種，分布於東洋區、非洲區、澳洲區及古北區東部。

臺灣有 2 種。

Melanitis leda (Linnaeus, 1758) (暮眼蝶／樹蔭蝶／樹間蝶)

PLATE 62, Figs. 358–360; PLATE 63, Fig. 361; PLATE 106, Fig. 537; PLATE 144, Fig. 685

Papilio (*Nymphalis*) *leda* Linnaeus, 1758: Systema Naturae (Edn. 10) 1: 474. (Type locality: "Asia [Canton] [Guangdong, China]")

Papilio solandra Fabricius, 1775: Systema Entomologiae: 500. (Type locality: "insula Otaheity maris pacifici [Tahiti, Pacifics]")

Papilio mycena Stoll, [1782]: De uitlandsche kapellen 4: 7, pl. 291, f. F. (Type locality: "Coromandel, [India]")

Melanitis determinata Butler, 1885: Transactions of the Entomological Society of London 1885: vi. (Type locality: "India")

Specimens examined:

TAIPEI CITY: 1♂, Wenshan, NTNU, Gongguan campus, 9. VII. 2021 (Y. F. Hsu); 1♂, Beitou, Shipai, 11. VII. 2021 (H. C. Huang). **ZHANGHUA Co.:** 1♂, Zhanghua City, 1. XI. 1996 (Y. F. Hsu); 1♂, same locality, 11. VI. 1997 (Y. F. Hsu); 1♂, NCUE campus, 5. XI. 1996 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Guantian, Wushantou, 24. X. 2005 (Y. F. Hsu); 1♂, same locality, 80m, 26. IX. 2005 (Y. F. Hsu); 1♂, same locality, 24. X. 2005 (Y. F. Hsu); 1♂, same locality, 19. XI. 2005, reared from *Pennisetum purpureum* [= *Cenchrus purpureus*], emgd. 19. XII. 2005, HSU 05M39 (Y. F. Hsu); 2♂, 1♀, same locality, 100m, 22. I. 2007 (Y. F. Hsu); 1♀, same locality, 6. IX. 2011, reared from *Panicum maximum* [= *Megathyrsus maximus*], emgd. 10. IX. 2011, HSU 11J11 (Y. F.

Hsu); 1♂, Xinhua, Dakeng, 80m, 10/11. II. 2006 (Y. F. Hsu); 1♂, same locality, 18. XI. 2011 (Y. F. Hsu); 3♂, 3♀, Xinhua, 20m, 20. XI. 2011 (Y. F. Hsu); 2♂, 1♀, same locality, 20. XI. 2011, reared from *Pan. maximum* [= *M. maximus*], emgd. 22/29. XI. 2011, HSU 11L15 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Tianliao, Yueshijie, 80m, 3. XII. 2011 (Y. F. Hsu); 1♂, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu).

Description. Adult – Forewing length 31–38 mm. Polymorphic but sexual dimorphism absent or weakly present. Male (PLATE 62, Figs. 358–359): Head brown. Antennae dark brown, naked ventrally and distally. Compound eyes naked. Proboscis brown. Labial palpus porrect, with 3rd segment short, pale brown. Thorax dark brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, pale brown ventrally. Forewing roughly triangular; costa convex; termen slightly wavy, produced anteriorly near apex, dorsum straight. Hindwing ovate, with termen wavy; distal end of vein M_3 produced to a short tail-like projection. Wing uppersides ground color brown. Dark brown eyespots with white dots present in cell M_2 and M_3 of forewing, near apex, associated with faint, orange, eyebrow-like markings. White dot in cell M_3 approximately at center of dark brown marking. Small eyespots sometimes present on hindwing distally. Wing undersides ground color yellow ochre, with fine brown striae. Postdiscal eyespots prominent in wet season form, up to four on forewing, seven on hindwing, reduced in dry season form. Dark bands or markings sometimes present. Fringe brown. Female (PLATE 62, Fig. 360; PLATE 63, Fig. 361): Body and wing pattern similar to those of male; wings broader with ground color paler; foreleg less hairy, with protarsi segmented.

Male genitalia (PLATE 106, Fig. 537) – Tegumen broad, triangular; uncus forming slightly down-curved beak with pointed distal tip. Brachia vestigial. Saccus thick, longer than length of tegumen, with distal end blunt, rod-shaped. Vinculum nearly straight. Valva flattened, slightly up-raising, tapering posteriorly with distal end blunt, setose, notably on ventral surface near base. Juxta as small disc with dorsal margin invaginated. Phallus elongate, straight; aedeagus approximately 3X of phallobase, with distal end beveling.

Female genitalia (PLATE 144, Fig. 685) – Corpus bursae oblong. Signa as two small, reniform, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, slender, approximately 2X length of corpus bursae, with both ends enlarged, forming a vase-like sclerite surrounding ostium bursae. Sterigma as weakly sclerotized dome. Anterior apophyses as short process with distal ends paddle-like, posterior apophyses as short, weakly sclerotized rod. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals of dry season are more variable in wing patterns, with eyespots of wing undersides reduced.

Global distribution. Widespread in the Afrotropical, Oriental, and Australian regions; also found on islands of the western Pacific (Aoki *et al*., 1985).

Distribution in Taiwan. Mainly lowlands in main island of Taiwan; also found from most associated islands (Hsu, 1999, 2013, 2014; Lu & Chen, 2014).

Larval Host plant(s). Various kinds of grasses (Poaceae), including *Oryza sativa*, *Cenchrus purpureus*, *Brachiaria mutica*, *Megathyrsus maximus*, etc. (Hsu, 1999, 2013; Lu & Chen, 2014)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

Remarks. Compared to congeneric *M. phedima*, this species prefers less shady habitats, thus used to be common in waste fields of lowland Taiwan. It is no longer easy to find this butterfly in many areas where urbanization advanced rapidly.

形態特徵：成蝶前翅長 31–38 mm。具多形性；雌雄二型性略有或缺乏。雄蝶 (圖 358–359)：頭褐色。觸角黑褐色、腹面及末端裸露。複眼裸露。口器褐色。下唇鬚

前伸、淡褐色、第三節短小。胸部背面黑褐色、腹面淺褐色。足淺褐色；前足被毛、跗節減退、刺狀。腹部背面褐色、腹面淡褐色。前翅略呈三角形，前緣凸、外緣略呈波狀、前端近翅頂處突出、後緣直線狀。後翅卵形，外緣呈波狀、M_3 脈末端有短尾突。翅背面底色褐色，前翅近翅頂處之 M_2 室及 M_3 室有黑褐色眼狀紋及白色小點，並附帶模糊橙色眉狀紋；白點位於 M_3 室黑紋中央。後翅外側時有眼狀小紋。翅腹面底色赭黃色，上有褐色細紋；外側眼狀紋於雨季型鮮明，前翅可達四只、後翅七只，於乾季型減退；翅面上有時具深色帶紋或斑紋。緣毛褐色。雌蝶 (圖 360–361)：形態特徵與雄蝶相似，但翅幅較寬、底色較淺，前足疏被毛、跗節分節。

雄交尾器 (圖 537)：背兜寬、三角狀。鉤突形成略下彎之喙狀構造，末端尖。顎形突退化消失。囊突粗長、桿狀，末端鈍，長度超過背兜。基腹弧甚直。抱器扁平、修長，向後漸窄，略上彎，末端鈍，於基部腹側密被剛毛。陽基顎片小型、圓盤狀，背側內凹。陽莖長而直。陽莖器長度約為陽莖基 3 倍，末端斜切。

雌交尾器 (圖 685)：交尾囊橢圓形。花壁為一對具橫向排列小刺之腎形具刺小骨帶。交尾囊管細長，長度約為交尾囊 2 倍，兩端膨大，於交尾孔周圍形成瓶狀骨。交尾囊孔板形成輕度骨化之穹頂。前內骨突短，末端槳狀；後內骨突短、輕度骨化，棒狀。肛突輕度骨化，後緣具剛毛。

變異：乾季型個體翅紋多變異，翅腹面眼狀紋減退。

世界分布：廣泛分佈於非洲、東洋區、澳洲區及西太平洋熱帶地區。

臺灣分布：於本島主要棲息在低地，亦見於大部分離島。

寄主植物：多種禾本科之草本植物，包括稻、象草、巴拉草、大黍等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：與同屬之森林暮眼蝶相比，本種偏好環境較為明亮，因此本種於臺灣低海拔之荒地曾為常見種。然而隨著都市開發，本種於許多高度都市化的地區已不再常見。

***Melanitis phedima* (Cramer, [1780]) (森林暮眼蝶／睇暮眼蝶／黑樹蔭蝶／黑樹間蝶)**

Papilio phedima Cramer, [1780]: De uitlandsche kapellen 4 (25-26a): 8, pl. 292, f. B. (Type locali-

ty: Not stated, presumably Java)

Melanitis suyudana Moore, 1857: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 224. (Type locality: Java)

Ssp. *polishana* Fruhstorfer, 1908

PLATE 63, Figs. 362–365; PLATE 106, Fig. 538; PLATE 144, Fig. 686

Melanitis phedima polishana Fruhstorfer, 1908: Entomologische Zeitschrift 22 (20): 80. (Type locality: "Polisha [Puli]; Kagi [Jiayi], Formosa")

Melanitis phedima var. *asakurae* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 554, pl. 41, f. 6. (Type locality: "Horisha, Hoppo (Formosa)")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Manyueyuan, 13. V. 1996, reared from *Setaria palmifolia*, emgd. 25. V. 1996, HSU 96E1 (Y. F. Hsu); 1♂, Wulai, 15. X. 2005 (J. R. Chen); 1♀, Wulai, Jiajiuliao, 150m, 9. VI. 2008, reared from *S. palmifolia*, emgd. 26. VII. 2008, HSU 08F13 (Y. F. Hsu); 1♀, same locality, 21. VII. 2008 (Y. F. Hsu); 1♀, Wulai, Fushan, 21. III. 2009 (C. H. Lin & C. H. Yen); 1♀, Ruifang, Nanya, 28. XI. 2008 (C. K. Wang); 1♀, Wulai, Laka, 30. X. 2018, reared from *S. palmifolia*, emgd. 30. XI. 2018, HSU 18K34 (L. Huang). **TAIPEI CITY:** 1♂, Songshan, Hushan, 20. IV. 2010 (C. L. Huang); 1♀, Wenshan, NTNU, Gongguan campus, 5. VI. 2020, reared from *Oplismenus compositus*, emgd. 3. VII. 2020 (S. Y. Chen). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Shangguguan, 900m, 29. VII. 2007 (Y. F. Hsu). **MIAOLI Co:** 1♂, Taian, Henglongshanm 1300m, 11. X. 2021, reared from *Miscanthus sinensis*, emgd. 24. X. 2021. **TAINAN CITY [= TAINAN Co.]:** 1♀, Guantian, Wushantou Reservoir, 30. X. 2000 (Y. F. Hsu); 1♀, Guantian, Wushantou, 80m, 24. X. 2005 (Y. F. Hsu); 1♀, same locality, 6. IX. 2011, reared from *Panicum maximum* [= *Megathyrsus maximus*], emgd. 10. IX. 2011, HSU 11J11 (Y. F. Hsu); 2♂, Dongshan, Kantoushan, 600/800m, 4. II. 2011 (Y. F. Hsu); 3♂, same locality, 18. XI. 2011 (Y. F. Hsu); 1♀, Xinhua, Dakeng, 80m, 10/11. II. 2006 (Y. F. Hsu); 1♂, Xinhua, 20m, 20. XI. 2011 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Xiaoguanshan Forest Trail, 13. XI. 2005 (Y. F. Hsu); 1♀, Taoyuan, Meishan, 700m, 8. XI. 2010 (H. C. Huang); 1♂, Taoyuan, Meishan, 800m, 19. I. 2011 (H. C. Huang). **PINGDONG Co.:** 1♀, Shizi, Nunaishan, 200m, 26. III. 2006 (Y. F. Hsu); 1♂, Shizi, Lilongshan, 500m, 25. VIII. 2007 (Y. F. Hsu); 1♀, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang). **TAIDONG Co.:** 1♂, 1♀, Yanping, Hongye, 11. I. 2009 (C. H. Lin, jr).

Description. Adult – Forewing length 31–38 mm. Polymorphic; sexual dimorphism weakly present. Male (PLATE 63, Figs. 362–363): Head brown. Antennae dark brown, naked ventrally and distally. Compound eyes naked. Proboscis brown. Labial palpus porrect, with 3rd segment short, pale brown. Thorax dark brown dorsally, pale brown ventrally. Legs pale brown; foreleg hairy; protarsi reduced, stab-like. Abdomen brown dorsally, pale brown ventrally. Forewing roughly triangular; costa convex; termen slightly wavy, produced anteriorly near apex, dorsum straight. Hindwing ovate, with termen wavy; distal end of vein M_3 produced to a short tail-like projection. Wing uppersides ground color dark brown. Dark brown eyespots with white dots present in cell M_2 and M_3 of forewing, near apex, associated with faint, orange, eyebrow-like markings. White dot in cell M_3 approximately near distal corner of dark brown marking. Small eyespots sometimes present on hindwing distally. Wing undersides ground color yellow ochre, with fine brown striae. Postdiscal eyespots prominent in wet season form, up to four on forewing, seven on hindwing, reduced in dry season form. Dark bands or markings sometimes present. Fringe brown. Female (PLATE 63, Figs. 364–365): Body and wing pattern similar to those of male; wings broader with ground color paler; foreleg less hairy, with protarsi segmented.

Male genitalia (PLATE 106, Fig. 538) – Tegumen broad, triangular; uncus forming slightly down-curved beak with pointed distal tip. Brachia vestigial. Saccus thick, longer than length of tegumen, with distal end blunt, rod-shaped. Vinculum nearly straight. Valva flattened, slightly up-raising, tapering posteriorly with distal end blunt, setose, notably on ventral surface near base. Juxta as small disc with dorsal margin invaginated. Phallus elongate, straight; aedeagus approximately 3X of phallobase, with distal end beveling.

Female genitalia (PLATE 144, Fig. 686) – Corpus bursae oblong. Signa as two small, remiform, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae elongate, slender, approximately 2X length of corpus bursae, with both ends enlarged, forming a vase-like sclerite surrounding ostium bursae. Sterigma as weakly sclerotized dome. Anterior apophyses as short process with distal ends paddle-like, posterior apophyses as short, weakly sclerotized rod. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Individuals of dry season are paler in ground color of wings, notably in males; projections of wings and eyespots of wing uppersides more prominent, eyespots of wing undersides reduced.

Global distribution. Widespread in the Oriental region, but not in Borneo and the Philippines; also found in southern Japan and Sulawesi (Aoki *et al*., 1985).

Distribution in Taiwan. Mainly low to moderate elevations in main island of Taiwan (Hsu, 1999, 2013; Lu & Chen, 2014).

Larval Host plant(s). Various kinds of grasses (Poaceae), including *Arundo formosana*, *Cenchrus purpureus*, *Setaria palmifolia*, *Miscanthus sinensis*, etc. (Hsu, 1999, 2013; Lu & Chen, 2014)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 1999, 2013; Lu & Chen, 2014).

Remarks. This species is superficially similar to congeneric *M*. *leda*, and both species are highly variable in wing patterns. The easiest diagnosis of the two is on the eyespot of wing uppersides, with the white dot at the center of eyespot in *M*. *leda*, deviated outwards in *M*. *phedima*.

形態特徵：成蝶前翅長 31–38 mm。具多形性；略具雌雄二型性。雄蝶 (圖 362–363)：頭褐色。觸角黑褐色、腹面及末端裸露。複眼裸露。口器褐色。下唇鬚前伸、淡褐色、第三節短小。胸部背面黑褐色、腹面淺褐色。足淺褐色；前足被毛、跗節減退、刺狀。腹部背面褐色、腹面淡褐色。前翅略呈三角形，前緣凸、外緣略呈波狀、前端近翅頂處突出、後緣直線狀。後翅卵形，外緣呈波狀、M_3 脈末端有短尾突。翅背面底色褐色，前翅近翅頂處之 M_2 室及 M_3 室有黑褐色眼狀紋及白色小點，附帶模糊橙色眉狀紋；白點位於 M_3 室黑紋之外側。後翅外側時有眼狀小紋。翅腹面底色赭黃色，上有褐色細紋；外側眼狀紋於雨季型鮮明，前翅可達四只、後翅七只，於乾季型減退；翅面上有時具深色帶紋或斑紋。緣毛褐色。雌蝶 (圖 364–365)：形態特徵與雄蝶相似，但翅幅較寬、底色較淺，前足疏被毛、跗節分節。

雄交尾器 (圖 538)：背兜寬、三角狀。鉤突形成略下彎之喙狀構造，末端尖。顎形突退化消失。囊突粗長、桿狀，末端鈍，長度超過背兜。基腹弧甚直。抱器扁平、修長，向後漸窄，略上彎，末端鈍，於基部腹側密被剛毛。陽基顎片小型、圓盤狀，背側內凹。陽莖長而直。陽莖器長度約為陽莖基 3 倍，末端斜切。

雌交尾器 (圖 686)：交尾囊橢圓形。花壁為一對具橫向排列小刺之腎形具刺小骨帶。交尾囊管細長，長度約為交尾囊 2 倍，兩端膨大，於交尾孔周圍形成瓶狀骨。交尾囊孔板形成輕度骨化之穹頂。前內骨突短，末端槳狀；後內骨突短、輕度骨化，棒狀。肛突輕度骨化，後緣具剛毛。

變異：乾季型個體翅底色較淺、雄蝶尤其明顯；尾突及翅背面眼狀斑點均較明顯、翅腹面眼狀斑點減退。

世界分布：除婆羅洲及菲律賓外廣泛分佈於東洋區，亦見於日本南部及蘇拉威西。

臺灣分布：主要分布於本島低至中海拔地區。

寄主植物：多種禾本科之草本植物，包括臺灣蘆竹、象草、棕葉狗尾草、芒等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種與同屬之暮眼蝶十分相似，且兩者翅紋均多變異。最容易區分兩者之鑑別特徵為前翅背面之眼狀紋內之白色小點，暮眼蝶之白色小點位於眼狀紋中央、本種則偏向外側。

Genus *PENTHEMA* Doubleday, [1848]

Type species: *Diadema lisarda* Doubleday, 1845

Diagnostic characters may include the following: 1) compound eyes naked; 2) prolegs hairy in male, smooth in female; 3) discoidal cell shorter than 1/2 of forewing length; 4) humeral vein of hindwing bent inwards.

Larvae feed on plants in Bambusoideae of Poaceae.

5 species are known, distributed in Oriental region.

1 species occurs in Taiwan.

斑眼蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足被毛、雌蝶則平滑；3) 前翅中室長度短於前緣一半；4) 後翅肩脈內彎。

幼蟲取食禾本科竹亞科植物。

本屬已知 5 種，分布於東洋區。

臺灣有 1 種。

Penthema formosanum (Rothschild, 1898) (臺灣斑眼蝶 / 白條斑蔭蝶)

PLATE 63, Fig. 366; PLATE 64, Figs. 367–368; PLATE 107, Fig. 539; PLATE 144, Fig. 687

Isodema formosanum Rothschild, 1898: Novitates Zoologicae 5 (3): 603, f. 1. (Type locality: "Taipeh to Kuchu")

Isodema formosanum f. *umbratilis* Fruhstorfer, 1909: Entomologische Zeitschrift 23 (8): 40. (Type locality: "Chip-Chip [Jiji], Lehiku, Kagi [Jiayi] und Suishu, [Formosa]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Jiajiuliao, 150m, 10. IX. 2008 (Y. F. Hsu); 2♂, Danshui, Erziping, 800m, 19. V. 2010 (W. H. Chien); 2♂, same locality, 31. V. 2011 (H. C. Huang); 1♀, Danshui, Erziping, 700m, 18. VIII. 2011 (Y. T. Lin); 1♂, Sanzhi, Caigongkengshan, 800m, 19. V. 2011 (C. L. Huang); 1♀, Bali, Guanyinshan, 500m, 19. V. 2011 (Z. H. Yen); 1♀, Wulai, Badaoershan, 21. VII. 2011, reared from *Arundinaria kunishii* [= *Sinobambusa kunishii*], emgd. 27. IX. 2011, HSU 11G23 (L. H. Wang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sanmin, Bianfudong, 350m, 8. IX. 2008 (Y. F. Hsu); 1♂, Fuxing, Baling, 400m, 26. IV. 2010 (Y. F. Hsu). **TAIZHONG CITY [= TAIZHONG Co.]:** 1♀, Heping, Malunshan, 30. X. 2016, reared from *Bambusa*

sp., emgd. 15. III. 2017 (H. C. Huang) (genitalia preparation JYL1002). **NANTOU Co.:** 1♂, Puli, Shidunkeng, 600m, 16. VII. 2011 (L. H. Wang). **JIAYI Co.:** 1♂, Alishan, Shanmei, 500m, 31. III. 2007 (Y. F. Hsu). **TAINAN CITY:** 1♂, Dongshan, Kantoushan, 600m, 24. III. 2013 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Shizi, Shouka, 8/9. V. 2020 (Y. F. Hsu & J. Y. Liang).

Description. Adult – Forewing length 44–54 mm. Sexual dimorphism absent. Male (PLATE 63, Fig. 366; PLATE 64, Fig. 367): Head brown with white dots. Antennae dark brown, ridged. Compound eyes naked. Proboscis brown. Labial palpus porrect, dark brown with white bands laterally. Thorax dark brown dorsally, brown ochre ventrally. Legs brown with white band proximally; foreleg dark brown with white bands, hairy; protarsi reduced, stab-like. Abdomen dark brown dorsally, creamy white with brown medial band ventrally. Forewing nearly triangular; costa convex; termen, dorsum straight; apex obtuse. Hindwing flabellate, with termen slightly wavy. Wing uppersides ground color dark brown. Prominent creamy white bands present proximally; creamy white spots present distally. Small creamy white markings present in discoidal cell of forewing; prominent, elongate, creamy white marking in discoidal of hindwing. Wing undersides ground color brown ochre; markings similar to those of uppersides; creamy white bands of hindwing less extensive. Fringe white, checkered with brown. Female (PLATE 64, Fig. 368): Body and wing pattern similar to those of male; foreleg less hairy, with protarsi segmented.

Male genitalia (PLATE 107, Fig. 539) – Tegumen broad, with anterior margin truncate; uncus elongate, down-curved, tapering caudad with blunt distal end. Brachia short, enlarged basad, blade-shaped. Saccus very short, broad at base. Vinculum slightly bent, Valva elongate, slightly up-curved, tapering caudad with minute spines present distally, forming a prominent spine at distal end. Jutxa as weakly sclerotized plate with dorsal, medial notch. Phallus elongate, straight; aedeagus nearly as long as phallobase, with distal end truncate.

Female genitalia (PLATE 144, Fig. 687) – Corpus bursae bulbous. Signa as two prominent, elongate, spiny, sclerotized bands. Ductus bursae shorter than corpus bursae,

thick, wrinkled, elongate, slender, slightly shorter than length of corpus bursae, wrinkled, with anterior portion enlarged. Sterigma with lamella antevaginalis forming sclerotized dome with internal folds, lamella postvaginalis forming transverse sclerotized band. Anal papillae weakly sclerotized, setose along posterior margin.

Variation. Creamy white markings on wings considerably variable in size, sometimes partially vestigial.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Hsu, 1999, 2013).

Larval Host plant(s). Various kinds of bamboos (Poaceae), including *Bambusa oldhamii*, *B. multiplex*, *B. ventricosa*, *B. stenostachya*, *Phyllostachys pubescens* etc. (Hsu, 1999, 2013)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year except winter, when they overwinter as diapausing larvae (Hsu, 1999).

Remarks. *Penthema formosanum* is generally regarded as a species endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 2013). Lee & Wang (1995) and Chou (1994) reported this species from Mazu Islands and Fujian respectively; however, recent investigations all have failed to find this species from these areas (Hsu, 2014).

形態特徵：成蝶前翅長 44–54 mm。無雌雄二型性。雄蝶 (圖 366–367)：頭褐色，綴有白點。觸角黑褐色，有稜脊。複眼裸露。口器褐色。下唇鬚前伸、黑褐色，側面有白色條紋。胸部背面黑褐色、腹面赭褐色。足褐色，基部有白色條紋；前足黑褐色，有白色條紋、被毛、跗節減退、刺狀。腹部背面黑褐色、腹面乳白色，中央有褐色帶紋。前翅近三角形，前緣凸、外緣及後緣直線狀、翅頂鈍。後翅扇形，外緣略呈波狀。翅背面底色黑褐色，內側有鮮明乳白色條紋、外側則有乳色斑點；前

翅中室內有乳白色小斑紋；後翅中室內有鮮明乳白色長斑。翅腹面底色赭褐色，斑紋與背面相似，但後翅乳白色帶紋較小型。緣毛白色。雌蝶 (圖 368)：形態特徵與雄蝶相似，但前足疏被毛、跗節分節。

雄交尾器 (圖 539)：背兜寬，前緣截狀。鉤突細長，向下彎曲，向後漸細，末端鈍。顎形突短，呈刃狀，基部寬大。囊突甚短，基部寬。基腹弧略彎曲。抱器修長，向後略窄，略上彎，端部有細小棘刺，末端尖刺狀。陽基顎片輕度骨化，板狀，背側內凹。陽莖修長，挺直。陽莖器長度約略與陽莖基等長，末端截狀。

雌交尾器 (圖 687)：交尾囊球狀。花壁為一對明顯具刺之細長骨帶。交尾囊管短於交尾囊，粗長，前端膨大。交尾囊孔板之前陰片形成有內褶之骨化穹頂；後陰片形成橫向骨帶。肛突輕度骨化，後緣具剛毛。

變異：翅面白紋多變，有時部分減退、消失。

世界分布：臺灣特有種。

臺灣分布：本島低至中海拔地區。

寄主植物：多種禾本科之竹類植物，包括綠竹、蓬萊竹、佛竹、刺竹、孟宗竹等。

生物學：本種為一年多代物種，成蝶除冬季外均可見，冬季以幼蟲態休眠越冬。

註記：本種一般被視為臺灣特有種。Lee & Wang (1995) 及 Chou (1994) 分別提及本種亦分布於馬祖及福建之記錄。然而，近期之調查皆未能於該等地區發現本種。

Genus *ELYMNIAS* Hübner, 1818

Type species: *Elymnias jynx* Hübner, 1818

Diagnostic characters may include the following: 1) compound eyes naked; 2) prolegs hairy in male, smooth in female; 3) a subcostal cell resent near base of $Sc+R_1$ of hindwing; 4) discoidal cells indented distally, with length shorter than 1/3 of wing length of both wings; 5) termen of wings serrate, with distal end of M_3 of hindwing produced.

Larvae feed on plants in Arecaceae.

52 species are recognized by Wei *et al*. (2017), distributed in Oriental region.

1 species occurs in Taiwan.

鋸眼蝶屬

形態特徵如下：1) 複眼裸露；2) 雄蝶前足被毛、雌蝶則平滑；3) 後翅 Sc+R_1 室近基部處有一亞前緣室；4) 前、後翅中室末端均內縮，長度短於翅長 1/3；5) 翅外緣鋸齒狀，後翅 M_3 脈末端突出。

幼蟲取食棕櫚科植物。

Wei *et al*. (2017) 羅列本屬種類達 52 種，分布於東洋區。

臺灣有 1 種。

Elymnias hypermnestra (Linnaeus, 1763) (藍紋鋸眼蝶／紫蛇目蝶／翠袖鋸眼蝶)

Papilio (*Nymphalis*) *hypermnestra* Linnaeus, 1763: Amoenitates academicae 6: 407. (Type locality: "Java")

Papilio protogenia Cramer, [1777]: De uitlandsche kapellen 2 (9-16): 141, pl. 189, f. F, G. (Type locality: "Java")

Papilio lais Cramer, [1777]: De uitlandsche kapellen 2 (9-16): 21, pl. 110, f. A, B. (Type locality: "Java")

Elymnias jynx Hübner, 1808: Zuträge zur Sammlung exotischer Schmettlinge: 12, pl. [7], f. 37-38. (Type locality: "Ostindien [East Indies]")

Elymnias hypermnestra hypermnestra f. *perpusilla* Fruhstorfer, 1907: Deutsche entomologische Zeitschrift "Iris" 20: 181. (Type locality: "Java")

Elymnias hypermnestra f. *atrata* Roepke, 1942: Rhopalocera Javanica 4: 422. (Type locality: "Java")

Ssp. *hainana* Moore, 1878

PLATE 64, Figs. 369–370; PLATE 107, Fig. 540; PLATE 144, Fig. 688

Elymnias hainana Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 696.

(Type locality: “Hainan”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Taipei, 23. XI. 2006 (Y. F. Hsu); 1♀, Xindian, Feicui Dam, 16. VI. 2011 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Wenshan, Xianjiyan, 10. II. 2005 (Y. F. Hsu); 1♀, same locality, 15. I. 2007 (Y. F. Hsu); 1♂, same locality, 16. I. 2007 (Y. F. Hsu); 1♂, 1♀, same locality, 18. I. 2007 (Y. F. Hsu); 3♀, Beitou, 19. I. 2010 (Y. F. Hsu); 1♂, Wenshan, NTNU, Gongguan campus, 8. II. 2020 (Z. Y. Shen); 1♂, 1♀, same locality, 10. II. 2021, reared from *Chrysalidocarpus lutescens* [= *Dypsis lutescens*], emgd. 12/24. II. 2021, HSU 21B12 (Y. F. Hsu); 2♂, same locality, 15. II. 2021, reared from *Archontophoenix alexandrae*, emgd. 21. II. 2021, HSU 21B13 (Y. F. Hsu). **NANTOU Co.:** 1♂, 4♀, Jiji, 400m, 19. XI. 2011, reared from *Areca catechu*, emgd. 23/29. XI. 2011, HSU 11L13 (Y. F. Hsu); 1♂, Renai, Nanshanxi, 8. IV. 1997 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Yuli, Zhongping Forest Trail, 28. XII. 2005, reared from *Calamus quiquesetinervius* [= *C. formosanus*], emgd. 25. I. 2006, HSU 05M47 (C. C. Lu & L. H. Wang). **TAIDONG Co.:** 1♂, Donghe, Donghe Farm, 400m, 25. I. 2007, reared from *C. quiquesetinervius* [= *C. formosanus*], emgd. 8. II. 2007, HSU 07A37 (Y. F. Hsu). **KAOHSIUNG CITY:** 1♂, 1♀, Tianliao, 23. II. 2021, reared from *Phoenix hanceana*, emgd. 3/5. III. 2021, HSU 21B17 (Y. F. Hsu). **JINMEN Co.:** 3♂, Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 32–38 mm. Sexual dimorphism present. Male (PLATE 64, Fig. 369): Head brown, with hair tuft on vertex and frons. Antennae dark brown, with some white scalings, ridged. Compound eyes naked. Proboscis brown. Labial palpus porrect, hairy, dark brown. Thorax dark brown dorsally, brown ochre ventrally. Legs brown, with grayish white scaling; foreleg hairy; protarsi reduced. Abdomen dark brown dorsally, brown ochre ventrally. Forewing nearly triangular; costa convex; termen slightly convex, serrate; dorsum straight; apex angled, pointed. Hindwing flabellate; termen with distal ends of veins produced, notably vein M_3. Wing uppersides ground color dark brown tinged with indigo blue shine. A series of purplish blue, postdiscal spots on forewing, arranged into an arc. A prominent ochre patch on hindwing distally. Wing undersides ground color brown, paler distally, with fine ochre striae, denser proximally. A white triangular marking near apex of forewing. Fringe brown. Sexual brands including a dark patch of specialized scales associated with hair tufts in anterior portion of discoidal

cell of hindwing uppersides, an oval, black patch of specialized scales near base of cell CuA_2 of forewing uppersides, and a patch of silvery white specialized scales near base of cell 1A+2A. Female (PLATE 64, Fig. 370): Body and wing pattern similar to those of male; ground color of wings paler, postdiscal spots of wing uppersides also on hindwing, bluish white. Ochre markings on wing uppersides diffuse, visible on both wings; foreleg less hairy, with protarsi segmented. No sexual brand.

Male genitalia (PLATE 107, Fig. 540) – Tegumen broad, with anterior margin truncate; uncus forming elongate, with distal tip abruptly narrowed to short needle. Brachia as long rod, with distal end blunt, spiny. Saccus short, broad at base, tapering to blunt tip. Vinculum abrupt bent dorsally. Valva broad, with caudal margin truncate, ventral margin thickened, with harpe forming slender piece with inner groove. Jutxa as weakly sclerotized plate with dorsal, medial notch. Phallus elongate, straight; aedeagus longer than phallobase, with distal end truncate.

Female genitalia (PLATE 144, Fig. 688) – Corpus bursae bulbous. Signa as two prominent, elongate, spiny sclerotized bands, with spines arranged in transverse rows. Ductus bursae shorter than corpus bursae, thick, with both anterior and posterior ends enlarged. Sterigma with lamella antevaginalis forming sclerotized dorm with elongate flap; lamella postvaginalis forming V-shaped, flattened sclerite. Posterior apophyses as short, needle-like process. Anal papillae sclerotized basally, smooth, lobe-like, setose, bearing long setae posteriorly.

Global distribution. Throughout the Oriental region, excluding the Philippines; also Lesser Sunda Islands (Aoki *et al*., 1985).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also some associated islands (Hsu, 1999, 2013).

Larval Host plant(s). Various kinds of palms (Arecaceae), including *Arenga engleri*, *Phoenix hanceana*, *Ph. dactylifera*, *Ph. roebelenii*, *Livistona chinensis*, *L. rotundifolia*, *Areca catechu*, *Dypsis lutescens*, *Hyophorbe lagenicaulis*, *H. verschaffelti*, *Ptychosperma*

angustifolium, *Pt. elegans*, *Rhapis excelsa*, *R. humilis*, *Roystonea regia*, *Cocos nucifera*, etc. (Hsu, 1999, 2013)

Biology. Multivoltine in occurrence, with adults on the wing throughout the year (Hsu, 1999, 2013).

Remarks. This satyrid butterfly is considered a minor pest to palm trees (Wei *et al*., 2017). It may occur in disturbed, urbanized areas, including parks, gardens, and school campuses.

As Lamas (2010) and Wei *et al*. (2017) have discussed, the name *hypermnestra* Linnaeus, 1763 actually represents a junior primary homonym of *Papilio hypermnestra* Scopoli, 1763, currently treated as a synonym of *Zerynthia polyxena* ([Schiffermüller], 1775), thus should be replaced by its earliest available synonym, *Papilio undularis* Drury, 1773. However; the nomenclatural issue involving these names is complicated as stated by Lamas (2010), thus the name *hypermnestra* Linnaeus, 1763 is tentatively retained by Wei *et al*. (2017).

形態特徵：成蝶前翅長 32–38 mm。具雌雄二型性。雄蝶 (圖 369)：頭褐色，頭頂及前額具毛叢。觸角黑褐色，雜有些許白色鱗、具稜脊。複眼裸露。口器褐色。下唇鬚前伸、被毛、黑褐色。胸部背面黑褐色，腹面赭褐色。足褐色，雜有灰白色鱗，前足被毛、跗節減退。腹部背面黑褐色、腹面赭褐色。前翅近三角形，前緣凸、外緣略凸，鋸齒狀、後緣直線狀，翅頂角狀、尖銳。後翅扇形，外緣翅脈末端略突出、M_3 脈末端尤其明顯。翅背面底色黑褐色泛靛藍色，前翅外側有一列藍紫色斑點，作弧狀排列，後翅外側赭色。翅腹面底色褐色、外側色彩較淺。翅面上有赭色細紋、內側較密，前翅近翅頂處有白色三角形斑紋。緣毛褐色。後翅背面中室前半部有由深色特化鱗組成之斑塊與毛叢合成之性標；前翅背面 CuA_2 室近基部有黑色特化鱗組成之性標，1A+2A 室近基部則有銀白色特化鱗組成之性標。雌蝶 (圖 370)：形態特徵與雄蝶相似，但翅背面底色較淺，後翅背面外側亦有斑點，呈藍白色，翅背面赭色斑紋較擴散、且前、後翅均有之。前足疏被毛、跗節分節，無性標。

雄交尾器 (圖 540)：背兜寬，前緣截狀。鉤突細長，末端驟縮如針頭。顎形突修長、

桿狀，略彎曲；末端鈍，具小刺棘。囊突短，基部寬，向前漸細，末端鈍。基腹弧背側彎曲。抱器寬闊、瓣狀，尾端截狀，腹緣粗厚，抱握鋏修長，內有凹槽。陽基顎片為輕度骨化之骨板，其背側中央內凹。陽莖修長，挺直。陽莖器長度超過陽莖基，末端截狀。

雌交尾器 (圖 688)：交尾囊球狀。花壁為一對具橫向排列小刺之細長骨帶。交尾囊管短於交尾囊，粗而兩端膨大。交尾囊孔板之前陰片形成具長板之骨化穹頂；後陰片形成 V 形扁平骨片。後內骨突為針狀短突起。肛突基部骨化、平滑、葉狀，後端具長剛毛。

世界分布：除菲律賓之外的東洋區，亦見於小巽他群島。

臺灣分布：本島低至中海拔地區，亦見於部分離島。

寄主植物：棕櫚科之山棕、臺灣海棗、海棗、羅比親王海棗、蒲葵、圓葉蒲葵、檳榔、黃椰子、苦莖椰子、棍棒椰子、射葉椰子、海桃椰子、觀音棕竹、筋頭竹、大王椰子、可可椰子等。

生物學：本種為一年多代物種，全年皆可見成蝶活動。

註記：本種被視為棕櫚科植物之次要害蟲，可棲息在都市化場域，如公園、花園、學校校園等。

Lamas (2010) 及 Wei *et al*. (2017) 已說明 *hypermnestra* Linnaeus, 1763 實為 *Papilio hypermnestra* Scopoli, 1763 之次原異物同名，後者為鋸鳳蝶 *Zerynthia polyxena* ([Schiffermüller], 1775) 之同物異名，因此應由最早之適用名 *Papilio undularis* Drury, 1773 取代。然而，Lamas (2010) 指出，此命名異動涉及複雜的動物命名規約問題，須由國際動物命名會議大會處理，因此 *hypermnestra* Linnaeus, 1763 暫且保留使用。

Supplementary Notes

Compared to the other families of butterflies, there are more nymphalid species recorded in rare occasions or not recorded for a long time after their first observation from Taiwan, involving mis-labelling, doubtful sources of specimens or straying species, partially due to the fact that some species are migratory. Stray taxa at subspecies-level are already mentioned with relevant species aboriginal to Taiwan in the main content, other species are discussed as the following:

***Libythea geoffroy philippina* Staudinger, 1889 (紫喙蝶／紫長鬚蝶／紫天狗蝶)**

PLATE 65, Fig. 371

One male specimen of this taxon was collected on July 20th, 1969 (Shimonoya & Yu, 1971), undoubtedly a stray from the Philippines. A male specimen from Indonesia is shown on Fig. 371 for reference.

***Tirumala ishimoides sontinus* (Fruhsorfer, 1911) (南島青斑蝶／擬南方淡紋青斑蝶)**

One male individual of this species was found from the Butterfly Garden of Nation Tsing Hua University at Xinzhu on September 25th, 2010 (Jean, 2010). There is little doubt that it represents a stray, possibly carried over by typhoon, from the Philippines.

***Tirumala hamata orientalis* (Semper, 1879) (東方淡紋青斑蝶)**

PLATE 65, Fig. 372

This species has been recorded from southern Taiwan as rare strays from the Philippines (e.g., Yen *et al*., 1995). A male specimen from the Philippnes is shown on Fig. 372 for reference.

***Parantica luzonensis* (C. & R. Felder, 1863) (呂宋絹斑蝶)**

PLATE 65, Fig. 373

This species was recorded from southern Taiwan for several times a few decades ago and

considered representing stray species from the Philippines (Yamanaka, 1973). A male specimen from the Philippines is shown on Fig. 373 for reference.

Euploea swaison (Godart, [1824]) (菲律賓紫斑蝶／黑岩斑蝶)

This species was recorded from southern Taiwan for several times in 1960s (Yamanaka, 1973), evidently representing stray species from the Philippines.

Euploea klugii Moore, [1858] (緣點紫斑蝶)

One male individual was recorded on December 10th, 1995 from Kengding, Pingdong of southern Taiwan by Lee & Wang (1997a). The markings of the individual resembles ssp. *erichsonii* C. & R. Felder, [1865] ranging from Indochina to Sumatra.

Parthenos sylvia philippensis Fruhstorfer, 1898 (麗蛺蝶)

PLATE 66, Fig. 374

The sole record of this taxon in literature from Taiwan is listed in a catalogue by Shirôzu & Ueda (1992) without details. A male specimen from the Philippines is shown on Fig. 374 for reference.

Neptis thisbe (Ménétriés, 1859) (提環蛺蝶／大黃色三線蝶)

PLATE 66, Fig. 375

One female of this species was reported by Nomura (1935), with collecting data as "新竹州竹東郡結城 [Shinchiku-shū, Chikutou-gun, Yūki]". No further collecting or sighting record of this species from Taiwan after the record exists, and Nomura (1935) states that the sole specimen was conformed to Korean samples of the species. The record thus probably represents a mis-labelled Korean specimen. A female specimen from Guangdong is shown on Fig. 375 for reference.

Neptis rivularis formosicola Matsumura, 1929 (單環蛺蝶／二線蝶)

Neptis coenobita var. *formosana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 729. (Type locality: Taihoku [Taipei, Taiwan]) (preoccupied by *Neptis nandina formosana* Fruhstorf-

er, 1908)

Neptis coenobita formosicola Matsumura, 1929: Illustrated Common Insects of Japan: Tab. 21. [replacement name for *Neptis coenobita* var. *formosana* Matsumura, 1919]

Neptis coenobita bergmani Bryk, 1942: Deutsche entomologische Zeitschrift Iris 56: 14. (Type locality: "Anzahl, Kunashiri, Tomari, Kurilen")

Neptis rivularis matsumurai Shirôzu, 1960: Butterflies of Formosa in Colour: 448. [replacement name *Neptis coenobita* var. *formosana* Matsumura, 1919]

PLATE 66, Figs. 376–377

Only four specimens of *Neptis rivularis* have been recorded from Taiwan (Yamanaka, 1975), all dated a century ago. The holotype of *Neptis coenobita* var. *formosana* Matsumura,1919 is a male, bearing labels reading " 台　北 [Taihoku/ Taipei]/ 37. 6. 4 [4. VI. 1904]/ Type Matsumura [red label]" (Fig. 376, SEHU), collected by Teiichi Nagasawa according to Matsumura (1919). Two specimens were retrieved from TARI. One is a male specimen bearing labels reading " 台北 ニトベ [Taihoku Nitobe]/ *Neptis coenobita formosicola* Mats." (Fig. 377, TARI), the other looks like a female with only right forewing and hindwing remaining, bearing labels reading "関シレイ 44/4 ニトベ", which was interpreted as "Kanshirei [Guanzhiling, Tainan], April. 4, 1907" by Yamanaka (1975). *N. rivularis* is widespread in Eurasia from central Europe to Russia and Japan, and south to central China (Bozano, 2008; Wu & Hsu, 2017). The wing pattern of the specimens (Figs. 376–377) said to be from Taiwan possess broad white bands (Matsumura, 1919, p. 729), conformed to the diagnostic features of ssp. *bergmanni* Bryk, 1942 from Kurile Islands and Hokkaido (Shirôzu, 2006; Bozano, 2008). As lowland Taiwan does not seem to provide appropriate habitats for this temperate species, the rare records in Taiwan perhaps involve accidental introductions from Japan. Hsu *et al*. (2021) incorrectly treated the names *formosana* Matsumura, 1919, *formosicola* Matsumura, 1929 and *matsumurai* Shirôzu, 1960 as junior subjective synonyms of ssp. *bergmanni* Bryk, 1942 as the name *formosicola* Matsumura, 1929 predates *bergmanni* Bryk, 1942, thus should take the priority over the latter (Haruo Fukuda, per. Comm.).

***Limenitis glorifica* Fruhstorfer, 1909 (日本線蛺蝶／臺灣線蛺蝶／北投一文字蝶)**

Matsumura (1929) described "*Limenitis formosicola*" based on a female specimen collected from "Hokuto, Formosa" (Beitou, Taipei, Taiwan). Hsu *et al*. (2004) pointed out that the sole type specimen of this taxon deposited in SEHU is conformed to *Limenitis glorifica* Fruhstorfer, 1909, a species endemic to Japan, in diagnostic characters. They

suggested that the type may be a mis-labelled individual, and synonymized *formosicola* Matsumura, 1929 with *glorifica* Fruhstorfer, 1909.

Argynnis tropicalis Röber, 1919 (熱帶豹蛺蝶)

Argynnis tropicalis Röber, 1919: Entomologische Rundschau 36 (4): 17. (Type locality: "Formosa")

Argynnis tropicalis Röber, 1919 was described based on a male type from "Formosa". No further collecting record or treatment of this taxon exists besides a name listed in Shirôzu & Ueda (1992). According the original description by Röber (1919), it is similar to *Argynnis rhodope* Edwards, 1874 [currently recognized as a subspecies of *Speyeria hydaspe* (Boisduval, 1869)] (Miller & Brown, 1981), a species possessing creamy yellow or silver spots on wing undersides (Scott, 1986). In Asia, the species with markings most similar to *S. hydaspe* may be *Fabriciana adippe* (Denis & Schiffermüller, 1775), which ranges across Eurasia to Japan and East China (Shirôzu, 2006; Wu & Hsu, 2017). In case that the type of *Argynnis tropicalis* Röber, 1919 is not a mis-labelled specimen, it may be a taxon closely related to *Fabriciana adippe*.

Vindula dejone (Erichson, 1834) (迪氏文蛺蝶 / 木生紅蛺蝶 / 臺文蛺蝶)

This species has been recorded from southern Taiwan as rare strays from the Philippines (e.g., Murayama & Shimonoya, 1968).

Algia fasciata fasciata (Felder & Felder, 1860) (琥珀蛺蝶 / 珀蛺蝶 / 臺東黃線蝶)

Matsumura (1929) described *Cirrochroa fasciata formosana* based on a specimen collected from "Daito" [Taidong]. It was regarded as a junior subjective synonym of *Paduca fasciata* (Felder & Felder, 1860) by Shiôzu & Ueda (1992), and the type of *formosana* Matsumura, 1929 probably represents a stray individual from the Philippines. The population of *A. fasciata* in the Philippines is sometimes treated as a separate subspecies ssp. *ortopia* Fruhstorfer, 1912 (e.g., D'Abrera, 1985). The name *ortopia* is spelt as *ortopla* in the German edition of Fruhstorfer (1912), which was released 13 days after the English edition (Griffin, 1936), representing a "subsequent incorrect spelling" of the former.

Cethosia biblis (Drury, 1770) (紅鋸蛺蝶)

PLATE 67, Fig. 378

One male specimen was collected from Jinmen Island on November 6th, 2015. No other specimen is known, and its favorite hostplant *Passiflora cochinchinensis* in Hong Kong and southern China (Bascombe *et al*., 1999) does not grow in Jinmen (Lu, 2011).

Apatura ilia nikosia Fruhstorfer, 1913 (柳紫閃蛺蝶／細帶閃蛺蝶)

PLATE 67, Figs. 379–380

Apatura ilia nikosia Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 700. (Type locality: "Formosa")

In Taiwan, there have been only a couple doubtful records of *Apatura* ever documented. Matsumura (1908) listed "*Apatura here* Feld[er & Felder, 1862]" from Tainan in a checklist. *Apatura ilia nikosia* Fruhstorfer, 1913 was described based on a single female specimen from Plessen's collection in Munich, Germany (Fruhstorfer, 1913). No record of any *Apatura* species from Taiwan exists since these records of Matsumura and Fruhstorfer. Shirôzu & Ueda (1992) re-assigned the name *nikosia* Fruhstorfer, 1913 under *A. metis* Freyer, 1829 without explanation. According to Masui *et al*. (2011), *here* Felder & Felder, 1862 is classified as subspecies of *A. ilia* (Schiffermuller, 1775), with type locality in eastern China. *A. metis* is a species found from southeast Europe, southwest Siberia, Korea and Japan. The sources of the specimens Matsumura and Fruhstorfer examined may be questionable, and *nikosia* may be a synonym of other valid names; however, it is impossible to clarify this issue as neither specimen of above records has been located. Specimens of *A. ilia* from western China are shown on Figs. 379 and 380 for reference.

Hestina japonica manja Fruhstorfer, 1913 (小脈蛺蝶／日本脈蛺蝶／胡麻斑蛺蝶)

PLATE 67, Figs. 381

Hestina japonica manja Fruhstorfer, 1913: Die Gross-Schmetterlinge der Erde 9: 703. (Type locality: "Formosa")

Fruhstorfer (1913) described ssp. *manja* of *Hestina japonica* C. & R. Felder, 1862 from Taiwan based on uncertain number of specimens without details. No other record of this species from Taiwan is known, and the occurrence of the species in Taiwan was questioned by Shirôzu (2006). The specimens examined by Fruhstorfer thus probably

represent mis-labelled material from Japan or mainland China. The taxon *japonica* C. & R. Felder, 1862 is now regarded as a valid subspecific name within *Hestina persimilis* (Westwood, 1850) (Inomata, 1990; Masui *et al*., 2011), so *manja* Fruhstorfer, 1913 probably represent a synonym of the former or other subspecies of the latter. A male specimen *Hestina persimilis viridis* Leech, 1890 from Yunnan is shown on Fig. 381 for reference.

Doleschallia bisaltide philippensis Fruhstorfer, 1899 (蠹葉蝶／恆春小枯葉蝶)

PLATE 68, Figs. 382–384

Murayama & Shimonoya (1963b) described *Doleschallia bisaltide koshunensis* based on a male collected on July 14th, 1962 from Hengchun, [Pingdong] of southern Taiwan. Kurosawa (1973) pointed out that the holotype of *koshunensis* Murayama & Shimonoya, 1963 undoubtedly represents a stray individual from the Philippines. Shirôzu & Ueda (1992) subsequently synonymized it with *philippensis* Fruhstorfer, 1899. A female specimen was taken from National Plant Genetic Resources Center (NPGRC) at Taipei on June 20th, 2025 (Fig. 382). Specimens from the Philippines are shown on Figs. 383 and 384 for reference.

Junonia hedonia ida (*Cramer,* 1779) (南洋眼蛺蝶／岩崎擬蛺蝶／恆春黑擬蛺蝶)

PLATE 69, Figs. 385–386

A series of specimens about 10 individuals of this species were collected from Hengchun, Pingdong of southern Taiwan in 1958 (Shirôzu, 1960), suggesting a temporary colony was established. However, no further record of this species exist since then until a stray male was sighted and collected from National Sun Yat-sen University (NSYSU), Kaohsiung on September 7th of 2024 (Fig. 385). This species is widespread in Southeast Asia and Australia. The most likely source of the colony found in 1958 is the Philippines. Specimens from the Kaohsiung and Okinawa are shown on Figs. 385 and 386 for reference.

Mycalesis igoleta C. & R. Felder, 1863 (伊果眉眼蝶)

PLATE 69, Figs. 387–388

A pair of this satyrid species were collected from Lanyu, Taidong, April 26th, 2010 (Hsu *et al*., 2013b). There is no doubt that they represent stray individuals from the Philippines since the species is endemic to the region.

***Lethe diana australis* Naritomi, 1943 (月神黛眼蝶 / 黑蔭蝶)**

PLATE 69, Fig. 389

Naritomi (1943) described this taxon based on a female collected on August 17th, 1942 from Musha, Formosa [Wushe, Taiwan]. Yamanaka (1974) reported 3 additional males collected from Taiwan. However, no collecting or observation record of this species from Taiwan is known for decades, and it is an open question whether this species occurs in Taiwan.

***Lethe confusa* Aurivillius, 1898 (白帶黛眼蝶)**

PLATE 69, Fig. 390

The sole record of this species from Taiwan is two females collected on June 19th, 1976 from Tengzhi, Liugui, Kaohsiung Co. (Nidaira, 1981). No other record of this species from Taiwan is known, and the specimens mentioned in the article may represent mis-labelled material from the other areas, such as Hong Kong. A male specimen from Hong Kong is shown on Fig. 390 for reference.

***Lethe lanaris* Butler, 1877 (直帶黛眼蝶)**

This species is known to range in southern China and northern Vietnam (Lang, 2017). Only one specimen of this species is said to be “ostensibly taken…in Formosa in 1933” and shown in D’Abrera (1985). No other material is known from Taiwan, so the record may involve mis-labelling.

補充註記

與其他科別相比，蛺蝶科有較多臺灣曾有記載，但觀察記錄極少或長期沒有再

被發現之種類，或許涉及標籤錯誤、來源有疑問的標本、稀有的偶發性迷蝶或部分具遷徙能力之物種。有些亞種級分類群已和相關的臺灣原生種於正文中說明，其他種類的概要則在此討論：

***Libythea geoffroy philippina* Staudinger, 1889 (紫喙蝶／紫長鬚蝶／紫天狗蝶)**

PLATE 65, Fig. 371

本種曾於 1969 年 7 月 20 日有一隻雄蝶的採集記錄，無疑是源自菲律賓之偶產迷蝶。圖 371 為供參考之印尼產雄蝶標本。

***Tirumala ishimoides sontinus* (Fruhsorfer, 1911) (南島青斑蝶／擬南方淡紋青斑蝶)**

本種曾於 2010 年 9 月 25 日於新竹市清華大學蝴蝶園發現一雄蝶 (Jean, 2010)，無疑源自菲律賓，可能是藉由颱風到來之迷蝶。

***Tirumala hamata orientalis* (Semper, 1879) (東方淡紋青斑蝶)**

PLATE 65, Fig. 372

本種為源自菲律賓，曾見於臺灣南部之稀有迷蝶。圖 372 為供參考之菲律賓產雄蝶標本。

***Parantica luzonensis* (C. & R. Felder, 1863) (呂宋絹斑蝶)**

PLATE 65, Fig. 373

本種於數十年前曾數度見於臺灣南部，被認為是源自菲律賓之偶產迷蝶 (Yamanaka, 1973)。圖 373 為供參考之菲律賓產雄蝶標本。

***Euploea swaison* (Godart, [1824]) (菲律賓紫斑蝶／黑岩斑蝶)**

本種於 1960 年代曾數度於臺灣南部發現，顯然為源自菲律賓之偶產迷蝶。

***Euploea klugii* Moore, [1858] (緣點紫斑蝶)**

Lee & Wang (1997) 報告於 1995 年 12 月 10 日在臺灣南部屏東縣墾丁發現一隻本種雄蝶。該個體斑紋特徵類似分布於中南半島及蘇門答臘之亞種 ssp. *erichsonii* C. & R. Felder, [1865]。

Parthenos sylvia philippensis Fruhstorfer, 1898 (麗蛺蝶)

PLATE 66, Fig. 374

本種在臺灣的唯一文獻記錄見於 Shirôzu & Ueda (1992) 之目錄中，但缺乏詳細說明。圖 374 為供參考之菲律賓產雄蝶標本。

Neptis thisbe (Ménétriés, 1859) (提環蛺蝶 / 大黃色三線蝶)

PLATE 66, Fig. 375

Nomura (1935) 曾報告一隻採集自「新竹州竹東郡結城」的雌蝶標本，之後再無其他採集或目擊記錄。Nomura (1935) 指出唯一標本與朝鮮半島之樣本吻合。因此該記錄可能為標籤錯誤之朝鮮半島標本。圖 375 為供參考之廣東產雌蝶標本。

Neptis rivularis formosicola Matsumura, 1929 (單環蛺蝶 / 二線蝶)

PLATE 66, Figs. 376–377

Yamanaka (1975) 提及單環蛺蝶在臺灣歷來僅有四件標本記錄，且年代久遠，皆超過一世紀。其中北海道大學館藏的 *Neptis coenobita* var. *formosana* Matsumura, 1919 雄蝶正模標本標籤上注明採自臺北，Matsumura 在原始記載中並提及是 Teiichi Nagasawa [永澤定一] 於明治 37 年 6 月份採獲的。臺中霧峰農業試驗所另有收藏兩隻臺灣產標本，一隻雄蝶標本的標籤注明採自臺北，另一隻可能為雌蝶、殘缺只餘右邊翅膀的標本在六月份採自臺南關子嶺，Yamanaka (1975) 認為其採集日期是 1907 年 4 月 4 日。單環蛺蝶廣泛分布於歐亞大陸之中歐至俄羅斯、日本、華南至華中。標籤註明產自臺灣的標本白色帶紋寬闊，與分布於千島群島及北海道的亞種 ssp. *bergmanni* (Bryk, 1942) 符合。鑒於臺灣低地並無適合這種溫帶環蛺蝶棲息之環境，因此臺灣的稀少記錄可能係源自日本的偶發性移入，Hsu *et al*. (2021) 誤 將 *formosana* Matsumura, 1919、*formosicola* Matsumura, 1929 及 *matsumurai* Shirôzu, 1960 均視為亞種 ssp. *bergmanni* Bryk, 1942 之次主觀同物異名，實則由於適用名 *formosicola* Matsumura, 1929 發表年代早於 *bergmanni* Bryk, 1942，因此前者對後者有優先權 (Haruo Fukuda 個人通訊)。

Limenitis glorifica Fruhstorfer, 1909 (日本線蛺蝶 / 臺灣線蛺蝶 / 北投一文字蝶)

Matsumura (1929) 根據採集自臺北市北投區之一雌蝶標本記述了「*Limenitis formosicola*」。Hsu *et al*. (2004) 指出本種存放於日本北海道大學昆蟲體系學之唯

一模式標本特徵符合日本特有之日本線蛺蝶 *Limenitis glorifica* Fruhstorfer, 1909，該模式標本可能為標籤錯誤之個體，並將 *formosicola* Matsumura, 1929 處理為 *glorifica* Fruhstorfer, 1909 之同物異名。

***Argynnis tropicalis* Röber, 1919 (熱帶豹蛺蝶)**

Argynnis tropicalis Röber, 1919 是根據本採集自“Formosa”之雄蝶標本記述的種類。除了 Shirôzu & Ueda (1992) 臺灣蝶類名錄外並無其他已知的採集記錄或處理。根據原始描述，本種與分布於北美西部、翅腹面擁有乳黃色或銀色斑點的 *Argynnis rhodope* Edwards, 1874 [現為 *Speyeria hydaspe* (Boisduval, 1869) 之亞種] 相似。在亞洲與 *S. hydaspe* 最相似的物種可能為分布於歐亞大陸至日本、華東之燦福蛺蝶 *Fabriciana adippe* (Denis & Schiffermüller, 1775)。如果本種模式標本不涉及標籤誤植，則可能與燦福蛺蝶近緣。

***Vindula dejone* (Erichson, 1834) (迪氏文蛺蝶 / 木生紅蛺蝶 / 臺文蛺蝶)**

本種為源自菲律賓，曾於臺灣南部發現的稀有偶產迷蝶 (例如 Murayama & Shimonoya, 1968)。

***Algia fasciata fasciata* (Felder & Felder,1860) (琥珀蛺蝶 / 珀蛺蝶 / 臺東黃線蝶)**

Matsumura (1929) 根據一採集自臺東之標本記述了 *Cirrochroa fasciata formosana*。該學名後來由 Shiôzu & Ueda (1992) 處理為 *Paduca fasciata* (Felder & Felder, 1860) 的次主觀同物異名，而 *formosana* Matsumura, 1929 模式標本可能為源自菲律賓之迷蝶。菲律賓之 *A. fasciata* 族群有時被視為獨立亞種 ssp. *ortopia* Fruhstorfer, 1912，而 *ortopia* 在 Fruhstorfer (1912) 德文版中被拼為 *ortopla*，該版本較英文版晚 13 天發行，因此是前者的「不正確後拼寫」。

***Cethosia biblis* (Drury, [1773]) (紅鋸蛺蝶)**

PLATE 67, Fig. 378

本種曾於 2015 年 11 月 6 日於金門有一隻雄蝶的採集記錄，此外並無其他記錄。本種在華南及香港的常用寄主植物蛇王藤不見於金門 (Lu, 2011)。

***Apatura ilia nikosia* Fruhstorfer, 1913 (柳紫閃蛺蝶 / 細帶閃蛺蝶)**

PLATE 67, Figs. 379–380

在臺灣，閃蛺蝶的相關記錄絕無僅有。Matsumura (1908) 曾提及臺南產的「*Apatura here*」。德籍學者 Fruhstorfer 則依據德國慕尼黑 Plessen 收藏的唯一雌蝶標本記述了 *Apatura ilia nikosia* Fruhstorfer, 1913。除了這兩筆記錄以外，再無任何臺灣產閃蛺蝶屬物種之記錄。Shirôzu & Ueda (1992) 將 *nikosia* Fruhstorfer, 1913 改置於細帶閃蛺蝶 *A. metis* Freyer, 1829 內，但未給予解釋。根據 Masui *et al.* (2011)，*here* Felder & Felder, 1862 應為柳紫閃蛺蝶 *A. ilia* (Schiffermuller, 1775) 之亞種，模式產地位於華東。細帶閃蛺蝶則為分布於歐洲東南部、西伯利亞西南部、朝鮮半島及日本之物種。Matsumura 及 Fruhstorfer 檢視之標本來源可能有疑問，因此 *nikosia* 可能為細帶閃蛺蝶或柳紫閃蛺蝶之同物異名，然而，由於上述兩筆記錄提及的標本均下落不明，因而其分類地位無從釐清。圖 379 及 380 為供參考之華西產柳紫閃蛺蝶標本。

Hestina japonica manja Fruhstorfer, 1913 (小脈蛺蝶 / 日本脈蛺蝶 / 胡麻斑蛺蝶)

PLATE 67, Fig. 381

Fruhstorfer (1913) 根據數量不明且無明確數據的標本記述了小脈蛺蝶臺灣亞種 ssp. *manja*。除此之外，小脈蛺蝶在臺灣再無其他記錄，Shirôzu (2006) 亦對臺灣是否產本種存疑。Fruhstorfer 見到的小脈蛺蝶標本頗可能是源自日本或中國大陸的標籤錯誤之標本。由於日本脈蛺蝶現被認為是小脈蛺蝶的亞種，因此 *manja* Fruhstorfer, 1913 很可能是前者或是小脈蛺蝶其他亞種的同物異名。圖 381 為供參考之雲南產雌蝶標本。

Doleschallia bisaltide philippensis Fruhstorfer, 1899 (蠹葉蝶 / 恆春小枯葉蝶)

PLATE 68, Figs. 382–384

Murayama & Shimonoya (1963b) 根據 1962 年 7 月 14 日採集自臺灣南部屏東縣恆春鎮之雄蝶標本記述了 *Doleschallia bisaltide koshunensis*。Kurosawa (1973) 指出本亞種之正模標本無疑是源自菲律賓之偶產迷蝶。Shirôzu & Ueda (1992) 隨後將其處理為 *philippensis* Fruhstorfer, 1899 之同物異名。圖 383 及 384 為供參考之菲律賓產標本，另在 2025 年 6 月 20 日於臺北市國家林木種原庫採獲一隻雌蝶標本 (圖 382)。

Junonia hedonia ida (Cramer, 1779) (南洋眼蛺蝶 / 岩崎擬蛺蝶 / 恆春黑擬蛺蝶)

PLATE 69, Figs. 385–386

本種於 1958 年時曾於臺灣南部屏東縣恆春鎮採集到約 10 隻左右之標本

(Shirôzu, 1960)，可知當時應有暫時性族群建立，但其後直到 2024 年 9 月 7 日才在高雄中山大學再發現一隻偶產記錄 (圖 384)。本種廣布於東南亞及澳洲。1958 年發現之族群最有可能源自菲律賓。圖 385 及 386 為供參考之高雄產及沖繩產標本。

Mycalesis igoleta C. & R. Felder, 1863 (伊果眉眼蝶)

PLATE 69, Figs. 387–388

本種僅於 2010 年 4 月 26 日有一對採自臺東蘭嶼的標本採集記錄，由於這種眼蝶是菲律賓特有種，此記錄無疑是源自菲律賓的偶產迷蝶。

Lethe diana australis Naritomi, 1943 (月神黛眼蝶 / 黑蔭蝶)

PLATE 69, Fig. 389

Naritomi (1943) 根據 1942 年 8 月 17 日採集自霧社之一隻雌蝶標本記述了月神黛眼蝶臺灣亞種 ssp. *australis*。Yamanaka (1974) 另外列出三筆產自臺灣的雄蝶記錄。然而，過去數十年再無其他月神黛眼蝶採集或目擊記錄，本種是否棲息於臺灣實有疑問。

Lethe confusa Aurivillius, 1898 (白帶黛眼蝶)

PLATE 69, Fig. 390

本種於臺灣之唯一記錄為 1976 年 6 月 19 日採集自高雄縣六龜鄉藤枝的兩隻雌蝶，此外再無其他臺灣產本種的記錄，該文章提及的標本可能為其他地區 (也許是香港) 之標籤錯誤樣本。圖 390 為供參考之香港產雄蝶標本。

Lethe lanaris Butler, 1877 (直帶黛眼蝶)

本種分布於華南及越南北部，在臺灣僅有 D'Abrera (1985) 書中提及一隻據稱於 1933 年採集的記錄，除此以外無其他記錄，可能涉及標籤錯誤。

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COLOUR PLATES

Note. Scale bars represent 1 cm.

 : **Uppersides**

 : **Undersides**

1. *Libythea lepita formosana* Fruhstorfer, 1909 東方喙蝶
♂. TAIPEI CITY, Shilin, Pingding Ancient Canal, 11. III. 2014, reared from *Celtis sinensis*, emgd. 21. III. 2014, HSU 14C14 (Y. M. Hsu).

2. *Libythea lepita formosana* Fruhstorfer, 1909 東方喙蝶
♀. TAIPEI CITY, Beitou, Taipei Veterans General Hospital, 14. III. 2010, reared from *Celtis* sp., emgd. 24. III. 2010 (H. C. Huang).

3. *Danaus plexippus* (Linnaeus, 1758) 帝王斑蝶
♂. USA: TX: Harris Co., Houston, IV. 2007 (H. H. Chuah).

4. *Danaus plexippus* (Linnaeus, 1758) 帝王斑蝶
♀. USA: TX: Harris Co., Houston, IV. 2007 (H. H. Chuah).

5. *Danaus genutia* (Cramer, [1779]) 虎斑蝶
♂. XINBEI CITY, Ruifang, Nanya, 11. IX. 1998 (Y. T. Lo).



1♂ 1♀ 2♂ 2♀



3♂ 3♀



4♂ 4♀



5♂ 5♀

6. *Danaus genutia* (Cramer, [1779]) 虎斑蝶
♀. KAOHSIUNG CITY, Liugui, 23. X. 2005 (Y. F. Hsu).

7. *Danaus melanippus edmondii* (Bougainville, 1837) 白虎斑蝶
♂. TAIDONG Co., Lanyu, 24. VII. 1988 (C. S. Tseng).

8. *Danaus chrysippus* (Linnaeus, 1758) 金斑蝶
♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 27. V. 2005 (Y. F. Hsu).

9. *Danaus chrysippus* (Linnaeus, 1758) (f. *alcippoides*) 金斑蝶 (白化型)
♂. TAIDONG Co., Beinan, Danan, 120m, 29. VIII. 2005 (Y. F. Hsu).

10. *Danaus chrysippus* (Linnaeus, 1758) 金斑蝶
♀. TAIPEI CITY, Muzha, Taipei City Zoo, 28. V. 2009 (C. H. Lin, jr).



6♂



6♀



7♂



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10♂



10♀

11. *Tirumala limniace limniace* (Cramer, [1775]) 淡紋青斑蝶
♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 5. III. 2009 (Y. F. Hsu).

12. *Tirumala limniace limniace* (Cramer, [1775]) 淡紋青斑蝶
♀. KAOHSIUNG CITY, Liugui, 23. X. 2005 (Y. F. Hsu).

13. *Tirumala septentrionis* (Butler, 1874) 小紋青斑蝶
♂. TAIPEI CITY, Shilin, Jiantan, 27. IX. 2018, reared from *Heterostemma brownii*, emgd. 12. X. 2018 (L. Huang).

14. *Tirumala septentrionis* (Butler, 1874) 小紋青斑蝶
♀. XINBEI CITY, Wulai, 200m, 19. X. 2009 (Y. F. Hsu).



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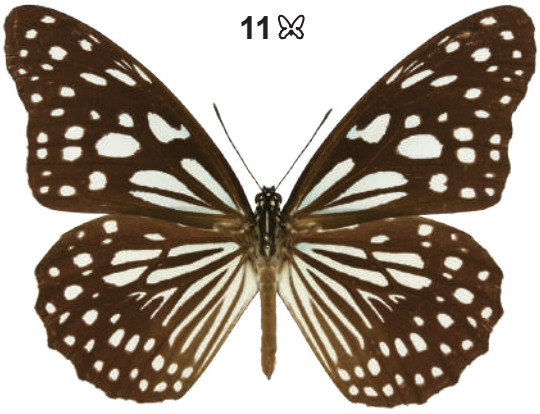
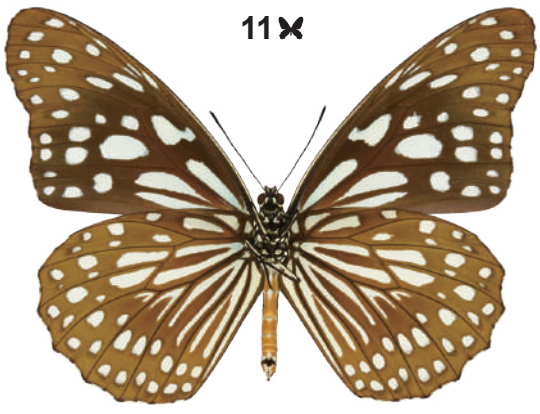
11♀



12♂



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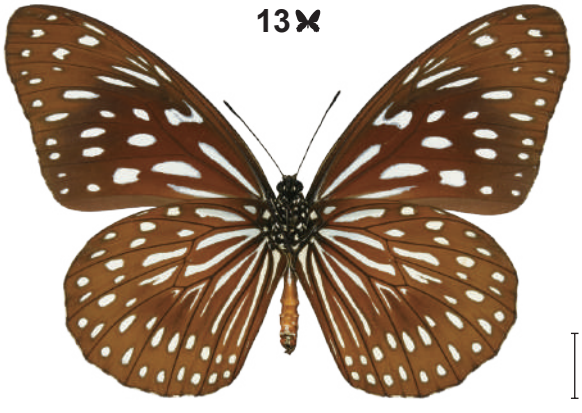

14♀

15. *Parantica aglea maghaba* (Fruhstorfer, 1909) 絹斑蝶
♂. PINGDONG Co., Shizi, Nunaishan, 26. III. 2006 (Y. F. Hsu).

16. *Parantica aglea maghaba* (Fruhstorfer, 1909) 絹斑蝶
♀. TAINAN CITY, Baihe, Zhentoushan, 27. VIII. 2004 (Y. F. Hsu).

17. *Parantica aglea melanoides* Moore, 1883 絹斑蝶
♀. JINMEN Co., Lieyu, Yangshan, 9. XI. 2021 (H. C. Huang).



15♂



15♀



16♂



16♀



17♂



17♀

18. *Parantica swinhoei* (Moore, 1883) 斯氏絹斑蝶
♂. XINZHU Co., Zhudong, 5. XI. 2008, reared from *Vincetoxicum hirsutum*, emgd. 26. XI. 2008, HSU 08L2.1(L. H. Wang & M. S. Sun).

19. *Parantica swinhoei* (Moore, 1883) 斯氏絹斑蝶
♀. XINBEI CITY, Bali, Guanyinshan, 500m, 15. IV. 2011 (Z. H. Yen).

20. *Parantica sita niphonica* (Moore, 1883) 大絹斑蝶
♂. TAIPEI CITY, Beitou, Shipai, 14. XII. 2018, reared from *Vincetoxicum hirsutum*, emgd. 9. I. 2019, HSU 18M30 (H. C. Huang & L. Huang).

21. *Parantica sita niphonica* (Moore, 1883) 大絹斑蝶
♀. TAIPEI CITY, Beitou, Shipai, 14. XII. 2018, reared from *Vincetoxicum hirsutum*, emgd. 2. I. 2019, HSU 18M30 (H. C. Huang & L. Huang).



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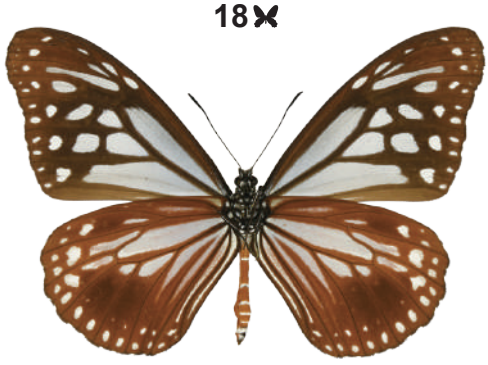
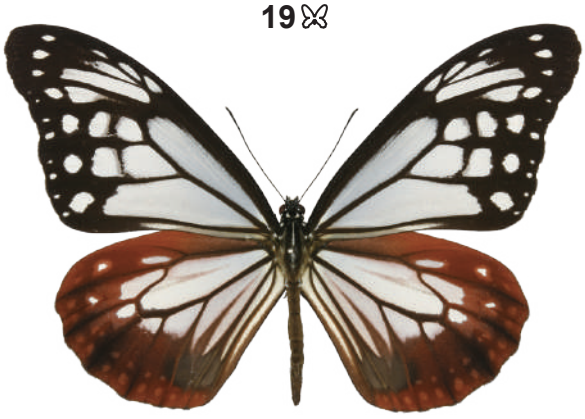


19♀



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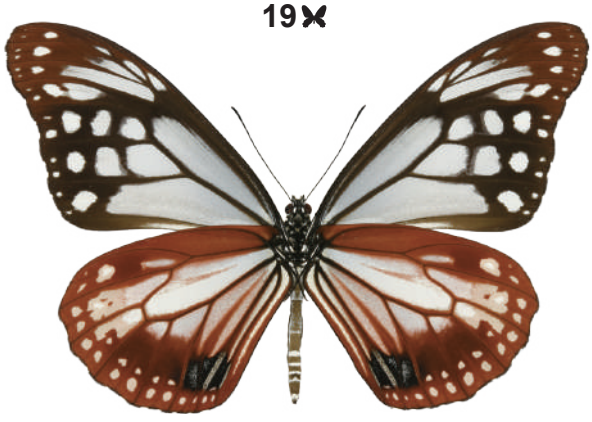

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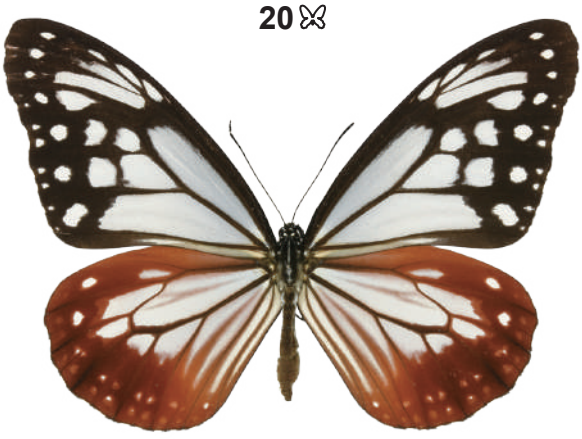

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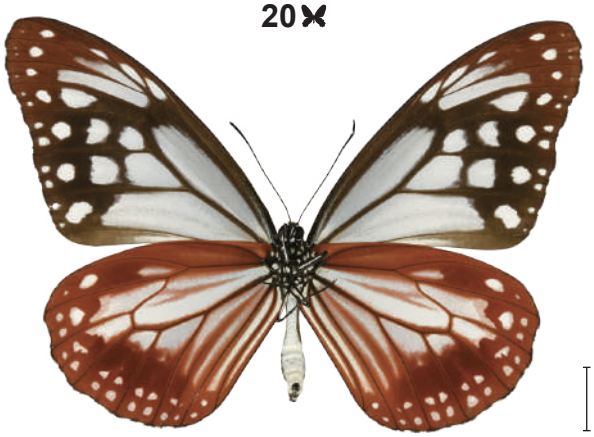

21♀

22. *Ideopsis similis* (Linneaus, 1758) 旖斑蝶

♂. XINZHU Co., Zhudong, 5. XI. 2008, reared from *Vincetoxicum hirsutum*, emgd. 24. XI. 2008, HSU 08L2 (L. H. Wang & M. H. Sun).

23. *Ideopsis similis* (Linneaus, 1758) 旖斑蝶

♀. XINBEI CITY, Sanzhi, Datunshan, 10. VI. 2021(C. W. Huang & Z. L. Chen).

24. *Euploea sylvester swinhoei* Wallace, 1866 雙標紫斑蝶

♂. TAOYUAN CITY, Fuxing, Northern Cross-Island Highway, 48Km, 3. V. 2017, reared from *Gymnema sylvestre*, emgd. 23. V. 2017, HSU 17E09 (C. W. Huang & Y. M. Hsu).

25. *Euploea sylvester swinhoei* Wallace, 1866 雙標紫斑蝶

♀. XINZHU Co., Xinfeng, Niuguling, 100m, 5. VI. 2010 (Y. F. Hsu & H. C. Huang).



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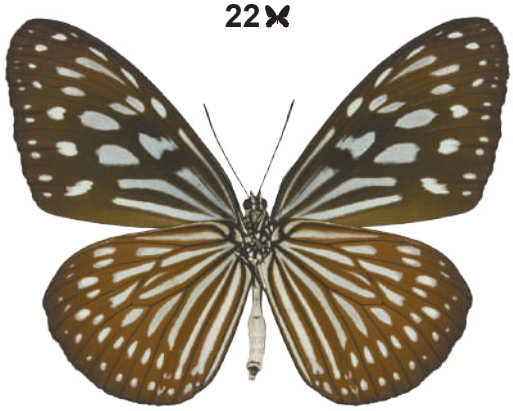

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26. *Euploea midamus* (Linnaeus, 1758) 藍點紫斑蝶
♂. JINMEN Co., Jinsha, Wuhushan, 6. VIII. 2001, reared from *Strophanthus divaricatus*, emgd. 5. VIII. 2001 (Y. T. Lo).

27. *Euploea midamus* (Linnaeus, 1758) 藍點紫斑蝶
♀. JINMEN Co., Jinsha, Wuhushan, 6. VIII. 2001, reared from *Strophanthus divaricatus*, emgd. 28. VIII. 2001 (Y. T. Lo).

28. *Euploea mulciber barsine* Fruhstorfer, 1904 異紋紫斑蝶
♂. TAIPEI CITY, Wenshan, Muzha, Taipei City Zoo, 25. IV. 2010, reared from *Ficus microcarpa*, emgd. 22. V. 2010, HSU 10D23 (Y. F. Hsu).

29. *Euploea mulciber barsine* Fruhstorfer, 1904 異紋紫斑蝶
♀. TAIDONG Co., Yanping, Hongye, 700m, 25/26. VI. 2012 (Y. T. Lo).



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27♂



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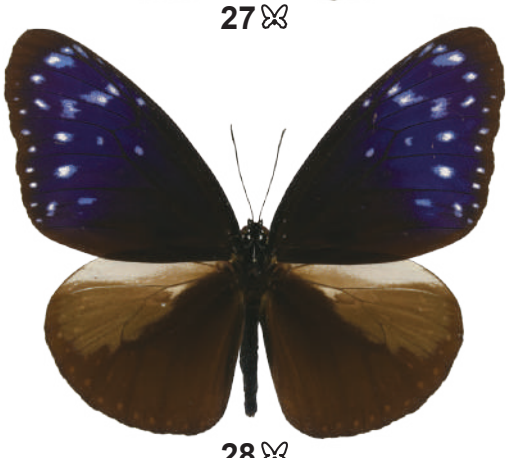
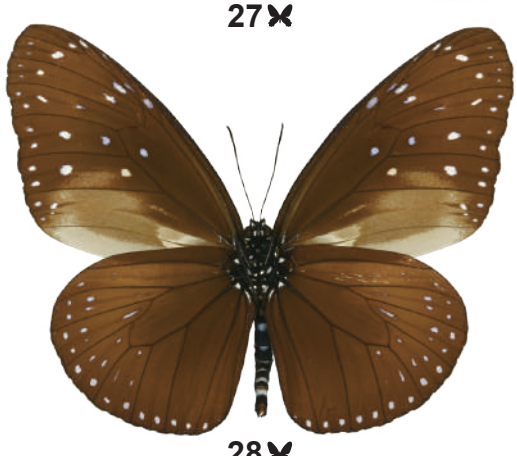


28♂



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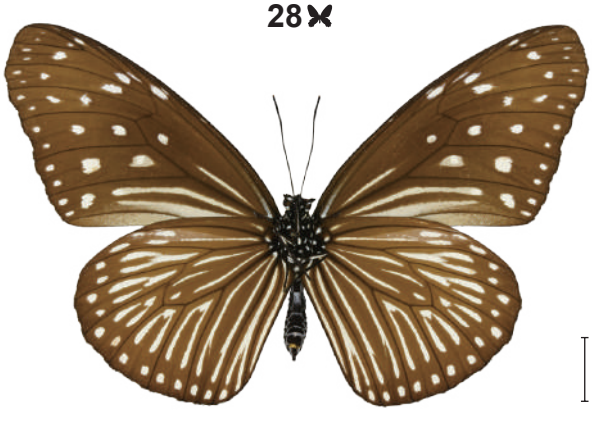

29♀

30. *Euploea phaenareta juvia* Fruhstorfer, 1908 大紫斑蝶
♂. TAIDONG Co., Lanyu, IV. 1960 (S. Araki).

31. *Euploea phaenareta juvia* Fruhstorfer, 1908 大紫斑蝶
♀. PINGDONG Co., Hengchun, VII. 1955 (S. Araki).

32. *Euploea eunice hobsoni* (Butler, 1877) 圓翅紫斑蝶
♂. XINBEI CITY, Wulai, 200m, 4. IV. 2012, reared from *Ficus microcarpa*, emgd. 24. IV. 2012, HSU 12D1 (Y. F. Hsu).



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33. *Euploea eunice hobsoni* (Butler, 1877) 圓翅紫斑蝶
♀. XINBEI CITY, Xindian, Feicui Dam, 11. IV. 2012, reared from *Ficus microcarpa*, emgd. 3. V. 2012, HSU 12D3 (Y. F. Hsu).

34. *Euploea tulliolus koxinga* Fruhstorfer, 1908 小紫斑蝶
♂. TAINAN CITY, Baihe, Zhentoushan, 27. VIII. 2004 (Y. F. Hsu).

35. *Euploea tulliolus koxinga* Fruhstorfer, 1908 小紫斑蝶
♀. JIAYI Co., Alishan, Shanmei, 500m, 29. IX. 2007 (Y. F. Hsu).

36. *Euploea tulliolus pollita* Erichson, 1834 小紫斑蝶 (菲律賓亞種)
♂. PHILIPPINES: CEBU PROV., Badian, Kawasan Falls, 4. XII. 2014 (C. L. Huang).



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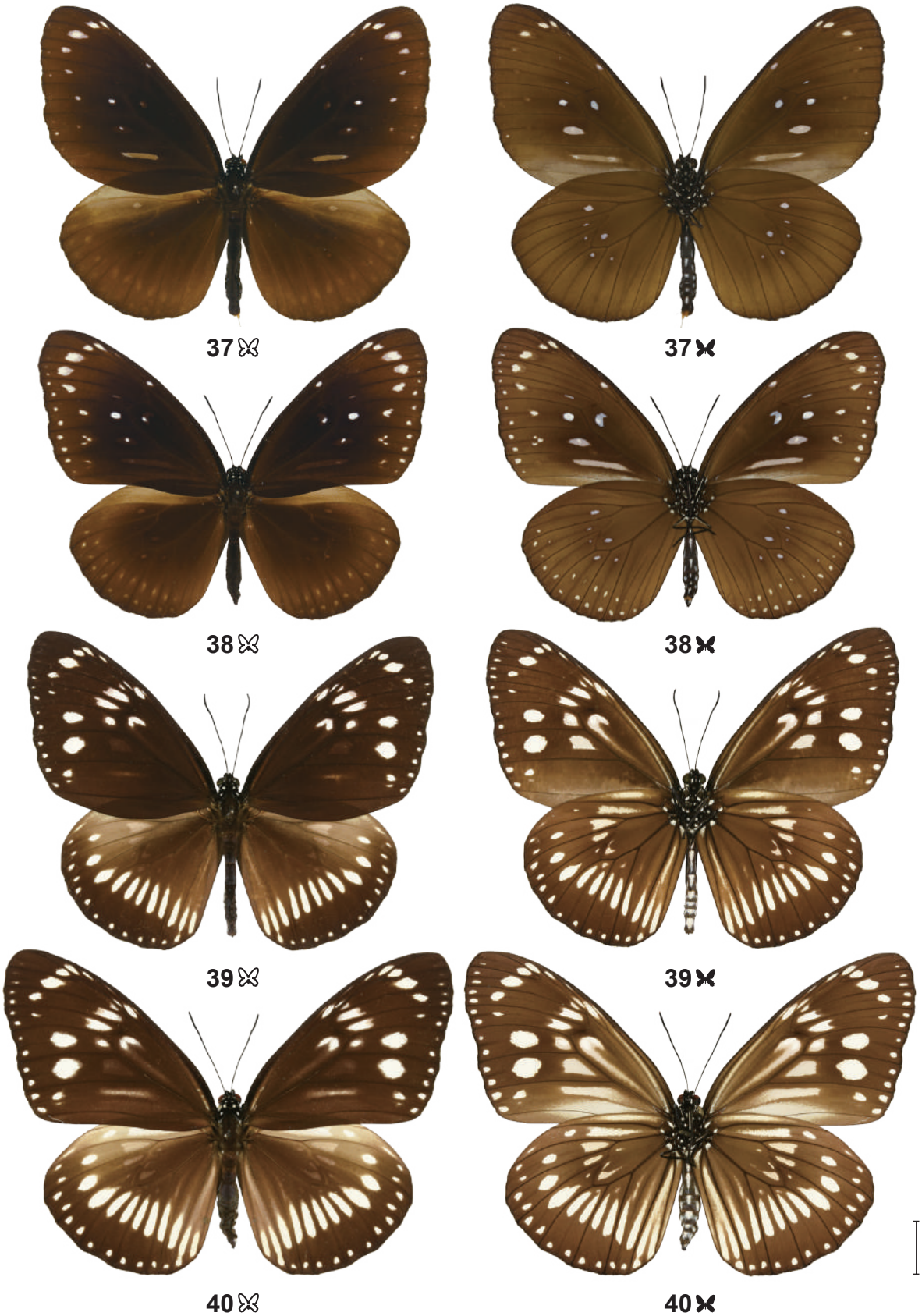
37. *Euploea core amymone* (Godart, 1819) 幻紫斑蝶
♂. KAOHSIUNG CITY, Qijin, Dongsha Is., 2/7. X. 2008, reared from *Ficus microcarpa*, emgd. 24. X. 2008, HSU 08K6 (Y. F. Hsu).

38. *Euploea core amymone* (Godart, 1819) 幻紫斑蝶
♀. KAOHSIUNG CITY, Qijin, Dongsha Is., 2/7. X. 2008, reared from *Ficus microcarpa*, emgd. 20. X. 2008, HSU 08K6 (Y. F. Hsu).

39. *Euploea camaralzeman cratis* Butler, 1866 白列紫斑蝶
♂. PENGHU Co., Xiyu, East Fort, 11. VI. 2014, reared from *Ficus microcarpa*, emgd. 14. VII. 2014, HSU 14F28 (C. W. Huang & J. Y. Liang).

40. *Euploea camaralzeman cratis* Butler, 1866 白列紫斑蝶
♀. PENGHU Co., Xiyu, East Fort, 11. VI. 2014, reared from *Ficus microcarpa*, emgd. 10. VII. 2014, HSU 14F28 (C. W. Huang & J. Y. Liang).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41. *Idea leuconoe clara* (Butler, 1867) 大白斑蝶
♂. JILONG CITY, Longgang Trail, 26. IX. 2006 (Y. F. Hsu).

42. *Idea leuconoe clara* (Butler, 1867) 大白斑蝶
♀. XINBEI CITY, Ruifang, Nanya, 9. X. 1998 (Y. F. Hsu).

43. *Idea leuconoe kwashotoensis* (Sonan, 1928) 大白斑蝶 (綠島亞種)
♂. TAIDONG Co., Ludao, Cross Mountain Ancient Trail, 28. IV. 2014, reared from *Parsonsia alboflavescens*, HSU 14D57 (H. Y. Lee & H. C. Huang).

44. *Idea leuconoe kwashotoensis* (Sonan, 1928) 大白斑蝶 (綠島亞種)
♀. TAIDONG Co., Ludao, 8/10. IX. 2009 (C. L. Huang & Y. C. Lin).



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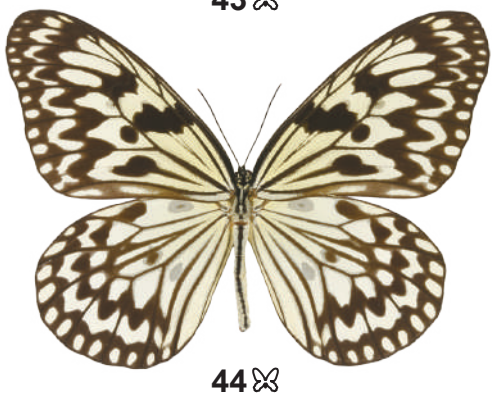

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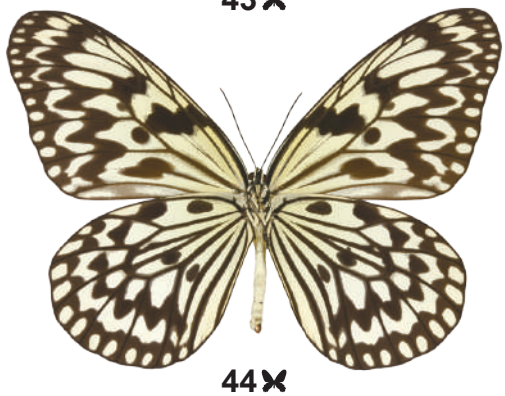

44♀

45. *Telchinia issoria formosana* (Fruhstorfer, 1914) 苧麻細蝶
♂. TAIZHONG CITY, Heping, Shangguguan, 800/900m, 28/29. VII. 2007, reared from *Debregeasia orientalis*, emgd. 3. VIII. 2007, HSU 07G41 (Y. F. Hsu).

46. *Telchinia issoria formosana* (Fruhstorfer, 1914) 苧麻細蝶
♀. TAIZHONG CITY, Heping, Shangguguan, 800/900m, 28/29. VII. 2007, reared from *Debregeasia orientalis*, emgd. 4. VIII. 2007, HSU 07G41 (Y. F. Hsu).

47. *Telchinia issoria issoria* Hübner, [1819] 苧麻細蝶
♂. LIANJIANG Co., Nangan, Jinsha, 20. VII. 2013 (C. L. Huang, H. C. Huang & H. Y. Lee).

48. *Argynnis paphia formosicola* Matsumura, 1927 綠豹蛺蝶
♂. HUALIAN Co., Xiulin, Guanyuan, 8. IX. 2020, reared from *Viola* sp., emgd. 4. III. 2021, HSU 20J4 (Y. F. Hsu).

49. *Argynnis paphia formosicola* Matsumura, 1927 綠豹蛺蝶
♀. HUALIAN Co., Xiulin, Guanyuan, 8. IX. 2020, reared from *Viola* sp., emgd. 4. III. 2021, HSU 20J4 (Y. F. Hsu).



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50. *Argynnis hyperbius* (Linnaeus, 1763) 斐豹蛱蝶
♂. NANTOU Co., Renai, Guandaoshan, 15. V. 1997.

51. *Argynnis hyperbius* (Linnaeus, 1763) 斐豹蛱蝶
♀. TAIPEI CITY, Wenshan, Xianjiyan, 17. VIII. 2008, reared from *Viola inconspicua*, emgd. 7. IX. 2008, HSU 08H9 (Y. F. Hsu).

52. *Argynnis childreni* Gray, 1831 大豹蛱蝶
♂. LIANJIANG Co., emgd. 12. II. 2015 (H. Y. Lee).

53. *Argynnis childreni* Gray, 1831 大豹蛱蝶
♀. LIANJIANG Co., emgd. 18. II. 2015 (H. Y. Lee).

54. *Boloria palina yangi* Hsu & Yen, 1997 珀豹蛱蝶
Holotype ♂. TAIZHONG CITY, [Heping], Lishan, 10. V. 1964 (C. T. Yang) (National Chung Hsing University, NCHU).

55. *Phalanta phalantha* (Drury, [1773]) 琺蛱蝶
♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 13. IV. 2007, reared from *Salix babylonica*, emgd. 28. IV. 2007, HSU 07D16 (Y. F. Hsu).

56. *Phalanta phalantha* (Drury, [1773]) 琺蛱蝶
♀. JIAYI Co., Lantan, 24. IX. 2019, reared from *Salix babylonica*, emgd. 3. X. 2019, HSU 19J35 (L. Huang & H. C. Huang).

57. *Cupha erymanthis* (Drury, [1773]) 黃襟蛱蝶
♂. XINBEI CITY, Xindian, Zhitan Elementary School, 6. III. 2011, reared from *Scolopia oldhamii*, emgd. 31. III. 2011, HSU 11C06 (C. L. Huang).


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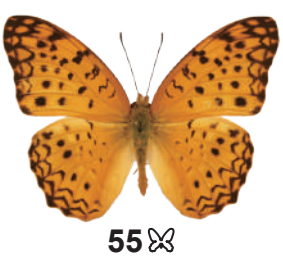
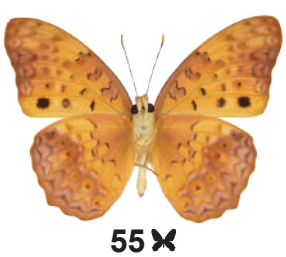

55♂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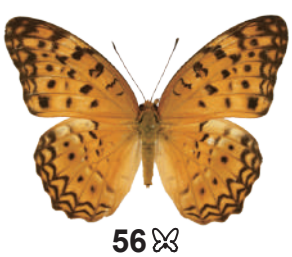
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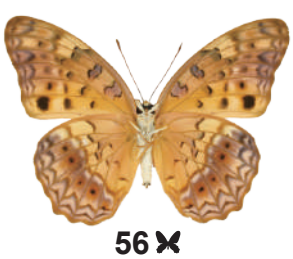
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58. *Cupha erymanthis* (Drury, [1773]) 黃襟蛺蝶

♀. XINBEI CITY, Xindian, Zhitan Elementary School, 6. III. 2011, reared from *Scolopia oldhamii*, emgd. 31. III. 2011, HSU 11C06 (C. L. Huang).

59. *Neptis hylas luculenta* Fruhstorfer, 1907 豆環蛺蝶

♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 4. I. 2016, reared from *Galactia tenuiflora*, emgd. 9. II. 2016, HSU 16A09.5 (C. W. Huang).

60. *Neptis hylas luculenta* Fruhstorfer, 1907 豆環蛺蝶

♀. NANTOU Co., Renai, Jiantai Forset Trail, 1. XII. 2007, reared from *Galactia* sp., emgd. 24. XII. 2007, HSU 07M3 (C. L. Huang & J. M. Wu).

61. *Neptis hylas hylas* (Linnaeus, 1758) (WSF) 豆環蛺蝶 (高溫 / 雨季型)

♂. LIANJIANG Co., Nangan, Jinsha, 18. XI. 2013 (L. H. Wang & H. Y. Lee).

62. *Neptis hylas hylas* (Linnaeus, 1758) (DSF) 豆環蛺蝶 (低溫 / 乾季型)

♂. LIANJIANG Co., Nangan, Jinsha, 9. IV. 2014 (L. H. Wang & H. Y. Lee).

63. *Neptis hylas hylas* (Linnaeus, 1758) (WSF) 豆環蛺蝶 (高溫 / 雨季型)

♀. JINMEN Co., Jinhu, Shenshiqiao, 27/28. V. 2011 (Y. F. Hsu & H. C. Huang).

64. *Neptis sappho formosana* Fruhstorfer, 1908 小環蛺蝶

♂. TAIEPI CITY, Wenshan, NTNU, Gongguan campus, 10. V. 2010, reared from *Wisteriopsis reticulata*, emgd. 30. V. 2010, HSU 10E69 (C. L. Huang).



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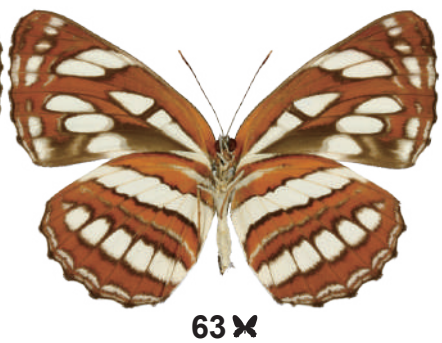

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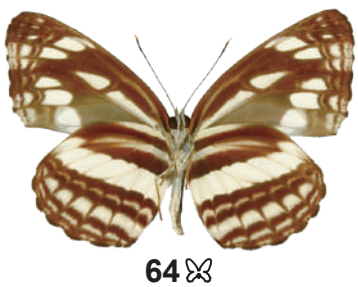

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65. *Neptis sappho formosana* Fruhstorfer, 1908 小環蛺蝶
♀. MIAOLI Co., Taian, Xiangbi, 750m, 1. XII. 2012, reared from *Aphananthe aspera*, emgd. 23. XII. 2012, HSU 12M4 (Y. F. Hsu & S. N. Hung).

66. *Neptis soma tayalina* Murayama & Shimonoya, 1968 斷線環蛺蝶
♂. NANTOU Co., Renai, Songgang, 3. III. 2001 (Y. T. Lo).

67. *Neptis soma tayalina* Murayama & Shimonoya, 1968 斷線環蛺蝶
♀. TAOYUAN CITY, Fuxing, Xuewunao, 21. II. 2017, reared from *Zelkova serrata*, HSU 17B31.1M (Y. M. Hsu, C. J. Chang & C. W. Huang).

68. *Neptis soma ominicola* Fruhstorfer, 1908 (WSF) 斷線環蛺蝶 (高溫 / 雨季型)
♂. LIANJIANG Co., Nangan, Jinsha, 18. VI. 2014 (C. L. Huang).

69. *Neptis soma ominicola* Fruhstorfer, 1908 (DSF) 斷線環蛺蝶 (低溫 / 乾季型)
♂. LIANJIANG Co., Beigan, Wusha, 15. IV. 2014 (Y. F. Hsu, H. C. Huang & C. L. Huang).

70. *Neptis soma ominicola* Fruhstorfer, 1908 (WSF) 斷線環蛺蝶 (高溫 / 雨季型)
♀. LIANJIANG Co., Nangan, Tree Nursery, 17. VI. 2014 (C. L. Huang).

71. *Neptis nata lutatia* Fruhstorfer, 1913 細帶環蛺蝶
♂. JIAYI Co., Alishan, Danayigu, 17. II. 2020 (Y. M. Hsu).



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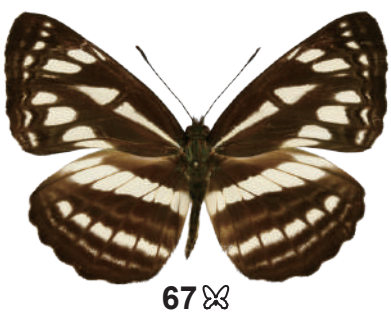

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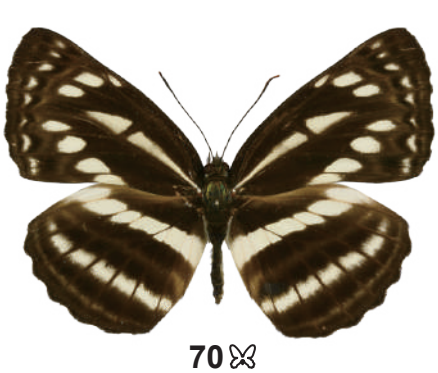

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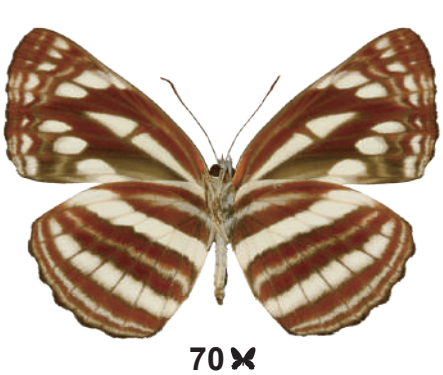

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72. *Neptis nata lutatia* Fruhstorfer, 1913 細帶環蛺蝶

♀. TAINAN CITY, Nanxi, Meiling, 29. XII. 2015, reared from *Trema orientalis*, emgd. 6. II. 2016, HSU 15M30 (C. W. Huang & T. Y. Liu).

73. *Neptis nata adipala* Moore, 1872 細帶環蛺蝶

♂. JINMEN Co., Jinsha, Doumen Trail, 10. XI. 2024, reared from *Celtis biondii*, emgd. 20. XII. 2024, HSU 24L26 (J. X. Lo).

74. *Neptis nata adipala* Moore, 1872 細帶環蛺蝶

♀. JINMEN Co., Jinsha, Doumen Trail, 10. XI. 2024, reared from *Celtis sinensis*, emgd. 1. I. 2025, HSU 24L26.1 (J. M. Lee).

75. *Neptis reducta* Fruhstorfer, 1908 無邊環蛺蝶

♂. NANTOU Co., Renai, Aowanda, 17. VIII. 2014, reared from *Aphananthe aspera*, emgd. 27. VIII. 2014, HSU 14H29 (W. J. Lin & J. R. Chen).

76. *Neptis reducta* Fruhstorfer, 1908 無邊環蛺蝶

♀. KAOHSIUNG CITY, Taoyuan, Meishan, 30. VI. 2016 (L. Huang).

77. *Neptis taiwana* Fruhstorfer, 1908 蓬萊環蛺蝶

♂. XINBEI CITY, Wulai, Xinxian, 23. IX. 2015, reared from *Phoebe formosana*, emgd. 16. X. 2015, HSU 15J56 (Y. M. Hsu).

78. *Neptis taiwana* Fruhstorfer, 1908 蓬萊環蛺蝶

♀. XINZHU Co., Jianshi, Lidongshan, 1500m, 3. IX. 2005 (Y. F. Hsu).



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79. *Neptis noyala ikedai* Shirôzu, 1952 流紋環蛺蝶
♂. XINBEI CITY, Wulai, Hapen, 21. I. 2021, reared from *Castanopsis* sp., emgd. 24. III. 2021, HSU 21A06 (C. W. Huang, L. H. Wang & Y. F. Hsu).

80. *Neptis noyala ikedai* Shirôzu, 1952 流紋環蛺蝶
♀. TAOYUAN CITY, Fuxing, Sileng, 6. XII. 2020, reared from *Castanopsis cuspidata* var. *carlesii*, emgd. 18. IV. 2021 (Z. L. Chen, Y. Q. Yeh & G. Y. Chen).

81. *Neptis sankara shirakiana* Matsumura, 1929 眉紋環蛺蝶
♂. XINBEI CITY, Xindian, Sikanshui, 400m, 16. VII. 2013, reared from *Prunus campanulata*, emgd. 29. VII. 2013, HSU 13G27 (Y. F. Hsu).

82. *Neptis sankara shirakiana* Matsumura, 1929 眉紋環蛺蝶
♀. TAIDONG Co., Haiduan, Liyuan, 1800m, 2. VII. 2014 (C. W. Huang).

83. *Neptis sylvana esakii* Nomura, 1935 深山環蛺蝶
♂. YILAN Co., Datong, Siyuan, 2000m, 1. III. 2009, reared from *Quercus stenophylloides*, emgd. 2. IV. 2009, HSU 09C1 (H. Y. Lee).

84. *Neptis sylvana esakii* Nomura, 1935 深山環蛺蝶
♀. TAIDONG Co., Haiduan, Liyuan/ Xiangyang, 19. VI. 2020 (C. W. Huang).

85. *Neptis podarces* Nire, 1920 臺灣蓮花環蛺蝶
♂. TAIDONG Co., Yanping, Hongye, 500/600m, 26. XII. 2009, reared from *Ficus sarmentosa*, emgd. 1. III. 2010, HSU 09M17.2 (L. H. Wang & M. S. Sun).



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86. *Neptis podarces* Nire, 1920 臺灣蓮花環蛺蝶
♀. XINZHU Co., Jianshi, Lidongshan, 10. IX. 2014, reared from *Ficus sarmentosa*, emgd. 30. XII. 2014, HSU 14J19 (C. L. Huang & L. H. Wang).

87. *Neptis philyra splendens* Murayama, 1941 楓環蛺蝶
♂. YILAN Co., Datong, Mingchi, 31. I. 2016, reared from *Acer serrulatum*, emgd. 19. III. 2016, HSU 16A49 (C. C. Lu, jr, C. H. Lin, W. J. Lin, C. W. Huang & Y. H. Lin).

88. *Neptis philyra splendens* Murayama, 1941 楓環蛺蝶
♀. XINZHU Co., Jianshi, Lidongshan, 31. XII. 2013, reared from *Acer serrulatum*, emgd. 6. IV. 2014, HSU 13M27 (C. W. Huang, L. H. Wang & C. L. Huang).

89. *Neptis philyroides sonani* Murayama, 1941 鑲紋環蛺蝶
♂. TAIDONG Co., Haiduan, Tianlong Trail, 700m, 16. IV. 2011 (L. H. Wang).

90. *Neptis philyroides sonani* Murayama, 1941 鑲紋環蛺蝶
♀. KAOHSIUNG CITY, Taoyuan, Liguan, 5. V. 2020 (C. J. Chang, C. W. Huang, W. J. Lin & S. Y. Chen).

91. *Neptis ilos nirei* Nomura, 1935 奇環蛺蝶
♂. HUALIAN Co., Xiulin, Guanyuan, 2374m, 20. VIII. 2020, reared from *Acer morrisonense*, emgd. 14. XI. 2020, HSU 20H7 (Z. L. Chen).

92. *Neptis ilos nirei* Nomura, 1935 奇環蛺蝶
♀. HUALIAN Co., Xiulin, Bilu, 2000m, 10. IX. 2020, reared from *Acer morrisonense*, emgd. 24. XI. 2020, HSU 20J7 (Y. F. Hsu & Z. Y. Shen).



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93. *Neptis pryeri jucundita* Fruhstorfer, 1908 黑星環蛺蝶
♂. PINGDONG Co., Wutai, Ali, 1000m, 22. V. 2011 (C. L. Huang).

94. *Neptis pryeri jucundita* Fruhstorfer, 1908 黑星環蛺蝶
♀. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

95. *Pantoporia hordonia rihodona* (Moore, 1878) 金環蛺蝶
♂. XINBEI CITY, Wulai, Fushan Research Station, 700m, 4/5. VIII. 2006, reared from *Albizia julibrissin*, emgd. 7. VIII. 2006, HSU 06H14 (Y. F. Hsu & H. C. Huang).

96. *Pantoporia hordonia rihodona* (Moore, 1878) 金環蛺蝶
♀. XINBEI CITY, Wulai, Fushan Research Station, 700m, 28. VIII. 2006, reared from *Acacia caesia*, emgd. 15. IX. 2006, HSU 06H39 (Y. F. Hsu).

97. *Limenitis sulpitia tricula* Fruhstorfer, 1908 殘眉線蛺蝶
♂. TAIPEI CITY, Nangang, Sanchongpupi, 26. V. 2014 (Y. F. Hsu).

98. *Limenitis sulpitia tricula* Fruhstorfer, 1908 (melanized form) 殘眉線蛺蝶 (黑化型)
♂. JILONG CITY, Longgang Trail, 26. VIII. 2008 (C. K. Wang).

99. *Limenitis sulpitia tricula* Fruhstorfer, 1908 殘眉線蛺蝶
♀. XINBEI CITY, Xindian, Zhitan Elementary School, 6. III. 2011, reared from *Lonicera japonica*, emgd. 1. IV. 2011, HSU 11C09.2 (C. L. Huang).



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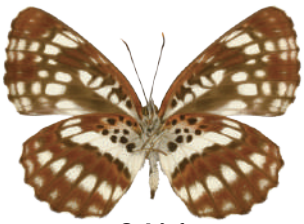

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100. *Limenitis sulpitia sulpitia* (Cramer, [1779]) 殘眉線蛺蝶
♂. LIANJIANG Co., Beigan, Qinbi/ Ankang, 21. VII. 2020 (Y. F. Hsu).

101. *Limenitis sulpitia sulpitia* (Cramer, [1779]) 殘眉線蛺蝶
♀. LIANJIANG Co., Nangan, Tree Nursery, 11. X. 2014 (H. Y. Lee & C. W. Huang).

102. *Limenitis asura baelia* (Fruhstorfer, 1908) 白圈線蛺蝶
♂. TAIPEI CITY, Neihu, Dalun Lake, 1. V. 2020, reared from *Ilex ficoidea*, emgd. 9. V. 2020, HSU 20E03 (Y. M. Hsu).

103. *Limenitis asura baelia* (Fruhstorfer, 1908) (melanized form) 白圈線蛺蝶 (黑化型)
♂. TAIPEI CITY, Nangang, Sanchongpupi, 26. V. 2014 (Y. F. Hsu).

104. *Limenitis asura baelia* (Fruhstorfer, 1908) 白圈線蛺蝶
♀. TAIPEI CITY, Neihu, Dalun Lake, 1. V. 2020, reared from *Ilex ficoidea*, emgd. 9. V. 2020, HSU 20E03 (Y. M. Hsu).

105. *Limenitis jina sauteri* (Fruhstorfer, 1913) 寬帶線蛺蝶
♂. XINZHU Co., Jianshi, Mamei, 1600m 13. IX. 2005, reared from *Lonicera hypoglauca*, emgd. 16. X. 2005, HSU 05J42 (C. C. Lu, L. H. Wang & H. Y. Lee).

106. *Limenitis jina sauteri* (Fruhstorfer, 1913) 寬帶線蛺蝶
♀. TAIZHONG CITY, Heping, Shangguguan, 900m, 29. VII. 2007 (Y. F. Hsu).



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107. *Limenitis fortuna kodahirai* (Sonan, 1938) 幻紫線蛺蝶
♂. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 14. VI. 2021, reared from *Viburnum* sp., emgd. 20. VII. 2021, HSU 21F6 (Y. Q. Yeh).

108. *Limenitis fortuna kodahirai* (Sonan, 1938) 幻紫線蛺蝶
♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 14. VI. 2021, reared from *Viburnum* sp., emgd. 20. VII. 2021, HSU 21F6 (Y. Q. Yeh).

109. *Limenitis dudu jinamitra* Fruhstorfer, 1908 紫俳線蛺蝶
♂. XINBEI CITY, Wugu, Zhanshan, 3. III. 2016 (H. C. Huang).

110. *Limenitis dudu jinamitra* Fruhstorfer, 1908 紫俳線蛺蝶
♀. XINBEI CITY, Wulai, Fushan, Kalamoji Trail, 500m, 7. IV. 2009, reared from *Lonicera* sp., emgd. 9. IV. 2009, HSU 09D16 (Y. F. Hsu).

111. *Athyma perius* (Linnaeus, 1758) 玄珠帶蛺蝶
♂. JIAYI Co., Fanlu, Chukou, 300m, 10. V. 2011 (Y. F. Hsu).

112. *Athyma perius* (Linnaeus, 1758) 玄珠帶蛺蝶
♀. TAIZHONG CITY, Dakeng, Trail No. 4, 18. VIII. 2018, reared from *Glochidion* sp., emgd. 5. IX. 2018 (L. Huang).



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113. *Athyma selenophora laela* (Fruhstorfer, 1908) 異紋帶蛺蝶
♂. XINBEI CITY, Wulai, Jiajiuliao, 150m, 21. VII. 2008 (Y. F. Hsu).

114. *Athyma selenophora laela* (Fruhstorfer, 1908) 異紋帶蛺蝶
♀. TAIPEI CITY, Beitou, Zhongzhengshan Trail, 1. IX. 2008, reared from *Wendlandia formosana*, emgd. 14. X. 2008, HSU 08H34 (N. Y. Tsai).

115. *Athyma selenophora laela* (Fruhstorfer, 1908) (melanized form) 異紋帶蛺蝶 (黑化型)
♀. XINBEI CITY, Wanli, Fengguizui, 650m, 25. IX. 2010 (C. L. Huang).

116. *Athyma cama zoroastres* Butler, 1877 雙色帶蛺蝶
♂. XINBEI CITY, Wulai, 9. VII. 2004, reared from *Glochidion rubrum*, emgd. 13. VIII. 2004, HSU 04G8 (J. R. Chen & C. T. Chang).

117. *Athyma cama zoroastres* Butler, 1877 (melanized form) 雙色帶蛺蝶 (黑化型)
♂. PINDONG Co., Mudan, Gaoshifoshan, 4. II. 2010, reared fom *Glochidion rubrum*, emgd. 19. II. 2010, HSU 10B10 (L. H. Wang).

118. *Athyma cama zoroastres* Butler, 1877 雙色帶蛺蝶
♀. PINDONG Co., Mudan, Gaoshifoshan, 4. II. 2010, reared fom *Glochidion rubrum*, emgd. 19. II. 2010, HSU 10B10 (L. H. Wang).



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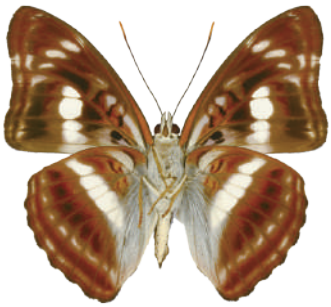

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119. *Athyma opalina hirayamai* (Matsumura, 1935) 流帶蛺蝶
♂. TAOYUAN CITY, Fuxing, Sileng, 1000m, 23. IX. 2014, emgd. 28. X. 2014, HSU 14J48 (Y. M. Hsu).

120. *Athyma opalina hirayamai* (Matsumura, 1935) 流帶蛺蝶
♀. TAOYUAN CITY, Fuxing, Sileng, 1000m, 23. IX. 2014, emgd. 5. XI. 2014, HSU 14J48 (Y. M. Hsu).

121. *Abrota ganga formosana* Fruhstorfer, 1909 瑙蛺蝶
♂. NANTOU Co., Renai, Aowanda, 5. VII. 2008 (T. W. Chen & N. Y. Tsai).

122. *Abrota ganga formosana* Fruhstorfer, 1909 瑙蛺蝶
♀. HUALIAN Co., Xiulin, Bilu, 2150m, 9. VII. 2018 (Y. F. Hsu).

123. *Euthalia irrubescens fulguralis* (Matsumura, 1909) 紅玉翠蛺蝶
♂. NANTOU Co., Renai, Huisun, 4. IV. 2021, reared from *Scurrula* sp., emgd. 15. VI. 2021, HSU 21D14 (Z. L. Chen, G. Y. Chen, M. H. Wu & Y. Q. Yeh).

124. *Euthalia irrubescens fulguralis* (Matsumura, 1909) 紅玉翠蛺蝶
♀. NANTOU Co., Renai, Huisun, 4. IV. 2021, reared from *Scurrula* sp., emgd. 8. VI. 2021, HSU 21D14 (Z. L. Chen, G. Y. Chen, M. H. Wu & Y. Q. Yeh).



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125. *Euthalia phemius* (Doubleday, [1848]) 尖翅翠蛺蝶
♂. TAIPEI CITY, Wenshan, Jingmei, 24. XI. 2020, reared from *Mangifera indica*, emgd. 30. XII. 2020, HSU 20L12 (Y. F. Hsu).

126. *Euthalia phemius* (Doubleday, [1848]) 尖翅翠蛺蝶
♀. XINBEI CITY, Xindian, Guishan, 22. XII. 2020, reared from *Mangifera indica*, emgd. 1. I. 2021, HSU 20M12 (Y. F. Hsu).

127. *Euthalia kosempona* Fruhstorfer, 1908 甲仙翠蛺蝶
♂. TAOYUAN CITY, Fuxing, Xuanyuan, 27. VI. 2018 (C. W. Huang & S. Y. Chen).

128. *Euthalia kosempona* Fruhstorfer, 1908 甲仙翠蛺蝶
♀. TAIZHONG CITY, Heping, Guguan, 1000m, 17. VI. 2012 (Y. C. Lin).

129. "*Euthalia pyrrha* var. *daitoensis* Matsumura 1919"
Holotype ♀ of *Euthalia pyrrha* var. *daitoensis* Matsumura 1919 ; " 臺 東 [Taito/ Taidong] Formosa Matsumura/ *E. pyrrha daitoensis*"(Systematic Entomology Laboratory, Hokkaido University, SEHU).

130. *Euthalia malapana* Shirôzu & Chung, 1958 馬拉巴翠蛺蝶
♂. TAIZHONG CITY, Heping, Shishanxi, 21. VII. 1997 (C. Y. Hung).



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131. *Euthalia malapana* Shirôzu & Chung, 1958 馬拉巴翠蛺蝶
♀. TAIZHONG CITY, Heping, Guguan, VII. 1988.

132. *Euthalia formosana* Fruhstorfer, 1908 臺灣翠蛺蝶
♂. XINBEI CITY, Wulai, 30. X. 2002, reared from *Quercus glauca*, emgd. 13. III. 2003, HSU 02K80.2 (L. W. Wu).

133. *Euthalia formosana* Fruhstorfer, 1908 臺灣翠蛺蝶
♀. XINBEI CITY, Wulai, 30. X. 2002, reared from *Quercus glauca*, emgd. 9. III. 2003, HSU 02K78.4 (C. L. Huang).

134. *Euthalia insulae* Hall, 1930 窄帶翠蛺蝶
♂. TAIZHONG CITY, Heping, Guguan, Bojinjiashan, emgd. 17. III. 2001 (C. C. Lu).

135. *Euthalia insulae* Hall, 1930 窄帶翠蛺蝶
♀. YILAN Co., Datong, Tuleng, 1600m, 11. VIII. 2009 (Y. F. Hsu).

136. *Dichorragia nesimachus formosanus* Fruhstorfer, 1909 流星蛺蝶
♂. JIAYI Co., Alishan, Dabang, 29. X. 2011, reared from *Meliosma rhoifolia*, emgd. 21. XI. 2011, HSU 11K35 (C. Y. Liao).



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137. *Dichorragia nesimachus formosanus* Fruhstorfer, 1909 流星蛺蝶
♀. TAIPEI CITY, Neihu, Dagouxi, 30. X. 2018, emgd. 21. XI. 2018 (L. Huang).

138. *Timelaea albescens formosana* Fruhstorfer, 1908 白裳貓蛺蝶
♂. PINGDONG Co., Wutai, Old Dawu, 1000m, 14/16. II. 2000, emgd. 31. III. 2000 (Y. T. Lo).

139. *Timelaea albescens formosana* Fruhstorfer, 1908 白裳貓蛺蝶
♀. PINGDONG Co., Wutai, Old Dawu, 1000m, 14/16. II. 2000, emgd. 23. III. 2000 (Y. T. Lo).

140. *Chitoria chrysolora* (Fruhstorfer, 1908) 金鎧蛺蝶
♂. NANTOU Co., Renai, Huisun, 700m, 8. X. 2011 (C. S. Chuang).

141. *Chitoria chrysolora* (Fruhstorfer, 1908) 金鎧蛺蝶
♀. NANTOU Co., Renai, Nanshanxi, 2. VII. 1999 (C. C. Lu).

142. *Chitoria chrysolora* (Fruhstorfer, 1908) ('Yellow form') 金鎧蛺蝶 (黃色型)
♀. PINGDONG Co., Chunri, Dahanshan, 25. XI. 2014, reared from *Celtis formosana*, emgd. 23. II. 2015, HSU 14L30 (Y. F. Hsu).

143. *Chitoria chrysolora* (Fruhstorfer, 1908) (gynandromorph) 金鎧蛺蝶 (雌雄型)
gynandromorph. XINBEI CITY, Wulai, 25. I. 2018, reared from *Celtis formosana*, emgd. 20. III. 2018, HSU 18A26 (L. Huang).



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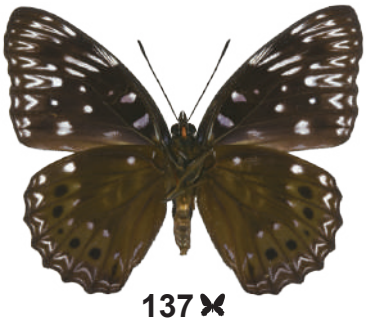

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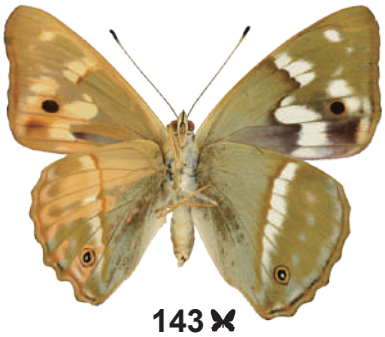

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144. *Chitoria ulupi arakii* Naritomi, 1959 武鎧蛺蝶

♂. XINZHU Co., Jianshi, Lidongshan, 19. IX. 2014, reared from *Celtis sinensis*, emgd. 17. XII. 2014, HSU 14J82 (C. W. Huang, C. L. Huang & L. H. Wang).

145. *Chitoria ulupi arakii* Naritomi, 1959 武鎧蛺蝶

♀. XINZHU Co., Jianshi, Lidongshan, 19. IX. 2014, reared from *Celtis sinensis*, emgd. 28. XII. 2014, HSU 14J82 (C. W. Huang, C. L. Huang & L. H. Wang).

146. *Helcyra plesseni* (Fruhstorfer, 1913) 普氏白蛺蝶

♂. PINGDONG Co., Wutai, 16. III. 2020, emgd. 10. IV. 2020 (G. Y. Chen).

147. *Helcyra plesseni* (Fruhstorfer, 1913) 普氏白蛺蝶

♀. TAIZHONG CITY, Heping, Guguan, Shaolai, 2. VIII. 2016 (Z. L. Chen).

148. *Helcyra superba takamukui* Matsumura, 1919 白蛺蝶

♂. NANTOU Co., Renai, Nanshanxi, 23. IV. 2014, reared from *Celtis biondii*, emgd. 4. VI. 2014, HSU 14D34 (Y. F. Hsu).

149. *Helcyra superba takamukui* Matsumura, 1919 白蛺蝶

♀. HUALIAN Co., Xiulin, Shikongzai, 25. IV. 2008, reared from *Celtis biondii*, emgd. 2. V. 2008, HSU 08D35 (C. K. Wang).



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150. *Sephisa chandra androdamas* Fruhstorfer, 1908 燦蛺蝶

♂. TAIPEI CITY, Shilin, Wanxi Industrial Rd., Right Branch Line, 13. IV. 2020, reared from *Quercus glauca*, emgd. 29. IV. 2020, HSU 20D01 (Y. M. Hsu).

151. *Sephisa chandra androdamas* Fruhstorfer, 1908 燦蛺蝶

♀. TAIPEI CITY, Shilin, Bixi Industrial Rd., 19. III. 2015, reared from *Quercus glauca*, emgd. 5. V. 2015, HSU 15C19 (Y. M. Hsu).

152. *Sephisa daimio* Matsumura, 1910 臺灣燦蛺蝶

♂. HUALIAN Co., Xiulin, Bilu, 30. VII. 2019 (C. W. Huang).

153. *Sephisa daimio* Matsumura, 1910 臺灣燦蛺蝶

♀. XINZHU Co., Jianshi, Yulao, 1200m, 14. II. 2006, reared from *Quercus gilva*, emgd. 14. V. 2006, HSU 06B24 (L. H. Wang).



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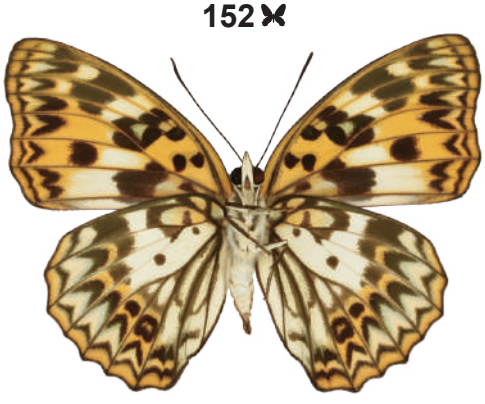

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154. *Hestina assimilis formosana* (Moore, [1896]) 紅斑脈蛺蝶
♂. TAIPEI CITY, Wenshan, Chanchushan, 7. VI. 2019 (L. Huang).

155. *Hestina assimilis formosana* (Moore, [1896]) (melanized form) 紅斑脈蛺蝶 (黑化型)
♂. TAIPEI CITY, Wenshan, Muzha, Hills S. of NCCU campus, 20. III. 2009 (N. Y. Tsai).

156. *Hestina assimilis formosana* (Moore, [1896]) 紅斑脈蛺蝶
♀. TAIPEI CITY, Wenshan, Chanchushan, 10. VII. 2019 (L. Huang).

157. *Hestina assimilis assimilis* (Linnaeus, 1758) 紅斑脈蛺蝶
♂. LIANJIANG Co., Beigan, Qinbi, 26. VI. 2019 (Y. Y. Lu).



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158. *Hestina assimilis assimilis* (Linnaeus, 1758) 紅斑脈蛺蝶

♀. JINEMN Co., Jincheng, Shuitou, 20. XI. 2013, reared from *Celtis sinensis*, emgd. 2. IV. 2014, HSU 13L50 (Y. F. Hsu & H. C. Huang).

159. *Sasakia charonda formosana* Shirôzu, 1963 大紫蛺蝶

♂. TAOYUAN CITY, Fuxing, Baling/ Xuanyuan, 2. VI. 1986 (Y. F. Hsu).

160. *Sasakia charonda formosana* Shirôzu, 1963 大紫蛺蝶

♀. TAOYUAN CITY, Fuxing, Xuanyuan, 600m, 7. VI. 2015, reared from *Celtis sinensis*, emgd. 20. IX. 2015, HSU 15F6 (C. C. Lu, jr).

161. *Rohana parisatis staurakius* Fruhstorfer, 1913 羅蛺蝶

♂. JINMEN Co., Jinsha, Wuhushan, 10. XI. 2024, reared from *Celtis biondii*, emgd. 27. XII. 2024, HSU 24L25 (H. C. Huang).

162. *Rohana parisatis staurakius* Fruhstorfer, 1913 羅蛺蝶

♀. JINMEN Co., Jinsha, Wuhushan, 10. XI. 2024, reared from *Celtis biondii*, emgd. 24. XII. 2024, HSU 24L25 (H. C. Huang).



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163. *Ariadne ariadne pallidior* (Fruhstorfer, 1899) 波蛺蝶
♂. TAINAN CITY, Xinhua, 20m, 20. XI. 2011 (Y. F. Hsu).

164. *Ariadne ariadne pallidior* (Fruhstorfer, 1899) 波蛺蝶
♀. TAINAN CITY, Xinhua, 20m, 20. XI. 2011 (Y. F. Hsu).

165. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 (WSF) 網絲蛺蝶 (高溫 / 雨季型)
♂. XINBEI CITY, Wulai, Fushan Research Station, 700m, 4/5. VIII. 2006 (Y. F. Hsu & H. C. Huang).

166. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 (DSF) 網絲蛺蝶 (低溫 / 乾季型)
♂. TAIPEI CITY, Wenshan, Xianjiyan, 16. III. 2011, reared from *Ficus* sp., emgd. 9. IV. 2011 (C. L. Huang).

167. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 ('Yellow form') 網絲蛺蝶 (黃色型)
♂. TAIPEI CITY, Neihu, Neigou, 3. I. 2009 (H. C. Huang).

168. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 (WSF) 網絲蛺蝶 (高溫 / 雨季型)
♀. XINBEI CITY, Wulai, Jiajiuliao, 200m, 24. X. 2011 (Y. C. Lin).



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169. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 (DSF) 網絲蛺蝶 (低溫 / 乾季型)
♀. TAIPEI CITY, Wenshan, Chanchushan, 17. II. 2009, reared from *Ficus microcarpa*, emgd. 21. II. 2009, HSU 09B17 (Y. F. Hsu).

170. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 ('Yellow form') 網絲蛺蝶 (黃色型)
♀. TAIPEI CITY, Shilin, Tianxiyuan, 600m, 27. VII. 2011 (H. C. Huang).

171. *Cyrestis thyodamas chinensis* Martin, 1903 網絲蛺蝶
♂. LIANJIANG Co., Beigan, Disposal Area, 20. X. 2020 (Y. F. Hsu).

172. *Cyrestis thyodamas chinensis* Martin, 1903 網絲蛺蝶 (黃色型)
♀. LIANJIANG Co., Beigan, Leishan, 22. VII. 2020 (Y. F. Hsu).

173. *Junonia almana* (Linnaeus, 1758) (WSF) 眼蛺蝶 (高溫 / 雨季型)
♂. JILONG CITY, Bisha Harbor, 9. XI. 2010 (J. H. Lin).

174. *Junonia almana* (Linnaeus, 1758) (DSF) 眼蛺蝶 (低溫 / 乾季型)
♂. TAINAN CITY, Liujia, 20m, 20. XI. 2011 (Y. F. Hsu).



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175. *Junonia almana* (Linnaeus, 1758) (WSF) 眼蛺蝶 (高溫 / 雨季型)
♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 5. VII. 2002, reared from *Bonnaya ruellioides*, emgd. 5. VIII. 2002, HSU 02G5 (H. S. Chuen & F. Z. Lin).

176. *Junonia almana* (Linnaeus, 1758) (DSF) 眼蛺蝶 (低溫 / 乾季型)
♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 1. XI. 2000 (Y. F. Hsu).

177. *Junonia lemonias aenaria* (Fruhstorfer, 1912) (WSF) 鱗紋眼蛺蝶 (高溫 / 雨季型)
♂. PINGDONG Co., Checheng, Xiaojianshan, 4. IX. 2010 (Y. F. Hsu).

178. *Junonia lemonias aenaria* (Fruhstorfer, 1912) (DSF) 鱗紋眼蛺蝶 (低溫 / 乾季型)
♂. PINGDONG Co., Sandimen, 300m, 2. I. 2009 (Y. F. Hsu).

179. *Junonia lemonias aenaria* (Fruhstorfer, 1912) (WSF) 鱗紋眼蛺蝶 (高溫 / 雨季型)
♀. JIAYI Co., Alishan, Shizhuo/ Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu).

180. *Junonia lemonias aenaria* (Fruhstorfer, 1912) (DSF) 鱗紋眼蛺蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Dongshan, Kantoushan, 24. XII. 2019 (C. W. Huang & S. Y. Chen).



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181. *Junonia orithya* (Linnaeus, 1758) 青眼蛺蝶
♂. TAIPEI CITY, Shilin, Tianxiyuan, 300m, 21. IX. 2010 (W. H. Chien).

182. *Junonia orithya* (Linnaeus, 1758) 青眼蛺蝶
♀. HUALIAN Co., Yuli, Chikeshan, 4. V. 2019 (J. Y. Liang).

183. *Junonia iphita* (Cramer, [1779]) (WSF) 黯眼蛺蝶 (高溫 / 雨季型)
♂. NANTOU Co., Renai, Huisun Forestry Station, 16. X. 2010 (Y. F. Hsu).

184. *Junonia iphita* (Cramer, [1779]) (DSF) 黯眼蛺蝶 (低溫 / 乾季型)
♂. PINGDONG Co., Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu).

185. *Junonia iphita* (Cramer, [1779]) (WSF) 黯眼蛺蝶 (高溫 / 雨季型)
♀. PINGDONG Co., Chunri, Dahan Forest Trail, 21+Km, 20. VII. 2020 (C. W. Huang, C. J. Chang & J. Y. Liang).

186. *Junonia iphita* (Cramer, [1779]) (DSF) 黯眼蛺蝶 (低溫 / 乾季型)
♀. JIAYI Co., Alishan, Shanmei, 500m, 31. III. 2007 (Y. F. Hsu).



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187. *Junonia atlites* (Linnaeus, 1763) 波紋眼蛺蝶

♂. JINMEN Co., Jinsha, Wuhushan, 30. IX. 2000 (Y. T. Lo).

188. *Junonia atlites* (Linnaeus, 1763) 波紋眼蛺蝶

♀. PINGDONG Co., Mudan, Xuhai, 23. X. 2009 (Y. F. Hsu).

189. *Kallima inachus formosana* Fruhstorfer, 1913 枯葉蝶

♂. HUALIAN Co., Xiulin, Huide Tunnel, 30m, 25. VII. 2008 (M. H. Sun).

190. *Kallima inachus formosana* Fruhstorfer, 1913 枯葉蝶

♀. HUALIAN Co., Xiulin, Shikongzai, 60m, 25. VII. 2008 (M. H. Sun).



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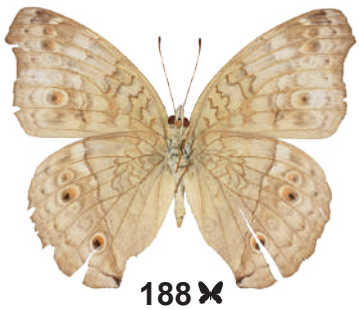

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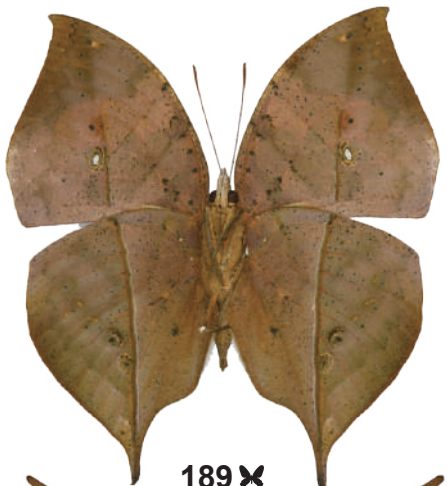

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191. *Yoma sabina podium* Tsukada, 1985 黃帶隱蛺蝶

♂. PINGDONG Co., Shizi, Lilongshan, 500m, 23. VI. 2007, reared from *Ruellia prostrata*, emgd. 27. VII. 2007, HSU 07F40 (C. C. Lu, L. W. Wu & L. H. Wang).

192. *Yoma sabina podium* Tsukada, 1985 黃帶隱蛺蝶

♀. PINGDONG Co., Shizi, Lilongshan, 500m, 23. VI. 2007, reared from *Ruellia prostrata*, emgd. 27. VII. 2007, HSU 07F40 (C. C. Lu, L. W. Wu & L. H. Wang).

193. *Vanessa indica* (Herbst, 1794) 大紅蛺蝶

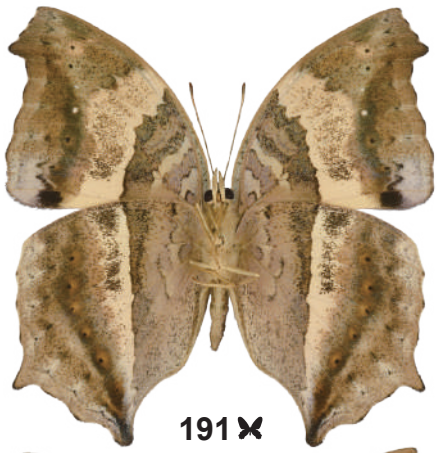
♂. HUALIAN Co., Xiulin, Guanyuan, 5. IX. 2018 (C. W. Huang).

194. *Vanessa indica* (Herbst, 1794) 大紅蛺蝶

♀. JILONG CITY, NTOU campus, 5. XI. 2009 (Z. H. Yen).



191♂



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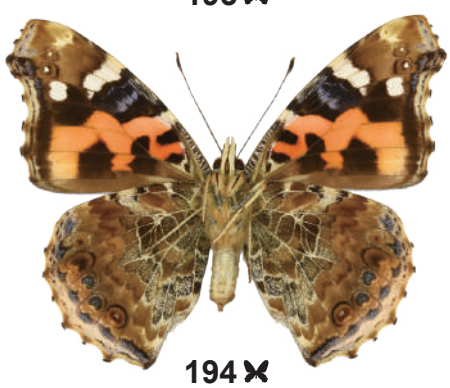

194♀

195. *Vanessa cardui* (Linnaeus, 1758) 小紅蛺蝶
♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 18. X. 2019, reared from *Artemisia indica*, emgd. 8. XI. 2019, HSU 19K16 (L. Huang).

196. *Vanessa cardui* (Linnaeus, 1758) 小紅蛺蝶
♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 18. X. 2019, reared from *Artemisia indica*, emgd. 5. XI. 2019, HSU 19K16 (L. Huang).

197. *Polygonia c-album asakurai* Nakahara, 1920 突尾鉤蛺蝶
♂. XINZHU Co., Jianshi, Lidongshan, 1500m, 31. III. 2009, reared from *Zelkova serrata*, emgd. 12. IV. 2009, HSU 09C56 (C. L. Huang).

198. *Polygonia c-album asakurai* Nakahara, 1920 突尾鉤蛺蝶
♀. HUALIAN Co., Xiulin, Cien, 15. VII. 2007, reared from *Ulmus uyematsui*, emgd. 27. VII. 2007, HSU 07G6 (C. C. Lu & L. H. Wang).

199. *Polygonia c-aureum lunulata* Esaki & Nakahara, 1924 (WSF) 黃鉤蛺蝶 (高溫 / 雨季型)
♂. TAIPEI CITY, Wenshan, Jingmei, 18. IX. 2008 (Y. F. Hsu).

200. *Polygonia c-aureum lunulata* Esaki & Nakahara, 1924 (DSF) 黃鉤蛺蝶 (低溫 / 乾季型)
♂. JIAYI Co., Xingang, Yuemei, 1. XII. 2008 (Y. F. Hsu).



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201. *Polygonia c-aureum lunulata* Esaki & Nakahara, 1924 (WSF) 黃鉤蛺蝶 (高溫 / 雨季型)
♀. JIAYI Co., Xingang, Yuemei, 29. XI. 2008, reared from *Humulus scandens*, emgd. 13. XII. 2008, HSU 08L29 (Y. F. Hsu).

202. *Polygonia c-aureum lunulata* Esaki & Nakahara, 1924 (DSF) 黃鉤蛺蝶 (低溫 / 乾季型)
♀. HUALIAN Co., Xiulin, Huitouwan, 700m, 30. I. 2007 (Y. F. Hsu).

203. *Polygonia c-aureum c-aureum* (Linnaeus, 1758) (DSF) 黃鉤蛺蝶 (低溫 / 乾季型)
♂. JINMEN Co., Jinhu, Jinmen Botanical Garden, 5. XI. 2015 (H. C. Huang).

204. *Polygonia c-aureum c-aureum* (Linnaeus, 1758) (DSF) 黃鉤蛺蝶 (低溫 / 乾季型)
♀. JINMEN Co., Jinsha, Tianpu Dam, 6. XI. 2015 (C. W. Huang).

205. *Kaniska canace drilon* (Fruhstorfer, 1908) 琉璃蛺蝶
♂. XINBEI CITY, Bali, Guanyinshan, 400/450m, 28. IV. 2011 (Z. H. Yen).

206. *Kaniska canace drilon* (Fruhstorfer, 1908) 琉璃蛺蝶
♀. TAIPEI CITY, Neihu, Daluntou, 21. X. 2013, emgd. 22. XI. 2013 (Y. M. Hsu).



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207. *Kaniska canace canace* (Linnaeus, 1763) 琉璃蛺蝶
♂. JINEMN Co., Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang).

208. *Kaniska canace canace* (Linnaeus, 1763) 琉璃蛺蝶
♀. LIANJIANG Co., Nangan, Tree Nursery, 18. VI. 2014 (C. L. Huang).

209. *Kaniska canace ishima* (Fruhstorfer, 1898) 琉璃蛺蝶
♂. TAIDONG Co., Lanyu, Sidaogou, 13/15. VI. 2003 (Y. F. Hsu).

210. *Nymphalis xanthomelas formosana* (Matsumura, 1925) 緋蛺蝶
♂. TAOYUAN CITY, Fuxing, Fufushan, 1400m, 4. III. 2020, reared from *Zelkova serrata*, emgd. 6. IV. 2020, HSU 20C4 (Y. F. Hsu).

211. *Nymphalis xanthomelas formosana* (Matsumura, 1925) 緋蛺蝶
♀. NANTOU Co., Renai, Kunyang, 24. VI. 2016 (J. Y. Liang).



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212. *Symbrenthia formosanus* Fruhstorfer, 1908 臺灣盛蛺蝶
♂. XINBEI CITY, Wulai, 150m, 8. XI. 2004, reared from *Boehmeria nivea*, emgd. 18. XI. 2004, HSU 04L21 (Y. F. Hsu).

213. *Symbrenthia formosanus* Fruhstorfer, 1908 臺灣盛蛺蝶
♀. TAOYUAN CITY, Fuxing, Daman, 10. VI. 2005, reared from *Boehmeria nivea*, emgd. 22/23. VI. 2005, HSU 05F28 (Y. F. Hsu).

214. *Symbrenthia lilaea* (Hewitson, 1864) 散紋盛蛺蝶
♂. MIAOLI Co., Sanwan, Emei Bridge, 14. I. 2006, reared from *Boehmeria nivea*, emgd. 3. II. 2006, HSU 06A12 (Y. F. Hsu).

215. *Symbrenthia lilaea* (Hewitson, 1864) 散紋盛蛺蝶
♀. XINZHU Co., Zhudong, 100m, 28. III. 2008 (Y. F. Hsu).

216. *Symbrenthia brabira scatinia* Fruhstorfer, 1908 黃豹盛蛺蝶
♂. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

217. *Symbrenthia brabira scatinia* Fruhstorfer, 1908 黃豹盛蛺蝶
♀. TAIZHONG CITY, Heping, Shangguguan, 900m, 30. X. 2006 (Y. F. Hsu).



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218. *Hypolimnas misippus* (Linnaeus, 1764) 雌擬幻蛺蝶

♂. TAINAN CITY, Xinhua, 26. VII. 2007, reared from *Portulaca oleracea*, emgd. 2. IX. 2007, HSU 07G35 (Y. F. Hsu).

219. *Hypolimnas misippus* (Linnaeus, 1764) 雌擬幻蛺蝶

♀. TAINAN CITY, Xinhua, 26. VII. 2007, reared from *Portulaca oleracea*, emgd. 2. IX. 2007, HSU 07G35 (Y. F. Hsu).

220. *Hypolimnas bolina kezia* (Butler, 1877) 幻蛺蝶

♂. TAIDONG Co., Lanyu, Qiwei, 16. III. 2012, reared from *Achyranthes aspera* var. *rubrofusca*, emgd. 1. V. 2012, HSU 12C16 (Y. F. Hsu).

221. *Hypolimnas bolina kezia* (Butler, 1877) 幻蛺蝶

♀. TAIDONG Co., Haiduan, Liyuan, Southern Cross-Island Highway, 163Km, 20/21. V. 2017 (C. W. Huang).

222. *Hypolimnas bolina philippensis* (Butler, 1874) 幻蛺蝶菲律賓型 (亞種)

♂. TAIDONG Co., Lanyu, Xiaotianchi, 8. IX. 2008 (C. H. Yen).

223. *Hypolimnas bolina philippensis*? (Butler, 1874) 幻蛺蝶菲律賓型 (亞種)

♀. PINGDONG Co., Chaozhou, Linhousilin, 10. VII. 2024, emgd. 22. VIII. 2024, HSU 24G9 (Y. F. Hsu).



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224. *Hypolimnas bolina iacintha* (Drury, 1773) 幻蛺蝶大陸型 (亞種)
♀. TAIDONG Co., Lanyu, Cross-Island Road, 19. IV. 2024 (Y. M. Hsu).

225. *Hypolimnas bolina* ?*bolina* (Linnaeus, 1758) 幻蛺蝶紅斑型 (? 承名亞種)
♀. KAOHSIUNG CITY, Niaosong, Chengqing Lake, 31. VII. 2019 (Y. H. Ou).

226. *Hypolimnas anomala truentus* Fruhstorfer, 1912 端紫幻蛺蝶
♂. TAIDONG Co., Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang).

227. *Hypolimnas anomala truentus* Fruhstorfer, 1912 端紫幻蛺蝶
♀. TAIDONG Co., Lanyu, 17. XII. 2009, reared from *Pipturus arborescens*, emgd. 12. I. 2010, HSU 09M15 (J. H. Lin).



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228. *Hypolimnas anomala truentus* Fruhstorfer, 1912 端紫幻蛺蝶

♂. TAIDONG Co., Ludao, 12. VIII. 2010, reared from *Pipturus arborescens*, emgd. 6. IX. 2010, HSU 10H49 (H. C. Huang).

229. *Hypolimnas anomala truentus* Fruhstorfer, 1912 端紫幻蛺蝶

♀. TAIDONG Co., Ludao, 12. VIII. 2010, reared from *Pipturus arborescens*, emgd. 6. IX. 2010, HSU 10H49 (H. C. Huang).

230. *Calinaga formosana* Fruhstorfer, 1908 臺灣絹蛺蝶

♂. XINBEI CITY, Wulai, Fushan, 400m, 19. III. 2010 (Y. F. Hsu).

231. *Calinaga formosana* Fruhstorfer, 1908 臺灣絹蛺蝶

♀. TAOYUAN CITY, Fuxing, Ronghua, 26. III. 2021 (C. W. Huang).



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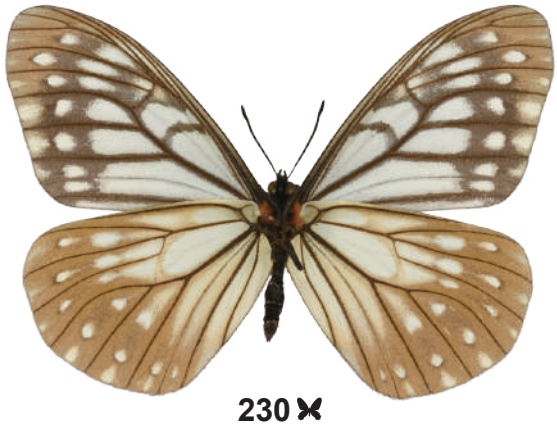
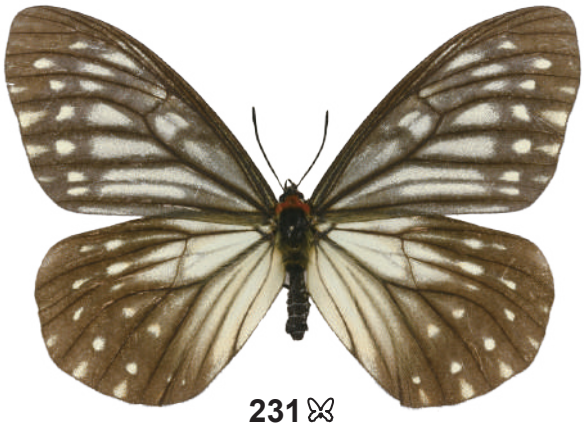
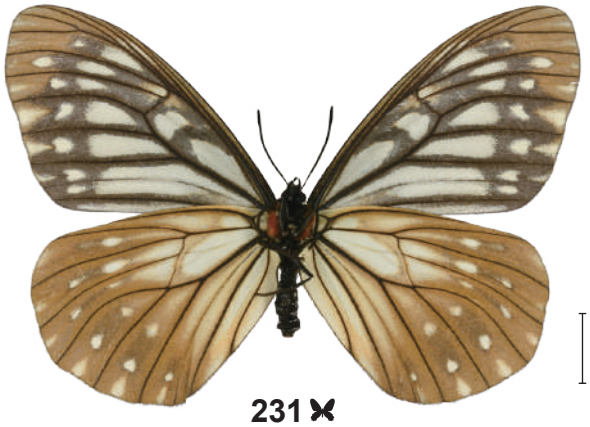


230♀



231♂



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232. *Charaxes eudamippus formosanus* (Rothschild, 1899) 雙尾蛺蝶
♂. TAOYUAN CITY, Fuxing, Baling, 23. IV. 2004 (Y. F. Hsu).

233. *Charaxes eudamippus formosanus* (Rothschild, 1899) 雙尾蛺蝶
♀. TAIZHONG CITY, Dongshi, Zhongzheng Park, 9. V. 2005, reared from *Wisteriopsis reticulata*, emgd. 20. VI. 2005, HSU 05E39 (C. L. Huang & C. M. Wu).

234. *Charaxes narcaea meghaduta* (Fruhstorfer, 1908) 小雙尾蛺蝶
♂. XINBEI CITY, Danshui, Erziping, 20. IX. 2011, reared from *Maackia taiwanensis*, emgd. 31. X. 2011, HSU 11J6 (H. C. Huang).



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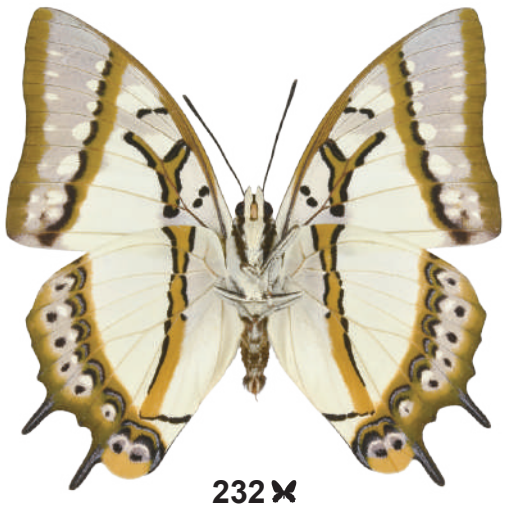

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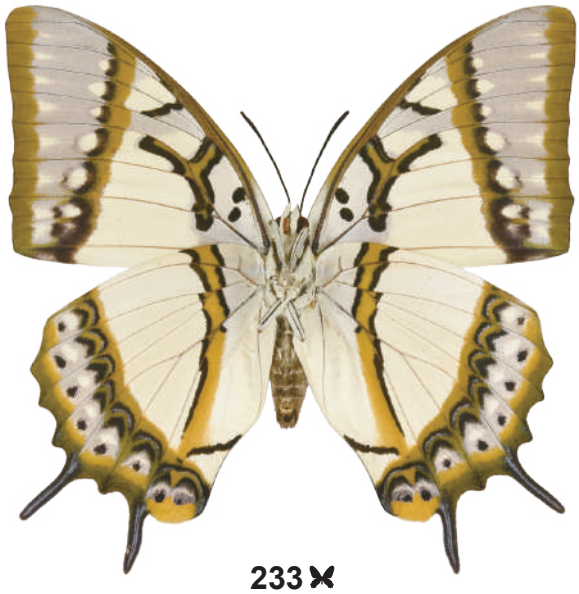

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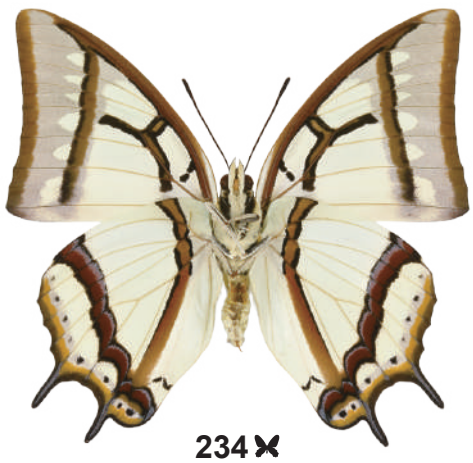

234♀

235. *Charaxes narcaea meghaduta* (Fruhstorfer, 1908) 小雙尾蛺蝶

♀. XINBEI CITY, Wulai, Fushan Botanical Garden, 700m, 5. VIII. 2006, reared from *Maackia taiwanensis*, emgd. 1. IX. 2006 (Y. F. Hsu & H. C. Huang).

236. *Charaxes bernardus* (Fabricius, 1793) 玉帶蛺蝶

♂. LIANJIANG Co., Beigan, Jinsha, 18. XI. 2013 (L. H. Wang & H. Y. Lee).

237. *Charaxes bernardus* (Fabricius, 1793) 玉帶蛺蝶

♀. LIANJIANG Co., Nangan, Jinsha, 18. XI. 2013, reared from *Camphora officinarum*, emgd. 5. I. 2014 (L. H. Wang & H. Y. Lee).



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238. *Stichophthalma howqua formosana* Fruhstorfer, 1908 箭環蝶
♂. NANTOU Co., Lugu, Fenghuanggu Bird Park, 8. VII. 2012 (Y. F. Hsu).

239. *Stichophthalma howqua formosana* Fruhstorfer, 1908 箭環蝶
♀. TAIZHONG CITY, Heping, Malunshan, 30. X. 2016, reared from bamboo, emgd. 4. VI. 2017, HSU16K33 (H. C. Huang).



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240. *Faunis eumeus* (Drury, 1770) 串珠環蝶

♂. JILONG CITY, Zhongzhen, Haimentianxian, 13. I. 2001 (M. H. Lin).

241. *Faunis eumeus* (Drury, 1770) 串珠環蝶

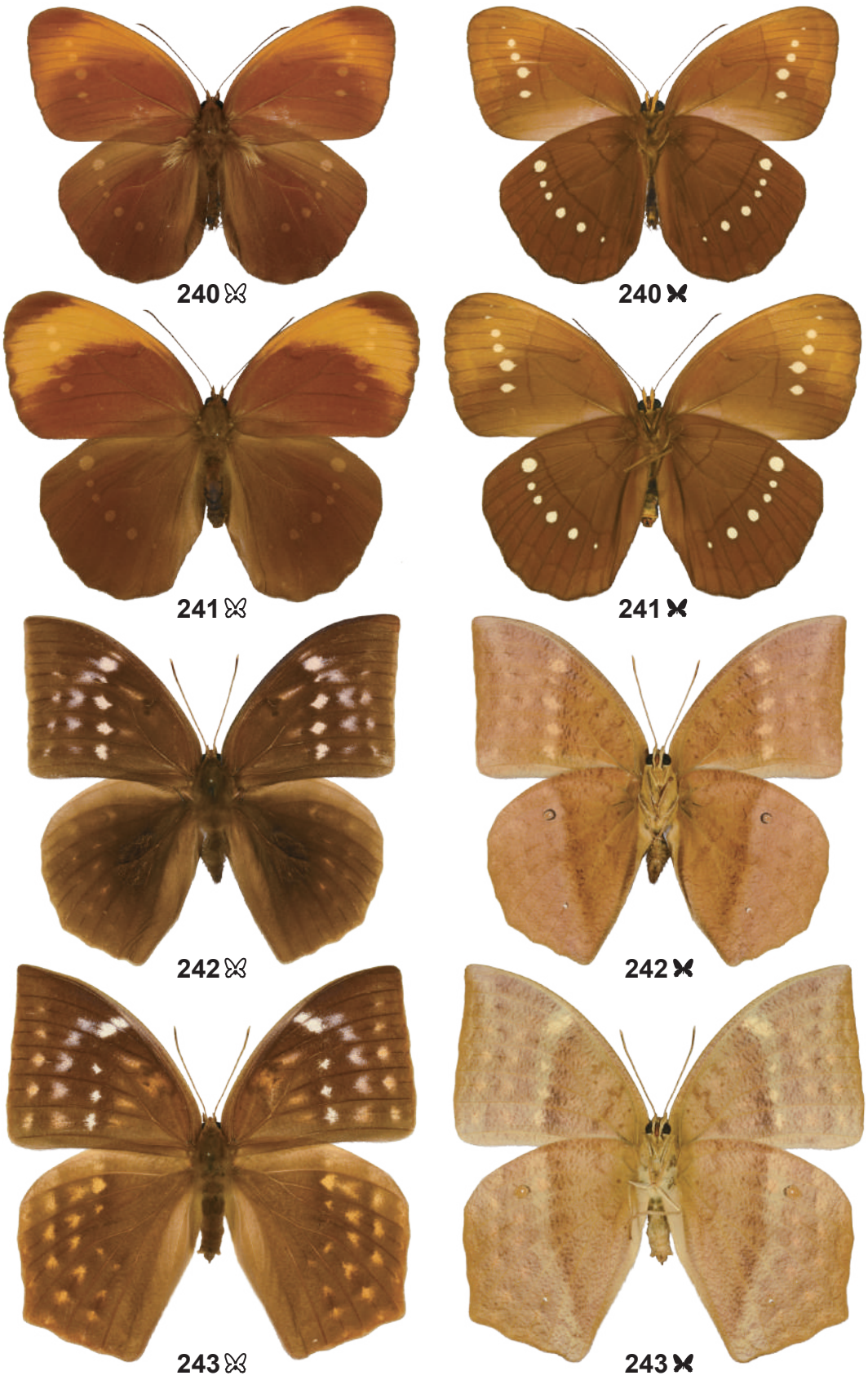
♀. JILONG CITY, Zhongzhen, Haimentianxian, 15. I. 2001 (M. H. Lin).

242. *Discophora sondaica tulliana* Stichel, 1905 方環蝶

♂. TAIPEI CITY, Shilin, Zhishanyan, 12. I. 2007, reared from *Bambusa* sp., emgd. 23. III. 2007, HSU 07A19 (Y. F. Hsu).

243. *Discophora sondaica tulliana* Stichel, 1905 方環蝶

♀. TAIPEI CITY, Shilin, Zhishanyan, 12. I. 2007, reared from *Bambusa* sp., emgd. 11. III. 2007, HSU 07A19 (Y. F. Hsu).


240 ♂
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244. *Ypthima baldus zodina* Fruhstorfer, 1911 (WSF) 小波眼蝶 (高溫 / 雨季型)
♂. TAIPEI CITY, Beitou, Zhonghu, 28. IX. 2021 (C. W. Huang).

245. *Ypthima baldus zodina* Fruhstorfer, 1911 (DSF) 小波眼蝶 (低溫 / 乾季型)
♂. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

246. *Ypthima baldus zodina* Fruhstorfer, 1911 (WSF) 小波眼蝶 (高溫 / 雨季型)
♀. TAIDONG Co., Lanyu, Qiwei, 27. III. 2010 (J. H. Lin).

247. *Ypthima baldus zodina* Fruhstorfer, 1911 (DSF) 小波眼蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Danei, Erxi, Hushan, 13. II. 2012 (Y. F. Hsu).

248. *Ypthima argus okurai* Okano, 1962 (WSF) 北方小波眼蝶 (高溫 / 雨季型)
♂. KAOHSIUNG CITY, Taoyuan, Fenggangshan,1100/1300m, 29. IX. 2020, reared from *Oplismenus* sp., emgd. 12. XI. 2020, HSU 20J26 (Y. F. Hsu).

249. *Ypthima argus okurai* Okano, 1962 (DSF) 北方小波眼蝶 (低溫 / 乾季型)
♂. PINGDONG Co., Wutai, Wutoushan, 1200m, 4. IV. 2002 (C. C. Lu).

250. *Ypthima argus okurai* Okano, 1962 (WSF) 北方小波眼蝶 (高溫 / 雨季型)
♀. KAOHSIUNG CITY, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su).

251. *Ypthima argus okurai* Okano, 1962 (DSF) 北方小波眼蝶 (低溫 / 乾季型)
♀. PINGDONG Co., Wutai, Wutoushan, 1200m, 4. IV. 2002 (Y. F. Hsu, C. C. Lu & C. L. Huang).

252. *Ypthima tappana* Matsumura, 1909 達邦波眼蝶
♂. PINGDONG Co., Shizi, Shouka, 8/9. V. 2020 (Y. F. Hsu & J. Y. Liang).

253. *Ypthima tappana* Matsumura, 1909 達邦波眼蝶
♀. JILONG CITY, Longgang Trail, 50m, 11. IV. 2010 (C. L. Huang).



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254. *Ypthima atra taiwana* Lamas, 2010 大波眼蝶
♂. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

255. *Ypthima atra taiwana* Lamas, 2010 大波眼蝶
♀. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

256. *Ypthima yamanakai* Sonan, 1938 白漪波眼蝶
♂. HUALIAN Co., Xiulin, Xinbaiyang, 1700m, 19. VI. 2009 (L. H. Wang).

257. *Ypthima yamanakai* Sonan, 1938 白漪波眼蝶
♀. XINZHU Co., Jianshi, Yulao, 1500m, 25. VI. 2009 (L. H. Wang).

258. *Ypthima angustipennis* Takahashi, 2000 狹翅波眼蝶
♂. TAOYUAN CITY, Fuxing, Xuanyuan, 1000m, 31. V. 2011 (J. H. Lin).

259. *Ypthima angustipennis* Takahashi, 2000 狹翅波眼蝶
♀. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).



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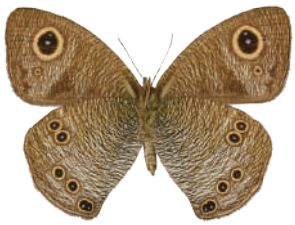

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260. *Ypthima multistriata* Butler, 1883 密紋波眼蝶
♂. KAOHSIUNG CITY, Taoyuan, Zhongzhiguan, 28. IV. 2020 (C. W. Huang).

261. *Ypthima multistriata* Butler, 1883 密紋波眼蝶
♀. NANTOU Co., Renai, Huisun, Forestry Station, 16. X. 2010 (Y. F. Hsu).

262. *Ypthima esakii esakii* Shirôzu, 1960 (WSF) 江崎波眼蝶 (高溫 / 雨季型)
♂. KAOHSIUNG CITY, Taoyuan, Shidong, 600m, 11. VIII. 2011 (Y. F. Hsu).

263. *Ypthima esakii esakii* Shirôzu, 1960 (DSF) 江崎波眼蝶 (低溫 / 乾季型)
♂. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

264. *Ypthima esakii esakii* Shirôzu, 1960 (WSF) 江崎波眼蝶 (高溫 / 雨季型)
♀. HUALIAN Co., Xiulin, Lushui, 450m, 20. V. 2007 (L. H. Wang).

265. *Ypthima esakii esakii* Shirôzu, 1960 (DSF) 江崎波眼蝶 (低溫 / 乾季型)
♀. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

266. *Ypthima esakii wangi* Lee, 1998 江崎波眼蝶北部亞種
♂. XINBEI CITY, Ruifang, Nanya, 26. IX. 1999 (Y. F. Hsu).

267. *Ypthima esakii wangi* Lee, 1998 江崎波眼蝶北部亞種
♀. XINBEI CITY, Ruifang, Nanya, 12. X. 1999 (Y. F. Hsu).



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268. *Ypthima akragas* Fruhstorfer, 1911 白帶波眼蝶
♂. PINGDONG Co., Wutai, Wutoushan, 1100/1200m, 5. V. 2007 (Y. F. Hsu).

269. *Ypthima akragas* Fruhstorfer, 1911 白帶波眼蝶
♀. HUALIAN Co., Xiulin, Bilu, 2150m, 9. VII. 2018 (Y. F. Hsu).

270. *Ypthima praenubila kanonis* Matsumura, 1929 巨波眼蝶 (臺灣北部亞種)
♂. TAIPEI CITY, Beitou, Datunshan, 800m, 18. VI. 2007 (Y. A. Lin).

271. *Ypthima praenubila kanonis* Matsumura, 1929 巨波眼蝶 (臺灣北部亞種)
♀. TAIPEI CITY, Beitou, Datunshan, 950m, 3. VII. 2008 (Y. F. Hsu).

272. *Ypthima praenubila neobilia* Murayama, 1980 巨波眼蝶 (臺灣中南部亞種)
♂. TAIDONG Co., Haiduan, Liyuan, 1750/1800m, 18/19. VI. 2020 (Y. F. Hsu & C. W. Huang).

273. *Ypthima praenubila neobilia* Murayama, 1980 巨波眼蝶 (臺灣中南部亞種)
♀. TAIDONG Co., Haiduan, Liyuan, 27. VI. 2020, emgd. 25. VI. 2021, HSU 20F18 (Y. Q. Yeh & Z. L. Chen).

274. *Ypthima norma posticalis* Matsumura, 1909 罕波眼蝶
♂. “13. 11. 3. 烏尖連峯 [3. XI. 1938. TAIPEI CITY: Beitou, Wujianlianfeng]” (TARI).

275. *Ypthima norma posticalis* Matsumura, 1909 罕波眼蝶
♀. [No label, data presumably same as Fig. 267] (TARI).



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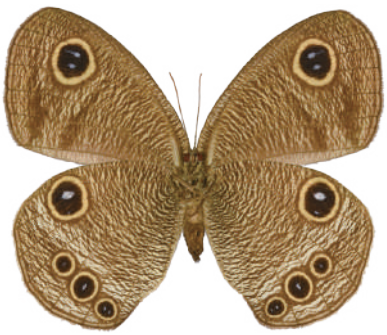

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276. *Ypthima norma norma* Westwood, 1851 罕波眼蝶
♂. LIANJIANG Co., Beigan, Daqiu, 2. IX. 2014 (C. L. Huang & H. Y. Lee).

277. *Ypthima norma norma* Westwood, 1851 罕波眼蝶
♀. LIANJIANG Co., Beigan, Daqiu, 31. VII. 2008, reared from *Panicum* sp., emgd. 29. X. 2008, HSU 08H32 (D. C. Chen).

278. *Ypthima wenlungi* Takahashi, 2007 文龍波眼蝶
♂. KAOHSIUNG CITY, Taoyuan, Fenggangshan, 1300m, 30. IX. 2007, reared from *Oplismenus* sp., emgd. 26. XI. 2007, HSU 07J61 (Y. F. Hsu).

279. *Ypthima wenlungi* Takahashi, 2007 文龍波眼蝶
♀. KAOHSIUNG CITY, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su).

280. *Ypthima lisandra* (Cramer, [1780]) 圓翅波眼蝶
♂. JINMEN Co., Jinhu, Jianhua, 20. VI. 2010, reared from *Paspalum conjugatum*, emgd. 26. VII. 2010, HSU 10F29 (C. K. Wang).

281. *Ypthima lisandra* (Cramer, [1780]) 圓翅波眼蝶
♀. JINMEN Co., Jinhu, Jianhua, 20. VI. 2010 (C. K. Wang).

282. *Palaeonympha opalina macrophthalmia* Fruhstorfer, 1911 古眼蝶
♂. TAOYUAN CITY, Fuxing, Baling Ancient Trail, 5. IV. 2017 (L. Huang).

283. *Palaeonympha opalina macrophthalmia* Fruhstorfer, 1911 古眼蝶
♀. PINGDONG Co., Chunri, Danhanshan, 26. IV. 2008 (R. K. Dong).

284. *Zophoessa dura neoclides* (Fruhstorfer, 1909) 大幽眼蝶
♂. TAIDONG Co., Haiduan, Southern Cross-Island Highway, 160Km, 20/21. V. 2017 (C. W. Huang).



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285. *Zophoessa dura neoclides* (Fruhstorfer, 1909) 大幽眼蝶
♀. HUALIAN Co., Xiulin, Guanyuan, 2200m, 7. VII. 2006 (L. H. Wang).

286. *Zophoessa siderea kanoi* (Esaki & Nomura, 1937) 圓翅幽眼蝶
♂. HUALIAN Co., Xiulin, Kuailin, 2100m, 14. I. 2007, reared from *Yushania niitakayamensis*, emgd. 13. III. 2007, HSU 07A22.2 (L. H. Wang).

287. *Zophoessa siderea kanoi* (Esaki & Nomura, 1937) 圓翅幽眼蝶
♀. HUALIAN Co., Xiulin, Nenggao Trail, 25Km, 1800m, 1. I. 2007, reared from *Yushania niitakayamensis*, emgd. 4. III. 2007, HSU 07A10 (L. H. Wang).

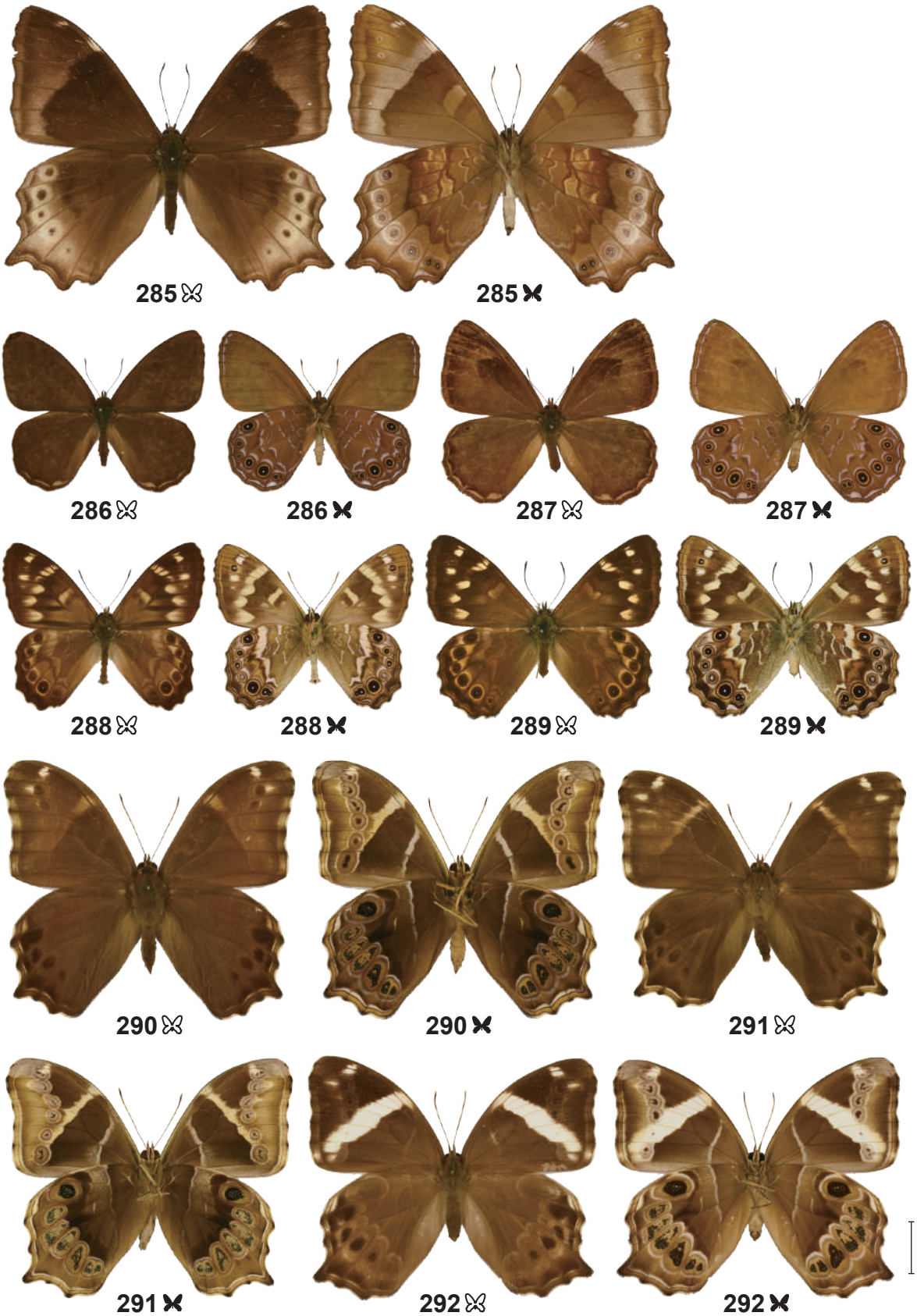
288. *Zophoessa niitakana* (Matsumura, 1906) 玉山幽眼蝶
♂. NANTOU Co., Renai, Yunhai, 2400m, 13. I. 2007, reared from *Yushania niitakayamensis*, emgd. 19. III. 2007, HSU 07A21.1 (L. H. Wang).

289. *Zophoessa niitakana* (Matsumura, 1906) 玉山幽眼蝶
♀. HUALIAN Co., Xiulin, Xiaofengkou, 5. IX. 2018 (C. J. Chang).

290. *Lethe europa pavida* Fruhstorfer, 1908 (WSF) 長紋黛眼蝶 (高溫 / 雨季型)
♂. KAOHSIUNG CITY, Tianliao, 100m, 13. XI. 2010, reared from *Bambusa* sp., emgd. 23. XI. 2010, HSU 10L24 (Y. F. Hsu).

291. *Lethe europa pavida* Fruhstorfer, 1908 (DSF) 長紋黛眼蝶 (低溫 / 乾季型)
♂. YUNLIN Co., Douliu, Hushan Dam, 12. XII. 2015 (L. Huang & H. C. Huang).

292. *Lethe europa pavida* Fruhstorfer, 1908 (WSF) 長紋黛眼蝶 (高溫 / 雨季型)
♀. TAINAN CITY, Guantian, Wushantou, 24. XI. 2009, reared from *Bambusa* sp., emgd. 18. I. 2010, HSU 09L27 (Y. F. Hsu).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293. *Lethe europa pavida* Fruhstorfer, 1908 (DSF) 長紋黛眼蝶 (低溫 / 乾季型)
♀. XINZHU Co., Baoshan, Shanhu, 27. XII. 2008 (Y. F. Hsu).

294. *Lethe europa beroe* (Cramer, [1775]) 長紋黛眼蝶
♂. LIANJIANG Co., Beigan, Leishan, 20. XI. 2013 (L. H. Wang & H. Y. Lee).

295. *Lethe rohria daemoniaca* Fruhstorfer, 1908 波紋黛眼蝶
♂. TAOYUAN CITY, Fuxing, Baling Ancient Trail, 1. IV. 2015, reared from *Miscanthus sinensis*, emgd. 14. V. 2015, HSU 15D01 (L. Huang).

296. *Lethe rohria daemoniaca* Fruhstorfer, 1908 波紋黛眼蝶
♀. XINBEI CITY, Xindian, Dailaokengshan, 25. III. 2016, reared from *Miscanthus* sp., emgd. 25. II. 2016, HSU 16B5 (Y. F. Hsu).

297. *Lethe verma cintamani* Fruhstorfer, 1909 玉帶黛眼蝶
♂. XINZHU Co., Wufeng, E. branch Dalu Forest Trail, 2000m, 20. X. 2009 (L. H. Wang & C. H. Huang).

298. *Lethe verma cintamani* Fruhstorfer, 1909 玉帶黛眼蝶
♀. KAOHSIUNG CITY, Taoyuan, Meishan, 700m, 8. XI. 2010 (H. C. Huang).



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299. *Lethe hyrania formosana* Fruhstorfer, 1908 深山黛眼蝶
♂. YILAN Co., Datong, Taipingshan, 1700m, 15. VI. 2007 (Y. F. Hsu).

300. *Lethe hyrania formosana* Fruhstorfer, 1908 深山黛眼蝶
♂. TAOYUAN CITY, Fuxing, Xuanyuan, 19. VII. 2018 (Y. F. Hsu).

301. *Lethe hyrania formosana* Fruhstorfer, 1908 深山黛眼蝶
♀. HUALIAN Co., Xiulin, Kuailin, 2100m, 14. I. 2007, reared from *Yushania niitakayamensis*, emgd. 19. II. 2007, HSU 07A22.3 (L. H. Wang).

302. *Lethe hyrania formosana* Fruhstorfer, 1908 深山黛眼蝶
♀. TAOYUAN CITY, Fuxing, Xuewunao, 1300m, 7. VI. 2017 (Y. F. Hsu).

303. *Lethe chandica ratnacri* Fruhstorfer, 1908 曲紋黛眼蝶
♂. TAIPEI CITY, Shilin, Tianxiyuan, 13. XII. 2013, reared from bamboo, emgd. 20. I. 2014, HSU 13M33 (Y. M. Hsu).

304. *Lethe chandica ratnacri* Fruhstorfer, 1908 曲紋黛眼蝶
♀. TAOYUAN CITY, Fuxing, Baling, 1. II. 2020, reared from *Miscanthus* sp., emgd. 20. III. 2020, HSU 20B4 (Y. F. Hsu).



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305. *Lethe mataja* Fruhstorfer, 1908 臺灣黛眼蝶
♂. PINGDONG Co., Wutai, Wutoushan, 1200m, 6. VI. 2009 (Y. F. Hsu).

306. *Lethe mataja* Fruhstorfer, 1908 臺灣黛眼蝶
♀. NANTOU Co., Renai, Huisun, 600/700m, 20. II. 2012, reared from *Miscanthus sinensis*, emgd. 2. III. 2012, HSU 12B20 (Y. F. Hsu & H. C. Huang).

307. *Lethe christophi hanako* Fruhstorfer, 1908 柯氏黛眼蝶
♂. HUALIAN Co., Xiulin, Bilu, 2200m, 24. VII. 2005 (Y. F. Hsu).

308. *Lethe christophi hanako* Fruhstorfer, 1908 柯氏黛眼蝶
♀. YILAN Co., Nanao, Taipingshan, 28. VI. 1984 (Y. F. Hsu).

309. *Lethe butleri periscelis* (Fruhstorfer, 1908) 巴氏黛眼蝶
♂. TAOYUAN CITY, Fuxing, Daman, 700m, 10. VI. 2005 (Y. F. Hsu).

310. *Lethe butleri periscelis* (Fruhstorfer, 1908) 巴氏黛眼蝶
♀. HUALIAN Co., Xiulin, Lushui, 450m, 20. V. 2007 (L. H. Wang).



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311. *Lethe gemina zaitha* Fruhstorfer, 1914 孿斑黛眼蝶

♂. NANTOU Co., Renai, Beidongyanshan, 1500m, 28. X. 2006, reared from *Miscanthus sinensis*, emgd. 27. III. 2007, HSU 06L29 (Y. F. Hsu).

312. *Lethe gemina zaitha* Fruhstorfer, 1914 孿斑黛眼蝶

♀. NANTOU Co., Renai, Beidongyanshan, 1500m, 28. X. 2006, reared from *Miscanthus sinensis*, emgd. 1. IV. 2007, HSU 06L29 (Y. F. Hsu).

313. *Neope pulaha didia* (Fruhstorfer, 1909) 黃斑蔭眼蝶

♂. TAIZHONG CITY, Heping, Siyuan, 2100m, 24. IV. 2009 (C. L. Huang).

314. *Neope pulaha didia* (Fruhstorfer, 1909) 黃斑蔭眼蝶

♀. NANTOU Co., Renai, Tunyuan, 1500m, 5. V. 2010 (L. H. Wang).

315. *Neope bremeri watanabei* Matsumura, 1909 (WSF) 布氏蔭眼蝶 (高溫 / 雨季型)

♂. NANTOU Co., Renai, Beidongyanshan, 1500m, 28. X. 2006 (Y. F. Hsu).

316. *Neope bremeri watanabei* Matsumura, 1909 (DSF) 布氏蔭眼蝶 (低溫 / 乾季型)

♂. YILAN Co., Datong, Renze Spring[= Jiuzhize Spring], 15. II. 1987 (Y. F. Hsu).



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317. *Neope bremeri watanabei* Matsumura, 1909 (WSF) 布氏蔭眼蝶 (高溫 / 雨季型)
♀. XINBEI CITY, Xindian, Sikanshui, 1. III. 2019, reared from *Miscanthus sinensis*, emgd. 18. IV. 2019, HSU 19C3 (Y. F. Hsu).

318. *Neope bremeri watanabei* Matsumura, 1909 (DSF) 布氏蔭眼蝶 (低溫 / 乾季型)
♀. TAOYUAN CITY, Fuxing, Baling, 600m, 23. II. 2010 (Y. F. Hsu).

319. *Neope armandii lacticolora* (Fruhstorfer, 1908) 白斑蔭眼蝶
♂. TAIDONG Co., Haiduan, Southern Cross-Island Highway, 160Km, 20/21. V. 2017 (C. W. Huang).

320. *Neope armandii lacticolora* (Fruhstorfer, 1908) 白斑蔭眼蝶
♀. TAIZHONG CITY, Heping, Xueshan, Qika, 2600m, 19/21. IX. 2005 (Y. F. Hsu).

321. *Neope muirheadii nagasawae* Matsumura, 1919 (WSF) 褐翅蔭眼蝶 (高溫 / 雨季型)
♂. TAINAN CITY, Zuozhen, Caoshan, 16. VII. 2018 (Y. F. Hsu).

322. *Neope muirheadii nagasawae* Matsumura, 1919 (DSF) 褐翅蔭眼蝶 (低溫 / 乾季型)
♂. XINBEI CITY, Wulai, 2. III. 2007 (Y. F. Hsu).



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323. *Neope muirheadii nagasawae* Matsumura, 1919 (WSF) 褐翅蔭眼蝶 (高溫 / 雨季型)
♀. TAOYUAN CITY, Fuxing, Baling, 1000m, 11. VII. 2011 (H. C. Huang).

324. *Neope muirheadii nagasawae* Matsumura, 1919 (DSF) 褐翅蔭眼蝶 (低溫 / 乾季型)
♀. XINBEI CITY, Jinshan, Dingbayan, 19. III. 2013 (C. L. Huang).

325. *Mycalesis francisca formosana* Fruhstorfer, 1908 (WSF) 眉眼蝶 (高溫 / 雨季型)
♂. TAOYUAN CITY, Fuxing, Xuanyuan, 19. VII. 2018 (C. W. Huang).

326. *Mycalesis francisca formosana* Fruhstorfer, 1908 (DSF) 眉眼蝶 (低溫 / 乾季型)
♂. JIAYI Co., Alishan, Shanmei, 30. III. 2008 (Y. F. Hsu).

327. *Mycalesis francisca formosana* Fruhstorfer, 1908 (WSF) 眉眼蝶 (高溫 / 雨季型)
♀. KAOHSIUNG CITY, Taoyuan, Meishan, 27. X. 2016 (L. Huang).

328. *Mycalesis francisca formosana* Fruhstorfer, 1908 (DSF) 眉眼蝶 (低溫 / 乾季型)
♀. JIAYI Co., Alishan, Shanmei, 500m, 31. III. 2007 (Y. F. Hsu).

329. *Mycalesis gotama nanda* Fruhstorfer, 1908 (WSF) 稻眉眼蝶 (高溫 / 雨季型)
♂. XINBEI CITY, Danshui, Pingding, 250m, 1. VIII. 2011 (H. C. Huang).

330. *Mycalesis gotama nanda* Fruhstorfer, 1908 (DSF) 稻眉眼蝶 (低溫 / 乾季型)
♂. XINBEI CITY, Wulai, 30. XI. 2004 (Y. F. Hsu).

331. *Mycalesis gotama nanda* Fruhstorfer, 1908 (WSF) 稻眉眼蝶 (高溫 / 雨季型)
♀. NANTOU Co., Renai, Songboling, emgd. 20. XII. 2008 (Y. T. Lo).

332. *Mycalesis gotama nanda* Fruhstorfer, 1908 (DSF) 稻眉眼蝶 (低溫 / 乾季型)
♀. NANTOU Co., Lugu, 500m, 20. I. 2009 (Y. F. Hsu).

333. *Mycalesis kagina* Fruhstorfer, 1908 嘉義眉眼蝶
♂. TAINAN CITY, Dongshan, Kantoushan, ca 600m, 21. X. 2014, reared from *Zingiber pleiostachyum*, emgd. 20. XI. 2014, HSU 14K46 (Y. F. Hsu).



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334. *Mycalesis kagina* Fruhstorfer, 1908 嘉義眉眼蝶
♀. TAINAN CITY, Dongshan, Kantoushan, 600/800m, 18. XI. 2011, reared from *Zingiber pleiostachyum*, emgd, 6. XII. 2011, HSU 11L10 (Y. F. Hsu).

335. *Mycalesis perseus blasius* (Fabricius, 1798) (WSF) 曲斑眉眼蝶 (高溫 / 雨季型)
♂. TAIDONG Co., Beinan, Danan, 100m, 27. V. 2005 (Y. F. Hsu).

336. *Mycalesis perseus blasius* (Fabricius, 1798) (DSF) 曲斑眉眼蝶 (低溫 / 乾季型)
♂. KAOHSIUNG CITY, Liugui, 200m, 29. X. 2006, reared from *Panicum* sp., emgd. 26. XII. 2006, HSU 06K60 (Y. F. Hsu).

337. *Mycalesis perseus blasius* (Fabricius, 1798) (WSF) 曲斑眉眼蝶 (高溫 / 雨季型)
♀. PINGDONG Co., Pingdong City, Pingdong Airport, 12. VIII. 2000 (S. C. Chen).

338. *Mycalesis perseus blasius* (Fabricius, 1798) (DSF) 曲斑眉眼蝶 (低溫 / 乾季型)
♀. TAIDONG Co., Taidong City, Pipa Lake, 16. X. 2007, reared from grass, emgd. 23. XII. 2007, HSU 07K32 (Y. F. Hsu).

339. *Mycalesis mucianus zonatus* Matsumura, 1909 (WSF) 切翅眉眼蝶 (高溫 / 雨季型)
♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 2. V. 2014 (L. Huang).

340. *Mycalesis mucianus zonatus* Matsumura, 1909 (DSF) 切翅眉眼蝶 (低溫 / 乾季型)
♂. KAOHSIUNG CITY, Liugui, 200m, 31. XII. 2006 (Y. F. Hsu).

341. *Mycalesis mucianus zonatus* Matsumura, 1909 (WSF) 切翅眉眼蝶 (高溫 / 雨季型)
♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 29. IV. 2014 (Y. F. Hsu).

342. *Mycalesis mucianus zonatus* Matsumura, 1909 (DSF) 切翅眉眼蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Dongshan, Kantoushan, 600/800m, 18. XI. 2011 (Y. F. Hsu).

343. *Mycalesis mucianus mucianus* Fruhstorfer, 1908 切翅眉眼蝶
♂. JINMEN Co., Lieyu, 10. XI. 2024 (H. C. Huang).


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344. *Mycalesis mineus* (Linnaeus, 1758) (WSF) 小眉眼蝶 (高溫 / 雨季型)
♂. TAIDONG Co., Taidong City, Pipa Lake, 16. X. 2007 (Y. F. Hsu).

345. *Mycalesis mineus* (Linnaeus, 1758) (DSF) 小眉眼蝶 (低溫 / 乾季型)
♂. JIAYI CITY, Lantan, 12. II. 2006 (Y. F. Hsu).

346. *Mycalesis mineus* (Linnaeus, 1758) (WSF) 小眉眼蝶 (高溫 / 雨季型)
♂. JINMEN Co., Jinsha, nr. Houling Park, 28/29. VIII. 2011 (Y. F. Hsu & H. C. Huang).

347. *Mycalesis mineus* (Linnaeus, 1758) (DSF) 小眉眼蝶 (低溫 / 乾季型)
♂. JINMEN Co., Jinsha, Houling, 18. XI. 2013 (Y. F. Hsu & H. C. Huang).

348. *Mycalesis mineus* (Linnaeus, 1758) (WSF) 小眉眼蝶 (高溫 / 雨季型)
♀. TAIDONG Co., Taidong City, Pipa Lake, 16. X. 2007 (Y. F. Hsu).

349. *Mycalesis mineus* (Linnaeus, 1758) (DSF) 小眉眼蝶 (低溫 / 乾季型)
♀. KAOHSIUNG CITY, Tianliao, 80m, 3. XII. 2011 (Y. F. Hsu).

350. *Mycalesis mineus* (Linnaeus, 1758) (WSF) 小眉眼蝶 (高溫 / 雨季型)
♀. JINEMN Co., Jinning, Zhongshan Forest, 5. XI. 2013 (C. L. Huang & H. C. Huang).

351. *Mycalesis mineus* (Linnaeus, 1758) (DSF) 小眉眼蝶 (低溫 / 乾季型)
♀. JINEMN Co., Jinsha, Shishan, 18. XI. 2013 (Y. F. Hsu & H. C. Huang).

352. *Telinga mara* (Fruhstorfer, 1908) (WSF) 淺色眉眼蝶 (高溫 / 雨季型)
♂. TAIDONG Co., Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu).



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353. *Telinga mara* (Fruhstorfer, 1908) (DSF) 淺色眉眼蝶 (低溫 / 乾季型)
♂. PINGDONG Co., Wutai, Old Dawu/ Bayouxi, 500/900m, 17. III. 2009 (Y. F. Hsu & H. C. Huang).

354. *Telinga mara* (Fruhstorfer, 1908) (WSF) 淺色眉眼蝶 (高溫 / 雨季型)
♀. TAINAN CITY, Dongshan, Kantoushan, 25. III. 2020, emgd. 9. V. 2020, HSU 20C61 (C. W. Huang & S. Y. Chen).

355. *Telinga mara* (Fruhstorfer, 1908) (DSF) 淺色眉眼蝶 (低溫 / 乾季型)
♀. PINGDONG Co., Wutai, Wutoushan, 26. IV. 1999 (Y. F. Hsu).

356. *Minois nagasawae* (Matsumura, 1906) 永澤蛇眼蝶
♂. NANTOU Co., Renai, Nenggao/ Tianchi, 17. IX. 2010 (C. L. Huang).

357. *Minois nagasawae* (Matsumura, 1906) 永澤蛇眼蝶
♀. NANTOU Co., Renai, Tianchi, 17. IX. 2010 (C. L. Huang).

358. *Melanitis leda* (Linnaeus, 1758) (WSF) 暮眼蝶 (高溫 / 雨季型)
♂. TAINAN CITY, Xinhua, 20m, 20. XI. 2011, reared from *Cenchrus purpureus*, emgd. 22. XI. 2011, HSU 11L15 (Y. F. Hsu).

359. *Melanitis leda* (Linnaeus, 1758) (DSF) 暮眼蝶 (低溫 / 乾季型)
♂. TAINAN CITY, Guantian, Wushantou, 80m, 19. XI. 2005, reared from *Megathyrsus maximus*, emgd. 19. XII. 2005, HSU 05M39 (Y. F. Hsu).

360. *Melanitis leda* (Linnaeus, 1758) (WSF) 暮眼蝶 (高溫 / 雨季型)
♀. TAINAN CITY, Guantian, Wushantou, 6. IX. 2011, reared from *Cenchrus purpureus*, emgd. 10. IX. 2011, HSU 11J11 (Y. F. Hsu).



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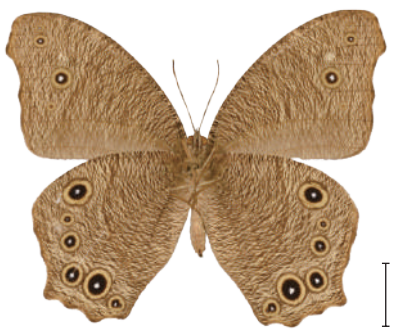

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361. *Melanitis leda* (Linnaeus, 1758) (DSF) 暮眼蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Xinhua, 20m, 20. XI. 2011 (Y. F. Hsu).

362. *Melanitis phedima polishana* Fruhstorfer, 1908 (WSF) 森林暮眼蝶 (高溫 / 雨季型)
♂. TAIPEI CITY, Songshan, Hushan, 20. IV. 2010 (C. L. Huang).

363. *Melanitis phedima polishana* Fruhstorfer, 1908 (DSF) 森林暮眼蝶 (低溫 / 乾季型)
♂. TAINAN CITY, Dongshan, Kantoushan, 600/800m, 4. II. 2011 (Y. F. Hsu).

364. *Melanitis phedima polishana* Fruhstorfer, 1908 (WSF) 森林暮眼蝶 (高溫 / 雨季型)
♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 5. VI. 2020, reared from *Oplismenus compositus*, emgd. 3. VII. 2020 (S. Y. Chen).

365. *Melanitis phedima polishana* Fruhstorfer, 1908 (DSF) 森林暮眼蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Xinhua, Dakeng, 80m, 10/11. II. 2006 (Y. F. Hsu).

366. *Penthema formosanum* (Rothschild, 1898) 臺灣斑眼蝶
♂. XINBEI CITY, Danshui, Erziping, 800m, 31. V. 2011 (H. C. Huang).



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367. *Penthema formosanum* (Rothschild, 1898) (melanized form) 臺灣斑眼蝶 (黑化型)
♂. PINGDONG Co., Shizi, Shouka, 8/9. V. 2020 (Y. F. Hsu & J. Y. Liang).

368. *Penthema formosanum* (Rothschild, 1898) 臺灣斑眼蝶
♀. XINBEI CITY, Danshui, Erziping, 700m, 18. VIII. 2011 (Y. T. Lin).

369. *Elymnias hypermnestra hainana* Moore, 1878 藍紋鋸眼蝶
♂. KAOHSIUNG CITY, Tianliao, 23. II. 2021, reared from *Phoenix hanceana*, emgd. 5. III. 2021, HSU 21B17 (Y. F. Hsu).

370. *Elymnias hypermnestra hainana* Moore, 1878 藍紋鋸眼蝶
♀. KAOHSIUNG CITY, Tianliao, 23. II. 2021, reared from *Phoenix hanceana*, emgd. 3. III. 2021, HSU 21B17 (Y. F. Hsu).



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371. *Libythea geoffroy philippina* Staudinger, 1889 紫喙蝶

♂. INDONESIA: S. SULAWESI PROV., Bantimurubg near Maros, IV. 2013 (Native collector).

372. *Tirumala hamata orientalis* (Semper, 1879) 東方淡紋青斑蝶

♂. PHILIPPINES: Pampanga Prov., Mt. Arayat, 4. VII. 2023 (Y. F. Hsu).

373. *Parantica luzonensis* (C. & R. Felder, 1863) 呂宋絹斑蝶

♂. PHILIPPINES: IFUGAO PROV., Kinakin, IX. 2013.



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374. *Parthenos sylvia philippensis* Fruhstorfer, 1898 麗蛺蝶

♂. PHILIPPINES: Mindanao, Dava, 6. XII. 2014 (C. L. Huang).

375. *Neptis thisbe* (Ménétriés, 1859) 提環蛺蝶

♀. CHINA: GUANGDONG PROV., Shaoguan Shi, Ruyuan Xian, Ruyang, Laopenkeng, 1000/1100m, 5/6. II. 2001, reared from *Fagus longipetiolata*, emgd. 16. IV. 2001, HSU 01B3 (Y. F. Hsu, C. C. Lu & Y. T. Lo).

376. *Neptis rivularis formosicola* Bryk, 1942 單環蛺蝶

♂. Holotype of *Neptis coenobita* var. *formosana* Matsumura, 1919; "台北[Taihoku/ Taipei]/ 37. 6. 4 [4. VI. 1904]/ Type Matsumura [red label]" (Systematic Entomology Laboratory, Hokkaido University, SEHU).

377. *Neptis rivularis formosicola* Bryk, 1942 單環蛺蝶

♂. "台北 ニトベ [Taihoku Nitobe]/ *Neptis coenobita formosicola* Mats." (Taiwan Agriculture Research Institute, TARI).



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378. *Cethosia biblis* (Drury, 1770) 紅鋸蛺蝶

♂. JINMEN Co., Jinsha, Shishan, 6. XI. 2015 (L. Huang).

379. *Apatura ilia here* C. & R. Felder, 1862 柳紫閃蛺蝶

♂. CHINA: SHAANXI PROV., Huayin Shi, Huayin, 400m, 4. IX. 2009 (Y. F. Hsu).

380. *Apatura ilia yunnanensis* Le Moult, 1947 柳紫閃蛺蝶

♀. CHINA: YUNNAN PROV., Kunming Shi, Helongtan, 14. VII. 2009 (Y. F. Hsu).

381. *Hestina persimilis viridis* Leech, 1890 小脈蛺蝶

♂. CHINA: YUNNAN PROV., Dehong Zhou, Ruili Shi, Bangdashan, 1400m, 5/6. IX. 2014 (Y. F. Hsu & N. Y. Tsai).



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382. *Doleschallia bisaltide philippensis* Fruhstorfer, 1899 蠹葉蝶
♀. TAIPEI CITY, Zhongzhen, NPGRC, 20. VI. 2025 (Y. F. Hsu).

383. *Doleschallia bisaltide philippensis* Fruhstorfer, 1899 蠹葉蝶
♂. PHILIPPINES: BATANES PROV., Sabtang Is., Sumnanga, 20. III. 2014, reared from *Pseuderanthemum curtatum*, emgd. 17. IV. 2014, HSU 14C22 (Y. F. Hsu, C. L. Huang & H. C. Huang).

384. *Doleschallia bisaltide philippensis* Fruhstorfer, 1899 蠹葉蝶
♀. PHILIPPINES: BATANES PROV., Sabtang Is., Sumnanga, 20. III. 2014, reared from *Pseuderanthemum curtatum*, emgd. 16. IV. 2014, HSU 14C22 (Y. F. Hsu, C. L. Huang & H. C. Huang).



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385. *Junonia hedonia ida* (Cramer, 1779) 南洋眼蛺蝶
♂. KAOHSIUNG CITY, Gushan, NSYSU, 7. IX. 2024 (H. X. Zhang).

386. *Junonia hedonia ida* (Cramer, 1779) 南洋眼蛺蝶
♀. JAPAN: OKINAWA PREF., Yaeyama, Takatomi, Iriomote, 1. VII. 1990 (J & Y Iwahashi).

387. *Mycalesis igoleta* C. & R. Felder, 1863 伊果眉眼蝶
♂. TAIDONG Co., Lanyu, Xiaotianchi, 26. IV. 2010 (J. H. Lin).

388. *Mycalesis igoleta* C. & R. Felder, 1863 伊果眉眼蝶
♀. TAIDONG Co., Lanyu, Xiaotianchi, 26. IV. 2010 (J. H. Lin).

389. *Lethe diana australis* Naritomi, 1943 月神黛眼蝶
Holotype ♀ of *Lethe diana australis* Naritomi, 1943；“(台)ムシヤ 17 年 8 月 10 日 [Taiwan Musha 17. 8. 10] [Wushe, 10. VIII. 1942]/ HOLOTYPE ssp. *australis* [red label]”(University Museum, University of Tokyo, UMUT).

390. *Lethe confusa* Aurivillius, 1898 白帶黛眼蝶
♂. HONG KONG: New Territory, Wu Kau Tang, 100m, 6. IX. 2006 (Y. F. Hsu, P. Loh & L. W. Wu).



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MALE GENITALIA

Note. Scale bars represent 1 mm.

391. *Libythea lepita formosana* Fruhstorfer, 1909 東方喙蝶

♂. YILAN Co., Nanao, Dabaishan, 21. VII. 2016 (L. Huang) (genitalia preparation JYL824).

392. *Danaus plexippus* (Linnaeus, 1758) 帝王斑蝶

♂. USA: TX: Harris Co., Houston, IV. 2007, reared from *Asclepias curassavica*, emgd., 25. IV. 2007, HSU 07D7 (H. H. Chuah) (genitalia preparation JYL1033).

393. *Danaus genutia* (Cramer, [1779]) 虎斑蝶

♂. TAIPEI CITY, Shilin, Zhishanyan, 1. VI. 2015 (L. Huang) (genitalia preparation JYL728).

394. *Danaus melanippus edmondii* (Bougainville, 1837) 白虎斑蝶

♂. PHILIPPINES: BATANES PROV., Turahan, San Rafael, 14. IV. 2013 (Y. F. Hsu) (genitalia preparation JYL1026).



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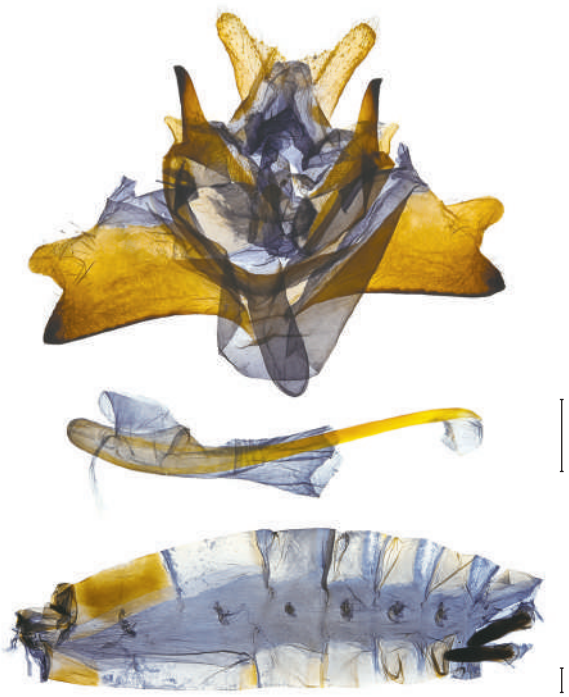

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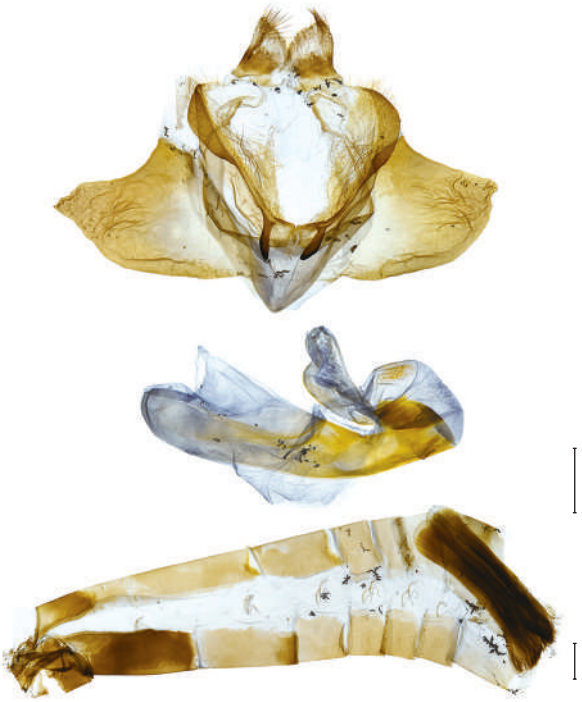

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395. *Danaus chrysippus* (Linnaeus, 1758) 金斑蝶

♂. TAIZHONG CITY, Tanzi, Tanzi Elementary School, 4. VII. 2015 (L. Huang) (genitalia preparation JYL729).

396. *Tirumala limniace limniace* (Cramer, [1775]) 淡紋青斑蝶

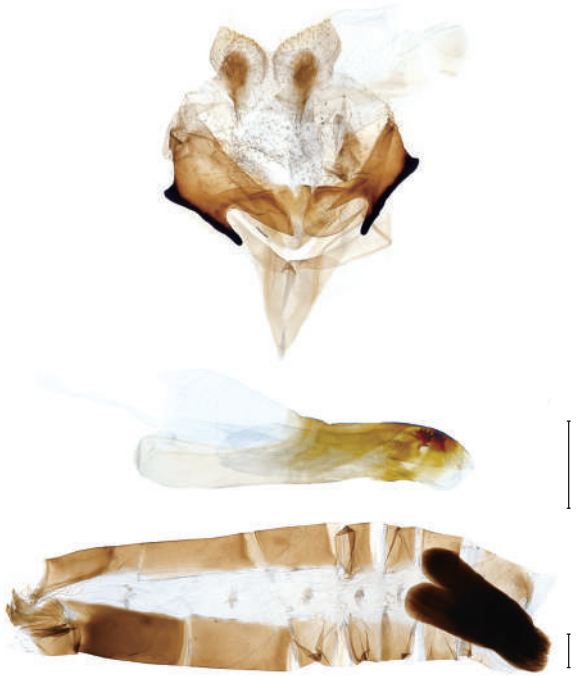
♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 8. IX. 2018, emgd. 19. IX. 2018 (L. Huang) (genitalia preparation JYL963).

397. *Tirumala septentrionis* (Butler, 1874) 小紋青斑蝶

♂. TAIPEI CITY, Shilin, Zhishanyan, 8. V. 2015 (L. Huang) (genitalia preparation JYL749).

398. *Parantica aglea maghaba* (Fruhstorfer, 1909) 絹斑蝶

♂. PINGDONG Co., Chunri, Dahanshan, 2. IX. 2014 (C. L. Huang) (genitalia preparation JYL742).



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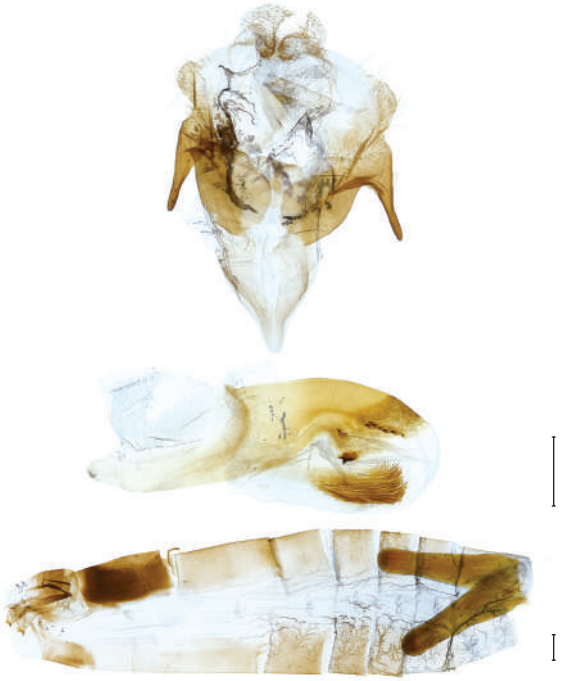

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399. *Parantica swinhoei* (Moore, 1883) 斯氏絹斑蝶

♂. HUALIAN Co., Zhuoxi, Nanan, 22. IV. 2015 (J. Y. Liang) (genitalia preparation JYL744).

400. *Parantica sita niphonica* (Moore, 1883) 大絹斑蝶

♂. PENGHU Co., Xiyu, East Fort, 11. VI. 2014 (C. W. Huang) (genitalia preparation JYL746).

401. *Ideopsis similis* (Linneaus, 1758) 旖斑蝶

♂. MIAOLI Co., Sanyi, Zhentoushan, 13. IX. 2015 (L. Huang) (genitalia preparation JYL752).

402. *Euploea sylvester swinhoei* Wallace, 1866 雙標紫斑蝶

♂. TAIDONG Co., Beinan, Zhiben Forest Trail, 31. X. 2015 (L. Huang) (genitalia preparation JYL732).



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403. *Euploea midamus* (Linnaeus, 1758) 藍點紫斑蝶

♂. JINEMN Co., Jinning, 5. XI. 2015 (L. Huang) (genitalia preparation JYL740).

404. *Euploea mulciber barsine* Fruhstorfer, 1904 異紋紫斑蝶

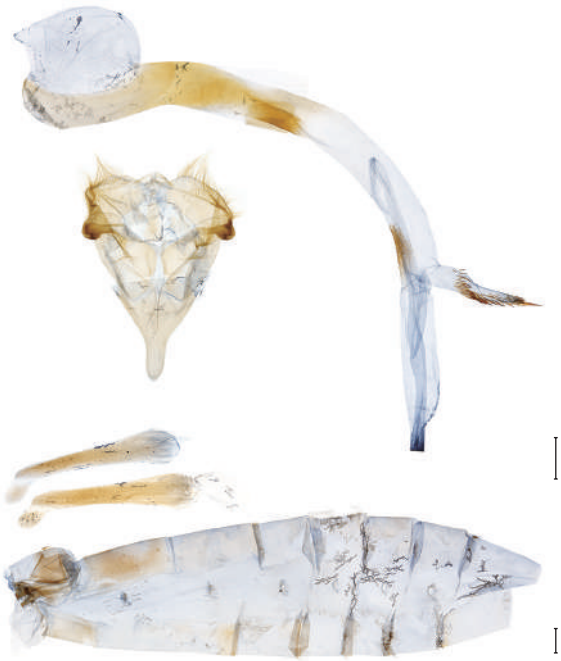
♂. PINGDONG Co., Chunri, Dahanshan, 2. IX. 2014 (C. L. Huang) (genitalia preparation JYL735).

405. *Euploea phaenareta juvia* Fruhstorfer, 1908 大紫斑蝶

♂. THAILAND: PHUKET PROV., Rt4020, Mu Ban Phuket Hopeland, 24. VIII. 2016, reared from *Cerbera* sp., emgd. 28. VIII. 2016, HSU 16H50 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL1015).

406. *Euploea eunice hobsoni* (Butler, 1877) 圓翅紫斑蝶

♂. TAOYUAN CITY, Fuxing, Xuanyuan Trail, 1000m, 19. V. 2012, reared from *Ficus erecta*, emgd. 25. V. 2012, HSU 12E6 (H. C. Huang) (genitalia preparation JYL1013).



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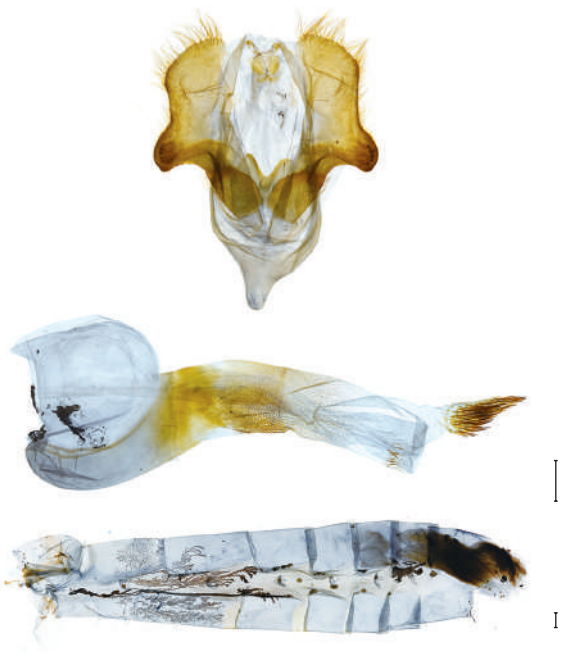

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407. *Euploea tulliolus koxinga* Fruhstorfer, 1908 小紫斑蝶

♂. PINGDONG Co., Chunri, Dahanshan, 2. IX. 2014 (C. L. Huang) (genitalia preparation JYL738).

408. *Euploea core amymone* (Godart, 1819) 幻紫斑蝶

♂. KAOHSIUNG CITY, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu) (genitalia preparation JYL1025).

409. *Euploea camaralzeman cratis* Butler, 1866 白列紫斑蝶

♂. PENGHU Co., Xiyu, East Fort, 11. VI. 2014, reared from *Ficus microcarpa*, emgd. 14. VII. 2014, HSU 14F28 (C. W. Huang & J. Y. Liang) (genitalia preparation JYL1009).

410. *Idea leuconoe clara* (Butler, 1867) 大白斑蝶

♂. JILONG CITY, Zhongzheng, NTOU, 4. II. 2017, emgd. 3. IV. 2017, HSU 17B05 (L. Huang) (genitalia preparation JYL1003).



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411. *Idea leuconoe kwashotoensis* (Sonan, 1928) 大白斑蝶 (綠島亞種)

♂. TAIDONG Co., Ludao, 28/29. VII. 2007 (T. W. Chen & Y. C. Lin) (genitalia preparation JYL1041).

412. *Telchinia issoria formosana* (Fruhstorfer, 1914) 苧麻細蝶

♂. MIAOLI Co., Taian, Dongguashan, 29. I. 2015 (L. Huang) (genitalia preparation JYL778).

413. *Telchinia issoria issoria* Hübner, [1819] 苧麻細蝶

♂. LIANJIANG Co., Nangan, Jinsha, 20. VII. 2013 (C. L. Huang, H. C. Huang & H. Y. Lee) (genitalia preparation JYL927).

414. *Argynnis paphia formosicola* Matsumura, 1927 綠豹蛺蝶

♂. HUALIAN Co., Xiulin, Xinbaiyang, 1600/1700m, 3. VII. 2008 (L. H. Wang) (genitalia preparation JYL1011).



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415. *Argynnis hyperbius* (Linnaeus, 1763) 斐豹蛱蝶

♂. XINBEI CITY, Shiding, Ergeshan, 29. V. 2015 (R. Z. Chang) (genitalia preparation JYL776).

416. *Argynnis childreni* Gray, 1831 大豹蛱蝶

♂. LIANJIANG Co., Beigan, 19. XI. 2013, reared from *Viola* sp., emgd. 2/21. II. 2014, HSU 13L63 (L. H. Wang & H. Y. Lee) (genitalia preparation JYL925).

417. *Phalanta phalantha* (Drury, [1773]) 琺蛱蝶

♂. TAIZHONG CITY, Wufeng, Xiangbi Road, 12. XII. 2015 (H. C. Huang) (genitalia preparation JYL867).

418. *Cupha erymanthis* (Drury, [1773]) 黃襟蛱蝶

♂. TAIPEI CITY, Zhongzheng, Taipei Botanical Garden, 8. X. 2018, emgd. 24. X. 2018 (L. Huang) (genitalia preparation JYL966).



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419. *Neptis hylas luculenta* Fruhstorfer, 1907 豆環蛺蝶

♂. NANTOU Co., Renai, Huisun, 10. IX. 2010 (C. L. Huang) (genitalia preparation JYL848).

420. *Neptis hylas hylas* (Linnaeus, 1758) 豆環蛺蝶

♂. JINMEN Co., Jinhu, Shenshiqiao, 13. VIII. 2015 (L. Huang) (genitalia preparation JYL846).

421. *Neptis sappho formosana* Fruhstorfer, 1908 小環蛺蝶

♂. KAOHSIUNG CITY, Taoyuan, Southern Cross-Island Highway, 120Km, 3. VII. 2015 (C. W. Huang) (genitalia preparation JYL857).

422. *Neptis soma tayalina* Murayama & Shimonoya, 1968 斷線環蛺蝶

♂. KAOHSIUNG CITY, Taoyuan, Southern Cross-Island Highway, 130Km, 3. VII. 2015 (C. W. Huang) (genitalia preparation JYL841).



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423. *Neptis soma ominicola* Fruhstorfer, 1908 斷線環蛺蝶

♂. LIANJIANG Co., Beigan, Qinbi, 16. IV. 2014 (Y. F. Hsu, H. C. Huang & C. L. Huang) (genitalia preparation JYL923).

424. *Neptis nata lutatia* Fruhstorfer, 1913 細帶環蛺蝶

♂. TAOYUAN CITY, Fuxing, Xuanyuan, 13. VII. 2015 (R. Z. Chang) (genitalia preparation JYL851).

425. *Neptis reducta* Fruhstorfer, 1908 無邊環蛺蝶

♂. TAOYUAN CITY, Fuxing, Sule, 14. VII. 2015 (L. Huang) (genitalia preparation JYL859).

426. *Neptis taiwana* Fruhstorfer, 1908 蓬萊環蛺蝶

♂. TAOYUAN CITY, Fuxing, Sule, 14. VII. 2015 (R. Z. Chang) (genitalia preparation JYL855).



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427. *Neptis noyala ikedai* Shirôzu, 1952 流紋環蛺蝶

♂. NANTOU Co., Renai, Nanshanxi, 1000m, 27. V. 2012 (C. C. Lu, jr) (genitalia preparation JYL980).

428. *Neptis sankara shirakiana* Matsumura, 1929 眉紋環蛺蝶

♂. HUALIAN Co., Xiulin, Huoranting, 1. VI. 2019 (C. W. Huang) (genitalia preparation JYL912).

429. *Neptis sylvana esakii* Nomura, 1935 深山環蛺蝶

♂. KAOHSIUNG CITY, Taoyuan, Southern Cross-Island Highway, 135Km, 3. VII. 2015 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL971).

430. *Neptis podarces* Nire, 1920 臺灣蓮花環蛺蝶

♂. NANTOU Co., Xinyi, Renlun Forest Trail, 7. I. 2011, reared from *Ficus sarmentosa*, emgd. 1. III. 2011, HSU 11A09 (L. H. Wang) (genitalia preparation JYL945).



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431. *Neptis philyra splendens* Murayama, 1941 楓環蛺蝶

♂. TAOYUAN CITY, Fuxing, Xuanyuan, 4. VI. 2018 (L. Huang) (genitalia preparation JYL964).

432. *Neptis philyroides sonani* Murayama, 1941 鑲紋環蛺蝶

♂. TAOYUAN CITY, Fuxing, Baling, 26. V. 2015 (L. Huang) (genitalia preparation JYL852).

433. *Neptis ilos nirei* Nomura, 1935 奇環蛺蝶

♂. HUALIAN Co., Xiulin, Bilu, 30. VII. 2019 (C. W. Huang) (genitalia preparation JYL947).

434. *Neptis pryeri jucundita* Fruhstorfer, 1908 黑星環蛺蝶

♂. PINGDONG Co., Chunri, Dahanshan, 2. IX. 2014 (C. L. Huang) (genitalia preparation JYL854).



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435. *Pantoporia hordonia rihodona* (Moore, 1878) 金環蛺蝶

♂. TAIDONG Co., Beinan, Zhiben Forest Trail, 31. X. 2015 (L. Huang) (genitalia preparation JYL863).

436. *Limenitis sulpitia tricula* Fruhstorfer, 1908 殘眉線蛺蝶

♂. TAIPEI CITY, Neihu, Kaiyanshan, 21. VII. 2015 (R. Z. Chang) (genitalia preparation JYL826).

437. *Limenitis sulpitia sulpitia* (Cramer, [1779]) 殘眉線蛺蝶

♂. LIANJIANG Co., Beigan, Qinbi, 25. VI. 2019 (Y. Y. Lu) (genitalia preparation JYL994).

438. *Limenitis asura baelia* (Fruhstorfer, 1908) 白圈線蛺蝶

♂. TAIPEI CITY, Beitou, Menghuanhu, emgd. 18. VII. 2014 (genitalia preparation JYL953).



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439. *Limenitis jina sauteri* (Fruhstorfer, 1913) 寬帶線蛺蝶

♂. TAOYUAN CITY, Fuxing, Kayilan, 580m, 13. VII. 2016 (L. Huang & H. C. Huang) (genitalia preparation JYL995).

440. *Limenitis fortuna kodahirai* (Sonan, 1938) 幻紫線蛺蝶

♂. TAOYUAN CITY, Fuxing, Northern Cross-Island Highway, 55Km, 16. V. 2015 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL1020).

441. *Limenitis dudu jinamitra* Fruhstorfer, 1908 紫俳線蛺蝶

♂. TAIPEI CITY, Neihu, Kaiyanshan, 22. VII. 2015 (R. Z. Chang) (genitalia preparation JYL865).

442. *Athyma perius* (Linnaeus, 1758) 玄珠帶蛺蝶

♂. TAIZHONG CITY, Fengyuan, Zhongzheng Park, 1. VIII. 2015 (L. Huang) (genitalia preparation JYL781).



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443. *Athyma selenophora laela* (Fruhstorfer, 1908) 異紋帶蛺蝶

♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 1. V. 2011 (genitalia preparation JYL955).

444. *Athyma cama zoroastres* Butler, 1877 雙色帶蛺蝶

♂. MIAOLI Co., Sanyi, 7. VI. 2015 (L. Huang) (genitalia preparation JYL771).

445. *Athyma opalina hirayamai* (Matsumura, 1935) 流帶蛺蝶

♂. HUALIAN Co., Xiulin, Huoranting, 3. IV. 2019 (C. W. Huang) (genitalia preparation JYL968).

446. *Abrota ganga formosana* Fruhstorfer, 1909 瑙蛺蝶

♂. XINBEI CITY, Wulai, Baoqing Temple, 10 VIII. 2015 (L. Huang) (genitalia preparation JYL775).



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447. *Euthalia irrubescens fulguralis* (Matsumura, 1909) 紅玉翠蛺蝶

♂. NANTOU Co., Renai, Huisun, 4. IV. 2021, reared from *Scurrula* sp., emgd. 5. VI. 2021, HSU 21D14 (Z. L. Chen, G. Y. Chen, M. H. Wu & Y. Q. Yeh) (genitalia preparation JYL1040).

448. *Euthalia phemius* (Doubleday, [1848]) 尖翅翠蛺蝶

♂. JILONG CITY, Zhongshan, Wuqiaotou, 1. XI. 2019, reared from *Mangifera indica*, emgd. 26. XI. 2019, HSU 19L2 (K. L. Chen, H. C. Huang, Y. F. Hsu & C. C. Lu, jr) (genitalia preparation JYL1005).

449. *Euthalia kosempona* Fruhstorfer, 1908 甲仙翠蛺蝶

♂. XINBEI CITY, Wulai, Badaoershan, 21. VII. 2011 (L. H. Wang) (genitalia preparation JYL989).

450. *Euthalia malapana* Shirôzu & Chung, 1958 馬拉巴翠蛺蝶

♂. TAIZHONG CITY, Heping, Shishanxi, VIII. 1988 (C. K. La) (genitalia preparation JYL1030).



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451. *Euthalia formosana* Fruhstorfer, 1908 臺灣翠蛺蝶

♂. KAOHSIUNG CITY, Taoyuan, Laonongxi Forest Trail, 7Km, 7. VI. 2015 (C. W. Huang) (genitalia preparation JYL789).

452. *Euthalia insulae* Hall, 1930 窄帶翠蛺蝶

♂. KAOHSIUNG CITY , Taoyuan, Southern Cross-Island Highway, 130Km, 4. VII. 2015 (C. W. Huang) (genitalia preparation JYL793).

453. *Dichorragia nesimachus formosanus* Fruhstorfer, 1909 流星蛺蝶

♂. XINBEI CITY, Bali, Guanyinshan, 400/450m, 28. IV. 2011 (Z. H. Yen) (genitalia preparation JYL1045).

454. *Timelaea albescens formosana* Fruhstorfer, 1908 白裳貓蛺蝶

♂. TAOYUAN CITY, Fuxing, Sule, 2. VII. 2015 (L. Huang) (genitalia preparation JYL881).



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455. *Chitoria chrysolora* (Fruhstorfer, 1908) 金鎧蛺蝶

♂. TAOYUAN CITY, Fuxing, Xuanyuan, 14. VII. 2015 (R. Z. Chang) (genitalia preparation JYL783).

456. *Chitoria ulupi arakii* Naritomi, 1959 武鎧蛺蝶

♂. HUALIAN Co., Xiulin, Bilu, 15/16. VII. 2019 (C. W. Huang) (genitalia preparation JYL975).

457. *Helcyra plesseni* (Fruhstorfer, 1913) 普氏白蛺蝶

♂. TAIZHONG CITY, Heping, Shaolai Trail, 30. IX. 2018 (L. Huang) (genitalia preparation JYL785).

458. *Helcyra superba takamukui* Matsumura, 1919 白蛺蝶

♂. PINGDONG Co., Chunri, Qijia, 350m, 27. VII. 2018 (Y. T. Chung) (genitalia preparation JYL1014).



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459. *Sephisa chandra androdamas* Fruhstorfer, 1908 燦蛺蝶

♂. TAIPEI CITY, Beitou, Datunshan, 6. VII. 2016 (L. Huang) (genitalia preparation JYL874).

460. *Sephisa daimio* Matsumura, 1910 臺灣燦蛺蝶

♂. TAOYUAN CITY, Fuxing, Northern Cross-Island Highway, 20. VI. 2015 (W. J. Lin) (genitalia preparation JYL940).

461. *Hestina assimilis formosana* (Moore, [1896]) 紅斑脈蛺蝶

♂. HUALIAN Co., Xiulin, Huoranting, 23. VI. 2020 (C. W. Huang) (genitalia preparation JYL944).

462. *Hestina assimilis assimilis* (Linnaeus, 1758) 紅斑脈蛺蝶

♂. JINMEN Co., Jinsha, Ronghu Dam, 15. VIII. 2015, reared from *Celtis sinensis*, HSU 15H47 (L. Huang) (genitalia preparation JYL797).



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463. *Sasakia charonda formosana* Shirôzu, 1963 大紫蛺蝶

♂. TAOYUAN CITY, Fuxing, Zhongbaling, 4. VI. 2015 (H. C. Huang) (genitalia preparation JYL873).

464. *Rohana parisatis staurakius* Fruhstorfer, 1913 羅蛺蝶

♂. JINEMN Co., Jinsha, Wuhushan, 22. VIII. 2024 (Y. D. Ho) (genitalia preparation JYL1082).

465. *Ariadne ariadne pallidior* (Fruhstorfer, 1899) 波蛺蝶

♂. JINMEN Co., Jincheng, Shuitou, 15. VIII. 2015 (L. Huang) (genitalia preparation JYL770).

466. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 網絲蛺蝶

♂. JILONG CITY, NTOU, 5. II. 2017, emgd. 27. II. 2017, HSU 17B04 (L. Huang) (genitalia preparation JYL948).



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467. *Cyrestis thyodamas chinensis* Martin, 1903 網絲蛺蝶

♂. LIANJIANG Co., Beigan, Leishan, 22. VII. 2020 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL786).

468. *Junonia almana* (Linnaeus, 1758) 眼蛺蝶

♂. PENGHU Co., Magong, Anyihu, 12. VI. 2014 (J. Y. Liang & C. W. Huang) (genitalia preparation JYL798).

469. *Junonia lemonias aenaria* (Fruhstorfer, 1912) 鱗紋眼蛺蝶

♂. YUNLIN Co., Douliu, Hushan Dam, 12. XII. 2015 (L. Huang) (genitalia preparation JYL803).

470. *Junonia orithya* (Linnaeus, 1758) 青眼蛺蝶

♂. XINBEI CITY, Ruifang, Sandiaoling, 12. IX. 2015, emgd. 11. X. 2015 (L. Huang) (genitalia preparation JYL767).



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471. *Junonia iphita* (Cramer, [1779]) 黯眼蛺蝶

♂. XINBEI CITY, Ruifang, Sandiaoling, 12. IX. 2015 (L. Huang) (genitalia preparation JYL801).

472. *Junonia atlites* (Linnaeus, 1763) 波紋眼蛺蝶

♂. JINMEN Co., Jinhu, Taiwushan, 14. VIII. 2015, emgd. 7. IX. 2015 (L. Huang) (genitalia preparation JYL800).

473. *Kallima inachus formosana* Fruhstorfer, 1913 枯葉蝶

♂. MIAOLI Co., Sanyi, Zhentoushan, 13. IX. 2015 (L. Huang) (genitalia preparation JYL773).

474. *Yoma sabina podium* Tsukada, 1985 黃帶隱蛺蝶

♂. JIAYI Co., Dapu, Qingyun Spring, 21. IV. 2020 (Y. F. Hsu) (genitalia preparation JYL939).



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475. *Vanessa indica* (Herbst, 1794) 大紅蛺蝶

♂. TAIPEI CITY, Beitou, Qixing Park, 15. VI. 2015 (L. Huang) (genitalia preparation JYL763).

476. *Vanessa cardui* (Linnaeus, 1758) 小紅蛺蝶

♂. TAIPEI CITY, Neihu, Dagouxi, 7. XI. 2017 (L. Huang) (genitalia preparation JYL996).

477. *Polygonia c-album asakurai* Nakahara, 1920 突尾鉤蛺蝶

♂. XINZHU Co., Jianshi, Lidongshan, 11. VI. 2018, emgd. 23. VI. 2018 (L. Huang) (genitalia preparation JYL990).

478. *Polygonia c-aureum lunulata* Esaki & Nakahara, 1924 黃鉤蛺蝶

♂. MIAOLI Co., Sanyi, 7. VI. 2015 (L. Huang) (genitalia preparation JYL869).



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479. *Polygonia c-aureum c-aureum* (Linnaeus, 1758) 黃鉤蛺蝶

♂. LIANJIANG Co., Beigan, Leishan, 22. VII. 2020 (Y. F. Hsu) (genitalia preparation JYL952).

480. *Kaniska canace drilon* (Fruhstorfer, 1908) 琉璃蛺蝶

♂. TAOYUAN CITY, Fuxing, Baling, 9. V. 2015 (L. Huang) (genitalia preparation JYL806).

481. *Kaniska canace canace* (Linnaeus, 1763) 琉璃蛺蝶

♂. JINMEN Co., Jinhu, Botanical Garden, 5. XI. 2015 (L. Huang) (genitalia preparation JYL759).

482. *Nymphalis xanthomelas formosana* (Matsumura, 1925) 緋蛺蝶

♂. HUALIAN Co., Xiulin, Bilu/ Xinbaiyang, 9. VII. 2018 (C. W. Huang) (genitalia preparation JYL905).



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483. *Symbrenthia formosanus* Fruhstorfer, 1908 臺灣盛蛺蝶

♂. TAIZHONG CITY, Heping, 540 Forest Trail, 1000m, 6. VIII. 2024 (J. Y. Liang) (genitalia preparation JYL1093).

484. *Symbrenthia lilaea* (Hewitson, 1864) 散紋盛蛺蝶

♂. TAINAN CITY, Dongshan, Kantoushan, 18. IX. 2018 (Y. F. Hsu) (genitalia preparation JYL879).

485. *Symbrenthia brabira scatinia* Fruhstorfer, 1908 黃豹盛蛺蝶

♂. MIAOLI Co., Sanyi, Guandaoshan, 4. VII. 2015 (L. Huang) (genitalia preparation JYL760).

486. *Hypolimnas misippus* (Linnaeus, 1764) 雌擬幻蛺蝶

♂. XINBEI CITY, Yingge, 8. VII. 2015, emgd. 7. VIII. 2015 (H. C. Huang) (genitalia preparation JYL754).



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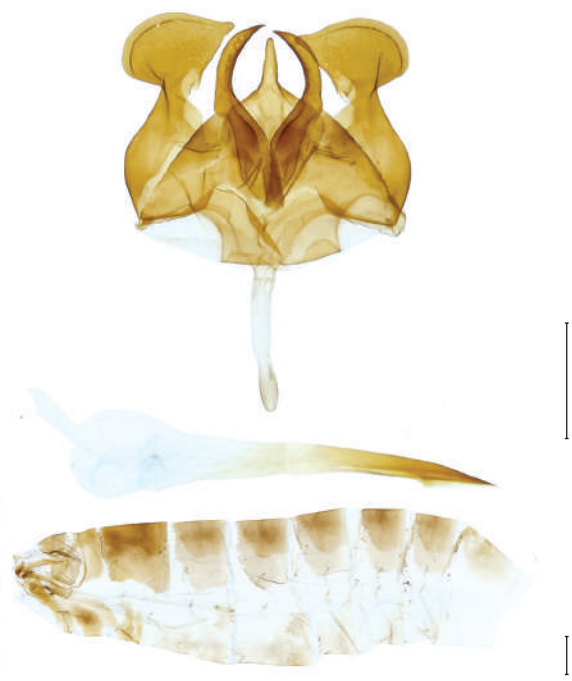

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487. *Hypolimnas bolina kezia* (Butler, 1877) 幻蛺蝶

♂. MIAOLI Co., Sanyi, 7. VI. 2015, emgd. 29. VI. 2015 (L. Huang) (genitalia preparation JYL755).

488. *Hypolimnas anomala truentus* Fruhstorfer, 1912 端紫幻蛺蝶

♂. TAIDONG Co., Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL992).

489. *Calinaga formosana* Fruhstorfer, 1908 臺灣絹蛺蝶

♂. TAOYUAN CITY, Fuxing, Gaoyi, 600m, 5. IV. 2017 (L. Huang) (genitalia preparation JYL998).

490. *Charaxes eudamippus formosanus* (Rothschild, 1899) 雙尾蛺蝶

♂. PINGDONG Co., Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14/17. III. 2008 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL1008).



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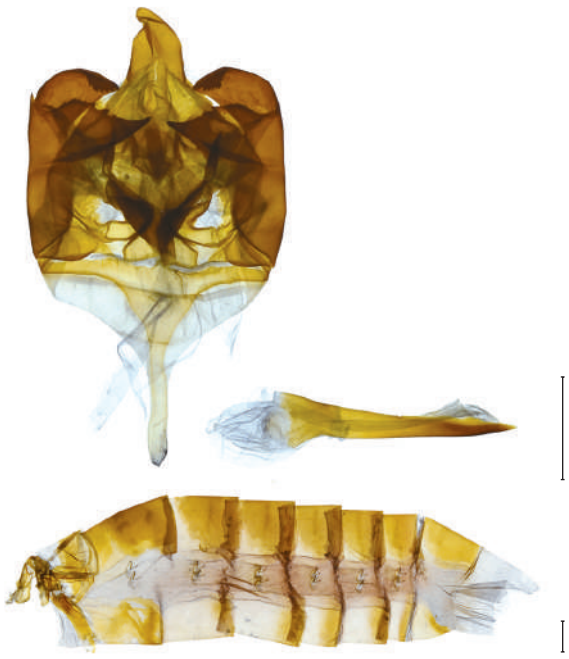

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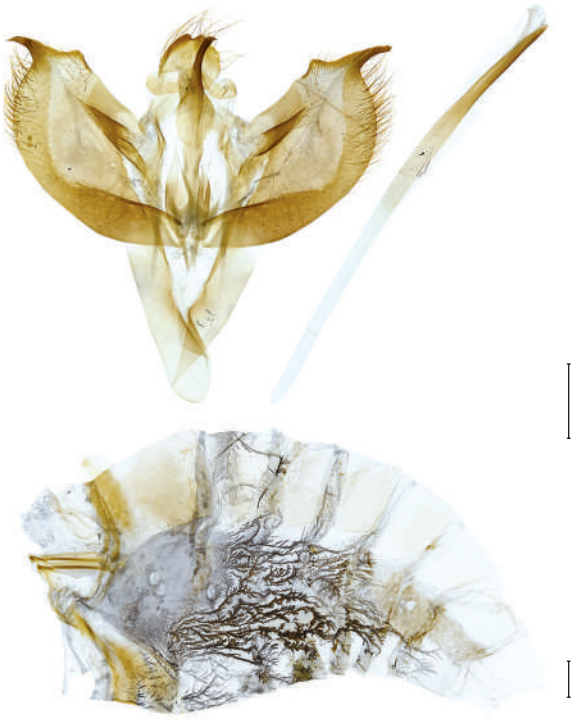

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491. *Charaxes narcaea meghaduta* (Fruhstorfer, 1908) 小雙尾蛺蝶

♂. XINBEI CITY, Wulai, Baoqing Temple, 17. VIII. 2015 (Y. H. Lin & C. W. Huang) (genitalia preparation JYL871).

492. *Charaxes bernardus* (Fabricius, 1793) 玉帶蛺蝶

♂. LIANJIANG Co., Beigan, Jinsha, 18. XI. 2013, reared from *Cinnamomum camphora*, emgd. 30. XII. 2013 (L. H. Wang & H. Y. Lee) (genitalia preparation JYL1047).

493. *Stichophthalma howqua formosana* Fruhstorfer, 1908 箭環蝶

♂. TAOYUAN CITY, Fuxing, Xuanyuan, 29. VI. 2015 (L. Huang) (genitalia preparation JYL876).

494. *Faunis eumeus* (Drury, 1770) 串珠環蝶

♂. JILONG CITY, Longgang Trai, 11. IV. 2011, reared from *Heterosmilax japonica* [= *Smilax bockii*], emgd. 27. V. 2010, HSU 10D10 (C. L. Huang, C. K. Wang & Y. T. Lin) (genitalia preparation JYL794).



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495. *Discophora sondaica tulliana* Stichel, 1905 方環蝶

♂. TAIPEI CITY, Shilin, Ciwu Temple, 22. VI. 2015 (L. Huang) (genitalia preparation JYL788).

496. *Ypthima baldus zodina* Fruhstorfer, 1911 小波眼蝶

♂. XINBEI CITY, Ruifang, Sandiaoling, 12. IX. 2015 (L. Huang) (genitalia preparation JYL884).

497. *Ypthima argus okurai* Okano, 1962 北方小波眼蝶

♂. TAIDONG Co., Haiduan, Wulu Forest Trail, 30. IV. 2019 (L. H. Wang) (genitalia preparation JYL920).

498. *Ypthima tappana* Matsumura, 1909 達邦波眼蝶

♂. PINGDONG Co., Shizi, Shouka, 8. V. 2020 (Y. F. Hsu) (genitalia preparation JYL897).



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499. *Ypthima atra taiwana* Lamas, 2010 大波眼蝶

♂. TAIDONG Co., Beinan, Zhiben Forest Trail, 21. X. 2015 (L. Huang) (genitalia preparation JYL893).

500. *Ypthima yamanakai* Sonan, 1938 白漪波眼蝶

♂. KAOHSIUNG CITY, Taoyuan, Southern Cross-Island Highway, 130Km, 3. VII. 2015 (C. W. Huang) (genitalia preparation JYL886).

501. *Ypthima angustipennis* Takahashi, 2000 狹翅波眼蝶

♂. TAIDONG Co., Haiduan, Lidao, 7. VI. 2020 (J. Y. Liang) (genitalia preparation JYL918).

502. *Ypthima multistriata* Butler, 1883 密紋波眼蝶

♂. TAIPEI CITY, Nangang, Academia Sinica, 23. IV. 2014 (H. C. Huang) (genitalia preparation JYL894).



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503. *Ypthima esakii esakii* Shirôzu, 1960 江崎波眼蝶

♂. YILAN Co., Nanao, Dabaishan, 21. IV. 2016 (L. Huang) (genitalia preparation JYL888).

504. *Ypthima esakii wangi* Lee, 1998 江崎波眼蝶北部亞種

♂. XINBEI CITY, Ruifang, Nanya, 9. X. 1998 (Y. F. Hsu) (genitalia preparation JYL978).

505. *Ypthima akragas* Fruhstorfer, 1911 白帶波眼蝶

♂. YILAN Co., Nanao, Dabaishan, 12. VI. 2014 (L. H. Wang) (genitalia preparation JYL882).

506. *Ypthima praenubila kanonis* Matsumura, 1929 巨波眼蝶 (臺灣北部亞種)

♂. TAIPEI CITY, Beitou, Menghuan Lake, 8. VI. 2013 (C. L. Huang) (genitalia preparation JYL896).



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507. *Ypthima praenubila neobilia* Murayama, 1980 巨波眼蝶 (臺灣中南部亞種)

♂. PINGDONG Co., Chunri, Dahanshan, 1100/1200m, 8. VIII. 2020 (Y. F. Hsu) (genitalia preparation JYL903).

508. *Ypthima norma norma* Westwood, 1851 罕波眼蝶

♂. LIANJIANG Co., Beigan, Daqiu, 6. IX. 2014 (C. L. Huang & H. Y. Lee) (genitalia preparation JYL934).

509. *Ypthima wenlungi* Takahashi, 2007 文龍波眼蝶

♂. KAOHSIUNG CITY, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su) (genitalia preparation JYL977).

510. *Ypthima lisandra* (Cramer, [1780]) 圓翅波眼蝶

♂. JINMEN Co., Jinhu, Jianhua, 20. VI. 2010, reared from *Paspalum conjugatum*, emgd. 28. VII. 2010, HSU 10F29 (C. K. Wang) (genitalia preparation JYL936).



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511. *Palaeonympha opalina macrophthalmia* Fruhstorfer, 1911 古眼蝶

♂. TAOYUAN CITY, Fuxing, Ronghua, 9. IV. 2016 (L. Huang) (genitalia preparation JYL861).

512. *Zophoessa dura neoclides* (Fruhstorfer, 1909) 大幽眼蝶

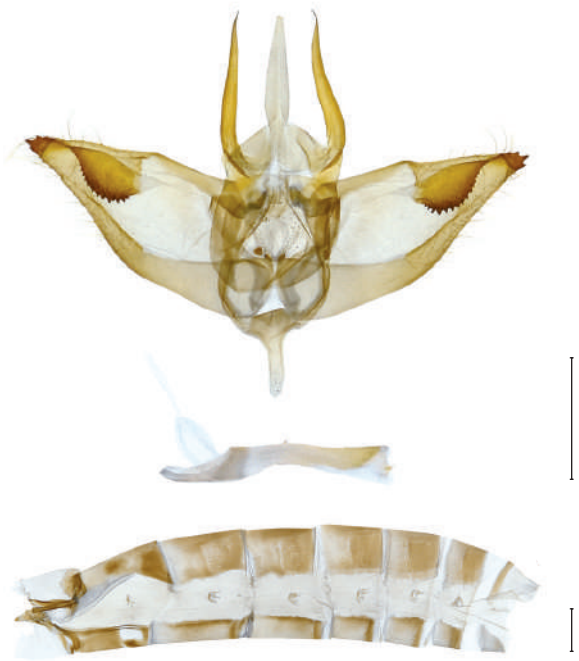
♂. TAIDONG Co., Haiduan, Wulu Forest Trail, 30. IV. 2019 (L. H. Wang) (genitalia preparation JYL902).

513. *Zophoessa siderea kanoi* (Esaki & Nomura, 1937) 圓翅幽眼蝶

♂. XINBEI CITY, Sanxia, Beichatianshan, 1500/1727m, 25/26. V. 2002 (C. L. Huang, L. H. Wang & C. R. Chen) (genitalia preparation JYL1018).

514. *Zophoessa niitakana* (Matsumura, 1906) 玉山幽眼蝶

♂. NANTOU Co., Renai, Songquangang, 16. VIII. 2018 (C. W. Huang) (genitalia preparation JYL914).



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515. *Lethe europa pavida* Fruhstorfer, 1908 長紋黛眼蝶

♂. TAIDONG Co., Beinan, Zhiben Forest Trail, 31. X. 2015 (H. C. Huang) (genitalia preparation JYL813).

516. *Lethe rohria daemoniaca* Fruhstorfer, 1908 波紋黛眼蝶

♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 17. VI. 2018 (C. J. Chang) (genitalia preparation JYL822).

517. *Lethe verma cintamani* Fruhstorfer, 1909 玉帶黛眼蝶

♂. HUALIAN Co., Xiulin, Bilu, 6. VII. 2015 (L. Huang) (genitalia preparation JYL823).

518. *Lethe hyrania formosana* Fruhstorfer, 1908 深山黛眼蝶

♂. XINBEI CITY, Sanzhi, Erziping, 15. VI. 2011 (C. L. Huang) (genitalia preparation JYL821).



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519. *Lethe chandica ratnacri* Fruhstorfer, 1908 曲紋黛眼蝶

♂. HUALIAN Co., Guangfu, Taibawang Elementary School, 6. VI. 2018 (J. Y. Liang) (genitalia preparation JYL810).

520. *Lethe mataja* Fruhstorfer, 1908 臺灣黛眼蝶

♂. PINGDONG Co., Chunri, Dahan Forest Trail, 21+Km, 20. VII. 2020 (C. W. Huang, C. J. Chang & J. Y. Liang) (genitalia preparation JYL921).

521. *Lethe christophi hanako* Fruhstorfer, 1908 柯氏黛眼蝶

♂. HUALIAN Co., Xiulin, Bilu, 5. VII. 2015 (L. Huang) (genitalia preparation JYL811).

522. *Lethe butleri periscelis* (Fruhstorfer, 1908) 巴氏黛眼蝶

♂. NANTOU Co., Renai, Wushe, 18. VIII. 2018 (L. Huang) (genitalia preparation JYL965).



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523. *Lethe gemina zaitha* Fruhstorfer, 1914 孿斑黛眼蝶

♂. NANTOU Co., Renai, Beidongyanshan, 1600m, 17. IX. 2018 (Y. F. Hsu) (genitalia preparation JYL1022).

524. *Neope pulaha didia* (Fruhstorfer, 1909) 黃斑蔭眼蝶

♂. HUALIAN Co., Xiulin, Bilu, 5. VII. 2015 (L. Huang) (genitalia preparation JYL845).

525. *Neope bremeri watanabei* Matsumura, 1909 布氏蔭眼蝶

♂. PINGDONG Co., Wutai, Xiaoguihu Forest Trail, 0Km, 2. VI. 2014, reared from *Miscanthus* sp., emgd. 18. VII. 2014 (Y. H. Lin, L. H. Wang, C. L. Huang & J. Y. Liang) (genitalia preparation JYL842).

526. *Neope armandii lacticolora* (Fruhstorfer, 1908) 白斑蔭眼蝶

♂. YILAN Co., Nanao, Dabaishan, 1260m, 21. IV. 2016 (L. Huang) (genitalia preparation JYL991).



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527. *Neope muirheadii nagasawae* Matsumura, 1919 褐翅蔭眼蝶

♂. XINBEI CITY, Bali, Guanyinshan, 16. VI. 2011 (J. H. Yen) (genitalia preparation JYL843).

528. *Mycalesis francisca formosana* Fruhstorfer, 1908 眉眼蝶

♂. XINBEI CITY, Shimen, Qingshan Spring, 30. III. 2015 (genitalia preparation JYL834).

529. *Mycalesis gotama nanda* Fruhstorfer, 1908 稻眉眼蝶

♂. TAIPEI CITY, Shilin, Pingding Ancient Canal, 1. VI. 2017 (L. Huang) (genitalia preparation JYL932).

530. *Mycalesis kagina* Fruhstorfer, 1908 嘉義眉眼蝶

♂. TAINAN CITY, Dongshan, Kantoushan, 26. IV. 2016 (L. Huang) (genitalia preparation JYL837).



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531. *Mycalesis perseus blasius* (Fabricius, 1798) 曲斑眉眼蝶

♂. KAOHSIUNG CITY, Tianliao, 14. VI. 2013 (Y. F. Hsu) (genitalia preparation JYL916).

532. *Mycalesis mucianus zonatus* Matsumura, 1909 切翅眉眼蝶

♂. TAIPEI CITY, Shilin, Zhishanyan, 8. V. 2015 (L. Huang) (genitalia preparation JYL838).

533. *Mycalesis mineus* (Linnaeus, 1758) 小眉眼蝶

♂. JIAYI Co., NCYU, Lantan campus, 30. VII. 2016 (L. Huang) (genitalia preparation JYL960).

534. *Mycalesis mineus* (Linnaeus, 1758) 小眉眼蝶

♂. JINMEN Co., Jinsha, Longlinghu, 4. XI. 2013 (genitalia preparation JYL962).



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535. *Telinga mara* (Fruhstorfer, 1908) 淺色眉眼蝶

♂. NANTOU Co., Xinyi, Heshe, 6. VII. 2015 (L. Huang) (genitalia preparation JYL835).

536. *Minois nagasawae* (Matsumura, 1906) 永澤蛇眼蝶

♂. TAIDONG Co., Haiduan, Xiangyang, 19. VIII. 2008 (genitalia preparation JYL832).

537. *Melanitis leda* (Linnaeus, 1758) 暮眼蝶

♂. MIAOLI Co., Sanyi, 13. IX. 2015 (L. Huang) (genitalia preparation JYL828).

538. *Melanitis phedima polishana* Fruhstorfer, 1908 森林暮眼蝶

♂. YILAN Co., Nanao, Dabaishan, 21. VII. 2016 (L. Huang) (genitalia preparation JYL830).



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539. *Penthema formosanum* (Rothschild, 1898) 臺灣斑眼蝶

♂. MIAOLI Co., Sanyi, Guandaoshan, 4. VII. 2015 (L. Huang) (genitalia preparation JYL866).

540. *Elymnias hypermnestra hainana* Moore, 1878 藍紋鋸眼蝶

♂. XINBEI CITY, Ruifang, Sandiaoling, 12. IX. 2015 (L. Huang) (genitalia preparation JYL758).



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FEMALE GENITALIA

Note. Scale bars represent 1 mm.

541. *Libythea lepita formosana* Fruhstorfer, 1909 東方喙蝶

♀. KAOHSIUNG CITY, Taoyuan, Baoshan, Erjituan, 27. VI. 2015 (R. Z. Chang) (genitalia preparation JYL825).

542. *Danaus plexippus* (Linnaeus, 1758) 帝王斑蝶

♀. USA: TX: Harris Co., Houston, IV. 2007, reared from *Asclepias curassavica*, emgd., 5. V. 2007, HSU 07D7 (H. H. Chuah) (genitalia preparation JYL1034).

543. *Danaus genutia* (Cramer, [1779]) 虎斑蝶

♀. TAINAN CITY, Xinhua, Zhiyi Forest Area, 28. X. 2016 (L. Huang) (genitalia preparation JYL982).

544. *Danaus melanippus edmondii* (Bougainville, 1837) 白虎斑蝶

♀. PHILIPPINES: BATANES PROV., Sabtang, Malakdang, 10. IV. 2013 (Y. F. Hsu) (genitalia preparation JYL1035).



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545. *Danaus chrysippus* (Linnaeus, 1758) 金斑蝶

♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 24. IX. 2015, emgd. 1. X. 2015 (L. Huang) (genitalia preparation JYL730).

546. *Tirumala limniace limniace* (Cramer, [1775]) 淡紋青斑蝶

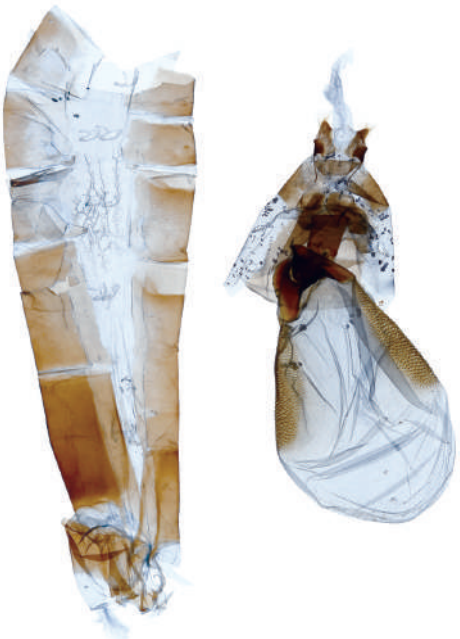
♀. XINZHU Co., Beipu, 12. X. 2015, emgd. 18. XI. 2015 (H. C. Huang) (genitalia preparation JYL751).

547. *Tirumala septentrionis* (Butler, 1874) 小紋青斑蝶

♀. XINBEI CITY, Ruifang, Sandiaoling, 12. IX. 2015 (L. Huang) (genitalia preparation JYL748).

548. *Parantica aglea maghaba* (Fruhstorfer, 1909) 絹斑蝶

♀. JIAYI Co., Fanlu, Chukou, 300m, 11. X. 2004 (Y. F. Hsu) (genitalia preparation JYL1043).



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549. *Parantica swinhoei* (Moore, 1883) 斯氏絹斑蝶

♀. PINGDONG Co., Chunri, Dahanshan, 2. IX. 2014 (C. L. Huang) (genitalia preparation JYL745).

550. *Parantica sita niphonica* (Moore, 1883) 大絹斑蝶

♀. XINBEI CITY, Wulai, Fushan, 400m, 19. IV. 2017 (L. Huang) (genitalia preparation JYL1001).

551. *Ideopsis similis* (Linneaus, 1758) 旖斑蝶

♀. TAINAN CITY, Zuozhen, Caoshan, 18. IX. 2018 (Y. F. Hsu) (genitalia preparation JYL753).

552. *Euploea sylvester swinhoei* Wallace, 1866 雙標紫斑蝶

♀. TAIPEI CITY, Shilin, Zhishanyan, 1. VI. 2015 (L. Huang) (genitalia preparation JYL731).



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553. *Euploea midamus* (Linnaeus, 1758) 藍點紫斑蝶

♀. JINEMN Co., Jinning, Zhongshan Forest, 5. XI. 2015 (C. W. Huang) (genitalia preparation JYL741).

554. *Euploea mulciber barsine* Fruhstorfer, 1904 異紋紫斑蝶

♀. TAIPEI CITY, Beitou, Junjianyan, 11. VI. 2015, emgd. 29. VI. 2015 (H. C. Huang) (genitalia preparation JYL736).

555. *Euploea phaenareta juvia* Fruhstorfer, 1908 大紫斑蝶

♀. THAILAND: PHUKET PROV., Rt4020, Mu Ban Phuket Hopeland, 24. VIII. 2016, reared from *Cerbera* sp., emgd. 14 . IX. 2016, HSU 16H50 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL1016).

556. *Euploea eunice hobsoni* (Butler, 1877) 圓翅紫斑蝶

♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 14. V. 2020 (Y. M. Hsu) (genitalia preparation JYL734).



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557. *Euploea tulliolus koxinga* Fruhstorfer, 1908 小紫斑蝶

♀. PINGDONG Co., Checheng, Sichongxi, 24. II. 2014 (C. L. Huang) (genitalia preparation JYL739).

558. *Euploea core amymone* (Godart, 1819) 幻紫斑蝶

♀. KAOHSIUNG CITY, Qijin, Dongsha Is., 2/7. X. 2008, reared from *Nerium oleander*, emgd. 24. X. 2008, HSU 08K5(Y. F. Hsu) (genitalia preparation JYL1024).

559. *Euploea camaralzeman cratis* Butler, 1866 白列紫斑蝶

♀. PENGHU Co., Xiyu, East Fort, 11. VI. 2014 (C. W. Huang & J. Y. Liang) (genitalia preparation JYL1010).

560. *Idea leuconoe clara* (Butler, 1867) 大白斑蝶

♀. JILONG CITY, Zhongzheng, NTOU, 4. II. 2017, emgd. 28. III. 2017, HSU 17B05 (L. Huang) (genitalia preparation JYL1004).



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561. *Idea leuconoe kwashotoensis* (Sonan, 1928) 大白斑蝶 (綠島亞種)

♀. TAIDONG Co., Ludao, 8/10. IX. 2009 (C. L. Huang & Y. C. Lin) (genitalia preparation JYL1042).

562. *Telchinia issoria formosana* (Fruhstorfer, 1914) 苧麻細蝶

♀. TAIZHONG CITY, Heping, Shangguguan, 800/900m, 28. VII. 2007, reared from *Debregeasia orientalis*, emgd. 3. VIII. 2007, HSU 07G41 (Y. F. Hsu) (genitalia preparation JYL1050).

563. *Argynnis paphia formosicola* Matsumura, 1927 綠豹蛺蝶

♀. HUALIAN Co., Xiulin, Guanyuan, 8. IX. 2020, reared from *Viola* sp., emgd. 13. III. 2021, HSU 20J4 (Y. F. Hsu) (genitalia preparation JYL1012).

564. *Argynnis hyperbius* (Linnaeus, 1763) 斐豹蛺蝶

♀. TAIPEI CITY, Beitou, Datunshan, 9. IX. 2014 (L. Huang) (genitalia preparation JYL777).



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565. *Argynnis childreni* Gray, 1831 大豹蛱蝶

♀. LIANJIANG Co., Beigan, 19. XI. 2013, reared from *Viola* sp., emgd. 2/21. II. 2014, HSU 13L63(L. H. Wang & H. Y. Lee) (genitalia preparation JYL926).

566. *Phalanta phalantha* (Drury, [1773]) 琺蛱蝶

♀. PINGDONG Co., Checheng, Sichongxi, 24. II. 2014 (C. L. Huang) (genitalia preparation JYL868).

567. *Cupha erymanthis* (Drury, [1773]) 黃襟蛱蝶

♀. TAIPEI CITY, Wenshan, Chanchushan, X. 2018, emgd. 14. X. 2018 (L. Huang) (genitalia preparation JYL984).

568. *Neptis hylas luculenta* Fruhstorfer, 1907 豆環蛱蝶

♀. TAIPEI CITY, Xinyi, Hushan, 8. IX. 2010 (C. L. Huang) (genitalia preparation JYL847).



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569. *Neptis hylas hylas* (Linnaeus, 1758) 豆環蛺蝶

♀. JINMEN Co., Jinhu, Botanical Garden, 18. XI. 2013 (Y. F. Hsu) (genitalia preparation JYL922).

570. *Neptis sappho formosana* Fruhstorfer, 1908 小環蛺蝶

♀. NANTOU Co., Renai, Beidongyanshan, 1600m, 17. IX. 2018 (Y. F. Hsu) (genitalia preparation JYL858).

571. *Neptis soma tayalina* Murayama & Shimonoya, 1968 斷線環蛺蝶

♀. NANTOU Co., Renai, Beidongyanshan, 1600m, 17. IX. 2018 (Y. F. Hsu) (genitalia preparation JYL840).

572. *Neptis soma ominicola* Fruhstorfer, 1908 斷線環蛺蝶

♀. LIANJIANG Co., Beigan, Qinbi, 25. VI. 2019 (Y. Y. Lu) (genitalia preparation JYL839).



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573. *Neptis nata lutatia* Fruhstorfer, 1913 細帶環蛺蝶

♀. XINBEI CITY, Shimen, Qingshan Spring, 30. III. 2015 (genitalia preparation JYL850).

574. *Neptis reducta* Fruhstorfer, 1908 無邊環蛺蝶

♀. TAIZHONG CITY, Heping, Guguan (Z. L. Chen) (genitalia preparation JYL860).

575. *Neptis taiwana* Fruhstorfer, 1908 蓬萊環蛺蝶

♀. TAIPEI CITY, Beitou, NYCU, 14. VI. 2015 (L. Huang) (genitalia preparation JYL856).

576. *Neptis noyala ikedai* Shirôzu, 1952 流紋環蛺蝶

♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Highway, 56Km, 30. IX. 2014, reared from *Castanopsis cuspidata* var. *carlesii*, emgd. 5. XII. 2014, HSU 14J88 (Y. M. Hsu & Y. F. Hsu) (genitalia preparation JYL981).



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577. *Neptis sankara shirakiana* Matsumura, 1929 眉紋環蛺蝶

♀. TAOYUAN CITY, Fuxing, Kulushan, 8. VI. 2018 (C. W. Huang) (genitalia preparation JYL913).

578. *Neptis sylvana esakii* Nomura, 1935 深山環蛺蝶

♀. NANTOU Co., Renai, Hewang. 1600m, 22. VI. 2008 (R. K. Dong) (genitalia preparation JYL972).

579. *Neptis podarces* Nire, 1920 臺灣蓮花環蛺蝶

♀. YILAN Co., Datong, Tuleng, 8. VIII. 2018 (L. H. Wang & C. W. Huang) (genitalia preparation JYL911).

580. *Neptis philyra splendens* Murayama, 1941 槭環蛺蝶

♀. TAOYUAN CITY, Fuxing, Dongyanshan, emgd. 20. IV. 2015 (X. Lee) (genitalia preparation JYL1031).



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581. *Neptis philyroides sonani* Murayama, 1941 鑲紋環蛺蝶

♀. PINGDONG Co., Wutai, Yichangshan, 1100m, 23. III. 2010, reared from *Carpinus kawakamii*, emgd. 12. IV. 2010, HSU 10C26 (C. L. Huang) (genitalia preparation JYL1027).

582. *Neptis ilos nirei* Nomura, 1935 奇環蛺蝶

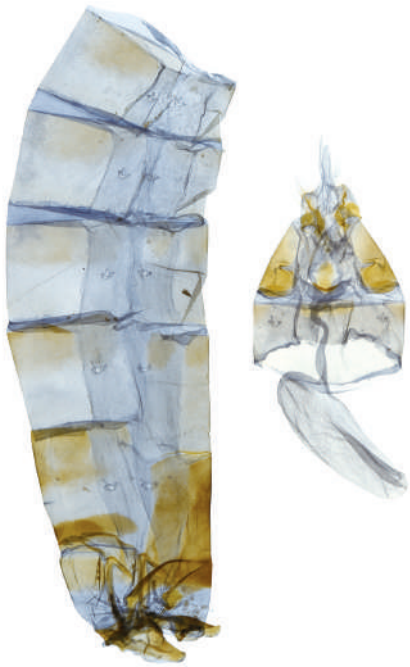
♀. HUALIAN Co., Xiulin, Bilu, 15/16. VII. 2019 (C. W. Huang) (genitalia preparation JYL946).

583. *Neptis pryeri jucundita* Fruhstorfer, 1908 黑星環蛺蝶

♀. PINGDONG Co., Chunri, Dahan Forest Trail, 15Km, 5. VII. 2015 (C. W. Huang) (genitalia preparation JYL853)

584. *Pantoporia hordonia rihodona* (Moore, 1878) 金環蛺蝶

♀. KAOHSIUNG CITY, Taoyuan, Meishan, 27. X. 2016 (L. Huang) (genitalia preparation JYL986).



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585. *Limenitis sulpitia tricula* Fruhstorfer, 1908 殘眉線蛺蝶

♀. TAIPEI CITY, Shilin, Pingding Ancient Canal, 15. VI. 2014 (L. Huang) (genitalia preparation JYL827).

586. *Limenitis asura baelia* (Fruhstorfer, 1908) 白圈線蛺蝶

♀. XINBEI CITY, Pinglin, Shangde, 20. VIII. 2015 (C. W. Huang) (genitalia preparation JYL768).

587. *Limenitis jina sauteri* (Fruhstorfer, 1913) 寬帶線蛺蝶

♀. XINZHU Co., Jianshi, Mamei, 1550m, 6. IX. 2005, reared from *Lonicera hypoglauca*, emgd. 14/22. IX. 2005, HSU 05J22 (C. C. Lu) (genitalia preparation JYL1028).

588. *Limenitis fortuna kodahirai* (Sonan, 1938) 幻紫線蛺蝶

♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Highway, 14. VI. 2021, reared from *Viburnum* sp., emgd. 20. VII. 2021, HSU 21F6 (Y. Q. Yeh) (genitalia preparation JYL1021).



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589. *Limenitis dudu jinamitra* Fruhstorfer, 1908 紫俳線蛺蝶

♀. TAIPEI CITY, Beitou, Sansheng Temple, 6. IV. 2009, reared from *Lonicera* sp., emgd. 8. V. 2009, HSU 09D13 (Y. F. Hsu, C. H. Lin, jr & M. S. Sun) (genitalia preparation JYL907).

590. *Athyma perius* (Linnaeus, 1758) 玄珠帶蛺蝶

♀. HUALIAN Co., Fengbin, Baliwan, 29. VII. 2018 (J. Y. Liang) (genitalia preparation JYL782).

591. *Athyma selenophora laela* (Fruhstorfer, 1908) 異紋帶蛺蝶

♀. XINEBEI CITY, Sanzhi, Erziping, 17. VIII. 2010 (C. L. Huang) (genitalia preparation JYL780).

592. *Athyma cama zoroastres* Butler, 1877 雙色帶蛺蝶

♀. NANTOU Co., Puli, Lingxiaodian, 14. VIII. 2019 (J. Y. Liang) (genitalia preparation JYL772).



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593. *Athyma opalina hirayamai* (Matsumura, 1935) 流帶蛺蝶

♀. TAIDONG Co., Haiduan, Liyuan, 1800m, 18/19. VI. 2020 (Y. F. Hsu & C. W. Huang) (genitalia preparation JYL969).

594. *Abrota ganga formosana* Fruhstorfer, 1909 瑙蛺蝶

♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Highway, 55.6Km, 2. X. 2018 (C. W. Huang) (genitalia preparation JYL774).

595. *Euthalia irrubescens fulguralis* (Matsumura, 1909) 紅玉翠蛺蝶

♀. TAIZHONG CITY, Heping, Guguan, 10. VIII. 2018, emgd. 14. IX. 2018 (Z. L. Chen) (genitalia preparation JYL908).

596. *Euthalia phemius* (Doubleday, [1848]) 尖翅翠蛺蝶

♀. JILONG CITY, Nuannuan, 17. X. 2019, reared from *Mangifera indica*, emgd. 11. XII. 2019 (J. F. Shen) (genitalia preparation JYL1006).



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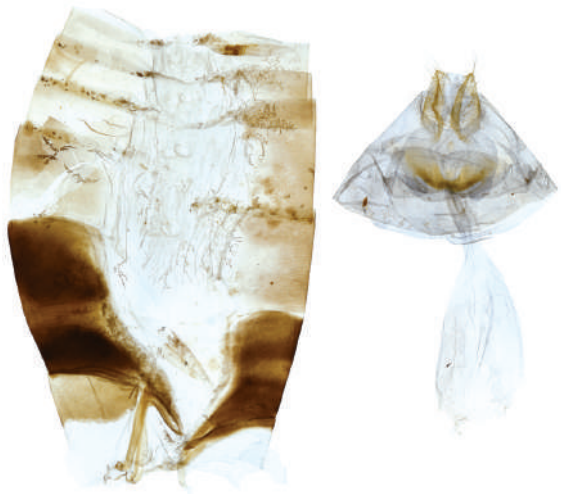

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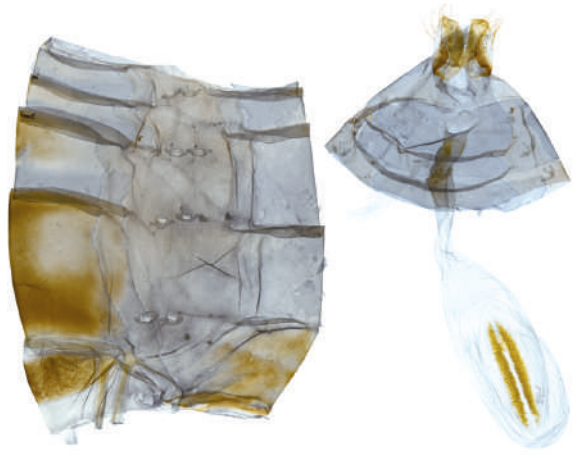

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597. *Euthalia kosempona* Fruhstorfer, 1908 甲仙翠蛺蝶

♀. TAIDONG Co., Yanping, Hongye, 22. IX. 2001 (L. W. Wu) (genitalia preparation JYL988).

598. *Euthalia malapana* Shirôzu & Chung, 1958 馬拉巴翠蛺蝶

♀. TAIZHONG CITY, Heping, Shishanxi, 5. IX. 2003 (J. L. Jan) (genitalia preparation YFH1581).

599. *Euthalia formosana* Fruhstorfer, 1908 臺灣翠蛺蝶

♀. TAOYUAN CITY, Fuxing, Xuanyuan, 2. VII. 2015 (L. Huang) (genitalia preparation JYL790).

600. *Euthalia insulae* Hall, 1930 窄帶翠蛺蝶

♀. YILAN Co., Yuanshan, Fushan Botanical Garden, 800m, 28. VIII. 2007 (Y. F. Hsu) (genitalia preparation JYL987).



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601. *Dichorragia nesimachus formosanus* Fruhstorfer, 1909 流星蛺蝶

♀. TAIPEI CITY, Neihu, Dagouxi, 30. X. 2018, emgd. 21. XI. 2018 (L. Huang) (genitalia preparation JYL1046).

602. *Timelaea albescens formosana* Fruhstorfer, 1908 白裳貓蛺蝶

♀. XINBEI CITY, Wulai, 1. V. 2010, reared from *Celtis formosana*, HSU 10E06 (J. H. Lin) (genitalia preparation JYL910).

603. *Chitoria chrysolora* (Fruhstorfer, 1908) 金鎧蛺蝶

♀. TAIDONG Co., Donghe, Dulanshan, 1000m, 29. VII. 2021 (J. Y. Liang) (genitalia preparation JYL970).

604. *Chitoria ulupi arakii* Naritomi, 1959 武鎧蛺蝶

♀. NANTOU Co., Renai, Beidongyanshan, 1500m, 1. IX. 2006 (L. H. Wang) (genitalia preparation JYL974).



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605. *Helcyra plesseni* (Fruhstorfer, 1913) 普氏白蛺蝶

♀. KAOHSIUNG CITY, Taoyuan, Meishan, 700m, 8. XI. 2011 (H. C. Huang) (genitalia preparation JYL1037).

606. *Helcyra superba takamukui* Matsumura, 1919 白蛺蝶

♀. TAIZHONG CITY, Heping, Guguan, Shaolai Trail, 30. IX. 2018 (L. Huang) (genitalia preparation JYL779).

607. *Sephisa chandra androdamas* Fruhstorfer, 1908 燦蛺蝶

♀. TAIPEI CITY, Beitou, Datunshan, 6. VII. 2016 (L. Huang) (genitalia preparation JYL875).

608. *Sephisa daimio* Matsumura, 1910 臺灣燦蛺蝶

♀. YILAN Co., Datong, Tuleng, 8. VIII. 2018 (L. H. Wang & C. W. Huang) (genitalia preparation JYL909).



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609. *Hestina assimilis formosana* (Moore, [1896]) 紅斑脈蛺蝶

♀. TAIPEI CITY, Beitou, Datunshan, 19. VI. 2016 (L. Huang) (genitalia preparation JYL943).

610. *Hestina assimilis assimilis* (Linnaeus, 1758) 紅斑脈蛺蝶

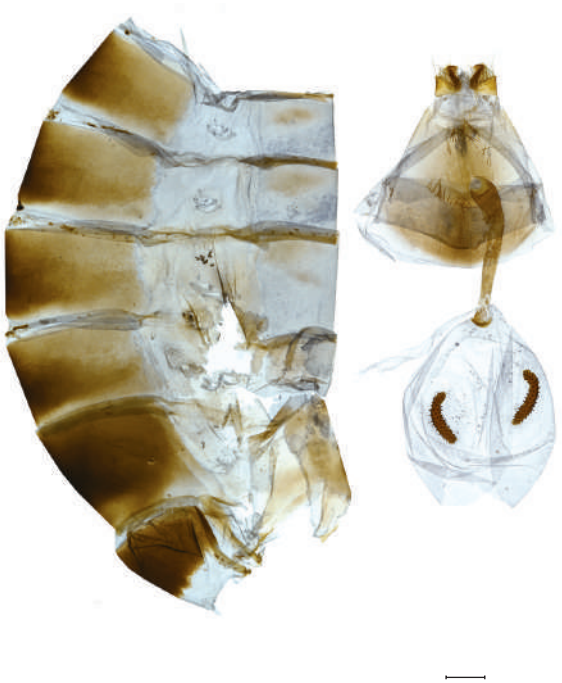
♀. JINMEN Co., Jinhu, Shenshiqiao, 4. XI. 2015 (C. W. Huang) (genitalia preparation JYL796).

611. *Sasakia charonda formosana* Shirôzu, 1963 大紫蛺蝶

♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Highway, 48.5Km, 13. VII. 2015 (R. Z. Chang) (genitalia preparation JYL899).

612. *Rohana parisatis staurakius* Fruhstorfer, 1913 羅蛺蝶

♀. JINEMN Co., Jinsha, Wuhushan, 22. VIII. 2024 (Y. D. Ho) (genitalia preparation JYL1083).



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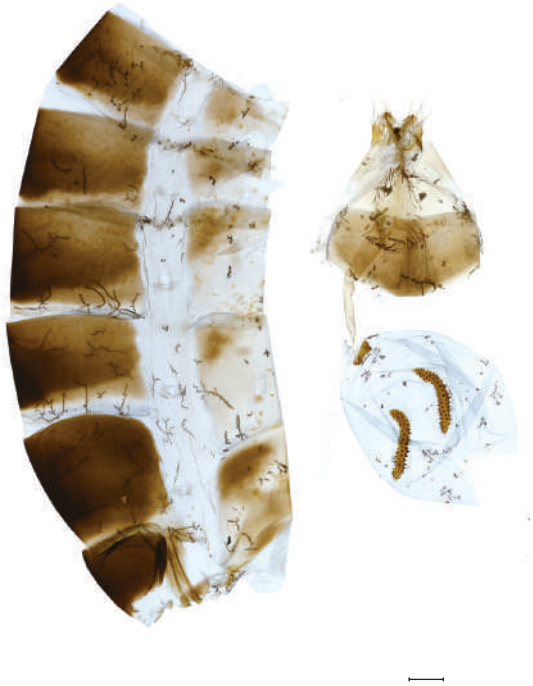

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613. *Ariadne ariadne pallidior* (Fruhstorfer, 1899) 波蛺蝶

♀. JINMEN Co., Jinning, Zhongshan Forest, 16. VIII. 2001, reared from *Ricinus communis*, emgd. 14. IX. 2001, HSU 01H20 (Y. T. Lo, L. W. Wu, Y. C. Yang& Y. C. Su) (genitalia preparation JYL1038).

614. *Cyrestis thyodamas formosana* Fruhstorfer, 1898 網絲蛺蝶

♀. TAIPEI CITY, Beitou, Datunshan, 31. V. 2016 (H. C. Huang) (genitalia preparation JYL949).

615. *Cyrestis thyodamas chinensis* Martin, 1903 網絲蛺蝶

♀. LIANJIANG Co., Nangan, Tree Nursery, 11. X. 2014 (C. W. Huang & H. Y. Lee) (genitalia preparation JYL1029).

616. *Junonia almana* (Linnaeus, 1758) 眼蛺蝶

♀. TAINAN CITY, Xinhua, Zhiyi Forest Area, 25. XII. 2016 (L. Huang) (genitalia preparation JYL942).



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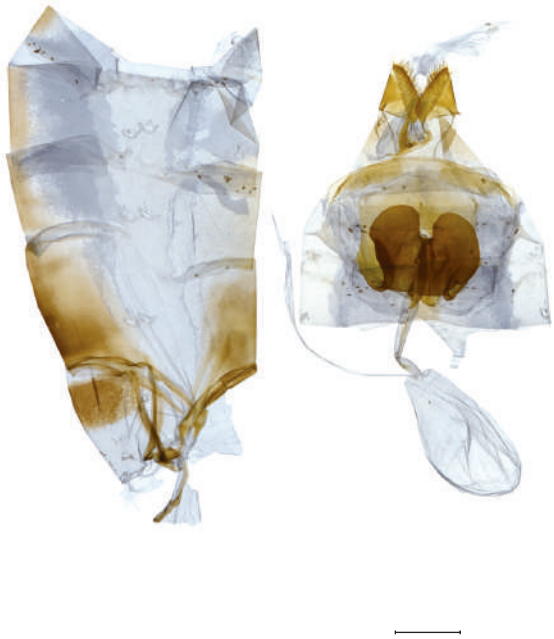

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617. *Junonia lemonias aenaria* (Fruhstorfer, 1912) 鱗紋眼蛺蝶

♀. PINGDONG Co., Checheng, Sichongxi, 24. II. 2014 (C. L. Huang) (genitalia preparation JYL804).

618. *Junonia orithya* (Linnaeus, 1758) 青眼蛺蝶

♀. MIAOLI Co., Taian, Dabicuo, 12. IV. 2015, emgd. 28. IV. 2015 (H. C. Huang) (genitalia preparation JYL765).

619. *Junonia iphita* (Cramer, [1779]) 黯眼蛺蝶

♀. PINGDONG Co., Chunri, Dahanshan, 2. IX. 2014 (C. L. Huang) (genitalia preparation JYL802).

620. *Junonia atlites* (Linnaeus, 1763) 波紋眼蛺蝶

♀. JINMEN Co., Jinhu, Taiwushan, 14. VIII. 2015, emgd. 7. IX. 2015 (L. Huang) (genitalia preparation JYL799).



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621. *Kallima inachus formosana* Fruhstorfer, 1913 枯葉蝶

♀. XINZHU Co., Guanxi, Jinshanxi, 7. XII. 2005 (C. L. Huang) (genitalia preparation JYL769).

622. *Yoma sabina podium* Tsukada, 1985 黃帶隱蛺蝶

♀. PINGDONG Co., Shizi, Lilongshan, 500m, 23. VI. 2007, reared from *Ruellia prostrata*, emgd. 27. VII. 2007, HSU 07F40 (C. C. Lu, L. W. Wu & L. H. Wang) (genitalia preparation JYL1049).

623. *Vanessa indica* (Herbst, 1794) 大紅蛺蝶

♀. JILONG CITY, NTOU/ Gangziliao, 5. II. 2017, reared from *Boehmeria nivea*, emgd. 16. II. 2017, HSU 17B17 (L. Huang & H. C. Huang) (genitalia preparation JYL958).

624. *Vanessa cardui* (Linnaeus, 1758) 小紅蛺蝶

♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 18. X. 2019, reared from *Artemisia indica*, emgd. 4. XI. 2019, HSU 19K16 (L. Huang) (genitalia preparation JYL997).



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625. *Polygonia c-album asakurai* Nakahara, 1920 突尾鉤蛺蝶

♀. XINZHU Co., Jianshi, Lidongshan, 11. VI. 2018, emgd. 23. VI. 2018 (L. Huang) (genitalia preparation JYL967).

626. *Polygonia c-aureum lunulata* Esaki & Nakahara, 1924 黃鉤蛺蝶

♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 27. VI. 2015, emgd. 9. VII. 2015 (L. Huang) (genitalia preparation JYL762).

627. *Polygonia c-aureum c-aureum* (Linnaeus, 1758) 黃鉤蛺蝶

♀. LIANJIANG Co., Beigan, Tangqi, 21. VII. 2020 (Y. F. Hsu) (genitalia preparation JYL951).

628. *Kaniska canace drilon* (Fruhstorfer, 1908) 琉璃蛺蝶

♀. TAIPEI CITY, Shilin, Pingding Ancient Canal, 1. XII. 2010 (genitalia preparation JYL726).



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629. *Kaniska canace canace* (Linnaeus, 1763) 琉璃蛺蝶

♀. LIANJIANG Co., Beigan, Nigushan, 16. IV. 2014, reared from *Smilax china*, emgd. 8. V. 2014, HSU 14D19 (Y. F. Hsu, H. C. Huang & C. L. Huang) (genitalia preparation JYL956).

630. *Nymphalis xanthomelas formosana* (Matsumura, 1925) 緋蛺蝶

♀. TAOYUAN CITY, Fuxing, Baling, 23. IV. 2017, emgd. 3. V. 2017, HSU 17D60 (L. Huang) (genitalia preparation JYL957).

631. *Symbrenthia formosanus* Fruhstorfer, 1908 臺灣盛蛺蝶

♀. TAIDONG Co., Haiduan, Liyuan, 7. VI. 2020 (Y. F. Hsu) (genitalia preparation JYL1036).

632. *Symbrenthia lilaea* (Hewitson, 1864) 散紋盛蛺蝶

♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 21. IV. 2015, emgd. 6. V. 2015 (L. Huang) (genitalia preparation JYL880).



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633. *Symbrenthia brabira scatinia* Fruhstorfer, 1908 黃豹盛蛺蝶

♀. TAOYUAN CITY, Fuxing, Xuanyuan, 1000m, 5. IV. 2017 (L. Huang) (genitalia preparation JYL1000).

634. *Hypolimnas misippus* (Linnaeus, 1764) 雌擬幻蛺蝶

♀. XINBEI CITY, Yingge, 8. VII. 2015, emgd. 4. VIII. 2015 (H. C. Huang) (genitalia preparation JYL757).

635. *Hypolimnas bolina kezia* (Butler, 1877) 幻蛺蝶

♀. XINBEI CITY, Pinglin, Bihu Temple, 4. VI. 2016 (L. Huang) (genitalia preparation JYL756).

636. *Hypolimnas anomala truentus* Fruhstorfer, 1912 端紫幻蛺蝶

♀. TAIDONG Co., Lanyu, Central Transverse Road, 19. V. 2021 (Y. F. Hsu) (genitalia preparation JYL950).



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637. *Calinaga formosana* Fruhstorfer, 1908 臺灣絹蛺蝶

♀. XINBEI CITY, Wulai, Fushan, 19. IV. 2017 (L. Huang) (genitalia preparation JYL999).

638. *Charaxes eudamippus formosanus* (Rothschild, 1899) 雙尾蛺蝶

♀. PINGDONG Co., Chunri, Qijia, 350m, 27. VII. 2018 (Y. T. Chung) (genitalia preparation JYL1007).

639. *Charaxes narcaea meghaduta* (Fruhstorfer, 1908) 小雙尾蛺蝶

♀. TAOYUAN CITY, Fuxing, Sanmin, Bianfudong, 29. V. 2016, emgd. 8. VI. 2016 (W. Y. Pan) (genitalia preparation JYL872).

640. *Charaxes bernardus* (Fabricius, 1793) 玉帶螯蛺蝶

♀. LIANJIANG Co., Nangan, Jinsha, 18. XI. 2013, reared from *Camphora officinarum*, emgd. 5. I. 2014 (L. H. Wang & H. Y. Lee) (genitalia preparation JYL1048).



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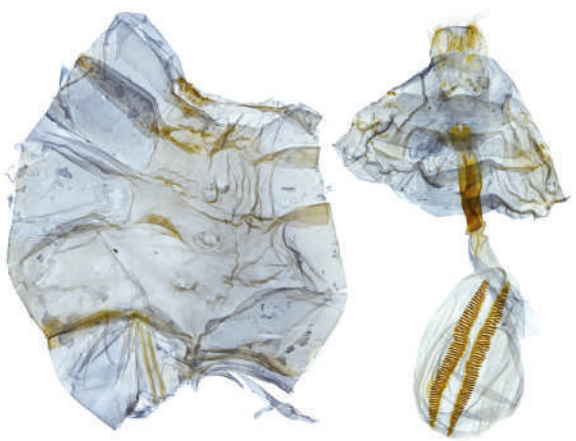

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641. *Stichophthalma howqua formosana* Fruhstorfer, 1908 箭環蝶

♀. MIAOLI Co., Sanyi, Guandaoshan, 1. VIII. 2020 (L. Huang) (genitalia preparation JYL941).

642. *Faunis eumeus* (Drury, 1770) 串珠環蝶

♀. JILONG CITY, Longgang Trail, 25. IV. 2015, emgd. 3. VI. 2015 (H. C. Huang) (genitalia preparation JYL795).

643. *Discophora sondaica tulliana* Stichel, 1905 方環蝶

♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 15. VI. 2015 (L. Huang) (genitalia preparation JYL764).

644. *Ypthima baldus zodina* Fruhstorfer, 1911 小波眼蝶

♀. XINBEI CITY, Ruifang, Sandiaoling, 12. IX. 2015 (L. Huang) (genitalia preparation JYL885).



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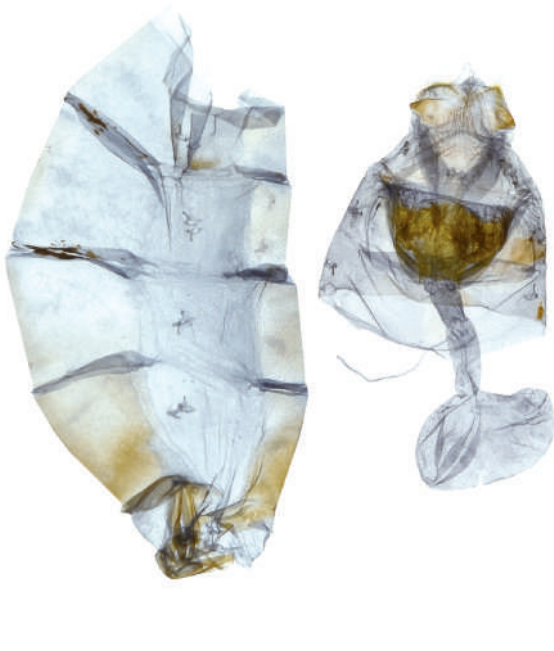

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645. *Ypthima argus okurai* Okano, 1962 北方小波眼蝶

♀. TAIDONG Co., Haiduan, Wulu Forest Trail, 30. IV. 2019 (L. H. Wang) (genitalia preparation JYL919).

646. *Ypthima tappana* Matsumura, 1909 達邦波眼蝶

♀. TAIDONG Co., Beinan, Zhiben Forest Trail, 31. X. 2015 (H. C. Huang) (genitalia preparation JYL898).

647. *Ypthima atra taiwana* Lamas, 2010 大波眼蝶

♀. TAIPEI CITY, Shilin, Pingding Ancient Canal, 7. IV. 2016 (L. Huang) (genitalia preparation JYL892).

648. *Ypthima yamanakai* Sonan, 1938 白漪波眼蝶

♀. KAOHSIUNG CITY, Taoyuan, Southern Cross-Island Highway, 130Km, 3. VII. 2015 (C. W. Huang) (genitalia preparation JYL887).



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649. *Ypthima angustipennis* Takahashi, 2000 狹翅波眼蝶

♀. TAIDONG Co., Haiduan, Lidao, 5. VI. 2020 (C. W. Huang) (genitalia preparation JYL917).

650. *Ypthima multistriata* Butler, 1883 密紋波眼蝶

♀. TAIPEI CITY, Neihu, Neigou, 10. II. 2016 (L. Huang) (genitalia preparation JYL895).

651. *Ypthima esakii esakii* Shirôzu, 1960 江崎波眼蝶

♀. NANTOU Co., Renai, Aowanda, 17/18. VIII. 2015, emgd. 30. IX. 2015 (H. C. Huang) (genitalia preparation JYL890).

652. *Ypthima esakii wangi* Lee, 1998 江崎波眼蝶北部亞種

♀. XINBEI CITY, Ruifang, Jiufen, 300m, 4. XI. 2011 (Y. F. Hsu) (genitalia preparation JYL979).



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653. *Ypthima akragas* Fruhstorfer, 1911 白帶波眼蝶

♀. NANTOU Co., Renai, Qingjing, 1. VI. 2015 (C. L. Huang) (genitalia preparation JYL883).

654. *Ypthima praenubila kanonis* Matsumura, 1929 巨波眼蝶 (臺灣北部亞種)

♀. TAIPEI CITY, Beitou, Datunshan, 12. VI. 2016 (H. C. Huang) (genitalia preparation JYL929).

655. *Ypthima praenubila neobilia* Murayama, 1980 巨波眼蝶 (臺灣中南部亞種)

♀. TAIDONG Co., Haiduan, Liyuan, 7/8. VII. 2021 (Z. L. Chen) (genitalia preparation JYL1044).

656. *Ypthima norma norma* Westwood, 1851 罕波眼蝶

♀. LIANJIANG Co., Beigan, Daqiu, 20. IV. 2007 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL937).



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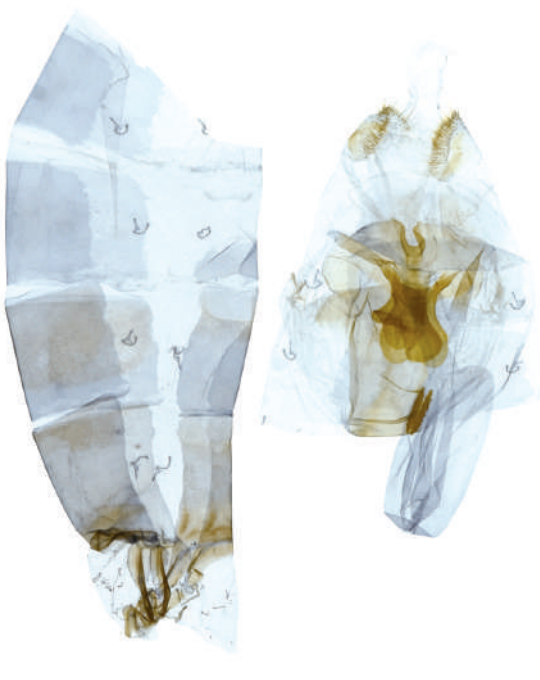

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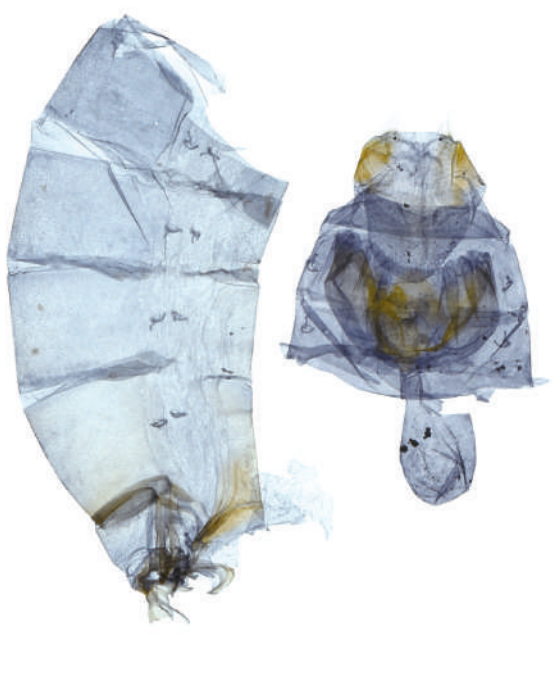

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657. *Ypthima wenlungi* Takahashi, 2007 文龍波眼蝶

♀. KAOHSIUNG CITY, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su) (genitalia preparation JYL976).

658. *Ypthima lisandra* (Cramer, [1780]) 圓翅波眼蝶

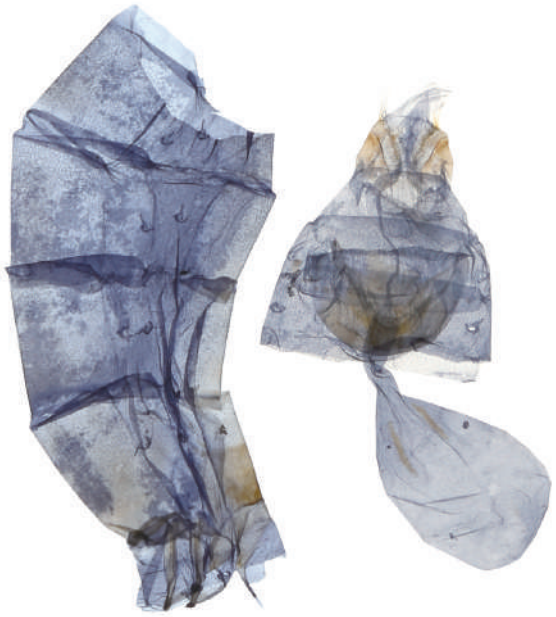
♀. JINMEN Co., Jinhu, Jianhua, 20. VI. 2010, reared from *Paspalum conjugatum*, emgd. 24. VII. 2010, HSU 10F29 (C. K. Wang) (genitalia preparation JYL935).

659. *Palaeonympha opalina macrophthalmia* Fruhstorfer, 1911 古眼蝶

♀. TAOYUAN CITY, Fuxing, Ronghua, 9. IV. 2016 (L. Huang) (genitalia preparation JYL862).

660. *Zophoessa dura neoclides* (Fruhstorfer, 1909) 大幽眼蝶

♀. HUALIAN Co., Xiulin, Guanyuan, 2200m, 7. VII. 2006 (L. H. Wang) (genitalia preparation JYL1032).



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661. *Zophoessa siderea kanoi* (Esaki & Nomura, 1937) 圓翅幽眼蝶

♀. XINBEI CITY, Sanxia, Beichatianshan, 1500/1700m, 7/10. VI. 2001 (Y. T. Lo) (genitalia preparation JYL1017).

662. *Zophoessa niitakana* (Matsumura, 1906) 玉山幽眼蝶

♀. NANTOU Co., Renai, Xiaofengkou, 8. VII. 2018 (C. W. Huang) (genitalia preparation JYL915).

663. *Lethe europa pavida* Fruhstorfer, 1908 長紋黛眼蝶

♀. YUNLIN Co., Douliu, Hushan Dam, 2. XII. 2015 (L. Huang) (genitalia preparation JYL812).

664. *Lethe rohria daemoniaca* Fruhstorfer, 1908 波紋黛眼蝶

♀. TAOYUAN CITY, Fuxing, Baling Ancient Trail, 1. IV. 2015, reared from *Miscanthus sinensis*, HSU 15D01 (L. Huang) (genitalia preparation JYL928).



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665. *Lethe verma cintamani* Fruhstorfer, 1909 玉帶黛眼蝶

♀. TAOYUAN CITY, Fuxing, Xuewunao, 7. VI. 2017 (L. Huang) (genitalia preparation JYL983).

666. *Lethe hyrania formosana* Fruhstorfer, 1908 深山黛眼蝶

♀. TAINAN CITY, Nanxi, Meiling, 26. II. 2017 (C. W. Huang) (genitalia preparation JYL815).

667. *Lethe chandica ratnacri* Fruhstorfer, 1908 曲紋黛眼蝶

♀. YUNLIN Co., Douliu, Hushan Dam, 31. III. 2016 (L. Huang) (genitalia preparation JYL809).

668. *Lethe mataja* Fruhstorfer, 1908 臺灣黛眼蝶

♀. PINGDONG Co., Chunri, Dahanshan, 4. V. 2016, reared from *Miscanthus* sp., emgd. 20. VI. 2016, HSU 16F9 (Y. F. Hsu) (genitalia preparation JYL816).



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669. *Lethe christophi hanako* Fruhstorfer, 1908 柯氏黛眼蝶

♀. HUALIAN Co., Xiulin, Guanyuan, 2200m, 7. VII. 2006 (L. H. Wang) (genitalia preparation JYL1019).

670. *Lethe butleri periscelis* (Fruhstorfer, 1908) 巴氏黛眼蝶

♀. NANTOU Co., Renai, Aowanda, 17. VII. 2018 (L. Huang) (genitalia preparation JYL808).

671. *Lethe gemina zaitha* Fruhstorfer, 1914 孿斑黛眼蝶

♀. NANTOU Co., Renai, Beidongyanshan, 1500m, 28. X. 2006, reared from *Miscanthus sinensis*, emgd. 25. IV. 2007, HSU 06L29 (Y. F. Hsu) (genitalia preparation JYL1023).

672. *Neope pulaha didia* (Fruhstorfer, 1909) 黃斑蔭眼蝶

♀. HUALIAN Co., Xiulin, Guanyuan, 2200m, 12. VII. 2009 (L. H. Wang) (genitalia preparation JYL1039).



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673. *Neope bremeri watanabei* Matsumura, 1909 布氏蔭眼蝶

♀. TAOYUAN CITY, Fuxing, Xuewunao, 1430m, 7. VI. 2017 (L. Huang) (genitalia preparation JYL993).

674. *Neope armandii lacticolora* (Fruhstorfer, 1908) 白斑蔭眼蝶

♀. HUALIAN Co., Xiulin, Guanyuan, 13. VI. 2018 (C. W. Huang) (genitalia preparation JYL900).

675. *Neope muirheadii nagasawae* Matsumura, 1919 褐翅蔭眼蝶

♀. XINBEI CITY, Sanxia, Wuliao, 23. IX. 2015 (H. C. Huang) (genitalia preparation JYL844).

676. *Mycalesis francisca formosana* Fruhstorfer, 1908 眉眼蝶

♀. NANTOU Co., Xinyi, Heshe, 5. VII. 2015 (L. Huang) (genitalia preparation JYL833).



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677. *Mycalesis gotama nanda* Fruhstorfer, 1908 稻眉眼蝶

♀. YILAN Co., Suao, Houhoukeng, 18. VII. 2016 (L. Huang) (genitalia preparation JYL933).

678. *Mycalesis kagina* Fruhstorfer, 1908 嘉義眉眼蝶

♀. TAINAN Co., Dongshan, Kantoushan, 23. X. 2019, reared from *Zingiber pleiostachyum*, emgd. 6. XII. 2019 (C. W. Huang & S. Y. Chen) (genitalia preparation JYL930).

679. *Mycalesis perseus blasius* (Fabricius, 1798) 曲斑眉眼蝶

♀. TAINAN CITY, Xinhua, Zhiyi Forest Area, 28. X. 2016 (L. Huang) (genitalia preparation JYL938).

680. *Mycalesis mucianus zonatus* Matsumura, 1909 切翅眉眼蝶

♀. TAINAN CITY, Xinhua, Zhiyi Forest Area, 30. XII. 2016 (L. Huang) (genitalia preparation JYL931).



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681. *Mycalesis mineus* (Linnaeus, 1758) 小眉眼蝶

♀. TAINAN CITY, Xinhua, Zhiyi Forest Area, 30. XII. 2016 (L. Huang) (genitalia preparation JYL959).

682. *Mycalesis mineus* (Linnaeus, 1758) 小眉眼蝶

♀. JINMEN Co., Jinsha, Ronghu Constructed Wetland, 8. VI. 2014 (C. L. Huang & H. C. Huang) (genitalia preparation JYL961).

683. *Telinga mara* (Fruhstorfer, 1908) 淺色眉眼蝶

♀. NANTOU Co., Xinyi, Heshe, 5. VII. 2015 (L. Huang) (genitalia preparation JYL836).

684. *Minois nagasawae* (Matsumura, 1906) 永澤蛇眼蝶

♀. HUALIAN Co., Zhuoxi, Dashuikushan, 3. IX. 2008 (C. L. Huang) (genitalia preparation JYL973).



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685. *Melanitis leda* (Linnaeus, 1758) 暮眼蝶

♀. MIAOLI Co., Sanyi, 13. IX. 2015 (L. Huang) (genitalia preparation JYL829).

686. *Melanitis phedima polishana* Fruhstorfer, 1908 森林暮眼蝶

♀. TAOYUAN CITY, Fuxing, Xuanyuan, 29. VI. 2015 (L. Huang) (genitalia preparation JYL831).

687. *Penthema formosanum* (Rothschild, 1898) 臺灣斑眼蝶

♀. TAIZHONG CITY, Heping, Malunshan, 30. X. 2016, reared from *Bambusa* sp., emgd. 15. III. 2017 (H. C. Huang) (genitalia preparation JYL1002).

688. *Elymnias hypermnestra hainana* Moore, 1878 藍紋鋸眼蝶

♀. TAIDONG Co., Beinan, Zhiben Forest Trail, 31. X. 2015 (L. Huang) (genitalia preparation JYL791).



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