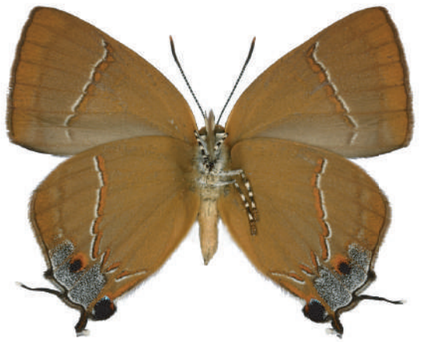






臺灣蝶類誌
BUTTERFLY FAUNA OF TAIWAN
第四卷
Vol. IV
REVISED EDITION

灰蝶科
LYCAENIDAE
蜆蝶科
RIODINIDAE

徐堉峰、梁家源、黃智偉

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





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

臺灣蝶類誌

BUTTERFLY FAUNA
OF
TAIWAN

作者

徐堉峰

梁家源

黃智偉

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 four Lycaenidae (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《台灣維管束植物簡誌》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。本年度出版第四卷灰蝶科 (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

習性最多樣的蝶國小精靈

堉峰又要出書了，這一次所要出版的是臺灣個體最小的蝴蝶，灰蝶科，種類幾乎佔臺灣四分之一的蝶群：臺灣蝶類誌第四卷。

為了這個序，我問幾位喜歡蝴蝶的朋友；「您能不能說說對小灰蝶的印象？」

「小小的，飛得很快，很可愛！」

「外型很漂亮，飛起來像珠寶一樣！」

「我最喜歡牠停下來時翅的尾突動來動去，好像觸角在動！」

「還有翅膀合起來，動來動去像一對小眼睛！」

「有些種類會和螞蟻共生……。」

看來愛蝶人總是說不盡小小灰蝶迷人的地方！

從這個書中堉峰和他兩位高足，延續已出版的三卷一樣，依分類系統對科、亞科、屬的描述，並依種類別，介紹每一種的形態特徵、地理分布、幼蟲寄主植物、生物學習性等，難能可貴的是中英並陳，並附上成蟲正反面圖片，及雄雌生殖器解剖照；也附上最方便研究人員查閱的文獻。

所以不管是對初學者而言，或是從事學術研究的國內外學者來說，都是不可或缺的好書！

相信您一定會喜歡這一本有蝴蝶王國小精靈之稱的灰蝶科昆蟲專書。

國立台灣大學名譽教授

楊平世

2020.4.16.

Foreword

Inventories are faunistic accounts that provide comprehensive catalogues of species at various spatial scales. They typically document the make-up (composition) and spatial distribution of those species, and tell us which components are unique (endemic) to the area in question. These works are important because they provide foundational knowledge upon which biodiversity conservation is based and ultimately help in identifying natural heritage assets – areas of high biodiversity value in need of protection and conservation management.

Among the insects, butterflies have long held a special place in biodiversity conservation. They are day-flying and relatively conspicuous, their taxonomy is generally well understood so that most species can be easily identified, their biology, life history and ecology are relatively well-documented, and they have proven to be good indicators of environmental change. And people love them! Building on a remarkable series on the Butterfly Fauna of Taiwan this latest (fourth) volume by Yu-Feng Hsu and colleagues admirably sets out to document the current state of knowledge of the family Lycaenidae, commonly known as blues, on the island of Taiwan. The Lycaenidae are perhaps unrivalled among the butterflies in terms of their morphological variety, brilliance, colour pattern and curiosity. Some of my earliest experiences and fondest memories with butterflies (in Australia) are with these beautiful and fascinating butterflies – hairstreaks, coppers, jewels, azures and the like etched a deep and lasting impression. Many have intricate, and sometimes, bizarre relationships with ants, many are secretive or rare and thus challenging to find, many are highly seasonal in occurrence, and many are facing extinction and have attracted substantial conservation attention.

Taiwan has an impressive diversity of lycaenids relative to the size of its country (c. 36,000 km^2), with 120 species (in 64 genera), of which 22 (18%) species and 58 subspecies are endemic to the island – that is, a total of 80 taxa are found nowhere else in the world. The Taiwanese lycaenid fauna includes wonderful butterflies, such as hairstreaks, sunbeams, sapphires, oakblues, royals, flashes and silverlines to name just a few. However, this work is more than a taxonomic inventory. It provides for each species up-to-date nomenclature, together with information on taxonomic status, identity, variation, geographic distribution (both globally and locally in Taiwan), larval host plants and biology, as well as beautifully prepared colour plates portraying the adults and reproductive structures – key elements for accurate identification.

Yu-Feng Hsu and his co-authors have invested decades of their lives conducting field and laboratory research that underpins this volume. It represents the culmination of that

effort and is a wonderful achievement that showcases the rich lycaenid fauna of Taiwan, disseminating complex information in an accessible format. It's an essential reference tool for anyone with an interest in butterflies and in natural resource management.


2020.4.24.

A/Prof Michael F. Braby
The Australian National University &
Australian National Insect Collection

推薦序

統整物種編目的「誌」提供不同尺度的完整種類資料。它記錄物種組成與其空間分布，並說明那些是特定區域的獨特種類。編誌工作的重要性在於提供生物多樣性保育的基礎知識，更協助我們找出亟需保護管理的自然資產所在位置。

在昆蟲當中，蝴蝶在生物多樣性保育上長期扮演重要角色。牠們是日行性而吸睛的，牠們的分類被做得比較詳盡而易於鑑定，生物學、生活史及生態資料也較豐富，而且是環境變化的良好指標。最重要的是人們愛蝶！徐堉峰研究團隊近年戮力從事編寫「臺灣蝶類誌」，而目前投入的類群是灰蝶科。這個科的蝴蝶在形態多樣性、色彩花紋及特殊程度上在蝶類當中可說是無出其右的了。從我少年時代便深刻在我腦海裡留下不滅印記的澳洲蝴蝶正是這些令人讚嘆的美麗灰蝶。牠們當中有的種類和螞蟻有著錯綜複雜，甚至古怪的關係，有的行蹤隱密或稀少得難以覓蹤。許多種類只出現在特定季節，更有不少種類面臨滅絕危機而引起保育上的重視。

就面積來說，臺灣的灰蝶多樣性很高，在約 64 屬 120 種之中，估計有 22 種 (18%) 及 58 亞種是特有的，也就是說有大約 80 個分類單元是不見於世上其他地方的，而且包括許多精彩的種類。「臺灣蝶類誌」的內容除了提供分類名錄外，並對每一個種類給予最新命名處理、分類地位、鑑別、變異、地理分布、幼蟲寄主及生物學等資料，還附上對鑑定而言最重要的成蝶及交尾器精美圖版。

徐堉峰團隊的長期野外及研究室室內工作成就了這本書，充分體現他們把艱澀資料轉換成容易獲取的形式、展現臺灣美妙灰蝶相的努力。這本書可說是對蝴蝶及自然資源管理有興趣者提供了不可或缺之參考。

麥克•布萊比 教授
澳大利亞國家大學暨澳大利亞國家昆蟲收藏

Preface

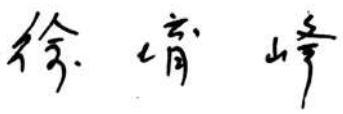
The preparation of volume 4 of the book series “Butterfly Fauna of Taiwan”, Lycaenidae, started right after volume 3 was published in the spring of 2019. Obstacles were, however, encountered during the process. I was hospitalized for a major operation due to health problem in the summer of the year, and the rehabilitation following it took several months. The entire world was struck by arrival of the pandemic covid-19 by the end of 2019, interrupting everything, unfortunately including various chores related to preparation of this volume. Consequently the publication of the volume was delayed for a few months. I thus apologize to those friends, who look forward to reading this volume. Just like what happened to previous volumes, although we tried our best to use specimens from Taiwan for this volume, there are a few occasions that specimens from other sources were used for reference due to paucity of available materials. My co-authors and I hope this volume may serve to provide update information on lycaenid butterflies of Taiwan to anyone who concerns about these lovely creatures.



National Taiwan Normal University, Taipei

作者序

「臺灣蝶類誌」第四卷灰蝶科的撰寫工作在第三卷發行後隨即展開。然而，此卷的編寫過程並不平順。我本人在 2019 年夏天因病痛住院開刀，隨後並花費數月復健。年底衝擊全球的新冠肺炎疫情爆發，也連帶影響本書的編寫與出版，使本書的正式發行耽延，對期盼本書問世的朋友十分抱歉。就如先前幾卷的情形，本書儘量使用本地產的標本，但仍有少數種類因材料缺乏而使用境外標本充當參考，敬請讀者注意。我等希望本書得出版可為關心這些可愛蝶兒的朋友提供充分參考。



2020. 4. 17. 於師大分部

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Many friends and students provide assistance to this book volume, on various preparation works, giving helpful comments, or providing materials and literature. Overseas colleagues and friends include Dr. Dick Vane-Wright (UK), Mr. Adam Cotton (UK, now in Thailand), Dr. Michael Braby (Australia), Dr. Alexander Monastyrskiy (Russia, now in Vietnam), Dr. Tomoo Fujioka (Japan), Prof. Osamu Yata (Japan), Prof. Masaya Yago (Japan), Dr. Hideyuki Chiba (Japan), Mr. Hiroshi Tsukiyama (Japan), Mr. Motoki Saito (Japan), Mr. Gian Cristoforo Bozano (Italy), Mr. James Young (Hong Kong), Mr. Philip Yik-Fui Lo (Hong Kong), Prof. Gou-fang Jiang (mainland China), Prof. Shan-yi Zhou (mainland China), Mr. He-li Deng (mainland China), Mr. Ai-min Li (mainland China), Mr. Jian-qin Zhu (mainland China), Mr. Zhen-jun Wu (mainland China), Mr. Jia-lin Chen (mainland China), Mr. Shao-ji Hu (mainland China). Local colleagues and friends include Prof. Ping-Shu Yang, Prof. Shen-Horn Yen, Mr. Shou-Ming Wang, Ms. Shu-Chi Hsieh, Mr. Yu-Chang Yang, Dr. Kuang-Liang Chen, Mr. Hang-Chi Huang, Mr. Cheng-Chih Lu, Mr. Chang-Ching Chen, Mr. Hui-Yung Li, Mr. Hsing-Han Li, Mr. Ren-Kai Tung, Mr. Jin-Ping Su, Mr. Han-Yu Lin, Mr. Yu-Jung Hung, Mr. Yung-Jen Chang, and Mr. Yi-Chih Hung. Members and ex-members of my laboratory include Mr. Yin-Ting Lo, Mr. Li-Hao Wang, Ms. Rung-June Lin, Ms. Tzu-Ling Chen, Mr. Cheng-Jui Chang, Mr. Wen-Jie Lin, Mr. Li Huang, Mr. Yu-Ming Hsu, Ms. Hsin-Yun Chen, Mr. Zong-Yu Shen, Mr. Zhang-Lin Chen, Ms. Yu-Ting Chang, Mr. Guang-Yao Chen, Mr. Yi-Yang Lu, Dr. Chih-Chien Lu, Dr. Li-Wei Wu, Dr. Chia-Lung Huang, and Dr. Yu-Chi Lin. Professor Kazunori Yoshizawa (Hokkaido University) and Dr. Chi-Feng Li (Taiwan Agricultural Research Institute) kindly allowed me to examine a few historical specimens. I am here to express my cordial thanks to all of them. Conservation Section of Forestry Department, Council of Agriculture (COA) (now Nature Conservation Management Division, Forestry and Nature Conservation Agency, Ministry of Agriculture (MOA)) generously provides financial aid to the production of the book series. Without their support, the publication of the book series cannot be accomplished. Finally, I hope the readers of the book series may find them useful, and comments from anyone will be heartily welcomed.



National Taiwan Normal University, Taipei

致謝

除了梁家源博士及黃智偉先生以外，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，均讓本書撰寫獲益良多。海外學者包括英國的 Dick Vane-Wright 博士及 Adam Cotton 先生 (現居泰國)、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、矢田 脩教授、矢後勝也教授、千葉秀幸博士、築山 洋先生、齊藤基樹先生，義大利的 Gian Cristoforo Bozano 先生，香港的楊建業先生與羅益奎先生，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、蘇錦平先生、林翰羽先生、洪裕榮先生、張永仁先生及洪翊智先生。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、張宸睿先生、林文傑先生、黃黎先生、許育銘先生、陳歆芸小姐、沈宗諭先生、陳璋臨先生、張瑜庭小姐、陳光耀先生、呂易陽先生、呂至堅博士、吳立偉博士、黃嘉龍博士及林育綺博士。北海道大學的吉澤和德教授及農業試驗所的李奇峰博士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

2020. 4. 17. 於師大分部

Preface to the revised edition

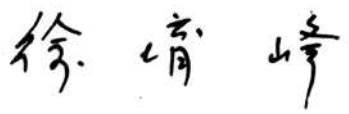
It has been just about three years after the last volume of the "Butterfly Fauna of Taiwan" was issued in 2021. Nonetheless, many changes in taxonomic status and scientific names on butterflies have occurred and published since the release of the first volume in 2017, due to advances in the researches 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

Contents

LYCAENIDAE 1
CURETINAE 4
Curetis 5
MILETINAE 13
Taraka 14
Spalgis 18
APHNAEINAE 22
Cigaritis 23
LYCAENINAE 36
Heliophorus 37
THECLINAE 41
Arhopala 42
Mahathala 63
Iraota 67
Japonica 70
Ussuriana 74
Cordelia 78
Araragi 82
Antigius 85
Wagimo 91
Leucantigius 94
Ravenna 98
Iratsume 102
Euaspa 105
Teratozephyrus 114
Neozephyrus 124
Chrysozephyrus 129
Sibataniozephyrus 159

Amblopala 163
Tajuria 166
Ancema 177
Hypolycaena 180
Deudorix 188
Artipe 198
Sinthusa 203
Rapala 207
Satyrium 226
Fixsenia 245
Horaga 249
Catapaecilma 261
POLYOMMATINAE 266
Orthomiella 267
Nacaduba 270
Nothodanis 285
Catopyrops 289
Prosotas 293
Jamides 303
Catochrysops 315
Euchrysops 323
Lampides 327
Leptotes 332
Zizeeria 336
Zizina 345
Famegana 350
Zizula 354
Everes 358

Tongeia 367
Shijimia 375
Pithecops 379
Neopithecops 386
Megisba 390
Udara 394
Acytolepis 402
Celatoxia 408
Celastrina 412
Callenya 426
Phengaris 429
Chilades 436
Freyeria 446
RIODINIDAE 450
NEMEOBIINAE 452
Sibosia 453
Zemeros 456
Dodona 459
Supplementary Notes 463
References 467
Colour Plates 478
Index 693

目錄

灰蝶科 2

銀灰蝶亞科 4

銀灰蝶屬 5

雲灰蝶亞科 13

蚜灰蝶屬 14

熙灰蝶屬 18

虎灰蝶亞科 22

虎灰蝶屬 23

灰蝶亞科 36

日灰蝶屬 37

翠灰蝶亞科 41

紫灰蝶屬 42

凹翅紫灰蝶屬 63

異灰蝶屬 67

焰灰蝶屬 71

赭灰蝶屬 75

珂灰蝶屬 78

墨點灰蝶屬 82

折線灰蝶屬 86

線灰蝶屬 91

瓏灰蝶屬 95

朗灰蝶屬 98

珠灰蝶屬 102

鋩灰蝶屬 106

鐵灰蝶屬 115

榿翠灰蝶屬 125

翠灰蝶屬 130

璀灰蝶屬 159

尖灰蝶屬 163
青灰蝶屬 167
鈿灰蝶屬 177
蘭灰蝶屬 181
玳灰蝶屬 189
綠灰蝶屬 199
閃灰蝶屬 204
燕灰蝶屬 208
灑灰蝶屬 227
烏灰蝶屬 246
鑽灰蝶屬 250
三尾灰蝶屬 262
藍灰蝶亞科 266
鋸灰蝶屬 267
娜波灰蝶屬 270
黑列波灰蝶屬 286
曲波灰蝶屬 289
波灰蝶屬 294
雅波灰蝶屬 303
珈波灰蝶屬 316
奇波灰蝶屬 323
豆波灰蝶屬 328
細灰蝶屬 333
藍灰蝶屬 337
折列藍灰蝶屬 346
單點藍灰蝶屬 350
迷你藍灰蝶屬 355
燕藍灰蝶屬 359

玄灰蝶屬 367
森灰蝶屬 375
丸灰蝶屬 379
黑點灰蝶屬 386
黑星灰蝶屬 390
嫵琉灰蝶屬 395
靛色琉灰蝶屬 403
白紋琉灰蝶屬 408
琉灰蝶屬 413
寬邊琉灰蝶屬 426
雀斑灰蝶屬 430
綺灰蝶屬 437
晶灰蝶屬 446
蜆蝶科 450
古蜆蝶亞科 452
白點褐蜆蝶屬 453
波蜆蝶屬 456
尾蜆蝶屬 459
補充註記 465
文獻 467
彩色圖版 478
索引 697

Family LYCAENIDAE Leach, 1815

The family consists of more than 6,000 species distributed worldwide according to Ackery *et al*. (1999). Espeland *et al*. (2018) state that there are about 5,200 species known for Lycaenidae *sensu stricto*, and 1,500 species for metalmarks. The common name for the members of the family include coppers, blues, hairstreaks, and harvesters. Metalmarks, are included as a subfamily by some authors (e.g., Scoble, 1992; Ackery *et al*., 1999; Pierce *et al*., 2002), but regarded as a distinct family by others (e.g., Wahlberg *et al*., 2005; Espeland *et al*., 2015, 2018). As all recent phylogenetic analyses recognize Riodinidae (Riodininae) as the sister group of Lycaenidae *sensu stricto*, the two combined thus forms a monophyletic assemblage in butterflies. It is therefore a subjective decision whether they are treated as separate families or the other way around.

Ackery *et al*. (1999) mention a few morphological characters for Lycaenidae *sensu lato*: 1) antennal base adjacent to margin of compound eye, and usually indenting it (but similar condition found in some other butterflies and moths); 2) reduction of the metathoracic wing case of pupa, extending no further than segment 2 (extending at least to segment 3 in all other butterflies); 3) spatulate lobe on larval abdominal prolegs which interrupts the mesoseries of crochets (unknown in other butterflies; also absent in some riodinids, considered as a secondary loss); 4) absence of larval eversible prothoracic gland. (also absent in Papilionidae but interpreted to be correlated with the origin of osmeterium).

Scoble (1992) recognizes 9 subfamilies within Lycaenidae *sensu lato*: Lipteninae, Poritiinae, Liphyrinae, Miletinae, Curetinae, Theclinae, Lycaeninae, Polyommatinae, and Riodinae. Based on morphological features, Ackery *et al*. (1999) recognize five subfamilies in the family *sensu lato*: Riodininae, Poritiinae, Miletinae, Curetinae, and Lycaeninae. They followed Eliot's (1992) treatment to lump Theclinae (haistreaks) and Polyommatinae (blues) with Lycaeninae, and Lipteninae with Poritiinae. Liphyrinae was tentatively included in Miletinae, although no unambiguous synapomorphy was recognized. Based on molecular evidence, Wahlberg *et al*. (2005) list 7 subfamilies in Lycaenidae *sensu stricto*, largely identical to those of Scoble's classification except *Liphyra* is placed within Miletinae. Based on a phylogenomic analysis, Espeland *et al*. (2018) revise the classification of Lycaenidae *sensu stricto* into 7 subfamiles: Curetinae,

Miletinae, Aphnaeinae, Poritiinae, Lycaeninae, Theclinae, Polyommatinae, but the last two were not recovered as monophyletic assemblages in this work. The phylogeny based on sampling at global scale performed by Kawahara *et al*. (2023) result in the same grouping as that of Espeland *et al*. (2018).

A total of 117 species of lycaenid butterflies are known to occur Taiwan and its associated islands, with 6 additional species of uncertain sources or accidental stray from areas outside of Taiwan.

灰蝶科

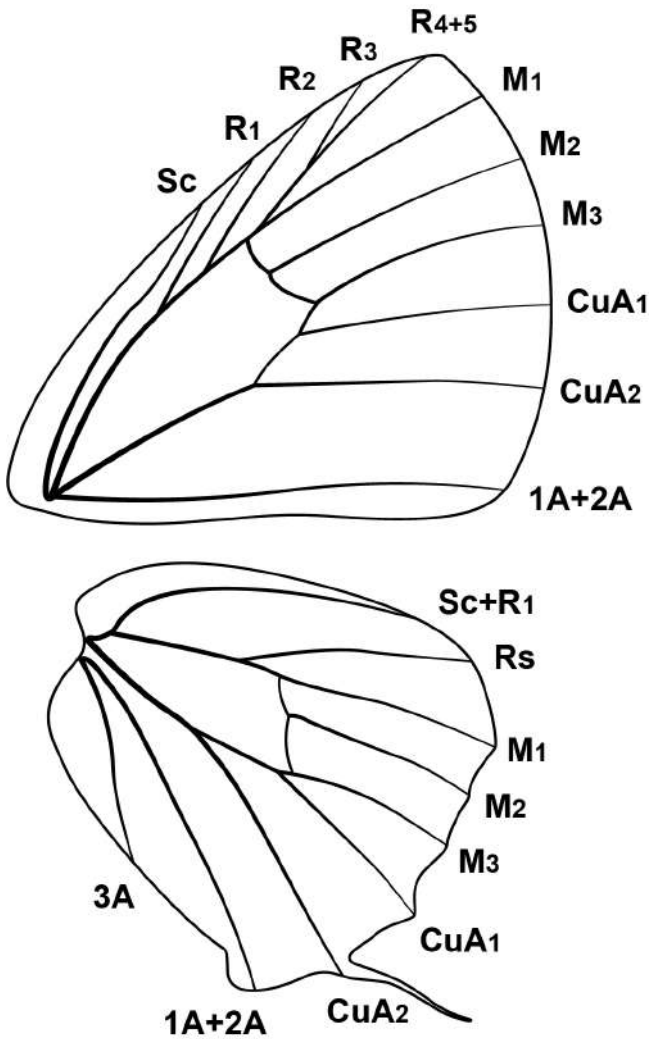
根據 Ackery *et al*. (1999) 之研究，本科成員超過 6000 種且呈泛世界分布。Espeland *et al*. (2018) 指出本科約有 5200 種「狹義」灰蝶及 1500 種蜆蝶。本科成員之英文俗名包含 coppers、blues、hairstreaks 以及 harvesters。有些研究者將蜆蝶視為灰蝶科下之亞科，亦有研究者將其視為一獨立科。因近期之所有親緣關係分析皆認為蜆蝶科為狹義灰蝶科之姊妹群，兩者分開均為單系群，合併亦為單系群，因此蜆蝶科與灰蝶科分開與否實為個人主觀之決定。

Ackery *et al*. (1999) 提出廣義灰蝶科具有某些形態特徵：1) 觸角基部與複眼邊緣相鄰，並常使其內凹 (但在某些蝶類及蛾類中亦發現相同情形)；2) 蛹後胸翅殼縮減，不超過第二體節 (於其他蝶類至少延伸至第三體節)；3) 幼蟲腹部原足勺狀葉切分原足鉤中列 (其他蝶類無此特徵，某些蜆蝶也缺乏此特徵，但被視為二次性丟失)；4) 幼蟲缺乏可外翻之前胸腺 (鳳蝶科亦缺乏，但被解讀為與臭角出現相關聯)。

Scoble (1992) 將廣義灰蝶科分為 9 個亞科：地衣灰蝶亞科、錦灰蝶亞科、蟻灰蝶亞科、雲灰蝶亞科、銀灰蝶亞科、翠灰蝶亞科、灰蝶亞科、藍灰蝶亞科以及蜆蝶亞科。根據形態特徵，Ackery *et al*. (1999) 將廣義灰蝶科分為 5 個亞科：蜆蝶亞科、錦灰蝶亞科、雲灰蝶亞科、銀灰蝶亞科以及灰蝶亞科，並依循 Eliot (1992) 的處理將翠灰蝶亞科 (hairstreaks) 及藍灰蝶亞科 (blues) 與灰蝶亞科合併、地衣灰蝶亞科與錦灰蝶亞科合併。雖然沒有明確的共衍徵，蟻灰蝶亞科暫時置於雲灰蝶亞科內。根據分子證據，Wahlberg *et al*. (2005) 將狹義灰蝶科分為 7 亞科，除了蟻灰蝶被置於雲灰蝶亞科中以外，其餘則與 Scoble (1992) 的分類架構相同。根據親緣關係樹分析，Espeland *et al*. (2018) 修改狹義灰蝶科分類，將其分為 7 個亞科：銀灰蝶亞科、雲

灰蝶亞科、虎灰蝶亞科、錦灰蝶亞科、灰蝶亞科、翠灰蝶亞科及藍灰蝶亞科，但在此研究中，翠灰蝶亞科及藍灰蝶亞科並未呈現為單系群。Kawahara *et al*. (2023) 的全球尺度蝶類系統發育研究的灰蝶科亞科分群與 Espeland *et al*. (2018) 雷同。

臺灣及其離島地區記錄之灰蝶種類有 117 種，此外有 6 種來源不確定或偶然從臺灣以外地區進入此區的偶產種或迷蝶。



Text-fig. 1. Wing venation of Lycaenidae (*Chrysozephyrus nishikaze*)

灰蝶科翅脈脈相圖 (西風翠灰蝶為例)

Subfamily CURETINAE Distant, 1884

Ackery *et al*. (1999) listed two characters unique for this subfamily: male with two invaginated tergal brushes on abdominal segment 2 and larvae with permanently exserted pair of cylindrical tubercles on abdominal segment 11.

18 species are distributed in the Oriental and eastern Palearctic regions. The host plants of the subfamily are Fabaceae.

In Taiwan, 2 species in 1 genus are known.

銀灰蝶亞科

Ackery *et al*. (1999) 列出之本亞科獨有特徵有二：雄蝶第 2 腹節背板具內陷之毛筆器；幼蟲第 11 腹節具有一對圓柱形突起。

本亞科共 18 種，分布於東洋區及古北區東部。寄主為豆科植物。

臺灣有 1 屬 2 種。

Genus *CURETIS* Hübner, [1819]

Type species: *Papilio aesopus* Fabricius, 1781

Diagnostic characters include the following: 1) eyes hairy; 2) palpi covered with appressed scales; 3) a fringe of bristles on the underside of the three or four basal shaft segments of antennae; 4) hair pencils arising from tergum of A2, contained in a flap on the sternum of A3.

18 species are known, distributed in the Oriental, and northern Australian regions and Japan (Eliot, 1990).

Larval hostplants are Fabaceae.

2 species occur in Taiwan.

銀灰蝶屬

形態特徵如下：1) 複眼披毛；2) 下唇鬚覆蓋平貼鱗粉；3) 觸角基部 3 或 4 節腹面簇生刺毛；4) 毛筆器由第 2 腹節背板伸出並收納於第 3 腹節腹板之袋狀構造內。

本屬已知 18 種，分布於東洋區、澳洲區北部及日本。

幼生期以豆科植物為寄主。

臺灣有 2 種。

Curetis acuta Moore, 1877 (銀灰蝶／銀斑小灰蝶)

Curetis acuta Moore, 1877: The Annals and magazine of natural history; zoology, botany, and geology, series 4, 20 (115): 50. (Type locality: Shanghai)

Ssp. *formosana* Fruhstorfer, 1908

PLATE 1, Figs. 1–3; PLATE 40, Fig. 308; PLATE 73, Fig. 437

Curetis acuta formosana Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 49. (Type locality: Formosa, Kanshire [Guanzhiling])

Specimens examined:

JILONG CITY: 1♂, Longgang Trail, 2. IX. 2006 (Y. F. Hsu); 1♀, Haimentianxian, 26. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Danshui, Pingding, ca 250m, 1. VIII. 2011 (H. C. Huang); 2♂, Ruifang, Nanya, 15. VI. 2007 (C. L. Huang); 1♂, Xindian, Feicui Dam, 18. IV. 2012 (Y. F. Hsu); 1♀, Shenkeng, 30. VI. 1984. **TAIPEI CITY:** 1♂, Shilin, Zhishanyan, 16. X. 2005, reared from *Millettia reticulata* [= *Wisteriopsis reticulata*], emgd. 16. X. 2005 (H. C. Huang); 1♀, Songshan, Hushan, 8. VI. 2010 (C. H. Lin); 1♂, Wenshan, Xianjiyan, 11. V. 2004, reared from *M. reticulata* [= *W. reticulata*], emgd. 2. VI. 2004, HSU 04E18 (Y. F. Hsu). **YILAN Co.:** 1♀, Datong, Siyuanyakou, 11. VII. 2004 (J. R. Chen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sule, 600m, 17. IX. 2008 (Y. F. Hsu & L. W. Wu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Fengyuan, 9. V. 2005, reared from *M. reticulata* [= *W. reticulata*], emgd. 7. VI. 2005 (C. L. Huang & C. M. Wu). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 7. XII. 2002 (C. L. Huang); 1♀, Renai, Nanshanxi, reared from *Millettia* sp., emgd. 1. VIII. 2000 (C. Y. Hung & C. C. Hsieh). **HUALIAN Co.:** 1♂, Zhuoxi, Nanan, 9. II. 2016 (J. Y. Liang) (genitalia preparation JYL445); 1♀, Fengbin, Maogongyue, 8. VII. 2018 (J. Y. Liang) (genitalia preparation JYL313). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, 27. IV. 2010 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Fangliao, Nanshan, 25. II. 2006, reared from *M. reticulata* [= *W. reticulata*], emgd. 25. II. 2006, HSU 06B45 (Y. F. Hsu); 1♀, Shizi, Nunaishan, 26. III. 2006, reared from *M. reticulata* [= *W. reticulata*], emgd. 12. IV. 2006, HSU 06C25 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Yanping, Hongye, 28. VIII. 1998 (Y. F. Hsu); 1♂, same locality, 7. V. 2000 (L. W. Wu).

Description. Adult – Forewing length 18–25 mm. Sexual dimorphism prominent. Male (PLATE 1, Fig. 1): Head hairy, generally dark brown, partially white around eyes, lower portion of frons, and near base of antennae. Antennae dark brown, segmented with white; inner surface naked. Proboscis brown, setose. Labial palpus porrect, white but dark brown distally; 1st and 2nd segments robust; 3rd segment small, flattened. Thorax brown dorsally, white ventrally. Abdomen brown dorsally, white brown ventrally; hair pencil creamy yellow. Legs covered by white scalings, mixed with brown scales. Protarsus

modified, fused, tapering into a down-curved beak. Forewing triangular. Hindwing ovate, angled at tornus. Wing uppersides ground color brown, with orange tinged with red patches on forewing and hindwing. Wing undersides ground color silvery white, scattered with dark brown scales. Fringe white, but brown at distal end of veins. Female (PLATE 1, Figs. 2–3): Body and general wing patterns similar to those of male, but Protarsi normal, markings on wing upperside white and blue instead of orange. No hair pencils on abdomen.

Male genitalia (PLATE 40, Fig. 308) – Tegumen with a pair of weakly sclerotized, lateral windows. Uncus broad, semi-circular, with a medial process, attenuate to a blunt distal tip. Saccus short, attenuate anteriorly. Brachium enlarged basally, curved, hook-like. Vinculum broad, curved dorsally, attenuate, straight ventrally, Valva elongate, ampulla as setose bump with heavily sclerotized distal horn-like process; harpe elongate, digitate; sacculus spherical. Juxta as an elongate narrow sclerite enlarged distally into axe with small medial invagination. Phallus tubular, asymmetrical caudad; distal end of aedeagu with only right wall present, spiny. Cornuti as two patches of spiny bands.

Female genitalia (PLATE 73, Fig. 437) – Corpus bursae elongate, wrinkled at anterior end. Ductus bursae elongate, enlarged posteriorly with sclerotized ring at caudal end. Sterigma with lamella antevaginalis forming a heavily sclerotized sheet with caudal margin concave; lamella postvaginalis forming depressed, sclerotized wall. Posterior apophyses longer than anal papillae, heavily sclerotized, nearly straight, with anterior end slightly enlarged. Anal papillae lobe-like, setose.

Variation. Markings on wing uppersides are more extensive, and wing configuration is more angled in dry/cold season.

Global distribution. India, Indochina, Japan, West, South, and East China, Hainan, and Taiwan (Eliot, 1990).

Distribution in Taiwan. Low to moderate elevations (Hsu, 2013).

Larval Host plant(s). Fabaceae: *Wisteriopsis reticulata*, *Pueraria montana*, *Millettia pinnata*, *Ormosia formosana*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. This species is multivoltine in occurence (Hsu, 2013; Lu & Chen, 2014).

Remarks. Evans (1954–1955) treated *dentata* Moore, 1879 and *acuta* Moore, 1877 as separate species based on the differences in the shape of "harpe", but Eliot (1990) argued that these differences represent individual variations, and considered these two taxa conspecific. Bascombe *et al*. (1999) still retained the name *dentata* for the populations in southern China. This taxonomic problem awaits for further investigation.

形態特徵：成蝶前翅長 18–25 mm。雌雄二型性顯著。雄蝶 (圖 1)：頭被毛，主呈黑褐色，複眼周圍、額下半部及近觸角基部處白色。觸角黑褐色，有白環；內側裸露。口器褐色，具毛。下唇鬚前伸、白色，末端黑褐色。第一及第二節粗壯；第三節小、扁平。胸部背面褐色，腹面白色。腹部背面褐色，腹面淡褐色；毛筆器乳黃色。足覆白色鱗片，雜褐色鱗片。前足跗節特化、癒合，向下彎曲、漸細而呈鳥喙狀。前翅三角形。後翅葉狀，臀區角狀。翅背面底色褐色，前、後翅均具橙紅色斑塊。翅腹面底色銀白色，散布黑褐色鱗片。緣毛白色，但翅脈末端處褐色。雌蝶 (圖 2–3)：形態特徵與雄蝶相似，但前足跗節正常，翅背面斑塊白色或藍色而非橙紅色。腹部無毛筆器。

雄交尾器 (圖 308)：背兜寬闊，兩側有弱骨化區。鉤突寬闊、半圓形，中央有末端圓鈍之突起。囊突短，先端漸尖。顎形突基部膨大、彎曲、鉤狀。基腹弧寬，背側彎曲，腹側漸縮。抱器修長，抱器內突為具有毛丘狀突起，末端有明顯骨化之角狀突起；抱握鋏長、指狀，密被毛；抱器背球狀。陽基顎片為窄細骨片，中央具小凹陷，向兩側擴大呈斧狀。陽莖管狀，末端左右不對稱；陽莖器末端僅右側形成具刺棘之骨壁。角狀器為 2 片具刺棘之小骨板。

雌交尾器 (圖 437)：交尾囊長卵形，先端具皺褶。交尾囊管長，向末端擴大，於末端形成骨化環。交尾孔前板形呈末端凹入之片狀骨板，交尾孔後板形成凹陷骨化壁。後內骨突長於肛突，明顯骨化、筆直，前端略膨大。肛突瓣狀，具毛。

變異：乾季／低溫期翅背面斑紋較顯著、翅輪廓稜角較明顯。

世界分布：印度、中南半島、華西、華南、華東、海南島及臺灣。

臺灣分布：本島低至中海拔地區。

寄主植物：豆科之老荊藤、山葛、水黃皮、臺灣紅豆樹等。

生物學：本種為一年多世代物種。

註記：Evans (1954–1955) 根據抱握鋏形狀差異將 *dentata* Moore, 1879 及 *acuta* Moore, 1877 處理為不同種，但 Eliot (1990) 認為兩者應為同種，該差異僅屬個體差異。Bascombe *et al*. (1999) 仍將 *dentata* 視為獨立種，此議題仍待進一步探討。

Curetis brunnea Wileman, 1909 (臺灣銀灰蝶／臺灣銀斑小灰蝶)

PLATE 1, Figs. 4–6; PLATE 40, Fig. 309; PLATE 73, Fig. 438

Curetis acuta var. *brunnea* Wileman, 1909: Annotationes Zoologicae Japonenses 7 (1): 88. (Type locality: "Juippun, Horisha (Polisia), Formosa")

Curetis lucifuga Fruhstorfer, 1909: Societas Entomologica 24 (16): 121. (Type locality: Formosa, Chip-Chip [Jiji])

Specimens examined:

NANTOU Co.: 1♂, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang); 1♂, Xinyi, Dongpu, 29. VI. 1987. **HUALIAN Co.:** 1♂, Zhuoxi, Batongguan Trail, 21. VIII. 2014 (J. Y. Liang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Fenggangshan, 1300m, 30. IX. 2007 (Y. F. Hsu); 1♀, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu) (genitalia preparation JYL628). **PINGDONG Co.:** 1♂, Shizi, Shuangliu, 18. XII. 2005 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Yanping, Hongye, 22. VII. 2000 (L. W. Wu); 2♀, same locality, 30. IX. 2000 (L. W. Wu); 2♂, 1♀, same locality, 25. XI. 2000, reared from *Derris laxiflora*, emgd. 8/11. I. 2008, HSU 00L33 (L. W. Wu); 1♀, same locality, 11. I. 2009 (C. H. Lin, jr); 2♂, Yanping, Hongye, 480m, 30. IX. 2000 (Y. F. Hsu); 1♀, Luyuxi, 3. I. 1988 (Y. F. Hsu); 1♂, Changbin, Ningpu, 2. IX. 2017 (J. Y. Liang) (genitalia preparation JYL323).

Description. Adult – Forewing length 17–23 mm. Sexual dimorphism prominent. Male (PLATE 1, Fig. 4): Head hairy, generally dark brown, partially white around eyes, lower

portion of frons, and near base of antennae. Antennae dark brown, segmented with white; inner surface naked. Proboscis brown, setose. Labial palpus porrect, white but dark brown distally; 1st and 2nd segments robust; 3rd segment small, flattened. Thorax brown dorsally, white ventrally. Abdomen brown dorsally, white brown ventrally; hair pencil creamy yellow. Legs covered by white scalings, mixed with brown scales. Protarsus modified, fused, tapering into a down-curved beak. Forewing triangular. Hindwing ovate, slightly angled at tornus. Wing uppersides ground color brown, with faint orange tinged with red patches on hindwing. Wing undersides ground color silvery white, scattered with dark brown scales. Fringe mostly brown, white in anterior portion of hindwing termen. Female (PLATE 1, Figs. 5–6): Body and general wing patterns similar to those of male, but Protarsi normal, wings broader, with forewing apex slightly pointed; markings on wing uppersides lead gray and white instead of orange. No hair pencils on abdomen.

Male genitalia (PLATE 40, Fig. 309) – Tegumen with a pair of weakly sclerotized, lateral windows. Uncus broad, semi-circular, with a medial process, attenuate to a rounded distal tip. Saccus short, attenuate anteriorly. Brachium enlarged basally, curved, hook-like with pointed distal end. Vinculum broad, curved dorsally, attenuate, straight ventrally, Valva elongate, ampulla as setose lobe with heavily sclerotized distal ox horn-like process; harpe elongate, digitate, slightly curved; sacculus ovate. Juxta as an elongate narrow sclerite enlarged. Phallus tubular, asymmetrical caudad; distal end of aedeagus with only right wall present, serrate. Cornuti as two patches of spiny bands.

Female genitalia (PLATE 73, Fig. 438) – Corpus bursae elongate. Ductus bursae elongate, enlarged posteriorly, with sclerotized ring at caudal end. Sterigma with lamella antevaginalis forming a heavily sclerotized sheet with caudal margin concave; lamella postvaginalis forming depressed, sclerotized wall. Posterior apophyses much longer than anal papillae, bent, attenuate anteriorly. Anal papillae lobe-like, setose.

Variation. Markings on wing uppersides are more extensive, and wing configuration is more angled in dry/cold seasons.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Eliot, 1990; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone, mostly in central and southern parts of the island (Hsu, 2013).

Larval Host plant(s). Fabaceae: *Derris laxiflora* (Hsu, 2006).

Biology. This species is multivoltine in occurrence (Hsu, 2006, 2013).

Remarks. This species may be distinguished from sympatric *C. acuta* by the following features: 1) tornus of hindwing not prominently angled in *C. brunnea*; 2) orange patches of wing uppersides in male of *C. brunnea* not prominent; 3) white and lead gray scalings on hindwing uppersides of female extending to termen in *C. brunnea*, but not so in *C. acuta*.

形態特徵：成蝶前翅長 17–23 mm。雌雄二型性顯著。雄蝶 (圖 4)：頭被毛，主呈黑褐色，複眼周圍、額下半部及近觸角基部處白色。觸角黑褐色，有白環；內側裸露。口器褐色，具毛。下唇鬚前伸、白色，末端黑褐色。第一及第二節粗壯；第三節小、扁平。胸部背面褐色，腹面白色。腹部背面褐色，腹面淡褐色；毛筆器乳黃色。足覆白色鱗片，雜褐色鱗片。前足跗節特化、癒合，向下彎曲、漸細而呈鳥喙狀。前翅三角形。後翅葉狀，臀區略呈角狀。翅背面底色褐色，前、後翅均具模糊橙紅色斑塊。翅腹面底色銀白色，散布黑褐色鱗片。緣毛大部分褐色，但後翅外緣前部呈白色。雌蝶 (圖 5–6)：形態特徵與雄蝶相似，但前足跗節正常、翅幅較寬、前翅翅頂略尖，翅背面斑塊鉛灰色或白色而非橙紅色。腹部無毛筆器。

雄交尾器 (圖 309)：背兜寬闊，兩側區域呈弱骨化。鉤突寬闊，半圓形狀，中央具末端圓之形突起。囊突短，向先端漸尖。顎形突基部膨大、彎曲，末端尖鉤狀。基腹弧寬大，背側彎曲，腹側直且漸縮。抱器長，抱器內突葉狀、被毛，末端明顯骨化而呈有牛角狀突起；抱握鋏長、指狀，略彎曲，密被毛；抱器背卵形。陽基顎片為細窄骨片。陽莖管狀，末端呈左右不對稱；陽莖器僅右側末端具鋸齒。角狀器為 2 枚具小刺棘之骨化帶。

雌交尾器 (圖 438)：交尾囊長卵形。交尾囊管長，後端膨大，並具骨化環。交尾孔前板為末端凹狀之骨片；交尾孔後板呈凹陷的骨化壁。後內骨突明顯長於肛突、彎

曲，前端漸細。肛突瓣狀，具毛。

變異：乾季／低溫期翅背面斑紋較顯著，翅輪廓較明顯。

世界分布：本種為臺灣特有種。

臺灣分布：主要分布於本島中南部之中海拔山區。

寄主植物：豆科之疏花魚藤。

生物學：本種為一年多世代物種。

註記：本種可藉下述特徵與共域之銀灰蝶作區分：1) 臺灣銀灰蝶後翅臀區較圓；2) 臺灣銀灰蝶雄蝶翅背面橙紅色斑塊不鮮明；3) 臺灣銀灰蝶雌蝶後翅背面白色或鉛灰色鱗片延伸至外緣，銀灰蝶則否。

Subfamily MILETINAE Corbet, 1939

No unambiguous synapomorphy for this subfamily was identified according to Ackery *et al*. (1999), but all members in the subfamily are aphytophagous, either carnivorous or feeding on secretions of Hemiptera (Eliot, 1992; Pierce, 1995; Mathew, 2003; Lohmana & Samarita, 2009; Kaliszewska *et al*., 2015). The moth butterflies (*Liphyra* spp.) were treated as a distinct subfamily Liphyrinae, but reduced to a tribe within Miletinae by Eliot (1992). The phylogeny of Espeland *et al*. (2018) identified it as the sister group to the remaining members of Miletinae *sensu stricto*.

Approximately 190 species in 13 genera recognized, distributed in the Afrotropical, Oriental, Australian, and Nearctic regions.

In Taiwan, 2 species in 2 genera are known.

雲灰蝶亞科

Ackery *et al*. (1999) 未能找到此亞科成員明確的共衍徵，但此亞科成員皆非植食性，而為肉食性或取食半翅目昆蟲之分泌物 (Eliot, 1992；Pierce, 1995；Mathew, 2003；Lohmana & Samarita, 2009；Kaliszewska *et al*., 2015)。 蟻 灰蝶 (*Liphyra* spp.) 曾被當成獨立亞科，但 Eliot (1992) 將其併入雲灰蝶亞科之中。Espeland *et al*. (2018) 之親緣關係研究判定它為其他狹義雲灰蝶亞科成員之姊妹群。

本亞科約有 13 屬 190 種，分布於非洲區、東洋區、澳洲區以及新北區。

臺灣有 2 屬 2 種。

Genus *TARAKA* Doherty, 1889

Type species: *Miletus hamada* Druce, 1875

Diagnostic characters include the following: 1) tibiae swollen; 2) palpi slightly asymmetrical; 3) wing undersides white, with black spots.

Three species are known, distributed in eastern Palearctic and Oriental regions (Bascombe *et al*., 1999; Tamai & Guo, 2001).

Larvae are carnivorous, feeding on aphids and theirs secretions.

1 species occurs in Taiwan.

蚜灰蝶屬

形態特徵如下：1) 脛節膨大；2) 下唇鬚略不對稱；3) 翅腹面白色，上綴黑色斑點。

本屬已知 3 種，分布於古北區東部及東洋區 (Bascombe *et al*., 1999；Tamai & Guo, 2001)。

幼蟲肉食性，取食蚜蟲及其分泌物。

臺灣有 1 種。

***Taraka hamada* (Druce, 1875) (蚜灰蝶／棋石小灰蝶)**

Miletus hamada Druce, 1875: Cistula entomologica 1 (12): 361. (Type locality: Yokohama, Japan)

Ssp. *thalaba* Fruhstorfer, 1922

PLATE 1, Figs. 7–8; PLATE 2, Figs. 9–10; PLATE 40, Fig. 310; PLATE 73, Fig. 439

Taraka hamada thalaba Fruhstorfer, 1922: in Seitz, Die Gross-Schmetterlinge der Erde 9: 884. (Type locality: “Formosa”)

Taraka hamada formosana Matsumura, 1927: Insecta Matsumurana 2 (2): 117, pl. 3, fig. 7. (Type

locality: “Baibara in the district of Horisha, Formosa”)

Ssp. *isona* Fruhstorfer, 1922

PLATE 2, Figs. 11–12; PLATE 40, Fig. 311; PLATE 73, Fig. 440

Taraka hamada isona Fruhstorfer, 1922: in Seitz, Die Gross-Schmetterlinge der Erde 9: 884. (Type locality: “Fokien, Süd-China”)

Specimens examined:

Ssp. *thalaba*: **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Daxi, Houcihu, 300m, 24. V. 2011 (Y. F. Hsu). **XINZHU Co.:** 1♀, Wufeng, Dalu Forest Trail, 1000m, 19. VIII. 2010 (L. H. Wang). **TAIZHONG CITY:** 1♀, Beitun Dist, Dakeng Trail #2, 16. X. 2019 (L. Huang). **YUNLIN Co.:** 1♀, Linnei, Longguomai Trail, 7. X. 2018 (L. Huang) (genitalia preparation JYL476). **NANTOU Co.:** 1♀, Renai, Jiantai Forest Trail, 1200m, 6. VIII. 2010 (C. L. Huang). **HUALIAN Co.:** 1♂, Yuli, Chikeshan, 30. VI. 2016 (J. Y. Liang) (genitalia preparation JYL402). **TAINAN CITY [= TAINAN Co.]:** 2♀, Xinhua, 80m, 1. XII. 2008, reared from *Astegopteryx bambucifoliae* on *Dendrocalamus latiflorus*, emgd. 10. XII. 2008, HSU 08M4 (Y. F. Hsu); 3♀, Xinhua, Xinhua Forest Field, 100m, 12. III. 2013, reared from *A. bambucifoliae* on *D. latiflorus*, emgd. 22/29. III. 2013, HSU 13C18 (Y. F. Hsu); 1♀, same locality, 12. III. 2013, reared from *A. bambucifoliae* on *D. latiflorus*, emgd. 29. III. 2013, HSU 13C31 (Y. F. Hsu); 1♂, 2♀, Xinhua, 17. III. 2010 (N. Y. Tsai); 2♂, Xinhua, Dakeng, 80m, 4. II. 2006 (K. L. Chen); 1♂, 1♀, same locality, 4. II. 2006, reared from *A. bambucifoliae* on *D. latiflorus*, emgd. 21/22. II. 2006, HSU 06B7 (K. L. Chen); 2♂, 2♀, same locality, 10/11. II. 2006 (Y. F. Hsu); 8♂, 8♀, same locality, 10/11. II. 2006, reared from *A. bambucifoliae* on *D. latiflorus*, emgd. 14/27. II. 2006, HSU 06B16 (Y. F. Hsu); 2♂, same locality, 25. II. 2006 (Y. F. Hsu); 1♂, 1♀, Xinhua, 200m, 31. I. 2008, reared from *A. bambucifoliae* on *D. latiflorus*, emgd. 15/23. II. 2008, HSU 08A29 (Y. F. Hsu); 1♀, same locality, 29. III. 2014 (Y. F. Hsu). **JIAYI Co.:** 4♂, 1♀, Alishan, Danayigu, 500m, 10. V. 2011 (Y. F. Hsu); 1♀, same locality, 10. V. 2011, reared from *A. bambucifoliae*, emgd. 12. V. 2011, HSU 11E9 (Y. F. Hsu); 1♂, Alishan, Shanmei, 500m, 30. III. 2008 (Y. F. Hsu); 2♀, Fanlu, Chukou, Tufeishan, 400m, 16. X. 2011, reared from *A. bambucifoliae*, emgd. 27. X. 2011, HSU 11K24 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♀, Liugui, 200m, 31. XII. 2006 (Y. F. Hsu); 1♂, Taoyuan, Meishan, 800m, 8. XI. 2010 (H. C. Huang); 1♂, Taoyuan, Fenggangshan, 700m, 30. VI. 2008 (Y. F. Hsu); 1♂, Maolin, Shanping, 11/14. II. 2003, reared from *Astegopteryx* sp., 3. III. 2003, HSU 03B18 (L. W. Wu). **PINGDONG Co.:**

1♂, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2009 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, Chunri, Dahanshan, 850m, 4. I. 2003, reared from *Melanaphis* sp., emgd. 17. I./5. II. 2003, HSU 03A4 (Y. F. Hsu & H. C. Huang). **TAIDONG Co.:** 1♀, Jinfeng, Jinlunxi, Dufelu Forest Trail, 1/4. XI. 2002 (J. L. Hung); 1♀, Haiduan, Tianlong Trail, 700m, 15. IV. 2011 (L. H. Wang).

Ssp. *isona*: **LIANJIANG Co.:** 2♂, 1♀, Nangan, Jinsha, Shengtian Road, 14. IV. 2014, reared from *Astegopteryx* sp., emgd. 23/27. IV. 2014, HSU 14D14 (Y. F. Hsu, H. C. Huang & C. L. Huang). **JINMEN [= KINMEN] Co.:** 1♂, Jinhu, Jinmen Botanical Garden, reared from *Astegopteryx* sp. emgd. 2. VI. 2018, HSU 18E17 (H. C. Huang).

Description. Adult – Forewing length 8–13 mm. Sexual dimorphism weakly present. Male (PLATE 1, Figs. 7–8; PLATE 2, Fig. 11): Head brown, with frons edged with white. Antennae covered by dark brown scaling, banded with white on outer surface, apical tip naked. Proboscis brown. Labial palpus flattened, porrect, white with brown lateral patches. Compound eyes smooth. Thorax covered by brown hairs dorsally, white ventrally. Legs hairy, white with tips of tarsus black; protarsus modified, bearing single claw. Abdomen brown dorsally, white ventrally. Forewing triangular, termen and dorsum straight, costa slightly convex. Hindwing rounded. Wing uppersides brown, with white scalings at various extent. Wing undersides ground color white, decorated with many dark brown markings. Fringe white banded with brown. Female (PLATE 2, Figs. 9–10, 12): Body and general wing patterns similar to those of male, but protarsus normal. Termen of forewing more rounded.

Male genitalia (PLATE 40, Figs. 310–311) – Tegumen broad, with deep medial concavity posteriorly, bearing small spines at distal ends laterally. Saccus tubular, slender. Vinculum narrow, strongly curved, Valva short, bifurcate; ampulla digitate; harpes of two valvae fused basad. Phallus conical, with prominent, large phallobase and elongate, slender aedeagus. Aedeagus longer than phallobase, slightly up-curved, then bent down, tapering toward caudad end.

Female genitalia (PLATE 73, Figs. 439–440) – Corpus bursae oval, elongate. Signa

asymmetrical; one as elongate sclerotized band, other as small sclerotized patch with minute spines. Ductus bursae elongate, enlarged posteriorly with sclerotized ring at caudal end. Sterigma vestigial. Posterior apophyses slightly longer than anal papillae. Anal papillae lobe-like, setose.

Global distribution. Widely distributed in East Asia and Southeast Asia (Shirôzu, 1960).

Distribution in Taiwan. Ssp. *thalaba* is found from low to moderate elevations on main island of Taiwan (Hsu, 2013). Ssp. *isona* was found from Mazu (Matsu) (Hsu, 2014) and Jinmen islands.

Larval Diet. Larvae are known to feed on aphids associated with bamboos, including Aphididae: *Melanaphis* sp. and Hormaphidae: *Astegopteryx bambucifoliae* (Hsu, 2006; Lu & Chen, 2014).

Biology. This species is multivoltine in occurrence (Hsu, 2006).

形態特徵：成蝶前翅長 8–13 mm。雌雄二型性微弱。雄蝶 (圖 7–8、11)：頭褐色，額具白邊。觸角覆黑褐色鱗片，外側具白環，尖頂裸露。口器褐色。下唇鬚白色、扁平且前伸，側面具褐色斑塊。複眼光滑。胸部背面覆褐色毛，腹面覆白色毛。足被毛，跗節白色、末端黑色；前足跗節特化，具單爪。腹部背面褐色、腹面白色。前翅三角形，外緣及後緣直線狀，前緣略凸出。後翅圓。翅背面褐色，覆有範圍多變之白色鱗片。翅腹面底色白色，飾以許多黑褐色斑紋。緣毛白褐相間。雌蝶 (圖 9–10、12)：形態特徵與雄蝶相似，但前足跗節正常。前翅外緣較圓。

雄交尾器 (圖 310–311)：背兜寬闊，後緣深凹陷，後端具小刺棘。囊突細長。抱器短、二分叉；抱器內突指狀；抱器兩側之抱握鋏癒合。陽莖錐狀，陽莖基大形；陽莖器細長，略長於陽莖基，基部上彎，後端略下彎且漸細。

雌交尾器 (圖 439–440)：交尾囊長橢圓形。花壁不對稱；一邊為細長骨化帶；另一邊為骨化小斑塊，具微小刺棘。交尾囊管長，向後端擴大、具環狀骨。交尾孔板退化。後內骨突略長於肛突。肛突瓣狀、具毛。

世界分布：廣泛分布於東亞及東南亞。

臺灣分布：亞種 ssp. *thalaba* 分布於本島低至中海拔地區。亞種 ssp. *isona* 分布於馬祖列嶼及金門。

幼生期食性：已知幼蟲取食竹類植物上之蚜蟲及其分泌物，包括常蚜科之色蚜屬物種及扁蚜科之竹葉扁蚜。

生物學：本種是一年多世代物種。

Genus *SPALGIS* Moore, 1879

Type species: *Geridus* [sic] *epeus* Westwood, [1851]

Diagnostic characters include the following: 1) eyes smooth; 2) undivided, hood-like uncus; 3) juxta bifid, abnormally long; 4) wing undersides with dark, fine striae.

Approximately 7 species are known, distributed in Afrotropical, Oriental, and northern Australian regions (Parsons, 1998).

Larvae are carnivorous, feeding on coccids. The pupa of this genus is famous by its appearance similar to an ape head (Van der Poorten & Van der Poorten, 2016)

1 species occurs in Taiwan.

熙灰蝶屬

形態特徵如下：1) 複眼光滑；2) 鉤突兜狀、不中分；3) 陽基軛片二分，格外修長；4) 翅腹面有深色細波浪紋。

本屬已知約 7 種，分布於非洲區、東洋區及澳洲區北部。

幼生期肉食性，取食介殼蟲。本屬成員蛹期因外觀似猿面而著名 (Van der Poorten & Van der Poorten, 2016)。

臺灣有 1 種。

Spalgis epeus (Westwood, [1851]) (熙灰蝶 / 白紋黑小灰蝶)

Geridus epeus Westwood, [1851]: The Genera of Diurnal Lepidoptera (2): pl. 76, f. 5.
Lucia epius Westwood, 1852: The Genera of Diurnal Lepidoptera (2): 502. (Type locality: "Ceylon")

Ssp. *dilama* Moore, 1878

PLATE 2, Figs. 13–14; PLATE 41, Fig. 312; PLATE 74, Fig. 441

Lucia dilama Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 701. (Type locality: Hainan)

Specimens examined:

TAINAN CITY [= TAINAN Co.]: 1♂, Baihe, Guanziling, 400m, 17. IX. 2002; 1♂, 2♀, same locality, 17. IX. 2002, reared from *Planococcus macarangae* [= *Formicococcus macarangae*] on *Macaranga sinensis*, emgd. 11. XI. 2002, HSU 02J24 (Y. F. Hsu); 1♀, Liuying, Nanyuan Farm, 29. XII. 2012, reared from *Dysmicoccus brevipes* ex *Pongamia pinnata* [= *Millettia pinnata*], emgd. 10. I. 2013, HSU 12M22 (Y. F. Hsu); 1♂, Xinhua, Luguxilaya, 31. VII. 2016 (L. Huang) (genitalia preparation JYL408). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Tianliao, 100m, 22. VI. 2011 (Y. F. Hsu); 1♂, 1♀, Meinong, Zhuzimen, ca 100m, 16. I. 2006, reared from *Phenacoccus madeirensis* on *Bidens pilosa*, emgd. 10/20. II. 2006, HSU 06A9 (Y. F. Hsu); 1♂, Meinong, 3. XI. 2005 (S. C. Chen); 1♀, Taoyuan, Shidong, 600m, 11. VIII. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Sandimen, 250m, 10. II. 2007 (Y. F. Hsu); 1♂, Sandimen, 200m, 26. III. 2011 (Y. F. Hsu); 1♀, Kending, 29. V. 1988 (Y. F. Hsu); 1♀, Hengchun, Dajianshan, 5. I. 2006 (Y. F. Hsu); 1♀, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14/17. III. 2008 (Y. F. Hsu & H. C. Huang). **HUALIAN Co.:** 1♀, Zhuoxi, Nanan, 200m, 27. XI. 2009 (L. H. Wang); 1♀, Zhuoxi, Nanan, 9. II. 2016 (J. Y. Liang) (genitalia preparation JYL409). **TAIDONG Co.:** 2♂, Yanping, Hongye, 8. IX. 2000 (Y. F. Hsu); 1♀, Yanping, Hongye, 450/480m, 30. IX. 2000 (Y. F. Hsu); 2♀, Taoyuan, 14. V. 1988 (Y. F. Hsu).

Description. Adult – Forewing length 10–13 mm. Sexual dimorphism weakly present. Male (PLATE 2, Fig. 13): Head hairy, brown mixed with white. Antennae dark brown

banded with white. Proboscis brown. Labial palpus porrect, white with brown lateral patches. Compound eyes smooth, green when alive. Thorax covered by brown hairs dorsally, white ventrally. Legs hairy, white mottled with pale brown markings; protarsus modified, bearing single claw. Abdomen brown dorsally, white ventrally. Forewing triangular, termen and dorsum straight, costa slightly convex. Hindwing rounded. Wing uppersides brown, with a faint, creamy yellow spot present by distal end of discoidal cell of forewing. Wing undersides ground color pale grey, decorated with multiple wavy brown lines; a white round spot by distal end of discoidal cell of forewing. Fringe pale brown. Female (PLATE 2, Fig. 14): Body and general wing patterns similar to those of male, but protarsus normal. Termen of forewing more rounded.

Male genitalia (PLATE 41, Fig. 312) – Tegumen broad, convex caudally. Brachia robust, ox-horn in shape, tapering to pointed distal end. Saccus vestigial. Vinculum moderately broad. Valva short, bifurcate; ampulla elongate, with distal end narrowed to bifid tip; harpes of two valvae fused basad, each forming elongate process tapering posteriorly with distal ends widely separated. Phallus tubular, with phallobase nearly equal to aedeagus in length.

Female genitalia (PLATE 74, Fig. 441) – Corpus bursae oval, elongate. Signa as two small, invaginated, sclerotized patches on opposite walls. Ductus bursae elongate, membranous but with sclerotized ring at caudal end. Sterigma vestigial. Posterior apophyses longer than anal papillae, nearly straight. Anal papillae weakly sclerotized, semi-circular, setose.

Global distribution. Widely distributed in the Oriental region (Shirôzu, 1960).

Distribution in Taiwan. Mainly lowland habitats of southern part of main island of Taiwan (Hsu, 2002, 2013); seldom seen in central Taiwan.

Larval diets. Larvae are carnivorous, feeding on a variety of mealybugs, including a few species in the family Pseudococcidae: *Formicococcus macarangae*, *Dysmicoccus brevipes*, and *Phenacoccus madeirensis* (Hsu, 2002, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013).

Remarks. The pupa of this species is famous for having appearance of dorsal view like an anthropoid head, but probably mimicking a bird dropping according to Parsons (1998).

形態特徵：成蝶前翅長 10–13 mm。雌雄二型性微弱。雄蝶 (圖 13)：頭被毛，褐色雜白色。觸角黑褐色，有白環。口器褐色。下唇鬚白色、前伸，側面具褐色斑塊。複眼光滑，活體呈綠色。胸部背面覆褐色毛，腹面覆白色毛。足被毛，呈斑駁之白色、淡褐色斑紋；前足跗節特化，具單爪。腹部背面褐色，腹面白色。前翅三角形，外緣及後緣直線狀，前緣略凸。後翅圓。翅背面褐色，前翅中室端具一黯淡之乳黃色斑點。翅腹面底色淡灰色，飾以多道褐色波浪紋；前翅中室端具一白色圓形斑點。緣毛淡褐色。雌蝶 (圖 14)：形態特徵與雄蝶相似，但前足跗節正常，前翅外緣較圓。

雄交尾器 (圖 312)：背兜寬闊，後端突出。顎形突壯碩、牛角形，末端漸尖。囊突退化。基腹弧中間略寬。抱器短、二分叉；抱器內突後端漸窄、端部二分；抱器兩側之抱握鋏基部癒合，向後漸細、末端遠離。陽莖管狀，陽莖基長度略等於陽莖器。

雌交尾器 (圖 441)：交尾囊長橢圓形。花壁為相對位置之兩只內陷小骨。交尾囊管修長、膜質，末端具環狀骨。交尾孔板退化。後內骨突略長於肛突、筆直。肛突半圓形、骨化、具毛。

世界分布：廣泛分布於東洋區。

臺灣分布：主要分布於本島南部之低地，中部地區偶見。

幼生期食性：幼蟲肉食性，取食多種粉介殼蟲，包括粉介殼蟲科之野桐蟻粉介殼蟲、鳳梨嫡粉介殼蟲及美地綿粉介殼蟲等。

生物學：本種為一年多世代物種。

註記：本種因蛹體背面神似人或猿首而聞名，但 Parsons (1998) 認為其形態與花紋可能有偽裝成鳥糞的效果。

Subfamily APHNAEINAE Distant, 1884

Aphnaeinae was treated as a tribe within Theclinae (e.g., Eliot, 1973) or Lycaeninae (e.g., Heath, 1997). The phylogenetic work based on molecular evidence by Boyle *et al*. (2015) treats it as a distinct subfamily, and Espeland *et al*. (2018) support the treatment in their phylogenomic analysis.

Heath (1997) stated that the unique character for this group of lycaenids is the phallus shealthed by valvae of male genitalia.

Members of the subfamily are distributed in the Afrotropical, Oriental and eastern Palearctic regions. Carnivorous and herbivorous life histories are both present.

In Taiwan, 3 species in 1 genus are known.

虎灰蝶亞科

虎灰蝶亞科以往被置於翠灰蝶亞科 (如 Eliot, 1973) 或藍灰蝶亞科 (如 Heath, 1997) 內。Boyle *et al*. (2015) 根據分子證據所進行之親緣關係分析將其處理為一獨立亞科，Espeland *et al*. (2018) 的親緣關係分析亦支持此處理。

Heath (1997) 指出此類灰蝶之特有特徵：雄蝶交尾器之陽莖器為抱器所包覆。

本亞科成員分布於非洲區、東洋區及古北區東部。幼蟲肉食性及植食性皆有發現。

臺灣有 1 屬 3 種。

Genus *Cigaritis* Donzel, 1847

Type species: *Cigaritis zohra* Donzel, 1847

Diagnostic characters include the following: 1) wing undersides ground color yellow with dark-edged continuous or broken bars; 2) sexual dimorphism present, with forewing apex angled and metallic patches usually in male; 3) tail-like projections at distal end of CuA_2 and 1A+2A of hindwing in most species; 4) hair tuft present in cell CuA_2 on hindwing underside in males.

More than 70 species are known, distributed mainly in the Oriental, Afrotropical and eastern Palearctic regions (Heath, 1997; Bascombe *et al*., 1999; Boyle *et al*., 2015).

Members of this genus in Asia have long been assigned to the genus *Spindasis* Wallengren, 1857 (type species; *Spindasis masilikazi* Wallengren, 1857, a junior synonym of *Aphnaeus natalensis* Westwood, 1851). Hesselbarth *et al*. (1995) synonymized *Spindasis* with *Cigaritis* Donzel, 1847, but Heath (1997) and Larsen (2005) both retained *Spindasis* as a distinct genus. Boyle *et al*. (2015) demonstrated that the Asian and African members of the genus each form a monophyletic group. As the type species of both *Cigaritis* and *Spindasis* are African, *Spindasis* under current usage would probably be polyphyletic. Subsequently, they supported the idea to lump *Spindasis* with *Cigaritis*.

Immatures of the members in the genus is considered steadily myrmecophilous or obligatorily myrmecophilous by Fiedler (1991) and Pierce *et al*. (2002), associated with *Crematogaster* and *Pheidole* ants (Heath, 1997).

Members of this genus are famous for employing hair-like projections and associated markings at hindwing tornus to make it look like a false head.

3 species occur in Taiwan.

虎灰蝶屬

形態特徵如下：1) 翅腹面底色黃色並有連續或不連續之條紋；2) 有雌雄二型性，

雄蝶前翅翅頂尖，背面常有金屬光澤色斑紋；3) 大部分種類後翅 CuA_2 及 1A+2A 脈末端具尾突；4) 雄蝶後翅腹面 CuA_2 室內有毛束 (性標)。

本屬已知超過 70 種，主要分布於東洋區、非洲區及古北區東部 (Heath, 1997; Bascombe *et al*., 1999)。

本屬的亞洲成員常期被置於 *Spindasis* 屬 (模式種：*Spindasis masilikazi* Wallengren, 1857, 為 *Aphnaeus natalensis* Westwood, 1851[納塔爾虎灰蝶] 的同物異名)。Hesselbarth *et al*. (1995) 將本屬處理為 *Cigaritis* Donzel, 1847 的同物異名，但 Heath (1997) 及 Larsen(2005) 則仍保留本屬。Boyle *et al*. (2015) 指出本屬的亞洲及非洲成員各自成單系群，由於 *Cigaritis* 及 *Spindasis* 的模式種均為非洲蝶種，*Spindasis* 單獨成屬會成一複系群，因此他們支持將 *Spindasis* 併入 *Cigaritis* 的處理。

本屬幼生期被認為有穩定喜蟻性或專性喜蟻性 (Fiedler, 1991；Pierce *et al*., 2002)，與舉尾蟻屬及大頭家蟻屬螞蟻關係密切 (Heath, 1997)。

本屬成員以利用後翅尾突及臀區斑紋偽裝成其頭部而聞名。

臺灣有 3 種。

Cigaritis lohita (Horsfield, [1829]) (虎灰蝶 / 臺灣雙尾燕蝶 / 銀線灰蝶)

Amblypodia lohita Horsfield, [1829]: Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 2: 106. (Type locality: Java)

Aphnaeus zoilus Moore, 1877: Proceedings of the Zoological Society of London 1877 (3): 588. (Type locality: S. Andamans)

Ssp. *formosanus* Moore, 1877

PLATE 2, Figs. 15–16; PLATE 41, Fig. 313; PLATE 74, Fig. 442

Aphnaeus formosanus Moore, 1877: The Annals and magazine of natural history; zoology, botany, and geology, series 4, 20 (115): 51. (Type locality: Formosa)

Aphanaeus [sic] *sozanensis* Kato, 1934: Insect World 2 (10): 386. (Type locality: "Sozan, Formosa [Yangmingshan, Taipei, Taiwan]")

Specimens examined:

JILONG CITY.: 1♂, 1♀, Jilongyu, 25. IX. 2011 (H. C. Huang). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Danshui, Miantianshan, 2. VIII. 1987 (Y. F. Hsu); 1♂, 5♀, Ruifang,

Nanya, 7. IX. 2005, reared from *Mallotus japonicus* with *Crematogaster rogenhoferi*, emgd. 5/26. IX. 2005, HSU 05J31 (Y. F. Hsu & C. L. Huang); 1♀, Xindian, Sikanshui, 200/400m, 6. VIII. 2007 (Y. F. Hsu). **TAIPEI CITY:** 1♂, Beitou, Xiangtianshan, 31. VII. 1987 (Y. F. Hsu); 1♀, Daan, Fuzhoushan, 30. IV. 2007 (Y. F. Hsu); 2♂, Songshan, Hushan, 200m, 20. IV. 2010 (C. L. Huang). **NANTOU Co.:** 1♀, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F Hsu). **JIAYI Co.:** 1♂, Zhongpu, Shekou, 4. VII. 2010 (J. H. Lin). **PINGDONG Co.:** 1♀, Hengchun, Kending, 28. III. 1988 (C. F. Li); 1♂, Hengchun, Xiangjiaowan, 19. XI. 1995, reared from *Mal. repandus*, emgd. 20. XII. 1995, HSU 95L7 (Y. F. Hsu); 2♂, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu); 1♂, 1♀, Sandimen, 250m, 23. I. 2007, reared from *Macaranga tanarius*, emgd. 7. IV. 2007, HSU 07A23 (C. L. Huang); 1♀, Sandimen, 2. I. 2009, reared from *Mal. paniculatus* with *C. rogenhoferi*, emgd. 16. III. 2009, HSU 09A7 (Y. F. Hsu). **LIANJIANG Co.:** 5♂, 2♀, Beigan, Qiaozai, 7. IX. 2014 (C. L. Huang & H. Y. Lee).

Description. Adult – Forewing length 13–21 mm. Sexual dimorphism present. Male (PLATE 2, Fig. 15): Head hairy, brown, with a medial white patch on vertex; frons edged by white margins. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, creamy yellow, covered by brown scalings dorsally. Compound eyes smooth. Thorax brown dorsally, creamy yellow ventrally. Abdomen brown banded with creamy yellow. Legs creamy yellow, mottled by brown scalings; tarsus creamy yellow banded with brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa and dorsum straight, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2 and 1A+2A. Wing uppersides ground color brown, with prominent metallic blue tinged with purple patches on both forewing and hindwing. A prominent orange patch present at tornus, associated with two small black spots. Wing undersides ground color creamy yellow, with silvery bands edged by dark brown margins. Submarginal bands continuous. A “V”-shaped dark brown bar present basad on forewing. Fringe gray. Brown hair tuft present in cell CuA_2 on hindwing underside. Female (PLATE 2, Fig. 16): Body and general wing patterns similar to those of male, but Protarsi normal, forewing termen more convex, no metallic patches on wing uppersides.

Male genitalia (PLATE 41, Fig. 313) – Tegumen broad, short. Socii prominent, forming

large lobes with blunt posterior end. Vinculum narrow, curved. Brachium hook-like, circularly curved, with distal end blunt. Saccus broad, short, with anterior margin convex. Valvae lobe-like, with prominent digitate distal process; costa forming heavily sclerotized band with inner spine. Juxta as a plate with lateral arms. Phallus stout, with aedeagus shorter than phallobase. Aedeagus enlarged, slightly up-curved, with dorsal opening. Cornutus as a short, narrow sclerotized bar, serrate distally.

Female genitalia (PLATE 74, Fig. 442) – Corpus bursae oval. Signa as numerous paired minute teeth arranged in regular pattern throughout corpus bursae. Ductus bursae short, thick, moderately sclerotized, with longitudinal folds, connecting to sclerotized tube. Sterigma with antevaginalis forming a pair of sclerotized sacs with V-shaped crevices; postvaginalis as a pair of narrow, depressed, sclerotized bands. Posterior apophyses slightly longer than anal papillae, nearly straight. Anal papillae prominent, lobe-like, heavily sclerotized, setose with long setae.

Global distribution. India, Sri Lanka, Indochina, Sundaland, West to East China, Taiwan (D'Abrera, 1986; Bascombe *et al*., 1999; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations (Hsu, 2013). Also found from Jinmen and Mazu Islands (Hsu, 2014).

Larval Host plant(s). A variety of broad-leaved plants are utilized, but immatures are always associated with *Crematogaster rogenhoferi* ants.

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 13–21 mm。具雌雄二型性。雄蝶 (圖 15)：頭被毛、褐色；頭頂中央具白斑；額有白邊。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、乳黃色、腹面覆褐色鱗片。複眼光滑。胸部背面褐色、腹面乳黃色。腹部褐色，有乳黃色帶紋。足乳黃色雜褐色鱗片；跗節乳黃色，有褐色條紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣及後緣甚直、外緣近翅頂處略凸出。後翅卵形，臀區具葉狀突；CuA_2 及 1A+2A 脈末端具絲狀尾突。翅背面底色褐色，具鮮明、帶金屬光澤

之紫藍色斑塊；臀區具鮮明橙色紋，附帶二黑色小斑點。翅腹面底色乳黃色，有帶黑褐色邊之銀色帶紋；亞外緣帶紋不間斷；前翅基部有倒 V 字形黑褐色條紋。後翅腹面 CuA_2 室有褐色毛束。緣毛灰色。雌蝶 (圖 16)：形態特徵與雄蝶相似，但前足跗節不癒合，前翅外緣較凸，翅背面無金屬光澤斑紋。

雄交尾器 (圖 313)：背兜寬短。背兜側突為大型瓣狀突起，末端鈍。基腹弧狹窄、彎曲。顎形突鉤狀、呈弧形彎曲，末端鈍。囊突寬短，前緣凸出。抱器瓣狀，末端具明顯指狀突；抱器背為高度骨化帶。陽基軛片為骨化盤，生有側臂。陽莖粗壯，陽莖器長度短於陽莖基。 陽莖器大型，略上彎，開口於背側。角狀器為末端有鋸齒之狹窄骨帶。

雌交尾器 (圖 442)：交尾囊橢圓形。花壁為成對小齒結構，規則排列於交尾囊上。交尾囊管粗短、中度骨化，具縱向褶皺，近交尾孔處形成骨化管。交尾孔前板兩側具一對有 V 形開口之骨化囊袋，交尾孔後板為一對狹窄、凹陷之骨化帶。後內骨突長度略長於肛突，甚直。肛突高度骨化、瓣狀，具長毛。

世界分布：印度、斯里蘭卡、巽他地區、中南半島、華西至華東、臺灣。

臺灣分布：分布於本島低至中海拔地區，金馬地區亦有分布。

寄主植物：取食多種闊葉植物，但幼生期與懸巢舉尾家蟻共棲。

生物學：本種為一年多世代物種。

Cigaritis kuyanianus (Matsumura, 1919) (蓬萊虎灰蝶 / 姬雙尾燕蝶)

PLATE 3, Figs. 17–18; PLATE 41, Fig. 314; PLATE 74, Fig. 443

Aphnaeus kuyanianus Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 611, pl. 48, fig. 6. (Type locality: “Formosa (Tappan, Horisha, Bokusekkaku)”)

Specimens examined:

NANTOU Co.: 1♂, Puli, 1. VII. 1988 (Y. F. Hsu); 1♂, same locality, 10. VII. 1988 (Y. F. Hsu); 1♂, same locality, 22. VII. 1989 (Y. F. Hsu); 1♂, Renai, Nanshanxi, 9. IV. 1989 (T. C. Li); 1♀, same locality, ca 900m, 1. IX. 2007 (Y. F. Hsu); 5♂, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F. Hsu); 1♀, same locality, 24. IX. 2005 (Y. F. Hsu); 1♀, same

locality, 12. XI. 2005, reared from *Rhus chinensis* with *Crematogaster laborisa* [= *C. nawai*], emgd. 10. II. 2006, HSU 05L19 (Y. F. Hsu); 3♂, 2♀, same locality, 22. IV. 2007, reared from *Mallotus japonica* [= *Mallotus japonicus*] with *C. laborisa* [= *C. nawai*], emgd. 14/17. VI. 2007, HSU 07D19 (C. L. Huang); 1♀, same locality, 600m, 27. II. 2011 (Y. F. Hsu). **JIAYI Co.:** 1♀, Fanlu, Shizhuo/ Dabang, 900/1000m, 8. V. 2010 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, 60m, 22. XI. 2009 (Y. F. Hsu); 1♀, same locality, 1. VII. 2010 (J. H. Lin). **TAIDONG Co.:** 1♂, Yangping, Hongye, 6. V. 1988 (T. C. Li); 1♂, same locality, 15. V. 1988 (Y. F. Hsu); 1♀, Yangping, Luyexi, 28. VIII. 1988 (Y. F. Hsu).

Description. Adult – Forewing length 12–21 mm. Sexual dimorphism present. Male (PLATE 2, Fig. 17): Head hairy, brown, with a medial white patch on vertex; frons edged by white margins. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, creamy yellow, covered by brown scalings dorsally. Compound eyes smooth. Thorax brown dorsally, creamy yellow ventrally. Abdomen brown banded with creamy yellow. Legs creamy yellow, mottled by brown scalings; tarsus creamy yellow banded with brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa and dorsum straight, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2 and 1A+2A. Wing uppersides ground color brown, with prominent metallic blue tinged with purple patches on both forewing and hindwing. A prominent orange patch present at tornus, associated with two small black spots. Wing undersides ground color creamy yellow, with yellow stripes edged by dark brown margins; silvery lines sometimes present within yellow stripes. Submarginal bands continuous. A dark brown bar present basad on forewing, associated with a "C"-shaped marking. Fringe gray. Brown hair tuft present in cell CuA_2 on hindwing underside. Female (PLATE 2, Fig. 18): Body and general wing patterns similar to those of male, but Protarsi normal, forewing termen more convex, no metallic patches on wing uppersides.

Male genitalia (PLATE 41, Fig. 314) – Tegumen broad, short. Socii prominent, forming lobes with rounded posterior end. Vinculum narrow, curved. Brachium hook-like, circularly curved, with distal end blunt. Saccus broad, short, with anterior margin

convex. Valvae lobe-like, with prominent conical distal process; costa forming heavily sclerotized band with inner spine. Juxta as a plate with lateral arms. Phallus stout, with aedeagus shorter than phallobase. Aedeagus enlarged, slightly up-curved, with dorsal opening. Cornutus as a short, narrow sclerotized bar.

Female genitalia (PLATE 74, Fig. 443) – Corpus bursae oval. Signa as numerous paired minute teeth arranged in regular pattern throughout corpus bursae. Ductus bursae short, thick, moderately sclerotized, with longitudinal folds, connecting to sclerotized tube. Sterigma with antevaginalis forming a sclerotized cap with a pair of lateral sacs with crevices; postvaginalis as a pair of narrow, depressed, sclerotized bands. Posterior apophyses longer than anal papillae, straight. Anal papillae prominent, lobe-like, heavily sclerotized, setose with long setae.

Variations. Fine silvery striae on wing undersides are reduced or absent in some individuals.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 2013).

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

Larval Host plant(s). A variety of broad-leaved plants are utilized, but immatures are always associated with *Crematogaster* ants.

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. This species is superficially similar to *S. lohita*, but the silvery striae on wing undersides of *S. lohita* are fully filled up the spaces in dark brown bands in *S. lohita*, whereas they are reduced or absent in *S. kuyanianus*.

形態特徵：成蝶前翅長 12–21 mm。具雌雄二型性。雄蝶 (圖 17)：頭被毛、褐色；

頭頂中央具白斑；額有白邊。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、乳黃色、腹面覆褐色鱗片。複眼光滑。胸部背面褐色、腹面乳黃色。腹部褐色，有乳黃色帶紋。足乳黃色雜褐色鱗片；跗節乳黃色，有褐色條紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣及後緣直、外緣近翅頂處略凸出。後翅卵形，臀區具葉狀突；CuA_2 及 1A+2A 脈末端具絲狀尾突。翅背面底色褐色，具鮮明、帶金屬光澤之紫藍色斑塊；臀區有鮮明橙色紋，附帶二黑色小斑點。翅腹面底色乳黃色，具帶黑褐色邊之黃色條紋，有時黃色條內具銀色線紋；亞外緣帶紋不間斷；前翅基部具黑褐色短條，及 C 字形小紋。後翅腹面 CuA_2 室具褐色毛束。緣毛灰色。雌蝶 (圖 18)：形態特徵與雄蝶相似，但前足跗節不癒合，前翅外緣較凸出，翅背面無金屬光澤斑紋。

雄交尾器 (圖 314)：背兜寬短。背兜側突為大型瓣狀突起，末端圓鈍。基腹弧狹窄、彎曲。顎形突鉤狀、呈弧形彎曲，末端鈍。囊突寬短，前緣凸出。抱器瓣狀，末端具明顯錐狀突；抱器背為高度骨化帶。陽基軛片為骨化盤，生有側臂。陽莖粗壯，陽莖器長度短於陽莖基。陽莖器大型，略上彎，開口於背側。角狀器為狹窄骨帶。

雌交尾器 (圖 443)：交尾囊橢圓形。花壁為成對小齒結構，規則排列於交尾囊上。交尾囊管粗短、中度骨化，具縱向褶皺，近交尾孔處形成骨化管。交尾孔前板帽狀，兩側具一對有開口之骨化囊袋，交尾孔後板為一對狹窄、凹陷之骨化帶。後內骨突長度長於肛突，甚直。肛突高度骨化、瓣狀，具長毛。

變異：部分個體翅腹面銀色線紋退減或消失。

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：取食多種闊葉植物，但幼生期與舉尾家蟻屬螞蟻共棲。

生物學：本種為一年多世代物種。

註記：本種與虎灰蝶相似，但虎灰蝶翅腹面有銀色線紋填滿具黑褐色邊之條紋，而在蓬萊虎灰蝶則銀色線紋較稀疏或缺少。

Cigaritis syama (Horsfield, [1829]) (三斑虎灰蝶 / 三星雙尾燕蝶 / 豆粒銀線灰蝶)

PLATE 3, Figs. 19–22; PLATE 41, Fig. 315; PLATE 74, Fig. 444

Amblypodia syama Horsfield, [1829]: Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 2: 107. (Type locality: Java)

Ssp. *lamuae* Hsu & Liang, 2020

Spindasis syama lamuae Hsu & Liang, 2020: Zootaxa 4763 (4): 485–500. (Type locality: Taiwan: Kaohsiung City, Meinong, Shuangxi, 150m)

Specimens examined:

JILONG CITY: 1♀paratype, Longgang Trail, 2. IX. 2006 (Y. F. Hsu); 1♀paratype, same locality, 26. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= TAIPEI Co.]:** 1♂paratype, Shiding, Ergeshan, 28. V. 2004, reared from *Maesa japonica*, emgd. 10. VIII. 2004, HSU 04F53 (J. R. Chen & C. T. Chuang); 2♂paratypes, 1♀paratype, Danshui, Miantianshan, 2. VIII. 1987 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂paratype, 1♀paratype, Fuxing, Gaoyi, VIII. 1984 (C. L. Lee). **YILAN Co.:** 1♂paratype, Datong, Qilan, 5. VIII. 1988 (C. F. Li). **NANTOU Co.:** 3♂paratypes, Yuchi, Lianhuachi, 22. V. 1989 (C. F. Li); 1♀paratype, Puli, 15. VIII. 1989 (C. F. Li); 1♂paratype, Yuchi, Lianhuachi, 700m, 8. X. 2002 (Y. F. Hsu); 1♂paratype, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F. Hsu); 1♀paratype, same locality, 22. X. 2005 (Y. F. Hsu); 1♂paratype, 1♀paratype, same locality, 16. X. 2010 (Y. F. Hsu); 1♀paratype, Renai, Nanshanxi, ca 900m, 1. IX. 2007 (Y. F. Hsu); 1♂paratype, 1♀paratype, Renai, Wushe, 26. VII. 2016 (J. Y. Liang) (genitalia preparation JYL446, 447). **HUALIAN Co.:** 1♀paratype, Xiulin, Lushui, 11. VIII. 1988 (C. F. Li). **JIAYI Co.:** 1♂, Fanlu, Chukou, ca 350m, 10. X. 2005 (Y. F. Hsu); 1♀paratype, Fanlu, Chukou, 300m, 5. IX. 2010 (Y. F. Hsu); 1♂paratype, 1♀paratype, Alishan, Shizhuo/ Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂paratype, Guanziling, 400m, 17. IX. 2002 (Y. F. Hsu); 1♂paratype, Baihe, Zhentoushan, 25. X. 2002 (Y. F. Hsu); 2♂paratypes, Xinhua, 24. IX. 2010 (Y. F. Hsu); 1♂paratype, 1♀paratype, same locality, 29. III. 2013 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂paratype, Liugui, 1. II. 1983 (Y. F. Hsu); 1♂paratype, same locality, 26. III. 1989 (D. X. Lee); 1♂paratype, same locality, 200m, 31. XII. 2006 (Y. F. Hsu); 5♂paratypes, Liugui, Nanfengshan, 17. VI. 1989 (Y. F. Hsu); 1♂holotype, 3♀paratypes, Meinong, Shuangxi, 150m, 8. II. 2006 (Y. F. Hsu); 2♂, same locality, 22. I. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♀paratype, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu); 1♂paratype, same locality, 1200m, 4. IV. 2002 (Y. F. Hsu, C. C. Lu

& C. L. Huang); 1♀, Wutai, 400m, 8. II. 2006 (C. C. Lu); 1♂paratype, 2♀paratypes, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2009, reared from *Ardisia crenata* with *Crematogaster laborisa* [= *C. nawai*], emgd. 9. IV/9. V. 2009, HSU 09C26 (Y. F. Hsu & H. C. Huang); 2♂paratypes, Sandimen, 250m, 10. II. 2007 (Y. F. Hsu); 1♂paratype, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu); 1♂paratype, same locality, 19. III. 2006 (Y. F. Hsu); 1♂paratype, Chunri, Dahanshan, 20. I. 2011, reared from *Psidium guajava*, emgd. 17. IV. 2011, HSU 11A14 (J. H. Lin); 2♂paratypes, same locality, 27. IV. 2011 (J. H. Lin).

Description. Adult – Forewing length 12–18 mm. Sexual dimorphism present. Male (PLATE 3, Figs. 19–20): Head hairy, brown, with a medial white patch on vertex; frons edged by white margins. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, creamy yellow, covered by brown scalings dorsally. Compound eyes smooth. Thorax brown dorsally, creamy yellow ventrally. Abdomen brown banded with creamy yellow. Legs creamy yellow, mottled by brown scalings; tarsus creamy yellow banded with brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa and dorsum straight, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2 and 1A+2A. Wing uppersides ground color brown, with prominent metallic blue tinged with purple patches on both forewing and hindwing. A prominent orange patch present at tornus, associated with two small black spots. Wing undersides ground color creamy yellow, with silvery bands edged by dark brown margins. Submarginal bands partially or entirely broken. Proximal band of hindwing broken into three separate spots. A short dark brown or ochreous bar present basad on forewing. Buff hair tuft present in cell CuA_2 on hindwing underside. Fringe gray. Female (PLATE 3, Figs. 21–22): Body and general wing patterns similar to those of male, but Protarsi normal, forewing termen more convex, no metallic patches on wing uppersides.

Male genitalia (PLATE 41, Fig. 315) – Tegumen broad, short. Socii prominent, forming lobes with short, digitate projections. Vinculum narrow, curved. Brachium hook-like, circularly curved, with distal end blunt. Saccus broad, short, with anterior margin convex. Valvae lobe-like, with prominent flattened, bar-shaped process; costa forming heavily sclerotized band with inner spine. Juxta as a plate with lateral arms. Phallus stout, with

aedeagus shorter than phallobase. Aedeagus enlarged, with dorsal opening. Cornutus as a serrate sclerotized band.

Female genitalia (PLATE 74, Fig. 444) – Corpus bursae oval. Signa as numerous paired minute teeth arranged in regular pattern throughout corpus bursae. Ductus bursae short, thick, moderately sclerotized, with longitudinal folds, connecting to sclerotized ring. Sterigma with antevaginalis forming a pair of sclerotized sacs with broad crevices. Posterior apophyses approximately as long as anal papillae, slightly curved. Anal papillae prominent, lobe-like, heavily sclerotized, setose with long setae.

Variation. Markings on wing undersides are reduced and turning reddish in dry/cold seasons.

Global distribution. Sundaland, Indochina, West to East China, and Taiwan (D'Abrera, 1986; Hsu, 2013; Hsu & Liang, 2020).

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

Larval Host plant(s). A variety of broad-leaved plants are utilized, but immatures are known to be always associated with *Crematogaster* ants, such as *C. popohana* (Hsu & Liang, 2020).

Biology. This species is multivoltine in occurrence (Hsu & Huang, 2013; Hsu & Liang, 2020).

Remarks. *Aphnaeus hirayamae* Matsumura, 1919 was considered as a synonym of *S. syama* by Shirôzu & Ueda (1992), but Hsu *et al*. (2005) pointed out that the sole holotype of the taxon appeared to be a mis-labeled specimen of *S. vulcanus* (Fabricius, 1775)

This species may be easily diagnosed from the other two congeneric species by markings on wing undersides: proximal band of hindwing broken into three separate spots and the

subbasal marking as a short bar.

形態特徵：成蝶前翅長 12–18 mm。具雌雄二型性。雄蝶 (圖 19–20)：頭被毛、褐色；頭頂中央具白斑；額有白邊。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、乳黃色、腹面覆褐色鱗片。複眼光滑。胸部背面褐色、腹面乳黃色。腹部褐色，有乳黃色帶紋。足乳黃色雜褐色鱗片；跗節乳黃色，有褐色條紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣及後緣直、外緣近翅頂處略凸出。後翅卵形，臀區具葉狀突； CuA_2 及 1A+2A 脈末端具絲狀尾突。翅背面底色褐色，具鮮明、帶金屬光澤之紫藍色斑塊；臀區具鮮明橙色紋，附帶二黑色小斑點。翅腹面底色乳黃色，具帶黑褐色邊之銀色條紋；亞外緣帶紋常分斷不連續；後翅內側帶紋分為三個小斑；前翅基部有黑褐色或土黃色短條。後翅腹面 CuA_2 室具淺黃色毛束。緣毛灰色。雌蝶 (圖 21–22)：形態特徵與雄蝶相似，但前足跗節不癒合，前翅外緣較凸出，翅背面無金屬光澤斑紋。

雄交尾器 (圖 315)：背兜寬短。背兜側突為大型瓣狀突起，末端鈍。基腹弧狹窄、彎曲。顎形突鉤狀、呈弧形彎曲，末端鈍。囊突寬短，前緣凸出。抱器瓣狀，末端具扁平棒狀突起；抱器背為高度骨化、帶狀。陽基軛片為骨化盤，生有側臂。陽莖粗壯，陽莖器長度短於陽莖基。 陽莖器大型，略上彎，開口於背側。角狀器複雜，包括一束針狀刺、棒狀具刺骨片及多排小齒。

雌交尾器 (圖 444)：交尾囊橢圓形。花壁為成對小齒結構，規則排列於交尾囊上。交尾囊管粗短、中度骨化，具縱向褶皺，近交尾孔處形成骨化管。交尾孔前板兩側具一對有寬開口之骨化囊袋。後內骨突長度略與肛突等長，略彎曲。肛突高度骨化、瓣狀，具長毛。

變異：乾季／低溫型個體翅腹面斑紋退減、變紅。

世界分布：巽他陸塊、中南半島、華西至華東、臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：取食多種闊葉植物，但幼生期與舉尾家蟻屬螞蟻 (如甲仙舉尾家蟻) 專性共棲。

生物學：本種為一年多世代物種。

註記：Shirôzu & Ueda (1992) 認為 *Aphnaeus hirayamae* Matsumura, 1919 是三斑虎灰蝶之同物異名，但 Hsu *et al*. (2005) 指出該分類單元之全模式標本為一標籤錯誤之南亞虎灰蝶 *S. vulcanus* (Fabricius, 1775)。

本種可藉由翅腹面斑紋與另外兩種虎灰蝶區別：後翅腹面內側條紋分斷為三個小斑點、亞翅基斑紋為短條狀。

Subfamily LYCAENINAE Leach, 1815

The members in the subfamily are usually called the coppers. They form a group of lycaenid butterflies predominately found in the Holarctic region (Scoble, 1992), with most species associated with plants in Polygonaceae. Some species possess "tails" on the hindwings but other do not. Eliot (1992) lumped Theclinae and Polyommatinae with this subfamily, and the treatment was followed by some authors (e.g., Ackery *et al*., 1999) but not the others (e.g., Wahlberg *et al*., 2005). In the phylogenomic analysis performed by Espeland *et al*. (2018) and a phylogenetic work based on global sampling by Kawahara *et al*. (2023), Lycaeninae was recovered basal to all members of Theclinae+Polyommatinae.

Members of Lycaeninae *sensu stricto* are well-represented in Holarctic region, but weakly represented in southern hemisphere.

In Taiwan, 1 species in 1 genus is known. A sole record of an additional species exists, probably involving mis-labelling or anthropogenic introduction.

灰蝶亞科

本亞科成員英文名常稱為「coppers」。牠們形成一群主要分布於全北區 (Scoble, 1992) 且大部分種類取食蓼科植物之灰蝶。有些物種後翅具尾突，其餘種類則無尾突。Eliot (1992) 將翠灰蝶亞科及藍灰蝶亞科與本亞科合併，此處理有贊同者亦有不同意者。根據 Espeland *et al*. (2018) Kawahara *et al*. (2023) 之親緣關係分析，灰蝶亞科為翠灰蝶亞科 + 藍灰蝶亞科所有成員之基群。

狹義灰蝶亞科成員廣泛分布於全北區，南半球亦有少數種類。

臺灣有 1 屬 1 種，並有 1 筆其他種類之記錄，可能為標籤錯誤或人為引進。

Genus *HELIOPHORUS* Geyer, 1832

Type species: *Heliophoru belenus* Geyer, 1832

Diagnostic characters include the following: 1) wing undersides yellow with red bands along termen; 2) sexual dimorphism present, with metallic patches in males, and red or orange markings in females; 3) a tail-like projection at distal end of CuA_2 of hindwing in most species.

Approximately a dozen species are known, distributed mainly in the Oriental region (D'Aberera, 1986, 1993).

Larvae feed on plants in the family of Polygonaceae.

1 species occurs in Taiwan.

日灰蝶屬

形態特徵如下：1) 翅腹面黃色，外緣具紅色帶；2) 具雌雄二型性，雄蝶有金屬光澤斑塊，雌蝶則具紅色或橘色斑紋；3) 大部分種類後翅 CuA_2 脈末端具尾突。

本屬已知約 12 種，主要分布於東洋區。

幼生期以蓼科植物為寄主。

臺灣有 1 種。

***Heliophorus ila* (de Nicéville & Martin, [1896]) (紫日灰蝶／紅邊黃小灰蝶)**

Ilerda ila de Nicéville & Martin, [1896]: Journal of the Asiatic Society of Bengal 64, Pt. II (3): 472. (Type locality: "Battak mountains, N.-E. Sumatra")

Ssp. *matsumurae* Fruhstorfer, 1908

PLATE 3, Figs. 23–24; PLATE 42, Fig. 316; PLATE 75, Fig. 445

Ilerda epicles matsumurae Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 49. (Type locality: "Formosa, Suisha-See")

Ssp. *chinensis* Fruhstorfer, 1908

PLATE 3, Figs. 25–26; PLATE 42, Fig. 317; PLATE 75, Fig. 446

Ilerda epicles chinensis Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 49. (Type locality: "West-China")

Specimens examined:

Ssp. *matsumurae*: **TAIPEI CITY:** 1♀, Wenshan Dist., Gongguan campus, NTNU, 19. II. 2000, reared from *Polygonum chinense* [= *Persicaria chinensis*], emgd. 13. III. 2000 (Y. T. Lo). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Xuanyuan, 1000m, 17. IX. 2008 (Y. F. Hsu & L. W. Wu). **NANTOU Co.:** 1♂, 1♀, Lugu, Fonghuanggu Bird and Ecology Park, 3. II. 2000 (Y. C. Hung); 1♂, 1♀, Nantou City, Zhongxingxin, emgd. 25. XII. 2000 (Y. T. Lo); 1♀, Renai, Nanshanxi, 900m, 23. I. 2008 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu); 1♀, Checheng, Sichongxi, 24. II. 2014 (C. L. Huang) (genitalia preparation CJC113). **TAIDONG Co.:** 1♂, Haiduan, Liyuan, 1793m, 3. VIII. 2018 (J. Y. Liang) (genitalia preparation JYL332).

Ssp. *chinensis*: **LIANJIANG Co.:** 2♀, Nangan, 1. V. 2010, reared from *P. chinense*, emgd. 29. VI. 2010, HSU 10F4 (Y. F. Hsu); 1♂, 2♀, same locality, 2. VI. 2010 (Y. F. Hsu); 1♂, same locality, 9. IV. 2014 (H. Y. Lee) (genitalia preparation JYL465); 2♂, Nangan, Jinsha, 26. VI. 2013; 1♀, Beigan, Wusha, 15. IV. 2014 (C. L. Huang, H. C. Huang & Y. F. Hsu) (genitalia preparation JYL466).

Description. Adult – Forewing length 15–18 mm. Sexual dimorphism prominent. Male (PLATE 3, Figs. 23, 25): Head hairy, brown, white scalings present at base of antennae; a white rim surrounding eyes. Antennae dark brown with white annuli. Proboscis dark brown. Labial palpus porrect, white mixed with brown. Thorax and abdomen covered by brown hairs dorsally, white ventrally. Legs white mixed with dark brown, Protarsi fused. Forewing triangular, costa and dorsum straight, termen slightly convex. Hindwing lobe-like, with tail-like projection at tip of vein CuA_2. Wing upperside ground color dark brown, with dull purple patch on both forewing and hindwing. A short series of orange crescents present near tornus of hindwing. Wing undersides ground color yellow, with red bands along termen. A discal series of narrow, brown spots on forewing, mostly

replaced by white spots on hindwing. Fringe white banded with brown. Female (PLATE 3, Figs. 24, 26): Body and general wing patterns similar to those of male, but forewing termen more rounded. No purple patches on wing upperside. A tilt, orange, discal band present on forewing. Band of orange crescents present throughout termen.

Male genitalia (PLATE 42, Figs. 316–317) – Tegumen narrow, short, with a pair elongate, digitate socii slightly tapering to blunt distal end. Saccus elongate, longer than height of vinculum. Brachium long, slender, forming up-curved hook. Vinculum bent dorsally, Valva triangular basally, bearing digitate distal process. Juxta large, forming a pair of ligulate processes. Phallus elongate, lance-shaped, up-raising; aedeagus more than 2X of phallobase, tapering to fine caudal end with pointed tip.

Female genitalia (PLATE 75, Figs. 445–446) – Corpus bursae bulbous. Ductus bursae elongate, more than 2X of length of corpus bursae, with anterior portion membranous, wrinkled, posterior portion sclerotized, tubular. Sterigma forming a prominent weakly sclerotized dome, with a heavily sclerotized ligulate sclerite at ostium bursae. Posterior apophyses slightly longer than anal papillae, heavily sclerotized, nearly straight, enlarged basally. Anal papillae lobe-like, sclerotized anteriorly, setose posteriorly.

Global distribution. Sumatra, Indochina, West, South, East China, and Taiwan. (Eliot, 1963).

Distribution in Taiwan. Ssp. *matsumurae* occurs in the main island of Taiwan, Ssp. *chinensis* has been found from Mazu Island.

Larval Host plant(s). Polygonaceae: *Persicaria chinensis* (Hsu, 1999; Lu & Chen, 2014). Muroya *et al*. (1967) observed oviposition of this species on *Rumex* sp.

Biology. Multivoltine (Hsu, 1999a, 2013).

Remarks. The purple patches and red markings on wing uppersides are less extensive in

individuals found from Mazu Islands (ssp. *chinensis*) compared to those from Taiwan (ssp. *matsumurae*).

形態特徵：成蝶前翅長 15–18 mm。雌雄二型性顯著。雄蝶 (圖 23、25)：頭被毛、褐色，觸角基部具白色鱗片；複眼具白色輪緣。觸角黑褐色，具白環。口器黑褐色。下唇鬚前伸，白色雜褐色。胸部及腹部背面覆褐色毛、腹面覆白色毛。足白色雜黑褐色，前足跗節癒合。前翅三角形，前緣及後緣直線狀，外緣略凸出。後翅葉狀，於 CuA_2 脈末端具尾突。翅背面底色黑褐色，前翅及後翅均有暗紫色斑塊。後翅近臀區處具一列橙色弦月短紋。翅腹面底色黃色，沿外緣具紅色帶紋；中央具一列細小斑點，於前翅黑色、於後翅白色。緣毛白褐相間。雌蝶 (圖 24、26)：形態特徵與雄蝶相似，但前翅外緣較圓；翅背面無紫色斑塊，前翅中央具一橙色斜帶紋，後翅弦月紋分布於整個外緣。

雄交尾器 (圖 316–317)：背兜狹窄、甚短，具一對向末端漸縮的修長背兜側基突，其末端鈍。囊突修長，長於基腹弧。顎形突細長、彎曲，呈鉤狀。基腹弧背側彎曲。抱器基部呈三角形，向末端形成指狀突起。陽基顎片大型，形成一對舌狀突起。陽莖細長，矛狀，上揚；陽莖器為陽莖基 2 倍長，向末端漸細，末端尖銳。

雌交尾器 (圖 445–446)：交尾囊球狀。交尾囊管長，長度大於交尾囊 2 倍，前端膜質並具皺褶；後端呈骨化管狀。交尾孔板呈弱骨化圓頂狀，於交尾孔處具一舌狀骨板。後內骨突長度略長於肛突，明顯骨化、筆直，基部膨大。肛突瓣狀，前端骨化，末端具毛。

世界分布：蘇門答臘、中南半島、華西、華南、華東及臺灣。

臺灣分布：亞種 ssp. *matsumurae* 分布於臺灣本島。亞種 ssp. *chinensis* 見於馬祖列嶼。

幼生期寄主：蓼科之火炭母草。另 Muroya *et al*. (1967) 曾觀察到雌蝶產卵於酸模屬植物。

生物學：本種為一年多世代種。

註記：馬祖列嶼所發現之個體 ssp. *chinensis* 翅背面紫色斑塊及後翅腹面紅紋較臺灣亞種 ssp. *matsumurae* 窄小。

Subfamily THECLINAE Swainson, 1831

The members in the subfamily are usually called the hairstreaks. They form an extremely diverse lycaenid subfamily. Many species possess "tails" on the apices of the hindwings that authors have hypothesized act as a false head, distracting the attention of predators away from the more vital body parts by hindwing movements while settled (e.g., Robbins, 1980, 1981). Such morphological and behavioral traits are shared with Lycaeninae *sensu stricto* and Polyommatinae. Eliot (1992) reduced the subfamily Theclinae to a tribe of Lycaeninae *sensu lato*, and the treatment was followed by some authors (e.g., Ackery *et al*., 1999) but not the others (e.g., Wahlberg *et al*., 2005). Theclinae *sensu* Espeland *et al*. (2018) and Kawahara *et al*. (2023) do not form a monophyletic assemblage, thus whether Theclinae should be retained as a subfamily is still in dispute. Myrmecophily is found in some members (Pierce *et al*., 2002), but reduction or absence of myrmecophilous organs is found in many genera. Fiedler (1991) considered myrmecophily a ground plan synapomorphy for Lycaeninae *sensu lato*, thus absence of myrmecophilous organs in some Theclinae was interpreted as secondary loss.

Members of Theclinae are well-represented in all regions and particularly in the tropics.

In Taiwan, 63 species in 29 genera are known.

翠灰蝶亞科

本亞科成員英文名常被稱為「hairstreaks」。本亞科多樣性極高，其中許多種類後翅具尾突，有研究認為這種構造可以藉由某些動作，模擬成假頭部，將掠食者的注意力移離會危及性命的身軀。此等構造及行為亦見於狹義灰蝶亞科及藍灰蝶亞科中。Eliot (1992) 將翠灰蝶亞科視為廣義灰蝶亞科之成員，此處理有研究者贊同或否定。在 Espeland *et al*. (2018) 及 Kawahara *et al*. (2023) 之研究中本亞科未形成單系群，因此翠灰蝶亞科是否應維持為單獨亞科仍有爭議。本亞科有些成員具有喜蟻性 (Pierce *et al*., 2002)，但許多屬的喜蟻器退化或消失。Fiedler (1991) 認為喜蟻性是廣義灰蝶科之基本共衍徵，因此翠灰蝶亞科部分成員之喜蟻器的缺少可視為二次喪失。

翠灰蝶亞科成員呈泛世界分布，主要分布在熱帶地區。

臺灣有 29 屬 63 種。

Genus *ARHOPALA* Boisduval, 1832

Type species: *Arhopala phryxus* Boisduval, 1832

Diagnostic characters include the following: 1) metallic blue or purple patches on wing uppersides in both sexes, but a few species replaced by metallic green patches in males; 2) dark borders on wing uppersides broader in females; 3) ground color of wing undersides brown, decorated with macular bands; a tail-like projection usually at distal end of CuA_2 of hindwing; 4) uncus concave between rounded lobes.

This genus is considered the largest genus in Lycaenidae (Bascombe, 1999; Megens *et al*., 2004). Megens *et al*. (2004) addressed that "several butterfly systematists have studied and revised *Arhopala* thoroughly, and all of them had trouble dividing the genus into smaller groups in a satisfactory manner." Evans (1957) made the first revision of the whole genus. He split the *Arhopala*: Boisduval, 1832 *s*. *l*. into the genera *Arhopala s*. *str*., *Flos* Doherty, 1889, *Aurea* Evans, 1957, *Panchala* Moore, 1882 and *Narathura* Moore, 1878. The problems with the definitions of the genera and groups by Evans (1957) led Eliot (1963) to conclude that many of these groups were artificial, and subsequently he placed all genera back to the genus *Arhopala* except *Flos*. Megens *et al*. (2004) pointed out *Arhopala* sensu Eliot was not monophyletic, but it would be if *A*. *abseus* is assigned to the genus *Flos*.

Larvae mostly feed on leaves of a variety of plant families, but *A*. *wildei* of Australian region is known to be carnivorous, feeding on immatures of ants (Pierce, 1995; Braby, 2000). Although some species are specialists, other species are generalists on many different plants.

5 species are known to occur in Taiwan, with an additional species found from Jinmen.

紫灰蝶屬

形態特徵如下：1) 雌、雄蟲翅背面皆有具金屬光澤之藍紫色斑紋，少數種類雄

蟲有具金屬光澤之綠色斑紋；2) 翅背面黑邊於雌蝶較寬；3) 翅腹面底色褐色，綴有斑點及條帶；4) 後翅 CuA_2 脈末端常具尾突。鉤突兩側突出，中央凹入。

本屬被認為是灰蝶科中之最大屬 (Bascombe, 1999; Megens *et al*., 2004)。Megens *et al*. (2004) 提及「許多蝶類分類研究者嘗試對紫灰蝶類進行分類整理，但均在切割細分為合理的較小分類群時遭遇困難」。Evans (1957) 首度對整個紫灰蝶屬進行修訂，將廣義紫灰蝶屬分為 *Arhopala*: Boisduval, 1832 *s*. *str*.、*Flos* Doherty, 1889、*Aurea* Evans, 1957、*Panchala* Moore, 1882 以及 *Narathura* Moore, 1878 五個屬。由於這些屬及其他更細的分群定義不清，Eliot (1963) 認為其中大部分是人為分群，並將除了花灰蝶屬 *Flos* 之外的屬全部併回紫灰蝶屬中。Megens *et al*. (2004) 指出 Eliot 所定義之紫灰蝶並非單系群，但如果將三尾紫灰蝶 *A*. *abseus* 加入花灰蝶屬 *Flos* 中即可成為單系群。

幼生期取食多種不同科之植物，但澳洲區的威氏紫灰蝶 *A*. *wildei* 已知為肉食性，取食螞蟻幼蟲 (Pierce, 1995；Braby, 2000)，部分種類食性專一，部分種類食性很廣。

臺灣已知 5 種，另於金門發現 1 種

Arhopala ganesa (Moore, [1858]) (蔚青紫灰蝶／白底青小灰蝶／白背青小灰蝶／俳灰蝶)

Amblypodia ganesa Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India Company 1: 44. (Type locality: “N. India”)

Ssp. *formosana* Kato, 1930

PLATE 4, Figs. 27–28; PLATE 42, Fig. 318; PLATE 75, Fig. 447

Arhopala ganesa formosana Kato, 1930: Zephyrus 2 (4): 206. (Type locality: “Formosa: Mt. Taihei” [= Yilan, Taipingshan])

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Sanxia, Beichatianshan, 1500/1700m, 25/27. V. 2001 (Y. T. Lo); 1♂, same locality, 1700m, 27/28. V. 2002 (L. H. Wang). **TAIPEI CITY:** 1♂, 1♀, Shilin, Fengguizui, 22. IV. 2022, reared from *Quercus gilva*, emgd. 13. V. 2022, HSU YMS 22D33.1 (C. W. Huang & Z. L. Chen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Lalashan, 24. VI. 1987 (Y. F. Hsu); 1♀, same locality, 4. VI. 1988 (T. C. Li); 1♂, same locality, 11. VI. 1988 (T. C. Li). **YILAN Co.:** 1♂, 1♀, Yuanshan,

Caopi, 800m, 9. V. 2011, reared from *Q. pachyloma*, emgd. 24/25. V. 2011, HSU 11E10 (Y. H. Lin). **XINZHU Co.:** 2♀, Wufeng, Dalu Forest Trail. 10km, 1000m, 4. III. 2010 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♀, Heping, Shenmazhen, Meadow, 3200m, 10. VII. 2007 (L. H. Wang). **HUALIAN Co.:** 1♂, Xiulin, Tianxiang, 27. IV. 1987 (Y. F. Hsu); 4♀, Xiulin, Luoshao, 1300/1400m, 28. III. 1988 (Y. F. Hsu); 1♀, Xiulin, Bilu, 14. VII. 2019 (J. Y. Laing & C. W. Huang) (genitalia preparation JYL516). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Tengzhi/ Shishan, 18. VI. 1989 (T. C. Li); 3♂, Taoyuan, Liguan, 1600m, 5. V. 2000, reared from *Q. stenophylloides*, emgd. 22/23. V. 2000, HSU 00E7 (Y. F. Hsu & C. Y. Hung). **PINGDONG Co.:** 1♀, Wutai, Yichangshan, 1100/1400m, 23. III. 2010 (J. H. Lin & N. Y. Tsai). **TAIDONG Co.:** 1♂, Yanping, Hongye, 300m, 21. V. 2009 (N. Y. Tsai & C. H. Lin).

Description. Adult – Forewing length 13–16 mm. Sexual dimorphism absent. Male (PLATE 3, Fig. 27): Head brown, scalings forming a wall with medial double ridges on vertex, frons with bump-like tuft, a blurred white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, down-curved distad, 3rd segment small with distal end blunt; white, turning brown distad. Compound eyes naked. Thorax and abdomen brown dorsally, white ventrally. Legs brown on outer surface, white on inner surface, Protarsi fused, with distal end obtuse. Forewing broad, with apex slightly produced, termen convex. Hindwing rounded. Wing uppersides ground color dark brown, with blue patches on both wings, proximal on forewing, covering much area on hindwing. Wing undersides ground color brown overlaid with white scalings. A discal band present on both wings, brown on forewing, overlaid with white on hindwing. Two series of proximal spots present. Submarginal bands as a proximal faint band and a series of dots. Short bar present at distal end of discoidal cells. Fringe white. Female (PLATE 3, Fig. 28): Body and general wing patterns similar to those of male, but Protarsi normal.

Male genitalia (PLATE 42, Fig. 318) –Tegumen with prominent lateral fold, with small mesal concavity posteriorly. Vinculum broad but narrow dorsally, curved. Saccus as a bar with blunt distal end. Brachium enlarged basally, forming digitate distal process. Valva simple, lobe-like, setose. Juxta narrow, M-shaped. Phallus stout, nearly straight;

phallobase narrowed anteriorly; caudal end of aedeagu with a dorsal teeth. Aedeagus less than half of length of phallobase.

Female genitalia (PLATE 75, Fig. 447) – Corpus bursae elongate, oval. Signa as a pair of invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae membranous, enlarged posteriorly, sclerotized into a rim at ostium bursae. Posterior apophyses nearly equal to anal papillae in length, heavily sclerotized, slightly curved, with, anterior end blunt. Anal papillae setose, strongly sclerotized, shovel-like with pointed tip.

Global distribution. Himalayas, West China, and Taiwan (Shirôzu, 2006).

Distribution in Taiwan. Usually found in moderate elevations in montane zone (Hsu, 2013), but occasionally also lowland hills.

Larval Host plant(s). Fagaceae: *Quercus stenophylloides*, *Q. gilva*, *Q. pachyloma*, etc. (Uchida, 1991; Hsu, 2013).

Biology. Voltinism is not fully understood in Taiwan (Hsu, 2013). In central Japan, the species is univoltine, with adults surviving a long time and ovaries mature during winter diapause (Shirôzu, 2006).

Remarks. *Arhopala nankoshana* (Shimonoya & Murayama, 1976) is different from this species only by possessing dark brown hindwing undersides, a feature seen in individuals on wings after winter diapause, thus probably should be regarded as a synonym of *formosana* Kato, 1930.

形態特徵：成蝶前翅長 13–16 mm。無雌雄二型性。雄蝶 (圖 27)：頭褐色，鱗片於頭頂中央堆集形成雙脊狀，額具瘤狀毛束，複眼具模糊白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸，末端下彎，第三節細小，末端鈍；向末端由白轉褐。複眼光滑。胸部及腹部背面褐色、腹面白色。足外側表面褐色，內側表面白色，前

足跗節癒合，末端鈍。前翅寬，翅頂略向外延伸，外緣略凸出。後翅圓。翅背面底色黑褐色，具藍色斑塊，於前翅分布於內側、於後翅則覆蓋大部分區域。翅腹面底色褐色，覆白色鱗，前、後翅皆具中央斑帶，於前翅褐色，於後翅覆白色鱗；內側具兩列斑點；亞外緣帶紋由一內側淡色帶紋及一系列點組成；中室末端具短條。緣毛白色。雌蝶 (圖 28)：形態特徵與雄蝶相似，但前足跗節不癒合。

雄交尾器 (圖 318)：背兜兩側有褶，後緣中央有小凹陷。基腹弧寬闊，背側較窄、彎曲。囊突棒狀，末端鈍。顎形突基部膨大，形成指狀突起。抱器單純、葉狀、具毛。陽基顎片狹窄，M 字形。陽莖器粗壯、甚直；陽莖基前端隘縮；陽莖器末端擴大，背側具齒。陽莖器長度不足陽莖基一半。

雌交尾器 (圖 447)：交尾囊長卵形。花壁位於交尾囊相對位置，為一對內陷鰭狀骨板。交尾囊管膜質，末端擴大，於交尾孔周圍骨化。後內骨突長度略與肛突等長，明顯骨化，略彎曲，前端鈍。肛突具毛、明顯骨化、鏟狀，末端尖。

世界分布：喜馬拉雅地區、華西及臺灣。

臺灣分布：通常見於本島中海拔山區，偶爾亦在低海拔山丘發現。

寄主植物：殼斗科之狹葉櫟、赤皮櫟、捲斗櫟等。

生物學：本種化性在臺灣尚未釐清 (Hsu, 2013)。在日本中部，本種為一年一世代物種，成蝶存活時間長，卵巢於冬天休眠成熟 (Shirôzu, 2006)。

註記：*Arhopala nankoshana* (Shimonoya & Murayama, 1976) (南湖紫灰蝶 / 南湖白底青小灰蝶) 與本種差異僅在於後翅腹面呈褐色，該特徵亦見於本種越冬後個體，因此可能為蔚青紫灰蝶之同物異名。

Arhopala birmana (Moore, [1884]) (小紫灰蝶 / 朝倉小灰蝶 / 黑俳灰蝶)

PLATE 4, Figs. 29–30; PLATE 42, Fig. 319; PLATE 75, Fig. 448

Panchala birmana Moore, [1884]: Proceedings of the Zoological Society of London 1883 (4): 531. (Type locality: “Toungu, Brittish Burmah”)

Ssp. *asakurae* Matsumura, 1910

Acesina asakurae Matsumura, 1910: Entomologische Zeitschrift 23 (50): 221. (Type locality: "Formosa, Horisha")

Arhopala uchidae Matsumura, 1926: Insecta Matsumurana 1 (1): 26. (Type locality: Formosa (Horisha))

Arhopara paraganesa oryuzana Corbet, 1941: Proceedings of the Royal entomology Society of London (B) 10: 168. (nomen nudum)

Specimens examined:

XINBEI CITY: 5♂, 3♀, Wulai, Fushan, 21. III. 2022, reared from *Quercus glauca*, emgd. 9/20. IV. 2022, HSU 22C22 (Y. F. Hsu). **NANTOU Co.:** 3♂, 1♀, Yuchi, Lianhuachi, 23. III. 2001, reared from *Q. pachyloma*, emgd. 11/16. IV. 2001, HSU 01C43 (Y. F. Hsu); 1♂, same locality, 700m, 24. V. 2000, reared from *Q. pachyloma*, emgd. 25. VI. 2000, HSU 00E30 (Y. F. Hsu & C. Y. Hung); 1♂, same locality, 21. VIII. 2002, reared from *Q. pachyloma*, emgd. 8. IX. 2002, HSU 02H59.1 (Y. F. Hsu); 1♀, same locality, 21. V. 2011 (Y. F. Hsu); 1♂, 1♀, Renai, Nanshanxi, ca 900m, 1. IX. 2007 (Y. F. Hsu); 1♂, 1♀, Renai, Jiuxianxi, 700m, 14/15. V. 2012 (Y. F. Hsu); 1♂, Renai, Huisun, 4. XI. 2018 (Y. F. Hsu) (genitalia preparation JYL583). **HUALIAN Co.:** 1♀, Zhuoxi, Nanan, 9. II. 2016 (J. Y. Liang) (genitalia preparation JYL434). **PINGDONG Co.:** 1♀, Wutai, Old Dawu/ Bayouxi, 500/900m, 17. III. 2009 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, same locality, 17. III. 2009, reared from *Q. glauca*, emgd. 10. IV. 2009, HSU 09C20 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 22. III. 2010 (J. H. Lin & N. Y. Tsai). **TAIDONG Co.:** 4♀, Yanping, Hongye, 7. II. 1988 (Y. F. Hsu); 1♂, 5♀, same locality, 15. V. 1988 (Y. F. Hsu); 2♂, 2♀, same locality, 28. VIII. 1998 (Y. F. Hsu); 1♂, same locality, 500m, 4. VIII. 2009 (C. H. Lin); 3♀, Yanping, Luyexi, 3. I. 1988 (Y. F. Hsu); 3♂, same locality, 30. I. 1988 (Y. F. Hsu).

Description. Adult – Forewing length 12–16 mm. Sexual dimorphism present. Male (PLATE 3, Fig. 29): Head brown, scalings forming a wall with medial double ridges on vertex, frons with bump-like tuft, a blurred white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, down-curved distad, 3rd segment small with distal end blunt; white, turning brown distad. Compound eyes naked. Thorax and abdomen brown dorsally, white ventrally. Legs brown on outer surface, white on inner surface, Protarsi fused, with distal end obtuse. Forewing broad, with apex slightly produced, termen convex. Hindwing rounded, distal end of CuA_2 with a small tail-like projection. Wing uppersides ground color dark brown, with deep purple

patches on both wings, broader on forewing, reaching costa. Wing undersides ground color brown overlaid with white scalings. A discal band present on both wings, brown on forewing, overlaid with white on hindwing. Two series of proximal spots present. Submarginal bands as two faint, white bands. Short bar present at distal end of discoidal cells. Fringe largely brown, partially white. Female (PLATE 3, Fig. 30): Body and general wing patterns similar to those of male, but Protarsi normal, markings on wing uppersides blue instead of purple, less extensive, not reaching costa on forewing.

Male genitalia (PLATE 42, Fig. 319) – Tegumen with prominent lateral fold, with small mesal concavity posteriorly. Vinculum broad but narrow dorsally, curved. Saccus as a bar with blunt distal end. Brachium enlarged basally, forming digitate distal process. Valva simple, lobe-like, setose. Juxta narrow, M-shaped. Phallus stout, nearly straight; phallobase narrowed anteriorly; caudal end of aedeagus enlarged, with a dorsal teeth. Aedeagus less than half of length of phallobase.

Female genitalia (PLATE 75, Fig. 448) – Corpus bursae elongate, oval. Signa as a pair of invaginated, triangular sclerites on opposite walls of corpus bursae. Ductus bursae membranous, enlarged posteriorly, sclerotized into a rim at ostium bursae. Posterior apophyses nearly equal to anal papillae in length, heavily sclerotized, slightly curved, with, anterior end bent into a hook. Anal papillae setose, strongly sclerotized, shovel-like with pointed tip.

Variations. White scalings on wing undersides reduced in wet/hot season; small white patch sometimes present on forewing uppersides in females.

Global distribution. Himalayas, Indochina, South China, and Taiwan (Shirôzu, 1960; Bascombe *et al*., 1999).

Distribution in Taiwan. This species was confined to low to moderate elevations in central and southern Taiwan (Hsu, 2002, 2013), but has expanded to northern Taiwan in recent years.

Larval Host plant(s). Fagaceae: *Quercus pachyloma* and *Q. glauca* (Hsu, 2002, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013).

Remarks. *Arhopala paraganesa* (de Nicéville, 1882) was included in the checklist of Taiwan butterflies in some literature (e.g., Corbet, 1941; Chou, 1994), but these records evidently refer to the dry season form of *A. birmana asakurae*, at least to the butterfly fauna of Taiwan.

Genitalia of *A. birmana* is similar to that of *A. ganesa*, but may be distinguished using the following features: 1) dorsal teeth at distal end on aedeagus is short, roughly in the shape of regular triangle in *birmana*, whereas it is narrow, in the shape of isosceles triangle in *ganesa*; 2) distal end of aedeagus is prominently enlarged in *birmana*, but only slightly enlarged in *ganesa*; 3) cephalic end of brachium is nearly truncate in *birmana*, whereas it is slightly bent, hook-like in *ganesa*.

形態特徵：成蝶前翅長 12–16 mm。具雌雄二型性。雄蝶 (圖 29)：頭褐色，鱗片於頭頂中央堆集形成雙脊狀，額具瘤狀毛束，複眼具模糊白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸，末端下彎，第三節細小，末端鈍；向末端顏色由白轉褐。複眼光滑。胸部及腹部背面褐色、腹面白色。足外側表面褐色，內側表面白色，前足跗節癒合，末端鈍。前翅寬，翅頂略向外延伸，外緣略凸出。後翅圓，於 CuA_2 脈末端具尾突。翅背面底色黑褐色，具深紫色斑塊，於前翅較廣，及於前緣。翅腹面底色褐色，覆白色鱗，前、後翅皆具中央斑帶，於前翅褐色，於後翅覆白色鱗；內側具兩列斑點；亞外緣帶紋由兩道淡色、白色帶紋組成；中室末端有短條。緣毛大致呈褐色，部分白色。雌蝶 (圖 30)：形態特徵與雄蝶相似，但前足跗節不癒合，翅背面斑紋藍色範圍較窄，於前翅不及於前緣。

雄交尾器 (圖 319)：背兜兩側有褶，後緣中央有小凹陷。基腹弧寬闊，背側較窄、彎曲。囊突棒狀、末端鈍。顎形突基部膨大，形成指狀突起。抱器單純、葉狀、具毛。陽基顎片窄，M 字形。陽莖器粗壯、頗直；陽莖基前端隘縮；陽莖器末端擴大，背側具齒。陽莖器長度不足陽莖基一半。

雌交尾器 (圖 448)：交尾囊長卵形。花壁位於交尾囊相對位置，為一對內陷三角形

骨板。交尾囊管膜質，後端擴大，於交尾孔周圍骨化。後內骨突長度略與肛突等長，明顯骨化，略彎曲，前端彎曲成鉤狀。肛突具毛、明顯骨化、鏟狀，末端尖。

變異：高溫／雨季期翅腹面白色鱗較少。雌蝶前翅背面有時具白色小斑。

世界分布：喜馬拉雅地區、中南半島、華南及臺灣。

臺灣分布：本種過去被認為僅見於本島中部及南部低至中海拔地區，但近年分布已擴大至北部地區。

寄主植物：殼斗科之捲斗櫟及青剛櫟。

生物學：本種為一年多代物種。

註記：往昔文獻的臺灣蝴蝶名錄曾有短尾蔚青紫灰蝶 *Arhopala paraganesa* (de Nicéville, 1882) 之記錄 (如 Corbet, 1941；Chou, 1994)，但至少就臺灣蝶相而言，這些記錄應是小紫灰蝶乾季型之誤鑑定。

本種交尾器與蔚青紫灰蝶相似，但可藉由以下特徵區別：1) 小紫灰蝶陽莖器末端背側齒突短，大致呈正三角形；蔚青紫灰蝶則較窄，呈等腰三角形；2) 小紫灰蝶陽莖器末端明顯擴大，蔚青紫灰蝶則僅略大；3) 小紫灰蝶顎形突末端近截狀；蔚青紫灰蝶則為略呈鉤狀。

Arhopala japonica (Murray, 1875) (日本紫灰蝶／紫小灰蝶／日本嬈灰蝶)

PLATE 4, Figs. 31–32; PLATE 43, Fig. 320; PLATE 76, Fig. 449

Dipsas japonica Murray, 1875: The Entomologist's monthly magazine 11: 169. (Type locality: "Japoniam" [Japan])

Amblypodia japonica kotoshona Sonan, 1940: Transactions of the Natural History Society of Formosa 30 (204): 368. (Type locality: Kotosho (Botel-Tobago Island), Formosa [= Lanyu])

Specimens examined:

JILONG CITY: 1♀, Longgang Trail, 2. IX. 2006 (Y. F. Hsu); 1♂, same locality, 14. I. 2010 (W. H. Chien & J. H. Lin). **XINBEI CITY [= TAIPEI Co.]:** 4♂, 2♀, Wulai, 12. V. 1987 (Y. F. Hsu); 1♂, same locality, 3. VIII. 1987 (Y. F. Hsu); 1♀, same locality, 15. IX. 1987 (Y. F. Hsu); 1♂, same locality, 6. IV. 2001 reared from *Quercus gilva*, emgd. 22. IV. 2001, HSU 01D10; 1♂, 1♀, Wulai, Jiajiuliao, 150m, 21. VII. 2008 (Y. F. Hsu);

1♂, Beichatianshan, ca 800m, 28. V. 1992 (Y. F. Hsu); 1♂, Shiding, Ergeshan, 15. VIII. 2014 (L. Huang); 1♂, Bali, Guanyinshan, 17. II. 2011 (Z. H. Yen); 1♀, Xindian, Guangxing, 18. V. 2004 (P. Loh & L. H. Wang). **TAIPEI CITY:** 1♀, Wenshan, Muzha, Hills S. of NCU campus, 20. III. 2009 (N. Y. Tasi). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 26. VI. 1987 (Y. F. Hsu); 1♂, Fuxing, Ronghua, 6. VIII. 1987 (Y. F. Hsu); 1♀, Fuxing, Dongyanshan, 3. IV. 2015 (genitalia preparation CJC115). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, 1♀, Heping, Anmashan, 950m, 2. IV. 2000, reared from *Q. pachyloma*, emgd. 6. V. 2000, HSU 00D1 (Y. F. Hsu); 1♀, Heping, Defulan Trail, 700m, 29. VI. 2013 (Y. F. Hsu); 1♂, Heping, Malunshan, 2. IV. 2015 (genitalia preparation CJC114). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 18. III. 2001, reared from *Lithocarpus kawakamii*, emgd. 19. IV. 2001, HSU 01C64 (C. C. Lu & H. S. Chuen). **HUALIAN Co.:** 1♀, Xiulin, Luoshao, 1100m, 13. IV. 2012, reared from *Q. glauca*, emgd. 5. V. 2012, HSU 12D18.2 (L. H. Wang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Nanfengshan, 6. VI. 1989 (Y. F. Hsu); 1♂, Taoyuan, Liguan, 1600m, 5. V. 2000, reared from *Q. stenophylloides*, emgd. 22. V. 2000, HSU 00E8 (Y. F. Hsu & C. Y. Hung). **PINGDONG Co.:** 1♂, 1♀, Shizi, Shuangliu, 200/400m, 30. IV. 2006 (Y. F. Hsu); 1♀, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu); 1♂, Wutai, Yichangshan, 1300m, 23. III. 2010, reared from *Q. dentata*, emgd. 10. IV. 2010, HSU 10C27 (C. L. Huang & N. Y. Tsai). **YILAN Co.:** 1♀, Toucheng, Guishan Is., 5/6. XI. 2005 (H. C. Huang). **TAIDONG Co.:** 1♀, Honghe, 30. I. 1988 (Y. F. Hsu); 1♀, Yanping, Hongye, 400m, 23. VI. 2009 (C. H. Lin, jr); 1♀, Luyexi, 3. I. 1988 (Y. F. Hsu); 1♂, 1♀, Jinfeng, Jianshan, 750m, 7. IV. 2000, reared from *Q. stenophylloides*, emgd. 30. IV./2. V. 2000, HSU 00D5 (Y. F. Hsu & C. C. Lu).

Description. Adult – Forewing length 17–21 mm. Sexual dimorphism present. Male (PLATE 4, Fig. 31): Head brown, scalings forming a wall with medial double ridges on vertex, frons with bump-like tuft, a blurred white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, down-curved distad, 3rd segment small with distal end blunt; white, turning brown distad. Compound eyes naked. Thorax and abdomen brown dorsally, white ventrally. Legs brown on outer surface, white on inner surface, Protarsi fused, with distal end obtuse. Forewing broad, with apex slightly produced, termen convex. Hindwing rounded, distal end of CuA_2 sometimes with a small tail-like projection. Wing uppersides ground color brown,

with broad metallic deep purple patches on proximal areas of wings, reaching costa on forewing. Wing undersides ground color brown. A dark discal band present on both wings. Two series of proximal spots present. Submarginal bands as faint, dark bands. Short, dark bar at distal end of discoidal cells. Fringe brown. Female (PLATE 4, Fig. 32): Body and general wing patterns similar to those of male, but purple patch lighter in color tone, less extensive on both wings, not reaching costa on forewing, Protarsi normal.

Male genitalia (PLATE 43, Fig. 320) – Tegumen with prominent lateral fold, concave mesad. Vinculum broad but narrow dorsally, curved. Saccus attenuate anteriorly into a blunt end. Brachium enlarged basally, forming digitate distal process. Valva short, bifid; ampulla as fin-shaped process; harpe lobe-like, with blunt distal margin; sacculus as elongate, weakly sclerotized band. Juxta flat, M-shaped. Phallus stout; phallobase narrowed anteriorly; caudal end of aedeagus with a dorsal window. Aedeagus up-curved, slightly shorter than phallobase.

Female genitalia (PLATE 76, Fig. 449) – Corpus bursae elongate, oval. Signa as a pair of invaginated sclerotized fins on opposite walls of corpus bursae, at posterior part. Ductus bursae elongate, wrinkled, sclerotized near caudal end. Sterigma with lamella antevaginalis forming a broad plate with mesal concavity posteriorly; lamella postvaginalis as a pair of elongate sclerites, sleeve-like. Posterior apophyses longer than anal papillae, heavily sclerotized, nearly straight, slightly enlarged basad, bent at anterior end. Anal papillae fused ventrally into hardened, semi-circular lobe-like sclerite, setose distally.

Global distribution. Southern Korea, Japan, and Taiwan (Shirôzu, 2006).

Distribution in Taiwan. Mainly lowland to moderate elevations on main island of Taiwan (Hsu, 1999, 2013).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. gilva*, *Q. sessilifolia*, *Q. stenophylloides*, *Q. pachyloma*, etc. (Hsu, 1999a, 2013; Lu & Chen, 2014).

Biology. This species is multivoltine, overwintering as adults (Hsu, 1999a; Lu & Chen, 2014).

Remarks. The populations in Taiwan are sometimes regarded as a distinct subspecies *kotoshona* Sonan, 1940 (e.g., Hamano, 1987), which was described from a specimen collected from Lanyu Island, but no oak is known from the island and no additional specimen of *A. japonica* has been found there.

形態特徵：成蝶前翅長 17–21 mm。具雌雄二型性。雄蝶 (圖 31)：頭褐色，鱗片於頭頂中央形成雙脊狀，額具瘤狀毛束，複眼具模糊白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸，末端向下彎曲，第三節細小、末端鈍；向末端顏色由白轉褐。複眼光滑。胸部及腹部背面褐色、腹面白色。足外側表面褐色，內側表面白色，前足跗節癒合，末端鈍。前翅寬，翅頂略向外延伸，外緣略凸。後翅圓，有時於 CuA_2 脈末端具小尾突。翅背面底色褐色，內側具帶金屬光澤紫色寬斑塊，於前翅及於前緣。翅腹面底色褐色，前、後翅皆具中央斑帶；內側具兩列斑點；亞外緣帶紋由淡色及深色帶紋組成；中室末端具深色短條。緣毛褐色。雌蝶 (圖 32)：形態特徵與雄蝶相似，但紫色斑塊色調較亮、範圍較窄、不及前翅前緣，前足跗節正常。

雄交尾器 (圖 320)：背兜兩側有褶，後緣中央凹入。基腹弧寬闊，背側較窄並彎曲。囊突向前漸細，末端鈍。顎形突基部膨大，呈指狀突起。抱器短，二分；抱器內突為鰭狀突起；抱握鋏葉狀、末端鈍；抱器腹為細長骨化帶。陽基顎片扁平、M 字形。陽莖器粗壯；陽莖基前端隘縮；陽莖器末端背側具膜質區。陽莖器上揚，長度略短於陽莖基。

雌交尾器 (圖 449)：交尾囊長卵形。花壁位於交尾囊相對位置，為一對內陷且末端鰭狀的骨板。交尾囊管長、有皺褶，近後端處骨化。前交尾孔板寬闊、片狀，中央後側凹入；後交尾孔板延伸成一對袖狀骨板。後內骨突長於肛突，明顯骨化，甚直，基部略膨大，前端彎曲。肛突半圓瓣狀，腹側基部骨化癒合，末端具毛。

世界分布：朝鮮半島南部、日本及臺灣。

臺灣分布：主要分布於本島低至中海拔地區。

寄主植物：殼斗科之青剛櫟、赤皮櫟、毽子櫟、狹葉櫟、捲斗櫟等。

生物學：本種為一年多世代物種，以成蟲過冬。

註記：臺灣族群有時被視為一獨立亞種 *kotoshona* Sonan, 1940，該亞種模式標本採自蘭嶼，但蘭嶼並無殼斗科植物分布，且後來沒有再發現日本紫灰蝶之紀錄。

Arhopala paramuta (de Nicéville, [1884]) (暗色紫灰蝶／小嬈灰蝶／埔里紫小灰蝶)

Panchala? *paramuta* de Nicéville, [1884]: Journal of the Asiatic Society of Bengal 52 Pt. II (2/3/4): 81, pl. 9, f. 7. (Type locality: "Sikkim")

Ssp. *horishana* Matsumura, 1910

PLATE 4, Figs. 33–34; PLATE 43, Fig. 321; PLATE 76, Fig. 450

Arhopala japonica var. *horishana* Matsumura, 1910: Entomologische Zeitschrift 23 (50): 221. (Type locality: "Formosa")

Specimens examined:

KAOHSIUNG CITY [= KAOHSIUNG Co.]: 1♂, 1♀, Maolin, Nanfengshan, 6. VI. 1989 (Y. F. Hsu); 1♀, Jiaxian, Southern Cross-Island Road, 64.7K, 3. IV. 2016, reared from *Castanopsis formosana*, emgd. 20. IV. 2016, HSU 16D42 (C. C. Lu, jr) (genitalia preparation JYL520). **PINGDONG Co.:** 1♂, 1♀, Shizi, Shuangliu, 200/400m, 30. IV. 2006 (Y. F. Hsu). **TAIDONG Co.:** 1♂, 1♀, Jinfeng, Dawulaishan, 500/600m, 3. IV. 2003, reared from *C. formosana*, emgd. 20/23. IV. 2003, HSU 03D6 (L. H. Wang).

Description. Adult – Forewing length 16–18 mm. Sexual dimorphism present. Male (PLATE 4, Fig. 33): Head brown, scalings forming a wall with medial double ridges on vertex, frons with bump-like tuft, a blurred white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, down-curved distad, 3rd segment small with distal end blunt; white, turning brown distad. Compound eyes naked. Thorax and abdomen brown dorsally, white ventrally. Legs brown on outer surface, white on inner surface, Protarsi fused, with distal end obtuse. Forewing broad, with termen rounded. Hindwing rounded. Wing uppersides ground color brown, with metallic deep purple patches on proximal areas of wings, small on hindwing. Wing undersides ground color brown. A dark discal band present on both wings. Two series of

proximal spots present. Submarginal bands as faint, dark bands. Short, dark bar at distal end of discoidal cells. Fringe brown. Female (PLATE 4, Fig. 34): Body and general wing patterns similar to those of male, but purple patch lighter in color tone and less extensive on both wings, Protarsi normal.

Male genitalia (PLATE 43, Fig. 321) – Tegumen with prominent lateral fold, with small mesal concavity posteriorly. Vinculum broad but narrow dorsally, curved. Saccus attenuate anteriorly into a blunt end. Brachium enlarged basally, forming rod-like distal process with truncate distal end. Valva short, bifid; ampulla as fin-shaped process; harpe lobe-like, with truncate distal margin; sacculus as elongate sclerotized band. Juxta flat, M-shaped. Phallus stout; phallobase narrowed anteriorly; caudal end of aedeagus with slender dorsal window. Aedeagus down-curved distally, nearly as long as phallobase.

Female genitalia (PLATE 76, Fig. 450) – Corpus bursae elongate, oval. Signa as a pair of invaginated sclerotized fins on opposite walls of corpus bursae, at posterior part. Ductus bursae elongate, wrinkled, membranous. Sterigma with lamella antevaginalis forming a pair of lateral, transverse sclerotized band by ostium bursae. Posterior apophyses longer than anal papillae, heavily sclerotized, nearly straight, slightly enlarged basad. Anal papillae, semi-circular, lobe-like, setose distally.

Global distribution. Himalayas, Indochina, West to East China, and Taiwan (Shirôzu, 1960; Bascombe *et al*., 1999).

Distribution in Taiwan. Low elevations in montane zone of central and southern Taiwan (Hsu, 2013).

Larval Host plant(s). Fagaceae: *Castanopsis formosana* (Hsu, 2013).

Biology. This species is multivoltine, overwintering as adults in aggregation (Hsu, 2013).

Remarks. This species is superficially similar to *A*. *japonica*, but can be separated from the latter by the following characteristics: 1) purple patches on wing uppersides much

smaller, occupying less than half of area on each wing in contrast to over half in *A. japonica*; 2) discal band of hindwing underside in a distal position, so the short band at the end of discoidal band being equally distant to the spot in discoidal cell and the one in M cells. By contrast, that short band at the end of discoidal cell discal band of *A. japonica* is closer to the discal band than to the spot in discoidal cell.

形態特徵：成蝶前翅長 16–18 mm。具雌雄二型性。雄蝶 (圖 33)：頭褐色，鱗片於頭頂中央形成雙脊狀，額具瘤狀毛束，複眼具模糊白色輪緣。觸角褐色，具白環。口器黑褐色。下唇鬚前伸，末端向下彎曲，第三節小、末端鈍；向末端顏色由白轉褐。複眼光滑。胸部及腹部背面褐色、腹面白色。足外側表面褐色，內側表面白色，前足跗節癒合，末端鈍。前翅寬，外緣圓。後翅圓。翅背面底色褐色，內側具帶金屬光澤紫色寬斑塊，於後翅狹小。翅腹面底色褐色，前、後翅均具中央斑帶；內側有兩列斑點；亞外緣帶紋由淡色及深色帶紋組成；中室末端具深色短條。緣毛褐色。雌蝶 (圖 34)：形態特徵與雄蝶相似，但紫色斑塊色調較亮、範圍較窄，前足跗節正常。

雄交尾器 (圖 321)：背兜兩側有褶，後緣中央有小凹陷。基腹弧寬，背側較窄、彎曲。囊突向前漸細、末端鈍。顎形突基部膨大，呈棍棒狀突起，末端截平。抱器短，二分；抱器內突鰭狀；抱握鋏葉狀，末端截平；抱器腹為細長骨化帶。陽基顎片扁平、M 字形。陽莖器粗壯；陽莖基前端隘縮；陽莖器末端背側具細長的膜質區。陽莖器下彎，長度略與陽莖基等長。

雌交尾器 (圖 450)：交尾囊長橢圓形。花壁位於交尾囊相對位置，為一對內陷且末端鰭狀的骨板。交尾囊管修長、膜質，具皺褶。交尾孔板向兩側延伸成一對帶狀骨片。後內骨突長於肛突，明顯骨化，甚直，基部略膨大。肛突半圓瓣狀，末端具毛。

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、南部低海拔山區。

寄主植物：殼斗科之臺灣栲。

生物學：本種為一年多世代物種，成蝶群聚越冬。

註記：本種外觀與日本紫灰蝶相似，但可藉以下列特徵區分：1) 本種翅背面紫色斑塊小，不足翅面積一半，而日本紫灰蝶紫色斑塊大於翅面積一半；2) 後翅腹面中央斑帶外偏，故中室端短帶紋與中室內斑點及 M 室斑點距離相同，日本紫灰蝶之中室端短帶紋則較接近 M 室斑點。

Arhopala bazalus (Hewitson, 1862) (燕尾紫灰蝶／紫燕小灰蝶／百媱灰蝶)

Amblypodia bazalus Hewitson, 1862: Specimens of a Catalogue of Lycaenidae in the British Museum: 8, pl. 4, f. 37–38. (Type locality: Sylhet and Java)

Ssp. *turbata* Butler, [1882]

PLATE 5, Figs. 35–36; PLATE 43, Fig. 322; PLATE 76, Fig. 451

Amblypodia turbata Butler, [1882]: Proceedings of the Zoological Society of London 1881: 855. (Type locality: "Nikko, [Japan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Kuaishan, 24. VI. 1987 (Y. F. Hsu); 1♂, 1♀, Wulai, 16. IV. 2003, reared from *Lithocarpus hancei*, emgd. 2. V. 2003, HSU 03D16 (Y. F. Hsu, L. W. Wu, H. H. Chueh & I. H. Li); 1♂, same locality, 8. II. 2006, reared from *L. kawakamii*, emgd. 13. III. 2006 (L. H. Wang); 1♀, Wulai, Xinxian, 5. IV. 2014 (L. Huang) (genitalia preparation JYL318); 1♂, Wulai, Fushan, 16. VII. 2019 (C. W. Huang & H. Y. Chen) (genitalia preparation JYL530). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Lalashan, 1. VII. 1983 (Y. F. Hsu); 1♀, same locality, 24. VI. 1987 (Y. F. Hsu); 1♂, Fuxing, Daman, 29. V. 2002, reared from *Quercus glauca*, emgd. 4. VII. 2002, HSU 02E88 (Y. F. Hsu). **YILAN Co.:** 1♀, Nanao, Tongshan, 1800m, 16. VI. 1999 (C. C. Lu). **TAIDONG Co.:** 1♀, Yanping, Hongye, 7. II. 1988 (T. C. Li); 1♂, Yanping, Hongye, 500m, 4. VIII. 2009 (C. H. Lin). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 23. III. 2001, reared from *L. harlandii*, emgd. 16. IV. 2001, HSU 01C44 (Y. F. Hsu); 1♀, Renai, Huisun Forestry Station, 16. X. 2010 (Y. F. Hsu); 1♀, Renai, Nanshanxi, 900m, 23. I. 2008 (Y. F. Hsu). **JIAYI Co.:** 1♀, Alishan, Chashan, 27. IX. 2019, reared from *Castanopsis formosana*, emgd. 20. X. 2019 HSU 19J37 (L. Huang). **JINMEN [= KINMEN] Co.:** 1♂, Jinsha, Longling Lake, 4. XI. 2003 (C. L. Huang & H. C. Huang); 2♂, 6♀, Jinmen, 18/20. XI. 2013 (Y. F H); 1♂, Jinhu, Zhongshan Forest, 19/20. XI. 2013 (Y. F. Hsu & H. C. Huang). **LIANJIANG Co.:** 2♂, 3♀, Nangan, Jinsha, 18. XI. 2013 (L. H. Wang & H. Y. Lee).

Description. Adult – Forewing length 18–23 mm. Sexual dimorphism present. Male (PLATE 5, Fig. 35): Head brown, scalings forming a wall with medial double ridges on vertex, frons with bump-like tuft, a blurred white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, down-curved distad, 3rd segment small with distal end blunt; white, turning brown distad. Compound eyes naked. Thorax and abdomen brown dorsally, white ventrally. Legs brown on outer surface, white on inner surface, Protarsi fused, with distal end obtuse. Forewing triangular, broad, with termen nearly straight. Hindwing fan-like, with small lobe at tornus, distal end of CuA_2 with a prominent tail-like projection. Wing uppersides ground color brown, with inconspicuous broad deep purple patches on wings, reaching costa on forewing. Wing undersides ground color brown. A dark discal band edged by white present on both wings. Two series of proximal spots present. Submarginal bands as faint, dark bands. Short, dark bar at distal end of discoidal cells. Metallic blue scalings present at tornus of hindwing underside. Fringe brown. Female (PLATE 5, Fig. 36): Body and general wing patterns similar to those of male, but with purple patch pale in color, small in size, mainly on forewings, Protarsi normal.

Male genitalia (PLATE 43, Fig. 322) – Tegumen with prominent lateral fold, concave mesad. Vinculum broad but narrow dorsally, curved. Saccus vestigial. Brachium enlarged basally, as a strongly curved hook with pointed distal end. Valva short, bifid; costa triangular; harpe digitate. Juxta broad, with medial invagination and lateral arms. Phallus stout; phallobase narrowed anteriorly; caudal end of aedeagus with angular opening. Aedeagus slightly bent, shorter than phallobase.

Female genitalia (PLATE 76, Fig. 451) – Corpus bursae elongate, oval, with surface granular. Signa as a pair of prominent, elongate, large sclerites, fork-like and tapering posteriorly. Ductus bursae elongate, wrinkled, sclerotized near caudal end. Sterigma with lamella antevaginalis forming a bell-like sclerite; lamella postvaginalis as a pair of large square sclerites. Posterior apophyses longer than anal papillae, heavily sclerotized, nearly straight, slightly enlarged basad, bent at anterior end. Anal papillae semi-circular, lobe-like, setose.

Global distribution. Himalayas, Indochina, Sundaland, Mindanao, Korea, Japan, West

to East China, and Taiwan (Bascombe *et al*., 1999; Shirôzu, 1960, 2006).

Distribution in Taiwan. Low to moderate elevations (Shirôzu, 1960; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Lithocarpus hancei*, *L. kawakamii*, *L. formosanus*, *Quercus glauca*, *Castanopsis formosana*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Multivoltine, overwintering as adults in cluster (Hsu, 2013).

Remarks. This species is frequently found from Jinmen and Mazu Islands in the fall (Hsu, 2014), but as this species is an oak-specialist, it is evidently not residential on these islands since oaks do not grow on these islands (Lu, 2011).

形態特徵：成蝶前翅長 18–23 mm。具雌雄二型性。雄蝶 (圖 35)：頭褐色，鱗片於頭頂中央形成雙脊狀，額具瘤狀毛束，複眼具模糊白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸，末端向下彎曲，第三節細小，末端鈍；末端方由白轉褐。複眼光滑。胸部及腹部背面褐色、腹面白色。足外側表面褐色，內側表面白色，前足跗節癒合，末端鈍。前翅寬、三角形，外緣近乎直線狀。後翅扇形，臀區具小葉狀突，CuA_2 脈末端具明顯尾突。翅背面底色褐色，具不明顯之深紫色寬斑塊，於前翅及於前緣。翅腹面底色褐色，前後翅皆具有白邊之深色中央帶紋；內側具兩列斑點；亞外緣帶紋由淡色及深色帶紋組成；中室末端具深色短條；後翅腹面臀區有帶金屬光澤藍色鱗片。緣毛褐色。雌蝶 (圖 36)：形態特徵與雄蝶相似，但紫色斑塊顏色較亮、面積較小，且主要見於前翅，前足跗節正常。

雄交尾器 (圖 322)：背兜兩側有褶，後緣中央凹入。基腹弧寬闊，背側較窄、彎曲。囊突退化。顎形突基部膨大、彎曲、鉤狀，末端尖。抱器短，二分；抱器背三角形；抱握鋏指狀。陽基顎片寬闊，中間內凹，側面具臂狀突。陽莖器粗壯；陽莖基前端隘縮；陽莖器末端開口背側斜切。陽莖器略彎曲，長度略短於陽莖基。

雌交尾器 (圖 451)：交尾囊長橢圓形，表面具刻點。花壁為一對大且細長的叉狀內陷骨片，向後漸縮。交尾囊管修長，有皺褶，近交尾孔處骨化。前交尾孔板為鐘狀骨片；後交尾孔板為一對矩形大骨片。後內骨突長於比肛突，明顯骨化，甚直，基

部略膨大，前端彎曲。肛突半圓瓣狀，末端具毛。

世界分布：喜瑪拉雅地區、中南半島、巽他地區、民答那峨島、朝鮮半島、日本、華西至華東、臺灣。

臺灣分布：低至中海拔地區。

寄主植物：殼斗科之阿里山三斗石櫟、大葉石櫟、臺灣石櫟、青剛櫟、臺灣栲等。

生物學：本種為一年多世代物種，成蟲群聚越冬。

註記：本種秋天常於金門及馬祖列嶼發現 (Hsu, 2014)，但本種專食殼斗科植物，而金門與馬祖列嶼並無殼斗科植物分布 (Lu, 2011)，可知本種於金馬地區無常駐族群。

Arhopala rama (Kollar, [1844]) (短尾紫灰蝶／拉瑪紫灰蝶／齒翅嬈灰蝶)

PLATE 5, Figs. 37-38; PLATE 43, Fig. 323; PLATE 76, Fig. 452

Thecla rama Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 412, pl. 4, f. 1–2. (Type locality: “Himaleya, Massuri”)

Amblypodia querceti Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India Company 1: 43. (Type locality: N. India)

Amblypodia violacea Röber, 1886: Correspondenz-blatt des Entomologischen Vereins Iris zu Dresden 1 (3): 72, pl. 5, f. 6. (Type locality: “Ost-Indien” [E. India])

Ssp. *ramosa* Evans, 1925

Amblypodia rama ramosa Evans, 1925: Journal of the Bombay Natural History Society 30 (3): 634. (Type locality: “Manipur-Dawnas”)

Specimens examined:

JINMEN [= KINMEN] Co.: 1♀, Gugang Lake, 5. XI. 2013 (C. L. Huang & H. C. Huang); 1♂, Jinhu, Zhongshan Forest, 19/20. XI. 2013 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 17–19 mm. Sexual dimorphism present. Male (PLATE 5, Fig. 37): Head brown, scalings forming a wall with medial double ridges on vertex, frons with bump-like tuft, a blurred white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, down-

curved distad, 3rd segment small with distal end blunt; white, turning brown distad. Compound eyes naked. Thorax and abdomen brown dorsally, white ventrally. Legs brown on outer surface, white on inner surface, Protarsi fused, with distal end obtuse. Forewing triangular, broad, with apex slightly produced. Hindwing rounded, distal end of CuA_2 with a small tail-like projection. Wing uppersides ground color brown, with broad metallic deep purple patches on proximal areas of wings, reaching costa on forewing. Wing undersides ground color brown. A dark discal band present on both wings. Two series of proximal spots present. Submarginal bands as faint, dark bands. Short, dark bar at distal end of discoidal cells. Fringe brown. Female (PLATE 5, Fig. 38): Body and general wing patterns similar to those of male, but purple patch lighter in color tone, less extensive on both wings, not reaching costa on forewing, Protarsi normal.

Male genitalia (PLATE 43, Fig. 323) – Tegumen with prominent lateral fold, concave mesad. Vinculum broad but narrow dorsally, curved. Saccus attenuate anteriorly into a blunt end. Brachium enlarged basally, forming digitate distal process. Valva short, bifid; ampulla as fin-shaped process; harpe lobe-like, with blunt distal margin; sacculus as elongate, weakly sclerotized band. Juxta flat, M-shaped. Phallus stout; phallobase narrowed anteriorly; caudal end of aedeagu with a dorsal window. Aedeagus up-curved, slightly shorter than phallobase.

Female genitalia (PLATE 76, Fig. 452) – Corpus bursae elongate, oval. Signa as a pair of invaginated sclerotized fins on opposite walls of corpus bursae, at posterior part. Ductus bursae elongate, wrinkled, sclerotized near caudal end. Sterigma with lamella antevaginalis forming a pair of fin-shaped plates; lamella postvaginalis as a pair of elongate sclerites, sleeve-like. Posterior apophyses longer than anal papillae, heavily sclerotized, curved, slightly enlarged basad, bent at anterior end. Anal papillae lobe-like, with ventral digitate extensions, setose distally.

Global distribution. Himalayas, Indochina, and West to East China (Bascombe *et al*., 1999).

Distribution in Taiwan. This species was recorded from Jinmen (Hsu, 2014).

Larval Host plant(s). Not recorded from Jinmen, but known as oak-feeders in the other areas (Bascombe *et al*., 1999). No oak is known from Jinmen islands (Lu, 2011).

Biology. Presumably multivoltine (Hsu, 1999a).

Remarks. This species is occasionally found from Jinmen, but its hostplants, oaks, are not known to grow there (Lu, 2011), so the individuals found there evidently came from the continental area near the islands.

This species is similar to *A. japonica*, but the latter is usually tailless.

形態特徵：成蝶前翅長 17–19 mm。具雌雄二型性。雄蝶 (圖 37)：頭褐色，鱗片於頭頂中央形成雙脊狀，額具瘤狀毛束，複眼具模糊白色輪緣。觸角褐色，具白環。口器黑褐色。下唇鬚前伸，末端向下彎曲，第三節細小，末端鈍；向末端顏色由白轉褐。複眼光滑。胸部及腹部背面褐色、腹面白色。足外側表面褐色，內側表面白色，前足跗節癒合，末端鈍。前翅寬、三角形，翅頂略向外延伸。後翅圓，於 CuA_2 脈末端具小尾突。翅背面底色褐色，內側具帶金屬光澤紫色寬斑塊，於前翅及於前緣。翅腹面底色褐色；前、後翅均具中央斑帶；內側具兩列斑點；亞外緣帶紋由淡色及深色帶紋組成；中室末端具深色短條。緣毛褐色。雌蝶 (圖 38)：形態特徵與雄蝶相似，但紫色斑塊色調較亮、範圍較窄、不及於前翅前緣，前足跗節正常。

雄交尾器 (圖 323)：背兜兩側具褶，後緣中央凹入。基腹弧寬闊，背側較窄、彎曲。囊突向前漸細，末端鈍。顎形突基部膨大，呈指狀突起。抱器短，二分；抱器內突呈鰭狀突起；抱握鋏葉狀，末端鈍；抱器腹呈細長弱骨化帶。陽基顎片扁平、M 字形。陽莖器粗壯；陽莖基前端隘縮；陽莖器末端背側具膜區。陽莖器上揚，長度略短於陽莖基。

雌交尾器 (圖 452)：交尾囊長卵形。花壁位於交尾囊相對位置，為一對內陷且末端鰭狀的骨板。交尾囊管修長，有皺褶，近末端處骨化。前交尾孔板為一對鰭狀骨片；後交尾孔板延伸成一對袖狀骨板。後內骨突長於比肛突，明顯骨化、彎曲，基部略膨大，前端彎曲。肛突瓣狀，腹側基部延伸為指狀，末端具毛。

世界分布：喜瑪拉雅地區、中南半島、華西至華東。

臺灣分布：本種於金門有記錄。

寄主植物：本種在金門無寄主紀錄，但於其他地區取食殼斗科植物。然而，金門地區並無殼斗科植物分布。

生物學：本種可能是一年多世代物種。

註記：本種偶爾見於金門，但該地已知並無殼斗科植物生長，從而可以知金門發現之個體應來自鄰近之大陸華東地區。

本種與日本紫灰蝶相似，但日本紫灰蝶通常無尾突。

Genus *MAHATHALA* Moore, 1878

Type species: *Amblypodia ameria* Hewitson, 1862

Diagnostic characters similar to those of *Arhopala* but with the following distinctions: 1) projection at distal end of CuA_2 of hindwing digitate with distal end club-like; 2) costa of hindwing concave, falcate.

2 to 3 species are known from the Oriental region.

Larvae feed on the leaves of plants in the genus *Mallotus* of Euphorbiaceae.

1 species is known to occur in Taiwan.

凹翅紫灰蝶屬

形態特徵與紫灰蝶屬相似，但有以下區別：1) 後翅 CuA_2 脈末端尾突指狀，末端錘形；2) 後翅前緣內凹、鐮形。

本屬已知約 2–3 種，分布於東洋區。

幼生期取食大戟科野桐屬植物之葉片。

臺灣有 1 種。

Mahathala ameria (Hewitson, 1862) (凹翅紫灰蝶／凹翅紫小灰蝶／瑪灰蝶)

Amblypodia ameria Hewitson, 1862: Specimen of a Catalogue of Lycaenidae in the British Museum: 14, pl. 8, f. 85–86. (Type locality: "Northern India and Siam")

Ssp. *hainani* Bethune-Baker, 1903

PLATE 5, Figs. 39–40; PLATE 44, Fig. 324; PLATE 77, Fig. 453

Mahathala hainani Bethune-Baker, 1903: Transaction of the Zoological Society of London 17: 23, pl. 1, f. 1. (Type locality: "Isle of Hainan" [error?])

Mahathala ameria formosa Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 49. (Type locality: "Formosa, Kanshirei [= Guangzhiling]")

Specimens examined:

TAIPEI CITY: 1♂, Beitou, Erziping, 15. IV. 2005, reared from *Mallotus repandus*, emgd. 16. V. 2005, HSU 05D30 (J. M. Wu, C. L. Huang & W. C. Chang) (genitalia preparation JYL581); 1♀, Beitou, Guizikeng, 23. IX. 2018, reared from *M. repandus*, emgd. 14. X. 2018, HSU 18J21 (L. Huang). **XINZHU Co.:** 1♀, Guanxi, 14. V. 2008, reared from *M. repandus*, emgd. 9. VI. 2008, HSU 08E12 (C. H. Lin); 1♂, Zhudong, 150m, 26. VII. 2008 (Y. F. Hsu). **MIAOLI Co.:** 1♂, Sanyi, Linchushan, 30. IX. 1995, reared from *M. repandus*, emgd. 17. X. 1995, HSU 95J10 (Y. F. Hsu & C. Y. Li). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Beitun, Dakeng, 4. IX. 2010, reared from *M. repandus*, emgd. 17. IX. 2010 (J. H. Lin). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, 22. IX. 2006, reared from *M. repandus*, emgd. 9. X. 2006, HSU 06J35 (Y. F. Hsu); 2♂, Xinhua, Dakeng, 80m, 25. II. 2006 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Tianliao, 80m, 3. XII. 2011 (Y. F. Hsu); 1♀, Tianliao, Xinning, 80m, 1. VI. 2010, reared from *M. repandus*, emgd. 18. VI. 2012, HSU 12F4 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Zhuoxi, Nanan, 26. VI. 2015 (J. Y. Liang) (genitalia preparation JYL501). **TAIDONG Co.:** 1♂, Yanping, Hongye, 17. V. 1988 (Y. F. Hsu); 1♂, same locality, 28. VIII. 1998 (Y. F. Hsu).

Description. Adult – Forewing length 16–21 mm. Sexual dimorphism absent. Male (PLATE 5, Fig. 39): Head brown, frons with prominent conical tuft. Antennae brown,

somewhat segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, down-curved distad, 3rd segment small with distal end blunt, brown. Compound eyes naked. Thorax and abdomen brown. Legs brown with white scalings, Protarsi fused, with distal end obtuse. Forewing broad, with termen slightly convex. Hindwing rounded, with costa concave, falcate; tornus lobed, distal end of CuA_2 with a small digitate projection, with distal end club-like. Wing uppersides ground color brown, with broad metallic deep purple patches on proximal areas of wings, more extensive on forewings. Wing undersides ground color brown, with proximal half on hindwing darkened. A dark discal band present on both wings, those on forewing edged with white. Two series of proximal spots present, faint. Submarginal bands as faint, dark bands. Short, dark bar at distal end of discoidal cells, those on forewing edged with white. Fringe brown. Female (PLATE 5, Fig. 40): Body and general wing patterns similar to those of male, Protarsi normal.

Male genitalia (PLATE 44, Fig. 324) – Tegumen with prominent lateral fold, with medial concavity. Vinculum broad, curved. Saccus attenuate anteriorly into a blunt end. Brachium L-shaped, forming perpendicular "elbow" with pointed distal tip. Valva broad; costa folded inwards; ampulla as fin-shaped process; harpe as a digitate process. Juxta narrow, U-shaped. Phallus relatively short, cylindrical; phallobase narrow, longer than aedeagus; aedeagus thicker than phallobase, with distal end truncate.

Female genitalia (PLATE 77, Fig. 453) – Corpus bursae ovate. Signum absent. Ductus bursae thick, wrinkled, forming enlarged sclerotized ring at caudal end. Sterigma forming a pair of prominent triangular scletites. Posterior apophyses approximately equal to anal papillae in length, heavily sclerotized, nearly straight, hook-like at distal end. Anal papillae large, rectangular, setose.

Global distribution. Himalayas, Indochina, South China, and Taiwan (Shirôzu, 1960; Bascombe *et al*., 1999; Hsu, 2013).

Distribution in Taiwan. Lowland and hillside habitats on main island of Taiwan (Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Euphorbiaceae: *Mallotus repandus* (Uchida, 1991; Hsu, 2006; Lu

& Chen, 2014).

Biology. This species is multivoltine in occurrence (Hsu, 2006; Lu & Chen, 2014).

Remarks. The type locality of ssp. *hainani* was given as "Isle of Hainan" by Bethune-Baker (1903), but the author described several taxa as *hainani* using materials collected from Taiwan (e.g., *Tongeia hainani* and *Nacaduba pactolus hainani*). The possibility that the type series of ssp. *hainani* were also from Taiwan instead of Hainan cannot be ruled out.

形態特徵：成蝶前翅長 16–21 mm。無雌雄二型性。雄蝶 (圖 39)：頭褐色，額具明顯眼錐狀毛束。觸角褐色，部分間有白環。口器黑褐色。下唇鬚背毛、前伸，末端下彎，第三節細小、末端鈍、褐色。複眼光滑。胸部及腹部褐色。足褐色，雜白色鱗，前足跗節癒合、末端鈍。前翅寬闊，外緣略凸出。後翅圓，前緣凹陷而呈鐮狀；臀區葉狀，CuA_2 脈末端具指狀尾突、末端錘形。翅背面底色褐色，內側有具金屬光澤深紫色寬斑塊，於前翅範圍較廣。翅腹面底色褐色，基半部色深；前、後翅皆具中央斑帶，於前翅者有白邊；內側有兩列淡色斑點；亞外緣帶紋由淡色及深色帶紋組成；中室末端具深色短條，於前翅者具白邊。緣毛褐色。雌蝶 (圖 40)：形態特徵與雄蝶相似，前足跗節正常。

雄交尾器 (圖 324)：背兜兩側有褶，中央內凹。基腹弧寬闊、彎曲。囊突向前漸細、末端鈍。顎形突 L 形，垂直成肘狀，末端尖。抱器寬大；抱器背向內摺疊；抱器內突成鰭狀突起；抱握鋏為指狀突起。陽基顎片狹窄，U 字形。陽莖略短，圓柱狀；陽莖基狹窄，略長於陽莖器；陽莖器略粗於陽莖基，末端截狀。

雌交尾器 (圖 453)：交尾囊卵狀。無花壁。交尾囊管粗大、具皺褶，於末端形成擴大骨環。交尾孔板為一對明顯三角形骨板。後內骨突約略與肛突等長，明顯骨化、甚直、前端鉤狀。肛突頗大、矩形、具毛。

世界分布：喜瑪拉雅地區、中南半島、華南、臺灣。

臺灣分布：本島低地至中海拔山區。

寄主植物：大戟科之扛香藤。

生物學：本種為一年多世代物種。

註記：本亞種模式產地「Isle of Hainan」(Bethune-Baker, 1903) 意指海南島，但該作者在描述多種種小名為 *hainani* 之物種時，所用標本多採自臺灣 (如臺灣玄灰蝶、暗色娜波灰蝶)。因此本亞種的模式標本或許也採自臺灣。

Genus *IRAOTA* Moore, [1881]

Type species: *Hesperia maecenas* Fabricius, 1793

Diagnostic characters include the following: 1) tail-like projection present at distal of 1A+2A of hindwing, sometimes also CuA_2 and CuA_1; 2) tibiae and tarsi spiny throughout surface; 3) sexual dimorphism prominent.

4–5 species are known from the Oriental region.

Larvae feed on plants in the genus *Ficus* of family Moraceae.

1 species is known from Jinmen.

異灰蝶屬

形態特徵如下：1) 後翅 1A+2A 脈末端具尾突，有時 CuA_1 及 CuA_2 脈末端亦有；2) 脛節及跗節表面密布細刺；3) 雌雄二型性顯著。

本屬已知 4–5 種，分布於東洋區。

幼生期以桑科榕屬植物為寄主。

金門有 1 種。

Iraota timoleon (Stoll, [1790]) (異灰蝶／鐵木萊異灰蝶)

PLATE 6, Figs. 41–44; PLATE 44, Fig. 325; PLATE 77, Fig. 454

Papilio timoleon Stoll, [1790]: Aanhangsel van het werk, De uitlandsche kapellen (2–5): 146, pl. 32, f. 4. (Type locality: "Chine" [= China])

Hesperia maecenas Fabricius, 1793: Entomologia systematica emendata et aucta 3 (1): 271. (Type locality: "China")

Thecla nila Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 413, pl. 4, f. 5–6. (Type locality: "Himaleya. Massuri")

Specimens examined:

JINMEN [= KINMEN] Co.: 3♂, 5♀, Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang) (male genitalia preparation JYL629); 1♀, Taiwushan, 31. X. 2000 (H. Y. Lee); 1♀, Wuhushan, 13. IV. 2001 (C. C. Lu & Y. T. Lo); 1♂, Jinsha, Shishan, 29. X. 2014 (Y. F. Hsu); 1♀, Jinsha, Shishan, 18. XI. 2013 (Y. F. Hsu) (genitalia preparation JYL613); 1♂, Qionglin, 6. XI. 2018, reared from *Ficus superba*, emgd. 26. XI. 2018 (L. Huang).

Description. Adult – Forewing length 17–24 mm. Sexual dimorphism present. Male (PLATE 6, Figs. 41–42): Head hairy, vertex brown, frons white with medial brown patch, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus porrect, with 3rd segment minute, pointed, white with distal end brown. Compound eyes naked. Thorax and abdomen dark brown, mixed with white hairs ventrally. Legs with tibiae and tarsi spiny, dark brown, with tibiae and tarsi gray white, Protarsi fused, with distal end down-curved. Forewing triangular, slightly convex near apex. Hindwing ovate, tornus lobed. Digitate process at distal end of 1A+2A of hindwing. Wing uppersides ground color brown, with metallic blue patch on both wings, more extensive on hindwing. Wing undersides ground color brown or ochre, with different shades and several whit markings. Fringe white or pale brown, checkered with brown. Female (PLATE 6, Figs. 43–44): similar to male, but additional tail-like projection present at distal end of CuA_2 on hindwing, Protarsi not fused, wing uppersides with purple patches, more extensive on forewing.

Male genitalia (PLATE 44, Fig. 325) – Tegumen with prominent lateral fold, concave mesad. Vinculum broad, curved. Saccus short, blunt anteriorly. Brachium thick, hook-

like, with distal half attenuate to pointed tip. Valva broad, fin-shaped; ampulla as fin-shaped process folded downwards; harpe lobe-like, with blunt distal margin; sacculus as elongate, sclerotized band, forming a triangular sheet posteriad. Juxta broad, M-shaped. Phallus nearly straight, attenuate posteriorly; phallobase slightly longer than aedeagus. Aedeagus with prominent dorsal opening at caudal end. Cornuti as a posterior small, serrate, sclerotized band and anterior, larger blade-like sclerite armed with a serrate process.

Female genitalia (PLATE 77, Fig. 454) – Corpus bursae flattened anteriorly, attenuate posteriorly, connecting ductus bursae without obvious delimitation. Ductus bursae thick, wrinkled, membranous, enlarged near ostium bursae. Sterigma weakly sclerotized, forming a pouch around ostium bursae. Posterior apophyses nearly as long as longer than anal papillae, sclerotized, slightly curved, enlarged basad. Anal papillae shoe-shaped, setose, with long setae.

Variation. Markings on wing undersides reduced, with ground color reddish in dry/cold seasons.

Global distribution. India, Sri Lanka, Indochina, Malay Peninsula, West, South and East China (Bascombe *et al*., 1999).

Distribution in Taiwan. So far only found from Jinmen Islands (Hsu, 2014).

Larval Host plant(s). Moraceae: *Ficus superba* (Chang, 2011; Hsu, 2014).

Biology. Multivoltine (Chang, 2011).

形態特徵：成蝶前翅長 17–24 mm。具雌雄二型性。雄蝶 (圖 41–42)：頭被毛，頭頂褐色，額白色、中央具褐色斑，複眼有白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚前伸，第三節細小、尖銳、白色、末端褐色。複眼裸露。胸部及腹部深褐色，腹面雜白色毛。足深褐色，脛節及跗節具棘刺、灰白色，前足跗節癒合，

末端下彎。前翅三角形，近翅頂處略凸出。後翅卵形，臀區具葉狀突。後翅 1A+2A 脈末端具指狀尾突。翅背面底色褐色，前後翅皆具帶金屬光澤藍色斑塊，於後翅範圍較廣。翅腹面底色褐或赭色、深淺不一，並有許多白色斑紋。緣毛白色或淺褐色間以褐色。雌蝶 (圖 43–44)：與雄蝶相似，惟後翅 CuA_2 脈末端亦具尾突於，前足跗節不癒合，翅背面具紫色斑塊、且於前翅範圍較廣。

雄交尾器 (圖 325)：背兜兩側有褶，中央凹入。基腹弧寬闊、彎曲。囊突短小，末端鈍。顎形突粗壯，末端漸細、呈鉤狀。抱器寬闊、鰭狀；抱器內突鰭狀、下摺；抱握鋏瓣狀，末端邊緣鈍；抱器腹呈為骨化帶，末端三角狀。陽基顎片寬、M 字形。陽莖器甚直，向後漸細；陽莖基略長於陽莖器。陽莖器末端具上向開口。角狀器兩只，後側者較小、帶狀、有鋸齒；前側者較大、瓣狀，具鋸齒狀突起。

雌交尾器 (圖 454)：交尾囊前端平坦、向後漸窄，與交尾囊管相連處無明顯區分。交尾囊管粗、膜質、有皺褶，近交尾孔處擴大。交尾孔板骨化程度弱，交尾孔周圍袋狀。後內骨突長度略與肛突等長、骨化，略彎曲，基部膨大。肛突履狀，具長毛。

變異：乾季／低溫型翅腹面斑紋退減，底色帶紅色調。

世界分布：印度、斯里蘭卡、中南半島、馬來半島、華西、華南及華東。

臺灣分布：目前僅見於金門。

寄主植物：桑科之雀榕。

生物學：本種為一年多世代物種。

Genus *JAPONICA* Tutt, [1907]

Type species: *Dipsas saepestriata* Hewitson, [1865]

Diagnostic characters include the following: 1) ground color of wings orange, decorated with dark brown markings, bands or pale colored bands edged by white or silvery white lines; 2) filiform projection present at distal end of CuA_2 of hindwing; 3) protarsus segmented in male.

Approximately 4 species are known from the Oriental and eastern Palearctic regions.

Larvae feed on plants in Fagaceae.

1 species is known from Taiwan.

焰灰蝶屬

形態特徵如下：1) 翅底色橙色，飾以黑褐色斑紋、條紋或鑲白色或銀白色邊的淺色帶紋；2) 後翅 CuA_2 脈末端具絲狀尾突；3) 雄蝶前足跗節分節。

本屬已知約 4 種，分布於東洋區及古北區東部。

幼生期以殼斗科植物為寄主。

臺灣有 1 種。

***Japonica patungkoanui* Murayama, 1956 (臺灣焰灰蝶／紅小灰蝶／高砂紅小灰蝶)**

PLATE 6, Figs. 45–46; PLATE 44, Fig. 326; PLATE 77, Fig. 455

Japonica lutea patungkoanui Murayama, 1956: Tyô to Ga 7 (2): 13, f. 4, 7–8. (Type locality: "Sankakuho Taichu, Formosa [= Sanjiaofeng, Nantou, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, 2♀, Sanxia, Beichatianshan, 1700/1727m, 28/29. V. 1992 (Y. F. Hsu & M. Y. Lin); 1♂, 1♀, same locality, 6. VI. 1996 (Y. F. Hsu); 1♀, same locality, 3/4. VI. 2000 (C. C. Lu); 1♀, same locality, 25/27. V. 2002 (L. H. Wang & C. R. Chen); 1♂, same locality, 17. V. 2004 (L. H. Wang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, 1♀, Fuxing, Lalashan, 4. VI. 1988 (Y. F. Hsu); 1♂, same locality, 1500m, 11/12. I. 2000, reared from *Quercus stenophylloides*, emgd. 13. IV. 2000, HSU 00A11 (C. C. Lu & Y. T. Lo). **YILAN Co.:** 1♂, Datong, Siyuanyakou, ca 1600m, 13. XII. 2005, reared from *Q. stenophylloides*, emgd. 26. III. 2006, HSU 05M28.1 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 2♂, Heping, Anmashan, 18/19. V. 1996 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Bilu, 2300m, 8. VII. 1991 (Y.

F. Hsu & C. L. Li). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 1600m, 17. V. 1998 (Y. F. Hsu).

Description. Adult – Forewing length 12–20 mm. Sexual dimorphism absent. Male (PLATE 6, Fig. 45): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but dark brown distad. Compound eyes sparsely hairy. Thorax and abdomen orange dorsally, white ventrally. Legs white, with tarsi banded with dark brown. Forewing triangular, termen slightly convex. Hindwing somewhat triangular. Filiform projections at distal ends of CuA_2. Wing uppersides ground color orange, with apex of forewing dark brown. A black dot in cell CuA_1 of hindwing. Wing undersides ground color orange, with discal bands on both wings, edged by faint, white on forewing, prominent, edged by silvery white on hindwing. Short bar edged by white present at distal end of discoidal cells of forewing. Submarginal bands consisted of a proximal white band and a distal series of dark brown dots; a conspicuous black spot in distal end of cell CuA_1. Fringe mostly orange. Female (PLATE 6, Fig. 46): Body and general wing patterns similar to those of male.

Male genitalia (PLATE 44, Fig. 326) – Tegumen convex mesad. Vinculum narrow. Saccus longer than length of tegumen, broad at base, attenuate anteriorly into a blunt end. Brachium curved, hook-like. Valva with digitate distal process with a terminal teeth. Juxta very narrow, U-shaped. Phallus straight, nearly cylindrical, with phallobase shorter than aedeagus. Cornuti as a pair of sclerotized bands. Carina penis present, as two separate heavily sclerotized pieces, proximal one larger, with triangular, serrate; distal one as a prominent spine.

Female genitalia (PLATE 77, Fig. 455) – Corpus bursae elongate, oval. Signa as a pair of invaginated sclerotized spiny ridges on opposite walls of corpus bursae. Ductus bursae forming a prominent pouch associasted with a caudal funnel. Sterigma elaborated into a ventral, transverse membranous fold, and a pair of large dorsal sclerites, each with a proximal depression and a distal setose process. Anterior apophyses short, broad at basally. Posterior apophyses over 3X longer than anterior apophyses, straight. Anal

papillae prominent, sac-like, setose, bearing long hairs.

Global distribution. Endemic to Taiwan (Fujioka, 1993; Uchida, 1999; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone (Uchida, 1999; Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Fagaceae: *Quercus stenophylloides*, *Q. longinux*, *Q. sessilifolia*, *Q. glauca*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. Univoltine, adults on wing in summer; overwintering as egg at dormant buds of the hostplants (Uchida, 1999; Hsu, 2013; Lu & Chen, 2014).

Remarks. This taxon was long considered as a subspecies of *J. lutea* (Hewitson, [1865]) (e.g., Murayama, 1956; Shirôzu, 1960; Hamano, 1987), until Fujioka (1993) treated as a distinct species endemic to Taiwan based on morphology of genitalia of both sexes.

形態特徵：成蝶前翅長 12–20 mm。無雌雄二型性。雄蝶 (圖 45)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、漸細、末端尖、白色但末端褐色。複眼被疏毛。胸部及腹部背面橙色，腹面白色。足白色，跗節具深褐色帶紋。前翅三角形，外緣略凸出。後翅略呈三角形，於 CuA_2 脈末端具絲狀尾突。翅背面底色橙色，前翅翅頂深褐色，後翅 CuA_1 室具一黑點。翅腹面底色橙色，前、後翅皆具中央帶紋，於前翅者具淡白色邊、於後翅者具鮮明之銀白色邊；前翅中室末端有帶白邊之短條紋；亞外緣帶紋由靠內側之白色帶紋及靠外側之一列深褐色點組成；CuA_1 室末端具一鮮明黑色斑點。緣毛主要呈橙色。雌蝶 (圖 46)：形態特徵與雄蝶相似。

雄交尾器 (圖 326)：背兜中央隆起。基腹弧狹窄。囊突長度長於背兜，基部寬，向前漸細，末端圓鈍狀。顎形突彎曲、鉤狀。抱器向後端指狀、具齒。陽莖顎片甚窄，U 字形。陽莖甚直，近圓筒狀，陽莖基長度較陽莖器短。角狀器為一對骨化刺棘。陽莖端器高度骨化，為兩個分別的隆起骨片，末端骨片呈棘刺狀；前端骨片大、三

角形、具齒。

雌交尾器 (圖 455)：交尾囊長橢圓形。花壁位於交尾囊相對位置，為內陷帶棘之稜骨。交尾囊管膨大成袋狀，後端漏斗狀。交尾孔板複雜，腹側具橫向皺褶，背側具一對大型骨板，其前側凹陷，後端具毛。前內骨突短，基部較寬。後內骨突長度大於前內骨突 3 倍，甚直。肛突具長毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之狹葉櫟、錐果櫟、毽子櫟、青剛櫟等。

生物學：本種為一年一世代物種，成蝶於夏天活動，以產於寄主植物休眠芽旁之卵越冬。

註記：本種昔日長期被歸類為焰灰蝶 *J. lutea* (Hewitson, [1865]) 之亞種，直到 Fujioka (1993) 依據雌雄雙性之交尾器形態差異，方視為臺灣特有種。

Genus *USSURIANA* Tutt, [1907]

Type species: *Thecla michaelis* Oberthür, 1880

Diagnostic characters include the following: 1) ground color of wings yellow or orange, with a series of dark brown or white lunules on wing underside; 2) filiform projection present at distal end of CuA_2 of hindwing; 3) protarsus segmented in male.

3 species are known from the Oriental and eastern Palearctic regions (Koiwaya, 2007).

Larvae feed on plants in the genus *Fraxinus* of Oleaceae.

1 species is known from Taiwan.

赭灰蝶屬

形態特徵如下：1) 翅底色黃色或橙色，腹面有一系列黑褐色或白色弦月紋；2) 後翅 CuA_2 脈末端具絲狀尾突；3) 雄蝶前足跗節分節。

本屬已知 3 種，分布於東洋區及古北區東部。

幼生期以木犀科梣屬植物為寄主。

臺灣有 1 種。

Ussuriana michaelis (Oberthür, 1880) (赭灰蝶／寶島小灰蝶)

Thecla michaelis Oberthür, 1880: Études d'Entomologie 5: 19, pl. 5, f. 2. (Type locality: Askold)
Zephyrus michaelis var. *gabrielis* Leech, 1894: Butterflies from China, Japan, and Corea (2): 389, pl. 28, f. 7. (Type locality: "Western China, probably at Omei-shan")
Ussuriana plania Wang & Ren, 1999: Monographia of Original Colored & Size Butterflies of China 's Northwest: 291, Fig. H3. (Type locality: Jiaohe (Jilin))
Ussuriana choui Wang & Fan 2000: Systematic and Faunistic Research on Chinese Insects: 196, Fig. 38. (Type locality: Wuzhishan town, Ruy[u]an County, Guangdong Province)

Ssp. *takarana* Araki & Hirayama, 1941

PLATE 7, Figs. 47–49; PLATE 44, Fig. 327; PLATE 77, Fig. 456

Coreana michaelis takarana Araki & Hirayama, 1941: Mushi no Sekai 4 (11/12): 1. (Type locality: Bikei, Taichu, [Taiwan])

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Baling, 3. V. 1997 (Y. F. Hsu); 2♀, same locality, 590m, 8. III. 1998, reared from *Fraxinus insularis*, emgd. 12. IV. 1998, HSU 98C1 (Y. F. Hsu); 1♀, same locality, 600m, 5. V. 2009 (H. C. Huang); 1♀, Fuxing, Gaoyi, emgd. 28. IV. 2008 (C. M. Wu); 1♀, Fuxing, Lian, 9. IV. 2019, reared from *F. insularis*, emgd. 6. V. 2019, HSU 19D13 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 6. II. 1999, reared from *F. insularis*, emgd. 21. III. 1999, HSU 99B4 (C. C. Lu & C. Y. Hung); 1♂, same locality, 1100/1200m, 11. V. 2007 (L. H. Wang). **TAIDONG Co.:** 1♂, Taoyuan, Hongye, 11. V. 2007 (C. L. Jan).

Description. Adult – Forewing length 21–26 mm. Sexual dimorphism present. Male

(PLATE 7, Figs. 47–48): Head hairy, brown, with a small white tuft on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but dark brown distad. Compound eyes naked. Thorax and abdomen dark brown dorsally, white ventrally, a series of black dots present laterally. Legs white, with tibiae and tarsi banded with dark brown. Forewing triangular. Hindwing somewhat triangular. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with a discal, orange marking on forewing. Wing undersides ground color yellow, with a series of white lunules on both wings, but frequently reduced on forewing. Submarginal bands consisted of a series of faint, white dots; a conspicuous black spot in distal end of cell CuA_1 of hindwing. Fringe white mixed with brown. Female (PLATE 7, Fig. 49): Body and general wing patterns similar to those of male, but with extensive orange scalings on wing uppersides and body; markings on wing undersides also more prominent.

Male genitalia (PLATE 44, Fig. 327) – Tegumen with prominent mesal concavity. Vinculum narrow dorsally. Saccus attenuate anteriorly into a blunt end. Brachium bent at basal 1/3 with a ventral teeth, curved to an up-raised hook. Valva short; ampulla as clavate process; harpe lobe-like, broad, with rounded distal margin. Juxta flat, with small mesal concavity. Phallus nearly stright; phallobase more than 2X of aedeagus; caudal end of aedeagus with angled ventral opening.

Female genitalia (PLATE 77, Fig. 456) – Corpus bursae ovate. Signa as a pair of invaginated sclerotized bands on opposite walls of corpus bursae, slug-like, spiny, tapering posteriorly. Ductus bursae forming sclerotized tube with an inner ridge near anterior end. Sterigma with lamella antevaginalis forming a broad square pouch; lamella postvaginalis as a sheet with lateral sclerotized band bearing a pair of sclerotized cones at posterior-lateral corners. Posterior apophyses very long, more than 3X of anal papillae, sclerotized, straight, clavate at anterior ends. Anal papillae Semicylindrical, setose.

Global distribution. Far East Russia, Korea, northern Indochina, Northeast, Central, South, Southwest, East China, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2002,

2013).

Larval Host plant(s). Oleaceae: *Fraxinus insularis* (Uchida, 1999; Hsu, 2002, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg laid in a cluster in crevice of twigs and trunk (Uchida, 1999; Hsu, 2002, 2013).

Remarks. This taxon was often regarded as a species endemic to Taiwan (e.g., Shirôzu, 1960; Hamano, 1987), but recently treated as a subspecies of continental *U. michaelis* (Oberthür, 1880) (e.g., Fujioka, 1992; Koiwaya, 2007; Hsu, 2013).

形態特徵：成蝶前翅長 21–26 mm。具雌雄二型性。雄蝶 (圖 47–48)：頭披毛、褐色，頭頂具一白色小毛束，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，呈白色而末端深褐色。複眼光滑。胸部及腹部背面深褐色、腹面白色，側面具一列黑色斑點。足白色，脛節及跗節具深褐色帶紋。前翅三角形。後翅略呈三角形，於 CuA_2 脈末端具絲狀尾突。翅背面底色褐色，前翅中央具一橙色斑。翅腹面底色黃色，前、後翅均具一列白色弦月紋，於前翅者常減退；亞外緣帶紋由一列模糊白點組成；CuA_1 室末端具一鮮明黑色斑點。緣毛白色雜褐色。雌蝶 (圖 49)：形態特徵與雄蝶相似，惟翅背面及軀體之橙色鱗覆蓋範圍更廣，翅腹面斑紋更鮮明。

雄交尾器 (圖 327)：背兜中間有明顯凹陷。基腹弧背側狹窄。囊突向前漸細，末端鈍。顎形突於近基部 1/3 處彎曲，腹側具齒，末端彎曲呈鉤狀。抱器短，抱器內突呈棒狀突起；抱握鋏瓣狀、寬闊，末端邊緣圓。陽基軛片平坦，中間有小凹陷。陽莖甚筆直；陽莖基長度超出陽莖器 2 倍；陽莖器末端開口斜切，位於腹側。

雌交尾器 (圖 456)：交尾囊卵形。花壁一對，位於交尾囊相對位置，為內陷骨帶，蛞蝓狀、向後漸細，具小刺棘。交尾囊管管狀、骨化，前端附近中央具脊。交尾孔前板寬大、方袋狀；交尾孔後板片狀，附兩側骨化帶，末端具一對錐狀骨。後內骨突極長，長度超出肛突 3 倍、明顯骨化、甚直，前端棒狀。肛突半圓柱狀，具毛。

世界分布：俄羅斯遠東地區、朝鮮半島、中南半島北部，華東北、華中、華南、華

西南及華東、臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：木犀科之臺灣梣。

生物學：本種為一年一世代物種，成蝶於初夏活動，以聚產於樹枝、樹幹裂縫內之卵塊越冬。

註記：本種過去常被視為臺灣特有種 (如 Shirôzu, 1960；Hamano, 1986)，但晚近之研究多視為赭灰蝶 *U. michaelis* (Oberthür, 1880) 之亞種 (如 Fujioka, 1992；Koiwaya, 2007；Hsu, 2013)。

Genus *CORDELIA* Shirôzu & Yamamoto, 1956

Type species: *Dipsas comes* Leech, 1890

Diagnostic characters include the following: 1) ground color of wings orange, decorated with white or silvery white lines; 2) filiform projection present at distal end of CuA_2 of hindwing; 3) protarsus fused in male.

2 to 3 species are known from the Oriental region according to Koiwaya (2007).

Larvae feed on plants in the genus *Carpinus* of Betulaceae.

1 species is known from Taiwan.

珂灰蝶屬

形態特徵如下：1) 翅底色橙色，飾有白色或銀白色線紋；2) 後翅 CuA_2 脈末端具絲狀尾突；3) 雄蝶前足跗節癒合。

本屬已知 2–3 種，分布於東洋區。

幼生期以樺木科千金榆屬植物為寄主。

臺灣已知 1 種。

Cordelia comes (Leech, 1890) (珂灰蝶／臺灣紅小灰蝶)

Dipsas comes Leech, 1890: Entomologist 23: 41. (Type locality: "Chang Yang")

Ssp. *wilemaniella* Matsumura, 1929

PLATE 7, Figs. 50–51; PLATE 45, Fig. 328; PLATE 78, Fig. 457

Zephyrus comes wilemaniella Matsumura, 1929: Insecta Matsumurana 3 (2/3): 99. (Type locality: "Musha" [= Wushe])

Specimens examined:

NANTOU Co.: 2♂, 1♀, Renai, Tunyuan, 1700m, 5. V. 2010 (L. H. Wang); 1♂, same locality, 10. V. 2010 (L. H. Wang); 1♂, Renai, Tunyuan, ca 1500m, 7. II. 2012, reared from *Carpinus kawakamii*, emgd. 19. III. 2012, HSU 12B16 (Y. F. Hsu & L. H. Wang); 1♀, Renai, Songgang, 1900m, 31. V. 2000 (C. Y. Hung). **HUALIAN Co.:** 1♂, 2♀, Xiulin, Xinbaiyang, 1300/1400m, 19. III. 2005, reared from *C. kawakamii*, emgd. 27. IV/5. V. 2005, HSU 05C10 (Y. F. Hsu & L. H. Wang); 1♀, same locality, 30. X. 1999, reared from *C. kawakamii*, emgd. 24. IV. 2000, HSU 99K41 (C. C. Lu & Y. T. Lo); 1♂, same locality, 5. II. 2006, reared from *C. kawakamii*, emgd. 6. IV. 2006, HSU 06B6 (C. M. Wu & L. H. Wang); 2♂, Xiulin, Wujiabengshan, 1900m, 15. VII. 2008 (L. H. Wang) (genitalia preparation YFH1479, JYL650); 1♀, Xiulin, Cien, Rt.8, 144km, ca 1650m, 24. III. 1997, reared from *C. kawakamii*, emgd. 2. V. 1997, HSU 97C53 (Y. F. Hsu); 4♂, 1♀, Xiulin, Huoranting, 28. V. 1989 (D. X. Li). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Zhongzhiguan, 30. VI. 2015 (C. W. Huang & A. L. Hui).

Description. Adult – Forewing length 15–17 mm. Sexual dimorphism absent. Male (PLATE 7, Fig. 50): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but dark brown distad. Compound eyes naked. Thorax and abdomen orange dorsally, white ventrally. Legs white, with tibiae and tarsi banded

with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded, filiform projections at distal ends of CuA_2. Wing uppersides ground color orange, with apex of forewing dark brown. Wing undersides ground color orange, with discal bands as narrow, white lines at distal position on both wings, nearly linear on forewing, posterior portion wavy on hindwing. Submarginal bands consisted of a series of red markings encircled of white arches on hindwing, obscure on forewing. A conspicuous black spot in cell Rs and CuA_1 of hindwing. Fringe mostly brown on forewing, white on hindwing. Female (PLATE 7, Fig. 51): Body and general wing patterns similar to those of male, Protarsi not fused.

Male genitalia (PLATE 45, Fig. 328) – Tegumen with lateral fold. Vinculum narrow, slightly enlarged laterally, curved. Brachium curved, hook-like. Saccus short, with anterior end rounded. Valva ovate, enlarged distally. Juxta pincer-shaped. Phallus enlarged caudad, down-curved, with phallobase approximately 2X of aedeagus. Aedeagus with angled opening ventrally.

Female genitalia (PLATE 78, Fig. 457) – Corpus bursae elongate, oval. Ductus bursae mostly membranous, wrinkled, enlarged to a sclerotized ring near caudal end. Sterigma with lamella antevaginalis forming a pair of shallow, sclerotized pouches; lamella postvaginalis as a broad sclerotized disc bearing a pair of sclerotized hemisphere posteriorly. Posterior apophyses longer than anal papillae, straight, enlarged basad. Anal papillae prominent, elongate, setose.

Global distribution. West to South China, Taiwan (Shirôzu, 1960; Uchida, 1999; Hsu, 2013).

Distribution in Taiwan. Moderate elevation in main island of Taiwan.

Larval Host plant(s). Betulaceae: *Carpinus kawakamii* (Hsu, 1999a, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg on small

twigs of the hostplants (Hsu, 1999a, 2013; Uchida, 1999).

Remarks. Koiwaya (2007) regarded the populations in Taiwan as a species endemic to Taiwan.

形態特徵：成蝶前翅長 15–17 mm。無雌雄二型性。雄蝶 (圖 50)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、漸細、末端尖，白色但末端深褐色。複眼光滑。胸部及腹部背面橙色，腹面白色。足白色，脛節及跗節具深褐色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略凸出。後翅圓，CuA_2 脈末端具絲狀尾突。翅背面底色橙色，翅頂深褐色。翅腹面底色橙色，前、後翅均具由白色窄線紋所組成之中央帶紋於偏外側處，於前翅者線形、於後翅者後部波浪狀；亞外緣帶紋由一列紅紋組成，於前翅者模糊、於後翅者鑲白色拱形紋；後翅 Rs 及 CuA_1 室各具一鮮明黑色斑點。前翅緣毛主呈褐色、後翅緣毛白色。雌蝶 (圖 51)：形態特徵與雄蝶相似，前足跗節不癒合。

雄交尾器 (圖 328)：背兜兩側有摺。基腹弧狹窄，側面略擴大、彎曲。顎形突鉤狀、彎曲。囊突短，前端圓。抱器卵形，末端擴大。陽基軛片鉗狀。陽莖末端膨大、下彎，陽莖基長度約為陽莖器 2 倍。陽莖器開口斜切、位於腹側。

雌交尾器 (圖 457)：交尾囊長橢圓形。交尾囊管主呈膜質，具皺摺，近交尾孔處形成擴大骨化環。交尾孔前板形成一對淺骨袋；交尾孔後板為寬骨板，末端具一對半球狀的骨化結構。後內骨突較肛突長，甚直，基部膨大。肛突修長、具毛。

世界分布：華西至華南、臺灣。

臺灣分布：本島中海拔地區。

寄主植物：樺木科之阿里山千金榆。

生物學：本種為一年一世代種，成蝶活動於初夏，越冬卵產於寄主植物細枝。

註記：Koiwaya (2007) 認為分布於臺灣之族群可視為臺灣特有種。

Genus *ARARAGI* Sibatani & Ito, 1942

Type species: *Thecla enthea* Janson, 1877

Diagnostic characters include the following: 1) ground color of wing undersides white, with dark brown and brown spots on wing underside; 2) M spots on forewing undersides deviated outwards; 3) filiform projection present at distal end of CuA_2 of hindwing; 4) protarsus fused in male.

3 species are known from the Oriental and eastern Palearctic regions (Hsu & Chou, 2001; Koiwaya, 2007).

Larvae feed on plants in Juglandaceae.

1 species is known from Taiwan.

墨點灰蝶屬

形態特徵如下：1) 翅腹面底色白色，上面綴黑褐色及褐色斑點；2) 前翅腹面 M 室斑點外移；3) 後翅 CuA_2 末端具絲狀尾突；4) 雄蟲前足跗節癒合。

本屬已知 3 種，分布於東洋區及古北區東部。

幼生期以胡桃科植物為寄主。

臺灣有 1 種。

Araragi enthea (Janson, 1877) (墨點灰蝶／癩灰蝶／長尾小灰蝶)

Thecla enthea Janson, 1877: Cistula entomologica 2: 157. (Type locality: “near the River Yokawa, about 140 miles N. W. of Yedo, [Japan]”)

Ssp. *morisonensis* Inoue, 1942

PLATE 7, Figs. 52–53; PLATE 45, Fig. 329; PLATE 78, Fig. 458

Thecla enthea morisonensis Inoue, 1942: The Entomological World 10: 644. (Type locality: "Niitakayama" [= Yushan])

Specimens examined:

YILAN Co.: 1♂, Datong, Tuleng, 1700m, 15. IV. 2009, reared from *Juglans cathayensis*, emgd. 15. V. 2009, HSU 09D56 (N. Y. Tsai). **HUALIAN Co.:** 1♀, Xiulin, Tongmen, Wujiabengshan, 2000m, 12. V. 2006, reared from *J. cathayensis*, emgd. 7. VI. 2006, HSU 06E14 (L. H. Wang); 1♂, 1♀, Xiulin, Xinbaiyang, 18. V. 1997, reared from *J. cathayensis*, emgd. 9. VI. 1997, HSU 97E34 (S. Y. Liu & C. C. Lu); 1♂, same locality, 21. IV. 2005, reared from *J. cathayensis*, emgd. 26. V. 2005, HSU 05D49 (L. H. Wang).

Description. Adult – Forewing length 14–18 mm. Sexual dimorphism absent. Male (PLATE 7, Fig. 52): Head hairy, white, with small brown patch on frons, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but dark brown distad. Compound eyes naked. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like, with distal end of M_1 and CuA_1 angled. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, sometimes with a faint white patch on forewing uppersides. Wing undersides ground color white, with discal bands as series of dark brown spots, M spots of forewing deviated distad. Short, dark brown bars at distal end of discoidal cells of both wings. Basal markings as several dark brown dots. Submarginal bands consisted of a proximal series of brown markings and a narrow distal brown band. A conspicuous black spot in cell CuA_1 of hindwing. Fringe mostly white. Female (PLATE 7, Fig. 53): Body and general wing patterns similar to those of male, Protarsi not fused.

Male genitalia (PLATE 45, Fig. 329) – Tegumen broad; socii short, wart-like; uncus forming elongate, medial process, down-curved, with blunt distal tip. Vinculum narrow, straight. Brachium curved, hook-like, distal end blunt. Saccus short, with anterior end rounded. Valva ovate, with distal end produced into a short, digitate process. Juxta narrow, V-shaped, with a small, lateral, external teeth. Phallus large, with phallobase much longer than aedeagus. Aedeagus with opening at left side.

Female genitalia (PLATE 78, Fig. 458) – Corpus bursae elongate, oval. Signa as a pair of small, invaginated, sclerotized patch with minute spines on opposite walls of corpus bursae. Ductus bursae short, thick, membranous. Sterigma with lamella antevaginalis forming a pair of broad sclerotized plates; lamella postvaginalis forming a large, heavily sclerotized plate with a central dome, with a medial concavity posteriorly. Posterior apophyses longer than anal papillae, nearly straight, attenuate distad. Anal papillae short, setose.

Global distribution. Far East Russia, Korea, Japan, Northeast, North, West, Central, East China, and Taiwan (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations in montane zone (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Juglandaceae: *Juglans cathayensis* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg on twigs and trunk (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 14–18 mm。無雌雄二型性。雄蝶 (圖 52)：頭被毛、白色，額具一褐色小斑，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚前伸，向前漸細、末端尖，白色而末端深褐色。複眼光滑。胸部及腹部背面深褐色、腹面白色。足白色，跗節具深褐色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略凸出。後翅葉狀，M_1 及 CuA_1 脈末端角狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，有時前翅有一淺色白色斑。翅腹面底色白色，中央帶紋由數列深褐色斑點組成，前翅 M 室斑點向外偏移；前、後翅中室末端均有深褐色短條；基部斑紋為數只深褐色斑點；亞外緣帶紋由內側數只褐色斑紋及外側褐色窄帶紋組成；後翅 CuA_1 室具一鮮明黑色斑點。緣毛大致白色。雌蝶 (圖 53)：形態特徵與雄蝶相似，前足跗節不癒合。

雄交尾器 (圖 329)：背兜寬闊。背兜側突短、疣狀。鉤突長，中央延長、下彎、末端鈍。基腹弧狹窄、甚直。顎形突彎曲、鉤狀，末端鈍。囊突短、前端圓。陽基軛

片狹窄、V 字形，側面外緣具 1 小齒。抱器卵形，末端延伸成指狀短突起。陽莖大型，陽莖基遠長於陽莖器。陽莖器開口於末端左側。

雌交尾器 (圖 458)：交尾囊長橢圓形。花壁一對，位於交尾囊相對位置，為具細小刺棘之內陷小骨。交尾囊管粗短、膜質。交尾孔前板為一對寬大的骨片；交尾孔後板形成一個大且高度骨化的拱頂，後緣中央內凹。後內骨突較肛突長，甚直，向端部漸細。肛突短，具毛。

世界分布：俄羅斯遠東地區、朝鮮半島、日本、華東北、華北、華西、華中及華東、臺灣。

臺灣分布：分布於本島中高海拔山區。

寄主植物：胡桃科之野核桃。

生物學：本種為一年一世代物種，成蝶於夏天活動，以產於樹枝或樹幹上之卵越冬。

Genus *ANTIGIUS* Sibatani & Ito, 1942

Type species: *Thecla attilia* (Bremer, 1861)

Diagnostic characters include the following: 1) ground color of wing undersides white, with dark brown and brown discal spots or bands, more or less in a straight line on forewing, strongly bent over posteriorly on hindwing; 2) filiform projection present at distal end of CuA_2 of hindwing; 3) protarsus fused in male.

5 species are known from the Oriental and eastern Palearctic regions (Hsu, 2009).

Larvae feed on plants in Fagaceae.

2 species are known from Taiwan.

折線灰蝶屬

形態特徵如下：1) 翅腹面底色白色，具褐色及黑褐色中央帶紋或斑列，於前翅約略呈直線，於後翅後端明顯彎曲；2) 後翅 CuA_2 脈末端具絲狀尾突；3) 雄蟲前足跗節癒合。

本屬已知 5 種，分布於東洋區及古北區東部。

幼生期以殼斗科植物為寄主。

臺灣有 2 種。

Antigius attilia (Bremer, 1861) (折線灰蝶／水色長尾小灰蝶／青灰蝶)

Thecla attilia Bremer, 1861: Bulletin de l'Académie impériale des sciences de St.-Pétersbourg 3: 469. (Type locality: "Bureja-Gebirge, [Far East Russia]")

Ssp. *obsoleta* Takeuchi, 1929

PLATE 7, Figs. 54–55; PLATE 45, Fig. 330; PLATE 78, Fig. 459

Zephyrus attilia obsoleta Takeuchi, 1929: Zephyrus 1 (3): 86. (Type locality: "Musha-Hougou, [Taiwan] ")

Specimens examined:

NANTOU Co.: 3♂, 2♀, Renai, Youshi/ Songgnag, data missing, ex Mokusei Museum Collection; 1♀, Renai, Tunyuan, 1550m, 4. VI. 2006 (C. C. Lu); 1♂, Renai, Tunyuan, 18. V. 2017 (C. W. Huang); 2♂, Renai, Lushan, emgd. 28/29. IV. 1999.

Description. Adult – Forewing length 15–16 mm. Sexual dimorphism absent. Male (PLATE 7, Fig. 54): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, 3rd segment slender, white but dark brown distad. Compound eyes naked. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tibiae and tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with a series of white markings on hindwing distally. Wing undersides ground color white, with brown or dark brown discal

bands, in a line on forewing, strongly bent-over into V-shaped in cell CuA_2 on hindwing. Short, dark brown bars at distal end of discoidal cells on forewing. Submarginal bands consisted of a proximal series of brown markings and a narrow distal brown band, more prominent on forewing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe mostly white. Female (PLATE 7, Fig. 55): Body and general wing patterns similar to those of male, Protarsi not fused.

Male genitalia (PLATE 45, Fig. 330) – Tegumen broad; socii small, wart-like; uncus forming a pair of elongate, lateral processes with pointed distal tip. Vinculum broad, straight. Brachium curved, hook-like, distal end pointed. Saccus short, with anterior end rounded. Valva simple, roughly rectangular, with posterior margin somewhat truncate. Juxta narrow, U-shaped. Phallus with aedeagus slightly longer than phallobases. Aedeagus with opening at right side ventrally. Cornutus as a flat sclerite.

Female genitalia (PLATE 78, Fig. 459) – Corpus bursae elongate, oval. Ductus bursae with anterior end bulbous, membranous, connecting to stout, heavily sclerotized tube. Sterigma with lamella antevaginalis forming a transverse fold with rounded posterior margin; lamella postvaginalis forming a prominent plate with deep, medial concavity. Posterior apophyses longer than anal papillae, slender, slightly enlarged at base, bent in distal half. Anal papillae short, setose.

Global distribution. Far East Russia, Korea, Japan, Myanmar, Northeast, North, West, Central, East China, and Taiwan (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of central Taiwan (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus variabilis* (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg on thick

twigs and trunk (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 15–16 mm。無雌雄二型性。雄蝶 (圖 54)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、第三節細小，白色而末端深褐色。複眼光滑。胸部及腹部背面深褐色、腹面白色。足白色，脛節及跗節具深褐色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略凸出。後翅圓，於 CuA_2 脈末端具絲狀尾突。翅背面底色褐色，後翅外側具一列白色斑紋。翅腹面底色白色，具褐色或深褐色中央帶紋，於前翅者直線狀、後翅者在 CuA_2 室反折呈 V 字形；前翅中室端具深褐色短條；亞外緣帶紋由內側一列褐色斑紋及外側褐色窄帶紋組成，於前翅較為鮮明；後翅臀區及 CuA_1 室各具一鮮明之帶黑色點橙色斑紋。緣毛大致白色。雌蝶 (圖 55)：形態特徵與雄蝶相似，前足跗節不癒合。

雄交尾器 (圖 330)：背兜寬闊，背兜側突小型、疣狀；鉤突為一對修長突起，末端尖。基腹弧寬，甚直。顎形突鉤狀、彎曲，末端尖。囊突短，前端圓鈍。抱器簡單，略呈矩形，後緣稍截平。陽基軛片狹窄，U 字形。陽莖器略長於陽莖基，陽莖器開口於腹側右方。角狀器為一個扁平骨片。

雌交尾器 (圖 459)：交尾囊長橢圓形。交尾囊管前端球形、膜質，連接粗壯、高度骨化之骨管。交尾孔前板橫向摺疊，後緣圓；交尾孔後板形成延伸骨片，中央深凹入。後內骨突細長於肛突，於近末端一半處彎曲，基部略膨大。肛突短，具毛。

世界分布：俄羅斯遠東地區、朝鮮半島、日本、緬甸、華東北、華北、華西、華中、華東及臺灣。

臺灣分布：分布於本島中部中海拔山區。

寄主植物：殼斗科之栓皮櫟。

生物學：本種為一年一世代種，成蝶於初夏活動，以產於粗枝條或樹幹上之卵越冬。

***Antigius jinpingi* Hsu, 2009 (錦平折線灰蝶 / 蘇氏青灰蝶)**

PLATE 8, Figs. 56–57

Antigius jinpingi Hsu, 2009: Zootaxa 1983: 45–53. (Type locality: "TAIWAN: Pingdong Co., Wutai, Wutoushan, 1200 m")

Specimens examined:

PINGDONG Co.: 1♂paratype, Wutai, 8. V. 2005 (G. P. Su) (genitalia preparation YFH1421); 1♂paratype, same locality, 16. V. 2005 (G. P. Su) (genitalia preparation YFH1415); 1♂, Wutai, Wutoushan, 1200m, 8. VI. 2009 (C. H. Lin, Jr).

Description. Adult – Forewing length 14–15 mm. Sexual dimorphism absent. Male (PLATE 8, Fig. 56): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but dark brown distad. Compound eyes naked. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tibiae and tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with a series of obscure white markings on hindwing distally. Wing undersides ground color white, with brown or dark brown discal bands, in a line on forewing, broken into several short narrow bands on hindwing. Short, dark brown bars at distal end of discoidal cells on both wings. Subbasal bands represented as dark brown dots. Submarginal bands consisted of a proximal series of brown dots and a narrow distal brown band, more prominent on forewing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe mostly white. Female (PLATE 8, Fig. 57): Body and general wing patterns similar to those of male, Protarsi not fused.

Male genitalia – Tegumen broad; socii small, wart-like; uncus forming a pair of elongate, lateral processes with pointed distal tip. Vinculum broad, nearly straight. Brachium curved, hook-like, distal end pointed. Saccus short, with anterior end rounded. Valva simple, with dorsal margin slightly concave. Juxta narrow, U-shaped. Phallus with phallobase approximately as long as aedeagus. Aedeagus with opening at right side ventrally. Cornutus as elongate sclerite.

Female genitalia – not examined.

Global distribution. Endemic to Taiwan (Hsu, 2009, 2013).

Distribution in Taiwan. Known only from the type locality in southern Taiwan (Hsu, 2009, 2013).

Larval Host plant(s). Unknown.

Biology. Univoltine, adults on wing in early summer (Hsu, 2009, 2013).

形態特徵：成蝶前翅長 14–15 mm。無雌雄二型性。雄蝶 (圖 56)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而末端深褐色。複眼光滑。胸部及腹部背面深褐色、腹面白色。足白色，脛節及跗節具深褐色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略凸出。後翅圓，於 CuA_2 脈末端具絲狀尾突。翅背面底色褐色，後翅外側具一列模糊白紋。翅腹面底色白色，具褐色或深褐色中央帶紋，於前翅者直線、於後翅者分裂成數條短、窄帶紋；前、後翅中室端均具深褐色短條；亞基部有數只深褐色斑點；亞外緣帶紋由內側一列褐色點及外側褐色窄帶紋組成，於前翅較為鮮明；後翅臀區及 CuA_1 室各具一鮮明之帶黑色點橙色斑紋。緣毛大致白色。雌蝶 (圖 57)：形態特徵與雄蝶相似，前足跗節不癒合。

雄交尾器：背兜寬闊。背兜側突小型、疣狀；鉤突為一對修長突起，末端尖。基腹弧寬，甚直。顎形突鉤狀、彎曲，末端尖銳。囊突短，前端圓。抱器簡單，略呈矩形，背緣略凹入。陽基軛片狹窄，U 字形。陽莖器略與陽莖基等長，陽莖器開口於腹側右方。角狀器為細長骨片。

雌交尾器：未檢視。

世界分布：本種為臺灣特有種。

臺灣分布：目前已知產地僅限於本島南部之模式產地。

寄主植物：尚未知悉。

生物學：本種為一年一世代物種，成蝶於初夏活動。

Genus *WAGIMO* Sibatani & Ito, 1942

Type species: *Thecla signata* Butler, [1882]

Diagnostic characters include the following: 1) ground color of wing undersides brown or dark brown, with white lines; 2) filiform projection present at distal end of CuA_2 of hindwing; 3) protarsus fused in male.

5 species are known from the Oriental and eastern Palearctic regions (Koiwaya, 2014).

Larvae feed on plants in Fagaceae.

1 species is known from Taiwan.

線灰蝶屬

形態特徵如下：1) 翅腹面底色褐色或深褐色，具白色線紋；2) 後翅 CuA_2 脈末端具絲狀尾突；3) 雄蝶前足跗節癒合。

本屬已知 5 種，分布於東洋區及古北區東部。

幼生期以殼斗科植物為寄主。

臺灣有 1 種。

Wagimo insularis Shirôzu, 1957 (臺灣線灰蝶／臺灣華灰蝶／翅底三線小灰蝶)

PLATE 8, Figs. 58–59; PLATE 45, Fig. 331; PLATE 78, Fig. 460

Wagimo slugeri [sic] *insularis* Shirôzu, 1957: Sieboldia 2 (1): 41. (Type locality: Vicinity of Musha, Central Formosa [near Wushe, Taiwan])

Specimens examined:

YILAN Co.: 1♀, Datong, Tuleng, 20. II. 2002, reared from *Quercus stenophylloides*, emgd. 15. IV. 2002, HSU 02B20 (C. C. Lu & C. L. Hung); 2♂, Datong, Siyuanyakou, 1800m, 2. XII. 2005, reared from *Q. stenophylloides*, emgd. 19. IV. 2006, HSU 05M15 (C. C. Lu & H. Y. Li); 1♂, same locality, VII. 2018 (Y. C. Hong) (genitalia preparation JYL674). **HUALIAN Co.:** 1♀, Xiulin, Xinbaiyang, 1600/1700m, 3. VII. 2008 (L. H. Wang); 1♀, Xiulin, Bilu, 2150m, 6. VII. 2015 (J. M. Wu) (genitalia preparation JYL551). **TAIDONG Co.:** 1♂, Haiduan, Liyuan, 18. VI. 2020 (C. W. Huang).

Description. Adult – Forewing length 17–18 mm. Sexual dimorphism absent. Male (PLATE 8, Fig. 58): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but dark brown distad. Compound eyes sparsely hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like, with distal end of M_1 and CuA_1 angled. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with a prominent purple patch on forewing, barely visible or absent on hindwing. A narrow blue band present along termen of hindwing. Wing undersides ground color brown, with broad band of same color as ground color edged by prominent white lines. Similar short band at discoidal cell of forewing. Submarginal bands consisted of two white narrow bands. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown on forewing, outer cilia brown, inner cilia white on hindwing. Female (PLATE 8, Fig. 59): Body and general wing patterns similar to those of male, Protarsi not fused.

Male genitalia (PLATE 45, Fig. 331) – Tegumen broad, with small medial process posteriorly; socii small, wart-like; uncus forming a pair of elongate, lateral processes with pointed distal tip. Vinculum broad, straight. Brachium curved, hook-like, distal end strongly bent. Saccus short, with anterior end rounded. Valva elongate. Broad at base, tapering toward distal end. Juxta V-shaped, with both terminal ends enlarged, flattened. Phallus with phallobase approximately as long as aedeagus. Aedeagus with caudal end enlarged, with oblique opening, trumpet-like.

Female genitalia (PLATE 78, Fig. 460) – Corpus bursae elongate, oval. Ductus bursae with anterior end membranous, connecting to stout, heavily sclerotized tube. Sterigma with lamella antevaginalis forming a transverse fold; lamella postvaginalis forming a prominent plate with deep, medial concavity. Posterior apophyses longer than anal papillae, slender, slightly enlarged at base, curved at distal end. Anal papillae short, setose.

Global distribution. West China and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations of montane zone (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus stenophylloides* (Uchida, 1999; Koiwaya, 2007; Hsu, 2013). *Q. salicina* is also listed as a hostplant by Uchida (1999), but according to Yang *et al*. (1997), this plant grows only in a small area at low elevation habitat in northern Taiwan, well outside of the distribution of *W. insularis*, thus the record is probably a mis-identification of *Q. stenophylloides*.

Biology. Univoltine, adults on wing in summer; overwintering as egg at dormant buds of the hostplant (Uchida, 1999; Hsu, 2013).

Remarks. This taxon was often regarded as a subspecies: of *W. sulgeri* (Oberthür, 1908) (e.g., Shirôzu, 1960; Hamano, 1987; Fujioka, 1994), but Koiwaya (1999) pointed out that *W. insularis* ought to be a species distinct from *W. sulgeri* based on evidence on both genitalia and immature morphology.

形態特徵：成蝶前翅長 14–15 mm。無雌雄二型性。雄蝶 (圖 58)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而末端深褐色。複眼疏被毛。胸部及腹部背面深褐色、腹面白色。足白色，跗節具深褐色帶紋，前足跗節癒合，末端向下彎曲、尖銳。前翅三角形，外緣略凸出。後翅葉狀，M_1 及 CuA_1 脈末端角狀，CuA_2 末端具絲狀尾突。翅背面底色褐色，前翅具一鮮明藍色斑塊，後翅則藍紋小或無；後翅沿外緣具一藍色窄線。

翅腹面底色褐色，具白邊鮮明、與底色同色之寬帶紋；前翅中室具相似之短帶；亞外緣帶紋由兩道白色窄帶紋組成；後翅臀區及 CuA_1 室各具一帶鮮明黑色點之橙色斑紋。緣毛於前翅褐色，於後翅外側毛褐色、內側毛白色。雌蝶 (圖 59)：形態特徵與雄蝶相似，前足跗節不癒合。

雄交尾器 (圖 331)：背兜寬闊，末端中央有小突起；背兜側突小型、疣狀；鉤突呈一對修長突起，末端尖銳。基腹弧寬，甚直。顎形突彎曲、鉤狀，末端明顯彎曲。囊突子彈形，前端圓鈍。抱器修長，基部寬闊，向後漸窄。陽基軛片 V 字形，兩端膨大。陽莖之陽莖基與陽莖器長度約等長。陽莖器末端擴大，開口斜切，喇叭狀。

雌交尾器 (圖 460)：交尾囊長橢圓形。交尾囊管前端膜質，連接粗壯骨管。交尾孔前板形成橫向摺疊；交尾孔後板明顯骨化，中間具深凹。後內骨突細長，長於肛突，基部略膨大，末端彎曲。肛突短，具毛。

世界分布：華西及臺灣。

臺灣分布：分布於本島中海拔以上之山區。

寄主植物：殼斗科之狹葉櫟。Uchida(1999) 亦將狹葉高山櫟列為寄主植物，但根據 Yang *et al*. (1997) 之報告，該植物僅分布於北臺灣低海拔小範圍棲地，與臺灣線灰蝶已知棲地相距甚遠，因此該紀錄可能為狹葉櫟之錯誤鑑定。

生物學：本種為一年一世代種，成蟲於夏天活動，越冬卵產於寄主植物休眠芽邊。

註記：本種常被視為華西華灰蝶 *W. sulgeri* (Oberthür, 1908) 之亞種，但 Koiwaya (1999) 指出根據交尾器及幼生期形態，兩者應為不同種。

Genus *LEUCANTIGIUS* Shirôzu & Murayama, 1951

Type species: *Thecla atayalica* Shirôzu & Murayama, 1943

Diagnostic characters include the following: 1) ground color of wing undersides white, with dark brown and narrow brown bands; 2) sexual dimorphism absent or poorly developed; 3) filiform projection present at distal end of CuA_2 of hindwing; 4) protarsus

fused in male.

1 species is known from the Oriental region (Koiwaya, 2007).

Larva feeds on plants in Fagaceae.

The sole representative species occurs in Taiwan.

瓏灰蝶屬

形態特徵如下：1) 翅腹面底色白色，上有深褐色和褐色窄帶紋；2) 雌雄二型性缺乏或不顯著；3) 後翅 CuA_2 脈末端具絲狀尾突；4) 雄蝶前足跗節癒合。

本屬已知 1 種，分布於東洋區。

幼生期以殼斗科植物為寄主。

本屬唯一種類臺灣有分布。

***Leucantigius atayalicus* (Shirôzu & Murayama, 1943) (瓏灰蝶/姬白小灰蝶/璐灰蝶)**

PLATE 8, Figs. 60–61; PLATE 46, Fig. 332; PLATE 79, Fig. 461

Thecla atayalica Shirôzu & Murayama, 1943: The Entomological World 11 (107): 2, Figs. 1–2. (Type locality: "Sankakuhon, Taichu, Formosa [Sanjiaofeng, Nantou, Taiwan]")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Xuanyuan, 900m, 4. V. 1997 (Y. F. Hsu); 1♂, Fuxing, Sule, 700m, 28. IV. 1997 (Y. F. Hsu); 1♀, Fuxing, Northern Cross-Island Road, 47K, 16. V. 2015 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL509). **HUALIAN Co.:** 4♂, 1♀, Xiulin, Huoranting, 28. V. 1989 (D. X. Li); 1♂, 3♀, same locality, ca 900m, 3. IV. 2009, reared from *Quercus glauca*, emgd. 17/26. IV. 2009, HSU 09D6 (C. K. Wang). **PINGDONG Co.:** 1♂, 2♀, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (Y. F. Hsu); 1♂, Wutai, Ali, 1200m, 4. IV. 2011, reared from *Q. glauca*, emgd. 19. IV. 2011, HSU 11D3 (Y. F. Hsu).

Description. Adult – Forewing length 12–18 mm. Sexual dimorphism absent or poorly developed. Male (PLATE 8, Fig. 60): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, 3rd segment slender, white but dark brown distad. Compound eyes sparsely hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tibiae and tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing triangular. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with narrow white line along termen of hindwing. Wing undersides ground color white, with double narrow brown discal bands, in a line on forewing, strongly bent-over into V-shaped in cell CuA_2 on hindwing. Short, dark double brown bars at distal end of discoidal cells on forewing. Submarginal bands consisted of a series of proximal lunules and a series of distal gray dots on both wings. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe mostly white. Female (PLATE 8, Fig. 61): Body and wing patterns of wing undersides similar to those of male, wing upperside ground color slightly paler, and white lunules sometimes present along termen of hindwing uppersides, Protarsi not fused.

Male genitalia (PLATE 46, Fig. 332) – Tegumen broad; socii small, wart-like; uncus forming a pair of lateral, horn-like processes. Vinculum narrow dorsally. Brachium enlarged basally, curved, with distal end blunt. Saccus short, with anterior end rounded. Valva simple, produced dorsally at distal end, with pointed caudal tip. Juxta broad, with mesal invagination dorsally. Phallus cylindrical, straight, with phallobase approximately as long as aedeagus. Aedeagus with caudal end truncate.

Female genitalia (PLATE 79, Fig. 461) – Corpus bursae oval, granulate. Signa as a pair of invaginated sclerotized cones on opposite walls of corpus bursae. Ductus bursae with anterior end funnel-like, membranous, connecting to heavily sclerotized tube. Sterigma with lamella antevaginalis forming a transverse sclerotized band with medial concavity; lamella postvaginalis forming a membranous dome. Posterior apophyses shorter than anal papillae, slender, bent, slightly enlarged at base. Anal papillae large, ellipsoid, setose.

Global distribution. Central and East China, Hainan, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations of montane zone (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus glauca* and *Q. longinux* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg on twigs of the hostplant (Uchida, 1999; Hsu, 2013), occasionally near dormant buds (Lu & Chen, 2014).

形態特徵：成蝶前翅長 12–18 mm。雌雄二型性缺乏或微弱。雄蝶 (圖 60)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、第三節細小，白色而末端深褐色。複眼疏被毛。胸部及腹部背面深褐色、腹面白色。足白色，脛節及跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅三角形，於 CuA_2 脈末端具絲狀尾突。翅背面底色褐色，後翅外緣有白色窄線紋。翅腹面底色白色，有兩道褐色窄中央帶紋，於前翅者直線、於後翅者在 CuA_2 室反折成 V 字形；前翅中室末端有兩道深褐色短條；亞外緣帶紋由一列內側弦月紋及一列外側灰點組成。後翅臀區及 CuA_1 室各具一鮮明之帶黑色點橙色斑紋。緣毛大致呈白色。雌蝶 (圖 61)：形態特徵與雄蝶相似，翅背面底色較淺、後翅背面外緣有時具白色弦月紋，前足跗節不癒合。

雄交尾器 (圖 332)：背兜寬闊；背兜側突小型、疣狀；鉤突為一對角狀突起。基腹弧背側狹窄。顎形突基部膨大、彎曲，末端鈍。囊突短，前端圓。抱器簡單，後端背側隆起，尾端突出。陽基軛片寬，中央凹陷。陽莖器圓柱狀，甚直，陽莖基與陽莖器約略等長，陽莖器末端截狀。

雌交尾器 (圖 461)：交尾囊橢圓形，表面有顆粒狀刻紋。花壁一對，位於交尾囊相對位置，為內陷錐狀小骨。交尾囊管前端膜質、漏斗狀，連接高度骨化的骨管。交尾孔前板為橫向帶狀骨片，中央內凹；交尾孔後板為薄膜狀圓頂。後內骨突短於肛突、甚細、彎曲，基部略膨大。肛突大型、橢圓、具毛。

世界分布：華中至華東、海南島、臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之青剛櫟及錐果櫟。

生物學：本種為一年一世代種，成蝶於初夏活動，越冬卵主要產於寄主植物枝條，有時亦產於休眠芽旁。

Genus *RAVENNA* Shirôzu & Yamamoto, 1956

Type species: *Zephyrus niveus* Nire, 1920

Diagnostic characters include the following: 1) ground color of wing undersides white, with dark brown and narrow brown bands; 2) sexual dimorphism prominent, with wing uppersides mostly purple in male, white in female; 3) filiform projection present at distal end of CuA_2 of hindwing; 4) protarsus fused in male.

1 species is known from the Oriental region (Koiwaya, 2007).

Larvae feed on plants in Fagaceae.

The sole representative species occurs in Taiwan.

朗灰蝶屬

形態特徵如下：1) 翅腹面底色白色，並有深褐色和褐色窄帶紋；2) 雌雄二型性顯著，翅背面底色於雄蝶紫色，雌蝶白色；3) 後翅 CuA_2 脈末端具絲狀尾突；4) 雄蝶前足跗節癒合。

本屬已知 1 種，分布於東洋區。

幼生期以殼斗科植物為寄主。

本屬代表種臺灣有分布。

***Ravenna nivea* (Nire, 1920) (朗灰蝶／白小灰蝶／冷灰蝶)**

PLATE 8, Figs. 62–63; PLATE 46, Fig. 333; PLATE 79, Fig. 462

Zephyrus niveus Nire, 1920: Zoological Magazine, Tokyo 32 (386): 375. (Type locality: "Horisha, Formosa [Puli, Nantou, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, 4♀, Wulai, Lalashan, 21. XII. 1996, reared from *Quercus sessilifolia*, emgd. 14/16. IV. 1997, HSU 96M10 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Beichatianshan, 1700/1727m, 6. VI. 1996 (C. S. Huang); 3♂, 1♀, same locality, 16. III. 1997, reared from *Q. sessilifolia*, emgd. 10/16. IV. 1997, HSU 97C16 (C. C. Lu &. Y. Hung); 1♀, Fuxing, Daman, 31. V. 2002 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Heping, Malunshan, 23. II. 2018, reared from *Q. glauca*, emgd. 13. IV. 2018, HSU 18B6 (H. Y. Lin) (genitalia preparation JYL655). **NANTOU Co.:** 1♂, 1♀, Renai, Guandaoshan, emgd. 5. V. 1989 (D. X. Lee); 1♀, Yuchi, Lianhuachi, ca 650m, 2. IV. 2005, reared from *Q. pachyloma*, emgd. 25. IV. 2005, HSU 05D4 (L. H. Wang); 1♀, Renai, Nanshanxi, reared from *Q. glauca*, emgd. 24. V. 2000 (C. Y. Hung) (genitalia preparation JYL584). **PINGDONG Co.:** 1♂, Wutai, Yichangshan, 1300m, 23. III. 2010 (L. H. Wang, C. L. Huang & N. Y. Tsai).

Description. Adult – Forewing length 19–23 mm. Sexual dimorphism prominent. Male (PLATE 8, Fig. 62): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, 3rd segment slender, white but dark brown distad. Compound eyes sparsely hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tibiae and tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing triangular. Filiform projections at distal ends of CuA_2. Wing uppersides ground color purple, with very narrow black margin near apex of forewing, white scalings forming a few stripes on both wings, a narrow white

line along termen of hindwing. Wing undersides ground color white, with double narrow brown discal bands, in a line on forewing, strongly bent-over into V-shaped in cell CuA_2 on hindwing. Short, dark double brown bars at distal end of discoidal cells on forewing. Submarginal bands consisted of two narrow brown bands on both wings. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe mostly white. Female (PLATE 8, Fig. 63): Body and wing patterns of wing undersides similar to those of male, wing upperside white with brown markings, Protarsi not fused.

Male genitalia (PLATE 46, Fig. 333) – Tegumen broad; socii prominent, conical; uncus forming a pair of elongate, lateral processes with pointed distal tip, slightly down-curved. Vinculum narrow. Brachium up-curved, ox horn-like, distal end pointed. Saccus longer than length of tegumen, with anterior end rounded. Valva elongate, narrowed posteriorly with distal end rounded, small teeth present along inner margin. Juxta broad ventrally, with two arms extending dorsad, forming opposite pointed tips. Phallus with phallobase approximately as long as aedeagus. Aedeagus with dorsal opening at distal end.

Female genitalia (PLATE 79, Fig. 462) – Corpus bursae oval, narrowed posteriorly. Ductus bursae short, thick, sclerotized, enlarged posteriorly, trumpet-like around ostium bursae. Sterigma with lamella antevaginalis forming a pair of sclerotized patches; lamella postvaginalis as broad sclerotized wall, following with additional small, detached transverse sclerite posteriorly. Posterior apophyses very slender, much longer than anal papillae, enlarged and flattened at base. Anal papillae as weakly sclerotized band, setose.

Global distribution. Vietnam, West to East China, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 1999a, 2013; Uchida, 1999; Lu & Chen, 2014).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. longinux*, *Q. sessilifolia*, *Q. pachyloma*, etc. (Hsu, 1999a, 2013; Uchida, 1999; Lu & Chen, 2014)

Biology. Univoltine, adults on wing in early summer; overwintering as egg at dormant buds of the hostplant (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 19–23 mm。雌雄二型性顯著。雄蝶 (圖 62)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、第三節細小，白色而末端深褐色。複眼疏被毛。胸部及腹部背面深褐色、腹面白色。足白色，脛節及跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅三角形，於 CuA_2 脈末端具絲狀尾突。翅背面底色紫色，前翅近翅頂處有窄黑緣；前、後翅均有白色鱗形成之條紋、後翅外緣有白色窄線紋。翅腹面底色白色，有兩道褐色中央帶紋，於前翅者直線狀、後翅者於 CuA_2 室反折成 V 字形；前翅中室末端有兩道深褐色短條；亞外緣帶紋由兩道褐色窄帶紋組成；後翅臀區及 CuA_1 室各具一鮮明之帶黑色點橙色斑紋。緣毛大致呈白色。雌蝶 (圖 63)：形態特徵與雄蝶相似，翅背面底色白色，上綴褐色斑紋，前足跗節不癒合。

雄交尾器 (圖 333)：背兜寬闊；背兜側突為圓錐狀突起；鉤突為一對細長突起，末端尖，略下彎。基腹弧狹窄。顎形突向上彎曲、牛角狀，末端尖銳。囊突長於背兜，前端圓。抱器修長，向後漸窄，末緣圓，內緣具小齒。陽基軛片腹側寬、臂狀，向背側延伸至相對位置，末端尖銳。陽莖基與陽莖器約略等長。陽莖器開口於末端背側。

雌交尾器 (圖 462)：交尾囊卵形，末端窄。交尾囊管粗短、骨化，末端膨大，交尾孔周圍呈喇叭狀。交尾孔前板形成一對片狀骨板；後交尾孔板形成寬闊骨化板，末端具一塊橫向分離骨片。後內骨突纖細，基部寬扁，遠較肛突長。肛突輕度骨化，具毛。

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、錐果櫟、毽子櫟、捲斗櫟等。

生物學：本種為一年一世代物種，成蝶於初夏活動，越冬卵產於寄主植物休眠芽附近。

Genus *IRATSUME* Sibatani & Ito, 1942

Type species: ***Thecla orsedice*** **Butler, [1882]**

Diagnostic characters include the following: 1) ground color of wing undersides brown, with white discal line and a series of black submarginal dots; 2) filiform projection present at distal end of CuA_2 of hindwing; 3) protarsus fused in male.

1 species is known from the Oriental and eastern Palearctic regions (Koiwaya, 2007).

Larvae feed on plants in Hamamelidaceae.

The sole representative species occurs in Taiwan.

珠灰蝶屬

形態特徵如下：1) 翅腹面底色褐色，中央有一白線紋及一列亞外緣黑點；2) 後翅 CuA_2 脈末端具絲狀尾突；3) 雄蝶前足跗節癒合。

本屬已知 1 種，分布於東洋區及古北區東部。

幼生期以金縷梅科植物為寄主。

本屬唯一代表種臺灣有分布。

Iratsume orsedice (Butler, [1882]) (珠灰蝶／黑底小灰蝶／黑背小灰蝶)

Thecla orsedice Butler, [1882]: Proceedings of the Zoological Society of London 1881: 852. (Type locality: Iwashiro, [Japan])

Ssp. *suzukii* Sonan, 1940

PLATE 9, Figs. 64–65; PLATE 46, Fig. 334; PLATE 79, Fig. 463

Zephyrus orsedice suzukii Sonan, 1940: Transactions of the Natural History Society of Formosa 30 (200/201): 159. (Type locality: “Rarasan (Taihoku Shu, Bunsan Gun), Formosa [Lalashan, Taoy-

uan, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Lalashan, 1500m, 9. VI. 2000 (C. Y. Hung). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 3. VII. 1989; 1♀, same locality, 4. VII. 1989 (Y. F. Hsu); 2♂, same locality, 17/18. V. 1997, reared from *Sycopsis sinensis*, emgd. 1/12. VI. 1997, HSU 97E34 (Y. F. Hsu); 1♂, 1♀, same locality, 9. VII. 2018 (C. W. Huang) (genitalia preparation JYL454, 455); 1♀, same locality, ca 2200m, 8. III. 2006, reared from *S. sinensis*, emgd. 6. IV. 2006, HSU 06C30 (C. C. Lu); 1♂, Xiulin, W. Peak Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai).

Description. Adult – Forewing length 16–19 mm. Sexual dimorphism present. Male (PLATE 8, Fig. 64): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tibiae and tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Filiform projections at distal ends of CuA_2. Wing uppersides ground color mostly glossy white, with a dark brown margin along termen of forewing. A narrow white band present along termen of hindwing. Wing undersides ground color brown, with white discal line. Submarginal bands consisted of a series of black spots encircled with white; a blurred gray band present along termen of hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown on forewing, outer cilia brown, inner cilia white on hindwing. Female (PLATE 8, Fig. 65): Body and general wing patterns similar to those of male, but white markings on wing uppersides not glossy and less extensive, with prominent apical brown area on forewing, Protarsi not fused.

Male genitalia (PLATE 46, Fig. 334) – Tegumen broad, short; socii digitate. Vinculum straight. Brachium enlarged at base, curved, hook-like, distal end pointed. Saccus short, with anterior end rounded. Valva broad, ovate basally, forming elongate distal process with beak-like tip. Juxta cuneiform, with dorsal extentions pointed distad. Phallus with phallobase approximately as long as aedeagus. Aedeagus sharpened distad, with dorsal

opening.

Female genitalia (PLATE 79, Fig. 463) – Corpus bursae oval. Signa as a pair of small, invaginated sclerotized processes on opposite walls of corpus bursae. Ductus bursae membranous, thick, short. Sterigma with lamella antevaginalis as weakly sclerotized transverse fold, lamella postvaginalis forming a prominent sclerotized wall. Posterior apophyses longer than anal papillae, straight, enlarged and flattened at base, distal end clavate. Anal papillae lobe-like, setose.

Global distribution. Japan, Central China, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of central and northern Taiwan (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Hamamelidaceae: *Sycopsis sinensis* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg on small twigs of the hostplant (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 16–19 mm。具雌雄二型性。雄蝶 (圖 64)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色。足白色，脛節及跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅圓，於 CuA_2 脈末端具絲狀尾突。翅背面底色具光澤白色，前翅外緣有深褐色緣、後翅外緣具白色細帶紋。翅腹面底色褐色，具白色中央線紋；亞外緣帶紋由一列白色環繞之黑色斑點組成；後翅外緣具一模糊之灰色帶紋；後翅臀區及 CuA_1 室各具一鮮明之帶黑色點橙色斑紋。前翅緣毛褐色，後翅外側毛褐色、內側毛白色。雌蝶 (圖 65)：形態特徵與雄蝶相似，但翅背面白色紋不具光澤且範圍較窄、前翅翅頂處具鮮明之褐色部分，前足跗節不癒合。

雄交尾器 (圖 334)：背兜寬短；背兜側突呈指狀。基腹弧頗直。顎形突基部膨大，

彎曲成鉤狀，末端尖銳。囊突短，前端圓。抱器寬闊，基部卵形，向後形成長突起，末端喙狀。陽基軛片楔形，背側末端尖。陽莖基與陽莖器約略等長。陽莖器末端削尖，開口於背側。

雌交尾器 (圖 463)：交尾囊卵形。花壁一對，位於交尾囊相對位置，形成內陷小骨。交尾囊管粗短、膜質。交尾孔前板為橫向摺；交尾孔後板為明顯骨化壁。後內骨突長於較肛長，甚直，基部膨大、扁平，末端棒狀。肛突瓣狀，具毛。

世界分布：日本、華中及臺灣。

臺灣分布：分布於本島中、北部中海拔山區。

寄主植物：金縷梅科之水絲梨。

生物學：本種為一年一世代物種，成蝶於夏天活動，越冬卵產於寄主植物細枝條下側。

Genus *EUASPA* Moore, 1884

Type species: *Myrina milionia* Hewitson, [1869]

Diagnostic characters include the following: 1) ground color of wing undersides brown, with white discal bands; 2) blue or purple markings on wing upperside; 3) sexual dimorphism absent; 4) filiform projection present at distal end of CuA_2 of hindwing; 5) protarsus fused in male.

Approximately 13 species are known from the Oriental region (Koiwaya, 2007; Hsu, 2013).

Larvae feed on plants in Fagaceae.

3 species are known from Taiwan.

錟灰蝶屬

形態特徵如下：1) 翅腹面底色褐色，具白色中央帶紋；2) 翅背面具藍色或紫色斑紋；3) 缺乏雌雄二型性；4) 後翅 CuA_2 脈末端具絲狀尾突；5) 雄蝶前足跗節癒合。

本屬已知約 13 種，分布於東洋區。

臺灣有 3 種。

Euaspa milionia (Hewitson, [1869]) (錟灰蝶／單帶小灰蝶／軛灰蝶)

Myrina milionia Hewitson, [1869]: Illustrations of diurnal Lepidoptera, Lycænidæ, supplement: 5, pl. 3, f. 79–80. (Type locality: "Simla [= Shimla, India]")

Ssp. *formosana* Nomura, 1931

PLATE 9, Figs. 66–67; PLATE 46, Fig. 335; PLATE 79, Fig. 464

Euaspa milionia formosana Nomura, 1931: Zephyrus 3 (1): 58. (Type locality: "near Shikikun, Rato Gun, Taihoku Shu, Formosa [Siji, Yilan, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 1700/1727m, 3/4. VI. 2000 (C. C. Lu); 1♂, same locality, 1500/1700m, 25/27. V. 2001 (Y. T. Lo). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Northern Cross-Island Road, 23. VI. 2006 (genitalia preparation JYL673); 3♂, 1♀, Fuxing, Lalashan, 1500m, 24. VI. 1987 (Y. F. Hsu) (genitalia preparation YFH0748); 1♀, same locality, 6. VI. 2006 (L. H. Wang); 1♂, same locality, 6. VIII. 1995 (H. Y. Lee); 1♀, same locality, VI. 2019 (Y. C. Hong) (genitalia preparation JYL672). **XINZHU Co.:** 1♀, Jianshi, Zhenxibao, 1600m, 3. VI. 2003 (L. H. Wang); 1♂, same locality, 1500m, 5. V. 2004 (L. H. Wang). **NANTOU Co.:** 1♂, Renai, Songgang, 31. V. 2000 (C. Y. Hung). **HUALIAN Co.:** 1♂, 1♀, Xiulin, Bilu, 4. VII. 2016 (L. H. Wang); 1♀, same locality, 2. VII. 2018 (L. H. Wang); 1♀, same locality, 9. VII. 2018 (C. W. Huang).

Description. Adult – Forewing length 13–16 mm. Sexual dimorphism absent. Male (PLATE 9, Fig. 66): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax

and abdomen dark brown dorsally, white ventrally. Legs white, with tibiae and tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with proximal half of forewing and most area of hindwing overlaid by blue scalings tinged with purple; a white patch present on forewing. A narrow white band present along termen of hindwing. Wing undersides ground color brown, with prominent, thick white discal band on both wings. Submarginal bands as a white band consisted of a series of small circles. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe mostly white. Female (PLATE 9, Fig. 67): Body and general wing patterns similar to those of male, Protarsi not fused.

Male genitalia (PLATE 46, Fig. 335) – Tegumen broad, short; uncus as elongate process, tapering distad with caudal end clavate; socii small, digitate. Vinculum slightly curved. Brachium elongate with distal end strongly curved. Saccus short, triangular. Valva broad at base; ampulla as a process with narrow base and enlarged, club-like distal end; sacculus triangular. Juxta narrow, U-shaped. Phallus slightly curved upwards, with phallobase approximately as long as aedeagus. Aedeagus with deep dorsal notch distally, opening dorsad.

Female genitalia (PLATE 79, Fig. 464) – Corpus bursae oval. Signa as a pair of invaginated fin-like sclerites on opposite walls of corpus bursae. Ductus bursae mostly membranous, connecting to heavily sclerotized ring. Sterigma forming a pair sclerotized plate with elongate posterior processes, associated with broad, dorsal, sclerotized wall with truncate caudal end. Posterior apophyses long and slender, longer than anal papillae, straight, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Himalayas, Myanmar, Laos, South China, Hainan, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone (Uchida, 1999; Hsu,

2013).

Larval Host plant(s). Fagaceae: *Quercus longinux* and *Q. sessilifolia* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg on small twigs of the hostplant (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 13–16 mm。無雌雄二型性。雄蝶 (圖 66)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色。足白色，脛節及跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅圓，於 CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，於前翅內半部及後翅大部分區域覆具紫色調之藍色鱗、前翅有白斑、後翅外緣有白色細線紋。翅腹面底色褐色，中央有鮮明白色寬帶紋；亞外緣帶紋為小白圈組成帶紋；後翅臀區及 CuA_1 室各有一鮮明黑色斑點及橙色斑紋。緣毛大致呈白色。雌蝶 (圖 67)：形態特徵與雄蝶相似，前足跗節不癒合。

雄交尾器 (圖 335)：背兜寬闊、甚短；背兜側突小型、指狀；鉤突為一長突起，向後漸細，末端錘狀。基腹弧略彎曲。顎形突修長，末端強彎曲。囊突短、三角形。抱器基部寬大；抱器內突基部狹窄、末端呈棒狀膨大；抱器腹三角狀。陽基軛片細，U 字形。陽莖上彎，陽莖基約略與陽莖器等長。陽莖器末端背側具深凹，開口於背側。

雌交尾器 (圖 464)：交尾囊卵形。花壁一對，位於交尾囊相對位置，形成內陷鰭狀骨。交尾囊管膜質，後端有強骨化環。交尾孔板骨化、寬闊、板狀，具一對細長、向後延伸之骨化突起。後內骨突細長，長於肛突，甚直，基部扁平膨大呈帶狀，末端彎曲。肛突瓣狀，具毛。

世界分布：喜瑪拉雅地區、緬甸、寮國、華南、海南島及臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之錐果櫟及毽子櫟。

生物學：本種為一年一世代物種，成蝶於夏天活動，越冬卵產於寄主植物細枝條上。

***Euaspa forsteri* (Esaki & Shirôzu, 1943) (** 伏氏鋩灰蝶／伏氏綠小灰蝶／文山綠小灰蝶／紫軛灰蝶 **)**

PLATE 9, Figs. 68–69; PLATE 47, Fig. 336; PLATE 80, Fig. 465

Thecla forsteri Esaki & Shirôzu, 1943: Zephyrus 9 (3): 151. (Type locality: Rarasan, Taihoku Shu, Formosa [Lalashan, Taoyuan, Taiwan])

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, Lalashan/ Kuaishan, 24. VII. 1987 (Y. F. Hsu); 1♀, Wulai, Kuaishan, 24. VI. 1987 (Y. F. Hsu); 1♂, same locality, 9. VII. 1997 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sileng, 2. II. 2001, reared from *Castanopsis carlesii* [= *Castanopsis cuspidata* var. *carlesii*], emgd. 19. V. 2001, HSU 01B1 (Y. T. Lo & L. W. Wu); 1♂, 3♀, Fuxing, Sileng, 1200m, 22. II. 2005, reared from *C. carlesii* [= *C. cuspidata* var. *carlesii*], emgd. 4/20. IV. 2005, HSU 05B25 (L. H. Wang & C. L. Huang) (genitalia preparation JYL596, 697); 1♂, Fuxing, Lalashan, 6. VIII. 1985 (H. Y. Li) (genitalia preparation YFH1281).

Description. Adult – Forewing length 16–20 mm. Sexual dimorphism absent. Male (PLATE 9, Fig. 68): Head hairy, brown, with a narrow white medial line on frons, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded, angled at distal end of Rs. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with a blue patch tinged with purple on forewing proximally; two orange spots usually present on forewing, one distal to discoidal cell, other in cell M_3. A narrow blue band present along termen of hindwing. Wing undersides ground color brown, with white distal band on both wings, edged by prominent white line on forewing. Dark brown spots present in Cu cells of forewing. A prominent, white band on hindwing, edged by uneven white line proximally, serrate margin distally. A prominent subbasal line present on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe partially white, partially brown.

Female (PLATE 9, Fig. 69): Body and general wing patterns similar to those of male, Protarsi not fused.

Male genitalia (PLATE 47, Fig. 336) – Tegumen broad, short; uncus as elongate process, tapering to blunt distal end; socii small, digitate. Vinculum slightly curved. Brachium as short bar with ax-like distal end. Saccus vestigial. Valva ovate basally; ampulla as elongate arm with clavate distal end; harpe angulate; costal triangular with a spine. Juxta narrow, U-shaped. Phallus with phallobase approximately as long as aedeagus. Phallobase narrow; aedeagus thick, with angled distal end, opening dorsad.

Female genitalia (PLATE 80, Fig. 465) – Corpus bursae oval. Signa as a pair of invaginated sclerites on opposite walls of corpus bursae, asymmetrical, with one papilliform, one nail-like. Ductus bursae membranous anteriorly, attenuate posteriorly, connecting to heavily sclerotized funnel. Sterigma forming sclerotized skirt with a pair of digitate posterior processes, associated with broad, dorsal, sclerotized wall. Posterior apophyses very long and slender, longer than anal papillae, straight, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Laos, Southern China, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Mainly in montane zone of northern Taiwan (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Castanopsis cuspidata* var. *carlesii* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg at dormant buds on twigs of the hostplant (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 16–20 mm。無雌雄二型性。雄蝶 (圖 68)：頭被毛、褐色，

額中央具白色窄線紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅圓，Rs 末端角狀，CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，前翅內側有帶紫色調之藍色斑；前翅通常具兩橙色斑點，分別位於中室末端外側及 M_3 室；後翅外緣有藍色細線紋。翅腹面底色褐色，外側白色帶紋，前翅者有鮮明白邊；前翅 Cu 室內有黑色斑點；後翅有鮮明白色帶紋，內側具顏色不均勻之白邊、外側邊緣鋸齒；亞基部有白色線紋；後翅臀區及 CuA_1 室各有一黑色斑點及橙色紋。緣毛白、褐相混。雌蝶 (圖 69)：形態特徵與雄蝶相似，前足跗節不癒合。

雄交尾器 (圖 336)：背兜寬短；背兜側突小型、指狀；鉤突為長突起，向後漸細，末端鈍。基腹弧略彎曲。顎形突短棒形，末端斧狀。囊突退化。抱器基部卵形；抱器內突為末端棒狀之長臂；抱握鋏角狀；抱器背三角形，後端棘刺狀。陽基軛片狹窄，U 字形。陽莖基與陽莖器約略等長。陽莖基細、陽莖器粗，末端開口斜切於背側。

雌交尾器 (圖 465)：交尾囊卵形。花壁一對，位於交尾囊相對位置，為不對稱內陷小骨，一邊呈乳頭狀，另一邊則為指甲狀。交尾囊管前端膜質，向後漸細，末端高度骨化、漏斗狀。交尾孔板形成裙狀骨，並有一對向後之骨化指狀突起。後內骨突細長，長於肛突，甚直，基部扁平、膨大，末端彎曲。肛突瓣狀、具毛。

世界分布：寮國、華南及臺灣。

臺灣分布：主要分布於本島北部山區。

寄主植物：殼斗科之長尾栲。

生物學：本種為一年一世代物種，成蝶於夏天活動，越冬卵產於寄主植物細枝上之休眠芽旁。

***Euaspa tayal* (Esaki & Shirôzu, 1943) (泰雅銼灰蝶／泰雅綠小灰蝶／泰雅軛灰蝶)**

PLATE 9, Figs. 70–71; PLATE 47, Fig. 337; PLATE 80, Fig. 466

Thecla tayal Esaki & Shirôzu, 1943: Zephyrus 9 (3): 154. (Type locality: Urai-Ayu, Taihoku Shu, Formosa [Wulai-Ayu, Xinbei, Taiwan])

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, Mogushan, 3. VII. 1980 (H. L. Huang) (genitalia preparation JYL686); 1♂, same locality, 1. VII. 1981 (H. L. Huang); 1♂, same locality, 7. VII. 1982 (H. L. Huang).

Description. Adult – Forewing length 17–19 mm. Sexual dimorphism absent or poorly developed. Male (PLATE 9, Fig. 70): Head hairy, brown, with a narrow white medial line on frons, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded, angled at distal end of Rs. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with a blue patch tinged with purple on forewing proximally. A narrow blue band present along termen of hindwing. Wing undersides ground color brown, with white distal band on both wings, edged by prominent white line on forewing. Dark brown spots present in Cu cells of forewing. An obscure white band on hindwing, edged by straight white line proximally, serrate margin distally. An obscure subbasal line present on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe partially white, partially brown. Female (PLATE 9, Fig. 71): Body and general wing patterns similar to those of male, Protarsi not fused, two orange spots present on forewing.

Male genitalia (PLATE 47, Fig. 337) – Tegumen broad, short; uncus as elongate process, tapering to blunt distal end; socii small, digitate. Vinculum slightly curved. Brachium elongate with distal end bent, “L”-shaped. Saccus vestigial. Valva ovate basally; ampulla as elongate arm with truncate distal end; harpe angulate; costal triangular with a spine. Juxta narrow, U-shaped. Phallus with aedeagus longer than phallobase. Phallobase narrow; aedeagus thick, with angled distal end, opening dorsad.

Female genitalia (PLATE 80, Fig. 466) – Corpus bursae oval. Signa as a pair of invaginated, papilliform sclerites on opposite walls of corpus bursae. Ductus bursae membranous anteriorly, attenuate posteriorly, connecting to heavily sclerotized tube. Sterigma forming sclerotized skirt with a pair of digitate posterior processes, associated with broad, dorsal, sclerotized wall. Posterior apophyses very long and slender, longer than anal papillae, straight, enlarged and flattened at base into sclerotized band. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Low elevations in montane areas of northern Taiwan (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Castanopsis uraiana* (Su & Chang, 2016).

Biology. Univoltine, adults on wing in summer; overwintering as egg at dormant buds on twigs of the hostplant (Su & Chang, 2016).

形態特徵：成蝶前翅長 17–19 mm。雌雄二型性缺乏或微弱。雄蝶 (圖 70)：頭被毛、褐色，額中央具白色窄線紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅圓，Rs 末端角狀，CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，前翅內側有帶紫色調之藍色斑塊；後翅外緣具藍色細線紋。翅腹面底色褐色，外側有白色帶紋，前翅者有鮮明白邊；前翅 Cu 室內有深褐色斑點；後翅具模糊白色帶紋，內側有線狀白邊、外側邊緣鋸齒；亞基部有模糊白色線紋；後翅臀區及 CuA_1 室各具一黑色斑點及橙色斑紋。緣毛白褐相混。雌蝶 (圖 71)：形態特徵與雄蝶相似，前足跗節不癒合、前翅有二只橙色斑點。

雄交尾器 (圖 337)：背兜寬短；背兜側突小型、指狀；鉤突為長突起，向後漸細，末端鈍。基腹弧略彎曲。顎形突修長，末端彎曲成 L 形。囊突退化。抱器基部卵形；抱器內突為末端截狀之骨臂；抱握鋏角狀；抱器背三角形，後端棘刺狀。陽基軛片

狹窄，U 字形。陽莖基短於陽莖器。陽莖基細，陽莖器粗，末端開口斜切於背側。

雌交尾器 (圖 466)：交尾囊卵形。花壁一對，位於交尾囊相對位置，形成內陷乳頭狀小骨。交尾囊管前端膜質，向後漸細，末端為高度骨化之骨管。交尾孔板形成骨化裙，有一對向後之骨化指狀突起。後內骨突細長，長於肛突，甚直，基部扁平、膨大，末端彎曲。肛突瓣狀、具毛。

世界分布：臺灣特有種。

臺灣分布：分布於本島北部低海拔山區。

寄主植物：殼斗科之烏來柯。

生物學：本種為一年一世代物種，成蝶於夏天飛行，越冬卵產於寄主植物細枝上之休眠芽旁。

Genus *TERATOZEPHYRUS* Sibatani, 1946

Type species: *Zephyrus arisanus* Wileman, 1909

Diagnostic characters include the following: 1) ground color of wing undersides white or brown, with prominent linear discal bands; 2) no metallic patch on wing upperside; 3) sexual dimorphism absent or poorly developed; 4) filiform projection present at distal end of CuA_2 of hindwing; 5) eyes densely hairy in male, less hairy in female; 6) protarsus fused in male.

8 species are known from the Oriental region (Koiwaya, 2007; Hsu, 2013).

Larvae feed on plants in Fagaceae.

3 species are known from Taiwan.

鐵灰蝶屬

形態特徵如下：1) 翅腹面底色白色或褐色，具鮮明線狀中央帶紋；2) 翅背面斑紋無金屬光澤；3) 雌雄二型性缺乏或微弱；4) 後翅 CuA_2 脈末端具絲狀尾突；5) 雄蝶複眼密被毛，雌蝶疏被毛；6) 雄蝶前足跗節癒合。

本屬已知 8 種，分布於東洋區。

幼生期以殼斗科植物為寄主。

臺灣有 3 種。

Teratozephyrus arisanus (Wileman, 1909) (阿里山鐵灰蝶／阿里山長尾小灰蝶)

PLATE 10, Figs. 72–73; PLATE 47, Fig. 338; PLATE 80, Fig. 467

Zephyrus arisanus Wileman, 1909: Annotationes Zoologicae Japonenses 7 (2): 91. (Type locality: "Arisan, 7300 feet")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 1500/1700m, 2/4. VI. 2000 (Y. F. Hsu, C. C. Lu & Y. T. Lo); 2♂, 2♀, Wulai, Lalashan, reared from *Quercus stenophylloides*, emgd. 5/7. V. 1987 (Y. F. Hsu). **XINZHU Co.:** 1♂, Jianshi, Zhenxibao, 1600m, 29. V. 2008 (L. H. Wang). **YILAN Co.:** 1♀, Datong, Siyuan, VII. 2018 (Y. C. Hong) (genitalia preparation JLY647). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 26. V. 1982 (Y. F. Hsu) (genitalia preparation JYL622). **TAIDONG Co.:** 1♀, Haiduan, Liyuan/Xiangyang, 18/19. VI. 2020 (C. W. Huang).

Description. Adult – Forewing length 17–19 mm. Sexual dimorphism absent or weakly present. Male (PLATE 10, Fig. 72): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal

ends of CuA_2. Wing uppersides ground color brown; sometimes with two orange spots on forewing, one distal to discoidal cell, the other in cell M_3. A faint, narrow white band present along termen of hindwing. Wing undersides ground color silvery white, with fine dark brown discal band on both wings, short dark brown band at distal end of discoidal cells. Submarginal bands as a thin brown band, barely visible on forewing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe partially white, partially brown. Female (PLATE 10, Fig. 73): Body and general wing patterns similar to those of male, eyes less hairy, Protarsi not fused, orange spots on forewing uppersides and brown markings of hindwing undersides usually more prominent.

Male genitalia (PLATE 47, Fig. 338) – Tegumen broad, short; uncus as produced, flattened process with shallow invagination at distal end; socii roughly rhomboid, with dorsal portion slightly convex, ventral portion angled. Vinculum slightly curved. Brachium as long, curved arm with base enlarged, distal end blunt. Saccus short, rounded anteriorly. Valva ovate basally; ampulla as robust arm with distal end bifurcate. Juxta as narrow, U-shaped band. Phallus with aedeagus slightly longer than phallobase. Aedeagus up-raised with angled, dorsal opening at distal end.

Female genitalia (PLATE 80, Fig. 467) – Corpus bursae oval. Signa as a pair of small, invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae with thicker anterior part membranous, leading to narrow sclerotized tube. Sterigma forming a witch hat-like ventral sclerite with posterior end bifid, connecting with a broad dorsal sclerotized wall. Posterior apophyses very long and slender, longer than anal papillae, straight, enlarged and flattened at base into sclerotized band with pointed caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. North Myanmar, West, Central and East China, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus stenophylloides* (Uchida, 1999; Hsu, 2013)

Biology. Univoltine, adults on wing in summer; overwintering as egg on twigs of the hostplant (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 17–19 mm。雌雄二型性缺乏或微弱。雄蝶 (圖 72)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，有時前翅有二只橙色斑點，分別位於中室末端外側及 M_3 室；後翅外緣有白色細線紋。翅腹面底色銀白色，具深褐色中央細帶紋；中室末端具深褐色短帶；亞外緣帶紋由褐色細帶紋組成，於前翅幾乎消失；後翅臀區及 CuA_1 室各有一鮮明黑色斑點及橙色斑紋。緣毛部白色、部分褐色。雌蝶 (圖 73)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、前翅背面橙色斑點及後翅腹面褐色斑紋常較鮮明。

雄交尾器 (圖 338)：背兜寬短；背兜側突略呈菱形，背側略凸，腹面角狀；鉤突為扁平突起，末端有淺凹。基腹弧略彎曲。顎形突長臂狀、彎曲，基部膨大、末端鈍。囊突短，前端圓。抱器基部卵形；抱器內突粗、臂狀，末端分叉。陽基軛片狹窄、帶狀、U 字形。陽莖器略長於陽莖基。陽莖器向上彎曲，開口斜切於背側。

雌交尾器 (圖 467)：交尾囊卵形。花壁一對，位於交尾囊相對位置，為內陷鰭狀小骨。交尾囊管前端粗、膜質，連接高度骨化之細管。交尾孔板腹側形成巫帽狀骨片，末端二分，連接背側寬骨板。有前內骨突，長度短於後內骨突。後內骨突細長，長於肛突，甚直，基部膨大、扁平、骨化，末端尖，前端錘狀。肛突瓣狀，具毛。

世界分布：緬甸北部、華西、華中、華東及臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之狹葉櫟。

生物學：本種為一年一世代物種，成蝶於夏天活動，越冬卵產於寄主植物細枝條上。

Teratozephyrus yugaii (Kano, 1928) (臺灣鐵灰蝶／玉山長尾小灰蝶)

PLATE 10, Figs. 74–75; PLATE 47, Fig. 339; PLATE 80, Fig. 468

Zephyrus yugaii Kano, 1928: Taiwan Sangetsu 3: 75. (Type locality: "the top of Niitaka [Yushan, Taiwan]")

Zephyrus hecale shirakiana Matsumura, 1929: Insecta Matsumurana 3 (2/3): 100. (Type locality: "Daisuikutsu, Formosa [Dashuikushan, Taiwan]")

Zephyrus hecale f. *niitakana* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 100. (Type locality: "Niitaka, Formosa [Yushan, Taiwan]")

Specimens examined:

YILAN Co.: 1♂, Datong, Siyuanyakou, 1600m, 2. XII. 2005, reared from *Quercus stenophylloides*, emgd. 22. IV. 2006, HSU 05M5 (C. C. Lu & H. Y. Li). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♀, Heping, Xueshan, Qika, 2600m, 19/21. IX. 2005 (Y. F. Hsu); 3♂, 3♀, Heping, Nanhubeishan, 3500m, 7/9. VIII. 1990 (C. L. Li). **NANTOU Co.:** 1♀, Renai, Songquangang, 2500m, 21. V. 2006, reared from *Q. stenophylloides*, emgd. 15. VI. 2006, HSU 06E21 (L. H. Wang); 1♂, 1♀, Renai, Shimenshan, 17. VIII. 2003 (Y. F. Hsu); 1♀, Renai, Shimenshan, 3100m, 14. IX. 2005 (C. C. Lu & C. L. Huang); 1♀, same locality, 3200m, 18. VI. 2006 (L. H. Wang); 1♂, Renai, Xinrengang, 19. VII. 1982 (C. K. Lo) (genitalia preparation YFH1236); 1♀, Renai, Yuanfeng, 2700m, 14. IX. 2005 (C. C. Lu & C. L. Huang) (genitalia preparation JYL620). **HUALIAN Co.:** 1♂, 1♀, Xiulin, Guanyuan, 2300m, 29. VIII. 2006 (C. C. Lu); 1♀, same locality, 2300m, 26. XI. 2006 (L. H. Wang & M. H. Sun); 1♀, Xiulin, Bilu, 15. VII. 1981 (C. L. Lo) (genitalia preparation YFH1237); 1♂, same locality, 2300m, 8. VII. 1991 (Y. F. Hsu & C. L. Li) (genitalia preparation YFH1223); 1♂, 1♀, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai) (genitalia preparation JYL621).

Description. Adult – Forewing length 16–18 mm. Sexual dimorphism absent or weakly present. Male (PLATE 10, Fig. 74): Head hairy, brown, with a thin medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white with blue sheen ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown; sometimes with two orange spots on forewing, one distal to discoidal cell, the

other in cell M_3. Wing undersides ground color brown, with prominent white discal band on both wings, short band edged by white at distal end of discoidal cells. Submarginal bands as a thin white band, edged by dark brown band on forewing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe partially white, partially brown. Female (PLATE 10, Fig. 75): Body and general wing patterns similar to those of male, eyes less hairy, Protarsi not fused, orange spots on forewing uppersides usually more prominent.

Male genitalia (PLATE 47, Fig. 339) – Tegumen broad, short; uncus as produced, flattened tongue-shaped process with pointed distal end; socii roughly rhomboid, with dorsal portion slightly convex, ventral portion angled. Vinculum slightly curved. Brachium as long, curved arm with base enlarged, distal end blunt. Saccus short, rounded anteriorly. Valva ovate basally; ampulla as robust arm with two digitate processes, outer one longer. Juxta as narrow, U-shaped band. Phallus with aedeagus slightly longer than phallobase. Aedeagus up-raised with angled, dorsal opening at distal end.

Female genitalia (PLATE 80, Fig. 468) – Corpus bursae oval. Signa as a pair of invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae with thicker anterior part membranous, attenuate posteriorly, leading to narrow sclerotized tube. Sterigma forming a triangular ventral sclerite with posterior end pointed, connecting with a broad dorsal sclerotized wall. Anterior apophyses present, shorter than posterior apophyses. Posterior apophyses very long and slender, longer than anal papillae, straight, enlarged and flattened at base into sclerotized band with pointed caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Higher elevations in montane zone (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus stenophylloides* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg by dormant buds of

the hostplant (Uchida, 1999; Hsu, 2013).

Remarks. This species is superficially similar to *T. elatus*, which differs by having ground color of wing undersides tinged with gray, more prominent submarginal bands on hindwing undersides, and differences in genitalia of both sexes.

形態特徵：成蝶前翅長 16–18 mm。雌雄二型性缺乏或微弱。雄蝶 (圖 74)：頭被毛、褐色，額中央具白色窄帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色帶藍色光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，有時前翅具二只橙色斑點，分別位於中室末端外側及 M_3 室。翅腹面底色褐色，有鮮明白色中央細帶紋；中室末端有鑲白邊短條；亞外緣帶紋由白色細帶紋組成，於前翅者有深褐色邊；後翅臀區及 CuA_1 室各有一鮮明黑色斑點及橙色斑紋。緣毛部分白色、部分褐色。雌蝶 (圖 75)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、前翅背面橙色斑點常較為鮮明。

雄交尾器 (圖 339)：背兜寬短；背兜側突略呈菱形，背側略凸，腹面角狀；鉤突為舌狀扁平突起，末端尖。基腹弧略彎曲。顎形突長臂狀、彎曲、基部膨大，末端鈍。囊突短，先端圓。抱器基部卵形；抱器內突粗、臂狀，末端形成兩指狀突起，外側者較長。陽基軛片狹窄、帶狀、U 字形。陽莖器略長於陽莖基。陽莖器向上彎曲，開口斜切於背側。

雌交尾器 (圖 468)：交尾囊卵形。花壁一對，位於交尾囊相對位置，形成內陷鰭狀小骨。交尾囊管前端粗、膜質，向後端漸細，連接高度骨化骨管。交尾孔板腹側形成三角狀骨片，連接背側寬闊骨板。有前內骨突，短於後內骨突。後內骨突細長，長於肛突，甚直，基部膨大、扁平，末端尖，先端棒狀。肛突瓣狀，具毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島高海拔山區。

寄主植物：殼斗科之狹葉櫟。

生物學：本種為一年一世代物種，成蝶於夏天飛行，越冬卵產於寄主植物休眠芽。

註記：本種與高山鐵灰蝶相似，差異在於高山鐵灰蝶翅腹面底色帶灰色調、亞外緣帶紋較為鮮明，以及雌雄交尾器形態差異。

Teratozephyrus elatus Hsu & Lu, 2005 (高山鐵灰蝶)

PLATE 10, Figs. 76–77; PLATE 48, Fig. 340; PLATE 81, Fig. 469

Teratozephyrus elatus Hsu & Lu, 2005: Journal of Natural History 39 (5): 381. (Type locality: Taiwan: Hualian Co., Xiulin, Guanyuan, 2335 m)

Specimens examined:

TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]: 1♂, Heping, Shenmazhen Meadow, 3200m, 10. VII. 2007 (L. H. Wang). **HUALIAN Co.:** 1♀, Xiulin, Guanyuan, 18. V. 1997, reared from *Quercus tatakaensis*, emgd. 9. VI. 1997, HSU 97E39 (Y. F. Hsu) (genitalia preparation YFH1251); 2♂, same locality, 2700/2800m, 16. IV. 2000, reared from *Q. tatakaensis*, emgd. 15/17. V. 2000, HSU 00D14 (C. C. Lu); 3♂paratypes, 1♀paratype, same locality, 2600/2700m, 19. V. 2000, reared from *Q. spinosa*, emgd. 17/18. VI. 2000, HSU 00E22 (Y. F. Hsu, C. C. Lu & C. Y. Hung) (genitalia preparation JYL627); 2♂, same locality, 20. V. 2001, reared from *Q. tatakaensis*, emgd. 8/13. VI. 2001, HSU 01E39 (Y. F. Hsu); 1♂paratype, same locality, 26. V. 2001, reared from *Q. spinosa*, emgd. 26. VI. 2001, HSU 01E46 (Y. F. Hsu); 1♂paratype, same locality, 10. VI. 2001, reared from *Q. spinosa*, emgd. 27. VI. 2001, HSU 01F16 (Y. F. Hsu); 1♂paratype, 1♀paratype, same locality, 16. V. 2002, reared from *Q. spinosa*, emgd. 3/6. VI. 2002, HSU 02E37 (Y. F. Hsu); 1♀, Xiulin, Guanyuan, 2300m, 14. IX. 2005 (C. C. Lu & C. L. Huang); 5♂, 1♀, same locality, 22. V. 2006, reared from *Q. tatakaensis*, emgd. 7/15. VI. 2006, HSU 06E22 (C. C. Lu, L. H. Wang & J. R. Chen); 1♀, same locality, 26. XI. 2006 (L. H. Wang & M. H. Sun) (genitalia preparation JYL619); 1♂, Xiulin, Cien, 2000m, 29. VIII. 2006 (L. H. Wang); 1♀, Xiulin, Bilu, 2200m, 14. IX. 2005 (C. C. Lu & C. L. Huang).

Description. Adult – Forewing length 15–18 mm. Sexual dimorphism absent or weakly present. Male (PLATE 10, Fig. 76): Head hairy, brown, with a thin medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis

dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white with blue sheen ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown; sometimes with two orange spots on forewing, one distal to discoidal cell, the other in cell M_3. Wing undersides ground color brown tinged with gray, with prominent white discal band on both wings, short band edged by white at distal end of discoidal cells. Submarginal bands as a thin white band on forewing, double bands on hindwing, edged by dark brown band on forewing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe partially white, partially brown. Female (PLATE 10, Fig. 77): Body and general wing patterns similar to those of male, eyes less hairy, Protarsi not fused, orange spots on forewing uppersides usually more prominent.

Male genitalia (PLATE 48, Fig. 340) – Tegumen broad, short; uncus as produced, flattened tongue-shaped process with pointed distal end; socii roughly rhomboid, with dorsal portion slightly convex, ventral portion angled. Vinculum slightly curved. Brachium as long, curved arm with base enlarged, distal end blunt. Saccus short, rounded anteriorly. Valva ovate basally; ampulla as robust arm with distal end shallowly bifid. Juxta as narrow, U-shaped band. Phallus with aedeagus slightly longer than phallobase. Aedeagus up-raised with angled, dorsal opening at distal end.

Female genitalia (PLATE 81, Fig. 469) – Corpus bursae oval. Signa as a pair of invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae with thicker anterior part membranous, attenuate posteriorly, leading to narrow sclerotized tube. Sterigma forming a narrow V-shaped, ventral sclerite with posterior end pointed, connecting with a broad dorsal sclerotized wall. Anterior apophyses present, shorter than posterior apophyses. Posterior apophyses very long and slender, longer than anal papillae, straight, enlarged and flattened at base into sclerotized band with pointed caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Hsu & Lu, 2005; Hsu, 2013).

Distribution in Taiwan. Higher elevations in montane zone (Hsu & Lu, 2005; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus spinosa* (Hsu & Lu, 2005; Hsu, 2013) and *Q. tatakaensis*.

Biology. Univoltine, adults on wing in summer; overwintering as egg by dormant buds of the hostplant (Hsu & Lu, 2005; Hsu, 2013).

Remarks. Koiwaya (2007) regarded this taxon as a subspecies of *T. nuwaii* Koiwaya, 1996 distributed in Central to West China.

形態特徵：成蝶前翅長 15–18 mm。雌雄二型性缺乏或微弱。雄蝶 (圖 76)：頭被毛、褐色，額中央具白色窄帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色帶藍色光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略凸出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，有時前翅有二橙色斑點，分別位於中室末端外側及 M_3 室。翅腹面底色帶灰色調褐色，具鮮明白色中央帶紋；中室末端具鑲白邊短條；前翅亞外緣帶紋由一道白色細帶紋組成、有深褐色邊，後翅則由兩道帶紋組成；後翅臀區及 CuA_1 室各具一鮮明黑色斑點及橙色斑紋。緣毛部分白色、部分褐色。雌蝶 (圖 77)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、前翅背面橙色斑點常較鮮明。

雄交尾器 (圖 340)：背兜寬短；背兜側突略呈菱形，背側略凸出，腹面角狀；鉤突為扁平舌狀突起，末端尖。基腹弧略彎曲。顎形突長臂狀、彎曲，基部膨大，末端鈍。囊突短，先端圓。抱器基部卵形；抱器內突粗、臂狀，末端淺裂。陽基軛片狹窄、帶狀、U 字形。陽陽莖器略長於陽莖基。陽莖器向上彎曲，開口斜切於背側。

雌交尾器 (圖 469)：交尾囊卵形。花壁一對，位於交尾囊相對位置，形成內陷鰭狀小骨。交尾囊管前端粗、膜質，連接高度骨化窄管。交尾孔板腹側形成 V 形骨片，後端尖，連接於背側寬闊骨板。有前內骨突，短於後內骨突。後內骨突細長，長於肛突，甚直，基部呈膨大、扁平，後端尖，前端錘狀。肛突瓣狀，具毛。

世界分布：臺灣特有種。

臺灣分布：分布於本島中部高海拔山區。

寄主植物：殼斗科之高山櫟及銳葉高山櫟。

生物學：本種為一年一世代物種，成蝶於夏天活動，越冬卵產於寄主植物休眠芽附近。

註 記：Koiwaya (2007) 視本種為分布於華中至華西之秦嶺鐵灰蝶 *T. nuwaii* Koiwaya, 1996 之亞種。

Genus *NEOZEPHYRUS* Sibatani & Ito, 1942

Type species: *Thecla taxila* Bremer, 1861

Diagnostic characters include the following: 1) ground color of wing undersides brown, with prominent white linear discal bands; 2) metallic green patch on wing uppersides in male; 3) sexual dimorphism prominent; 4) filiform projection present at distal end of CuA_2 of hindwing; 5) eyes densely hairy in male, less hairy in female; 6) protarsus fused in male; 7) signa as double elongated sclerotized bands; 8) aedeagus bearing slender sclerotized spiny process at right side.

Females of the members in this genus are frequently polymorphic within species in terms of color patterns of wing uppersides, with several basic types recognized. Murayama & Sibatani (1943) proposed a naming system to describe these wing pattern types using a metaphor of human blood types for this genus plus the genus *Favonius*: O type, uniformly brown; A type, orange or red spots on forewing; B type, blue or purple markings on forewing; AB type, both orange spots and blue markings on forewing. Howarth (1957) adopted this describing system and added one more type, AW type, with white spots replacing orange spots on forewing.

The genus *Neozephyrus* defined by Howarth (1957) was later split into several genera, adding *Chrysozephyrus* Shirôzu & Yamamoto, 1956, *Thermozephyrus* Inomata & Itagaki, 1986, *Shirozuozephyrus* Koiwaya, 2007, *Inomataozephyrus* Koiwaya, 2007, *Kawazoeozephyrus* Koiwaya, 2007, but acceptance of these taxa varies among different authors.

7 species are known from the Oriental and eastern Palearctic regions.

Larvae feed on plants in the genus *Alnus* of the family Betulaceae.

1 species is known from Taiwan.

楹翠灰蝶屬

形態特徵如下：1) 翅腹面底色褐色，具鮮明白色中央線紋；2) 雄蝶翅背面有帶金屬光澤之綠色斑塊；3) 雌雄二型性顯著；4) 後翅 CuA_2 脈末端具絲狀尾突；5) 雄蝶複眼密被毛，雌蝶疏被毛；6) 雄蝶前足跗節癒合；7) 花壁為兩道長骨帶；8) 陽莖器右側有狹長具刺之突起。

本屬雌蝶翅背面斑紋常具種內多型性，且被劃分為數個基本型。Murayama & Sibatani (1943) 提出模擬人類血型的方式命名楹翠灰蝶屬及艷灰蝶 *Favonius* 屬之雌蝶翅紋型：無紋者為 O 型，前翅有橙色或紅色斑點者為 A 型，前翅具藍色或紫色斑紋者為 B 型，而橙紅色斑點及藍紫色斑紋皆有者為 AB 型。Howarth (1957) 針對翠灰蝶作檢討時採用此命名方式，並增加前翅具斑點白色者為 AW 型。

Howarth (1957) 所定義之楹翠灰蝶屬後被分出數個不同屬：*Chrysozephyrus* Shirôzu & Yamamoto, 1956、*Thermozephyrus* Inomata & Itagaki, 1986, *Shirozuozephyrus* Koiwaya, 2007、*Inomataozephyrus* Koiwaya, 2007、*Kawazoeozephyrus* Koiwaya, 2007，但不同研究者這些屬是否成立有不同立場。

本屬已知 7 種，分布於東洋區及古北區。

幼蟲以樺木科赤楊屬植物為寄主。

臺灣有 1 種。

Neozephyrus taiwanus **(Wileman, 1908) (臺灣檜翠灰蝶 / 寬邊綠小灰蝶 / 高砂綠小灰蝶 / 臺灣翠灰蝶)**

PLATE 11, Figs. 78–80; PLATE 48, Fig. 341; PLATE 81, Fig. 470

Zephyrus taiwanus Wileman, 1908: Annotationes Zoologicae Japonenses 6 (5): 324. (Type locality: "Jūjimichi (Arizan), 5,025 feet")

Zephyrus coruscans takasagoensis Nire, 1920: Zoological Magazine, Tokyo 32 (386): 374. (Type locality: "Horisha, Formosa [Puli, Taiwan]")

Zephyrus tattakana Matsumura, 1929: Insecta Matsumurana 3 (2/3): 101. (Type locality: "Tamaho, Sankakuho and Tattaka, Formosa")

Zephyrus taiheizana Nomura, 1931: Zephyrus 3 (1): 59. (Type locality: Taihezan; Shikikun, Formosa [Taipingshan; Siji, Yilan, Taiwan])

Specimens examined:

YILAN Co.: 1♂, Nanao, Tongshan, 1800m, 16. VI. 1999 (C. C. Lu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Lalashan, 12. VII. 1986 (B. Chen); 1♀, same locality, 14. X. 1999 (Y. J. Chen). **XINZHU Co.:** 1♀, Jianshi, Lidongshan, 1600m, 11. VII. 2004 (H. C. Huang); 1♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu); 2♂, Wufeng, Xueba Farm, Yemakanshan, 1900m, 20. VIII. 2009 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Heping, Siyuan, 1600m, 22. VIII. 2001 (W. I. Chou); 1♀, Heping, Xueshan, Qika, 2600m, 19/21. IX. 2005 (Y. F. Hsu); 1♂, Heping, Anmashan, 14. IV. 1996, reaed from *Alnus formosana*, emgd. 17. V. 1996, HSU 96D6 (Y. F. Hsu); 2♂, 2♀, same locality, 25. IV. 1997, reared from *A. formosana*, emgd. 13. VI. 1997, HSU 97D67 (C. C. Lu & C. Y. Hung). **HUALIAN Co.:** 1♀, Xiulin, Cien/ Xinbaiyang, 1800m, 26. IV. 2008, reared from *A. formosana*, emgd. 25/29. V. 2008, HSU 08D20 (L. H. Wang); 1♀, Xiulin, Guanyuan, 18. V. 1997, reared from *A. formosana* (C. Y. Hung); 1♀, Xiulin, Bilu, 2100m, 5. VII. 2015 (L. Huang, H. C. Huang & J. M. Wu) (genitalia preparation JYL547); 1♂, same locality, 14/15. VII. 2019 (C. W. Huang) (genitalia preparation JYL617). **TAIDONG Co.:** 1♀, Beinan, Lijia Trail, 27. IX. 1998 (W. I. Chou).

Description. Adult – Forewing length 18–21 mm. Sexual dimorphism present. Male (PLATE 11, Fig. 78): Head hairy, brown, with a thin medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown.

Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green tinged with yellow scalings, prominent dark brown area at apex and along termen on forewing, along termen on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color brown, with prominent white discal band on both wings, a short white band in cell $Sc+R_1$. Submarginal bands as a thin white band on forewing, double bands on hindwing, edged by dark brown band on forewing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe partially white, partially brown. Female (PLATE 11, Figs. 79–80): Eyes less hairy, Protarsi not fused, wing pattern "B" or "AB" type, forewing uppersides with metallic blue patch, sometimes with orange spots on forewing uppersides.

Male genitalia (PLATE 48, Fig. 341) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly curved, convex at "elbow" position, minute spines present on outer surface. Saccus short, sac-like. Valva with ampulla forming prominent digitate process; sacculus triangular. Juxta broadened at dorsal ends, as narrow, U-shaped. Phallus nearly straight, with aedeagus longer than phallobase. Aedeagus with elongate, angled, dorsal opening at distal end; cornuti as a sclerotized saw, with a few minute spines on membrane nearby.

Female genitalia (PLATE 81, Fig. 470) – Corpus bursae oval, elongate. Signa as a pair of sclerotized, invaginated, spiny patches with central conical processes. Ductus bursae short, thick, wrinkled, sclerotized posteriorly, connecting to a heavily sclerotized funnel. Sterigma elaborated; lamella antevaginalis forming a bell-like sclerite with an anterior, deeper notch and a posterior, shallower notch, setose posteriorly. Lamella postvaginalis as broad sclerotized skirt with lateral folds, produced posteriad.; Posterior apophyses longer than anal papillae, strongly curved, enlarged and flattened at base into sclerotized band with curved caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hsu, 1999a, 2013; Uchida,

1999; Koiwaya, 2007).

Distribution in Taiwan. Lower to higher elevations in montane zone (Hsu, 1999a, 2013; Uchida, 1999; Koiwaya, 2007; Lu & Chen, 2014).

Larval Host plant(s). Betulaceae: *Alnus formosana* (Hsu, 1999a, 2013; Uchida, 1999; Koiwaya, 2007; Lu & Chen, 2014).

Biology. Univoltine, adults on wing in summer; overwintering as egg on twigs or trunk of the hostplant (Hsu, 1999a, 2013; Uchida, 1999; Koiwaya, 2007; Lu & Chen, 2014).

形態特徵：成蝶前翅長 18–21 mm。具雌雄二型性。雄蝶 (圖 78)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面亮白色。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆有金屬綠光澤之黃色鱗；前翅翅頂及前後翅外緣具明顯黑褐色區域；後翅外緣有藍色細帶紋。翅腹面底色褐色，具鮮明白色中央線紋；$Sc+R_1$ 室有白色短紋；前翅亞外緣帶紋由一道白色細帶紋組成、具暗黑色邊，後翅則由兩道帶紋組成；後翅臀區及 CuA_1 室各具一鮮明黑色斑點及橙色斑紋。緣毛部分白色、部分褐色。雌蝶 (圖 79–80)：複眼疏被毛、前足跗節不癒合、翅紋 B 型或 AB 型，前翅背面有具金屬光澤藍色斑塊，有時亦有橙色斑點。

雄交尾器 (圖 341)：背兜寬；背兜側突向後延伸成弓狀。基腹弧略彎曲。顎形突臂狀，強彎曲，肘處凸出，其表面有細刺。囊突短囊狀。抱器內突為指狀突起；抱器腹三角形。陽基軛片狹窄、U 字形，背側寬。陽莖甚直，陽莖器略長於陽莖基。陽莖器開口斜切於背側末端；角狀器鋸狀，附近膜質區有些許小刺。

雌交尾器 (圖 470)：交尾囊長橢圓形。花壁為一對狹長帶狀骨，中央有錐狀內陷。交尾囊管粗短、有皺摺，末端骨化，連接至一骨化漏斗。交尾孔板複雜：交尾孔前板為鐘狀骨，前端有深凹，後端有淺凹。交尾孔後板為寬闊裙狀骨，後端凸出。後內骨突較肛突長，明顯彎曲，基部膨大、扁平，末端彎曲，先端錘狀。肛突瓣狀，具毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島低至高海拔山區。

寄主植物：樺木科之臺灣榿木。

生物學：本種為一年一世代，成蝶於夏天活動，越冬卵產於寄主植物枝條或樹幹上。

Genus *CHRYSOZEPHYRUS* Shirôzu & Yamamoto, 1956

Type species: *Thecla smaragdina* Bremer, 1861

Diagnostic characters include the following: 1) metallic green patch on wing uppersides in male; 2) sexual dimorphism usually prominent; 3) filiform projection present at distal end of CuA_2 of hindwing; 4) eyes densely hairy in male, less hairy in female; 5) protarsus fused in male.

Females of the members in this genus are frequently polymorphic within species in terms of color patterns of wing uppersides, with several basic types recognized. Most members of this genus were included in the genus *Neozephyrus* by Howarth (1957), and the polymorphism of the females has been described following the terminology defined by Murayama & Sibatani (1943) and Howarth (1957) (e.g., Shirôzu, 1960).

Some species of *Chrysozephyrus* sensu Shirôzu & Yamamoto (1956) were removed to the genera *Thermozephyrus* Inomata & Itagaki, 1986 (Inomata, 1986), *Shirozuozephyrus* Koiwaya, 2007, *Inomataozephyrus* Koiwaya, 2007, and *Kawazoeozephyrus* Koiwaya, 2007 (Koiwaya, 2007).

More than a hundred species are known from the Oriental and eastern Palearctic regions.

Larvae feed on plants in the families Fagaceae, Ericaceae, and Rosaceae.

9 species are known from Taiwan.

翠灰蝶屬

形態特徵如下：1) 雄蝶翅背面有具金屬光澤綠色斑；2) 雌雄二型性顯著；3) 後翅 CuA_2 脈末端具絲狀尾突；4) 雄蝶複眼密被毛；雌蝶疏被毛；5) 雄蝶前足跗節癒合。

本屬雌蝶翅背面斑紋常具種內多形性，且劃分為數個基本型。Howarth (1957) 將本屬多數成員置於 *Neozephyrus* 中，而雌蝶之多型性多沿用 Murayama & Sibatani (1943) 及 Howarth (1957) 使用之命名方式 (如 Shirôzu, 1960)。

Shirôzu & Yamamoto (1956) 定義之翠灰蝶屬部分種類有時被置於 *Thermozephyrus* Inomata & Itagaki, 1986，*Shirozuozephyrus* Koiwaya, 2007，*Inomataozephyrus* Koiwaya, 2007 及 *Kawazoeozephyrus* Koiwaya, 2007 等屬內。

本屬已知超過 100 種，分布於東洋區及古北區東部。

幼蟲寄主植物包括殼斗科、杜鵑科及薔薇科。

臺灣已知 9 種。

Chrysozephyrus teisoi (Sonan, 1941) (碧翠灰蝶／江崎綠小灰蝶／鐵楝金灰蝶)

PLATE 11, Figs. 81–82; PLATE 48, Fig. 342; PLATE 81, Fig. 471

Zephyrus esakii Sonan, 1940: Transactions of the Natural History of Formosa 30 (199): 81. (Type locality: "Taihoku Shu, Bunsan gun, Rarasan [Taiwan, Taoyuan, Lalashan]")

Zephyrus teisoi Sonan, 1941: Transactions of the Natural History of Formosa 31 (219): 481. [replacement name]

Thecla sanctissima Araki & Sibatani, 1941: Zephyrus 9: 92. (Type locality: "Hori, Taityu-Pref. [Puli, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 1500/1700m, 2/4. VI. 2000 (C. Y. Hung, C. C. Lu & Y. T. Lo). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂,

Fuxing, Lalashan, 1500m, 25. III. 2000, reared from *Quercus stenophylloides*, emgd. 23. IV. 2000, HSU 00C15 (Y. T. Lo & Y. F. Hsu). **YILAN Co.:** 1♂, Nanao, Wangyangshan, 1900m, 23. III. 2001, reared from *Q. morii*, emgd. 25. IV. 2001, HSU 01C40 (C. C. Lu & Y. T. Lo); 1♀, Nanao, Cuifenghu, 1900m, 24. VI. 2002 (C. L. Li). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♀, Heping, Anmashan, 1/2. VI. 1996 (Y. C. Huang); 1♂, Heping, Anmashan, 2000m, 28. VII. 2003 (H. C. Huang & Y. C. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 4. VII. 1989 (Y. F. Hsu); 2♂, 1♀, Xiulin, Bilu, 2300m, 8. VII. 1991 (Y. F. Hsu & C. L. Li); 1♀, Xiulin, Guangbeibabiao, 16. VII. 2008 (L. H. Wang) (genitalia preparation JYL600). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 26. VI. 2003 (C. L. Huang & L. W. Wu); 1♂, Chunri, Danhanshan, 1350m, 20. VII. 2001 (W. I. Chou). **TAIDONG Co.:** 2♂, Yanping, Yanping Forest Trail, 25km, 1600m, 19. VI. 2000 (C. L. Li).

Description. Adult – Forewing length 19–21 mm. Sexual dimorphism present. Male (PLATE 11, Fig. 81): Head hairy, brown, with narrow medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green tinged with blue scalings, dark brown area present along termen on forewing, costa, termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color brown, overlaid with grayish white, with prominent white discal band edged by dark brown proximally on both wings, posterior part of band on hindwing in form of W-shape. A short white band in cell $Sc+R_1$. Short bar edged by white at distal end of discoidal cells of both wings. Submarginal bands as a dark brown edged by white band on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 11, Fig. 82): Eyes less hairy, Protarsi not fused, wing pattern “A” type; forewing uppersides with two orange spots.

Male genitalia (PLATE 48, Fig. 342) – Tegumen broad; socii expanded anteriad, forming

bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly bent, produced at "elbow" with a few spines, distal portion wavy and attenuate toward distal end. Saccus short, sac-like. Valva with ampulla forming prominent digitate, down-curved process; harpe as a broad lobe, slightly produced to curved margin ventrally. Juxta broad, V-shaped. Phallus nearly straight, with aedeagus slightly longer than phallobase. Aedeagus with angled, dorsal opening at distal end. Cornuti as multiple rows of small teeth.

Female genitalia (PLATE 81, Fig. 471) – Corpus bursae oval. Signum absent. Ductus bursae short, thick, wrinkled, membranous anteriorly, narrow, tubular, sclerotized posteriorly. Sterigma forming bicorne-shaped sclerite with medial notch posteriorly, in a membranous dome. Posterior apophyses longer than anal papillae, strongly curved, enlarged and flattened at base into sclerotized band with curved caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. North Vietnam, West China, Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations in montane zone (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. stenophylloides*, *Q. longinux*, *Q. sessilifolia*, *Q. morii*, and *Q. variabilis* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg by dormant buds of the hostplant (Uchida, 1999; Hsu, 2013).

Remarks. The specific name of this species, *esakii*, was originally given in honor of a prominent Japanese lepidopterist Teiso Esakii after his family name (Sonan, 1940). Sonan (1941) proposed a replacement name *teisoi*, after the given name of T. Esaki, for *esakii* was consider a homonym with *Zephyrus smaragdinus* f. *esakii* Umeno. Although this replacement was unnecessary because *esakii* Umeno is infra-subspecific, the article 59.3 of ICZN has ruled that all homonyms replaced before 1961 are treated as

permanently unavailable.

形態特徵：成蝶前翅長 19–21 mm。具雌雄二型性。雄蝶 (圖 81)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細，末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具暗褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆帶藍色調之金屬光澤綠色鱗；前翅外緣及後翅外緣、前緣及內緣有暗褐色區域；後翅外緣具一藍色窄線紋。翅腹面底色褐色泛灰白色，具內側鑲暗褐色邊之白色中央帶紋，於後翅後側形成 W 字形；後翅 $Sc+R_1$ 室有白色短紋；前、後翅中室端均有鑲白邊之短條；前翅亞外緣帶紋暗褐色鑲白邊，後翅則由白帶紋及內側弦月紋組成；後翅臀區及 CuA_1 室各有一黑色斑點及橙色斑紋。緣毛白色。雌蝶 (圖 82)：複眼疏被毛、前足跗節不癒合、翅紋 A 型：前翅有兩只橙色斑點。

雄交尾器 (圖 342)：背兜寬；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，肘處具刺棘，向末端漸細並呈波狀，末端尖。囊突短囊狀。抱器內突為指狀突起，下彎；抱握鋏寬瓣狀，腹緣略彎曲。陽基軛片寬、V 字形。陽莖甚直；陽莖器略短於陽莖基。陽莖器末端開口斜切於背側；角狀器為多列小齒。

雌交尾器 (圖 471)：交尾囊橢圓形。無花壁。交尾囊管粗短，前端膜質、有皺褶，末端骨化、管狀。交尾孔板形成膜質拱頂，內有雙角帽狀骨化結構，後端內凹。後內骨突較肛突長，彎曲，基部膨大、扁平，前端棒狀。肛突瓣狀，具毛。

世界分布：越南北部、華西及臺灣。

臺灣分布：分布於本島中至高海拔山區。

寄主植物：殼斗科之青剛櫟、狹葉櫟、錐果櫟、毽子櫟、森氏櫟及栓皮櫟等。

生物學：本種為一年一世代物種，成蝶於夏天飛行，越冬卵產於寄主植物休眠芽附近。

註記：本種種小名用於表彰日籍著名鱗翅目研究者江崎悌三博士 (Sonan, 1940)。

Sonan (1941) 曾因 *esakii* 為 *Zephyrus smaragdinus* f. *esakii* Umeno 之異物同名而發表一替代名 *teisoi*，儘管此替代名因 *esakii* Umeno 為亞種階層以下之命名而無其必要，然而國際動物命名法規第 59.3 條規定凡 1961 年以前被替代之異物同名均視為永久性「不適用」。

Chrysozephyrus nishikaze (Araki & Sibatani, 1941) (西風翠灰蝶／西風綠小灰蝶／西風金灰蝶)

PLATE 12, Figs. 83–84; PLATE 48, Fig. 343; PLATE 81, Fig. 472

Thecla nishikaze Araki & Sibatani, 1941: Zephyrus 9: 91, Pls. 7/8, Fig. 1. (Type locality: "Formosa (Mt. Rara, Taihoku-Pref. [Taiwan, Taoyuan, Lalashan])")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Lalashan, 1500/1750m, 12. VI. 1988 (Y. F. Hsu); 1♀, same locality, 1200/1500m, 29/30. I. 2000, reared from *Prunus campanulata*, emgd.16. III. 2000, HSU 00A14 (C. C. Lu & Y. T. Lo). **YILAN Co.:** 1♀, Datong, Siyuanyakou, 27. I. 2004, reared from *P. campanulata*, emgd. 25. III. 2004, HSU 04A9 (C. L. Huang, L. H. Wang & G. M. Wu) (genitalia preparation JYL630); 3♂, 1♀, Datong, Tuleng, 12. I. 2003, reared from *P. campanulata*, emgd. 23/28. II. 2003, HSU 03A22 (C. C. Lu & J. R. Chen); 1♂, Nanao, Tongshan, 2000m, 10. VI. 1999 (Y. F. Hsu & L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Heping, Anmashan, 1/2. VI. 1996 (Y. C. Huang); 1♂, Heping, Anmashan, 1600/1700m, 3. II. 2000 (C. Y. Hung). **NANTOU Co.:** 1♂, Renai, Hewangshan, 22. X. 1999, reared from *P. campanulata*, emgd. 15. III. 2000, HSU 99L1 (C. W. Lo). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 9. VII. 2018 (C. W. Huang) (genitalia preparation JLY586).

Description. Adult – Forewing length 21–23 mm. Sexual dimorphism present. Male (PLATE 12, Fig. 83): Head hairy, brown, with a thin medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green tinged

with yellow scalings, prominent dark brown area along termen on forewing, costa, termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color brown, with prominent white discal band edged by dark brown proximally on both wings, a short white band in cell $Sc+R_1$. Short bar edged by white at distal end of discoidal cells of both wings. Submarginal bands as a dark brown edged by white band on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 12, Fig. 84): Eyes less hairy, Protarsi not fused, wing pattern "B" or "AB" type, forewing uppersides with two metallic purple patches, in cell CuA_2 and discoidal cell, usually two orange spots also present.

Male genitalia (PLATE 48, Fig. 343) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly bent, produced at "elbow" with a few spines, distal portion straight with curved distal end. Saccus short, sac-like. Valva with ampulla protruding to prominent digitate, strongly down-curved process; harpe as a broad lobe with ventral margin convex. Juxta broad, V-shaped. Phallus nearly straight, with aedeagus slightly longer than phallobase. Aedeagus with angled, dorsal opening at distal end. Cornuti as multiple rows of small teeth.

Female genitalia (PLATE 81, Fig. 472) – Corpus bursae oval. Signa as a pair of weakly sclerotized, invaginated conical sclerites on opposite walls of corpus bursae. Ductus bursae short, thick, wrinkled, membranous anteriorly, narrow, tubular, sclerotized posteriorly. Sterigma forming bicorne-shaped sclerite with deep, wide medial notch posteriorly, in a membranous dome. Posterior apophyses longer than anal papillae, strongly curved, enlarged and flattened at base into sclerotized band with curved caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Uchida, 1999; Hsu, 2002, 2013; Koiwaya, 2007).

Distribution in Taiwan. Moderate to higher elevations (Uchida, 1999; Hsu, 2002, 2013).

Larval Host plant(s). Rosaceae: *Prunus campanulata* (Uchida, 1999; Hsu, 2002, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg on twigs of the hostplant (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 21–23 mm。具雌雄二型性。雄蝶 (圖 83)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆帶黃色調之金屬光澤綠色鱗；前翅外緣及後翅外緣、前緣及內緣有暗褐色區域；後翅外緣有一藍色細線紋。翅腹面底色褐色，有內側鑲深褐色邊之白色中央線紋；後翅 $Sc+R_1$ 室有白色短紋；前、後翅中室端均有鑲白邊之短條；前翅亞外緣帶紋暗褐色鑲白邊，後翅則由白帶紋及內側弦月紋組成；後翅臀區及 CuA_1 室各有一黑色斑點及橙色紋。緣毛白色。雌蝶 (圖 84)：複眼疏被毛、前足跗節不癒合、翅紋 B 型或 AB 型：前翅背面中室及 CuA_2 室具金屬光澤紫色斑塊，有時亦有兩只橙色斑點。

雄交尾器 (圖 343)：背兜寬；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，肘處外側有刺棘，後部直，末端彎曲。囊突短囊狀。抱器內突指狀，先端強下彎；抱握鋏寬瓣狀，腹緣凸出。陽基軛片寬、V 字形。陽莖甚直；陽莖器略長於陽莖基。陽莖器末端開口斜切於背側；角狀器為多列小齒。

雌交尾器 (圖 472)：交尾囊橢圓形。花壁為一對內陷、低度骨化錐狀骨。交尾囊管粗短，前端膜質、有皺褶，末端窄、骨、化管狀。交尾孔板形成膜質拱頂狀，內具雙角帽狀骨化結構，後端有深且寬之內凹。後內骨突長於肛突，彎曲，基部膨大、扁平，前端棒狀。肛突瓣狀，具毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島中至高海拔地區。

寄主植物：薔薇科之山櫻花。

生物學：本種為一年一世代物種，成蝶活動於初夏，越冬卵產於寄主植物細枝條上。

Chrysozephyrus kabrua (Tytler, 1915) (黃閃翠灰蝶／玉山綠小灰蝶／加布雷金灰蝶)

Zephyrus kabrua Tytler, 1915: Journal of the Bombay Natural History Society 24 (1): 128-129, pl. 4, Fig. 41. (Type locality: Kabru peak, Manipur, 8,400 feet)

Zephyrus scintillans f. *taiwanus* Matsumura, 1931: 6000 Illustrated Insects of Japan-Empire: 575. (Type locality: Arisan, Formosa)

Chrysozephyrus neidhoeferi Shimonoya & Murayama, 1971: Tyô to Ga 22 (1/2): 18, Figs, 1–3, 5. (Type locality: "Middle Formosa")

Ssp. *niitakanus* Kano, 1928

PLATE 12, Figs. 85–86; PLATE 49, Fig. 344; PLATE 82, Fig. 473

Zephyrus niitakana Kano, 1928: Taiwan Sangetsu 3: 75. (Type locality: "Niitaka [Yushan, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 1700m, 11/14. VI. 1999 (Y. T. Lo). **YILAN Co.:** 1♀, Datong, Siyuan, VII. 2018 (Y. C. Hong) (genitalia preparation JYL646). **NANTOU Co.:** 1♂, 1♀, Renai, Songgang, 1900m, 13. VII. 1996 (Y. F. Hsu); 1♂, Renai, Xinrengang, 2500m, 3. VI. 2003 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Bilu, 3. VII. 1989 (Y. F. Hsu); 1♂, Xiulin, Panshishan, 20. VII. 2009 (N. Y. Tsai). **KAOHSIUNG CITY:** 2♂, Taoyuan, Zhongzhiguan, 3. VII. 2015 (C. W. Huang & A. L. Hui) (genitalia preparation JYL512).

Description. Adult – Forewing length 18–20 mm. Sexual dimorphism present. Male (PLATE 12, Fig. 85): Head hairy, brown, with narrow medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green tinged with yellow scalings, narrow dark brown area present along termen on forewing, costa, termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color brown, overlaid with grayish white, with prominent white discal

band edged by dark brown proximally on both wings, posterior part of band on hindwing in form of W-shape. A short white band in cell $Sc+R_1$. Short bar edged by white at distal end of discoidal cells of both wings. Submarginal bands as a dark brown edged by white band on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 12, Fig. 86): Eyes less hairy, Protarsi not fused, wing pattern "B" or "AB" type; forewing uppersides with proximal blue patch, sometimes with additional orange spots.

Male genitalia (PLATE 49, Fig. 344) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly bent, produced at "elbow" with a few spines, distal portion wavy and attenuate toward pointed distal end. Saccus short, sac-like. Valva with ampulla forming prominent digitate, down-curved process with pointed distal end; harpe as a broad lobe with ventral margin concave. Juxta broad, V-shaped. Phallus nearly straight, with aedeagus slightly longer than phallobase. Aedeagus with angled, dorsal opening at distal end. Cornuti as multiple rows of small teeth.

Female genitalia (PLATE 82, Fig. 473) – Corpus bursae oval. Signa as a pair of invaginated conical sclerites on opposite walls of corpus bursae. Ductus bursae short, thick, wrinkled, membranous anteriorly, narrow, tubular, sclerotized posteriorly. Sterigma forming bicorne-shaped sclerite with wide medial notch posteriorly, in a membranous dome. Posterior apophyses longer than anal papillae, strongly curved, enlarged and flattened at base into sclerotized band with curved caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. Northeast India, Indochina, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate to higher elevations in montane zone (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus stenophylloides* (Uchida, 1999; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg by dormant buds or on twigs of the hostplant (Uchida, 1999; Hsu, 2013).

形態特徵：成蝶前翅長 18-20mm。具雌雄二型性。雄蝶 (圖 85)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆帶黃色調之金屬光澤綠色鱗；前翅外緣及後翅外緣、前緣及內緣有狹窄暗褐色區域；後翅外緣有一藍色細線紋。翅腹面底色褐色泛灰白色，有內側鑲暗褐色邊之中央線紋，於後翅後側形成 W 字形；後翅 $Sc+R_1$ 室有白色短紋；前、後翅中室端均有鑲白邊之短條；前翅亞外緣帶紋深褐色帶白帶邊，後翅則由白色帶紋及內側弦月紋組成；後翅臀區及 CuA_1 室各有一黑色斑點及橙色斑紋。緣毛白色。雌蝶 (圖 86)：複眼疏被毛、前足跗節不癒合、翅紋為 B 型或 AB 型：前翅背面內側具藍色斑塊，有時亦有橙色斑點。

雄交尾器 (圖 344)：背兜寬；背兜側突前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，肘處具刺棘，向前漸窄、波狀，末端尖。囊突短囊狀。抱器內突指狀，下彎，末端尖；抱握鋏寬瓣狀，腹緣凹。陽基軛片寬、V 字形。陽莖近甚直；陽莖器略短於陽莖基。陽莖器末端開口斜切於背側；角狀器為多列小齒。

雌交尾器 (圖 473)：交尾囊卵形。花壁為一對小型內陷錐狀骨。交尾囊管粗短，前端膜質、有皺褶，末端骨化、管狀。交尾孔板形成膜質拱頂，內具雙角帽狀骨化結構，後端明顯內凹。後內骨突長於肛突，彎曲，基部呈膨大、扁平、彎曲，前端棒狀。肛突瓣狀，具毛。

世界分布：印度東北部、中南半島及臺灣。

臺灣分布：分布於本島中至高海拔山區。

寄主植物：殼斗科之狹葉櫟。

生物學：本種為一年一世代物種，成蝶於夏天飛行，越冬卵產於寄主植物休眠芽附近或枝條上。

***Chrysozephyrus disparatus* (Howarth, 1957) (小翠灰蝶／臺灣綠小灰蝶／裂斑金灰蝶)**

Neozephyrus disparatus Howarth, 1957: Bulletin of the British Museum (Natural History) Entomology 5 (6): 259. (Type locality: "Weisi, Yunnan")

Ssp. *pseudotaiwanus* Howarth, 1957

PLATE 12, Fig. 87; PLATE 13, Figs. 88–89; PLATE 49, Fig. 345; PLATE 82, Fig. 474

Neozephyrus pseudotaiwanus Howarth, 1957: Bulletin of the British Museum (Natural History) Entomology 5 (6): 259. (Type locality: "Mareppa, Formosa, [Lixing, Renai, Taiwan]")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Lalashan, 14. X. 1999 (Y. J. Chen); 1♂, Fuxing, Galahe, 1550m, 26. II. 2013, reared from *Quercus sessilifolia*, emgd. 21. VI. 2013, HSU 13B15 (L. H. Wang & H. Y. Lee). **XINZHU Co.:** 1♂, Jianshi, Zhenxibao, 1100m, 27. II. 2001, reared from *Q. longinux*, emgd. 15. IV. 2001, HSU 01B35 (C. C. Lu, Y. T. Lo & H. S. Chuen); 1♂, same locality, 1500m, 10. I. 2009, reared from *Q. longinux*, emgd. 13. IV. 2009, HSU 09A17 (L. H. Wang); 2♀, same locality, 1600m, 3. VI. 2009 (L. H. Wang); 1♀, same locality, 5. VI. 2004 (L. H. Wang) (genitalia preparation JYL603). **NANTOU Co.:** 1♂, Xinyi, Dongpu, 6. III. 2010, reared from *Q. glauca*, emgd. 10. IV. 2010 (C. C. Lu, jr); 2♀, Renai, Hewan, 22. VI. 2008 (R. K. Dong).

Description. Adult – Forewing length 17–21 mm. Sexual dimorphism present. Male (PLATE 12, Fig. 87): Head hairy, brown, with narrow medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green tinged with yellow scalings, narrow dark brown area present along termen on forewing, costa, termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color pale brown, with prominent white discal band edged by dark

brown proximally on both wings, posterior part of band on hindwing in form of W-shape. Submarginal bands as a dark brown edged by white band on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 13, Figs. 88–89): Eyes less hairy, Protarsi not fused, wing pattern "A", "AB", "B" or "O" type all present.

Male genitalia (PLATE 49, Fig. 345) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly bent, produced at "elbow" with a few spines, distal portion wavy and attenuate toward pointed distal end. Saccus short, sac-like. Valva with ampulla forming prominent digitate, down-curved process with blunt distal end; harpe as a broad lobe with ventral margin convex. Juxta broad, V-shaped. Phallus nearly straight, with aedeagus slightly longer than phallobase. Aedeagus with angled, dorsal opening at distal end. Cornuti as multiple rows of small teeth.

Female genitalia (PLATE 82, Fig. 474) – Corpus bursae oval. Signa as a pair of small, invaginated conical sclerites on opposite walls of corpus bursae. Ductus bursae short, thick, wrinkled, membranous anteriorly, narrow, tubular, sclerotized posteriorly. Sterigma forming spade-shaped sclerite with small medial notch posteriorly, in a membranous dome. Posterior apophyses longer than anal papillae, slightly curved, enlarged and flattened at base into sclerotized band with curved caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. Himalayas, Northeast India, Indochina, West, South, East China, and Taiwan (Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone (Uchida, 1999; Hsu, 2002, 2013).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Q. longinux*, *Q. sessilifolia*, *Q.*

stenophylloides, *Lithocarpus konishii*, *L. kawakamii* (Uchida, 1999; Hsu, 2002, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg by dormant buds of the hostplant (Uchida, 1999; Hsu, 2002, 2013).

形態特徵：成蝶前翅長 17–21 mm。具雌雄二型性。雄蝶 (圖 87)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、前端漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面亮白色。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆帶黃色調之金屬光澤綠色鱗；前翅外緣及後翅外緣、前緣及內緣有狹窄黑褐色區域；後翅外緣有一藍色細線紋。翅腹面底色淡褐色，有內側鑲暗褐色邊之白色中央線紋，於後翅後側形成 W 字形；前翅亞外緣帶紋暗褐色鑲白邊，後翅則由白色帶紋及弦月紋組成；後翅臀區及 CuA_1 室各具一鮮明黑色斑點及橙色斑紋。緣毛白色。雌蝶 (圖 88-89)：複眼疏被毛、前足跗節不癒合、翅紋 A、AB、B 或 O 型個體均可見到。

雄交尾器 (圖 345)：背兜寬；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，肘處凸出，表面具刺棘，後半部波狀、漸尖。囊突短囊狀。抱器內突呈指狀突起，先端下彎，末端鈍；抱握鋏寬、葉狀，腹緣凸出。陽基軛片寬、V 字形。陽莖甚直，陽莖器略長於陽莖基。陽莖器末端開口斜切於背側；角狀器為多列小齒。

雌交尾器 (圖 474)：交尾囊卵形。花壁為一對內陷錐狀骨。交尾囊管粗短、有皺褶，末端骨化、管狀。交尾孔板形成膜質拱頂狀構造，內有鏟狀骨，其末端中央有小凹陷。後內骨突略長於肛突，略彎曲，基部呈膨大、扁平、彎曲，前端棒狀。肛突瓣狀，具毛。

世界分布：喜馬拉雅地區、印度東北部、中南半島、華西、華南、華東及臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之青剛櫟、錐果櫟、毽子櫟、狹葉櫟、小西氏石櫟、大葉石櫟等。

生物學：本種為一年一世代物種，成蝶於夏天活動，越冬卵產於寄主植物休眠芽附近。

***Chrysozephyrus rarasanus* (Matsumura, 1939) (** 拉拉山翠灰蝶／拉拉山綠小灰蝶／嬈嬈金灰蝶 **)**

PLATE 13, Figs. 90–91; PLATE 49, Fig. 346; PLATE 82, Fig. 475

Zephyrus rarasanus Matsumura, 1939: Insecta Matsumurana 13 (2/3): 110. (Type locality: "Mt. Rara, Formosa [Lalashan, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Sanxia, Beichatianshan, 1720/1727m, 25. VI. 1989 (Y. F. Hsu); 1♂, same locality, 22.V. 1993 (Y. F. Hsu & M. Y. Lin); 7♂, same locality, 3/4. VI. 2000 (C. C. Lu); 4♂, same locality, 1700/1727m, 6. VI. 1996 (Y. F. Hsu); 7♂, same locality, 1500/1700m, 2/4. VI. 2000 (C. Y. Hung, C. C. Lu & Y. T. Lo); 1♀, same locality, 1500/1727m, 25/26. V. 2002 (C. L. Huang, L. H. Wang & C. R. Chen); 1♂, same locality, 1700m, 27/28. V. 2002 (L. H. Wang); 1♂, same locality, 16. V. 2011 (L. H. Wang); 1♂, Wulai, Lalashan, 1500m, 9. VI. 2000 (C. Y. Hung). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, 14. VI. 1986 (C. K. Lo); 2♂, same locality, 11/12. VI. 1988 (Y. F. Hsu); 1♂, 2♀, Fuxing, Hewei, 24. VIII. 2000, reared from *Quercus sessilifolia*, emgd. 25/28. IV. 2001, HSU 00H5 (C. C. Lu); 1♀, Fuxing, Galahe, 1550m, 26. II. 2013, reared from *Q. sessilifolia*, emgd. 3. VI. 2013, HSU 13B15.2 (L. H. Wang & H. Y. Lee). **YILAN Co.:** 1♂, Nanao, Tongshan, 16. VI. 1999 (C. C. Lu). **XINZHU Co.:** 1♀, Jianshi, Zhenxibao, 27. II. 2001, reared from *Q. longinux*, emgd. 30. V. 2002, HSU 01B35.1 (C. C. Lu, Y. T. Lo & H. S. Chuen) (genitalia preparation JYL634).

Description. Adult – Forewing length 16–19 mm. Sexual dimorphism present. Male (PLATE 13, Fig. 90): Head hairy, brown, with narrow medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green scalings tinged with blue, dark brown area present along termen on forewing, costa,

termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color pale brown, with prominent white discal band edged by dark brown proximally on both wings, posterior part of band on hindwing in form of W-shape. Submarginal bands as a dark brown edged by white band on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 13, Fig. 91): Eyes less hairy, Protarsi not fused, wing pattern "O" or "A" type, with wing uppersides uniformly brown or with orange spots.

Male genitalia (PLATE 49, Fig. 346) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly bent, produced at "elbow" with a few spines, thick, with distal end abruptly narroweddistal portion wavy and attenuate toward pointed distal end. Saccus short, sac-like. Valva with ampulla forming prominent digitate, down-curved process with truncate distal end; harpe as a broad lobe with ventral margin convex. Juxta broad, V-shaped. Phallus nearly straight, with aedeagus slightly longer than phallobase. Aedeagus slightly down-curved, with angled, dorsal opening at distal end. Cornuti absent.

Female genitalia (PLATE 82, Fig. 475) – Corpus bursae oval. Signa as a pair of small, invaginated spines on opposite walls of corpus bursae. Ductus bursae short, thick, wrinkled, membranous anteriorly, narrow, tubular, sclerotized posteriorly. Sterigma forming bowl-shaped sclerite with small medial notch posteriorly, in a membranous dome. Posterior apophyses approximately as long as anal papillae, slightlyly curved, enlarged and flattened at base into sclerotized band with curved caudal ends, clavate at cephalic end. Anal papillae lobe-like, setose.

Global distribution. West to South China, Taiwan (Hsu, 1999b, 2013; Koiwaya, 2007).

Distribution in Taiwan. Moderate elevations in montane zone, rare in Central and South Taiwan (Uchida, 1999; Hsu, 2002, 2013).

Larval Host plant(s). Fagaceae: *Quercus sessilifolia*, *Q. longinux*, and *Q. morii* (Hsu,

2002, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg by dormant buds of the hostplant (Uchida, 1999; Hsu, 2013).

Remarks. The specific name refers to the type locality, Mr. Rara [Mt. Lala] in northern Taiwan.

形態特徵：成蝶前翅長 16–19 mm。具雌雄二型性。雄蝶 (圖 90)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角暗褐色，有白環。口器暗褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具暗褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆帶藍色調之金屬光澤綠色鱗；前翅外緣及後翅外緣、前緣及內緣有暗褐色區域；後翅外緣有一藍色細線紋。翅腹面底色淡褐色，有內側鑲暗褐色邊之白色中央線紋，於後翅後側形成 W 字形；前翅亞外緣帶紋深褐色鑲白邊，後翅則由白色帶紋及內側弦月紋組成；後翅臀區及 CuA_1 室各有一黑色斑點及橙色紋。緣毛白色。雌蝶 (圖 91)：複眼疏被毛、前足跗節不癒合、翅紋 O 或 A 型：翅背面全呈褐色或具橙色斑點。

雄交尾器 (圖 346)：背兜寬；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，肘處增厚、外側具刺棘，後端漸細，後半部波狀，末端尖。囊突短囊狀。抱器內突指狀，下彎，末端截平；抱握鋏寬瓣狀，腹緣凸出。陽基軛片寬、V 字形。陽莖甚直；陽莖器略長於陽莖基。陽莖器略下彎，末端開口斜切於背側；無角狀器。

雌交尾器 (圖 475)：交尾囊卵形。花壁為一對小型內陷棘狀骨。交尾囊管粗短，前端膜質、具皺褶，末端狹窄、管狀、骨化。交尾孔板形成膜質拱頂狀，內具骨化碗狀結構，末端有小凹陷。後內骨突約略與肛突等長，略彎曲，基部膨大、扁平、彎曲，前端棒狀。肛突瓣狀，具毛。

世界分布：華西至華南、臺灣。

臺灣分布：分布於本島中海拔山區，中南部少見。

寄主植物：殼斗科之毽子櫟、錐果櫟及森氏櫟。

生物學：本種為一年一世代種，成蝶活動於初夏，越冬卵產於寄主植物休眠芽附近。

註記：本種種小名源自其模式產地，臺灣北部之拉拉山。

Chrysozephyrus yuchingkinus Murayama & Shimonoya, 1960 (清金翠灰蝶 / 埔里綠小灰蝶)

PLATE 13, Figs. 92–93; PLATE 49, Fig. 347; PLATE 82, Fig. 476

Chrysozephyrus yuchingkinus Murayama & Shimonoya, 1960: Tyô to Ga 11 (2): 32. (Type locality: "Puli, Formosa")

Chrysozephyru etsu D'Abrera, 1986: Butterflies of the Oriental Region, PartIII: 554. (nomen nudum)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♀, Wulai, Kuaishan, 4. VI. 1988 (Y. F. Hsu); 2♂, Sanxia, Beichatianshan, 1500/1700m, 2/4. VI. 2000 (C. Y. Hung, C. C. Lu & Y. T. Lo) (genitalia preparation JYL635); 1♀, same locality, 1500/1727m, 25/26. V. 2002 (C. L. Huang, L. H. Wang & C. R. Chen); 1♂, same locality, 1600m, 2. VI. 2002 (C. L. Huang & C. R. Chen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, VI. 1980 (H. L. Huang); 1♀, same locality, reared from *Quercus* sp., emgd. 20. IV. 1985 (C. K. Lo); 1♀, Fuxing, Northern Cross-Island Road, 1. X. 2004 (Y. T. Lo) (genitalia preparation JYL636); 1♂, Fuxing, Baling, 600m, 7. V. 2009 (N. Y. Tsai); 1♀, Fuxing, Fufushan, 1700m, 20. X. 2013, reared from *Quercus sessilifolia*, emgd. 29. III. 2014, HSU 13K38 (C. C. Lu, jr); 1♂, same locality, 12. II. 2022, reared from *Q. sessilifolia*, emgd. 16. IV. 2022, HSU 22B14-2(7) (C. W. Haung, Z. L. Chen & C. C. Lu, jr). **TAIDONG Co.:** 1♂, Haiduan, Liyuan, 18. VI. 2020 (Y. F. Hsu & C. W. Huang).

Description. Adult – Forewing length 18–20 mm. Sexual dimorphism present. Male (PLATE 13, Fig. 92): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular.

Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, sometimes scattered with few metallic green scalings. A narrow blue band along termen of hindwing. Wing undersides ground color pale brown, with prominent white discal band edged by dark brown proximally on both wings, posterior part of band on hindwing in form of V-shape. Submarginal bands as a dark brown edged by white band on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 13, Fig. 93): Eyes less hairy, Protarsi not fused, wing pattern "A" or "O" type.

Male genitalia (PLATE 49, Fig. 347) – Tegumen broad, concave mesad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly curved, distal portion slightly curved, attenuate toward distal end. Saccus short, with anterior end rounded. Valva with ampulla forming process with shovel-like distal end; harpe as a broad lobe with ventral margin convex. Juxta broad, V-shaped. Phallus nearly straight, with aedeagus slightly shorter than phallobase. Aedeagus slightly up-raised, with angled, dorsal opening at distal end.

Female genitalia (PLATE 82, Fig. 476) – Corpus bursae oval. Signa as a pair of minute invaginated conical sclerites on opposite walls of corpus bursae. Ductus bursae moderately long, thick, membranous anteriorly, narrow, tubular, sclerotized posteriorly. Sterigma forming bicorne-shaped sclerite with prominent medial notch posteriorly, in a membranous dome. Posterior apophyses slightly longer than anal papillae, straight, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus sessilifolia*, *Q. glauca*, and *Q. longinux*

(Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg by dormant buds of the hostplant (Hsu, 2013).

Remarks. The specific name was given in honor of Mr. Ching-Kin Yu, the founder of Mokusei Insect Museum in Taiwan.

This species is the one of few species lacking metallic green scalings in males of the genus *Chrysozephyrus*.

形態特徵：成蝶前翅長 18–20 mm。具雌雄二型性。雄蝶 (圖 92)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，有時覆少許金屬綠光澤鱗；後翅外緣有一藍色細線紋。翅腹面底色淡褐色，有內側鑲暗褐色邊之白色中央線紋，於後翅後側形成 V 字形；前翅亞外緣帶紋深褐色鑲白邊，後翅則由白帶紋及內側弦月紋組成；後翅臀區及 CuA_1 室各有一黑色斑點及橙色紋。緣毛白色。雌蝶 (圖 93)：複眼疏被毛、前足跗節不癒合、翅斑紋 O 或 A 型：翅背面全呈褐色，有時有橙色斑點。

雄交尾器 (圖 347)：背兜寬，中央凹陷；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，向末端漸細，端部略彎曲，末端尖。囊突短，前端圓。抱器內突末端鏟狀；抱握鋏寬瓣狀，腹緣凸出。陽基軛片寬、V 字形。陽莖甚直；陽莖器略短於陽莖基。陽莖器略上揚，末端開口斜切於背側；無角狀器。

雌交尾器 (圖 476)：交尾囊卵形。花壁為一對小型內陷錐狀骨。交尾囊管粗、長，前端膜質，後端窄、骨化管狀。交尾孔板形成膜質拱頂狀，內具雙角帽狀骨化結構，末端有明顯內凹。後內骨突略長於肛突，甚直，基部呈膨大、扁平、彎曲。肛突瓣狀，具毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之毽子櫟、青剛櫟及錐果櫟。

生物學：本種為一年一世代種，成蝶活動於初夏，越冬卵產於寄主植物休眠芽附近。

註記：本種種小名係表彰臺灣木生昆蟲館創始人余清金先生。此外，本種為翠灰蝶屬內少數雄蝶缺乏帶金屬光澤綠色斑塊之種類。

***Chrysozephyrus splendidulus* Murayama & Shimonoya, 1965 (單線翠灰蝶／單帶綠小灰蝶)**

PLATE 13, Fig. 94; PLATE 14, Fig. 95; PLATE 50, Fig. 348; PLATE 83, Fig. 477

Chrysozephyrus hisamatsusanus splendidulus Murayama & Shimonoya, 1965: Tohoku Konchu Kenkyu 2 (2): 27, Figs. 15, 17. (Type locality: Mt. Rara, Formosa [Lalashan, Taiwan])
Chrysozephyrus splendiduclus Chen, 1974: Butterflies of Taiwan in Colour: 225. (misspelling)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Lalashan, 26. V. 1981 (C. K. Lo); 1♀, same locality, 15. VI. 1986 (C. K. Lo) (genitalia preparation JYL633); 1♀, Fuxing, Northern Cross-Island Road, 26. V. 2006 (Y. T. Lo); 1♂, Fuxing, Fufushan, 17. I. 2018, reared from *Quercus gilva*, emgd. VI. 2018, HSU 18A6.1 (C. J. Chang, L. H. Wang, H. Y. Lee & C. W. Huang) (genitalia preparation JYL552). **XINZHU Co.:** 1♂, Jianshi, Yulao, 1200m, 21. I. 2003, reared from *Q. gilva*, emgd. 28. IV. 2003, HSU 03A34.1 (Y. F. Hsu & S. C. Chen); 1♂, 1♀, same locality, 1400m, 14. II. 2006, reared from *Q. gilva*, emgd. 31. III/8. IV. 2006, HSU 06B25 (L. H. Wang). **NANTOU Co.:** 1♂, data missing, ex Mokusei Museum Coll.

Description. Adult – Forewing length 18–20 mm. Sexual dimorphism present. Male (PLATE 13, Fig. 94): Head hairy, brown, with narrow medial white band, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal

ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green tinged with yellow scalings, prominent narrow dark brown area present along termen on forewing, costa, termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color pale brown, with prominent white discal band edged by dark brown proximally on both wings, posterior part of band on hindwing in form of V-shape. Submarginal bands as two dark brown spots with a white distal line on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 14, Fig. 95): Eyes less hairy, Protarsi not fused, wing pattern "B" or "O" type.

Male genitalia (PLATE 50, Fig. 348) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium as long arm, strongly bent, produced at "elbow" with a few spines, basal portion thick, distal portion slender, slightly up-raised, attenuate toward distal end. Saccus short, sac-like. Valva with ampulla forming prominent horn-like, down-curved process with pointed distal end; harpe as a broad lobe with ventral margin convex, forming a bump-like process posteriorly. Juxta V-shaped. Phallus nearly straight, with aedeagus longer than phallobase. Aedeagus with angled, dorsal opening at distal end. Cornuti as multiple rows of small teeth.

Female genitalia (PLATE 83, Fig. 477) – Corpus bursae oval. Signa as a pair of small, invaginated conical sclerites on opposite walls of corpus bursae. Ductus bursae moderately long, forming elongate sclerotized tube with enlarged posterior membranous sac, following by a thicker sclerotized ring. Sterigma forming sclerotized wall with anterior rounded fold, a broad V-shaped invagination present. Posterior apophyses longer than anal papillae, slender, nearly straight, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of northern Taiwan

(Uchida, 1999; Koiwaya, 2007; Hsu, 2006, 2013).

Larval Host plant(s). Fagaceae: *Quercus gilva* (Uchida, 1999; Koiwaya, 2007; Hsu, 2006, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg by dormant buds of the hostplant (Uchida, 1999; Hsu, 2006, 2013).

Remarks. This species is closely related to *C. hisamatsusanus* (Nagami & Ishiga, 1935) distributed in Japan and sometimes regarded as subspecies of the latter (e.g., Hamano, 1987).

形態特徵：成蝶前翅長 18–20 mm。具雌雄二型性。雄蝶 (圖 94)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆帶黃色調之金屬光澤綠色鱗；前翅外緣及後翅外緣、前緣及內緣有深褐色區域；後翅外緣有一藍色細線紋。翅腹面底色淡褐色，有內側鑲深褐色邊之白色中央線紋，於後翅後側形成 V 字形；前翅亞外緣帶紋由二深褐色斑點及外側深褐色線紋組成，後翅則由白色帶紋及內側弦月紋組成；後翅臀區及 CuA_1 室各有一黑色斑點及橙色斑紋。緣毛白色。雌蝶 (圖 95)：複眼疏被毛、前足跗節不癒合、翅紋 B 或 O 型。

雄交尾器 (圖 348)：背兜寬；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，基部粗厚，肘部具刺棘，向後漸細，略上揚，末端尖。囊突短囊狀。抱器內突角狀，後端下彎，末端尖；抱握鋏寬瓣狀，腹緣凸出，末端隆起。陽基軛片 V 字形。陽莖甚直；陽莖器略短於陽莖基。陽莖器末端開口斜切於背側；角狀器為多列小齒。

雌交尾器 (圖 477)：交尾囊卵形。花壁為一對小型內陷錐狀骨。交尾囊管中庸長、細長、骨化，末端囊狀、膨大，連接骨化環。交尾孔板形骨壁，前端圓、有褶，具

寬闊 V 形內凹。後內骨突長於肛突，細長、直，基部呈膨大、扁平、彎曲的。肛突瓣狀，具毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島北部中海拔山區。

寄主植物：殼斗科之赤皮櫟。

生物學：本種為一年一世代種，成蝶活動於夏天，越冬卵產於寄主植物休眠芽附近。

註記：本種與分布於日本之久松翠灰蝶 *C. hisamatsusanus* (Nagami & Ishiga, 1935) 近緣，有時被視為其亞種。

Chrysozephyrus lingi Okano & Okura, 1969 (白芒翠灰蝶／蓬萊綠小灰蝶)

PLATE 14, Figs. 96–97; PLATE 50, Fig. 349; PLATE 83, Fig. 478

Chrysozephyrus ataxus lingi Okano & Okura, 1969: Tohoku Konchu Kenkyu 4 (1): 7, Fig. 1. (Type locality: Mt. Rara, Formosa [Lalashan, Taiwan])

Chrysozephyrus subnivalis Kawazoé & Wakabayashi, 1969: Tyô to Ga 20 (1/2): 1, Figs 1, 3A, 7-10. (Type locality: “Mt. Rara, Formosa”)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Lalashan, 14. VI. 1986 (C. K. Lo) (genitalia preparation JYL631); 1♀, same locality, 17. VI. 1986 (C. K. Lo) (genitalia preparation JYL632); 1♂, same locality, 14. VI. 2004 (R. K. Dong). **XINZHU Co.:** 1♀, Jianshi, Yualo, 1250m, 24/26. III. 2000, reared from *Quercus gilva*, emgd. 3. V. 2000, HSU 00C16 (C. C. Lu); 1♂, same locality, 1400m, 14. II. 2006, reared from *Q. gilva*, emgd. 9. IV. 2006, HSU 06B26 (L. H. Wang); 1♀, same locality, 1500m, 25. II. 2009, reared from *Q. gilva*, emgd. 3. IV. 2009, HSU 09B34.2 (L. H. Wang); 1♂, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 21. VIII. 2002 (C. Y. Hung).

Description. Adult – Forewing length 21–23 mm. Sexual dimorphism present. Male (PLATE 14, Fig. 96): Head hairy, brown, with narrow medial white band, a white rim

surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green scalings, prominent dark brown area present at apex and along termen on forewing, costa, termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color slivery white, with prominent brown discal band on both wing. Short brown bars at distal end of discoidal cells. Additional brown markings present anterior and posterior to hindwing bar. Submarginal band on forewing as several brown distal spots, on hindwing a blurred band by discal band. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 14, Fig. 97): Eyes less hairy, Protarsi not fused, wing pattern of forewing uppersides “B” or “AB” type, brown markings on wing underside much more extensive than those of males.

Male genitalia (PLATE 50, Fig. 349) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium strongly bent, produced at “elbow” into fusiform caltrop, distal portion strongly up-curved, buffalo horn-shaped, attenuate toward distal end. Saccus short, sac-like. Valva with ampulla forming spiny blade, with a prominent spine pointing outwards; costa with dorsal margin produced; harpe with margin nearly linear, not produced. Juxta V-shaped. Phallus aedeagus longer than phallobase. Aedeagus up-raised, with angled, dorsal opening at distal end. Cornuti as multiple rows of minute spines.

Female genitalia (PLATE 83, Fig. 478) – Corpus bursae oval. Signa as a pair of small, invaginated spines on opposite walls of corpus bursae. Ductus bursae membranous, short, thick, tapering posteriorly. Sterigma forming small bicorne-shaped sclerite with small medial notch posteriorly, in a membranous dome associated with broad, transverse sclerotized band with posterior margin concave. Posterior apophyses longer than anal papillae, slender, straight, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Koiwaya, 2007; Hasegawa & Saito, 2014).

Distribution in Taiwan. Moderate elevations in montane zone of North and Central Taiwan (Uchida, 1999; Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus gilva* (Uchida, 1999; Koiwaya, 2007; Hsu, 2013).

Biology. Univoltine, adults on wing in summer; overwintering as egg by dormant buds of the hostplant (Uchida, 1999; Hsu, 2013).

Remarks. This species is placed in another genus *Thermozephyrus* by some authors (e.g., Koiwaya, 2007; Hasegawa & Saito, 2014), and sometimes considered as a subspecies of *C. ataxus* (Westwood, [1851]) (e.g., Okano & Okura, 1969; Hamano, 1987; Uchida, 1999).

形態特徵：成蝶前翅長 21–23 mm。具雌雄二型性。雄蝶 (圖 96)：頭被毛、褐色，額中央具白色細帶紋，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆金屬光澤綠色鱗；前翅翅頂、外緣及後翅外緣、前緣及內緣有深褐色區域；後翅外緣有一藍色細線紋。翅腹面底色銀白色，具褐色中央帶紋；中室末端有褐色短條；後翅前端與後端亦有褐色斑紋；前翅亞外緣帶紋為數只靠外側之褐色斑點，後翅則為中央帶延伸之模糊帶紋；後翅臀區及 CuA_1 室各有一黑色斑點及橙色斑紋。緣毛白色。雌蝶 (圖 97)：複眼疏被毛、前足跗節不癒合、翅斑紋 B 或 AB 型，翅腹面褐色斑紋較雄蝶明顯。

雄交尾器 (圖 349)：背兜寬；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突明顯彎曲，肘部成梭形蔟藜狀，末端漸細、牛角狀。囊突短囊狀。抱器內突瓣狀、有棘，具一明顯外指之刺突；抱器背背緣具突起；抱握鋏邊緣線狀，無突起。陽基軛片 V 字形。陽莖器略長於陽莖基。陽莖器上陽，末端開口斜切於背側；角狀器為多列小齒。

雌交尾器 (圖 478)：交尾囊長橢圓形。花壁形成一對小型內陷棘狀骨。交尾囊管粗短、膜質，向後端漸細。交尾孔板形成膜質拱頂狀，內具寬闊、骨化橫板，後緣凹入，內有雙角帽狀骨化構造，其後緣中央有小凹陷。後內骨突長度略長於肛突、細長、甚直，基部呈膨大、扁平、彎曲。肛突瓣狀，具毛。

世界分布：Koiwaya (2007) 及 Hasegawa & Saito (2014) 視本種為臺灣特有種。

臺灣分布：分布於本島中、北部中海拔山區。

寄主植物：殼斗科之赤皮櫟。

生物學：本種為一年一世代種，成蝶活動於夏天，越冬卵產於寄主植物休眠芽附近。

註記：有些研究者將本種置於 *Thermozephyrus* 屬內。亦常被視為 *C. ataxus* (Westwood, [1851]) 之亞種。

Chrysozephyrus mushaellus (Matsumura, 1938) (霧社翠灰蝶／霧社綠小灰蝶／繆斯金灰蝶)

PLATE 14, Figs. 98–100; PLATE 50, Fig. 350; PLATE 83, Fig. 479

Zephyrus mushaellus Matsumura, 1938: Insecta Matsumurana 13 (1): 44. (Type locality: “Mamesha, Formosa”)

Chrysozephyrus chungianus Murayama, 1958: Tyô to Ga 9 (3): 43, Figs. 1, 3. (Type locality: Makabubu, Formosa)

Chrysozephyrus hsuehshanus Murayama & Shimonoya, 1969: Tohoku Konchu Kenkyu 4 (2): 22–23, pl. 3. (Type locality: Mt. Rara, Formosa [Lalashan, Taiwan])

Chrysozephyrus muhshengi Shimonoya & Murayama, 1971: Tyô to Ga 22 (1/2): 22, Figs, 8–9. (Type locality: “Nantou, Formosa”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♀, Sanxia, Beichatianshan, 1204m, 11. III. 2000, reared from *Lithocarpus harlandii* [= *Lithocarpus brevicaudatus*], emgd. 14/15. IV. 2000, HSU 00C5 (Y. T. Lo);1♂, Wulai, Fushan, Hapen, Trail, 500m, 20. I. 2006, reared from *Lithocarpus* sp., emgd. 20. III. 2006, HSU 06A20 (C. C. Lu, J. R. Chen, P. C. Kuan & J. T. Kuo). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Sileng, 1000m, 5.

II. 2006, reared from *L. kawakamii*, emgd. 23. III. 2006, HSU 06B4 (L. H. Wang); 1♀, same locality, 6. II. 2007, reared from *Lithocarpus* sp., emgd. 9. IV. 2009, HSU 07B8 (L. H. Wang, L. W. Wu & T. W. Chen); 1♀, Fuxing, Sileng, 12. II. 2009, reared from *Lithocarpus* sp., emgd. 24. III. 2009, HSU 09B39 (C. C. Lu, jr); 1♂, 1♀, same locality, 12. III. 2020, reared from *L. brevicaudatus*, emgd. 10/13. IV. 2020, HSU 20C14 (C. W. Huang & Z. L. Chen); 1♂, Fuxing, Xuewunao, 29. V. 2016 (C. W. Huang); 1♀, same locality, 12. II. 2022, reared from *Querucs sessilifolia*, emgd. 26. III. 2022, HSU 22B14-4 (C. W. Huang, Z. L. Chen & C. C. Lu, jr); 1♀, Fuxing, Xuanyuan, 19. VII. 2018 (C. W. Huang) (genitalia preparation JYL462). **YILAN Co.:** 1♂, Nanao, Tongshan, 1800m, 16. VI. 1666 (C. C. Lu). **XINZHU Co.:** 2♂, 4♀, Jianshi, Zhenxibao, 1650m, 24. III. 2000, reared from *L. harlandii* [= *L. brevicaudatus*], emgd. 21/23. IV. 2000, HSU 00C18 (C. C. Lu); 1♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 21. VIII. 2002 (C. Y. Hung). **NANTOU Co.:** 1♀, Renai, Nanshanxi, 16. IV. 1999, reared from *L. harlandii* [= *L. brevicaudatus*], emgd. 12. V. 1999, HSU 99D17 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Jinfeng, Jianshan, 1400m, 7. IV. 2000, reared from *L. harlandii* [= *L. brevicaudatus*], emgd. 13. V. 2000, HSU 00D9 (Y. F. Hsu); 1♂, Haiduan, Southern Cross-Island Road, 160K, 23/24. VI. 2016 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL456).

Description. Adult – Forewing length 18–21 mm. Sexual dimorphism present. Male (PLATE 14, Fig. 98): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic green scalings, dark brown area present along termen on forewing, costa, termen and dorsum on hindwing. A narrow blue band along termen of hindwing. Wing undersides ground color brown, with prominent white discal band edged by dark brown proximally on both wings, band on forewing broken at veins, posterior part of band on hindwing in form of W-shape. Submarginal bands as a dark brown edged by white band on forewing, a prominent white band edged by proximal lunules on hindwing. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 14, Figs. 99–100): Eyes less hairy,

Protarsi not fused, wing pattern “B” or “AB” type.

Male genitalia (PLATE 50, Fig. 350) – Tegumen broad; socii expanded anteriad, forming bow-like structure. Vinculum slightly curved. Brachium strongly bent arm, produced at “elbow” with a few spines, basal portion thick, distal portion narrow, attenuate toward distal end. Saccus short, disc-like. Valva with ampulla forming prominent horn-like, down-curved process with pointed distal end; harpe as a broad lobe with ventral margin convex. Juxta broad, V-shaped. Phallus aedeagus longer than phallobase. Aedeagus up-raised, with angled, dorsal opening at distal end. Cornuti as multiple rows of small sclerotized bars.

Female genitalia (PLATE 83, Fig. 479) – Corpus bursae oval. Signa as a pair of small, invaginated conical sclerites on opposite walls of corpus bursae. Ductus bursae moderately long, membranous anteriorly, sclerotized posteriorly. Sterigma forming bicorne-shaped sclerite with deep, narrow, medial, V-shaped notch posteriorly, in a membranous dome. Posterior apophyses longer than anal papillae, slender, curved, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Northern Indochina, West, South and East China, and Taiwan (Koiwaya, 2007; Hsu, 2002, 2013).

Distribution in Taiwan. Moderate elevations in montane zone (Uchida, 1999; Hsu, 2002, 2013).

Larval Host plant(s). Fagaceae: *Lithocarpus kawakamii*, *L. brevicaudatus* and *Querucs sessilifolia* (Uchida, 1999; Hsu, 2002, 2013).

Biology. Univoltine, adults on wing in early summer; overwintering as egg by dormant buds of the hostplant, usually on small trees (Uchida, 1999; Hsu, 2002, 2013).

Remarks. The specific name refers to “Musha” [= Wushe], a locality used to be famous for high insect diversity in central Taiwan.

Koiwaya (2007) placed this species in the genus *Kawazoeozephyrus*.

形態特徵：成蝶前翅長 18–21 mm。具雌雄二型性。雄蝶 (圖 98)：頭被毛、褐色，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細、末端尖，白色但部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面白色有光澤。足白色，跗節具深褐色帶紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，於 CuA_2 脈末端具絲狀尾突。翅背面底色褐色，覆金屬光澤綠色鱗；前翅外緣及後翅外緣、前緣及內緣有深褐色區域；後翅外緣有一藍色細線紋。翅腹面底色褐色，有內側鑲暗褐色邊之白色中央線紋，於前翅翅脈處分斷、於後翅後側形成 W 字形；前翅亞外緣帶紋深褐色鑲白邊，後翅則由白帶紋及內側弦月紋組成；後翅臀區及 CuA_1 室各有一黑色斑點及橙色斑紋。緣毛白色。雌蝶 (圖 99–100)：複眼疏被毛、前足跗節不癒合、翅斑紋 B 或 AB 型。

雄交尾器 (圖 350)：背兜寬；背兜側突向前延伸成弓狀。基腹弧略彎曲。顎形突長臂狀，強彎曲，肘部有刺棘，基部較厚，後端漸細，末端尖。囊突短、盤狀。抱器內突角狀、下彎、末端尖；抱握鋏寬、瓣狀，腹緣凸出。陽基軛片寬、V 字形。陽莖器略短於陽莖基。陽莖器末端開口斜切於背側；角狀器為多列小齒。

雌交尾器 (圖 479)：交尾囊卵形。花壁為一對小型內陷錐狀骨。交尾囊管中庸長，前端膜質，後端形成骨化管。交尾孔板形成膜質拱頂狀，內具雙角帽狀骨化結構，末端有窄深 V 形內凹。後內骨突長於肛突、細長、彎曲，基部膨大、扁平、彎曲，前端棒狀。肛突瓣狀，具毛。

世界分布：中南半島北部、華西、華南及華東、臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之大葉石櫟、短尾葉石櫟及毽子櫟。

生物學：本種為一年一世代種，成蝶活動於初夏，越冬卵產於寄主植物休眠芽附近，通常見於幼株上。

註記：本種種小名源自過去以昆蟲多樣性高而聞名之南投縣霧社。

Koiwaya (2007) 將本種移置於 *Kawazoeozephyrus* 屬中。

Genus *SIBATANIOZEPHYRUS* Inomata, 1986

Type species: *Zephyrus fujisanus* Matsumura, 1910

Diagnostic characters include the following: 1) metallic blue patch on wing uppersides; 2) sexual dimorphism prominent; 3) filiform projection present at distal end of CuA_2 of hindwing; 4) eyes densely hairy in male, less hairy in female; 5) protarsus fused in male.

3 species are known from the northern Oriental and eastern Palearctic regions.

Larvae feed on plants in the genus *Fagus* of family Fagaceae.

1 species is known from Taiwan.

璀灰蝶屬

形態特徵如下：1) 翅背面有具金屬光澤藍色斑；2) 雌雄二型性顯著；3) 後翅 CuA_2 脈末端具絲狀尾突；4) 雄蝶複眼密被毛，雌蝶疏被毛；5) 雄蝶前足跗節癒合。

本屬已知 3 種，分布於東洋區北部及古北區東部。

幼生期以殼斗科水青岡屬植物為寄主。

臺灣有 1 種。

***Sibataniozephyrus kuafui* Hsu & Lin, 1994 (** 夸父璀灰蝶／夸父綠小灰蝶／插天山綠小灰蝶 **)**

PLATE 15, Figs. 101–102; PLATE 50, Fig. 351; PLATE 83, Fig. 480

Sibataniozephyrus kuafui Hsu & Lin, 1994: Journal of the Lepidopterists' Society 48(2): 143, Figs. 28–32, 38–39, 46–49. (Type locality: Taiwan: Taipei Hsien, Sanhsia, Mt. N. Chatienshan, 1700–1727 m)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, 1♀, Wulai, Lalashan, 1750/1800m, 21. XII. 1996, reared from *Fagus hayatae*, emgd. 9/23. IV. 1997, HSU 96M16 (Y. F. Hsu); 1♂, same locality, 13. IV. 1997, reared from *F. hayatae*, emgd. 28. IV. 1997, HSU 97D36 (Y. F. Hsu); 2♂, 3♀, Sanxia, Beichatianshan, 1700/1727m, 6. VI. 1996 (Y. F. Hsu); 1♂, same locality, 1500/1727m, 16. III. 1997, reared from *F. hayatae*, emgd. 9. IV. 1997, HSU 97A41 (Y. F. Hsu); 2♂, Sanxia, Zhulushan, 1360m, 8. I. 2002, reared from *F. hayatae*, emgd. 26. III. 2002, HSU 02A12 (C. C. Lu & H. S. Chuen). **YILAN Co.:** 1♂, Nanao, Tongshan, 31. III. 2004, reared from *F. hayatae*, emgd. 5. V. 2004, HSU 04C14 (C. L. Huang); 2♀, Nanao, Xiatongshan, 7. I. 2003, reared from *F. hayatae*, emgd. 3. IV. 2003, HSU 03A19 (C. L. Huang & J. R. Chen); 1♀, same locality, ca 1800m, 16. II. 2003, reared from *F. hayatae*, emgd. 24. III. 2003, HSU 03B22 (C. L. Huang, L. H. Wang & G. M. Wu); 1♀, Nanao, Lupishan, 22. II. 2003, reared from *F. hayatae*, emgd. 25. III. 2003, HSU 03B31 (C. L. Huang); 1♀, Nanao, Wangyangshan, 1800m, 14. III. 2017, reared from *F. hayatae*, emgd. 15. IV. 2017 (L. H. Wang, Y. M. Hsu & L. Huang) (genitalia preparation JYL562); 1♂, Nanao, Cuifenghu, reared from *F. hayatae*, emgd. 9. IV. 2019 (L. H. Wnag) (genitalia preparation JYL576).

Description. Adult – Forewing length 15–18 mm. Sexual dimorphism present. Male (PLATE 15, Fig. 101): Head hairy, brown, with prominent brush-like tuft on frons, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis dark brown. Labial palpus hairy, porrect, tapering to pointed tip, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, glossy white ventrally. Legs white, with tarsi banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, overlaid with metallic blue tinged with yellow scalings, dark brown area present along termen on both wings. A pale

blue band along termen of hindwing. Wing undersides ground color white, with two dark brown bands on both wings, distal band on forewing reduced, not prominent; posterior part of proximal band on hindwing in form of V-shape. Submarginal bands as a series of proximal dark brown spots and faint, narrow brown bands along termen. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white. Female (PLATE 15, Fig. 102): Eyes less hairy, Protarsi not fused, wing uppersides uniformly brown.

Male genitalia (PLATE 50, Fig. 351) – Tegumen broad, produced laterally; socii expanded anteriorly, forming bow-like structure. Vinculum broad dorsally, tapering ventrad. Brachium as elongate, slender hook with blunt distal end. Saccus short, with anterior end rounded. Valva with ampulla forming prominent medio-dorsal spine; harpe as a broad, curved lobe with small spines along posterior and ventral margins; costa forming elongate spine near juxta. Juxta as a broad sclerite with small medial dorsal notch. Phallus with aedeagus longer than phallobase. Aedeagus strongly up-curved, with angled, dorsal opening at distal end. Cornuti as two spiny bands.

Female genitalia (PLATE 83, Fig. 480) – Corpus bursae oval. Signa as a pair of small, invaginated spines on opposite walls of corpus bursae. Ductus bursae elongate, slender, wrinkled, mostly membranous, but with a bulbous sclerotized portion near ostium bursae. Sterigma as a sclerite with medial, short, tongue-like structure and a pair of longer lateral processes, in a membranous dome. Posterior apophyses slightly longer than anal papillae, nearly straight, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Endemic to Taiwan (Hsu, 1999a, 2013; Uchida, 1999).

Distribution in Taiwan. Mountain ridges of northern Taiwan where Taiwan Beech forests grow (Hsu & Lin, 1994).

Larval Host plant(s). Fagaceae: *Fagus hayatae* (Yen & Jan, 1995; Hsu, 1999a, 2013; Uchida, 1999).

Biology. Univoltine, adults on wing in early summer; overwintering as egg, mostly on twigs of the hostplant (Hsu, 1999a, 2013; Uchida, 1999).

Remarks. This taxon is closely related to *S. lijinae* Hsu, 1995 distributed in West to South China (Hsu, 1995; Koiwaya, 2007).

形態特徵：成蝶前翅長 15–18 mm。具雌雄二型性。雄蝶 (圖 101)：頭被毛、褐色，額中央具白色細帶紋，複眼有白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、向前漸細，末端尖，白色而部分深褐色。複眼被毛。胸部及腹部背面深褐色、腹面亮白色。足白色，跗節有深褐色條紋，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅葉狀，於 CuA_2 脈末端有絲狀尾突。翅背面底色褐色，覆帶黃色調、有金屬光澤藍色鱗；前後翅外緣有深褐色區域；後翅外緣有淺藍色線紋。翅腹面底色白色，具兩道深褐色帶紋，前翅外側帶紋減退、不顯著，後翅內側帶紋後端反折成 V 字形；亞外緣帶紋由內側數枚深褐色斑點及外側模糊褐色窄帶紋組成；後翅臀區及 CuA_1 室有黑色斑點及橙色斑紋。緣毛白色。雌蝶 (圖 102)：複眼疏被毛、前足跗節不癒合、翅背面褐色。

雄交尾器 (圖 351)：背兜寬闊，向兩側延伸；背兜側突向前端延伸成弓狀。基腹弧背側寬闊，腹面漸細。顎形突細長、鉤狀，末端鈍。囊突短，前端圓。抱器內突中央背側具細長突起；抱握鋏腹緣和後緣鋸齒狀；抱器背於近陽基軛片處具棘狀突起。陽基軛片寬板狀，背緣有小凹陷。陽莖器長度略長於陽莖基。陽莖器明顯上彎，末端開口斜切於背側。角狀器為 2 只具刺骨帶。

雌交尾器 (圖 480)：交尾囊長卵形。花壁一對，位於交尾囊相對位置，為內陷且具刺小骨。交尾囊管細長、有皺摺，大部分膜質，接近交尾孔處具球狀骨化結構。交尾孔板於膜質的拱頂狀內，中央為短舌狀骨片，兩側則具一對長突起。後內骨突長度略長於肛突，甚直，基部呈膨大、扁平，後端彎曲。肛突瓣狀，有毛。

世界分布：目前視為臺灣特有種。

臺灣分布：分布於本島北部有臺灣水青岡林分布之山脊。

寄主植物：殼斗科之臺灣水青岡。

生物學：本種為一年一世代物種，成蝶活動於初夏，越冬卵多見於寄主植物細枝條下側。

註記：本種與分布於華西至華南之黎氏璀灰蝶 *S. lijinae* Hsu, 1995 關係近緣。

Genus *AMBLOPALA* Leech, [1893]

Type species: *Amblypodia avidiena* Hewitson, 1877

Diagnostic characters include the following: 1) hindwing produced posteriorly along 1A+2A; 2) subapical orange markings present on forewing upperside, metallic blue or purple patches on forewing and sometimes also hindwing upperside; 3) characteristic Y-shaped band on hindwing undersides.

Amblopapa is a monotypic genus Eliot (1973) placed in a monotypic section within Theclini, but the morphology and hostplant association of immatures of this genus are conformed to *Surendra* section of Arhopalini instead of Theclini.

Larvae feed on the genus *Albizia* of Fabaceae.

The sole representative species occurs in Taiwan.

尖灰蝶屬

形態特徵如下：1) 後翅沿 1A+2A 脈向後突出；2) 前翅背面近翅頂處有橙色紋，前翅有具金屬光澤之藍、紫色斑塊 (有時後翅背面亦有之)；3) 後翅腹面有特徵明顯之 Y 字形帶紋。

Eliot (1973) 將此單種屬置於翠灰蝶族內之單屬節 (section)，但本屬幼生期形態及寄主植物均與紫灰蝶族內的酥灰蝶節 *Surendra* section 較相近。

幼生期以豆科之合歡屬植物為寄主。

唯一代表種臺灣有分布。

Amblopala avidiena (Hewitson, 1877) (尖灰蝶／歪紋小灰蝶／丫灰蝶小灰蝶)

Amblypodia avidiena Hewitson, 1877: The Entomologist's monthly magazine 14: 108. (Type locality: "China")

Ssp. *y-fasciatus* Sonan, 1929

PLATE 15, Figs. 103–104; PLATE 51, Fig. 352; PLATE 84, Fig. 481

Zephyrus y-fasciatus Sonan, 1929: Zephyrus 1 (4): 136, tab. 12, fig. 2. (Type locality: "Chikutô (Shinchiku-Shû), N. Formosa" [Zhudong, Taiwan])

Specimens examined:

XINZHU Co.: 1♀, Jianshi, Lidongshan, ca 1500m, 10. IV. 2005 (H. C. Huang); 4♀, same locality, ca 1600m, 15. III. 2006 (Y. F. Hsu, C. C. Lu & L. H. Wang); 1♀, same locality, 10. IV. 2019 (C. W. Huang) (genitalia preparation JYL590); 1♂, Jianshi, Zhenxibao, 1600m, 28. II. 2010 (Y. F. Hsu). **NANTOU Co.:** 2♂, Renai, Tunyuan, 1500m, 26. II. 2011 (Y. F. Hsu) (genitalia preparation JYL698). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, ca 1200m, 4. IV. 2002 (C. C. Lu).

Description. Adult – Forewing length 17–19 mm. Sexual dimorphism absent. Male (PLATE 15, Fig. 103): Head hairy, vertex ochre, frons brown with ochre hairs, edged by white margin, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, hairy, 3rd segment small, short, brown with ochre and white hairs. Compound eyes with minute, short hairs. Thorax and abdomen dark brown dorsally, ochre ventrally. Legs ochre banded with dark white, Protarsi fused, with distal end obtuse. Forewing triangular. Hindwing ovate, with junction of costa and termen angled, distal end of 1A+2A produced. Wing uppersides ground color dark brown. Metallic blue tinged purple patches on proximal areas of wings, more extensive on forewing. Subapical orange spots present, distal to blue patches. Wing undersides ochre on hindwing and termen of forewing, ochreous on most area of forewing. A white line present along termen of forewing, with a short white line at distal end of discoidal cell. A characteristic Y-shaped band on hindwing. Fringe brown. Female (PLATE 15, Fig. 104): Body and general wing patterns similar to those of male, but Protarsi normal.

Male genitalia (PLATE 51, Fig. 352) – Tegumen broad with a pair of narrow, L-shaped windows, slightly produced posteriorly with shallow medial concavity. Vinculum unevenly broadened. Saccus short, with anterior end blunt. Brachium enlarged basally, bent into L-shaped arm, tapering to a distal hook. Valva broad, with caudal end curved inwards into blunt hook, serrate dorsally. Juxta narrow, with both ends clavate. Phallus stout, straight; phallobase longer than aedeagus. Aedeagus with a sword-like caudal process, distal end angled with ventral opening. Cornuti as multiple rows of minute sclerotized bars.

Female genitalia (PLATE 84, Fig. 481) – Corpus bursae elongate, oval. Signa as a pair of spiny sclerotized patches with medial invaginations on opposite walls of corpus bursae. Ductus bursae membranous, tapering posteriorly to sclerotized funnel. Sterigma as a weakly sclerotized dome with medial invagination. Posterior apophyses slightly longer than anal papillae, nearly straight, enlarged and flattened at base into sclerotized band with curved caudal ends. Anal papillae lobe-like, setose.

Global distribution. Northeast India, Himalayas, northern Indochina, West to East China, and Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Moderate to high elevations in montane zone (Hsu, 2002, 2013).

Larval Host plant(s). Fabaceae: *Albizia julibrissin* (Uchida, 1991; Hsu, 2002, 2013).

Biology. Univoltine, with adults on wing in spring, overwintering as pupa (Hsu, 2002, 2013).

形態特徵：成蝶前翅長 17–19 mm。無雌雄二型性。雄蝶 (圖 103)：頭被毛，頭頂赭色，額褐色雜赭色毛，有白邊，複眼具白色輪緣。觸角深褐色，有白環。口器深褐色。下唇鬚被毛、前伸、第三節短小、褐色雜赭色及白色毛。複眼被短細毛。胸部及腹部背面深褐色、腹面赭色。足赭色，有深褐色帶紋，前足跗節癒合、末端鈍。

前翅三角形。後翅卵形，前緣與外緣交界處角狀，1A+2A 末端突出。翅背面底色深褐色，內側有帶紫色調金屬光澤之藍色斑紋，於前翅範圍較廣；藍色斑外側、亞翅頂處有橙色斑點。翅腹面底色於前翅外緣及後翅呈赭色、前翅大部分呈土黃色；前翅沿外緣有白線紋；中室末端有白色短線紋；後翅有特徵明顯之 Y 字形帶紋。緣毛褐色。雌蝶 (圖 104)：形態特徵與雄蝶相似，但前足跗節不癒合。

雄交尾器 (圖 352)：背兜寬闊，略向後端突出，中央有淺凹陷，具一對狹窄、L 形膜質區。基腹弧寬窄不均。囊突短，前端鈍。顎形突基部膨大，彎曲成 L 形、臂狀，端部漸細，末端鉤狀。陽基顎片細，兩端呈棒狀。抱器寬闊，背緣有鋸齒，後端內彎成鈍鉤。陽莖粗壯、甚直；陽莖基長於陽莖器。陽莖器尾端具劍狀突起，末端開口斜切於腹側。角狀器形成多列微細小骨帶。

雌交尾器 (圖 481)：交尾囊長橢圓形。花壁一對，位於交尾囊對應位置，為生有微小刺棘、中央內陷之小骨。交尾囊管膜質，後端漸細，近交尾孔處形成骨化漏斗。交尾孔板輕度骨化、拱頂狀，中央凹陷。後內骨突略長於肛突，甚直，基部膨大、扁平，尾端彎曲。肛突瓣狀，有毛。

世界分布：印度東北部、喜瑪拉雅地區、中南半島北部、華西至華東、臺灣。

臺灣分布：分布於本島中至高海拔山區。

寄主植物：豆科之合歡。

生物學：本種為一年一世代物種，成蝶於春天活動，蛹態越冬。

Genus *TAJURIA* Moore, [1881]

Type species: *Hesperia longinus* Fabricius, 1798

Diagnostic characters include the following: 1) blue or purple patches on wings; 2) sexual brand of hindwings and hair tuft of forewing absent; 3) prominent tail-like projections at distal end of CuA_1 and CuA_2; 4) pupa not girdled.

Over 30 species are found in the Oriental region (Bascombe *et al*., 1999).

Larvae feed on plants in the order Santalales.

3 species are known from Taiwan.

青灰蝶屬

形態特徵如下：1) 翅背面有藍、紫色斑塊；2) 後翅無性標，前翅無毛束；3) 後翅 CuA_1 及 CuA_2 脈末端有尾突；4) 蛹無縊絲環繞。

本屬已知超過 30 種，分布於東洋區。

幼生期以檀香目植物為寄主。

臺灣有 3 種。

Tajuria yajna (Doherty, 1886) (褐翅青灰蝶／褐底青小灰蝶／天藍雙尾灰蝶)

Remelana yajna Doherty, 1886: Journal of the Asiatic Society of Bengal 55, Pt. II (2): 128. (Type locality: Kumaon, [India])

Ssp. *caerulea* Nire, 1920

PLATE 15, Figs. 105–106; PLATE 51, Fig. 353; PLATE 84, Fig. 482

Tajuria caeruleae Nire, 1920: Zoological Magazine, Tokyo 32: 375. (Type locality: "Horisha, Formosa [Puli, Nantou, Taiwan]")

Tajuria rengechiana Matsumura, 1926: Insecta Matsumurana 1 (1): 24. (Type locality: "Rengechi near Horisha [Lianhuachi, Nantou, Taiwan]"

Tajuria caelurea Shirôzu, 1960: Butterflies of Formosa in Colour: 289. (Incorrect subsequent spelling)

Tajuria coelurea D'Abrera, 1986: Butterflies of the Oriental Region, Part III: 614. (Incorrect subsequent spelling)

Tajuria caeruela Shirôzu & Ueda, 1992: Lepidoptera of Taiwan, 1 (2), checklist: 137. (Incorrect subsequent spelling)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Xuanyuan, 1000m, 8. XII. 2008, reared from *Scurrula limprichtii* [= *Taxillus limprichtii*], emgd. 21. I. 2009, HSU 08M13 (L. H. Wang); 1♀, Fuxing, Baling, 660m, 18. II. 2011 (C. C. Lu, jr) (genitalia preparation JYL561). **XINZHU Co.:** 3♂, 1♀, Jianshi, Zhenxibao, 11. XI. 2005, reared from *S. rhododendricola* [= *T. rhododendricolius*], emgd. 12. I./25. II. 2006, HSU 05L16 (L. H. Wang). **MIAOLI Co.:** 1♀, Taian, Henglongshan, VI. 2003, reared from *S. lonicerifolia* [= *T. lonicerifolius*], emgd. 12. VII. 2003, HSU 03F29 (C. C. Lu, J. R. Chen & S. C. Chen). **NANTOU Co.:** 1♂, Renai, Songgang, 8. XII. 1999, reared from *S. lonicerifolia* [= *T. lonicerifolius*], emgd. 13. II. 2000 (Y. T. Lo). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1200m, 4/5. IV. 1998 (W. I. Chou).

Description. Adult – Forewing length 18–20 mm. Sexual dimorphism present. Male (PLATE 15, Fig. 105): Head hairy, vertex brown mixed with white, frons white with a medial dark brown patch, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, 3rd segment minute, white with dark brown dorsal band. Compound eyes smooth. Thorax gray mixed with blue dorsally, white ventrally; abdomen gray mixed with blue dorsally, creamy yellow ventrally. Legs white banded with dark brown, Protarsi fused, with distal end obtuse. Forewing triangular. Hindwing ovate, with tornus angled, lobed. Filiform projections at distal ends of CuA_2 and CuA_1. Wing uppersides ground color dark brown. Metallic blue patches covering posterior area of forewing and hindwing. Wing undersides ground color buff, with narrow white discal band edged by dark margin proximally, straight but tilted on forewing, forming a "W" posteriorly on hindwing. Submarginal bands as double, faint, brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing. Tornal lobe black with orange marking and blue scalings. Fringe white. Female (PLATE 15, Fig. 106): Body and general wing patterns similar to those of male, but Protarsi normal, blue patches on wing uppersides larger.

Male genitalia (PLATE 51, Fig. 353) – Tegumen triangular, with posterior end pointed; socii as broad band, enlarged laterally. Vinculum narrow. Brachium stout, curved with blunt distal end. Saccus vestigial. Valva elongate, produced to a triangular lobe ventrally, blunt at distal end. Juxta divided into two separate pieces. Phallus stout, with aedeagus approximately as long as phallobase. Phallobase tilted. Aedeagus with caudal end

truncate. Cornutus as a large, heavily sclerotized hook.

Female genitalia (PLATE 84, Fig. 482) – Corpus bursae tear shaped, with surface granular, wrinkled. Ductus bursae elongate, membranous anteriorly, forming stout sclerotized vase-like chamber posteriorly. Sterigma as a pair of lateral sclerotized bands with small, rounded depressions. Posterior apophyses very slender, curved. Anal papillae lobe-like, setose.

Global distribution. Northern India, Indochina, Malay Peninsula, Borneo, Southwest China, Taiwan (D'Abrera, 1986; Huang, 2022).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Loranthaceae: *Taxillus lonicerifolius*, *T. ritozanensis*, *T. rhododendricolius*, *T. tsaii*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. The taxon *caerulea* Nire, 1920 has been regarded as a species endemic to Taiwan for a long time. Based on observations on male and female genitalia, Huang (2022) treated it as a subspecies of *Tajuria yajna* (Doherty, 1886).

形態特徵：成蝶前翅長 18–20 mm。具雌雄二型性。雄蝶 (圖 105)：頭被毛，頭頂褐色雜白色，額中央有深褐色斑，複眼具白色輪緣。觸角褐色，有白環。口器深褐色。下唇鬚前伸、第三節細小、白色，背面有深褐色帶紋。複眼光滑。胸部背面灰色雜藍色、腹面白色。腹部背面灰色雜藍色，腹面乳黃色。足白色而有深褐色條紋，前足跗節癒合、末端鈍。前翅三角形。後翅卵形，臀區角狀、具葉狀突，CuA_1 及 CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，前、後翅後半部有帶金屬光澤之藍色斑塊。翅腹面底色黃褐色，中央有內側帶褐色邊之白色線紋，於前翅為斜直線、於後翅後端形成 W 字形；亞外緣帶紋由兩道淡褐色帶紋組成；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點；臀區葉狀突黑色，上有具橙色紋及藍色鱗。緣毛白色。雌蝶 (圖 106)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑較大型。

雄交尾器 (圖 353)：背兜三角形，後端尖；背兜側突寬帶狀，兩側膨大。基腹弧狹窄。顎形突粗壯、彎曲，末端鈍。囊突退化、不明顯。抱器修長，於腹側具三角形凸起，末端鈍。陽基軛片為兩只分離骨片。陽莖粗壯，陽莖器長度與陽莖基約略等長。陽莖基歪斜，末端開口斜切於背側。角狀器為 1 個大型、骨化明顯的鉤狀骨及 1 只小型鰭狀骨。

雌交尾器 (圖 482)：交尾囊水滴狀，表面顆粒狀、有皺褶。交尾囊管修長，前端膜質，後端高度骨化、花瓶狀。交尾前板為一對修長骨帶，近交尾孔處具一對小圓凹。後內骨突細長、彎曲。肛突瓣狀，具毛。

世界分布：印度北部、中南半島、馬來半島、婆羅洲、華西南及臺灣。。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：桑寄生科之忍冬葉桑寄生、李棟山桑寄生、杜鵑桑寄生及蓮華池寄生等。

生物學：本種為一年多世代物種。

註記：分類單元 *caerulea* Nire, 1920 長期被視為臺灣特有種，Huang (2022) 根據對雌雄交尾器觀察，將之視為 *Tajuria yajna* (Doherty, 1886) 之亞種。

Tajuria diaeus (Hewitson, [1865]) (白腹青灰蝶／花蓮青小灰蝶／白日雙尾灰蝶)

Iolaus diaeus Hewitson, [1865]: Illustrations of diurnal Lepidoptera, Lycænidæ (2): 45, pl. 20, figs. 26–28. (Type locality: “Northern India”)

Ssp. *karenkonis* Matsumura, 1929

PLATE 15, Figs. 107–109; PLATE 51, Fig. 354; PLATE 84, Fig. 483

Tajuria karenkonis Matsumura, 1929: Insecta Matsumurana 3 (2/3): 99. (Type locality: “Karenko, Formosa [Hualian, Taiwan]’’)

Specimens examined:

TAOYUAN CITY: 1♂, Fuxing, Xuewunao, 7. VI. 2017 (C. W. Huang) (genitalia preparation JYL457). **NANTOU Co.:** 1♂, 2♀, Renai, Qingjing, 18. XI. 2005, reared from *Scurrula ritozanensis* [= *Taxillus ritozanensis*], emgd. 9. XII. 2005/18. I. 2006, HSU 05L32 (L. H. Wang); 1♀, Renai, Songgang, 18. XII. 2005, reared from *Scurrula*

sp., emgd. 7/16. II. 2006, HSU 05M42.1 (L. H. Wang & L. W. Wu); 1♂, Renai, Guandaoshan, 17. IV. 2009 (C. C. Chen); 1♀, Renai, Guantoushan, 27. VII. 2016 (J. Y. Liang) (genitalia preparation JYL436). **HUALIAN Co.:** 1♀, Xiulin, Guanyuan, 2300m, 21. IV. 2005, reared from *T. rhododendricolius*, emgd. 4. V. 2005, HSU 05D48 (L. H. Wang); 1♀, same locality, 26. V. 2005, reared from *T. rhododendricolius*, emgd. 26. V. 2005, HSU 05E28 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1200m, 4/5. IV. 1998 (W. I. Chou).

Description. Adult – Forewing length 15–19 mm. Sexual dimorphism present. Male (PLATE 15, Fig. 107): Head hairy, vertex brown mixed with white, frons white, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, 3rd segment minute, white with dark brown dorsal band. Compound eyes smooth. Thorax and abdomen gray mixed with blue dorsally, white ventrally. Legs white banded with dark brown, Protarsi fused, with distal end obtuse. Forewing triangular. Hindwing ovate, with tornus angled, lobed. Filiform projections at distal ends of CuA_2 and CuA_1. Wing uppersides ground color dark brown. Metallic purplish blue patches covering posterior area of forewing and most area of hindwing. Wing undersides ground color white, with narrow brown discal band, straight but tilted on forewing, forming a "W" posteriorly on hindwing. Submarginal bands as double, faint, brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing. Tornal lobe black with orange marking and blue scalings. Fringe white. Female (PLATE 15, Figs. 108–109): Body and general wing patterns similar to those of male, but Protarsi normal, blue patches on wing uppersides larger but duller and paler, additional white patches sometimes present on forewing.

Male genitalia (PLATE 51, Fig. 354) – Tegumen narrow; socii as broad band with rounded margins. Vinculum narrow. Brachium as flattened arm, strongly bent, produced at "elbow" into a prominent spine with minute teeth, distal end pointed. Saccus vestigial. Valva forming elongate, flattened lobe, with dorsal margin serrate; a medial process present on dorsal and ventral margin. Juxta prominent, U-shaped, with distal ends ridged and pointed, bearing a short stalk ventrally. Phallus short, with aedeagus approximately as long as phallobase. Phallobase tilted. Aedeagus with sharp tip at caudal end; posterior end with dorsal opening at distal end.

Female genitalia (PLATE 84, Fig. 483) – Corpus bursae oval, with surface granular, wrinkled. Signa as a pair of invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae short, thick, wrinkled, membranous. Sterigma with lamella antevaginalis as a heavily sclerotized, transverse band with lateral triangle piece; lamella postvaginalis as a pair of weakly sclerotized reniform patches. Posterior apophyses slightly longer than anal papillae, curved, enlarged at base. Anal papillae lobe-like, setose.

Variation. Markings on wing undersides are reduced or paler in Individuals found in cold or dry season.

Global distribution. Northeast India, Himalayas, Indochina, Java, West to South China, Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Moderate to high elevations in montane zone (Hsu, 2002, 2013).

Larval Host plant(s). Loranthaceae: *Loranthus kaoi*, *Taxillus lonicerifolius*, *T. ritozanensis*, *T. rhododendricolius*, etc. (Hsu, 2002, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013).

形態特徵：成蝶前翅長 15–19 mm。具雌雄二型性。雄蝶 (圖 107)：頭被毛，頭頂褐色雜白色，額白色，複眼具白色輪緣。觸角褐色，有白環。口器深褐色。下唇鬚前伸、第三節細小、白色背面有深褐色帶紋。複眼光滑。胸部及腹部背面灰色雜藍色、腹面白色。足白色具深褐色帶紋，前足跗節癒合、末端鈍。前翅三角形。後翅卵形，臀區角狀、具葉狀突，CuA_1 及 CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，帶金屬光澤之藍紫色斑塊見於前翅後半部及後翅大部分區域。翅腹面底色白色，中央有褐色線紋，於前翅為斜直線、於後翅後端形成 W 字形；亞外緣帶紋由兩道淡褐色帶紋組成；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點；臀區葉狀突黑色，上有橙色紋及藍色鱗。緣毛白色。雌蝶 (圖 108–109)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑塊較大，顏色較暗淡、前翅時有白斑。

雄交尾器 (圖 354)：背兜狹窄；背兜側突寬帶狀，側緣圓弧狀。基腹弧窄。顎形突扁平、臂狀，明顯彎曲，末端尖，於肘處形成棘狀突起並具細齒。囊突退化。抱器修長、扁平，背緣有鋸齒，背側及腹側中央各具一突起。陽基軛片顯著、U 字形，末端尖、有稜，腹側具短柄。陽莖短，陽莖器長度略等於陽莖基。陽莖基歪斜。陽莖器尾端尖銳；末端開口斜切於背側。

雌交尾器 (圖 483)：交尾囊橢圓形，表面顆粒狀、有皺褶。花壁一對，位於交尾囊對應位置，形成內陷之的鰭狀骨。交尾囊管粗短、膜質、有皺褶。交尾孔前板為高度骨化橫帶，兩側有三角形骨板；交尾孔後板為一對輕度骨化之腎形骨。後內骨突長度略長於肛突、彎曲、基部膨大。肛突瓣狀、有毛。

變異：乾季／低溫型個體翅腹面斑紋減退。

世界分布：印度東北部、喜瑪拉雅地區、中南半島、爪哇、華西至華南、臺灣。

臺灣分布：分布於本島中至高海拔山區。

寄主植物：桑寄生科之高氏桑寄生、忍冬葉桑寄生、李棟山桑寄生、杜鵑桑寄生等。

生物學：本種為一年多世代物種。

Tajuria illurgis (Hewitson, 1869) (漣紋青灰蝶／淡藍雙尾灰蝶)

Iolaus illurgis Hewitson, 1869: Illustrations of diurnal Lepidoptera, Lycænidæ (4), Supplement: 10, pl. 4, figs. 37–38. (Type locality: “Darjeeling”, [India])

Ssp. *tattaka* Araki, 1949

PLATE 16, Figs. 110-111; PLATE 51, Fig. 355; PLATE 84, Fig. 484

Cophanta illurgis tattaka Araki, 1949: Kansai Konchū Gakkai kaihō (The Transactions of the Kansai Entomological Society) 14 (2): 17, f. 3, 3a. (Type locality: “Formosa, Taichū Shū, Tattaka” [= Liyingshan, Songgang, Nantou Co.])

Tajuria illurgiodes minekoae Morita, 1996: Wallace 2: 6, pl. XV, figs. 1-3. (Type locality: “TsinSen (QingQuanXi), HsinChu (XinCuXian) TAIWAN [= Qingquanxi, Xinzhu Co., Taiwan]”)

Specimens examined:

XINZHU Co.: 2♂, Jianshi, Zhenxibao, 1600m, 18. V. 2005 (L. H. Wang). **YILAN Co.:** 4♂, 2♀, Datong, Tuleng, 1600m, 6. VIII. 2009, reared from *Scurrula* sp. under 15

ºC, emgd. 29. X. 2009/8. II. 2010, HSU 09H4 (N. Y. Tsai). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 14. X. 2001 (C. L. Huang & C. C. Lu); 1♀, Renai, Gaofeng, emgd. 14. IX. 2006; 1♂, Renai, Guandaoshan, 17. IV. 2009 (C. C. Chen); 1♀, Xinyi, Dongpu, 1200m, 4. IV. 2011 (C. C. Lu, jr) (genitalia preparation JYL589); 1♂, 1♀, Xinyi, Dongpu, 1500m, 16. IV. 2011, reared from *Taxillus liquidambaricolus* [= *Scurrula liquidambaricolus*], emgd. 20. V. 2011, HSU 11D22 (C. C. Lu, jr., L. W. Wu & Y. T. Lin). **HUALIAN Co.:** 1♀, Xiulin, Bilu, 2000m, 13. IX. 2006, reared from *Scurrula rhododendricola* [= *Taxillus rhododendricolius*], emgd. 8. X. 2006, HSU 06J31 (L. H. Wang); 1♀, Xiulin, Qilai, 1500m, 4. VII. 2007 (L. H. Wang); **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 1200m, 4/5. IV. 1998 (W. I. Chou).

Description. Adult – Forewing length 16–20 mm. Sexual dimorphism absent. Male (PLATE 16, Fig. 110): Head hairy, vertex brown, with a prominent, narrow white band; frons white, with a broad brown band, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, 3rd segment minute, white with dark brown dorsal band. Compound eyes naked. Thorax gray dorsally, white ventrally. Abdomen gray, mixed with white scalings dorsally, white or creamy yellow ventrally. Legs white banded with dark brown, Protarsi fused, with distal end obtuse. Forewing triangular. Hindwing ovate, with tornus angled, lobed. Filiform projections at distal ends of CuA_2 and CuA_1. Wing uppersides ground color dark brown. Metallic purplish blue patches present proximally on forewing and most area of hindwing. Wing undersides ground color white, with narrow brown discal band forming broken lines, straight but tilted on forewing, irregular and wavy on hindwing. Short, dark brown bars at distal end of discoidal cells. Submarginal bands as faint brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing. Tornal lobe black with orange marking and blue scalings. Fringe white. Female (PLATE 16, Fig. 111): Body and general wing patterns similar to those of male, but Protarsi normal.

Male genitalia (PLATE 51, Fig. 355) – Tegumen with medial concavity posteriorly, with a small mesal spine. Socii olive-like, with rounded posterior end. Vinculum narrow. Brachium as elongate arm, strongly bent, produced at “elbow” into a prominent lobe, distal end clavate. Saccus short. Valva with distal portion forming elongate rod, with blunt caudal end; basal portion largely membranous, associated with a pair of sclerotized

bands surrounding phallus. Juxta as weakly sclerotized sheet. Phallus stout, with aedeagus shorter than phallobase. Aedeagus up-raised posteriorly, with caudal end angled opening. Cornuti represented with two spine-like sclerites.

Female genitalia (PLATE 84, Fig. 484) – Corpus bursae oval. Ductus bursae elongate, weakly sclerotized, tubular anteriorly, forming partial sclerotized, distorted tube posteriorly. Sterigma with antevaginalis as a prominent, shield-like sclerite with deep, mesal invagination posteriorly; postvaginalis as a weakly sclerotized patch. Posterior apophyses very slender, nearly straight, longer than anal papillae, with base enlarged, triangular. Anal papillae lobe-like, setose.

Variation. Markings of tornal area on hindwing undersides are reduced in individuals found in dry seasons.

Global distribution. Northeast India, Himalayas, Indochina, West China, and Taiwan (Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Loranthaceae: *Scurrula liquidambaricolus*, *T. lonicerifolius*, *T. ritozanensis*, *T. tsaii*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. Hsu (2013) and Hsu *et al*. (2020) suggested that *Tajuria illurgioides minekoae* Morita, 1996 may represent the wet season form of the taxon *tattaka* Araki, 1949. Huang (2022) subsequently synonymized *minekoae* Morita, 1996 with *tattaka* Araki, 1949.

形態特徵：成蝶前翅長 16–20 mm。無雌雄二型性。雄蝶 (圖 110)：頭被毛，頭頂褐色，有鮮明白色窄帶紋，額白色具褐色窄帶紋，複眼具白色輪緣。觸角褐色，有白環。口器深褐色。下唇鬚前伸、第三節細小、白色而背面有深褐色帶紋。複眼光滑。

胸部背面灰色、腹面白色。腹部灰色，背面雜白色鱗、腹面白色或乳黃色。足白色，有深褐色條紋，前足跗節癒合、末端鈍。前翅三角形。後翅卵形，臀區角狀、具葉狀突，CuA_1 及 CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，有帶金屬光澤之藍紫色斑塊於前翅內側及後翅大部分。翅腹面底色白色，中央線紋褐色、不連續，於前翅為斜直線、於後翅為不規則波浪狀；中室末端具深褐色短條；亞外緣帶紋為淺褐色帶紋；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點；臀區葉狀突黑色，有橙色紋及藍色鱗。緣毛白色。雌蝶 (圖 111)：形態特徵與雄蝶相似，但前足跗節不癒合。

雄交尾器 (圖 355)：背兜末端內凹並於中央具小型棘狀突起；背兜側突卵形，末端圓。基腹弧窄。顎形突修長、臂狀、明顯彎曲，末端棒狀，於肘處形成葉狀突起。囊突短。抱器後端長桿狀，末端鈍；基部大部分膜質，於陽莖周圍形成一對骨化帶。陽基軛片為輕度骨化之骨片。陽莖粗壯，陽莖器略短於陽莖基。陽莖基器末端上揚，末端開口斜切於腹側。角狀器為 2 只棘狀骨片。

雌交尾器 (圖 484)：交尾囊橢圓形。交尾囊管修長，前端輕骨化、管狀，後部部分骨化、扭曲。交尾孔前板為後緣深凹入之盾狀骨板；交尾孔後板輕度骨化、板斑。後內骨突細長、甚直，較肛突長，基部呈三角形、膨大。肛突瓣狀，具毛。

變異：乾季／低溫型個體翅腹面及臀區斑紋減退。

世界分布：印度東北部、喜瑪拉雅地區、中南半島、華西、臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：桑寄生科之大葉桑寄生、忍冬葉桑寄生、李棟山桑寄生、蓮華池寄生等。

生物學：本種為一年多世代物種。

註 記：Hsu (2013) 及 Hsu *et al*. (2020) 指出假漣紋青灰蝶臺灣亞種 *Tajuria illurgioides minekoae* Morita, 1996 可能是 *tattaka* Araki, 1949 雨季型。Huang (2022) 隨後處理前者為後者之同物異名。

Genus *ANCEMA* Eliot, 1973

Type species: *Camena ctesia* Hewitson, [1865]

Diagnostic characters include the following: 1) base of M_1 near M_2 on forewing; 2) secondary sexual characters as brands and hair tuft in males; 3) prominent tail-like projections at distal end of CuA_1 and CuA_2; 4) ground color of wing undersides silvery; 5) pupa girdled.

4 species are known in the Oriental region (Bascombe *et al*., 1999).

Larvae feed on plants in the family Santalaceae.

1 species is known from Taiwan.

鈿灰蝶屬

形態特徵如下：1) 前翅 M_1 及 M_2 脈基部接近；2) 雄蝶具性標及毛束等第二性徵；3) 後翅 CuA_1 及 CuA_2 末端具尾突；4) 翅腹面底色銀色；5) 蛹具有縊絲環繞。

本屬已知 4 種，分布於東洋區。

幼生期以檀香科植物為寄主。

臺灣有 1 種。

Ancema ctesia (Hewitson, [1865]) (鈿灰蝶／黑星琉璃小灰蝶／安灰蝶)

Camena ctesia Hewitson, [1865]: Illustrations of diurnal Lepidoptera (2): 48, pl. 20, figs. 1–2. (Type locality: “Northern India”)

Ssp. *cakravasti* Fruhstorfer, 1909

PLATE 16, Figs. 112–114; PLATE 52, Fig. 356; PLATE 85, Fig. 485

Camena ctesia cakravasti Fruhstorfer, 1909: Entomologische Zeitschrift 23 (8): 40. (Type locality:

"Chip-Chip, Formosa [Jiji, Taiwan]")

Camena ctesia cakravarti Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116. (Type locality: "Formosa, Polisha [Taiwan, Puli], ca. 4000'")

Pratapa cakravasti forma *parviocellato* Murayama & Shibatani, 1943: Kansai Konchū Gakkai kaihō (The Transactions of the Kansai Entomological Society) 13 (1): 37. (Type locality: Meikei, Taichui Shu, Formosa [Meixi, Nantou, Taiwan])

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Baling, 27. VI. 2005, reared from *Viscum articulatum*, emgd. 15. VII. 2005, HSU 05F63 (C. L. Huang & C. H. Weng). **XINZHU Co.:** 5♀, Xinpu, 15. XII. 2018, reared from *V. diospyrosicolum* [= *V. angulatum*], emgd. 3/11. II. 2019, HSU 18M3 (H. C. Huang) (genitalia preparation JYL649). **TAIDONG Co.:** 1♀, Yanping, Hongye, ca 500m, 27. VII. 2002, reared from *V. liquidambaricolum* [= *V. articulatum*], emgd. 25. VIII. 2002, HSU 02G53 (L. W. Wu); 1♂, same locality, 24. VIII. 2002, reared from *V. liquidambaricolum* [= *V. articulatum*], emgd. 22. IX. 2002, HSU 02H78 (L. W. Wu); 2♂, 2♀, same locality, 21. IX. 2002, reared from *V. liquidambaricolum* [= *V. articulatum*], emgd. 18/20. X. 2002, HSU 02J36 (L. W. Wu).

Description. Adult – Forewing length 16–18 mm. Sexual dimorphism present. Male (PLATE 16, Fig. 112): Head hairy, vertex brown, with a medial white tuft; frons white, with a pair of dark brown bands; a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, 3rd segment elongate, pointed, white with dark brown dorsal band. Compound eyes covered by short hairs. Thorax gray, white ventrally. Abdomen gray dorsally, white banded with brown laterally, white ventrally. Legs white banded with dark brown, Protarsi fused, with distal end obtuse. Forewing triangular, costa straight, dorsum straight but convex where secondary sexual character present, termen slightly convex near apex. Hindwing ovate, with tornus angled, lobed. Filiform projections at distal ends of CuA_2 and CuA_1. Wing uppersides ground color dark brown. Metallic blue patches covering posterior area of forewing and most area of hindwing. Wing undersides ground color silvery, with discal band represented as a series of dark brown spots arranged into a curve. Submarginal bands as double brown bands, more prominent on hindwing. Short, dark brown bars at distal end of discoidal cells. A black spot caped by orange crescent in cell CuA_1 of hindwing. Tornal lobe black with orange marking and blue scalings. Three patches of

sexual brands on wings, two on forewing, one on hindwing; a tuft of brown hairs present on convex extension on dorsum. Fringe white. Female (PLATE 16, Figs. 113–114): Body and general wing patterns similar to those of male, but Protarsi normal, markings on wing uppersides tinged with purple, not metallic like those in males; no secondary sexual characters.

Male genitalia (PLATE 52, Fig. 356) – Tegumen short, concave mesad; socii as broad band with rounded margins. Vinculum broad. Brachium as stout arm, strongly bent, tapering distally into curved, sharp point. Saccus short, triangular. Valva forming two arms; ventral arm very long, tapering posteriorly to a curved, pointed end; dorsal arm shorter, serrate along outer margin near distal end. Phallus elongate, with aedeagus longer than phallobase, nearly straight, but aedeagus slightly curved. Cornuti as several rows of minute spines.

Female genitalia (PLATE 85, Fig. 485) – Corpus bursae oval. Ductus bursae forming elongate, trumpet-like, sclerotized tubes. Sterigma as an elongate sclerotized band. Posterior apophyses longer than anal papillae, straight, enlarged and flattened at base. Anal papillae lobe-like, setose distally.

Global distribution. Northeast India, Himalayas, Indochina, West to south China, and Taiwan (Shirôzu, 1960; Uchida, 1991; Bascombe *et al.*, 1999; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2006, 2013).

Larval Host plant(s). Santalaceae: *Viscum articulatum* and *V. angulatum* (Uchida, 1991; Hsu, 2006, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2006, 2013).

形態特徵：成蝶前翅長 16–18 mm。具雌雄二型性。雄蝶 (圖 112)：頭被毛。頭頂

褐色，中央具白色毛束。額白色，有一對褐色帶紋，複眼具白色輪緣。觸角褐色，有白環。口器深褐色。下唇鬚前伸、第三節細長、尖銳、白色而背面有深褐色帶紋。複眼被短毛。胸部灰色，腹面白色。腹部背面灰色、側面白色而有褐色帶紋、腹面白色。足白色，有深褐色帶紋。前足跗節癒合、末端鈍。前翅三角形，前緣直、後緣直而於第二性徵處外凸、外緣近翅頂處略突出。後翅卵形，臀區角狀、具葉狀突，CuA_1 及 CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，前翅後部及後翅大部分區域有帶金屬光澤之藍色斑塊。翅腹面底色銀色，中央帶紋為一列深褐色斑點組成之曲線；亞外緣帶紋為兩道褐色帶紋，於後翅較為鮮明；中室末端有深褐色短條；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點；臀區葉狀突黑色，上有橙色紋及藍色鱗。翅面有三個性標，前翅二、後翅一。緣毛白色。雌蝶 (圖 113–114) : 形態特徵與雄蝶相似，但前足跗節不癒合、前翅背面斑紋帶紫色且無金屬光澤、無性標。

雄交尾器 (圖 356) : 背兜短，後緣內凹 ; 背兜側突寬帶狀，末端圓弧狀。基腹弧寬闊。囊突短小、三角形。顎形突粗壯、臂狀，強彎曲，末端漸細，端部尖鉤狀。抱器雙臂狀；腹側臂甚長，向後漸細，末端尖鉤狀；背側臂較短，末端外緣具鋸齒。陽莖修長、甚直，陽莖器略彎曲，陽莖器長於較陽莖基。角狀器為多列細刺。

雌交尾器 (圖 485) : 交尾囊橢圓形。交尾囊管形成細長、喇叭狀骨化管。交尾孔板為修長骨化帶。後內骨突長度略長於肛突，甚直、基部膨大、扁平。肛突瓣狀，後端具毛。

世界分布：印度東北部、喜瑪拉雅地區、中南半島、華西至華南、臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：檀香科之槲櫟柿寄生、柿寄生。

生物學：本種為一年多世代物種。

Genus *HYPOLYCAENA* C. & R. Felder, 1862

Type species: *Myrina sipylus* Felder, 1860

Diagnostic characters include the following: 1) two tail-like projections present, at distal end of CuA_1 and CuA_2; 2) secondary sexual characters as brands on forewing undersides in males if present; 3) sexual dimorphism prominent, with blue or purple patches on wing uppersides in males, absent in females.

Eliot (1992) pointed out that this genus contains a very heterogeneous lot of species, and is doubtfully separated from *Chliaria* Moore, 1884, which is sometimes regarded as a distinct genus.

More than 30 species are known from the Afrotropical, Oriental, and Australian regions (Parsons, 1998).

Larvae feed on plants in various families, but some species are specialists on Orchidaceae.

2 species are known from Taiwan.

蘭灰蝶屬

形態特徵如下：1) 後翅 CuA_1 及 CuA_2 脈末端各具一尾突；2) 若有第二性徵，則為位於雄蝶前翅腹面之性標；3) 雌雄二型性顯著，雄蝶翅背面有藍色或紫色斑塊，雌蝶則否。

Eliot (1992) 指出本屬中包含異質性高的種類，難以與 *Chliaria* Moore, 1884 (有時被當成獨立屬) 區分。

本屬已知超過 30 種，分布於非洲區、東洋區及澳洲區。

幼生期以多種不同科植物為寄主，但部分種類專食蘭科植物。

臺灣有 2 種。

Hypolycaena kina Hewitson, 1869 (蘭灰蝶／蒲灰蝶／雙尾琉璃小灰蝶)

Hypolycaena kina Hewitson, 1869: Illustrations of diurnal Lepidoptera (4) Supplement: 13, pl. 5, figs. 32–34. (Type locality: "Darjeeling")

Ssp. *inari* Wileman, 1908

PLATE 16, Figs. 115–118; PLATE 52, Fig. 357; PLATE 85, Fig. 486

Tajuria inari Wileman, 1908: Annotationes Zoologicae Japonenses 6 (5): 325. (Type locality: "Kan-shirei, Godaihō Mountain, 4,000 feet")

Chliaria vanavasa Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116–117. (Type locality: Formosa, Polisha)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, 26. VII. 1982 (Y. F. Hsu); 1♂, same locality, 8. III. 1985 (Y. F. Hsu); 1♂, Wulai, Xinxian-Fushan, 5. III. 2009 (L. H. Wang); 1♂, 1♀, Wulai, Xinxian, 250m, 17. III. 2009 (C. K. Wang); 1♂, Wulai, Badaoershan, 700/ 1100m, 5. III. 2009 (L. H. Wang); 1♂, Xindian, Feicui Dam, 15. III. 1999 (Y. F. Hsu); 1♂, Xindian, Sikanshui, 27. III. 1999 (C. M. Wu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Daman/ Xuanyuan, 26. VII. 1986 (Y. F. Hsu); 1♂, Fuxing, Kapu, 800m, 14. X. 2007, reared from *Liparis nakaharai* [= *L. nakaharae*], emgd. 5. XI. 2007, HSU 07K6 (Y. F. Hsu, H. C. Huang & A. H. Tsai); 3♂, 1♀, same locality, 2. XI. 2007, reared from *L. nakaharai* [= *L. nakaharae*], emgd. 3/4. XII. 2007, HSU 07L10 (Y. F. Hsu); 1♂, 1♀, same locality, 9. I. 2008, reared from *L. nakaharai* [= *L. nakaharae*], emgd. 12. I./15. II. 2008, HSU 08A9 (Y. F. Hsu & L. H. Wang); 1♂, Fuxing, Xuanyuan, ca 1000m, 2. IV. 2003 (Y. F. Hsu); 1♀, Northern Cross-Island Road, 20. III. 2005; 3♂ Fuxing, Sileng, ca 1000m, 5. III. 2009 (C. H. Lin, jr). **XINZHU Co.:** 1♀, Jianshi, Shuitian Forest Trail, 31. VII. 2015 (C. W. Huang) (genitalia preparation JYL511). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Heping, Shangguguan, 900m, 30. X. 2006 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 15. IV. 1986 (Y. F. Hsu); 3♀, Puli, Taomikeng, 5. VI. 2004, reared from *Phalaenopsis aphrodite*, emgd. 16/20. VI. 2004, HSU 04F7.3 (Y. F. Hsu); 1♂, 1♀, same locality, 5. VI. 2004, reared from *P. aphrodite*, emgd. 15. VI./5. VII. 2004, HSU 04F7.1 (Y. F. Hsu); 1♂, Yuchi, Lianhuachi, 22. VI. 2016 (W. Y. Wang) (genitalia preparation JYL410). **JIAYI Co.:** 1♂, Alishan, Tefuye, ca 1000m, IX. 2005, reared from *Dendrobium* sp., emgd. 20. IX. 2005, HSU 05J37. **YILAN Co.:** 1♀, Nanao, Shenmihu, 12. X. 2010 (S. W. Chung). **TAIDONG Co.:** 2♂, 1♀, Beinan, Zhiben, 165m, 17. II. 2000, reared from *P. aphrodite*, emgd. 16/23. III. 2000, HSU 00B2 (Y. F. Hsu); 4♂, 2♀, same locality, 27. II. 2005, reared from *P. aphrodite*,

emgd. 18/27. III. 2005, HSU 05B28 (Y. C. Yang); 6♂, 5♀, same locality, 200m, 16. II. 2012, reared from *P. aphrodite*, emgd. 1/12. III. 2012, HSU 12B12 (Y. F. Hsu).

Description. Adult – Forewing length 11–15 mm. Sexual dimorphism present. Male (PLATE 16, Figs. 115–116): Head hairy, vertex brown mixed with white; frons white, with broad, medial brown band; a white rim surrounding eyes. Antennae with club flattened, brown segmented with white. Proboscis dark brown. Labial palpus porrect, 3rd segment elongate, white with dark brown dorsal band. Compound eyes hairy. Thorax and abdomen brown dorsally, white ventrally. Legs white banded with dark brown; Protarsi fused, with distal end down-curved, pointed. Forewing triangular, with termen slightly convex. Hindwing ovate. Filiform projections at distal ends of CuA_2 and CuA_1. Wing uppersides ground color dark brown with purple sheen. Blue patches in discal area of forewing and posterior or distal area of hindwing. Wing undersides ground color white, with brown discal band on forewing, detached at M_3 into two bands; brown band on hindwing broken into a series of spots, with spots in M_1 and M_2 deviated distad. Two black spots in cell $Sc+R_1$ of hindwing. Submarginal bands as double, faint, brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing. Fringe white. Female (PLATE 16, Figs. 117–118): Body and general wing patterns similar to those of male, but Protarsi normal, blue patches on wing uppersides lacking but frequently with white patches.

Male genitalia (PLATE 52, Fig. 357) – Tegumen short, concave mesad; socii as broad band with truncate lateral margins. Vinculum broad. Brachium as slender arm, strongly bent, distal portion elongate, tapering distally into sharp point. Saccus short, rounded. Valvae fused, each forming elongate arm tapering posteriorly, with distal end hook-like. Phallus slightly down-curved, with aedeagus shorter than phallobase; aedeagus with distal end truncate. Cornuti as two spiny bands.

Female genitalia (PLATE 85, Fig. 486) – Corpus bursae elongate, tubular, with terminal end slightly enlarged, sac-like. Ductus bursae elongate, membranous, connecting to a sclerotized ring in front of ostium bursae. Posterior apophyses short, slightly longer than anal papillae, nearly straight. Anal papillae short, semi-circular, setose distally.

Variations. The blue patches of male and white patches of females on wing uppersides are more extensive in individuals found in dry/cold season. Markings on wing undersides of both sexes are reduced in dry/cold season.

Global distribution. Northeast India, Himalayas, Indochina, West China, and Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2002, 2013).

Larval Host plant(s). A variety of plants in Orchidaceae, including *Phalaenopsis aphrodite*, *Thrixspermum formosanum*, *Papilionanthe teres*, *Dendrobium nobile*, etc. (Hsu, 2002, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013).

Remarks. Yamanaka (1980) synonymized *Chliaria vanavasa* Fruhstorfer, 1909 with this taxon without giving explanation. Hsu (2013) suggested that *vanavasa* may represent a seasonal form of this species.

形態特徵：成蝶前翅長 11–15 mm。具雌雄二型性。雄蝶 (圖 115–116)：頭被毛，頭頂褐色雜白色。額白色，中央有褐色寬帶紋，複眼具白色輪緣。觸角錘部扁平、褐色，有白環。口器深褐色。下唇鬚前伸、第三節細長、白色而背面有深褐色帶紋。複眼被毛。胸部及腹部背面褐色、腹面白色。足白色，有深褐色條紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略突出。後翅卵形，CuA_1 及 CuA_2 脈末端具絲狀尾突。翅背面底色深褐色帶紫色光澤，前翅中央及後翅後側、外側有藍色斑塊。翅腹面底色白色，前翅具褐色中央帶紋、於 M_3 室二分，後翅褐色中央帶紋破碎為一列斑點、於 M_1 及 M_2 室者外偏；後翅 $Sc+R_1$ 室有兩黑色斑點；亞外緣紋為兩道淡褐色帶紋；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點。緣毛白色。雌蝶 (圖 117–118)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面若有斑紋則為白色而非藍色。

雄交尾器 (圖 357)：背兜短，中央內凹；背兜側突寬帶狀，側緣截狀。基腹弧寬闊。顎形突細長、臂狀，強彎曲，向後漸細，末端尖。囊突短、圓。抱器癒合，分別延伸成長臂，末端鉤狀。陽莖略下彎，陽莖器略短於陽莖基；陽莖器末端截狀。角狀器為 2 列棘刺。

雌交尾器 (圖 486)：交尾囊長管狀，末端囊狀、略膨大。交尾囊管修長、膜質，於交尾孔附近形成骨化環。後內骨突短，略長於肛突，甚直。肛突短、瓣狀，後端有毛。

變異：乾季／低溫型個體翅背面斑塊較為擴散、翅腹面斑紋較為減退。

世界分布：印度東北部、喜瑪拉雅地區、中南半島、華西、臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：多種蘭科植物，包括臺灣蝴蝶蘭、臺灣風蘭、棒葉萬代蘭 (棒葉蝶花蘭)、臺灣石斛等。

生物學：本種為一年多世代物種。

註記：Yamanaka (1980) 將小蘭灰蝶 *Chliaria vanavasa* Fruhstorfer, 1909 視為本種之同物異名，但未提供理由。Hsu (2013) 認為小蘭灰蝶可能為本種之季節型。

Hypolycaena othona Hewitson, [1865] (熱帶蘭灰蝶／淡褐雙尾琉璃小灰蝶)

PLATE 17, Figs. 119–120; PLATE 52, Fig. 358; PLATE 85, Fig. 487

Hypolycaena othona Hewitson, [1865]: Illustrations of diurnal Lepidoptera (2): 50, pl. 22, figs. 17–18. (Type locality: “Northern India”)

Hypolycaena eltola Hewitson, 1869: Illustrations of diurnal Lepidoptera (4), Supplement: 14, pl. 5, figs. 37–38. (Type locality: “Andaman Islands”)

Specimens examined:

[Not available]

Description. Adult – Forewing length 14–16 mm. Sexual dimorphism present. Male (PLATE 17, Fig. 119): Head hairy, vertex brown; frons white, with broad, medial brown

band; a white rim surrounding eyes. Antennae with club flattened, brown segmented with white. Proboscis dark brown. Labial palpus porrect, 3rd segment elongate, white with dark brown dorsal band. Compound eyes hairy. Thorax brown with blue hairs dorsally, white ventrally; abdomen brown with white scalings dorsally, white ventrally. Legs white banded with dark brown; Protarsi fused, with distal end down-curved, pointed. Forewing triangular, with termen slightly convex. Hindwing ovate. Filiform projections at distal ends of CuA_2 and CuA_1. Wing uppersides ground color dark brown. Metallic blue patches in proximal area of forewing and most area of hindwing. Wing undersides ground color white, with brown discal band on forewing, detached at M_3 into two bands, anterior band much thicker; brown band on hindwing broken into a series of spots, with spots in M_1 and M_2 deviated distad. Two black spots in cell $Sc+R_1$ of hindwing. Submarginal bands as double brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing. Fringe mostly white. Female (PLATE 17, Fig. 120): Body and general wing patterns similar to those of male, but Protarsi normal and blue patches on wing uppersides lacking.

Male genitalia (a specimen from Yunnan was used for reference; PLATE 52, Fig. 358) – Tegumen short, concave mesad; socii as broad band with truncate lateral margins. Vinculum broad. Brachium as slender arm, strongly bent, distal portion elongate, tapering distally into sharp point. Saccus short, rounded. Valvae fused, each forming elongate arm, tapering and curved posteriorly. Phallus slightly down-curved, with aedeagus shorter than phallobase; aedeagus with distal end truncate. Cornuti as two spiny bands.

Female genitalia (a specimen from Yunnan was used for refrence; PLATE 85, Fig. 487) – Corpus bursae elongate, tubular, with terminal end slightly enlarged, sac-like. Ductus bursae elongate, membranous, partially sclerotized near ostium bursae. Posterior apophyses short, slightly longer than anal papillae, nearly straight. Anal papillae short, semi-circular, setose distally.

Global distribution. Northeast India, Indochina, Java, Southwest China, and Taiwan (Fiedler, 1992; Hsu, 2013).

Distribution in Taiwan. Only known from few specimens collected in northern and

central Taiwan (Yamanaka, 1980).

Larval Host plant(s). Not recorded in Taiwan, evidently orchid-feeder as this species is known as a specialist on orchids in other regions (Fiedler, 1992).

Biology. Unknown in Taiwan, but the few known specimens were collected in March and October (Shirôzu, 1960; Yamanaka, 1980), thus its occurrence is probably multivoltine.

Remarks. This species has not been found from Taiwan since 1940, perhaps due to over-collecting of orchids, its presumed hostplants.

形態特徵：成蝶前翅長 14–16 mm。具雌雄二型性。雄蝶 (圖 119)：頭被毛，頭頂褐色。額白色，中央有褐色寬帶紋，複眼具白色輪緣。觸角錘部扁平、褐色，有白環。口器深褐色。下唇鬚前伸、第三節細長、白色、背面有深褐色條紋。複眼被毛。胸部背面褐色，有藍色毛、腹面白色。腹部背面褐色，有白色鱗、腹面白色。足白色，有深褐色條紋，前足跗節癒合、末端下彎、尖銳。前翅三角形，外緣略突出。後翅卵形，CuA_1 及 CuA_2 脈末端具絲狀尾突。翅背面底色深褐色，前翅內側及後翅大部分區域有帶金屬光澤之藍色斑塊。翅腹面底色白色，前翅中央有褐色帶紋、於 M_3 室二分、前半部較粗，後翅褐色中央帶紋破碎為一列斑點、於 M_1 及 M_2 室者外偏；後翅 $Sc+R_1$ 室有兩黑色斑點；亞外緣紋為兩道褐色帶紋；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點。緣毛主要呈白色。雌蝶 (圖 120)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面無藍色斑塊。

雄交尾器 (圖 358) (參考雲南產標本)：背兜短，中央內凹；背兜側突寬帶狀，側緣截狀。基腹弧寬闊。顎形突細長、臂狀，強彎曲，向後漸細。囊突短、圓。抱器癒合，分別延伸成長臂，末端彎曲。陽莖略下彎，陽莖器略短於陽莖基；陽莖器末端截狀。角狀器為 2 列刺棘。

雌交尾器 (圖 487) (參考雲南產標本)：交尾囊長管狀，末端囊狀、略膨大。交尾囊管細長、膜質，交尾孔附近部分骨化。後內骨突短，略長於肛突，甚直。肛突短、半圓形，後端有毛。

世界分布：印度東北部、中南半島、爪哇、華西南、臺灣。

臺灣分布：僅有少數採集自臺灣本島北、中部之標本。

寄主植物：本種於臺灣之寄主植物尚無紀錄，但顯然是與其他地區同為專食蘭科植物之物種。

生物學：本種於臺灣之世代數尚未知悉，但本種曾記錄之標本採於三月及十月(Shirôzu, 1960；Yamanaka, 1980)，因此可能為一年多世代物種。

註記：本種自 1940 年代後未再有發現記錄，可能與其理論上的寄主蘭科植物被過度採集有關。

Genus *DEUDORIX* Hewitson, [1863]

Type species: *Dipsas epijarbas* Moore, 1857

Diagnostic characters include the following: 1) wing uppersides orange or blue in males, mostly brown in females; 2) secondary sexual characters present in some members, as a sexual brand on hindwing upperside and a hair tuft at dorsum of forewing; 3) hindwing angled at distal end of CuA_1; 4) a tail-like projection at distal end of CuA_2.

Virachola Moore, [1881] and *Artipe* Boisduval, 1870 are closely related to *Deudorix* sharing similar genitalia of both sexes and immature morphology and habits. Larsen (2005) regards *Virachola* as a subgenus within *Deudorix*, whereas Rawlins *et al*. (2020) treat it as a distinct genus. This issue requires further investigations.

The number of species varies depending on definition of the genus among different authors. They are distributed in the Afrotropical, Oriental and Australian regions (Larsen, 2005).

Larvae mostly bore into fruits of various plant families.

3 species are known from Taiwan.

玳灰蝶屬

形態特徵如下：1) 雄蝶翅背面橙色或藍色，雌蝶多呈褐色；2) 部分種類具第二性徵，如後翅背面具性標及前翅腹面具毛束；3) 後翅 CuA_1 脈末端角狀；4) 後翅 CuA_2 脈末端有尾突。

Virachola Moore, [1881] 及 *Artipe* Boisduval, 1870 與本屬近緣，在成蝶交尾器與幼生期形態和習性上都相似。Larsen (2005) 將前者視為本屬亞屬，但 Rawlins *et al*. (2020) 視其為一獨立屬。此議題有待進一步檢討。

本屬種類數依研究者對本屬之處理而異，分布於非洲區、東洋區及澳洲區。

幼蟲主要蛀食植物果實。

臺灣有 3 種。

Deudorix epijarbas **(Moore, [1858]) (玳灰蝶／恆春小灰蝶)**

Dipsas epijarbas Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India company 1: 32. (Type locality: "Carara; N. India; Darjeeling")

Aphnaeus epijarbas Doubleday, 1847: List of the specimens of lepidopterous insects in the collection of the British Museum, part 2: 26. (nomen nudum)

Ssp. *menesicles* Fruhstorfer, 1912

PLATE 17, Figs. 121–122; PLATE 52, Fig. 359; PLATE 85, Fig. 488

Deudorix epijarbas menesicles Fruhstorfer, 1912: Berliner Entomologische Zeitschrift 56 (3/4): 265. (Type locality: "Formosa")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Xindian, Sikanshui, 200/400m, 6. VIII. 2007 (Y. F. Hsu); 1♂, Wanli, Fengguizui, 600m, 27. X. 2009 (Y. F. Hsu); 1♂, Wulai, Fushan, 21. III. 2009 (C. H. Lin & C. H. Yen); 1♀, Wulai, Zhongzhi, 6. X. 2010, reared from *Koelreuteria henryi*, emgd. 13. XI. 2010, HSU10K19 (C. L. Huang). **TAIPEI CITY:** 3♂, Shilin, Shuangxigou, 26. IX. 2007 (Y. F. Hsu); 1♂, Shilin, Neishuangxi, ca 450m, 7. X. 2006 (H. C. Huang, L. Huang & Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Ronghua, 6. VIII. 1987 (Y. F. Hsu); 1♂, Fuxing, Daman, 29. IV. 1997 (C. Y. Li). **XINZHU Co.:** 1♂, Zhudong, 150m, 26. VII. 2008 (Y. F. Hsu); 1♀, Beipu, Daing Elementary School, 22. IX. 2019, reared from *Elaeocarpus japonicus*, emgd. 26. IX.

2019, HSU 19J44 (H. C. Huang). **NANTOU Co.:** 1♀, Xinyi, Dongpu, 1500/1600m, 2. IX. 2007 (Y. F. Hsu); 1♀, Renai, Tunyuan, 1550m, 28. VII. 2006 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 2♂, Dongshan, Xiwushan, 17. XII. 2002, reared from *Bauhinia championii* [= *Phanera championii*], emgd. 14. I. 2003, HSU 02M37 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Meishan, ca 800m, 27. VIII. 2010 (H. C. Huang).**TAIDONG Co.:** 1♂, Lanyu, Sidaogou, 13/15. VI. 2003 (Y. F. Hsu); 1♂, Lanyu, 8. VIII. 2008 (C. H. Wang); 1♂, Lanyu, Xiaotianchi, 8. IX. 2008 (C. H. Yen); 1♀, Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu). **JINMEN [= KINMEN] Co.:** 1♂, Jinhu, Jinmen Botanical Garden, 5. XI. 2015 (L. Huang); 1♀, Jinsha, Ronghu, 6. XI. 2015 (H. C. Huang); 1♀, Zhongshan Forest, 10. VIII. 2008 (Y. T. Lo); 1♂, Jincheng, Oucuo, 21. I. 2019, reared from *Pongamia pinnata*, emgd. 1. III. 2019 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 15–22 mm. Sexual dimorphism present. Male (PLATE 17, Fig. 121): Head hairy, mostly white, but vertex dark brown. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering cephalad, with 3rd segment rod-like, white with distal tip brown. Compound eyes densely hairy. Thorax brown dorsally, white ventrally. Abdomen brown mixed with some red scalings dorsally, white with paired black spots ventrally. Legs white mixed with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus, angled at distal end of CuA_1. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with discal red patch on forewing, much of hindwing red. Tornal lobe orange, with a black spot and some metallic blue scalings Wing undersides ground color brown. Discal bands consisted of double white lines, continuous on forewing, broken on hindwing. Discoidal bars also consisted of double white lines, present both on forewing and hindwing. A black spot encircled by yellow ring in cell CuA_1 of hindwing, associated with metallic blue scalings. Fringe brown. Female (PLATE 17, Fig. 122): Body and general wing patterns similar to those of male, but eyes sparsely hairy, Protarsi normal, no red patches on wing uppersides.

Male genitalia (PLATE 52, Fig. 359) – Tegumen broad; socii as curved bands with rounded posterior margin and blunt lateral margins. Vinculum narrow, curved. Brachium as stout hook, with narrow, pointed distal tips. Saccus short, protruded. Valvae fused,

each forming elongate arm with posterior end slightly enlarged. Phallus with aedeagus approximately as long as phallobase; aedeagus slightly up-curved, with distal end forming angled opening bearing a tooth. Cornuti as a spiny band.

Female genitalia (PLATE 85, Fig. 488) – Corpus bursae as elongate sac, partially sclerotized posteriorly. Signa as a pair of prominent, invaginated, papilliform sclerites on opposite walls of corpus bursae. Ductus bursae short, sclerotized laterally. Sterigma as a mesal, shovel-like sclerite. Anterior apophyses present, blade-like, shorter than posterior apophyses. Posterior apophyses elongate, bent near posterior ends. Anal papillae prominent, shield-like with rounded posterior margins, heavily sclerotized, setose.

Global distribution. Throughout the Oriental region, and much of tropical Australian region (Shirôzu, 1960).

Distribution in Taiwan. Low to moderate elevations, also recorded from Lanyu and Jinmen (Hsu, 2013).

Larval Host plant(s). Sapindaceae: *Litchi chinensis*, *Dimocarpus longan*, *Koelreuteria henryi*; Proteaceae: *Helicia formosana*; Ebenaceae: *Diospyros eriantha*, *D. kaki*; Elaeocarpaceae: *Elaeocarpus japonicus*; Fabaceae: *Phanera championi*, *Pongamia pinnata*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 15–22 mm。具雌雄二型性。雄蝶 (圖 121)：頭被毛、主要呈白色，頭頂深褐色。觸角褐色，有白環。口器深褐色。下唇鬚前伸、前端漸細，第三節棒狀、白色而末端褐色。複眼密被毛。胸部背面褐色、腹面白色。腹部背面褐色雜紅色鱗、腹面白色，有成對黑色斑點。足白色雜深褐色，前足跗節癒合、末端下彎、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_1 末端角狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，前翅中央具紅色斑塊、後翅大部分紅色；臀區葉狀突橙色，有黑色斑點及帶金屬光澤藍色鱗。翅腹面底色褐色，中央帶紋由兩道

白色線紋組成，於前翅者連續、於後翅者分斷；中室條紋亦由兩道白色線紋組成；後翅 CuA_1 室有鑲黃環之黑色斑點，並有帶金屬光澤藍色鱗。緣毛褐色。雌蝶 (圖 122)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面無紅色斑塊。

雄交尾器 (圖 359)：背兜寬闊，末緣中央內凹；背兜側突彎曲、帶狀，後緣圓弧狀，側緣鈍。基腹弧狹窄、彎曲。顎形突粗壯、鉤狀，末端尖。囊突短、突出。抱器癒合，分別端延伸成長臂狀，末端略膨大。陽莖基與陽莖器略等長。陽莖器略上彎，末端開口具一齒、斜切於背側。角狀器帶狀，有許多小棘刺。

雌交尾器 (圖 488)：交尾囊為長囊狀，尾端部分骨化。花壁一對，位於交尾囊對應位置，形成內陷乳頭狀小骨。交尾囊管短，側面骨化。交尾孔板鏟狀。前內骨突刃狀，短於後內骨突。後內骨突長，末端彎曲。肛突明顯、盾狀，末端圓，高度骨化。

世界分布：泛東洋區及澳洲區熱帶廣分布。

臺灣分布：分布於本島低至中海拔地區，蘭嶼及金門亦有記錄。

寄主植物：無患子科之荔枝、龍眼、臺灣欒樹；山龍眼科之山龍眼；柿樹科之軟毛柿、柿；杜英科之薯豆；豆科之菊花木、水黃皮等。

生物學：本種為一年多世代物種。

Deudorix sankakuhonis (Matsumura, 1938) (三角峰玳灰蝶 / 三角峰小灰蝶)

PLATE 17, Figs. 123–124; PLATE 53, Fig. 360; PLATE 86, Fig. 489

Rapala sankakuhonis Matsumura, 1938: Insecta Matsumurana 12 (2/3): 107. (Type locality: "sankakuhon, Formosa [Sanjiaofeng, Taiwan]")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Xuanyuan, ca 1000m, 21. IX. 2011, reared from *Quercus glauca*, 20. I. 2012, HSU 11J25 (L. H. Wang); 1♂, same locality, 19. X. 2011, reared from *Lithocarpus hancei*, emgd. 13. XII. 2011, HSU 11K30 (L. H. Wang); 1♂, Fuxing, Baling, ca 600m, 6. IX. 2012, reared from *Q. glauca*, emgd. 20. X. 2012, HSU 12J5 (L. H. Wang, H. Y. Lee & J. Y. Liang); 1♂, Fuxing, Sule, 700m, 30. IX. 2014, reared from *Q. glauca*, emgd. 10. X. 2014, HSU 14J86 (Y. F. Hsu & L.

H. Wang); 1♂, Fuxing, Baling, 2. X. 2018, reared from *Q. glauca*, emgd. 30. XII. 2018, HSU 18K01 (L. H. Wang) (genitalia preparation JYL653). **YILAN Co.:** 1♂, Datong, Tuleng, 1700m, 5. VIII. 2009 (C. C. Hsiao). **NANTOU Co.:** 1♀, Renai, Tunyuan, 1400m, 30. VIII. 2012, reared from *L. hancei*, emgd. 1. X. 2012, HSU 12H50 (L. H. Wang); 2♂, Renai, Guantoushan, ca 1400m, 6. X. 2011, reared from *L. hancei*, emgd. 25. XII. 2011./8. I. 2012, HSU 11K1 (L. H. Wang); 1♂, 1♀, Reani, Gaofengshan, ca 1500m, 5. VII. 2006 (C. K. Lo) (genitalia preparation JYL648).

Description. Adult – Forewing length 17–21 mm. Sexual dimorphism weakly present. Male (PLATE 17, Fig. 123): Head hairy, frons white, vertex dark brown. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering cephalad, with 3rd segment rod-like, white with distal tip brown. Compound eyes densely hairy. Thorax, abdomen brown dorsally, white ventrally. Legs white with dark brown markings, Protarsi fused, with distal end down-curved, pointed. Forewing nearly triangular, termen straight. Hindwing ovate, lobed at tornus, angled at distal end of CuA_1. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, tinged with deep blue gloss. Tornal lobe with black, orange and blue scales. Wing undersides ground color pale brown. Discal bands as dark bands edged with white, nearly a straight band on forewing, uneven and recurved posteriorly on hindwing. Discoidal bars also edged with white, present both on forewing and hindwing, but usually obscure. A black spot encircled by orange ring in cell CuA_1 of hindwing, associated with metallic blue scalings. A gray sexual brand present near base on hindwing uppersides; a tuft of pale brown hairs present on convex extension on dorsum. Fringe mostly brown, but with some white along dorsum of hindwing. Female (PLATE 17, Fig. 124): Body and general wing patterns similar to those of male, but eyes sparsely hairy, Protarsi normal, ground color of undersides paler, forewing termen convex, no sexual brands.

Male genitalia (PLATE 53, Fig. 360) – Tegumen broad, concave mesad; socii as curved bands with rounded posterior margin and blunt lateral margins. Vinculum narrow, curved. Brachium as stout hook, with distal end narrowed to pointed tips. Saccus short, protruded. Valvae fused, each forming elongate arm with posterior end curved outwards. Phallus with aedeagus approximately as long as phallobase, nearly stright. Distal end of

aedeagus with dorsal opening at distal end. Cornuti as elongate spiny band.

Female genitalia (PLATE 86, Fig. 489) – Corpus bursae oval, with a sclerotized patch near posterior end. Signa as a pair of prominent, invaginated, triangular sclerites on opposite walls of corpus bursae. Ductus bursae cylindrical, sclerotized at anterior and posterior ends, connecting with club-shaped, sclerotized sterigma. Anterior apophyses present, short, broad basally, attenuate to blunt tip. Posterior apophyses elongate, bent posreriorly. Anal papillae prominent, shield-like with rounded posterior margins, heavily sclerotized, setose.

Global distribution. Southern China, Taiwan (Huang *et al*., 2016).

Distribution in Taiwan. Moderate elevations in montane areas of main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Fagaceae: *Quercus glauca*, *Lithocarpus hancei*, etc. (Hsu, 2013)

Biology. This species is probably univoltine in occurrence (Hsu, 2013).

Remarks. This taxon was regarded as a species endemic to Taiwan (Shirôzu, 1960), but Shirôzu & Ueda (1992) treated it as a subspecies of *D. repercussa* (Leech, 1890). Huang *et al*. (2016) classified these two taxa as distinct species, and described additional subspecies of *sankakuhonis* from mainland China.

形態特徵：成蝶前翅長 17–21 mm。雌雄二型性微弱。雄蝶（圖 123）：頭被毛，額白色，頭頂深褐色。觸角褐色，有白環。口器深褐色。下唇鬚前伸、前端漸細，第三節棒狀、白色而末端褐色。複眼密被毛。胸部及腹部背面褐色、腹面白色。足白色，有深褐色條紋，前足跗節癒合、末端下彎、尖銳。前翅近三角形，外緣直。後翅卵形，臀區具葉狀突，CuA_1 脈末端角狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，有深藍色光澤；臀區葉狀突橙色，有黑色斑點及帶金屬光澤藍色鱗。翅腹面底色淡褐色，中央帶紋為有白邊之深色帶紋，於前翅者直線狀、於後翅後側者不連續、內彎；中

室條紋亦具白邊、常模糊；後翅 CuA_1 室有鑲橙色環之黑色斑點，並有帶金屬光澤之藍色鱗。後翅背面近翅基處有灰色性標，後翅後緣突出部分有一淺灰色毛叢。 緣毛主要呈褐色，但後翅後緣部分呈白色。雌蝶 (圖 124)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅腹面底色較淺、前翅外緣較突出、無性標。

雄交尾器 (圖 360)：背兜寬闊，末緣中央內凹；背兜側突彎曲、帶狀，後緣圓弧狀，側緣鈍。基腹弧狹窄、彎曲。顎形突粗壯、鉤狀，末端尖。囊突短突起。抱器癒合，分別延伸成長臂，漸細，末端向外彎曲。陽莖基與陽莖器略等長，甚直。陽莖器末端開口於背側。角狀器帶狀、具小棘刺。

雌交尾器 (圖 489)：交尾囊橢圓形，後端有一骨化斑。花壁一對，位於交尾囊相對位置，形成內陷三角形小骨。交尾囊管圓柱狀，前端與後端骨化，末端球形。前內骨突為短突起，基部寬，前端漸細，頂端鈍。後內骨突長，末端處彎曲。肛突明顯、盾狀、後端圓，高度骨化、有毛。

世界分布：華南及臺灣。

臺灣分布：分布於本島中海拔山區。

寄主植物：殼斗科之青剛櫟、阿里山三斗石櫟等。

生物學：本種可能為一年一世代物種。

註記：本分類群過去被認為是臺灣特有種 (Shirôzu, 1960)，但 Shirôzu & Ueda (1992) 將其處理為茶翅玳灰蝶 *D. repercussa* (Leech, 1890) 之亞種。Huang *et al.* (2016) 認為此二分類群為不同種，並記述三角峰玳灰蝶之中國大陸產亞種。

Deudorix rapaloides (Naritomi, 1941) (淡黑玳灰蝶 / 淡黑小灰蝶)

PLATE 18, Figs. 125–126; PLATE 53, Fig. 361; PLATE 86, Fig. 490

Thecla rapaloides Naritomi, 1941: Insect World: 9 (91): 619, pl. 4, fig. 5. (Type locality: "Nōkōzan [Nenggaoshan, Nantou]")

Virachola ferrea Araki, 1949: Kansai Konchū Gakkai kaihō (The Transactions of the Kansai Entomological Society) 14 (2): 17, Figs. 1–2. (Type locality: Formosa, Taichū Shū, Tattaka)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Fushan Botanical Garden, ca 700m, 5. VIII. 2006, reared from *Camellia brevistyla*, emgd 7. IX. 2006, HSU 06H21 (Y. F. Hsu & H. C. Huang). **TAIPEI CITY:** 1♂, Shilin, Neishuangxi, 7. X. 2006 (H. C. Huang, L. Huang & Y. F. Hsu); 1♂, Shilin, Tianxiyuan, ca 300m, 21. IX. 2010 (W. H. Chien) (genitalia preparation JYL699). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♀, Heping, Wuling, 31. VIII. 1985 (Y. F. Hsu); 1♀, Heping, Anmashan, 24. IX. 2000, reared from *Gordonia axillaris* [= *Polyspora axillaris*], emgd. 20. X. 2000, HSU 00J47 (C. C. Lu & Y. T. Lo). **NANTOU Co.:** 1♀, Renai, Songgang, 27. VII. 1986 (Y. F. Hsu); 1♂, Renai, Songgang, 1900m, 24. X. 2006, reared from *G. axillaris* [= *P. axillaris*], emgd. 23. XI. 2006, HSU 06K36 (L. H. Wang & Y. F. Hsu).

Description. Adult – Forewing length 16–20 mm. Sexual dimorphism present. Male (PLATE 18, Fig. 125): Head hairy, mostly white, but vertex dark brown. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering cephalad, with 3rd segment rod-like, white with distal tip brown. Compound eyes densely hairy. Thorax, abdomen brown dorsally, white ventrally. Legs white mixed with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing nearly triangular. Hindwing ovate, lobed at tornus, angled at distal end of CuA_1. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with proximal half of forewing and much area of hindwing covered by metallic blue tinged with purple scalings. Wing undersides ground color pale gray. Discal bands as dark bands edged with white, a straight band on forewing, forming “W”-shaped band posteriorly on hindwing. Discoidal bars also edged with white, present both on forewing and hindwing. A black spot encircled by yellow ring in cell CuA_1 of hindwing, associated with metallic blue scalings. Tornal lobe with black, orange and blue scales. A gray sexual brand present near base on hindwing uppersides; a tuft of pale brown hairs present on convex extension on dorsum. Fringe mostly brown, but white along dorsum of hindwing. Female (PLATE 18, Fig. 126): Body and general wing patterns similar to those of male, but eyes sparsely hairy, Protarsi normal, ground color of undersides paler, no metallic blue patches on wing uppersides, no sexual brands.

Male genitalia (PLATE 53, Fig. 361) – Tegumen broad; socii as curved bands with rounded posterior margin and blunt lateral margins. Vinculum narrow, curved. Brachium

as stout hook, with distal end abruptly narrowed to pointed tips. Saccus short, protruded. Valvae fused, each forming elongate arm with posterior end curved outwards, hook-like. Phallus with aedeagus approximately as long as phallobase, nearly straight. Distal end of aedeagus with dorsal opening at distal end. Cornuti as a pair of serrate sclerites and a spiny band.

Female genitalia (PLATE 86, Fig. 490) – Corpus bursae oval. Signa as a pair of prominent, invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae short, cylindrical, sclerotized at anterior and posterior ends, broaden at posterior end. Anterior apophyses present, short, broad basally, attenuate to blunt tip. Posterior apophyses elongate, bent. Anal papillae prominent, shield-like with rounded posterior margins, heavily sclerotized, setose.

Global distribution. Southern China and Taiwan (Huang *et al*., 2016).

Distribution in Taiwan. Lowland to moderate elevations of main island of Taiwan (Hsu, 2013; Lu & Chen, 2014).

Larval Host plant(s). Theaceae: *Polyspora axillaris*, *Camellia brevistyla*, etc. (Hsu, 2013; Lu & Chen, 2014)

Biology. This species is multivoltine (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 16–20 mm。具雌雄二型性。雄蝶 (圖 125)：頭被毛，大部分白色，頭頂深褐色。觸角褐色，有白環。口器深褐色。下唇鬚前伸、前端漸細，第三節棒狀、白色，末端褐色。複眼密被毛。胸部及腹部背面褐色、腹面白色。足白色雜深褐色，前足跗節癒合、末端下彎、尖銳。前翅近三角形。後翅卵形，臀區具葉狀突，CuA_1 脈末端角狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，前翅基部及後翅大部分區域覆蓋帶紫色調之金屬光澤藍色鱗；臀區葉狀突有黑色、橙色及藍色鱗。翅腹面底色淺灰色，中央帶紋為有白邊之深色帶紋，於前翅者直線狀、於後翅後側形成 W 字形；中室條亦有白邊；後翅 CuA_1 室有鑲黃環之黑色斑點，並有

帶金屬光澤藍色鱗。後翅背面近翅基處有灰色性標，後翅後緣突出部分有一淺灰色毛叢。緣毛主要呈褐色，但後翅後緣呈白色。雌蝶 (圖 126)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅腹面底色較淺、翅背面無藍色光澤、無性標。

雄交尾器 (圖 361)：背兜寬闊；背兜側突彎曲、帶狀，後緣圓弧狀，側緣鈍。基腹弧狹窄、彎曲。顎形突粗壯、鉤狀，末端驟縮成針狀。囊突短、突出。抱器癒合，分別延伸成長臂，末端向外彎曲成鉤狀。陽莖基與陽莖器略等長，甚直。陽莖器末端開口於背側。角狀器為一對鋸齒狀骨片及一具小棘刺之骨帶。

雌交尾器 (圖 490)：交尾囊橢圓形。花壁一對，位於交尾囊相對位置，形成內陷鰭狀骨片。交尾囊管短、圓柱狀，前端與後端骨化，後端擴大。前內骨突為短突起，基部寬，前端漸細，頂端鈍。後內骨突修、彎曲。肛突明顯、盾狀，後端圓、高度骨化、有毛。

世界分布：華南及臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：茶科之大頭茶、短柱山茶等。

生物學：本種為一年多世代物種。

Genus *ARTIPE* Boisduval, 1870

Type species: *Papilio amyntor* Herbst, 1804

Diagnostic characters include the following: 1) ground color of wing underside green; 2) no sexual brand in male; 3) hindwing angled at distal end of CuA_1; 4) a long projection at distal end of CuA_2.

The members of the genus are similar to *Deudorix* in venation, genitalia and larval morphology and feeding habits.

4 species are known, distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Parsons, 1998).

Larvae feed on fruits of Rubiaceae.

1 species occurs in Taiwan.

綠灰蝶屬

形態特徵如下：1) 翅腹面底色綠色；2) 雄蟲無性標；3) 後翅 CuA_1 脈末端呈角狀；4) 後翅 CuA_2 脈末端具長尾突。

本屬成員與玳灰蝶屬於翅脈、交尾器、幼生期形態及取食習性上均相似。

本屬已知 4 種，分布於東洋區及澳洲區

幼蟲取食茜草科植物之果實。

臺灣有 1 種。

Artipe eryx (Linnaeus, 1771) (綠灰蝶／綠底小灰蝶)

Papilio eryx Linnaeus, 1771: Mantissa Plant. 2: 537. (Type locality: "China")

Lehera skinneri Wood-Mason & de Nicéville, [1887]: J. Asiat. Soc. Bengal 55 Pt. II (4): 369, pl. 15, f. 3. (Type locality: “Irangmara” [Cachar, Assam, India])

Papilio amyntor Herbst, 1804: in Jablonsky, Natursystem aller bekannten in- und ausländischen Insekten 11: 27, pl. 300, f. 5–6. (Type locality: “Karolina”) (preoccupied by *Papilio amyntor* Cramer, [1775])

Ssp. *horiella* Matsumura, 1929

PLATE 18, Figs. 127–128; PLATE 53, Fig. 362; PLATE 86, Fig. 491

Lehera eryx horiella Matsumura, 1929: Insecta Matsumurana 3 (2/3): 99. (Type locality: “Hori, Formosa [Puli, Taiwan]’’)

Ssp. *eryx* Linnaeus, 1771

PLATE 18, Figs. 129–130; PLATE 53, Fig. 363; PLATE 86, Fig. 492

Specimens examined:

Ssp. *horiella*: **JILONG CITY:** 1♀, Longgang Trail, 2. IX. 2006, reared from *Gardenia jasminoides*, emgd. 8. X. 2006, HSU 06J6 (Y. F. Hsu). **TAIPEI CITY:** 2♂, 3♀, Beitou, Junjianyan, 150m, 27. VIII. 2008, reared from *G. jasminoides*, emgd. 27. VIII./2. IX. 2008, HSU 08H26 (Y. F. Hsu); 1♂, 1♀, Neihu, Daluntou, 29. IX. 2014, reared from *G. jasminoides*, emgd. 19. X. 2014, HSU 14J77 (W. J. Lin) (genitalia preparation JYL541, 542). **NANTOU Co.:** 1♂, 1♀, Jiji, 300m, 30. VIII. 2008, reared from *G. jasminoides*, emgd. 3/4. IX. 2008, HSU 08H27 (L. W. Wu); 2♂, 1♀, Jiji, 17. XI. 2008, reared from *G. jasminoides*, emgd. 2/11. XII. 2008, HSU 08L31 (C. C. Lu); 1♀, same locality, 25. XI. 2008 (C. C. Lu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Maolin, Shanping, 500m, 11. XI. 2007, reared from *G. jasminoides*, emgd. 11. XI. 2008, HSU 07L4 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Mudan, Xuhai, 150m, 23. X. 2009 (Y. F. Hsu); 1♀, same locality, 4. IX. 2010, reared from *G. jasminoides*, emgd. 12. X. 2010, HSU 10J4 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, 27. X. 2008 (C. H. Lin, jr); 1♀, same locality, 25. VI. 2009, reared from *G. jasminoides*, emgd. 1. VIII. 2009, HSU 09F21 (N. Y. Tsai & C. H. Lin, jr); 3♂, Lanyu, Qiwei, 24/27. VI. 2009, reared from *G. jasminoides*, emgd. 28/29. VI. 2009, HSU 09F21 (N. Y. Tsai & C. H. Lin, jr); 1♂, Lanyu, Central Transverse Road, 14. XI. 2013, reared from *G. jasminoides*, emgd. 7. XII. 2013, HSU 13L62 (L. H. Wang & H. Y. Lee); 1♂, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang).

Ssp. *eryx*: **JINMEN [= KINMEN] Co.:** 1♂, Jincheng, Liangshan, 4. VI. 2000 (Y. F. Hsu); 3♀, Jinning, Zhongshan Forest, 28/29. VIII. 2011, reared from *G. jasminoides*, emgd. 3/7. IX. 2011, HSU 11H49 (Y. F. Hsu & H. C. Huang); 2♂, Jinhu, Shenshiqiao, 29. V. 2011 (Y. F. Hsu & H. C. Huang). **LIANJIANG Co.:** 1♂, Nangan, 2. V. 2010, reared from *G. jasminoides*, emgd. 14. VI. 2010, HSU 10F9 (Y. F. Hsu); 2♂, 3♀, Nangan, 2. VI. 2010, reared from *G. jasminoides*, emgd. 14/17. VI. 2010, HSU 10F9 (Y. F. Hsu); 1♂, 1♀, Nangan, Jinsha, 18. XI. 2013, reared from *G. jasminoides*, emgd. 7/28. I. 2014, HSU 13L66 (L. H. Wang); 1♀, Nangan, Tiebao, 15. IV. 2014 (Y. F. Hsu, H. C. Huang & C. L. Huang).

Description. Adult – Forewing length 14–24 mm. Sexual dimorphism present. Male

(PLATE 18, Figs. 127, 129): Head hairy, creamy white but extensively green, vertex partially brown. Antennae brown, segmented with white. Proboscis brown. Labial palpus porrect, tapering cephalad, with 3rd segment rod-like, creamy yellow with distal tip brown. Compound eyes densely hairy. Thorax, abdomen brown dorsally, creamy yellow ventrally. Legs white on inner surfaces, brown on outer surfaces, Protarsi fused, with distal end down-curved, pointed. Forewing nearly triangular, termen convex. Hindwing ovate, lobed at tornus, angled at distal end of CuA_1. Filiform projections at distal ends of CuA_2. Tornal lobe green, with some black scalings. Wing uppersides ground color brown, with proximal half of forewing and much area of hindwing covered by metallic blue tinged with purple scalings. Wing undersides ground color green. Discal bands as broken white line. A black spot present in cell CuA_1 of hindwing. Tornal lobe black. Fringe mostly brown, but white along dorsum of hindwing. Female (PLATE 18, Figs. 128, 130): Body and general wing patterns similar to those of male, but Protarsi normal, white markings on wing undersides more prominent, no metallic blue patches on wing uppersides, series of white markings present on hindwing upperside posteriorly.

Two subspecies are recognized: the nominotypical subspecies (PLATE 18, Figs. 129–130) occurs in Jinmen and Mazu Islands, whereas ssp. *horiella* inhabits main island of Taiwan, Ludao, and Lanyu. The filiform projections at distal ends of CuA_2 in female of the former are mostly white, whereas it is mostly dark brown in the latter.

Male genitalia (PLATE 53, Figs. 362–363) – Tegumen broad, concave mesad; socii as curved bands with rounded posterior margin and blunt lateral margins. Vinculum narrow, curved. Brachium as stout hook, with distal end narrowed to pointed tips. Saccus short, protruded. Valvae fused, each forming elongate arm, curved outwards, with posterior end blunt. Phallus with aedeagus approximately as long as phallobase, nearly straight. Distal end of aedeagus with dorsal opening at distal end. Cornuti as a dorsal, strong spine, with a serrate sclerite and an elongate spiny band.

Female genitalia (PLATE 86, Figs. 491–492) – Corpus bursae oval, with a sclerotized patch near posterior end. Signa as a pair of prominent, invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae short, with an internal vessel-like sclerite with a round disc at anterior end. Anterior apophyses present, short, broad basally,

attenuate to blunt tip. Posterior apophyses elongate, bent posteriorly. Anal papillae prominent, shield-like with rounded posterior margins, heavily sclerotized, setose.

Variations. Individuals of female found in the wet/hot season have white markings on hindwing uppersides reduced.

Global distribution. Nepal, Northeast India, Indochina, Malay Peninsula, Borneo, Sulawesi, South China, Amami Islands, Okinawa Islands, Yaeyama Islands, and Taiwan (Shirôzu, 1960; Bascombe *et al*., 1999).

Distribution in Taiwan. Lowland to moderate elevations of the main island; also Lanyu, Ludao, and Guishan Island (Hsu, 2013). Populations in Jinmen and Mazu Islands belong to the nominotypical subspecies.

Larval Host plant(s). Rubiaceae: *Gardenia jasminoides* (Uchida, 1991; Hsu, 2002; Lu & Chen, 2014).

Biology. This species is multivoltine in occurrence (Hsu, 2002; Lu & Chen, 2014).

形態特徵：成蝶前翅長 14–24 mm。具雌雄二型性。雄蝶 (圖 127、129)：頭被毛，乳白色但泛呈綠色，頭頂部分褐色。觸角褐色，有白環。口器深褐色。下唇鬚前伸、前端漸細，第三節棒狀、乳黃色而末端褐色。複眼密被毛。胸部及腹部背面褐色、腹面乳黃色。足內側白色，外側褐色。前足跗節癒合、末端下彎、尖銳。前翅近三角形，外緣凸。後翅卵形，臀區具葉狀突，CuA_1 脈末端角狀，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，前翅內半部及後翅大部分區域有帶金屬光澤之紫藍色鱗；臀區葉狀突綠色帶黑色鱗。翅腹面底色綠色，中央帶紋為不連續之白色線紋；後翅 CuA_1 室有黑色斑點；緣毛主要呈褐色，但後翅後緣白色。雌蝶 (圖 128、130)：形態特徵與雄蝶相似，但前足跗節不癒合、翅腹面斑紋較鮮明、翅背面無藍色斑塊、後翅背面後側有白色斑紋。

臺灣有兩亞種：承名亞種 (圖 129–130) 分布於金門及馬祖列嶼，而亞種 ssp. *horiella* 則分布於臺灣本島、綠島及蘭嶼。承名亞種後翅 CuA_2 脈末端絲狀尾突主要呈白色，而臺灣亞種 ssp. *horiella* 則為深褐色。

雄交尾器 (圖 362–363)：背兜寬闊，中央內凹；背兜側突彎曲、帶狀，後端圓弧形，側緣鈍。基腹弧狹窄，彎曲。顎形突粗壯、鉤狀，末端尖。囊突短、突出。抱器癒合，分別延伸成臂狀，末端鈍、外彎。陽莖器與陽莖基約等長，甚直。陽莖器末端開口於背側。角狀器包括一刺狀骨、具鋸齒小骨及細長棘刺帶。

雄交尾器 (圖 491–492)：交尾囊橢圓形，後端具一骨化斑。花壁一對，位於交尾囊相對位置，形成內陷鰭狀骨片。交尾囊管短，內內有管狀骨，前端有碟狀骨。前內骨突短，基部寬，前端漸細、頂端鈍。後內骨突長，末端彎曲。肛突明顯、盾狀，末端圓、高度骨化，具毛。

變異：雨季／高溫型雌蝶後翅背面白色斑紋減退。

世界分布：尼泊爾、印度東北部、中南半島、馬來半島、婆羅洲、蘇拉威西島、華南、奄美群島、沖繩島、八重山群島、臺灣。

臺灣分布：分布於本島低至中海拔地區，蘭嶼、綠島及龜山島亦有分布。分布於金門及馬祖列嶼之族群屬於承名亞種。

寄主植物：茜草科之山黃梔。

生物學：本種為一年多世代物種。

Genus *SINTHUSA* Moore, 1884

Type species: *Thecla nasaka* Horsfield, [1829]

Diagnostic characters include the following: 1) purple or blue gloss on wing undersides in males, dull brown in females; 2) secondary sexual character as a sexual brand on hindwing upperside and a tuft of hairs at dorsum of forewing.

Approximately a dozen species are known, distributed mainly in the Oriental region (Bascombe *et al*., 1999).

Larvae feed on plants in the family of Rosaceae.

1 species occurs in Taiwan.

閃灰蝶屬

形態特徵如下：1) 雄蝶翅背面有藍或紫色光澤，雌蝶暗褐色；2) 具第二性徵，包括後翅腹面性標及前翅後緣毛束。

本屬已知約 12 種，主要分布於東洋區。

幼蟲以薔薇科植物為寄主。

臺灣有 1 種。

Sinthusa chandrana (Moore, 1882) (閃灰蝶／嘉義小灰蝶／生灰蝶)

Hypolycaena chandrana Moore, 1882: Proceedings of the Zoological Society of London 1882 (1): 249, pl. 11, fig. 2, 2a. (Type locality: " Lahul [India]")

Ssp. *kuyaniana* Matsumura, 1919

PLATE 19, Figs. 131–132; PLATE 54, Fig. 364; PLATE 87, Fig. 493

Virachola kuyaniana Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 627, pl. 48, fig. 25. (Type locality: “Formosa, Kuyania near Tappan”)

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Xuanyuan, 19. II. 1988 (Y. F. Hsu); 1♂, same locality, 5. IV. 2017 (L. Huang); 2♂, 1♀, Longtan, 350m, 7. VI. 2002 (Y. F. Hsu); 1♀, Fuxing, Northern Cross-Island Road, 33K, 19. IV. 2017 (C. W. Huang) (genitalia preparation JYL452); 1♀, Fuxing, Lian, 22. V. 2018 (Y. F. Hsu) (genitalia preparation JYL468). **YILAN Co.:** 1♂, Datong, Mingchi, ca 1200m, 26. IX. 2003, reared from *Rubus formosensis*, emgd. 12. XII. 2003, HSU 03J21 (L. H. Wang). **XINZHU Co.:** 1♀, Wufeng, Dalu Forest Trail, 1200m, 24. VIII. 2010 (C. C. Chen). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 17. IX. 2002, reared from *R. alceifolius*, emgd. 20. X. 2002, HSU 02J25 (Y. F. Hsu); 4♂, 2♀, same locality, 8. X. 2002, reared from *R. alceifolius*, emgd. 24/28. X. 2002, HSU 02K22 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Tongmen, Longjian/Longxi, 10. VII. 1991 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/**

TAICHUNG Co.]: 1♀, Dongshi, Dongshi Forest Garden, 1. VII. 1996 (Y. F. Hsu); 2♀, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Old Dawu/ Bayouxi, 500/900m, 21. III. 2010 (J. H. Lin & N. Y. Tsai).

Description. Adult – Forewing length 11–16 mm. Sexual dimorphism present. Male (PLATE 19, Fig. 131): Head hairy, vertex dark brown, frons white, areas near antennal bases dark brown. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, white with distal tip dark brown. Compound eyes hairy. Thorax and abdomen brown dorsally, white ventrally. Legs white banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa straight, dorsum straight but convex where secondary sexual character present, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with metallic purple scalings present on proximal portion of forewing and most of hindwing except areas along costa and dorsum. Wing undersides ground color white, with brown discal bands broken into several short bars. Short, brown bar present at distal end of discoidal cells. Submarginal bands consisted of a series of brown crescents. Two or three black dots present proximally on hindwing. A black spot encircled by yellow ring in cell CuA_1 of hindwing, associated with metallic blue scalings. A round, gray sexual brand at base of $Sc+R_1$ of hindwing upperside; a tuft of brown hairs present on convex extension at dorsum of forewing. Fringe mostly brown. Female (PLATE 19, Fig. 132): Body and general wing patterns similar to those of male, but Protarsi normal, wings broader with forewing termen more convex, no metallic patches on wing uppersides, and no secondary sexual characters on wings.

Male genitalia (PLATE 54, Fig. 364) – Tegumen broad, concave mesad; socii as curved bands with rounded posterior margin and blunt lateral margins. Vinculum narrow, curved. Brachium as stout hook, with distal end narrowed to pointed tips. Saccus short, protruded. Valvae fused, each forming elongate arm. Phallus with aedeagus approximately as long as phallobase, nearly straight. Distal end of aedeagus with dorsal opening at distal end. Cornuti as elongate spiny band.

Female genitalia (PLATE 87, Fig. 493) – Corpus bursae oval. Signa as a pair of weakly

sclerotized, invaginated, fin-like sclerites on opposite walls of corpus bursae. Ductus bursae cylindrical, moderately sclerotized. Anterior apophyses present, as short process with blunt tips. Posterior apophyses elongate, longer than anal papillae. Anal papillae prominent, shield-like with rounded posterior margins, heavily sclerotized, sparsely setose.

Global distribution. Himalayas, Indochina, West to East China, and Taiwan (Bascombe *et al*., 1999; Hsu, 2006, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan (Hsu, 2006, 2013).

Larval Host plant(s). Rosaceae: *Rubus alceifolius*, *R. formosensis*, *R. rolfei*, etc. (Hsu, 2006, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2006, 2013).

形態特徵：成蝶前翅長 11–16 mm。具雌雄二型性。雄蝶 (圖 131)：頭被毛，頭頂黑褐色、額白色、觸角基部附近黑褐色。觸角黑褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、白色但末端黑褐色。複眼被毛。胸部及腹部背面褐色、腹面白色。足白色，有黑褐色條紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣直、後緣頗直但第二性徵處突出、外緣近翅頂處略突出。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，前翅內半部及後翅除前、後緣以外區域覆金屬光澤紫色鱗。翅腹面底色白色，褐色中央帶紋分斷為數枚短條；中室末端有褐色短條；亞外緣帶紋由一列褐色弦月紋組成；後翅內側有二至三枚黑色斑點；後翅 CuA_1 室有鑲黃環之黑色斑點，並有金屬光澤藍色鱗；後翅背面 $Sc+R_1$ 脈基部具灰色圓形性標；前翅後緣外凸處有褐色毛束。緣毛主要呈褐色。雌蝶 (圖 132)：形態特徵與雄蝶相似，但前足跗節不癒合、翅幅因外緣較突出而較寬、缺少第二性徵。

雄交尾器 (圖 364)：背兜寬闊，中央內凹。背兜側突彎曲、帶狀，後端圓弧形，兩側鈍。基腹弧狹窄、彎曲。顎形突粗壯、鉤狀，末端尖。囊突短、突出。抱器癒合，分別端延伸成臂狀。陽基軛片為輕度骨化骨片。陽莖基與陽莖器略等長，甚直。陽

莖器末端開口於背側，角狀器為具棘刺帶狀骨。

雌交尾器 (圖 493)：交尾囊橢圓形。花壁一對，位於交尾囊相對位置，形成內陷鰭狀骨片。交尾囊管圓柱狀、中度骨化。前內骨突短，頂端鈍。後內骨突修長，長於肛突。肛突明顯、盾狀，末端圓，高度骨化、疏具毛。

世界分布：喜瑪拉雅地區、華西至華東、臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：薔薇科之羽萼懸鉤子、臺灣懸鉤子、高山懸鉤子等。

生物學：本種為一年多世代物種。

Genus *RAPALA* Moore, [1881]

Type species: *Thecla varuna* Horsfield, [1829]

Diagnostic characters include the following: 1) wing uppersides blue or indigo in males, tinged with purple in females; 2) secondary sexual characters present in some members, as a sexual brand on hindwing upperside and a tuft of hairs at dorsum of forewing; 3) hindwing angled at distal end of CuA_1; 4) a tail-like projection at distal end of CuA_2.

At least 50 species are known, distributed in the Oriental and Australian regions (Bascombe *et al*., 1999).

Larvae feed mainly on flowers of various plant families, but foliage-feeding species are also known. They may sometimes become facultative gall-feeders.

5 species are known from Taiwan, but one of them only occurs in Jinmen and Mazu Islands.

燕灰蝶屬

形態特徵如下：1) 雄蝶翅背面藍色或靛色，雌蝶則為紫色；2) 部分種類具第二性徵，包括後翅背面性標及前翅腹面毛束；3) 後翅 CuA_1 脈末端角狀；4) 後翅 CuA_2 脈末端具尾突。

本屬至少已知 50 種，分布於東洋區及澳洲區。

幼蟲主要取食植物花器，也有取食葉片的種類，甚至偶有取食蟲癭者。

臺灣已知 5 種，但其中 1 種僅見於金馬地區。

Rapala caerulea (Bremer & Grey, [1851]) (堇彩燕灰蝶／淡紫小灰蝶／藍燕灰蝶)

Thecla caerulea Bremer & Grey, [1851]: Etudes Entomologiques 1: 60. (Type locality: “Peking [Beijing]”)

Thecla betuloides Blanchard, 1871: Comptes rendus hebdomadaires des séances de l'Académie des sciences 72: 810. (Type locality: “Mou-pin [Baoxing, Sichuan]”)

Ssp. *liliacea* Nire, 1920

PLATE 19, Figs. 133–134; PLATE 54, Fig. 365; PLATE 87, Fig. 494

Rapala liliacea Nire, 1920: Zoological Magazine, Tokyo 32 (386): 377. (Type locality: “Horisha, Formosa [Puli, Taiwan], near 8500 feet’’)

Rapala micans formosicola Matsumura, 1929: Insecta Matsumurana 3(2/3): 98. (Type locality: “Formosa, Musha [Wushe]”)

Specimens examined:

HUALIAN Co.: 1♂, 1♀, Xiulin, Xinbaiyang, 1600/1700m, 3. VII. 2008 (L. H. Wang). **NANTOU Co.:** 3♂, 3♀, Renai, Songgang, 1900m, 14. VII. 2003, reared from *Lespedeza formosa* [= *Lespedeza thunbergii formosa*], emgd. 30. VII./8. VIII. 2003, HSU 03G10 (Y. F. Hsu); 1♂, same locality, 26. V. 2005, reared from *L. formosa* [= *L. thunbergii formosa*], emgd. 25. VI. 2005, HSU 05E30 (Y. F. Hsu); 1♀, same locality, 18. X. 2005, reared from *L. formosa* [= *L. thunbergii formosa*], emgd. 10. XI. 2005 (C. C. Lu) (genitalia preparation JYL687); 1♂, same locality, 18. X. 2005, reared from *L. formosa* [= *L. thunbergii formosa*], emgd. 7. XI. 2005, HSU 05K49.1 (C. C. Lu); 1♀, same locality, 18. X. 2005, reared from *L. formos*a [= *L. thunbergii formosa*], emgd. 10. XI. 2005 (C. C. Lu); 2♂, Renai, Qingjing Farm, 1920m, 8. V. 2011 (C. C. Lu) (genitalia preparation

JYL556).

Description. Adult – Forewing length 14–18 mm. Sexual dimorphism weakly present. Male (PLATE 19, Fig. 133): Head hairy, vertex brown, frons white, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, white with 3rd segment brown. Compound eyes hairy. Thorax brown dorsally, creamy white ventrally; abdomen brown dorsally, creamy yellow ventrally. Legs white banded with dark brown, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa straight, dorsum straight but convex where secondary sexual character present, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with blue sheen tinged with purple. Orange markings sometimes present in discal area of forewing and in tornal area of hindwing. Wing undersides ground color buff, with prominent brown discal bands. Short bar edged with brown present at distal end of discoidal cells. Submarginal bands consisted of faint brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing; another black spot covered by metallic blue scales in CuA_2 of hindwing. Tornal lobe black with orange marking and blue scalings. A round, gray sexual brand at base of $Sc+R_1$ of hindwing upperside; a tuft of brown hairs present on convex extension at dorsum of forewing. Fringe mostly brown except inner cilia white around tornus of hindwing. Female (PLATE 19, Fig. 134): Body and general wing patterns similar to those of male, but eyes less hairy, Protarsi normal, and no secondary sexual characters on wings.

Male genitalia (PLATE 54, Fig. 365) – Tegumen slightly concave mesad; socii as bands with rounded posterior margin and blunt lateral margins. Vinculum narrow dorsally, broad ventrally, strongly curved. Brachium as slender hook, strongly curved into U-shaped, with distal end abruptly narrowed to pointed tip. Saccus short, with anterior margin rounded. Valvae fused, each forming setose process broad at base, tapering posteriorly to truncate terminal end. Phallus with aedeagus longer than phallobase, nearly straight. Distal end of aedeagus enlarged, thickened, armed with minute teeth.

Female genitalia (PLATE 87, Fig. 494) – Corpus bursae ovate. Signa as a pair of elongate, linear, invaginated, spiny sclerites on opposite walls of corpus bursae. Ductus

bursae thick, moderately long, connecting to prominent, large ostium bursae. Sterigma forming heavily elongate sclerotized plate, deeply extending into ductus bursae, with anterior end narrowed, folded laterally, posterior end forming rounded margin; ostium bursae prominent, with width over A8 width. Anterior apophyses present, short, narrow, spine-like. Posterior apophyses elongate, longer than anal papillae, slightly curved near posterior ends. Anal papillae shield-like, tapering to blunt caudal end, heavily sclerotized, sparsely setose.

Global distribution. Korea, mainland China, and Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Higher elevations of montane zone of the main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Fabaceae: *Lespedeza thunbergii formosa* and Hydrangeaceae: *Deutzia pulchra* (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 14–18 mm。雌雄二型性不明顯。雄蝶 (圖 133)：頭被毛，頭頂褐色、額白色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、向延漸細，末端尖、白色但第三節褐色。複眼被毛。胸部背面褐色、腹面乳白色。腹部背面褐色、腹面乳黃色。足白色，有褐色條紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣直、後緣筆直但第二性徵處外凸、外緣近翅頂處略突出。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突。翅背面底色黑褐色，有紫藍色光澤；前翅中央及後翅臀區有時具橙色斑紋。翅腹面底色淺黃褐色，中央有鮮明褐色帶紋；中室末端有鑲褐色邊短條；亞外緣帶紋由淡褐色帶紋組成；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點、CuA_2 室有覆金屬光澤藍色鱗之黑色斑點；臀區葉狀突黑色，上有橙色紋及藍色鱗；後翅背面 $Sc+R_1$ 脈基部具灰色圓形性標；前翅後緣外凸處具褐色毛束。緣毛主要呈褐色，但後翅臀區內側緣毛白色。雌蝶 (圖 134)：形態特徵與雄蝶相似，但複眼被毛稀疏、前足跗節不癒合、無第二性徵。

雄交尾器 (圖 365)：背兜中央略凹入；背兜側突帶狀，背兜側突帶狀，後側圓弧狀，側緣鈍。基腹弧背側窄，腹側寬，強彎曲。顎形突細、鉤狀，彎曲成 U 形，末端驟

縮成針狀。囊突短，前端圓。抱器癒合，基部寬，向後漸延窄，末端截狀，具剛毛。陽莖器長於陽莖基，甚直。陽莖器末端開口擴大，兩側具鋸齒。

雌交尾器 (圖 494)：交尾囊卵形。花壁一對，位於交尾囊對應位置，形成細長內陷線狀骨，密生小棘刺。交尾囊管中庸長、粗，連接大形交尾孔。交尾孔板大型，延伸深入交尾囊管，其前端窄而兩側有褶，後端後緣圓弧狀。交尾孔大，寬度超過第 8 腹節寬度一半。前內骨突細而短，成刺狀。後內骨突修長，長於肛突，近末端處略彎曲。肛突盾狀，向後端漸窄、尾端鈍，高度骨化，疏具毛。

世界分布：朝鮮半島、中國大陸及臺灣。

臺灣分布：分布於本島中高海拔山區。

寄主植物：豆科之毛胡枝子及八仙花科之大葉溲疏。

生物學：本種為一年多世代物種。

Rapala varuna (Horsfield, [1829]) (燕灰蝶／墾丁小灰蝶)

Thecla varuna Horsfield, [1829]: Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 2: 91. (Type locality: “Java”)

Ssp. *formosana* Fruhstorfer, 1912

PLATE 19, Figs. 135–136; PLATE 54, Fig. 366; PLATE 87, Fig. 495

Rapala varuna formosana Fruhstorfer, 1912: Berliner Entomologische Zeitschrift 56 (3/4): 259. (Type locality: “Formosa, Koshun [Taiwan, Hengchun]”)

Rapala horishana Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 601, pl. 47, fig. 4. (Type locality: “Formosa (Horisha) [Taiwan, Puli] ”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, 3. XII. 1986 (Y. F. Hsu); 1♀, same locality, 5. VI. 2005, reared from *Lagerstroemia subcostata*, emgd. 25. VI. 2005, HSU 05F7 (Y. F. Hsu); 1♀, Wulai, Jiajiuliao, 150m, 10. IX. 2008 (Y. F. Hsu); 1♀, Wanli, Fengguizui, 600m, 27. X. 2009 (Y. F. Hsu); 2♂, 1♀, Xindian, Bitan, 6. II. 2011, reared from *Trema orientalis*, emgd. 28. II. 2011, HSU 11B4 (Y. F. Hsu). **TAIPEI CITY:** 1♂, 2♀, Wenshan, Xianjiyan, 19. VI. 2003 (Y. F. Hsu & C. R. Chen); 1♀, same locality, 19. VI. 2003,

reared from *Sapindus saponaria* [= *S. mukorossi*], emgd. 7. VII. 2003, HSU 03F23 (Y. F. Hsu); 2♀, same locality, 20. VI. 2004, reared from *Itea oldhamii*, emgd. 23. VII. 2004 (Y. F. Hsu, J. R. Chen & C. T. Chaung); 1♂, Songshan, Xiangshan, 19. VI. 2004 (H. C. Huang); 1♂, Beitou, Qixingshan, ca 1000m, 14. VI. 2011 (C. Y. Liao); 1♂, Beitou, Junjianyan, 27. II. 2011 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 3♂, 1♀, Fuxing, Daman/ Xuanyuan, 700/ 900m, 16. VI. 2005, reared from *L. subcostata*, emgd. 4/7. VII. 2005, HSU 05F41 (L. H. Wang). **YILAN Co.:** 1♂, 2♀, Datong, Bailing, ca 1400m, 3. VII. 2005, reared from *L. subcostata*, emgd. 22/23. VII. 2005, HSU 05G2 (L. H. Wang). **NANTOU Co.:** 1♀, Renai, Xinrengang, 2500m, 3. VI. 2003 (Y. F. Hsu). **ZHANGHUA Co.:** 1♀, Ershui, ca 250m, 9. V. 2001 (Y. T. Lo). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Zhentoushan, 23. XI. 2002 (Y. F. Hsu); 1♀, Dongshan, Zengwen Dam, 24. IX. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♂, Maolin, Shanping/ Nanfengshan, 17. VI. 1987 (Y. F. Hsu); 6♂, 2♀, Tianliao, 100m, 10. V. 2011 (Y. F. Hsu); 1♂, Taoyuan, Baoshan, ca 1000/1100m, 11. XI. 2007, reared from *Castanopsis formosana*, emgd. 2. XII. 2007, HSU 07L6 (Y. F. Hsu); 1♂, Liugui, 300m, 22. I. 2008 (Y. F. Hsu). P**INGDONG Co.:** 1♂, Sandimen, 300m, 6. I. 2008 (Y. F. Hsu); 1♂, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2009 (Y. F. Hsu & H. C. Huang). **HUALIAN Co.:** 1♀, Xiulin, Shikongzai, 60m, 14. XII. 2008 (M. H. Sun); 1♀, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai); 1♀, Zhuoxi, Nanan, 27. XI. 2014 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu).

Description. Adult – Forewing length 15–18 mm. Sexual dimorphism weakly present. Male (PLATE 19, Fig. 135): Head hairy, brown, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, brown mixed with white. Compound eyes hairy. Thorax brown dorsally, gray ventrally; abdomen brown dorsally, creamy yellow ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa straight, dorsum straight but convex where secondary sexual character present, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2. Wing uppersides ground color brown, with deep indigo sheen. Wing undersides ground color brown or buff brown, with dark brown discal band. Short, brown bar present at distal end of discoidal cells. Submarginal bands consisted of faint brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing; another

black spot covered by metallic blue scales in CuA_2 of hindwing. Tornal lobe black with orange marking and blue scalings. Gray, narrow, thread-like sexual brand present at base of M_3, CuA_1, CuA_2 and associated vein of discoidal cell of forewing upperside. A round, gray sexual brand at base of $Sc+R_1$ of hindwing upperside; a tuft of brown hairs present on convex extension at dorsum of forewing. Fringe mostly brown except inner cilia white around tornus of hindwing. Female (PLATE 19, Fig. 136): Body and general wing patterns similar to those of male, but eyes less hairy, Protarsi normal, ground color of wing uppersides with purple sheen, and no secondary sexual characters on wings.

Male genitalia (PLATE 54, Fig. 366) – Tegumen thickened and concave mesad; socii as bands narrowed externally, with rounded posterior margin and blunt lateral margins. Vinculum narrow dorsally, broad ventrally, strongly curved. Brachium as stout hook, strongly curved, with distal tip bent. Saccus short, with anterior margin rounded. Valvae fused, each forming digitate, setose process. Phallus with aedeagus longer than phallobase, with aedeagus up-curved. Distal end of aedeagus enlarged, with a pair of folds armed with minute teeth. Cornutus as a flat ligulate sclerite with rounded posterior end.

Female genitalia (PLATE 87, Fig. 495) – Corpus bursae oval, granular. Signa as a pair of elongate, linear, invaginated, spiny sclerites on opposite walls of corpus bursae. Ductus bursae short and thick, connecting to prominent, large ostium bursae. Sterigma forming heavily elongate sclerotized plate, deeply extending into ductus bursae, with anterior end narrowed, folded laterally, posterior end enlarged, disc-like; ostium bursae prominent, with width over A8 width. Anterior apophyses present, broad basally, forming short rod distally. Posterior apophyses elongate, longer than anal papillae, slightly curved with distal ends blunt. Anal papillae prominent, shield-like with rounded posterior margins, heavily sclerotized, sparsely setose.

Variation. Markings on wing undersides reduced and less prominent in dry/cold seasons.

Global distribution. India, Sri Lanka, Southeast Asia, New Guinea, Northeast Australia, and Taiwan (Braby, 2000).

Distribution in Taiwan. Low to moderate elevations of the main island (Hsu, 2002, 2013).

Larval Host plant(s). Larvae feed on flowers, flower buds, and sometimes soft leaves of various broad-leaved plants: Rhamnaceae: *Rhamnus formosana*; Cannabaceae: *Trema orientalis*; Lythraceae: *Lagerstroemia subcostata*; Fabaceae: *Acacia confusa*, *Samanea saman*; Sapindaceae: *Sapindus mukorossi*; Malvaceae: *Kleinhovia hospita*, etc. (Hsu, 2002, 2013; Lu & Chen, 2014)

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 15–18 mm。雌雄二型性微弱。雄蝶 (圖 135)：頭被毛、褐色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、褐色雜白色。複眼被毛。胸部背面褐色、腹面灰色。腹部背面褐色、腹面乳黃色。足黑褐色，有白色條紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣直、後緣甚直但第二性徵處突出、外緣近翅頂處略突出。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突。翅背面底色褐色，帶靛藍色光澤。翅腹面底色褐色或淺黃色，中央有黑褐色帶紋；中室末端有褐色短條；亞外緣帶紋由淡褐色帶紋組成；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點、CuA_2 室有覆金屬光澤藍色鱗之黑色斑點；臀區葉狀突黑色並具橙色紋及藍色鱗；前翅背面 M_3、CuA_1、CuA_2 脈基部及與其相連之中室脈具灰色絲狀性標；後翅背面 $Sc+R_1$ 脈基部有灰色圓形性標；前翅後緣外凸處具褐色毛束。緣毛大部分呈褐色，但後翅臀區內側緣毛呈白色。雌蝶 (圖 136)：形態特徵與雄蝶相似，但複眼被毛較稀疏、前足跗節不癒合、翅背面底色帶紫色光澤、無第二性徵。

雄交尾器 (圖 366)：背兜厚，中央內凹；背兜側突帶狀，外側漸窄，後側圓弧狀，側緣鈍。基腹弧背側狹窄，腹側寬闊，強彎曲。顎形突粗、鉤狀，強彎曲，末稍彎折。囊突短，前端圓。抱器癒合，分別延伸成指狀，具剛毛。陽莖器長於陽莖基。陽莖器略上彎，末端開口擴大，兩側具鋸齒。角狀器為扁平舌狀骨片，後端圓。

雌交尾器 (圖 495)：交尾囊橢圓形，表面顆粒狀。花壁一對，位於交尾囊對應位置，形成細長內陷線狀骨，密生小棘刺。交尾囊管粗短，連接大形交尾孔。交尾孔板大

型，延伸深入交尾囊管，其前端窄而兩側有褶，後端擴大為盤狀。交尾孔大，寬度超過第 8 腹節寬度一半。前內骨突基部寬，前端短桿狀。後內骨突長，略彎曲，前端鈍，長於肛突。肛突盾狀，後端圓、高度骨化，疏具毛。

變異：乾季／低溫期個體之翅腹面斑紋減退、較不鮮明。

世界分布：印度、斯里蘭卡、華東南、新幾內亞、澳洲東北部及臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：幼蟲取食多種闊葉植物之花、花芽，有時亦取食嫩葉，其寄主植物包括鼠李科之桶鉤藤；大麻科之山黃麻；千屈菜科之九芎；豆科之相思樹、雨豆樹；無患子科之無患子；錦葵科之克蘭樹等。

生物學：本種為一年多世代物種。

Rapala nissa (Kollar, [1844]) (霓彩燕灰蝶／平山小灰蝶)

Thecla nissa Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 412, pl. 4, figs. 3–4. (Type locality: “Himaleya, Massuri”)

Ssp. *hirayamana* Matsumura, 1926

PLATE 19, Figs. 137–138; PLATE 54, Fig. 367; PLATE 87, Fig. 496

Rapala nissa var. *formosana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 600, pl. 47, figs. 1, 2. (Type locality: “Hoppo (Gakoki); Horisha”) (preoccupied by Rapala varuma formosana Fruhstorfer, 1912)

Rapala hirayamana Matsumura, 1926: Insecta Matsumurana 1 (1): 23. (Type locality: “Horisha, Formosa [Puli, Taiwan]’’)

Rapala micans formosicola Matsumura, 1929: Insecta Matsumurana 3 (2/3): 98. (Type locality: “Musha, Formosa [Wushe, Taiwan]’’)

Rapala mushana Matsumura, 1935: Insecta Matsumurana 9 (4): 173. (Type locality: “Formosa, at Musha near Hori”)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 25. VI. 1989 (Y. F. Hsu); 1♂, same locality, 1700/1727m, 6. VI. 1996 (Y. F. Hsu); 1♂, Sanzhi, Datunshan, 800m, 12. VII. 2007 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing,

Xuanyuan, 1000m, 17. IX. 2008 (Y. F. Hsu & L. W. Wu). **YILAN Co.:** 1♀, Nanao, Cuifenghu, 1900m, 24. VI. 2002 (C. L. Li); 1♂, Datong, Bailing, ca 1400m, 3. VII. 2005, reared from *Lagerstroemia subcostata*, emgd. 27. VII. 2005, HSU 05G2.1 (L. H. Wang); 1♂, Datong, Siyuan, 2000m, 31. VII. 2007 (L. H. Wang). **XINZHU Co.:** 1♂, Jianshi, Yulao, ca 1500m, 25. II. 2009 (C. K. Wang). T**AIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♀, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **NANTOU Co.:** 1♂, Zhushan, Shanlinxi, 15. X. 1988 (C. F. Li); 1♂, same locality, 16. X. 1988 (C. F. Li); 1♀, Renai, Fawunaiweishan, ca 2000m, 11. V. 2003, reared from *Quercus tatakaensis*, emgd. 1. VI. 2003, HSU 03E29.1 (C. C. Lu, J. R. Chen & C. Y. Yang); 1♀, Renai, Nanshanxi, 11. I. 2000 (C. Y. Hung); 1♀, Renai, Huisun Forest Field, 700m, 5. III. 2010 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Bilu, ca 2200m, 20. VII. 2007 (Y. F. Hsu); 1♀, Xiulin, Xinbaiyang, 1600/1700m, 3. VII. 2008 (L. H. Wang). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 1200m, 4/5. IV. 1998 (W. I. Chou); 1♂, same locality, 10/11. IV. 1998 (Y. F. Hsu); 1♂, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Haiduan, Liyuan, 1793m, 3. VIII. 2018 (J. Y. Liang) (genitalia preparation JYL333).

Description. Adult – Forewing length 14–20 mm. Sexual dimorphism weakly present. Male (PLATE 19, Fig. 137): Head hairy, vertex brown, frons white, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, white. Compound eyes hairy. Thorax brown dorsally, gray ventrally; abdomen brown dorsally, creamy yellow ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa straight, dorsum straight but convex where secondary sexual character present, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with blue sheen tinged with purple. Wing undersides ground color buff brown, with narrow brown discal band edged by inner orange margin and white outer margin. Short bar edged with brown present at distal end of discoidal cells. Submarginal bands consisted of faint brown bands, with outer band wider. A black spot caped by orange crescent in cell CuA_1 of hindwing; another black spot covered by metallic blue scales in CuA_2 of hindwing. Tornal lobe black with orange marking and blue scalings. A round, gray sexual brand at base of $Sc+R_1$ of hindwing upperside; a tuft of brown hairs present on convex extension

at dorsum of forewing. Fringe mostly brown except inner cilia white around tornus of hindwing. Female (PLATE 19, Fig. 138): Body and general wing patterns similar to those of male, but eyes less hairy, Protarsi normal, ground color of wing uppersides with purple sheen, and no secondary sexual characters on wings.

Male genitalia (PLATE 54, Fig. 367) – Tegumen thickened and concave mesad; socii as bands narrowed externally, with rounded posterior margin and blunt lateral margins. Vinculum narrow dorsally, broad ventrally, strongly curved. Brachium as stout hook, strongly curved, with distal tip slightly bent. Saccus short, with anterior margin rounded. Valvae fused, each forming broad setose process tapering near posterior end, with terminal end blunt. Phallus with aedeagus longer than phallobase, nearly straight. Distal end of aedeagus with dorsal opening, with a pair of folds armed with minute teeth. Cornuti as two ligulate sclerites.

Female genitalia (PLATE 87, Fig. 496) – Corpus bursae oblong. Signa as a pair of elongate, linear, invaginated, spiny sclerites on opposite walls of corpus bursae. Ductus bursae moderately long, thick, connecting to prominent, large ostium bursae. Sterigma forming heavily elongate sclerotized plate, deeply extending into ductus bursae, with anterior end narrowed, folded laterally, posterior end with lateral, spiny, alate extensions; ostium bursae prominent, with width over A8 width. Anterior apophyses present, short, attenuate anteriorly to truncate end. Posterior apophyses elongate, longer than anal papillae, nearly straight. Anal papillae tapering to blunt caudal end, sclerotized anteriorly, sparsely setose.

Variation. Individuals in dry/colder months frequently possess an orange or red discal patch on forewing uppersides, and with markings of undersides less prominent.

Global distribution. Himalayas, Indochina, Sundaland, South and west China, and Taiwan (Hsu, 2013; Nakamura & Seki, 2017).

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

Larval Host plant(s). Larvae mainly feed on flowers and flower buds of various broad-leaved plants: Cannabaceae: *Trema orientalis*; Lythraceae: *Lagerstroemia subcostata*; Fagaceae: *Quercus tatakaensis*; Fabaceae: *Desmodium sequax*; Araliaceae: *Aralia bipinnata* (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. Huang (2001) treated *hirayamana* Matsumura, 1926 as a race of *micans* (Bremer & Grey, 1853), but Nakamura & Seki (2017) recognized *micans* as a synonym of *R. nissa*.

形態特徵：成蝶前翅長 14–20 mm。雌雄二型性微弱。雄蝶 (圖 137)：頭被毛、頭頂褐色、額白色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、向前漸細，末端尖、白色。複眼被毛。胸部背面褐色、腹面灰色。腹部背面褐色、腹面乳黃色。足黑褐色，有白色條紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣直、後緣直但第二性徵處外凸、外緣近翅頂處略突出。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突。翅背面底色黑褐色，帶紫藍色光澤。翅腹面底色淺黃褐色，中央有褐色線紋，內側鑲橙色邊、外側鑲白邊；中室末端有鑲褐色邊之短條；亞外緣帶紋由淡褐色帶紋組成，外側者較寬；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點、CuA_2 室有覆金屬光澤藍色鱗之黑色斑點；臀區葉狀突黑色，上有橙色斑紋及藍色鱗；後翅背面 $Sc+R_1$ 脈基部具灰色圓形性標；前翅後緣外凸處有褐色毛束。緣毛主要呈褐色，但後翅臀區內側緣毛白色。雌蝶 (圖 138)：形態特徵與雄蝶相似，但複眼披較少毛、前足跗節不癒合、翅背面底色偏紫色、無第二性徵。

雄交尾器 (圖 367)：背兜厚，中央內凹；背兜側突帶狀，外側漸窄，後側圓弧狀，側緣鈍。基腹弧背側狹窄，腹側寬，強彎曲。顎形突粗、鉤狀，強彎曲，末端彎折。囊突短，前端圓。抱器癒合，分別延伸漸窄，末端鈍，具剛毛。陽莖器長於陽莖基，甚直。陽莖器末端開口於背側，兩側有鋸齒。角狀器為兩枚舌狀骨片。

雌交尾器 (圖 496)：交尾囊卵形。花壁一對，位於交尾囊對應位置，形成細長內陷線狀骨，密生小棘刺。交尾囊管中庸長、粗，連接大形交尾孔。交尾孔板大型，延伸深入交尾囊管，其前端窄而兩側有褶，後端擴大、有棘，兩側張出成翼狀。交尾

孔大，寬度超過第 8 腹節寬度一半。前內骨突短，向前漸窄，端部截狀。後內骨突長，近末端處稍彎曲長於肛突。肛突盾狀，向末端漸窄、尾端鈍，高度骨化，疏具毛。

變異：乾季／低溫型個體前翅背面常有橘色或紅色斑塊、翅腹面斑紋較不鮮明。

世界分布：喜馬拉雅地區、中南半島、巽他地區、華南、華西及臺灣。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：幼蟲主要取食多種闊葉植物之花、花芽，其寄主植物包含大麻科之山黃麻；千屈菜科之九芎；殼斗科之銳葉高山櫟；豆科之波葉山螞蝗；五加科之裏白蔥木。

生物學：本種為一年多世代物種。

註記：Huang (2001) 將 *hirayamana* Matsumura, 1926 處理為 *R. micans* (Bremer & Grey, 1853) 之亞種，但 Nakamura & Seki (2017) 認為 *micans* 為 *R. nissa* 之同物異名。

***Rapala takasagonis* Matsumura, 1929 (高砂燕灰蝶／高砂小灰蝶／高沙子燕灰蝶)**

PLATE 20, Figs. 139-140; PLATE 55, Fig. 368; PLATE 88, Fig. 497

Rapala takasagonis Matsumura, 1929: Insecta Matsumurana 3 (2/3): 96. (Type locality: "Hori, Formosa [Puli, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 25. VI. 1989 (Y. F. Hsu); 1♀, same locality, 1500/1700m, 2/4. VI. 2000 (Y. T. Lo); 1♀, Wulai, 23. IV. 2003, reared from *Eurycorymbus cavaleriei*, emgd. 27. V. 2003, HSU 03D33 (Y. F. Hsu); 1♂, same locality, 7. IX. 2004 (J. R. Chen); 1♂, 1♀, same locality, 2. V. 2005, reared from *E. cavaleriei*, emgd. 23/26. V. 2005, HSU 05E1 (Y. F. Hsu, C. L. Huang & C. M. Wu). **TAIPEI CITY:** 1♂, Beitou, Datunshan, 20. VII. 1986 (Y. F. Hsu); 1♂, Beitou, Yangmingshan, 4. VIII. 1986 (Y. F. Hsu); 1♂, Wenshan, Xianjiyan, 14. VII. 2000 (C. J. Chen); 1♂, Shilin, Tianxiyuan, 600m, 6. V. 2011 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Daman/ Xuanyuan, 16. VI. 2005, reared from

Lagerstroemia subcostata, emgd. 6. VII. 2005, HSU 05F41 (L. H. Wang). **XINZHU Co.:** 1♂, Jianshi, Zhenxibao, ca 1500m, 5. V. 2004 (L. H. Wang). **YILAN Co.:** 4♂, 4♀, Datong, Bailing, ca 1400m, 11. VII. 2004, reared from *L. subcostata*, emgd. 1/5. VIII. 2004, HSU 04G18 (L. H. Wang, J. R. Chen & C. T. Chaung); 20♂, 25♀, same locality, ca 1400m, 3. VII. 2005, reared from *L. subcostata*, emgd. 21. VII./1. VIII. 2005, HSU 05G2 (L. H. Wang); 2♂, 2♀, Nanao, Dabaishan, 20/21. VII. 2016 (L. Huang); 1♂, Nanao, Lankanshan, 20/21. VII. 2016 (L. Huang); 1♂, 1♀, Nanao, Dabaishan, 1200m, 3. VIII. 2016 (L. Huang) (genitalia preparation JYL553, 554). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♀, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu).

Description. Adult – Forewing length 18–21 mm. Sexual dimorphism weakly present. Male (PLATE 20, Fig. 139): Head hairy, vertex brown, frons white, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, white with 3rd segment brown. Compound eyes hairy. Thorax brown dorsally, gray ventrally; abdomen brown dorsally, creamy yellow ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa straight, dorsum straight but convex where secondary sexual character present, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with blue sheen tinged with purple. Wing undersides ground color brown, with narrow brown discal band edged by white outer margin. Short bar edged with brown present at distal end of discoidal cells. Submarginal bands consisted of faint brown bands, with outer band wider. A black spot caped by orange crescent in cell CuA_1 of hindwing; another black spot covered by metallic blue scales in CuA_2 of hindwing. Tornal lobe black with orange marking and blue scalings. A rectangle, gray sexual brand at base of $Sc+R_1$ of hindwing upperside; a tuft of brown hairs present on convex extension at dorsum of forewing. Fringe mostly brown except inner cilia white around tornus of hindwing. Female (PLATE 20, Fig. 140): Body and general wing patterns similar to those of male, but eyes less hairy, Protarsi normal, and no secondary sexual characters on wings.

Male genitalia (PLATE 55, Fig. 368) – Tegumen thickened and concave mesad; socii

as bands narrowed externally, with rounded posterior margin and blunt lateral margins. Vinculum narrow dorsally, broad ventrally, strongly curved. Brachium as slender hook, strongly curved, with distal portion straight with terminal tip slightly bent. Saccus short, with anterior margin rounded. Valvae fused, each forming elongate, setose process tapering posteriorly, with terminal end blunt. Phallus with aedeagus longer than phallobase, nearly straight. Distal end of aedeagus enlarged, with a pair of folds armed with minute teeth. Cornuti as a dorsal sclerite with a prominent spine and a narrow sclerotized band.

Female genitalia (PLATE 88, Fig. 497) – Corpus bursae oblong. Signa as a pair of elongate, linear, invaginated, spiny sclerites on opposite walls of corpus bursae. Ductus bursae moderately long, connecting to prominent, large ostium bursae. Sterigma forming heavily elongate sclerotized plate, deeply extending into ductus bursae, with anterior end narrowed, folded laterally, posterior end forming rounded margin with small shoulders; ostium bursae prominent, with width over A8 width. Anterior apophyses present, short, rod-like, with blunt distal end. Posterior apophyses elongate, longer than anal papillae, slightly curved near posterior ends. Anal papillae shield-like, tapering to blunt caudal end, heavily sclerotized, sparsely setose.

Variation. Markings of undersides in dry/colder months reduced.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations of main island of Taiwan, mostly found in northern and central parts of the island (Hsu, 2013).

Larval Host plant(s). Larvae mainly feed on flowers and flower buds of broad-leaved plants: Cannabaceae: *Trema orientalis*; Lythraceae: *Lagerstroemia subcostata*; Sapindaceae: *Eurycorymbus cavaleriei* (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. This species is superficially similar to *R. nissa*, but can be separated from it using the following characters: 1) the ground color of *R. nissa* is paler; 2) the discal bands on wing undersides of *R. nissa* are edged by orange margin, whereas those of *R. takasagonis* are not; 3) the discal bands on wing undersides of *R. takasagonis* are edged by outer prominent white margin, whereas those of *R. nissa* are not so, or with white margin obscure; 4) the sexual brand on hindwing upperside is semicircular in *R. nissa*, whereas it is nearly square in *R. takasagonis*.

形態特徵：成蝶前翅長 18–21 mm。雌雄二型性微弱。雄蝶 (圖 139)：頭被毛、頭頂褐色、額白色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、向前漸細，頂端尖、白色而第三節褐色。複眼被毛。胸部背面褐色、腹面灰色。腹部背面褐色、腹面乳黃色。足黑褐色，有白色條紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣筆直、後緣筆直但第二性徵處外凸、外緣近翅頂處略突出。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突。翅背面底色黑褐色，有紫藍色光澤。翅腹面底色褐色，中央有外側鑲白邊之褐色線紋；中室末端有鑲褐色邊短條；亞外緣帶紋由淡褐色帶紋組成，外側者較寬；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點、CuA_2 室有覆金屬光澤藍色鱗之黑色斑點；臀區葉狀突黑色，上有橙色紋及藍色鱗；後翅背面 $Sc+R_1$ 脈基部具灰色方形性標；前翅後緣外凸處具褐色毛束。緣毛主要呈褐色，但後翅臀區內側緣毛白色。雌蝶 (圖 140)：形態特徵與雄蝶相似，但複眼被毛稀疏、前足跗節不癒合、翅背面底色呈紫色光澤、無第二性徵。

雄交尾器 (圖 368)：背兜厚，中央內凹；背兜側突帶狀，外側漸窄，後側圓弧狀，側緣鈍。基腹弧背側狹窄，腹側寬，強彎曲。顎形突細、鉤狀，中央強彎曲，末端彎折。囊突短，前端圓。抱器癒合，分別延伸漸窄，末端鈍，具剛毛。陽莖器長於陽莖基，甚直。陽莖器末端開口於背側，兩側有鋸齒。角狀器為一棘狀骨片及一窄骨帶。

雌交尾器 (圖 497)：交尾囊卵形。花壁一對，位於交尾囊對應位置，形成細長內陷線狀骨，密生小棘刺。交尾囊管中庸長、粗，連接大形交尾孔。交尾孔板大型，延伸深入交尾囊管，其前端窄而兩側有褶，後端後緣圓弧狀，兩側有小肩突。交尾孔大，寬度超過第 8 腹節寬度一半。前內骨突短，向前漸窄，端部截狀。後內骨突長，近末端處稍彎曲長於肛突。肛突盾狀，向末端漸窄、尾端鈍，高度骨化，疏具毛。

變異：乾季／低溫型個體翅腹面斑紋較不鮮明。

世界分布：本種為臺灣特有種。

臺灣分布：主要分布於本島中、北部低至中海拔地區。

寄主植物：幼蟲主要取食闊葉植物之花、花芽，其寄主植物包含大麻科之山黃麻；千屈菜科之九芎；無患子科之賽欒華等。

生物學：本種為一年多世代物種。

註記：本種與霓彩燕灰蝶十分相似，可藉由以下特徵區分：1) 霓彩燕灰蝶底色較淺；2) 霓彩燕灰蝶翅腹面中央帶紋鑲橙色邊，高砂燕灰蝶則否；3) 高砂燕灰蝶翅腹面中央帶紋鑲鮮明白邊，霓彩燕灰蝶則無白邊或白邊模糊；4) 霓彩燕灰蝶後翅背面性標呈半圓形，高砂燕灰蝶則呈矩形。

Rapala manea (Hewitson, [1863]) (泥黃燕灰蝶／淡紫小灰蝶／藍燕灰蝶)

Deudorix manea Hewitson, [1863]: Illustrations of diurnal Lepidoptera, Lycænidæ (1): 23, pl. 10, figs. 40–41. (Type locality: "Celebes [Sulawesi]")

Ssp. *schistacea* Moore, 1879

PLATE 20, Figs. 141–142; PLATE 55, Fig. 369; PLATE 88, Fig. 498

Deudorix schistacea Moore, 1879: Proceedings of the Zoological Society of London 1879 (1): 140. (Type locality: "Calcutta, [India]'')

Specimens examined:

JINMEN [= KINMEN] Co.: 3♀, Jinhu, Shenshiqiao, 27/28. V. 2011 (Y. F. Hsu & H. C. Huang); 5♂, Jincheng, Shuitou, 14. V. 2013 (C. L. Huang); 6♂, 3♀, Jinhu, Jinmen Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang) (male genitalia preparation JYL565); 1♂, Jinsha, Ronghu Wetland, 18. XI. 2013 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 13–18 mm. Sexual dimorphism present. Male (PLATE 20, Fig. 141): Head hairy, vertex brown, frons white, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, white with 3rd segment brown. Compound eyes hairy. Thorax brown dorsally, buff ventrally; abdomen brown dorsally, creamy yellow ventrally. Legs brown banded with white, Protarsi fused, with distal end down-curved, pointed.

Forewing triangular, costa straight, dorsum straight but convex where secondary sexual character present, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with indigo sheen, revealing strong metallic purplish blue gloss when viewing at wings from sharp angles. Wing undersides ground color pale buff to gray, with narrow dark discal band edged by white margins. Short bar present at distal end of discoidal cells. Submarginal bands consisted of faint brown bands. A black spot caped by orange crescent in cell CuA_1 of hindwing; another black spot covered by metallic blue scales in CuA_2 of hindwing. Tornal lobe black with orange marking and blue scalings. A round, gray sexual brand at base of $Sc+R_1$ of hindwing upperside; a tuft of brown hairs present on convex extension at dorsum of forewing. Fringe mostly brown except inner cilia white around tornus of hindwing. Female (PLATE 20, Fig. 142): Body and general wing patterns similar to those of male, but eyes less hairy, Protarsi normal, wing upperside lacking metallic gloss, and no secondary sexual characters on wings.

Male genitalia (PLATE 55, Fig. 369) – Tegumen concave mesad; socii with inner portion enlarged, outer portion narrowed, posterior margin rounded and lateral margins blunt. Vinculum narrow dorsally, broad ventrally, strongly curved. Brachium curved, hook-like, with distal end abruptly narrowed to pointed tip. Saccus short, with anterior margin rounded. Valvae fused, each forming setose, elongate, digitate process, with blunt terminal end. Phallus with aedeagus longer than phallobase, with aedeagus slightly up-curved. Distal end of aedeagus enlarged, with a pair of folds armed with teeth.

Female genitalia (PLATE 88, Fig. 498) – Corpus bursae ovate. Signa as a pair of short, invaginated, spiny sclerites on opposite walls of corpus bursae. Ductus bursae moderately long, slightly enlarged posteriorly. Sterigma forming heavily elongate sclerotized plate, deeply extending into ductus bursae, with anterior end narrowed, folded laterally, posterior end enlarged, spade-like; ostium bursae prominent, with width over A8 width. Anterior apophyses present, short, rod-like. Posterior apophyses elongate, longer than anal papillae, straight. Anal papillae shield-like, with lobe-like extension anteriorly, tapering to blunt caudal end, heavily sclerotized, sparsely setose.

Global distribution. India, Sri Lanka, Indochina, Southeast Asia, southern China, and

the Philippines (Bascombe *et al*., 1999).

Distribution in Taiwan. Found from Jinmen and Mazu Islands (Hsu, 2014).

Larval Host plant(s). Probably polyphagous on flowers or flower buds of various broad-leaved plants.

Biology. This species is multivoltine in occurrence (Hsu, 2014).

形態特徵：成蝶前翅長 13–18 mm。具雌雄二型性。雄蝶 (圖 141)：頭被毛、頭頂褐色、額白色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、向前漸細，末端尖、白色但第三節褐色。複眼被毛。胸部背面褐色、腹面淺黃色。腹部背面褐色、腹面乳黃色。足黑褐色有白色條紋，前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣直、後緣筆直但第二性徵處外凸、外緣近翅頂處略突出。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突。翅背面底色黑褐色，有靛色光澤，以特定角度觀察時發出強烈紫藍色金屬光澤。翅腹面底色淡黃色至淺灰色，中央有外側鑲白邊之褐色窄帶紋；中室末端有短條；亞外緣帶紋由淡褐色帶紋組成；後翅 CuA_1 室有冠橙色弦月紋之黑色斑點、CuA_2 室有覆金屬光澤藍色鱗之黑色斑點；臀區葉狀突黑色，上有橙色紋及藍色鱗；後翅背面 $Sc+R_1$ 脈基部具灰色圓形性標；前翅後緣外凸處具褐色毛束。緣毛主要呈褐色，但後翅臀區內側緣毛白色。雌蝶 (圖 142)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面缺乏金屬光澤、無第二性徵。

雄交尾器 (圖 369)：背兜中央凹入；背兜側突帶狀，外側漸窄，後側圓弧狀，側緣鈍。基腹弧背側狹窄，腹側寬，強彎曲。顎形突彎曲成鉤狀，後端驟細，末端尖。囊突短，前端圓。抱器癒合，分別延伸漸窄呈指狀，末端鈍，具剛毛。陽莖器長於陽莖基，甚直。陽莖器略上彎，末端開口擴大並於兩側具鋸齒。陽莖器末端開口於背側，兩側有鋸齒。

雌交尾器 (圖 498)：交尾囊卵形。交尾囊卵形。花壁一對，位於交尾囊對應位置，形成短小內陷骨，上有小棘刺。交尾囊管中庸長、粗大，連接大形交尾孔。交尾孔板大型，延伸深入交尾囊管，其前端窄而兩側有褶，後端鍬形。交尾孔大，寬度超過第 8 腹節寬度一半。前內骨突短、桿狀。後內骨突修長，長於肛突，末端略彎曲。

肛突盾狀，後端漸窄、尾端鈍，高度骨化，疏具毛。

世界分布：印度、斯里蘭卡、中南半島、東南亞、華南、菲律賓。

臺灣分布：見於金門及馬祖地區。

寄主植物：幼蟲可能取食多種闊葉植物之花及花芽。

生物學：本種為一年多世代物種。

Genus *SATYRIUM* Scudder, 1876

Type species: *Lycaena fuliginosa* Edwards, 1861

Diagnostic characters include the following: 1) ground color of wings mostly brown or tan; 2) secondary sexual character as a sexual brand on forewing upperside if present; 3) tail-like projections at distal end of CuA_1 and CuA_2 present in some species; 4) present of ventral keel at distal end of phallus.

The hairstreaks of Eumaeini of the Old World are still short of modern phylogenetic analyses to determine their appropriate systematic placements, making generic assignments difficult. Clench (1978) considered the presence and absence of ventral keel at distal end of phallus a criterion to separate the genus *Satyrium* and *Fixsenia*. Although the two characters of the transformation series seem unlikely to be both synapomorphies for each genus, they are retained here for convenience until a modern phylogenetic work is in place.

Members of the genus are found in Holarctic region (Clench, 1978).

Larvae feed on soft tissues, such as buds or flowers of various plant families.

5 species are known from Taiwan.

灑灰蝶屬

形態特徵如下：1) 翅底色褐色或黃褐色；2) 若有第二性徵，則為前翅背面性標；3) 部分種類後翅 CuA_1 及 CuA_2 脈末端有尾突；4) 陽莖末端腹側有龍骨狀突起

舊世界灑灰蝶族之現代親緣關係研究至今仍不足以確定適當的分類地位，因此難以建立可靠分類。Clench (1978) 認為陽莖腹側末端有無龍骨狀突起是區分烏灰蝶屬與灑灰蝶屬之形態特徵。雖然此等特徵可能非兩屬內之個別共衍徵，但直至舊世界灑灰蝶族之現代親緣關係研究完成之前，暫保留使用之。

本屬成員分部於全北區。

幼生期取食多種科植物之柔軟組織 (如花或芽)。

臺灣有 5 種。

Satyrium austrinum (Murayama, 1943) (南方灑灰蝶／白底烏小灰蝶／南風灑灰蝶)

PLATE 22, Figs. 153–154; PLATE 55, Fig. 370; PLATE 88, Fig. 499

Styrmon [sic] *austrinus* Murayama, 1943: Zephyrus 9: 171, Fig. 2. (Type locality: "Musha, Formosa [Wushe, Taiwan]")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 2♂, Fuxing, Sule, 19. IV. 1987 (B. C. Chen); 1♂, Fuxing, Ronghua, 19. IV. 1987 (B. C. Chen); 1♂, same locality, 9. IV. 2018 (C. J. Chang, C. W. Huang & H. Y. Chen) (genitalia preparation JYL510); 6♂, 6♀, Fuxing, Gaoyi, 600m, 12. IV. 1997 (Y. F. Hsu); 3♂, Fuxing, Xuanyuan, 12. III. 2020, reared from *Zelkova serrata*, emgd. 24/26. III. 2020, HSU 20C13 (C. W. Huang & Z. L. Chen). **NANTOU Co.:** 1♂, Wushe, VIII. 1985. **PINGDONG Co.:** 4♂, Wutai, Wutoushan, 1200m, 4/5. IV. 1998 (W. I. Chou); 1♂, 1♀, same locality, 10/11. IV. 1998 (Y. F. Hsu).

Description. Adult – Forewing length 13–15 mm. Sexual dimorphism weakly present. Male (PLATE 22, Fig. 153): Head hairy, vertex and frons brown, with a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial

palpus porrect, tapering to pointed tip, dark brown but white laterally. Compound eyes hairy. Thorax and abdomen brown dorsally, white ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2, additional short, minute tail at distal ends of CuA_1. Wing uppersides with ground color brown. A yellow, discal patch usually present on forewing upperside, a small orange spot in tornal lobe of hindwing. Wing undersides ground color grayish white, with narrow white discal band edged by brown margin proximally, straight or slightly curved on forewing, forming a "W" posteriorly on hindwing. Submarginal bands consisted of faint, white, double bands, obscure on forewing, prominent on hindwing. A black spot present in cell CuA_1 of hindwing, associated with a patch of orange marking. Tornal lobe black with orange marking and blue scalings. An elongate, dark brown sexual brand at distal end of discoidal cell of forewing upperside. Fringe mostly white. Female (PLATE 22, Fig. 154): Body and general wing patterns similar to those of male, but Protarsi normal and no sexual brands on forewings.

Male genitalia (PLATE 55, Fig. 370) – Tegumen with sclerotized V-shaped narrow band, concave mesad; socii as bands slightly swollen externally, with posterior margin convex. Vinculum narrow, slightly curved. Brachium slender, elongate, curved, abruptly narrowed to a pointed tip near distal end. Saccus short, with anterior margin rounded. Valva oblong basally, forming elongate, setose, distal process with pointed tip. Phallus with aedeagus longer than phallobase, nearly straight. Distal end of aedeagus keeled, with dorsal opening. Cornuti as a pair of elongate, narrow, sclerotized bands; dorsal one longer, up-curved; ventral one shorter, straight.

Female genitalia (PLATE 88, Fig. 499) – Corpus bursae oval. Signa as a pair of invaginated fin-like sclerites forming an internal spine on opposite walls of corpus bursae. Ductus bursae with anterior portion weakly sclerotized, medial portion membranous, posterior portion farming heavily sclerotized funnel. Sterigma fused with ductus bursae, forming a triangular plate. Posterior apophyses slightly longer than anal papillae, slightly curved near posterior end. Anal papillae prominent, shield-like with rounded posterior margins, sclerotized, setose.

Global distribution. West China and Taiwan (Koiwaya, 1996a; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane areas (Hsu, 2013).

Larval Host plant(s). Ulmaceae: *Zelkova serrata* (Hsu, 2013).

Biology. Univoltine, adults on the wing in early summer, overwintering as eggs on twigs (Hsu, 2013).

形態特徵：成蝶前翅長 13–15 mm。雌雄二型性不顯著。雄蝶 (圖 153)：頭被毛、頭頂及額褐色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、黑褐色，兩側白色。複眼被毛。胸部及腹部背面褐色、腹面白色。足黑褐色，有白色帶紋，前足跗節癒合，末端向下彎曲、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突、CuA_1 脈末端具小尾突。翅背面底色褐色，前翅中央常具黃色斑塊、後翅臀區葉狀突有一橙色小斑。翅腹面底色灰白色，中央內側鑲褐色邊之白色窄帶紋，前翅者直線狀或略彎曲、後翅者後端呈 W 字形；亞外緣帶紋由兩道模糊白色帶紋組成，於後翅較鮮明；後翅 CuA_1 室有黑色斑點及橙色紋；臀區葉狀突黑色，上有橙色紋及藍色鱗。前翅背面中室末端具黑褐色長性標。緣毛主要呈白色。雌蝶 (圖 154)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅背面無性標。

雄交尾器 (圖 370)：背兜具骨化細 V 形帶，中間凹入；背兜側突帶狀，外側略膨大，後緣突出。基腹弧狹窄，略彎曲。顎形突細長、彎曲、鉤狀，向後漸細，末端驟尖。囊突短，前端圓。抱器基部長卵形，向後延伸成長突起，末端尖，具剛毛。陽莖器長於陽莖基，甚直。陽莖器末端開口於背側，腹端龍骨狀。角狀器為一對細長骨片，背側者較長、上彎；腹側者短、直。

雌交尾器 (圖 499)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成內陷鰭狀骨。交尾囊管骨化，前端輕度骨化，中段膜質，後段形成喇叭狀骨。交尾孔板與交尾囊管癒合成三角形骨板。後內骨突長於肛突，端部略彎曲。肛突明顯骨化、盾狀，末緣圓，有毛。

世界分布：華西及臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：榆科之櫸木。

生物學：本種為一年一世代物種，成蝶活動於初夏，越冬卵產於寄主植物細枝條上。

***Satyrium formosanum* (Matsumura, 1910) (臺灣瀧灰蝶 / 蓬萊烏小灰蝶)**

PLATE 20, Figs. 143–144; PLATE 55, Fig. 371; PLATE 88, Fig. 500

Thecla formosana Matsumura, 1910: Entomologische Zeitschrift 23 (49): 217. (Type locality: "Formosa, Horisha [Puli], Koshun [Hengchun]") (nomen nudum)

Thecla formosana Matsumura, 1910: Entomologische Zeitschrift 23 (50): 221. (Type locality: "Formosa, Koshun [Hengchun] und Horisha [Puli]")

Thecla grandis var. *formosana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 614, pl. 47, fig. 19. (Type locality: " 臺灣 (埔里社) [Taiwan, Nantou, Puli]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, 19. V. 1986 (B. C. Chen); 5♂, 4♀, same locality, 20. V. 1992 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Northern Cross-Island Road, 37.5K (Y. T. Lo); 1♂, Fuxing, Xuanyuan, 29. IV. 1989 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Guangfu, Maogongyue, 5. V. 2018 (J. Y. Liang) (genitalia preparation JYL311). **TAIDONG Co.:** 1♀, Haiduan, Lidao, 1020m, 22. V. 2017 (L. Huang) (genitalia preparation JYL563).

Description. Adult – Forewing length 15–21 mm. Sexual dimorphism weakly present. Male (PLATE 20, Fig. 143): Head hairy, vertex and frons brown, with small white patch on vertex, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, dark brown but white laterally. Compound eyes hairy. Thorax and abdomen brown dorsally, pale brown ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2, additional short, stub-like tail at distal ends of CuA_1. Wing uppersides ground color uniformly dark brown. A small orange spot in tornal lobe

of hindwing. Wing undersides ground color ochreous, with narrow white discal band edged by brown margin proximally, nearly straight but broken on forewing, forming a "W" posteriorly on hindwing. Submarginal bands consisted of a series of black spots encircled by white. A black spot present in cell CuA_1 of hindwing, associated with a patch of orange marking. Tornal lobe black with orange marking and blue scalings. A small, round, gray sexual brand at distal end of discoidal cell of forewing upperside. Fringe mostly white. Female (PLATE 20, Fig. 144): Body and general wing patterns similar to those of male, but Protarsi normal, tail-like projection at distal ends of CuA_2 longer, and no sexual brand on forewings.

Male genitalia (PLATE 55, Fig. 371) – Tegumen with sclerotized V-shaped narrow band, concave mesad; socii as bands narrowed laterally, with convex posterior margin. Vinculum narrow slightly curved. Brachium stout, elongate, curved, hook-like, with distal end slightly bent, pointed. Saccus short, with anterior margin rounded. Valva oblong basally, forming elongate, setose, distal process with pointed tip; costa produced, triangular. Phallus with aedeagus longer than phallobase. Aedeagus straight, with distal end keeled, with dorsal opening. Cornuti as a pair sclerotized bands, with dorsal one longer and larger.

Female genitalia (PLATE 88, Fig. 500) – Corpus bursae spherical. Signa as a pair of prominent, invaginated sclerites forming two internal horns on opposite walls of corpus bursae. Ductus bursae bulbous and membranous at anterior end, connecting to elongate, heavily sclerotized tube. Sterigma fused with ductus bursae, forming a broad plate. Posterior apophyses elongate, robust, straight, with anterior end clavate. Anal papillae large, elongate, heavily sclerotized, shovel-like with small terminal ends, sparsely setose.

Global distribution. East China and Taiwan (Hsu, 1999a, 2013).

Distribution in Taiwan. Low elevations where the hostplant grows (Hsu, 1999a, 2013).

Larval Host plant(s). Sapindaceae: *Sapindus mukorossi* (Uchida, 1991; Hsu, 1999a, 2013).

Biology. Univoltine, adults on the wing in early summer, overwintering as eggs concealed by gelatinous material in crevices on tree trunk or twigs (Hsu, 1999a, 2013).

形態特徵：成蝶前翅長 15–21 mm。雌雄二型性不顯著。雄蝶 (圖 143)：頭被毛、頭頂及額褐色、額具白色小斑、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、黑褐色，兩側白色。複眼被毛。胸部及腹部背面褐色、腹面淺褐色。足黑褐色，有白色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突、CuA_1 脈末端具短尾突。翅背面底色黑褐色，後翅臀區葉狀突有橙色小斑點。翅腹面底色土黃色，中央有內側鑲褐色邊之白色線紋，前翅者分斷，排成直線狀、後翅者後端呈 W 字形；亞外緣帶紋由鑲白環之黑斑組成；後翅 CuA_1 室具黑色斑點及橙色紋；臀區葉狀突黑色，有橙色紋及藍色鱗。前翅背面中室末端具小型黑色圓形性標。緣毛主要呈白色。雌蝶 (圖 144)：形態特徵與雄蝶相似，但前足跗節不癒合、後翅 CuA_2 末端絲狀尾突較長、前翅背面無性標。

雄交尾器 (圖 371)：背兜具骨化細 V 形帶，中央凹入；背兜側突帶狀，兩側漸窄，後緣突出。基腹弧狹窄，略彎曲。顎形突粗、長，彎曲成鉤狀，末端尖、略彎折。囊突短，前端圓。抱器基部長卵形，向後延伸成長突起，具剛毛；抱器背形成三角形突起。陽莖器長於陽莖基。陽莖器筆直，末端開口於背側，腹端龍骨狀。角狀器為一對骨片，於背側者較長、大型。

雌交尾器 (圖 500)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成成對內陷刺狀骨。交尾囊管前端膜質、球狀，連接修長骨化管。交尾孔板與交尾囊管癒合形成寬骨板。後內骨突長、粗壯，甚直，先端棒狀。肛突明顯骨化，大型、修長、鏟狀，末端窄，疏具毛。

世界分布：華東及臺灣。

臺灣分布：分布於本島具寄主植物之低海拔地區。

寄主植物：無患子科之無患子。

生物學：本種為一年一世代物種，成蝶活動於初夏，卵產於寄主植物樹幹或細枝條

之裂縫內，並以膠狀物質隱藏。

Satyrium eximium **(Fixsen, 1887) (秀灑灰蝶／霧社烏小灰蝶)**

Thecla w-album var. *eximia* Fixsen, 1887: Mémoires sur les lépidoptères 3: 271, pl. 13, fig. 2. (Type locality: Korea)

Ssp. *mushanum* Matsumura, 1929

PLATE 21, Figs. 145–146; PLATE 56, Fig. 372; PLATE 89, Fig. 501

Thecla mushana Matsumura, 1929: Insecta Matsumurana 3 (2/3): 102. (Type locality: "Musha, Formosa [Wushe, Taiwan]")

Specimens examined:

TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]: 4♂, 3♀, Heping, Guguan, 26. IV./11. V. 1991 (C. K. Lo); 1♀, same locality, 12. VI. 1998 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Meiyuan, 22. IV. 1991 (C. K. Lo); 1♂, Renai, Tunyuan, 1550m, 4. VI. 2006 (C. C. Lu); 1♀, same locality, 28. VII. 2006 (Y. F. Hsu); 1♀, Renai, Tunyuan, 1600m, 4. VI. 2006 (Y. F. Hsu); 7♂, same locality, 1700m, 5. V. 2010 (L. H. Wang & C. L. Huang); 1♂, same locality, 11. V. 2010 (L. H. Wang & C. L. Huang); 1♂, 1♀, Renai, Biluxi, 14. VII. 1994 (S. H. Yen); 1♂, data missing (ex Mokusei Museum). **YILAN Co.:** 1♂, Datong, Siyuanyakou, 710 Forest Trail, 30 VI. 2005 (L. H. Wang). **HUALIAN Co.:** 1♀, Xiulin, Huoranting, 900m, 18. V. 1997 (Y. F. Hsu); 1♀, Xiulin, Qingshuishan, 4. VII. 2003 (Y. F. Hsu).

Description. Adult – Forewing length 16–19 mm. Sexual dimorphism weakly present. Male (PLATE 21, Fig. 145): Head hairy, vertex and frons brown, with small white patch on vertex, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, dark brown but white laterally. Compound eyes hairy. Thorax and abdomen brown dorsally, pale brown ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2, additional short, stub-like tail at distal ends of CuA_1. Wing uppersides ground color uniformly dark brown. A small orange spot in tornal lobe of hindwing. Wing undersides ground color ochreous, with narrow white discal band edged by brown margin proximally, slightly curved on forewing, forming a "W"

posteriorly on hindwing. Submarginal bands consisted of faint, white, double bands, obscure on forewing, prominent on hindwing. A black spot present in cell CuA_1 of hindwing, associated with a patch of orange marking. Tornal lobe black with orange marking and blue scalings. An oval, gray sexual brand at distal end of discoidal cell of forewing upperside. Fringe mostly brown except inner cilia white around tornus of hindwing. Female (PLATE 21, Fig. 146): Body and general wing patterns similar to those of male, but Protarsi normal, tail-like projection at distal ends of CuA_2 longer, sometimes with additional orange markings on wing uppersides, and no sexual brands on forewings.

Male genitalia (PLATE 56, Fig. 372) – Tegumen with sclerotized V-shaped narrow band, concave mesad; socii as bands narrowed laterally, with rounded posterior margin. Vinculum narrow, slightly curved. Brachium slender, elongate, curved, abruptly narrowed to a pointed tip near distal end. Saccus short, with anterior margin rounded. Valva oblong basally, forming elongate, setose, distal process with pointed tip; costa produced as a small lobe. Phallus with aedeagus longer than phallobase, nearly straight. Distal end of aedeagus keeled, with dorsal opening. Cornuti as a pair of elongate, narrow, sclerotized bands, with dorsal one longer.

Female genitalia (PLATE 89, Fig. 501) – Corpus bursae oval. Signa as a pair of invaginated fin-like sclerites forming an internal spine on opposite walls of corpus bursae. Ductus bursae sclerotized, with both ends enlarged; anterior portion with two internal, heavily sclerotized bands; posterior portion trumpet-like. Sterigma fused with ductus bursae, forming a plate with rounded posterior margin. Posterior apophyses elongate, longer than anal papillae, slightly curved. Anal papillae prominent, shield-like with rounded posterior margins, sclerotized, setose.

Global distribution. Korea, mainland China, and Taiwan (Shirôzu, 1960; Wang & Fan, 2002; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of central and southern Taiwan (Uchida, 1991; Hsu, 2013).

Larval Host plant(s). Rhamnaceae: *Rhamnus parvifolia* (Uchida, 1991; Hsu, 2013).

Biology. Univoltine, adults on the wing in early summer, overwintering as eggs on twigs (Hsu, 2013).

Remarks. The subspecific name *mushana* Matsumura, 1929 refers to the type locality of the taxon, "Musha, Formosa [Wushe, Taiwan]" in central Taiwan.

形態特徵：成蝶前翅長 16–19 mm。雌雄二型性不顯著。雄蝶 (圖 145)：頭被毛、頭頂及額褐色、額具白色小斑、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、黑褐色，兩側白色。複眼被毛。胸部及腹部背面褐色、腹面淺褐色。足黑褐色，有白色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突、CuA_1 脈末端具短尾突。翅背面底色黑褐色，後翅臀區葉狀突有一橙色小斑點。翅腹面底色土黃色，中央有內側鑲褐色邊之白色線紋，於前翅者略彎、於後翅後端呈 W 字形；亞外緣帶紋由兩道白色模糊帶紋組成，於後翅較鮮明；後翅 CuA_1 室有黑色斑點及橙色紋；臀區葉狀突黑色，並具橙色紋及藍色鱗。前翅背面中室末端具灰色卵形性標。緣毛主要呈褐色，但後翅臀區處內側緣毛白色。雌蝶 (圖 146)：形態特徵與雄蝶相似，但前足跗節不癒合、後翅 CuA_2 末端絲狀尾突較長、翅背面有時具橙色斑紋、前翅背面無性標。

雄交尾器 (圖 372)：背兜具骨化細 V 形帶，中央凹入。背兜側突帶狀，兩側漸窄，末緣圓。基腹弧狹窄，略彎曲。顎形突細長、彎曲、鉤狀，末端突細，頂端尖。囊突短，前端圓。抱器基部長卵形，後端延伸成長突起，具剛毛；抱器背張出為小型瓣狀突。陽莖器長於陽莖基，甚直。陽莖器末端開口於背側，腹端龍骨狀。角狀器為一對狹窄細長骨片，背側者較長。

雌交尾器 (圖 501)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成內陷刺狀骨。交尾囊管骨化，兩端擴大，前端具兩條強烈骨化縱帶，末端喇叭狀。交尾孔板與交尾囊管癒合成圓板狀。後內骨突長於肛突，修細，略彎曲。肛突明顯骨化、盾狀，後緣圓，有毛。

世界分布：朝鮮半島、中國大陸、臺灣。

臺灣分布：分布於本島中南部之中海拔山區。

寄主植物：鼠李科之小葉鼠李。

生物學：本種為一年一世代物種，成蝶活動於初夏，越冬卵產於寄主植物細枝條。

註記：本種亞種名 *mushana* Matsumura, 1929 意指其模式產地南投縣仁愛鄉霧社。

***Satyrium tanakai* (Shirôzu, 1943) (田中灑灰蝶／田中烏小灰蝶)**

PLATE 21, Figs. 147–148; PLATE 56, Fig. 373; PLATE 89, Fig. 502

Strymon tanakai Shirôzu, 1943: Zephyrus 9: 157, pl. 17, Figs. 1–2. (Type locality: "Holisha, Taichū-Prefecture, Formosa [Puli, Taiwan]")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Daman, 600m, 29. IV. 1997 (Y. F. Hsu); 2♂, Fuxing, Daman, 8. III. 1998, reared from *Acer albopurpurascens*, emgd. 7. IV. 1998, HSU 98C7 (Y. F. Hsu); 1♂, 1♀, Fuxing, Xuanyuan, 900m, 4. V. 1997 (Y. F. Hsu); 1♂, same locality, 15. V. 1999 (Y. T. Lo). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 10. IV. 1991 (C. K. Lo); 1♀, Renai, Songgang, 1900m, 21. IV. 2005, reared from *A. albopurpurascens*, emgd. 20. V. 2005, HSU 05D44 (L. H. Wang); 1♀, Renai, Xinrengang, 2500m, 3. VI. 2003 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Heping, Guguan, 11. IV. 1991 (Y. F. Hsu); 1♀, same locality, 9. V. 1991 (C. K. Lo); 1♂, Heping, Anmashan, 1/2. VI. 1996 (Y. F. Hsu); 1♂, same locality, 1400m, 17. VI. 1997, reared from *A. albopurpurascens*, emgd. 5. V. 1997, HSU 97D51 (C. C. Lu & L. L. Yang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Taoyuan, Tengzhi, 1550/1700m, 18. VI. 1989 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Chunri, Dahan Forest Trail 18+K, 14/19. V. 2016 (C. W. Haung & T. Y. Liu) (genitalia preparation JYL515). **TAIDONG Co.:** 1♀, Haiduan, Southern Cross-Island Road, 160K, 23/24. VI. 2016 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL319).

Description. Adult – Forewing length 13–16 mm. Sexual dimorphism weakly present. Male (PLATE 21, Fig. 147): Head hairy, vertex and frons brown, with a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial

palpus porrect, tapering to pointed tip, dark brown but white laterally. Compound eyes hairy. Thorax and abdomen brown dorsally, white ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2, additional short, stub-like tail at distal ends of CuA_1. Wing uppersides ground color uniformly dark brown. Wing undersides ground color ochreous, with narrow white discal band edged by brown margin proximally, nearly straight but broken on forewing, forming a "W" posteriorly on hindwing. Submarginal bands consisted of a series of orange spots edged by dark brown. A black spot present in cell CuA_1 of hindwing, associated with a patch of orange marking. Tornal lobe black with orange marking and blue scalings. An oval, gray sexual brand at distal end of discoidal cell of forewing upperside. Fringe mostly brown. Female (PLATE 21, Fig. 148): Body and general wing patterns similar to those of male, but Protarsi normal and no sexual brands on forewings.

Male genitalia (PLATE 56, Fig. 373) – Tegumen with sclerotized V-shaped narrow band, concave mesad; socii as bands narrowed laterally, with posterior margin convex. Vinculum narrow, slightly curved. Brachium slender, elongate, curved, attenuate distad, with tip slightly bent. Saccus produced, with anterior margin rounded. Valva slender, oblong basally, forming elongate, setose, distal process with fine sharp tip. Phallus with aedeagus much longer than phallobase, nearly straight. Distal end of aedeagus keeled, with dorsal opening. Cornuti as a pair of sclerotized bands; dorsal one elongate, narrow, strongly up-curved, with distal end spiny; ventral one as a spiny short band.

Female genitalia (PLATE 89, Fig. 502) – Corpus bursae oval. Signa as a pair of sclerotized patches with two invaginated minute spines on opposite walls of corpus bursae. Ductus bursae with anterior portion forming short sclerotized tube with folds, following by a membranous area, leading to elongate, sclerotized tube connecting to plate with convex posterior margin. A pair of sclerotized, oval sac present laterally in A8. Posterior apophyses longer than anal papillae, heavily sclerotized, with anterior ends bent, hook-like. Anal papillae prominent, shield-like, attenuate posteriorly, sclerotized, setose.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2002, 2013).

Larval Host plant(s). Sapindaceae (formerly Aceraceae): *Acer albopurpurascens* (Hsu, 2002, 2013).

Biology. Univoltine, adults on the wing in early summer, overwintering as eggs concealed by gelatinous material in crevices on twigs (Hsu, 1999a, 2013).

Remarks. This species is thus far regarded a species endemic to Taiwan, but Hsu (2013) stated that it is similar to "*Thecla*" *saitua* Tytler, 1915 described from Manipur, and these two taxa may be conspecific.

形態特徵：成蝶前翅長 13–16 mm。雌雄二型性不顯著。雄蝶 (圖 147)：頭被毛、頭頂及額褐色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、黑褐色，兩側白色。複眼被毛。胸部及腹部背面褐色、腹面白色。足黑褐色，有白色條紋，前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突、CuA_1 脈末端具短尾突。翅背面底色黑褐色。翅腹面底色土黃色，中央具內側鑲褐色邊之白色窄帶紋，前翅者分斷，排成直線狀、後翅者後端呈 W 字形；亞外緣帶紋由一列鑲深褐色邊之橙色斑點組成；後翅 CuA_1 室有黑色斑點及橙色紋；臀區葉狀突黑色，有橙色紋及藍色鱗。前翅背面中室末端具灰色卵形性標。緣毛主要呈褐色。雌蝶 (圖 148)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅背面無性標。

雄交尾器 (圖 373)：背兜具骨化細 V 形帶，中間凹入；背兜側突帶狀，兩側漸窄，後緣突出。基腹弧狹窄，略彎曲。顎形突細長，彎曲成鉤狀，向後漸細，末端尖、略彎折。囊突明顯突出，先端圓。抱器細長，基部長卵形，向後延伸成長突起，末端尖銳，具剛毛。陽莖器長於陽莖基。陽莖器筆直，末端開口於背側，腹端龍骨狀。角狀器為一對骨片，背側者細長，明顯上彎，末端刺狀；腹側者為具許多小棘刺之短骨帶。

雌交尾器 (圖 502)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成一對內陷刺狀骨。交尾囊管前端為具皺褶之骨化管，接續小段膜質區，再連結至細長骨化

管狀，後末緣突出。第 8 腹節腹側於交尾孔兩側具一對橢圓形骨化囊。後內骨突長較肛突，高度骨化，先端彎曲、鉤狀。肛突明顯骨化，盾狀，末端漸縮，疏具毛。

世界分布：臺灣特有種。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：無患子科 (原槭樹科) 之樟葉槭。

生物學：本種為一年一世代物種，成蝶活動於初夏，越冬卵產於寄主植物細枝條縫隙內並以膠狀物質隱藏。

註記：本種至今被認為是臺灣特有種，但 Hsu (2013) 指出本種與記載自印度東北部曼尼普爾的“*Thecla*”*saitua* Tytler, 1915 相似，兩者可能同種。

***Satyrium esakii* (Shirôzu, 1942) (江崎灑灰蝶／江崎烏小灰蝶)**

PLATE 21, Figs. 149–150; PLATE 56, Fig. 374; PLATE 89, Fig. 503

Strymon esakii Shirôzu, 1942: Zephyrus 9: 73, Figs. 1–2. (Type locality: “Saramao-Heiganzan, Taichū-Prefecture, Formosa”)

Specimens examined:

TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]: 1♀, Heping, Guguan, 7. VII. 1992 (C. K. Lo); 1♀, Heping, Shishanxi, VII. 2000 (C. K. Lo). **TAIDONG Co.:** 2♂, Haiduan, Xiangyang, ca 2300m, 11. VI. 2002 (J. P. Su) (genitalia preparation JYL700); 2♂, Haiduan, Liyuan, ca 1800m, 13. VI. 2016 (Y. S. Lin); 1♂, same locality, 25. VI. 2016 (C. W. Huang); 1♂, same locality, 17. VI. 2020 (C. W. Huang); 1♀, same locality, 19. VI. 2022 (K. D. He); 1♀, Haiduan, Liyuan, 1793m, 2. VII. 2016 (J. Y. Liang) (genitalia preparation JYL701).

Description. Adult – Forewing length 12–13 mm. Sexual dimorphism weakly present. Male (PLATE 21, Fig. 149): Head hairy, vertex and frons brown, with small white patch on vertex, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, dark brown but white laterally. Compound eyes hairy. Thorax and abdomen brown dorsally, pale

brown ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2, additional minute tail at distal ends of CuA_1. Wing uppersides ground color uniformly brown. Wing undersides ground color buff, with narrow white discal band edged by white margin proximally, nearly straight on forewing, forming a "W" posteriorly on hindwing. Submarginal bands consisted of a series of prominent, orange lunules on hindwing. A black spot present in cell CuA_1 of hindwing, associated with a patch of orange marking. Tornal lobe black with orange marking and blue scalings. An oval, gray sexual brand at distal end of discoidal cell of forewing upperside. Fringe mostly white. Female (PLATE 21, Fig. 150): Body and general wing patterns similar to those of male, but Protarsi normal and no sexual brands on forewings.

Male genitalia (PLATE 56, Fig. 374) – Tegumen with sclerotized V-shaped narrow band, concave mesad; socii as semicircular bands. Vinculum narrow, slightly curved. Brachium slender, elongate, curved, attenuate distad to pointed tip. Saccus short, with anterior margin rounded. Valva oblong basally, forming setose, digitate distal process with blunt tip. Phallus with aedeagus much longer than phallobase, nearly straight. Distal end of aedeagus keeled, with dorsal opening. Cornuti as a pair of elongate, narrow bands, with posterior end swollen, spiny; dorsal one much smaller.

Female genitalia (PLATE 89, Fig. 503) – Corpus bursae oval. Signa as a pair of invaginated bar with minute internal spine on opposite walls of corpus bursae. Ductus bursae forming sclerotized tube, gradually enlarged posteriorly. Sterigma fused with ductus bursae, forming broad wall, with medial portion heavily sclerotized into a plate with convex posterior margin. Posterior apophyses longer than anal papillae, elongate, straight. Anal papillae prominent, shield-like with rounded posterior margins, sclerotized, setose.

Global distribution. Currently regarded as a species endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 2013).

Distribution in Taiwan. Moderate elevations in montane zone of central and southern Taiwan (Hsu, 2013).

Larval Host plant(s). Unknown.

Biology. Univoltine, with adults on the wing in summer (Hsu, 2013).

Remarks. Shirôzu (1942, 1960) pointed out that this species is similar to *S. patrius* (Leech, 1891) from western China.

The specific name of the species refers to a famous Japanese entomologist Teiso Esaki, who collected the first specimen of this species.

形態特徵：成蝶前翅長 13–16 mm。雌雄二型性不顯著。雄蝶 (圖 149)：頭被毛、頭頂及額褐色、額具白色小斑、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、黑褐色，兩側白色。複眼被毛。胸部及腹部背面褐色、腹面淺褐色。足黑褐色，有白色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突、CuA_1 脈末端有細小尾突。翅背面底色黑褐色。翅腹面底色淺黃褐色，中央有內側鑲褐色邊之白色線紋，前翅者直線狀、後翅者後端呈 W 字形；後翅亞外緣帶紋由一列鮮明橙色弦月紋組成；後翅 CuA_1 室有黑色斑點及橙色紋；臀區葉狀突黑色，上有橙色紋及藍色鱗。前翅背面中室末端具灰色卵形性標。緣毛主要呈白色。雌蝶 (圖 150)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅背面無性標。

雄交尾器（圖 374)：背兜具骨化細 V 形帶，中間凹入；背兜側突半圓形。基腹弧狹窄，略彎曲。顎形突細長、彎曲、鉤狀，向後漸細，末端尖。囊突短，前端圓。抱器基部長卵形，向後延伸成指狀突起，具剛毛。陽莖器遠長於陽莖基，甚直。陽莖器末端開口於背側，腹端龍骨狀。角狀器為一對細長小骨，腹側者膨大，具棘刺；背側者小型。

雌交尾器 (圖 503)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成內陷骨，有小刺。交尾囊管骨化，向後漸粗。交尾孔板與交尾囊管癒合，形成骨化壁，中央部分高度骨化形成後緣突出之骨板。後內骨突長於肛突，修長、筆直。肛突明顯骨化、盾狀，末緣圓，有毛。

世界分布：本種目前被視為臺灣特有種。

臺灣分布：分布於本島中南部之中海拔山區。

寄主植物：未知。

生物學：本種為一年一世代物種，成蝶活動於夏季。

註記：Shirôzu (1942, 1960) 指出本種與分布於華西之華西瀧灰蝶 *S. patrius* (Leech, 1891) 相似。

本種種小名 *esakii* 係紀念首度採獲本種標本之日本著名昆蟲學家江崎悌三。

Satyrium inouei **(Shirôzu, 1959) (井上瀧灰蝶／井上烏小灰蝶)**

PLATE 21, Figs. 151–152; PLATE 56, Fig. 375; PLATE 89, Fig. 504

Strymonidia inouei Shirôzu, 1959: Kontyû 27 (1): 91, pl. 8, Figs. 9–10. (Type locality: "Vicinity of Musha, Central Formosa")

Specimens examined:

XINZHU Co.: 1♀, Jianshi, Lidongshan, ca 1500m, 26. VI. 2005 (H. C. Huang). **HUALIAN Co.:** 1♂, Xiulin, Bilu, ca 2000m, 3. VII. 1989 (C. L. Li); 1♂, 3♀, Xiulin, Bilu/ Guanyuan, 125–125.5 km, ca 2100m, 2. VII. 2008 (C. C. Lu, jr.) (male genitalia preparation JYL702); 1♂, Xiulin, Wujiabengshan, 1900m, 15. VII. 2008 (L. H. Wang); 1♀, Xiulin, Guanyuan, 2300m, 5. VII. 2015 (L. Huang) (genitalia preparation JYL548).

Description. Adult – Forewing length 14–17 mm. Sexual dimorphism weakly present. Male (PLATE 21, Fig. 151): Head hairy, vertex and frons brown, with white patch on vertex, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, dark brown with extensive white scalings on inner surface but small white patch on outer surface. Compound eyes hairy. Thorax and abdomen brown dorsally, grayish white ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2, additional short, minute tail at distal ends of CuA_1. Wing uppersides ground color uniformly dark brown. A small orange spot in tornal lobe of hindwing. Wing undersides ground color ochreous, with narrow white discal band edged by brown

margin proximally, slightly curved on forewing, forming a “W” posteriorly on hindwing. Submarginal bands consisted of a series of orange lunules on hindwing. A black spot present in cell CuA_1 of hindwing, associated with a patch of orange marking. Tornal lobe black with orange marking and blue scalings. An oval, gray sexual brand at distal end of discoidal cell of forewing upperside. Fringe mostly white. Female (PLATE 21, Fig. 152): Body and general wing patterns similar to those of male, but Protarsi normal and no sexual brands on forewings.

Male genitalia (PLATE 56, Fig. 375) – Tegumen with sclerotized V-shaped narrow band, concave mesad; socii as bands narrowed laterally, with posterior margin convex. Vinculum narrow, slightly curved. Brachium slender, elongate, curved, attenuate distad, with tip slightly bent. Saccus short, with anterior margin rounded. Valva oblong basally, forming setose, distal process with pointed tip. Phallus with aedeagus much longer than phallobase, nearly straight. Distal end of aedeagus keeled, with dorsal opening. Cornuti as an elongate, narrow band tapering anteriorly and a small, serrate sclerite with pointed distal end.

Female genitalia (PLATE 89, Fig. 504) – Corpus bursae oval. Signa as a pair of invaginated bar with internal spine on opposite walls of corpus bursae. Ductus bursae with medial portion forming swollen, sclerotized tube; distal end enlarged with large ostium bursae. Posterior apophyses longer than anal papillae, slender, straight, with posterior ends flattened. Anal papillae prominent, shield-like with rounded posterior margins, sclerotized, setose.

Global distribution. West China and Taiwan (Koiwaya, 1996b; Hsu, 2013).

Distribution in Taiwan. Higher elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Not formally recorded.

Biology. Univoltine, with adults on the wing in summer (Hsu, 2013).

Remarks. This species was long considered a species endemic to Taiwan until Koiwaya (1996b) reported a hairstreak identified as this species from Shaanxi Province of western China.

The specific name of the species refers to a Japanese naturalist named “M. Inoue” (Shirôzu, 1959).

形態特徵：成蝶前翅長 13–16 mm。雌雄二型性不明顯。雄蝶 (圖 151)：頭被毛、頭頂及額褐色、額具白色斑、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、黑褐色但內側滿布白色鱗、外側有白色小紋。複眼被毛。胸部及腹部背面褐色、腹面灰白色。足黑褐色，有白色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突、CuA_1 脈末端具短小尾突。翅背面底色黑褐色，後翅臀區葉狀突有橙色斑點。翅腹面底色土黃色，中央有內側鑲褐色邊之白色線紋，前翅者略彎曲、後翅者後端呈 W 字形；後翅亞外緣帶紋由一列橙色弦月紋組成；後翅 CuA_1 室有黑色斑點及橙色斑紋；臀區葉狀突黑色，有橙色紋及藍色鱗。前翅背面中室末端具灰色卵形性標。緣毛主要呈白色。雌蝶 (圖 152)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅背面無性標。

雄交尾器 (圖 375)：背兜具骨化細 V 帶，中間凹；背兜側突帶狀，兩側漸窄，後緣突出。基腹弧狹窄，略彎曲。顎形突細長、彎曲、漸尖，末端略彎折。囊突短，前端圓。抱器基部卵形，向後突出，末端尖、具剛毛。陽莖器遠長於陽莖基，甚直。陽莖器末端開口於背側，腹端龍骨狀。角狀器為一對小骨，一枚較大、細長、向後漸細，另一枚小型、鋸齒狀、末端尖。

雌交尾器 (圖 504)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成內陷刺狀骨。交尾囊管中段膨大、骨化，於交尾孔處擴大。後內骨突長於較肛突，修長、直，末端扁平。肛突明顯骨化、盾狀，末緣圓，有毛。

世界分布：華西及臺灣。

臺灣分布：分布於本島海拔較高之山區。

寄主植物：尚無正式紀錄。

生物學：本種為一年一世代物種，成蝶活動於夏季。

註記：直至 Koiwaya (1996b) 報告將產於陝西之一些灑灰蝶樣本鑑定為本種之前，本種長期被視為臺灣特有種。

本種種小名為紀念日籍研究者井上正亮。

Genus *FIXSENIA* Tutt, [1907]

Type species: *Thecla herzi* Fixsen, 1887

Diagnostic characters include the following: 1) ground color of wings mostly brown or tan; 2) secondary sexual character as a sexual brand on forewing upperside if present; 3) tail-like projections at distal end of CuA_1 and CuA_2; 4) absence of ventral keel at distal end of phallus.

Clench (1978) considered the absence of ventral keel at distal end of phallus a diagnostic character to separate *Fixsenia* from *Satyrium*. Although this character may not be a synapomorphy for the genus, they are retained here for convenience until a modern phylogenetic work on the Old World Eumaeini is available.

Members of the genus are found in the Holarctic region (Clench, 1978).

Larvae feed on soft tissues like buds or flowers of their hostplants.

1 species is known from Taiwan.

烏灰蝶屬

形態特徵如下：1) 翅底色褐色或黃褐色；2) 若有第二性徵則為前翅背面性標；3) 後翅 CuA_1 及 CuA_2 脈末端具尾突；4) 陽莖末端腹側無龍骨狀突起。

Clench (1978) 認為陽莖腹側末端無龍骨狀突起是區分烏灰蝶屬與灑灰蝶屬之形態特徵。雖然該特徵可能並非本屬之共衍徵，但直至舊世界灑灰蝶族之現代親緣關係研究完成之前，暫保留此特徵為本屬特徵。

本屬成員分布於全北區。

幼生期取食其寄主植物之柔軟組織 (如花或芽)。

臺灣有 1 種。

Fixsenia watarii (Matsumura, 1927) (渡氏烏灰蝶／紅點烏小灰蝶／武大灑灰蝶)

PLATE 22, Figs. 155–156; PLATE 57, Fig. 376; PLATE 90, Fig. 505

Thecla eximia watarii Matsumura, 1927: Insecta Matsumurana 2 (2): 117, pl. 3, fig. 3. (Type locality: "Horisha, Formosa [Puli, Taiwan]")

Thecla eximia kanonis Matsumura, 1929: Insecta Matsumurana 3 (2/3): 102. (Type locality: "Formosa, Sankakuho [Taiwan, Nantou, Sanjiaofeng]")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Fuxing, Baling, 590m, 8. III. 1998, reared from *Spiraea prunifolia*, emgd. 12. IV. 1998, HSU 98C2 (Y. F. Hsu); 1♀, Fuxing, Gaoyi, 18. IV. 2003 (Y. F. Hsu). **XINZHU Co.:** 1♀, Jianshi, Zhenxibao, 24. V. 2003 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Heping, 710 Forest Trail, 10. VIII. 1990 (C. L. Li). **NANTOU Co.:** 3♂, 1♀, Renai, Biluxi, 14. VII. 1994 (S. H. Yen); 1♀, Renai, Tunyuan, 1550m, 4. VI. 2006 (C. C. Lu); 2♂, Renai, Tunyuan, 1700m, 5. V. 2010 (C. L. Huang); 1♂, same locality, 5. V. 2010 (L. H. Wang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuna, Liguan, 1600m, 29. IV. 2005 (Y. F. Hsu). **PINGDONG Co.:** 4♂, 1♀, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Bilu/ Guanyuan, 125–125.5 km, ca 2100m, 2. VII. 2008 (C. C. Lu, jr.).

Description. Adult – Forewing length 13–16 mm. Sexual dimorphism absent. Male (PLATE 22, Fig. 155): Head hairy, vertex and frons brown, with a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, tapering to pointed tip, dark brown with extensive white scalings on inner surface but small white patch on outer surface. Compound eyes hairy. Thorax and abdomen brown dorsally, grayish white ventrally. Legs dark brown banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing ovate, lobed at tornus. Filiform projections at distal ends of CuA_2, additional short, minute tail at distal ends of CuA_1. Wing uppersides ground color uniformly dark brown. A small orange spot in tornal lobe of hindwing. Wing undersides ground color ochreous or brown, with narrow white discal band, tilted on forewing, forming a "W" posteriorly on hindwing. Submarginal bands as an orange band edged by dark brown margins. A black spot present in cell CuA_1 of hindwing, associated with a patch of orange marking. Tornal lobe black with orange marking and blue scalings. Fringe mostly white. Female (PLATE 22, Fig. 156): Body and general wing patterns similar to those of male, but Protarsi normal.

Male genitalia (PLATE 57, Fig. 376) – Tegumen with sclerotized V-shaped narrow band, concave mesad; socii as bands narrowed laterally, with posterior margin convex. Vinculum narrow, slightly curved. Brachium slender, elongate, curved, attenuate distad, with tip slightly bent. Saccus produced, with anterior margin rounded. Valva rodlike basally, forming setose, straight, distal process with pointed tip. Phallus with aedeagus much longer than phallobase. Distal end of aedeagus up-curved, not keeled. Cornuti as two sclerites; anterior one forming prominent spine; posterior one as minute serrate band.

Female genitalia (PLATE 90, Fig. 505) – Corpus bursae oval. Signa as a pair of invaginated patches with two small internal spine on opposite walls of corpus bursae. Ductus bursae as a sclerotized tube, with anterior end forming a sclerotized disc, gradually enlarged posteriad, connecting with a plate-like sterigma with rounded posterior end. Posterior apophyses longer than anal papillae, slender, nearly straight, with anterior end slightly swollen, curved. Anal papillae prominent, shield-like with anterior margin convex, attenuate posteriorly, sclerotized, setose.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 1999a, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 1999a, 2013).

Larval Host plant(s). Rosaceae: *Spiraea prunifolia* (Uchida, 1991; Hsu, 1999a, 2013).

Biology. Univoltine, adults on the wing in early summer, overwintering as eggs on twigs (Hsu, 1999a, 2013).

Remarks. The specific name *watarii* refers to the first collector of the species, a Japanese naturalist named "S. Watari" (Matsumura, 1927).

形態特徵：成蝶前翅長 13–16 mm。無雌雄二型性。雄蝶 (圖 155)：頭被毛、頭頂及額褐色、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、漸細，末端尖、黑褐色但內側密布白色鱗、外側有白色小斑。複眼被毛。胸部及腹部背面褐色、腹面灰白色。足黑褐色，有白色帶紋，前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅卵形，臀區具葉狀突，CuA_2 脈末端具絲狀尾突、CuA_1 脈末端有短小尾突。翅背面底色黑褐色，後翅臀區葉狀突有橙色斑點。翅腹面底色土黃色或褐色，中央有白色線紋，前翅者呈斜線狀、後翅者後端呈 W 字形；亞外緣帶紋為鑲黑褐色邊之橙色帶紋；後翅 CuA_1 室有黑色斑點及橙色紋；臀區葉狀突黑色，上有橙色紋及藍色鱗。緣毛主要呈白色。雌蝶 (圖 156)：形態特徵與雄蝶相似，但前足跗節不癒合。

雄交尾器 (圖 376)：背兜具骨化細 V 形帶，中央凹入；背兜側突帶狀，兩側略膨大，後緣突出。基腹弧狹窄，略彎曲。顎形突細長、彎曲、鉤狀，向後漸細，末端尖。囊突短，前端圓。抱器基部棒狀，向後延伸成長、直之突起，末端尖，具剛毛。陽莖器遠長於陽莖基。陽莖器末端向上彎曲，開口於背側，腹端無龍骨狀結構。角狀器為一對細長小骨，前端者呈刺狀；後端者為有細齒之小骨。

雌交尾器 (圖 505)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成一對內陷刺狀骨。交尾囊管骨化，前端形成骨化盤，向後漸粗，連接板狀交尾孔板。後內骨突長較肛突，細長、直，前端略膨大。肛突明顯骨化、盾狀，前緣出，向後漸窄，有毛。

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山區。

寄主植物：薔薇科之笑靨花。

生物學：本種為一年一世代物種，成蝶活動於初夏，越冬卵產於寄主植物細枝上。

註記：本種種小名 *watarii* 係紀念首度採集本種之日籍研究者渡 正監。

Genus *HORAGA* Moore, [1881]

Type species: *Thecla onyx* Moore, 1857

Diagnostic characters include the following: 1) three tail-like projections present, at distal end of CuA_1, CuA_2, and 1A+2A; 2) secondary sexual characters as brands on forewing undersides in males if present; 3) a white discal patch usually on forewing uppersides; 4) blue or purple patches usually present on wing uppersides; 5) pupa ungirdled.

More than a dozen species are known from the Oriental region (Bascombe *et al*., 1999).

Larvae feed on plants in various families.

3 species are known from Taiwan.

鑽灰蝶屬

形態特徵如下：1) 後翅 CuA_1、CuA_2 及 1A+2A 脈末端各具一尾突；2) 若有第二性徵，則為雄蝶前翅腹面性標；3) 前翅背面常具一白色中室斑塊；4) 翅背面常有藍色或紫色斑塊；5) 蛹體無縊絲環繞。

本屬已知超過 12 種，分布於東洋區。

幼生期以多種不同科植物為寄主。

臺灣有 3 種。

Horaga onyx (Moore, [1858]) (鑽灰蝶／三尾小灰蝶／斑灰蝶)

Thecla onyx Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India Company 1: 30. (Type locality: " Moulmein, [Burma]", error, W. Himalayas)

Ssp. *moltrechti* Matsumura, 1919

PLATE 22, Figs. 157–160; PLATE 57, Fig. 377; PLATE 90, Fig. 506

Horaga onyx var. *moltrechti* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 604, pl. 47, fig. 9. (Type locality: “Kanshirei, Formosa [Guanzhiling, Taiwan]”)

Horaga asakurai Nire, 1920: Zoological Magazine, Tokyo 32 (386): 376. (Type locality: “Horisha, Formosa” [Puli, Taiwan])

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, reared from *Rhamnus formosana*, emgd. 30. I. 1983 (Y. F. Hsu); 1♀, same locality, 12. V. 1987 (Y. F. Hsu) (genitalia preparation JYL703). **TAIPEI CITY:** 6♂, 1♀, Wenshan, Gongguan campus, NTNU, 1. VII. 2004, reared from *Mangifera indica* (16/21 ºC), emgd. 12/30. VIII. 2004, HSU 04G4 (L. H. Wang & J. R. Chen). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Tianliao, 100m, 27. IV. 2010, reared from *Mangifera indica*, emgd. 11. VI. 2010, HSU 10D36 (Y. F. Hsu); 2♂, 2♀, same locality, 27. IV. 2010, reared from *Euphoria longana* [= *Dimocarpus longan*] (20ºC), emgd. 12/16. VI. 2010, HSU 10D37 (Y. F. Hsu); 2♀, Tianliao, 6. XII. 2014, reared from *Cordia dichotoma*, emgd. 19. I. 2015, HSU 14M13 (C. C. Lu, jr). **PINGDONG Co.:** 1♀, Chunri, Dahanshan, 1100m, 29. I. 2010 (N. Y. Tsai); 1♂, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2009 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 14–17 mm. Sexual dimorphism absent or weakly present. Male (PLATE 22, Figs. 157–158): Head hairy, vertex brown; frons white, with a broad brown band, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, white with dark brown dorsal band; 3rd segment rod-like, brown. Compound eyes naked. Thorax and abdomen brown dorsally, with scattered blue scalings, white ventrally. Legs white banded with dark brown, Protarsi fused, with distal end obtuse. Forewing triangular. Hindwing flabellate. Filiform projections at distal ends of CuA_1, CuA_2 and 1A+2A, with CuA_2 one longest. Wing uppersides ground color dark brown. Metallic blue patches present proximally on forewing and most area of hindwing. A white discal patch present on forewing. Wing undersides ground color ochreous, with a curved brown line on forewing and a straight brown line on hindwing. A white band proximal to brown line on forewing, a white patch distal to brown line on hindwing. A black spot caped by metallic green crescent in cell CuA_1 of hindwing. A brown sexual brand present proximally along CuA_2 of forewing underside. Foretibiae covered by thick tuft of specialized scales. Fringe mostly brown in forewing, white in hindwing. Female (PLATE 22, Figs. 159–160): Body and general wing patterns similar to those of male, but Protarsi normal, no sexual brand on forewing underside and tuft of specialized scales on foretibiae.

Male genitalia (PLATE 57, Fig. 377) – Tegumen broad, with a pair of narrow, linear "windows", very deep invagination present anteriorly. Socii prominent, forming triangular, ear-like projection. Vinculum narrow, slightly curved. Brachium elongate, asymmetrical, with distal end of left one enlarged, flatten, right one narrow, hook-like. Valva forming elongate process with distal end slightly swollen; a triangular medial lobe present ventrally. Juxta narrow, U-shaped. Phallus with phallobase approximately 2X of aedeagus in length, straight. Aedeagus thick, short. Cornuti consisted of more than 10 rows of minute teeth.

Female genitalia (PLATE 90, Fig. 506) – Corpus bursae united with ductus, forming elongate, wrinkled, membranous sac. Sterigma as a membranous chamber containing pair of small sacs by sides of ostium bursae. Posterior apophyses short,nearly straight. Anal papillae lobe-like, sclerotized mesad, fused ventrally, setose.

Variation. Dark brown markings at tornal area of hindwing undersides become red in individuals of dry or cold seasons.

Global distribution. Widespread in the Oriental region (Cowan, 1966; Hsu, 2013).

Distribution in Taiwan. Lowland to montane areas (Hsu, 2013).

Larval Host plant(s). Larvae feed on young growth or flowers of various broad-leaved plants, including Rhamnaceae: *Rhamnus formosana*; Anacardiaceae: *Mangifera indica*; Cordiaceae: *Cordia dichotoma*; Sapindaceae: *Dimocarpus longan*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. Cowan (1966) pointed out that both Matsumura (1919) and Nire (1920) attributed the name *moltrechti* to Oberthür but no justification of this viewpoint could be found, subsequently the name *moltrechti* ought to be attributed to Matsumura (1919).

形態特徵：成蝶前翅長 14–17 mm。雌雄二型性缺乏或微弱。雄蝶 (圖 157–158)：頭被毛、頭頂褐色、額白色具褐色寬帶、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、背面具黑褐色帶紋、第三節棒狀、褐色。複眼光滑。胸部及腹部背面褐色，散布藍色鱗；腹面白色。足白色，有黑褐色帶紋，前足跗節癒合，末端鈍。前翅三角形。後翅扇形，CuA_1、CuA_2 及 1A+2A 脈末端具絲狀尾突，於 CuA_2 者最長。翅背面底色黑褐色，前翅內側及後翅大部分區域具金屬光澤藍色斑塊；前翅中央有白色斑塊。翅腹面底色土黃色，前翅具褐色曲線、曲線內側有白色帶紋；後翅有褐色直線，直線外側有白色斑塊；後翅 CuA_1 室有冠金屬光澤綠色弦月紋之黑色斑點。前翅腹面內側具沿 CuA_2 脈分布之褐色性標；前足脛節覆有特化鱗組成之厚毛束。前翅緣毛主要呈褐色，後翅緣毛白色。雌蝶 (圖 159–160)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅腹面無性標、前足脛節無毛束。

雄交尾器 (圖 377)：背兜寬闊，具一對窄帶狀膜質區，後端具深內凹。背兜側突形成三角形耳狀突起。基腹弧狹窄，略彎曲。顎形突長，不對稱，左側末端擴大、扁平，

右側細而呈鉤狀。抱器形成長突起，末端略膨大，腹側中央具三角形突起。陽基顎片狹窄，U 字形。陽莖基長度約為陽莖器 2 倍，甚直，陽莖器粗短。角狀器由多列細齒組成。

雌交尾器 (圖 506)：交尾囊與交尾囊管合組，形成具皺摺之長囊。交尾孔板於交尾孔兩側形成一對小膜質囊。後內骨突短，甚直。肛突瓣狀，中央骨化，腹側癒合，具毛。

變異：乾季／低溫型個體後翅腹面臀區之黑褐色斑紋呈紅色。

世界分布：泛東洋區分布。

臺灣分布：分布於本島低地至山區。

寄主植物：幼蟲取食多種闊葉植物之嫩芽或花，其寄主植物包括鼠李科之桶鉤藤；漆樹科之芒果；破布子科之破布子；無患子科之龍眼等。

生物學：本種為一年多世代物種。

註記：Cowan (1966) 指出 Matsumura (1919) 及 Nire (1920) 均以為亞種名 *moltrechti* 之作者為 Oberthür，但未能發現支持此說之證據，從而該亞種名命名者應視為 Matsumura (1919)。

Horaga albimacula (Wood-Mason & de Nicéville, 1881) (小鑽灰蝶／姬三尾小灰蝶／白斑灰蝶)

'*Sithon*' *albimacula* Wood-Mason & de Nicéville, 1881: Journal of the Asiatic Society of Bengal 50 Pt. II (4): 249. (Type locality: "Andaman Islands")

Ssp. *triumphalis* Murayama & Shibatani, 1943

PLATE 23, Figs. 161–164; PLATE 57, Fig. 378; PLATE 90, Fig. 507

Horaga anytus triumphalis Murayama & Shibatani, 1943: Kansai Konchū Gakkai kaihō (The Transactions of the Kansai Entomological Society) 13 (1): 40. (Type locality: "Sangakuhon Formosa [Sanjiaofeng, Taiwan]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, 27. XI. 2001, reared from *Rhamnus formosana*, emgd. 10. I. 2002, HSU 01L54 (Y. F. Hsu); 1♂, same locality, 1. XII. 2001, reared from *Glochidion rubrum*, emgd. 14. II. 2002, HSU 01M1 (C. R. Chen); 1♀, Shiding, Ergeshan, 400m, 15. VII. 2003 (Y. C. Yang); 1♂, same locality, 20. VI. 2004, reared from *Itea parviflora*, emgd. 8. VII. 2004, HSU 04F19 (L. H. Wang, J. R. Chen & C. T. Chang); 2♂, Wulai, Qingwagu, 3. VIII. 2006, reared from *R. formosana*, emgd. 3. IX. 2006, HSU 06H21 (L. W. Wu); 1♂, Wanli, Shuangxi, 28. V. 2007, reared from *I. parviflora*, emgd. 15. VI. 2007, HSU 07E39 (C. L. Huang & C. K. Wang). **TAIPEI CITY:** 1♂, Wenshan, Muzha, 27. V. 2000, reared from *Lagerstroemia speciosa*, emgd. 1. VI. 2000 (H. C. Huang); 1♂, Wenshan, Xianjiyan, 28. V. 2002 (Y. F. Hsu); 6♂, 4♀, Wenshan, NTNU Gongguan campus, 11. VI. 2002, reared from *Peltophorum pterocarpum* (16/26 ºC), emgd. 30. VI./14. VII. 2002, HSU 02F13 (C. L. Huang & W. J. Chang); 1♂, 3♀, same locality, 22. VI. 2005, reared from *P. pterocarpum*, emgd. 22. VII./1. VIII 2005, HSU 05F45 (Y. F. Hsu & C. L. Huang); 1♀, Zhongzheng, Gongguan, 14. I. 2003 (Y. A. Lin); 1♂, Wenshan, Xianjiyan, 30. VI. 2004, reared from *I. oldhamii*, emgd. 19. VII. 2004, HSU 04F47 (Y. F. Hsu, J. R. Chen & C. T. Chang); 1♀, Neihu, 28. VI. 2002 (Y. A. Lin); 1♀, Songshan, Hushan, 8. VI. 2010 (C. H. Lin); 2♂, Daan, Fuzhoushan, 4. IV. 2012, reared from *Celtis formosana*, emgd. 16. IV. 2012 (W. H. Tan). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Gaoyi/ Ronghua, 13. VII. 1986 (Y. F. Hsu); 1♀, Fuxing, Gaoyi, emgd. 13. I. 1987 (Y. F. Hsu); 1♀, Fuxing, Xuanyuan, 1000m, reared from *R. formosana*, emgd. 23. V. 2010, HSU 09M8 (L. H. Wang). **YILAN Co.:** 1♀, Nanao, Jinchaoshan, 1200m, 29. VI. 2001 (L. W. Wu). **NANTOU Co.:** 1♀, Renai, Beidongyanshan, 1500m, 28. X. 2006 (Y. F. Hsu) (oviposting female HSU 06K41); 3♂, 2♀, same locality, 28. X. 2006, reared from *G. rubrum* (21/26 ºC), emgd. 2. XI./2. XII. 2006, HSU 06K41 (Y. F. Hsu); 1♂, Renai, Aowanda, 8. II. 2017, reared from *C. formosana*, emgd. 21. II. 2017, HSU 17B51 (H. C. Huang & L. Huang). **HUALIAN Co.:** 1♀, Zhuoxi, Nanan, 27. XI. 2014 (Y. F. Hsu); 1♀, Fengbin, Maogongyue, 8. VII. 2018 (J. Y. Liang) (genitalia preparation JYL309). **TAINAN CITY [= TAINAN Co.]:** 1♂, Xinhua, Dakeng, 80m, 19. III. 2006 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 1♀, Tianliao, 100m, 9. IV. 2010 (Y. F. Hsu); 1♂, 1♀, same locality, 26. IV. 2010 (Y. F. Hsu); 2♂, same locality, 10. V. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (Y. F. Hsu); 1♂,

Wutai, Wutoushan, 6. II. 1999, reared from *Prunus campanulata*, emgd. 9. III. 1999, HSU 99B5 (C. C. Lu & C. Y. Hung). **TAIDONG Co.:** 1♂, Yanping, Hongye, 18/19. XII. 1999, reared from *R. formosana*, emgd. 31. I. 2000, HSU 99M20 (C. M. Wu & L. W. Wu); 1♂, same locality, 29. X. 2000, reared from *Bauhinia championii* [= *Phanera championii*], emgd. 30. XI. 2000, HSU 00K83 (L. W. Wu); 1♀, Daren, Dazhuxi, Paotai, 800m, 22. VII. 2002 (C. L. Huang).

Description. Adult – Forewing length 11–17 mm. Sexual dimorphism present. Male (PLATE 23, Figs. 161–162): Head hairy, vertex brown; frons white, with a broad brown band, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, dark brown with some white scalings; 3rd segment rod-like, brown. Compound eyes naked. Thorax and abdomen brown dorsally, white ventrally. Legs white banded with dark brown, Protarsi fused, with distal end obtuse. Forewing triangular. Hindwing flabellate. Filiform projections at distal ends of CuA_1, CuA_2 and 1A+2A, with CuA_2 one longest. Wing uppersides ground color dark brown. Metallic purplish blue patches present proximally on forewing and most area of hindwing in cold months. A white discal patch present on forewing. Wing undersides ground color ochreous or brown, with a curved brown line on forewing and a straight brown line on hindwing. A white band proximal to brown line on forewing, a white patch distal to brown line on hindwing. A black spot caped by metallic green or blue crescent in cell CuA_1 of hindwing. A brown sexual brand present proximally along CuA_2 of forewing underside. Foretibiae covered by thick tuft of specialized scales. Fringe mostly brown in forewing, white in hindwing. Female (PLATE 23, Figs. 163–164): Body and general wing patterns similar to those of male, but Protarsi normal, no sexual brand on forewing and tuft of specialized scales on foretibiae.

Male genitalia (PLATE 57, Fig. 378) – Tegumen broad, with a pair of narrow, linear "windows", very deep invagination present posteriorly. Socii prominent, forming triangular, ear-like projection. Vinculum narrow, slightly curved. Brachium elongate, asymmetrical, with distal end of left one enlarged, flatten, right one narrow, hook-like. Valva forming elongate process with distal end clavate; no triangular medial lobe present ventrally. Juxta narrow, U-shaped. Phallus with phallobase slightly longer than aedeagus. Aedeagus narrow, slightly up-curved. Cornuti consisted of more than 10 rows of minute

teeth.

Female genitalia (PLATE 90, Fig. 507) – Corpus bursae united with ductus, forming elongate, wrinkled, membranous sac. Sterigma as a membranous chamber containing pair of small sacs by sides of ostium bursae. Posterior apophyses short, straight. Anal papillae lobe-like, sclerotized mesad, fused ventrally, setose.

Variation. Purplish blue patches on wing uppersides reduced in individuals of wet/hot seasons, completely diminished in males. White markings on wing undersides are also reduced in wet/hot seasons. Tufts of foretibiae in males nearly entirely white in color in wet/hot seasons, but banded with brown in dry/cold season.

Global distribution. Widespread in the Oriental region (Cowan, 1966; Hsu, 2013).

Distribution in Taiwan. Lowland to montane areas (Hsu, 2013).

Larval Host plant(s). Young growth and flowers of a variety of plants are utilized, including: Rhamnaceae: *Rhamnus formosana*; Rosaceae: *Prunus campanulata*; Phyllanthaceae: *Glochidion rubrum*, *G. philippicum*, *Bridelia balansae*; Euphorbiaceae: *Triadica sebifera*, *Mallotus japonicus*; Lamiaceae: *Vitex quinata*; Rubiaceae: *Wendlandia formosana*; Fabaceae: *Peltophorum pterocarpum*; Sapindaceae: *Dimocarpus longan*, *Sapindus mukorossi*, *Acer albopurpurascens*; Iteaceae: *Itea oldhamii*, *I. parviflora*; Podocarpaceae: *Podocarpus nakaii*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 11–17 mm。具雌雄二型性。雄蝶 (圖 161–162)：頭被毛、頭頂褐色、額白色具褐色寬帶、複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、黑褐色混白色鱗、第三節棒狀，褐色。複眼光滑。胸部及腹部背面褐色、腹面白色。足白色，有黑褐色帶紋，前足跗節癒合，末端鈍。前翅三角形。後翅扇形，CuA_1、CuA_2 及 1A+2A 脈末端具絲狀尾突，於 CuA_2 者最長。翅背面底色黑褐色，

低溫形個體前翅內側及後翅大部分區域有帶金屬光澤藍紫色斑塊；前翅中央有白色斑塊。翅腹面底色土黃色或褐色，前翅具褐色曲線、曲線內有白色帶紋；後翅有褐色線紋，線紋外側具白色斑；後翅 CuA_1 室有冠金屬光澤綠色或藍色弦月紋之黑色斑點。前翅腹面內側具沿 CuA_2 脈分布之褐色性標；前足脛節覆有特化鱗組成之厚毛束。前翅緣毛主要呈褐色，後翅緣毛白色。雌蝶 (圖 163–164)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅腹面無性標、前足脛節無毛束。

雄交尾器 (圖 378)：背兜寬闊，具一對窄帶狀膜質區，後端具深內凹。背兜側突形成三角形耳狀突起。基腹弧狹窄，略彎曲。顎形突長，不對稱，左側末端擴大、扁平，右側細而呈鉤狀。抱器形成細長突起，末端棒狀，腹側無三角形突起。陽基顎片狹窄，U 字形。陽莖基略長於陽莖器，陽莖器細、略上彎。角狀器由多列細齒組成。

雌交尾器 (圖 507)：交尾囊與交尾囊管合組，形成具皺摺之長囊。交尾孔板於交尾孔兩側形成一對小膜質囊。後內骨突短，甚直。肛突瓣狀，中央骨化，腹側癒合，具毛。

變異：雨季／高溫型個體翅背面藍紫色斑塊減退，於雄蝶完全消失；前翅腹面白色斑紋亦減退。此外，前足脛節毛束於雨季／高溫型個體幾乎全白、於乾季／低溫型個體則具褐色帶紋。

世界分布：泛東洋區分布。

臺灣分布：分布於本島低地至山區。

寄主植物：幼蟲取食多種闊葉植物之嫩芽或花，其寄主植物包括鼠李科之桶鉤藤；薔薇科之山櫻花；葉下株科之細葉饅頭果、菲律賓饅頭果、刺度密；大戟科之烏桕、野桐；唇形科之山埔姜；茜草科之水金京；豆科之盾柱木；無患子科之龍眼、無患子、樟葉槭；鼠刺科之鼠刺、小花鼠刺；羅漢松科之桃實百日青等。

生物學：本種為一年多世代物種。

***Horaga rarasana* Sonan, 1936 (拉拉山鑽灰蝶／拉拉山三尾小灰蝶／斜條斑灰蝶)**

PLATE 23, Figs. 165–167; PLATE 57, Fig. 379; PLATE 90, Fig. 508

Horaga rarasana Sonan, 1936: Zephyrus 6 (3/4): 207, pl. 14, Fig. 4. (Type locality: "Rarasan, Formosa [Lalashan, Taiwan, 1500 m]")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Sanxia, Beichatianshan, 1000m, 28. V. 1992 (Y. F. Hsu); 1♂, same locality, 1700/1727m, 13. V. 1996, reared from *Symplocos macrostroma*, emgd. 26. V. 1996, HSU 96E3 (Y. F. Hsu); 1♂, Sanxia, Beichatianshan, 1500/1727m, 30. I. 1997, reared from *S. macrostroma*, emgd. 25. IV. 1997, HSU 97A42 (Y. F. Hsu); 1♂, 1♀, same locality, III. 2000, reared from *S. macrostroma*, emgd. 5/19. IV. 2006 (L. H. Wang); 1♂, same locality, emgd. 21. V. 2001 (Y. T. Lo); 1♂, same locality, 24. II. 2002, reared from *S. macrostroma*, emgd. 3. III. 2002, HSU 02B26 (Y. T. Lo &. J. R. Chen); 1♀, same locality, reared from *S. macrostroma*, emgd. 30. III. 2006 (L. H. Wang); 1♀, same locality, I. 2006, reared from *S. macrostroma*, emgd. 17. IV. 2006 (L. H. Wang); 4♀, same locality, 31. III. 2007, reared from *S. macrostroma*, emgd. 15/18. V. 2007, HSU 07C40 (C. L. Huang); 1♀, same locality, 23. II. 2009, reared from *S. macrostroma*, emgd. 21. III. 2009, HSU 09B27 (C. L. Huang & T. W. Chen). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, 1♀, Fuxing, Lalashan, 15. VI. 1987 (Y. F. Hsu); 1♀, same locality, reared from *S. macrostroma*, emgd. 16. V. 1988 (Y. F. Hsu); 1♂, same locality, emgd. 5. V. 2001 (Y. T. Lo); 1♂, 1♀, Fuxing, Jianshan, 30. I. 2015, reared from *S. macrostroma*, emgd. 5/18. IV. 2015, HSU 15A27 (C. L. Huang). **YILAN Co.:** 2♂, Datong, Qilan, 6. II. 2007, reared from *S. macrostroma*, emgd. 9/18. V. 2007, HSU 07B12 (L. H. Wang, L. W. Wu & T. W. Chen); 1♂, Datong, Songluohu, 900/1200m, 29. XII. 2002, reared from *S. macrostroma*, emgd. 16. IV. 2003, HSU 02M61 (C. L. Huang & J. R. Chen); 2♀, Yuanshan, Caopi, 800m, 9. V. 2011, reared from *S. macrostroma*, emgd. 21/25. V. 2011, HSU 11E19 (Y. H. Lin); 1♂, same locality, 700m, 9. V. 2011 (W. Y. Wang) (genitalia preparation JYL543); 2♀, same locality, 19. III. 2014, reared from *S. macrostroma*, emgd. 15. IV. 2014, HSU 14C19 (C. W. Huang, Y. H. Lin & W. J. Lin).

Description. Adult – Forewing length 14–18 mm. Sexual dimorphism present. Male (PLATE 23, Fig. 165): Head hairy, vertex brown, with a small medial white tuft; frons white, with medial brown band, a white rim surrounding eyes. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, white but brown distally, a small brown patch present basad, 3rd segment rod-like. Compound eyes naked. Thorax and abdomen brown dorsally, with scattered blue scalings, white ventrally.

Legs white banded with dark brown, Protarsi fused, with distal end obtuse. Forewing triangular, broad. Hindwing ovate. Filiform projections at distal ends of CuA_1, CuA_2 and 1A+2A, CuA_2 longest. Wing uppersides ground color dark brown. Metallic purple patch present in anterior portion of hindwing; a prominent, tilted white band on forewing. Wing undersides ground color white or yellow, with a tilted, straight brown band on forewing and a straight brown band on hindwing. A brown bar at distal end of discoidal cell. Prominent buff margins present on both wings, with forewing band darker in color. A black spot caped by metallic green crescent in cell CuA_1 of hindwing. Submarginal band consisted of a series of metallic green crescents on hindwing. A brown sexual brand present proximally along CuA_2 of forewing underside. Foretibiae covered by thick tuft of specialized scales. Fringe white. Female (PLATE 23, Figs. 166–167): Body and general wing patterns similar to those of male, but Protarsi normal, purple patches on hindwing uppersides absent, no sexual brand on forewing and tuft of specialized scales on foretibiae.

Male genitalia (PLATE 57, Fig. 379) – Tegumen broad, with a pair of narrow, linear "windows", very deep invagination present posteriorly. Socii prominent, forming oblong, ear-like projection. Vinculum narrow, slightly curved. Brachium elongate, asymmetrical, with distal end of left one enlarged, right one narrow, hook-like. Valva forming elongate process with distal end spoon-like. Juxta narrow, U-shaped. Phallus with phallobase slightly longer than aedeagus, straight. Cornuti consisted of more than 10 rows of minute teeth.

Female genitalia (PLATE 90, Fig. 508) – Corpus bursae united with ductus, forming elongate, wrinkled, membranous sac, with anterior end slightly constricted. Sterigma as a membranous chamber surrounding ostium bursae. Posterior apophyses short, nearly straight. Anal papillae lobe-like, sclerotized mesad, fused ventrally, setose.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 2002, 2013).

Distribution in Taiwan. Mainly at moderate elevations in montane zone of northern

Taiwan (Hsu, 2002, 2013; Lu & Chen, 2014).

Larval Host plant(s). Symplocaceae: *Symplocos macrostroma* (Hsu & Yang, 1999; Hsu, 2002; Lu & Chen, 2014).

Biology. This species is univoltine, with adults on wing in early summer, overwintering as eggs on branches and twigs (Hsu & Yang, 1999; Hsu, 2002; Lu & Chen, 2014).

Remarks. Although this species is endemic to Taiwan, a similar species *H. takanamii* Saito & Seki, 2003 was discovered from montane areas of northern Laos, representing an interesting disjunct distribution between Taiwan and northern Indochina.

形態特徵：成蝶前翅長 11–17 mm。具雌雄二型性。雄蝶 (圖 165)：頭被毛；頭頂褐色，中央具白色小毛束；額白色，中央具褐色帶紋；複眼具白色輪緣。觸角褐色，有白環。口器黑褐色。下唇鬚前伸，白色但末端褐色，基部中央具褐色小帶紋；第三節棒狀。複眼光滑。胸部及腹部背面褐色，散布藍色鱗；腹面白色。足白色，有黑褐色帶紋；前足跗節癒合，末端鈍。前翅寬，呈三角形。後翅卵形，CuA_1、CuA_2 及 1A+2A 脈末端具絲狀尾突，於 CuA_2 者最長。翅背面底色黑褐色，後翅前側有帶金屬光澤紫色斑塊；前翅有鮮明白色斜帶。翅腹面底色白色或黃色，前翅具白色斜帶紋；後翅具褐色直帶紋；中室末端有褐色條；翅邊緣有鮮明之淺黃色褐帶，於前翅顏色較深；後翅 CuA_1 室有一列冠金屬光澤綠色弦月紋之黑色斑點。前翅腹面內側具沿 CuA_2 脈分布之褐色性標；前足脛節覆有特化鱗組成之厚毛束。緣毛白色。雌蝶 (圖 166-167)：形態特徵與雄蝶相似，但前足跗節不癒合、後翅背面無紫色斑塊、前翅腹面無性標、前足脛節無毛束。

雄交尾器 (圖 379)：背兜寬闊，具一對狹窄、帶狀之膜質區，後端有深內凹。背兜側突形成矩形耳狀突起。基腹弧狹窄，略彎曲。顎形突細長，不對稱，左側末端擴大，右側窄、鉤狀。抱器向形成細長突起，末端勺狀。陽基顎片狹窄，U 字形。陽莖基長度稍長於陽莖器，甚直。角狀器由多列細齒組成。

雌交尾器 (圖 508)：交尾囊與交尾囊管形成具皺摺的長囊袋狀，前端略縮。交尾孔板於交尾孔周圍形成膜質腔狀。後內骨突短、直。肛突瓣狀，中央骨化，腹側癒合，

具毛。

世界分布：本種為臺灣特有種。

臺灣分布：主要分布於本島北部中海拔山區。

寄主植物：灰木科之大花灰木。

生物學：本種為一年一世代物種，成蝶活動於初夏，越冬卵產於寄主植物分枝處或細枝條上。

註記：雖然本種為臺灣特有種，但寮國北部棲息有一相似種高波鑽灰蝶 *H. takanamii* Saito & Seki, 2003，呈現臺灣及中南半島北部間之間斷分布。

Genus *CATAPAECILMA* Butler, 1879

Type species: *Hypochrysops elegans* Druce, 1873

Diagnostic characters include the following: 1) three tail-like projections present, at distal end of CuA_1, CuA_2, and 1A+2A; 2) secondary sexual characters as basal portion of 1A+2A swollen, covered by specialized scales; 3) males with purple patches, females blue patches usually on wing uppersides; 4) wing undersides decorated with silvery, red or orange, and dark brown bands.

Approximately 8 species are known from the Oriental region (Hsu *et al*., 2016).

Immatures are associated with *Crematogaster* ants (Fiedler, 1991; Hsu *et al*., 2016).

1 species is known from Taiwan.

三尾灰蝶屬

形態特徵如下：1) 後翅 CuA_1、CuA_2 及 1A+2A 脈末端各具一尾突；2) 第二性徵為雄蝶前翅 1A+2A 脈基部膨大，上覆特化鱗；3) 雄蝶翅背面有紫色斑塊，雌蝶則有藍色斑塊；4) 翅腹背綴有銀色、紅或橙色及黑褐色細帶紋。

本屬已知約 8 種，分布於東洋區。

幼生期與舉尾家蟻屬螞蟻共生。

臺灣有 1 種。

Catapaecilma major Druce, 1895 (三尾灰蝶／銀帶三尾小灰蝶)

Catapaecilma major Druce, 1895: Proceedings of the Zoological Society of London 1895 (3): 612. (Type locality: Sikkim)

Ssp. *moltrechti* Wileman, 1908

PLATE 24, Figs. 168–169; PLATE 58, Fig. 380; PLATE 91, Fig. 509

Tajuria moltrechti Wileman, 1908: Annotationes Zoologicae Japonenses 6 (5): 326. (Type locality: "Kuraro Botanical Garden, Koshun, Formosa" [Sheding, Kending, Hengcung, Taiwan])

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Daman, 29. IV. 1997 (C. C. Lu); 1♂, same locality, 20. VII. 1999 (Y. F. Hsu); 1♀, Fuxing, Xuewunao, 1. IV. 2018 (C. J. Chang) (genitalia preparation JYL616). **NANTOU Co.:** 2♂, 1♀, Renai, Huisun Forest Field, 700m, 8. I. 2010, reared from scales ex *Crematogaster rogenhoferi* shelter on *Rhus succedanea*, emgd. 24. I./5. III. 2010, HSU 10A1 (J. H. Lin). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Tianliao, 100m, 22. IV. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♂, 3♀, Sandimen, 250m, 10. II. 2007, ex nest of *Cr. rogenhoferi*, emgd. 5/22. III. 2007, HSU 07B17 (Y. F. Hsu); 1♀, Sandimen, ca 300m, 21. I. 2009, reared from assoc with *Cr. rogenhoferi* on *Mallotus paniculatus* emgd. 16. III. 2009, HSU 09A7 (Y. F. Hsu); 1♀, same locality, 20. II. 2009, reared from *Coccus hesperidum* ex *Cr. rogenhoferi* shelters on *Mal. japonicus*, emgd. 23. II. 2009, HSU 09A28 (Y. F. Hsu); 1♂, Sandimen, 200m, 17. I. 2011, reared from *Saissetia olea*e ex *Cr. rogenhoferi* shelters on *Macaranga*

tanarius, emgd. 4. II. 2011, HSU 11A9 (Y. F. Hsu). **TAIDONG Co.:** 2♂, Lanyu, Langdao, 15. VIII. 2002 (C. Y. Hung); 1♀, Lanyu, Sidaogou, 1/3. V. 2003 (Y. F. Hsu, Y. C. Hsu & Y. Lo); 1♀, same locality, 13/15. VI. 2003 (Y. F. Hsu); 1♀, same locality, 3/5. III. 2007 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 18. VIII. 2008 (Y. F. Hsu); 1♂, 2♀, same locality, 4. III. 2009, reared from *Co*. *hesperidum* ex *Cr*. *rogenhoferi* shelters on *Mal*. *japonicus*, emgd. 29. III./15. IV. 2009, HSU 09C45 (C. L. Huang); 1♂, same locality, 19. II. 2012, reared from *Co*. *hesperidum* ex *Cr*. *rogenhoferi* shelters on *Mal*. *japonicus*, emgd. 20. III. 2013, HSU 13B22 (Y. F. Hsu); 1♂, same locality, 15. IV. 2019 (H. C. Huang).

Description. Adult – Forewing length 14–16 mm. Sexual dimorphism present. Male (PLATE 24, Fig. 168): Head hairy, brown, with a medial white hair tuft on vertex; frons edged by white margins, mixed with some slivery scalings. Antennae brown, segmented with white. Proboscis dark brown. Labial palpus porrect, hairy, white mottled with brown, mixed with some silvery scalings. Compound eyes hairy. Thorax and abdomen brown dorsally, white ventrally. Legs densely covered by long hairs, white banded with brown. Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa and dorsum straight, termen slightly convex. Hindwing ovate. Filiform projections at distal ends of CuA_1, CuA_2 and 1A+2A. Wing uppersides ground color brown, with large purple patches on both forewing and hindwing. Wing undersides ground color pale ochreous to gray, decorated with broken, silvery and dark brown bands, and dull orange stripes. A dark brown spot at distal end of cell CuA_1 of hindwing. Fringe white, checkered with brown. Female (PLATE 24, Fig. 169): Body and general wing patterns similar to those of male, but Protarsi normal, forewing termen more convex, legs less hairy, pale blue instead of purple patches on wing uppersides.

Male genitalia (PLATE 58, Fig. 380) – Tegumen broad. Produced posteriorly, with prominent U-shaped medial concavity mesad; socii as narrow bands with serrate margins. Vinculum narrow. Brachium as elongate hook, strongly curved, enlarged basally, attenuate to pointed tip distally. Saccus short, with anterior margin rounded. Valvae as a broad lobe; dorsal margin of distal part serrate; a small tooth present along ventral margin. Juxta narrow, U-shaped, enlarged basad. Phallus short, stout, with aedeagus

much shorter than phallobase. Distal end of aedeagus truncate.

Female genitalia (PLATE 91, Fig. 509) – Corpus bursae and ductus bursae united into elongate sac, attenuate posteriorly to a sclerotized ring. Sterigma with lamella antevaginalis forming a plate with shallow concavity posteriorly; lamella postvaginalis forming a sclerotized patch tapering posteriorly. Posterior apophyses longer than anal papillae, s straight, anterior end knot-like, posterior end enlarged, flatten. Anal papillae triangular, weakly sclerotized, densely setose.

Global distribution. India, Sri Lanka, Sundalands, Indochina, West to East China, and Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in main island of Taiwan, also found in Lanyu (Shirôzu, 1960; Hsu, 2013).

Larval Diet. Larvae devour secretions of scale insects, bark of plant soaked with the secretions, and sometimes nymphs of scale insects. The associated scale insects include *Saissetia oleae*, *Coccus hesperidum*, and *C. formicarii* (Coccidae) (Hsu *et al*., 2016).

Biology. Multivoltine (Hsu, 2013). Immatures are obligatorily associated with *Crematogaster rogenhoferi* ants. Larvae rest in satellite shelters constructed by ants for scale insects while not feeding (Hsu *et al*., 2016).

形態特徵：成蝶前翅長 11–17 mm。具雌雄二型性。雄蝶 (圖 168)：頭被毛、褐色；頭頂中央具白色毛束；額具白邊，混銀色鱗。觸角褐色，有白環。口器黑褐色。下唇鬚前伸、被毛、白色雜褐色、混銀色鱗。複眼被毛。胸部及腹部背面褐色、腹面白色。足密被長毛，白色具黑褐色帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣及後緣直、外緣略突出。後翅卵形，CuA_1、CuA_2 及 1A+2A 脈末端具絲狀尾突。翅背面底色褐色，有大型紫色班塊。翅腹面底色淡土黃色至灰色，綴以銀色、黑褐色帶紋及淡橙色波紋；後翅 CuA_1 室末端具一黑褐色斑點。緣毛白褐色相間。

雌蝶 (圖 169)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅外緣較凸、足被毛較稀、翅背面斑塊淺藍色而非紫色。

雄交尾器 (圖 380)：背兜寬闊，後端具明顯 U 形內凹；背兜側突細帶狀，後緣呈鋸齒狀。基腹弧狹窄。顎形突細長、鉤狀，強彎曲，基部膨大，向後漸細，末端尖。囊突短，前端圓。抱器寬瓣狀，後端背緣具鋸齒，腹緣有一小齒。陽基顎片狹窄，U 字形，基部膨大。陽莖粗短，陽莖器遠短於陽莖基，末端截狀。角狀器為兩枚小骨片；背側者具許多小刺棘；腹側者甚細小。

雌交尾器 (圖 509)：交尾囊與交尾囊管組合，形成長囊，後端漸細，形成骨化環。交尾孔前板為矩形骨化板，後緣淺凹；交尾孔後板形成向後漸窄之骨片。後內骨突長於肛突，甚直，前端結狀，後端膨大、扁平。肛突三角狀，輕度骨化，密被毛。

世界分布：印度、斯里蘭卡、巽他地區、中南半島、華西至華東、臺灣。

臺灣分布：分布於本島低至中海拔地區，蘭嶼亦有分布。

幼生期食性：幼蟲取食介殼蟲之分泌物及浸淫介殼蟲分泌物之樹皮，有時亦會啃食介殼蟲若蟲。賴以為生的介殼蟲種類包括工脊硬介殼蟲、扁堅介殼蟲及蟻台硬介殼蟲等。

生物學：本種為一年多世代物種。幼生期須與懸巢舉尾家蟻共生，幼蟲主要棲息在舉尾家蟻供介殼蟲居住之衛星巢內。

Subfamily POLYOMMATINAE Swainson, 1827

The members in the subfamily are usually called the blues. They form a very diverse lycaenid subfamily. Species in the subfamily are tailless or bearing a filamentous tail in hindwings, also considered to act as a false head for distraction of the attention of predators away from the vital body parts by hindwing movements while settled (Ackery *et al*., 1999). Eliot (1992) reduced the subfamily Polyommatinae to a tribe of Lycaeninae *sensu lato*, and the treatment was followed by some authors (e.g., Ackery *et al*., 1999) but not others (e.g., Wahlberg *et al*., 2005). The exemplars of Polyommatinae *sensu* Espeland *et al*. (2018) and Kawahara *et al*. (2023) both do not form a monophyletic assemblage, thus whether Polyommatinae should be retained as a subfamily is still in dispute. Myrmecophily associated with myrmecophilous organs in larvae are widespread in the subfamily.

Members of Polyommatinae are well-represented in all geographical regions.

In Taiwan, 46 species in 28 genera are known.

藍灰蝶亞科

本亞科成員常被稱為「blues」，為物種多樣性非常高之亞科。此亞科內的種類後翅有的沒有尾突，有的則具絲狀尾突，後者被認為藉由停棲時移動後翅使獵食者誤認其為頭部，從而將注意力從蝴蝶身軀上移開。Eliot (1992) 將藍灰蝶亞科視為廣義灰蝶亞科內的一員，此處理有贊同者，亦有否定者。Espeland *et al*. (2018) 及 Kawahara *et al*. (2023) 的研究結果均顯示藍灰蝶亞科沒有形成單系群，因此藍灰蝶亞科是否保留為獨立亞科尚有疑義。本亞科幼蟲多擁有喜蟻器與喜蟻性。

本亞科成員普遍見於世界各大地理區。

在臺灣地區已知 28 屬 46 種。

Genus *ORTHOMIELLA* de Niceville, 1890

Type species: *Chilades* (?) *pontis* Elwes, 1887

Diagnostic characters include the following: 1) distal portion of Sc fused with proximal portion of R_1, but separated at terminal end on forewing; 2) long brush-like hair present on labial palpus ventrally; 3) fringe long along dorsum of hindwing; 4) metallic blue or purple patches on wing uppersides in male.

Yoshino (2018) recognized 6 species, distributed in the Oriental region.

1 species occurs in Taiwan.

鋸灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈基部癒合，但於末端分離；2) 下唇鬚腹面具長毛叢；3) 後翅後緣緣毛長；4) 雄蝶翅背面有具金屬光澤之藍、紫色斑塊。

Yoshino (2018) 羅列 6 種，分布於東洋區。

臺灣有 1 種。

Orthomiella rantaizana Wileman, 1910 (巒大鋸灰蝶／巒大山小灰蝶／巒太鋸灰蝶)

PLATE 24, Figs. 170–171; PLATE 58, Fig. 381; PLATE 91, Fig. 510

Orthomiella rantaizana Wileman, 1910: Entomologist 43: 93. (Type locality: "Ranraizan, Formosa, 6000 ft")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Fushan, 17. III. 2015 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, Sileng, 16. III. 2007 (C. H. Liu). **XINZHU Co.:** 3♂, Jianshi, Zhenxibao, 1600m, 26. II. 2009 (L. H. Wang); 3♂, 6♀, same locality, 23. III. 2009 (L. H. Wang & Y. F. Hsu); 1♂, same locality, 2. III.

2010 (Y. F. Hsu); 1♀, same locality, 13. IV. 2011 (L. H. Wang); 1♀, same locality, 11. IV. 2012 (L. H. Wang); 1♂, same locality, 10. IV. 2019 (C. W. Huang) (genitalia preparation JYL591); 2♂, Jianshi, Yulao, ca 1500m, 25. II. 2009 (C. K. Wang). **NANTOU Co.:** 3♂, Renai, Nanshanxi, 14. III. 1996 (Y. F. Hsu); 1♂, same locality, 11. V. 1996 (Y. F. Hsu); 1♀, Renai, Kaofeng, 6. V. 2004; 1♀, Renai, Cuifeng, 27. III. 1993 (S. H. Yen).

Description. Adult – Forewing length 11–13 mm. Sexual dimorphism present. Male (PLATE 24, Fig. 170): Head hairy, brown, with prominent brush-like tuft on frons, a white rim surrounding eyes. Antennae with club flattened, dark brown, segmented with white. Proboscis dark brown. Labial palpus bearing brush-like hairs, porrect, 3rd segment slender, pointed, brown mixed with white. Compound eyes hairy. Thorax and abdomen dark brown, mixed with white ventrally. Legs dark brown, with tarsi banded with white, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing round. Wing uppersides ground color brown, with a metallic deep purple patch on anterior portion of hindwing. Wing undersides ground color pale brown, with two dark brown bands on both wings, but bands on forewing reduced and obscure. Submarginal bands as a series of distal dark brown spots and series of proximal lunules. Fringe brown checkered with white. Female (PLATE 24, Fig. 171): Body and general wing patterns of undersides similar to those of male, Protarsi not fused, wing uppersides uniformly brown.

Male gentalia (PLATE 58, Fig. 381) – Tegumen with prominent, triangular, lateral processes. Socii oblong, with posterior margins flat. Saccus produced. Brachium short, stout, straight, abruptly narrowed distally, tapering to pointed terminal end. Valva as a large lobe with distal end enlarged ventrally, distal margin truncate, serrate; ampulla short, beak-shaped; sacculus triangular. Juxta narrow, V-shaped. Phallus up-curved, with aedeagus longer than phallobase. Phallobase slightly sclerotized, aedeagus heavily sclerotized. Distal opening of aedeagus with deep invagination. Cornuti as several serrate bands.

Female genitalia (PLATE 91, Fig. 510) – Ductus bursae oval. Ductus bursae elongate, membranous, wrinkled. Sterigma with lamella antevaginalis as a square sclerite with

posterior process tapering to blunt posterior end; lamella postvaginalis as a membranous dome with prominent sclerotized patch. Posterior apophyses slightly longer than anal papillae, straight, with antertior ends bent into hooks. Anal papillae sclerotized, setose distally.

Global distribution. Indochina and Taiwan.

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Not formally published; Fagaceae (Hsu, 2013).

Biology. This species is univoltine, with adults on wings in spring (Hsu, 2013).

形態特徵：成蝶前翅長 11–13 mm。具雌雄二型性。雄蝶 (圖 170)：頭被毛、褐色；額具毛叢；複眼具白色輪緣。觸角黑褐色、有白環，錘部扁平。口器黑褐色。下唇鬚前伸，有毛叢；第三節細小、尖銳、褐色混白色。複眼被毛。胸部及腹部黑褐色，腹面混白色。足黑褐色，跗節有白色帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形。翅背面底色褐色，後翅前側有具金屬光澤之紫色斑塊。翅腹面底色淡褐色，有兩道黑褐色帶紋，於前翅退減、模糊；亞外緣帶紋由外側黑褐色斑點及內側弦月紋組成。緣毛褐色嵌白色。雌蝶 (圖 171)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面無紫色斑塊。

雄交尾器 (圖 381)：背兜兩側形成三角形突起。背兜側突橢圓形，後緣平坦。囊突突出。顎形突粗短、直，向後驟縮漸細，末端尖。抱器大型、瓣狀，後端腹側擴大，末緣截狀、具鋸齒；抱握鋏短、喙狀；抱器腹三角形。陽基軛片狹窄，V 字形。陽莖上彎，陽莖器長於陽莖基。陽莖基輕度骨化。陽莖器高度骨化，末端開口具深凹。角狀器為數列細齒。。

雌交尾器 (圖 510)：交尾囊橢圓形。交尾囊管長、膜質、有皺褶。交尾孔前板方形，向尾端漸窄，末端鈍；交尾孔後板形成膜質圓頂腔狀，中間有一對半圓形有鋸齒之骨斑。後內骨突略長於肛突、頗直，前端彎曲成鉤狀。肛突骨化，具毛。

世界分布：中南半島、臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：尚無正式報告，以殼斗科植物為食。

生物學：本種為一年一世代物種，成蝶活動於春季。

Genus *NACADUBA* Moore, [1881]

Type species: *Lampides prominens* Moore, 1877

Diagnostic characters include the following: 1) distal portion of Sc joined with medial portion of R_1, and separated at terminal end on forewing; 2) wing undersides with parallel pale striae; 3) filiform tail-like projection at distal end of CuA_2 of hindwing; 4) sexual dimorphism present, purple or blue scalings usually less extensive in female.

Members of the genus are similar to each other in appearance, but usually easy to identify by using genitalia, especially the shape of valvae.

Larval hostplants include a variety of broad-leaved trees, but some species are specialists on certain plant families.

About 40 species are known from the Oriental and Australian regions.

4 species occur in Taiwan.

娜波灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈中段相接，於末端分離；2) 翅腹面具

平行的淡色波紋；3) 後翅 CuA_2 脈末端具絲狀尾突；4) 具雌雄二型性，雌蝶翅背面藍、紫色斑較侷限。

本屬成員外觀相似，但易藉由交尾器區分，特別是抱器的形狀。

幼生期取食多種闊葉植物，但有些種類專食特定科植物。

本屬已知約 40 種，分布於東洋區及澳洲區。

臺灣有 4 種。

Nacaduba kurava (Moore, [1858]) (大娜波灰蝶／埔里波紋小灰蝶)

Lycaena atratus Horsfield, [1828] (not Stoll, [1781]): Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 1: 78. (misidentification, misspelling of *Papilio aratus* Stoll, [1781])

Lycaena kurava Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India Company 1: 22. (Type locality: Java) (replacement name for *Lycaena atratus* Horsfield, 1828)

Ssp. *therasia* Fruhstorfer, 1916

PLATE 24, Figs. 172–174; PLATE 58, Fig. 382; PLATE 91, Fig. 511

Nacaduba perusia therasia Fruhstorfer, 1916: Zoologische Mededeelingen 2 (2): 133. (Type locality: Formosa)

Nacaduba takamukuana Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 637, pl. 49, fig. 15. (Type locality: “Formosa (Horisha)”)

Ssp. *euplea* Fruhstorfer, 1916

PLATE 24, Fig. 175; PLATE 58, Fig. 383; PLATE 91, Fig. 512

Nacaduba perusia euplea Fruhstorfer, 1916: Zoologische Mededeelingen 2 (2): 133. (Type locality: Sikkim)

Nacaduba kurava euplea f. *evansi* Toxopeus, 1927: Treubia 9 (4): 424. [Dry season form] (Type locality: “East-Dawnas”)

Nacaduba kurava ataranica Toxopeus, 1927: Treubia 9 (4): 425. [Dry Season form] (Type locality: “Ataran Valley, Tenasserim”)

Specimens examined:

Ssp. *therasia*: **JILONG CITY:** 1♀, Longgang Trail, 30. IX. 2001 (H. C. Huang); 1♂,

same locality, 26. VIII. 2008 (C. K. Wang & C. H. Yen); 1♀, same locality, 5. IX. 2008 (C. K. Wang & C. H. Yen); 1♂, Longgang Trail, 50m, 25. II. 2010 (C. K. Wang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Wulai, 12. X. 1986 (Y. F. Hsu); 2♂, 1♀, same locality, 12. V. 1987 (Y. F. Hsu); 1♂, same locality, 16. V. 1987 (Y. F. Hsu); 1♀, same locality, 27. III. 1988 (Y. F. Hsu); 1♀, Wulai, Xinxian, 18. V. 2019 (J. Y. Laing) (genitalia preparation JYL477). **TAIPEI CITY:** 1♂, Beitou, Datunshan, 18. VII. 1985 (Y. F. Hsu); 1♀, same locality, 25. VII. 1985 (Y. F. Hsu); 1♂, Songshan, Hushan, 300m, 22. IX. 2009 (Y. F. Hsu); 1♀, same locality, 6. III. 2010 (C. H. Lin); 1♀, Wenshan Dist., Gongguan campus, NTNU, 13. VI. 2007 (Y. F. Hsu); 1♀, same locality, 17. VII. 2009 (Y. F. Hsu); 1♂, Wenshan, Dailaokengshan, 20. III. 2011 (N. Y. Tsai). **TAOYUAN CITY [= TAOYUAN Co.]:** 3♂, Fuxing, Ronghua/ Sule, 13. V. 1987 (Y. F. Hsu); 1♀, Fuxing, Kapu, 800m, 12. XI. 2007 (Y. F. Hsu). **JIAYI Co.:** 1♀, Lantan, 26. VII. 2006 (Y. F. Hsu). **YILAN Co.:** 1♂, Toucheng, Guishan Is., 401 highland, 22. I. 2005 (H. C. Huang, W. T. Wu & S. N. Hung). **NANTOU Co.:** 1♂, Jiji, 4/5. VI. 2004, reared from *Ardisia squamulosa*, emgd. 11. VIII. 2004, HSU 04F4 (Y. F. Hsu); 1♂, Renai, Nanshanxi, ca 900m, 1. IX. 2007 (Y. F. Hsu); 1♀, Renai, Beidongyanshan, 15. IX. 2007 (C. C. Lu). **HUALIAN Co.:** 2♂, Xiulin, Qilai, 1300m, 11. VII. 1991 (Y. F. Hsu & C. C. Li). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 3♂, Nanfengshan, 6. VI. 1989 (Y. F. Hsu); 1♂, Taoyuan, Fenggangshan, 1300m, 30. IX. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Manzhou, Nanrenshan, 17. V. 1986 (Y. F. Hsu); 7♂, 4♀, Hengchun, Kending, 28. V. 1988 (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); 1♂, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2009 (Y. F. Hsu & H. C. Huang). **TAIDONG Co.:** 1♂, Yanping, Hongye, 15. V. 1988 (Y. F. Hsu); 1♂, Taoyuan, 15. V. 1988 (Y. F. Hsu); 1♂, Danan, 28. II. 2003 (J. L. Jan); 1♂, Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu); 1♂, Lanyu, 8. X. 2007 (J. L. Jean); 1♀, same locality, 22. VII. 2008 (C. H. Lin, jr.); 1♂, same locality, 19. VIII. 2008 (Y. F. Hsu); 1♀, same locality, 29/30. VIII. 2008 (N. Y. Tsai); 7♂, 3♀, Lanyu, Qiwei, ca 200m, 18. V. 2009 (N. Y. Tsai & C. H. Lin, jr); 11♂, 3♀, same locality, 25/26. V. 2009 (Y. F. Hsu & N. Y. Tsai); 1♀, same locality, 27/29. III. 2010 (J. H. Lin & Y. F. Hsu); 1♂, Lanyu, Xiaotianchi, 26. VI. 2008 (W. C. Tsao); 1♂, Lanyu, Climate Center, 18. VIII. 2008 (Y. F. Hsu); 1♀, Lanyu, Sidaogou, 30. III. 2010 (Y. F. Hsu & J. H. Lin); 1♀, same locality, 17. V. 2010 (J. H. Lin); 2♂, Ludao, Old Transverse Trail, 28/30. IV. 2014 (H. C. Huang).

Ssp. *euplea*: **JINMEN [= KINMEN] Co.:** 1♀, Jinhu, Zhongshan Forest, 19/20. XI. 2013 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL705). **LIANJIANG Co.:** 1♀, Beigan, Daqiu, 11/13. VII. 2003 (L. W. Wu & Y. A. Lin).

Description. Adult – Forewing length 12–17 mm. Sexual dimorphism present. Male (PLATE 24, Fig. 172): Head hairy, brown, with small medial white patch on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides deep purple tinged with blue, with striae of underside visible. Wing undersides pale brown with white striae, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell. Submarginal bands as two series of white narrow short lines. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 24, Figs. 173–175): Eyes less hairy, Protarsi not fused, wing uppersides with blue markings on wings proximally, usually with small discal white patch on forewing upperside; a series of submarginal white lunules of hindwing uppersides.

Male genitalia (PLATE 58, Figs. 382–383) – Tegumen narrow. Socii pea-shaped. Saccus vestigial. Brachium as simple hook with pointed distal end. Vinculum enlarged laterally. Valva as a broad lobe, with distal margin truncate, armed with minute teeth, a prominent, strongly curved, digitate process present around corner dorsally. Juxta narrow, Y-shaped. Phallus stout, down-curved, with aedeagus shorter than phallobase. Aedeagus with distal end divided into dorsal and ventral parts, with ventral part pointed distally; rows of minute teeth present externally on dorsal part. Cornutus as a patch of lightly sclerotized band with minute teeth.

Female genitalia (PLATE 91, Figs. 511–512) – Corpus bursae bulbous. Signa as a pair of internal, curved blade-like sclerites on opposite walls of corpus bursae. Ductus bursae short, membranous, attenuate posteriorly, connecting to a sclerotized ring. Sterigma as

membranous chamber. Posterior apophyses longer than anal papillae, slender, straight. Anal papillae sclerotized, setose distally.

Variation. Blue markings on wing uppersides in females more extensive in dry/cold seasons.

Global distribution. Widely distributed across lowlands in the Oriental region and tropical areas in the Australian region, also north to southern Japan (Tite, 1963; Hsu, 2013).

Distribution in Taiwan. Ssp. *therasia* occurs in main island of Taiwan, Lanyu, Ludao, and Guishan Island. Ssp. *euplea* has been found from Jinmen and Mazu Islands.

Larval Host plant(s). Primulaceae (formerly Myrsinaceae): *Ardisia sieboldii*, *A. crenata*, *A. squamulosa*, *Embelia lenticellata*, *Maesa japonica*, etc. (Uchida, 1991; Hsu, 2013; Lu & Chen, 2014)

Biology. This species is multivoltine in occurrence (Hsu, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 12–17 mm。具雌雄二型性。雄蝶 (圖 172)：頭被毛、褐色；頭頂中央具白斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色為暗藍紫色，可透視翅腹面波紋。翅腹面底色淡褐色，有白色條紋組成之中央、亞基部帶紋及中室末端短條；亞外緣帶紋由兩道白色短細線紋組成；後翅臀區及 CuA_1 室各具一黑色斑點及橙色紋。緣毛褐色。雌蝶 (圖 173–175)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面藍色紋僅位於翅內側、前翅背面中央有時具白色小斑、後翅背面亞外緣有白色弦月紋。

雄交尾器 (圖 382–383)：背兜狹窄。背兜側突豌豆狀。囊突退化。顎形突鉤狀、

末端尖。基腹弧兩側膨大。抱器形成寬瓣，末端截狀，有細鋸齒，背側末端有一個彎曲指狀突起。陽基軛片狹窄，Y 字形。陽莖粗壯、下彎，陽莖器短於陽莖基。陽莖器末端分背側和腹側部分，腹側末端漸尖；背側背緣有多排細齒。角狀器為具小刺棘之輕度骨化骨斑。

雌交尾器 (圖 511–512)：交尾囊球狀。花壁一對，位於交尾囊相對位置，形成內陷彎刃狀突起。交尾囊管短、膜質，向後漸細，近交尾孔處形成骨化環。交尾孔前板形成輕度骨化之穹頂。後內骨突長於肛突長，直而纖細。肛突骨化，具毛。

變異：乾季／低溫型雌蝶翅背面斑紋較明顯。

世界分布：廣泛分布於東洋區低地及澳洲熱帶地區，日本北部至南部亦有分布。

臺灣分布：亞種 ssp. *therasia* 分布於臺灣本島、蘭嶼、綠島及龜山島；亞種 ssp. *euplea* 分布於金門及馬祖列嶼。

寄主植物：報春花科 (原紫金牛科) 之樹杞、硃砂根、春不老、賽山椒、山桂花等。

生物學：本種為一年多世代物種。

Nacaduba beroe (C. & R. Felder, [1865]) (南方娜波灰蝶)

Lycaena beroe C. & R. Felder, [1865]: Reise der Österreichischen Fregatte Novara, Bd 2 (Abt. 2): 275, n. 340, pl. 34, f. 36. (Type locality: Luzon)

Ssp. *asakusa* Fruhstorfer, 1916

PLATE 24, Figs. 176–177; PLATE 59, Fig. 384; PLATE 92, Fig. 513

Nacaduba atrata asakusa Fruhstorfer, 1916: Zoologische Mededeelingen 2 (2): 132. (Type locality: Formosa)

Nacaduba taiwana Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 636, pl. 9, fig. 16. (Type locality: “Formosa (Horisha)”)

Specimens examined:

YILAN Co.: 2♂, Yuanshan, Caopi, 29. IV. 2022, reared from *Castanopsis cuspidata* var. *carlesii*, emgd 10. V. 2022, HSU 22D47 (C. W. Huang, Z. L. Chen & Y. M. Hsu). **NANTOU Co.:** 1♂, Xinyi, Dongpu, 1100m, 31. VII. 2009 (Y. F. Hsu); 1♂, Renai, Nanshanxi, 900m, 7. VII. 2007 (C. C. Lu). **HUALIAN Co.:** 1♂, Xiulin, Heping Forest

Trail, 16. IX. 2010 (Z. H. Yen). **TAINAN CITY [= TAINAN Co.]:** 1♂, Dongshan, Baihe, Zhentoushan, 500m, 29. X. 2003 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Weijinxi, 1000m, 25. VI. 2003 (Y. F. Hsu); 1♀, Taoyuan, Meishan, 800m, 26. II. 2011 (H. C. Huang); 1♂, same locality, 850m, 30. III. 2017 (L. Huang & H. C. Huang) (genitalia preparation JYL578). **PINGDONG Co.:** 1♂, 1♀, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2008, reared from *Quercus dentata*, emgd. 4/8. IV. 2008, HSU 08C9 (Y. F. Hsu & H. C. Huang); 3♀, same locality, 15/16. III. 2008 (Y. F. Hsu & H. C. Huang); 2♂, 1♀, same locality, 15/16. III. 2009, reared from *Q. dentata*, emgd. 28. III./6. IV. 2009, HSU 09C24 (Y. F. Hsu & H. C. Huang); 2♀, same locality, 15/16. III. 2009, reared from *Q. dentata*, emgd. 5. IV. 2009, HSU 09C31 (Y. F. Hsu & H. C. Huang); 1♀, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu); 3♀, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, Hengchun, Kending, 29. V. 1988 (Y. F. Hsu). **TAIDONG CO.:** 1♀, Yanping, Hongye, Qingshui, 2. I. 1988 (Y. F. Hsu); 3♂, Yanping, Luyexi, 3. I. 1988 (Y. F. Hsu); 13♂, Yanping, Taoyuan, 15. V. 1988 (Y. F. Hsu); 2♂, same locality, 17. V. 1988 (Y. F. Hsu); 1♀, Yanping, Hongye, 6. II. 1988 (Y. F. Hsu); 2♂, same locality, 5. X. 1997 (Y. F. Hsu); 1♂, same locality, 30. IX. 2000 (Y. F. Hsu); 1♀, Haiduan, Tianlong, 5. V. 2019 (C. W. Huang) (genitalia preparation JYL601).

Description. Adult – Forewing length 13–16 mm. Sexual dimorphism present. Male (PLATE 24, Fig. 176): Head hairy, brown, with small medial white patch on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, grayish white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides deep purple tinged with blue. Wing undersides pale brown with white striae, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell. Submarginal bands as two series of white narrow short lines. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 24, Fig. 177): Eyes less hairy, Protarsi not fused, wing uppersides with purple patches on wings proximally, usually with a series of faint lunules along margin of purple patches; a series

of submarginal white lunules present on hindwing uppersides.

Male genitalia (PLATE 59, Fig. 384) – Tegumen narrow. Socii pea-shaped. Saccus vestigial. Brachium as simple hook with pointed distal end. Vinculum enlarged laterally. Valva as elongate lobe, with inner margin straight, outer margin curved; distal ends armed with a few spines pointing inwards. Juxta narrow, roughly Y-shaped, with distal ends distorted. Phallus stout, straight, with aedeagus shorter than phallobase. Aedeagus with distal end divided into dorsal and ventral parts, with posterior end of ventral part forming a pair of heavily sclerotized, ligulate processes; rows of minute teeth present externally on dorsal part. Cornutus as a patch of lightly sclerotized band with minute teeth.

Female genitalia (PLATE 92, Fig. 513) – Corpus bursae bulbous. Signa as a pair of internal, curved hook-shaped sclerites on opposite walls of corpus bursae. Ductus bursae short, membranous; posterior part with a narrow sclerotized tube connecting to a thicker posterior, sclerotized ring. Sterigma mostly membranous, but with lamella antevaginalis and lamella postvaginalis each forming small medial sclerotized patches. Posterior apophyses longer than anal papillae, slender, straight. Anal papillae sclerotized, setose distally.

Global distribution. Northeast India, Himalayas, Indochina, Sundaland, Philippines, Southwest and South China, Taiwan (Tite, 1963; Hsu, 2013).

Distribution in Taiwan. Found from low elevations in montane zone of Taiwan, rare in northern Taiwan.

Larval Host plant(s). Not formally reported; Fagaceae and Euphorbiaceae (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. This species is superficially similar to *N. kurava* sympatric in southern

Taiwan, but can be distinguished from the latter using the following characteristics: 1) wing patterns of undersides not visible from uppersides versus visible in *kurava*; 2) subbasal striae of forewing undersides not extending to costa versus extending to costa in *kurava*; 3) valva slender, with distal end possessing several spines versus valva broad, with distal end serrate, bearing a digitate process in *kurava*.

形態特徵：成蝶前翅長 13–16 mm。具雌雄二型性。雄蝶 (圖 176)：頭被毛、褐色；頭頂中央具白斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚披毛、前伸；第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面淡灰色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面底色深藍紫色。翅腹面底色淡褐色，有白色條紋組成之中央、亞基部帶紋及中室末端短條；亞外緣帶紋由兩道白色短細線紋組成；後翅臀區及 CuA_1 室各具一黑色斑點及橙色紋。緣毛褐色。雌蝶 (圖 177)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面紫色斑紋位於翅內側、紫色斑塊外側常有模糊弦月紋、後翅背面亞外緣具白色弦月紋。

雄交尾器 (圖 384)：背兜狹窄。背兜側突豌豆狀。囊突退化。顎形突鉤狀，末端尖。基腹弧兩側膨大。抱器長瓣形，腹緣直線狀，背緣彎曲；末端具數只向內向下之刺突。陽基軛片狹窄，略呈 Y 字形，末端扭曲。陽莖粗壯、直，陽莖器長度短於陽莖基。陽莖器末端分為背側和腹側區域，腹側形成一對明顯骨化舌狀突起；背側背緣有多排細齒。。角狀器為具小刺棘之輕度骨化骨斑。

雌交尾器 (圖 513)：交尾囊球狀。花壁一對，位於交尾囊相對位置，形成內陷鉤狀突起。交尾囊管短、膜質，後端形成骨化窄管狀，連接交尾孔處之骨化環。交尾孔板基本呈膜質，前板和後板中央均有小骨化區。後內骨突長於肛突，纖細、直。肛突骨化，具毛。

世界分布：印度東北部、喜馬拉雅地區、中南半島、巽他地區、菲律賓、華西南至華南、臺灣。

臺灣分布：分布於本島低海拔地區，北部罕見。

寄主植物：尚無正式報告，幼蟲以殼斗科及大戟科植物為食。

生物學：本種為一年多世代物種。

註記：本種與在南臺灣共域分布之大娜波灰蝶非常相似，但可由以下特徵區分：1) 大娜波灰蝶翅背面可透視翅腹面斑紋，南方娜波灰蝶則否；2) 大娜波灰蝶亞基部條紋及於前緣，南方娜波灰蝶則否；3) 大娜波灰蝶抱器寬大，末端有指狀突起且呈鋸齒狀，南方娜波灰蝶抱器細長，末端有數棘。

Nacaduba berenice (Herrich-Schäffer, 1869) (熱帶娜波灰蝶)

Lycaena berenice Herrich-Schäffer, 1869: Entomologische Zeitung 30 (1–3): 74. (Type locality: Rockhampton, [Australia])

Ssp. *leei* Hsu, 1990

PLATE 25, Figs. 178–179; PLATE 59, Fig. 385; PLATE 92, Fig. 514

Nacaduba berenice leei Hsu, 1990: Journal of Taiwan Museum 43 (1): 13. (Type locality: "Taiwan, Taitung, Orchid Is. [= Lanyu], Mt. TaShe [= Dasenshan]")

Specimens examined:

TAIDONG Co.: 1♂, Lanyu, Zhongaiqiao, 22. I. 1988 (C. F. Li); 1♂, Lanyu, Longmenqiao, 19. I. 1988 (C. F. Li); 1♂, 2♀, same locality, 29. VI. 1994 (S. H. Yen); 1♂, Lanyu, Badai Bay, 3/4. VII. 1998 (C. C. Lu); 1♂, same locality, 6/8. VIII. 2004 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 11♂, 10♀, same locality, 6/8. VIII. 2004, reared from *Rourea minor*, emgd. 16/23. VIII. 2004, HSU 04H5 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 2♂, Lanyu, Langdao, 15. VIII. 2002 (C. Y. Hung); 5♂, Lanyu, Sidaogou, 1/3. V. 2003 (Y. F. Hsu, Y. C. Hsu & Y. Lo); 3♂, 2♀, same locality, 13/15. VI. 2003, reared from *R. minor*, emgd. 25. VI./4. VII. 2003, HSU 03F8 (Y. F. Hsu); 1♂, 1♀, same locality, 13/15. VI. 2003 (Y. F. Hsu); 6♂, 4♀, same locality, 28/29. IX. 2003 (Y. F. Hsu); 1♀, 3/5. III .2007 (Y. F. Hsu & H. C. Huang); 4♂, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 1♂, 3♀, same locality, 3/5. III. 2007 (Y. F. Hsu & H. C. Huang); 3♂, 1♀, same locality, 17. III. 2007 (Y. F. Hsu); 4♂, 2♀, same locality, 10. IV. 2007 (Y. F. Hsu); 1♂, 2♀, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂, same locality, 22. VII. 2008 (Y. F. Hsu); 1♂, 1♀, same locality, 10. III. 2009 (Y. F. Hsu); 2♀, same locality, 30. III. 2010 (Y. F. Hsu & J. H. Lin, jr.); 1♀, Lanyu, 29/31. III. 2008 (C. H. Lin, jr. & N. Y. Tsai); 1♂, same locality, 22. VII. 2008 (C. H. Lin, jr.); 1♀, Lanyu, Qiwei, ca 200m, 25/26. V. 2009 (Y. F. Hsu & N. Y. Tsai).

Description. Adult – Forewing length 11–14 mm. Sexual dimorphism present. Male (PLATE 25, Fig. 178): Head hairy, brown, with small medial white patch on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides deep purple, with striae of underside visible. Wing undersides pale brown with white striae, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell. Submarginal bands as two series of white narrow short lines. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 25, Fig. 179): Eyes less hairy, Protarsi not fused, wing uppersides with blue patches on wings proximally, usually with a series of faint lunules along margin of blue patches; a series of submarginal white lunules present on hindwing uppersides.

Male genitalia (PLATE 59, Fig. 385) – Tegumen narrow. Socii pea-shaped. Saccus vestigial. Brachium as simple hook with pointed distal end. Vinculum enlarged laterally. Valva as a broad lobe, with distal margin truncate, armed with minute teeth, a prominent, folded, triangular process present around corner dorsally. Juxta narrow, Y-shaped. Phallus stout, down-curved, with aedeagus shorter than phallobase. Aedeagus with distal end divided into dorsal and ventral parts, with posterior end of ventral part forming a pair of sclerotized, ligulate processes; rows of minute teeth present externally on dorsal part. Cornutus as a patch of lightly sclerotized band with minute teeth.

Female genitalia (PLATE 92, Fig. 514) – Corpus bursae bulbous. Signa as a pair of internal, spines on opposite walls of corpus bursae. Ductus bursae short, membranous; attenuate posteriorly to a sclerotized ring. Sterigma with lamella antevaginalis forming a sclerotized dome with dorsal wall extending posteriorly; lamella postvaginalis membranous, with a pair of small sacs. Posterior apophyses longer than anal papillae, slender, straight. Anal papillae sclerotized, setose distally.

Global distribution. Widely distributed across lowlands in the Oriental region and

tropical areas in the Australian region (Tite, 1963; Hsu, 2013).

Distribution in Taiwan. So far only found from Lanyu, Taidong (Hsu, 1990, 2013).

Larval Host plant(s). Connaraceae: *Rourea minor*; Sapindaceae: *Pometia pinnata* (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. This species is similar to *N. kurava* in appearance, but can be distinguished from the latter by the following characteristics: 1) posterior end of stria in M cells of hindwing undersides approaching stria at distal end of discoidal cell; 2) a series of faint lunules present along margin of blue patches of wing uppersides in females; 3) valva without terminal digitate process.

Subspecific name *leei* was named in honor of Dr. Chi-Feng Lee, a prominent coleopterist of Taiwan, who collected the first series of *N. berenice* specimens from Lanyu.

形態特徵：成蝶前翅長 13–16 mm。具雌雄二型性。雄蝶 (圖 178)：頭被毛、褐色；頭頂中央具白斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面深紫色，可透視翅腹面波紋。翅腹面底色淡褐色，有白色條紋組成之中央、亞基部帶紋及中室末端短條；亞外緣帶紋由兩道白色短細線紋組成；後翅臀區及 CuA_1 室各具黑色斑點及橙色紋。緣毛褐色。雌蝶 (圖 179)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面藍色斑位於翅內側、藍色斑塊外側常有模糊弦月紋、後翅背面亞外緣具白色弦月紋。

雄交尾器 (圖 385)：背兜狹窄。背兜側突豌豆狀。囊突退化。顎形突鉤狀，末端尖。基腹弧兩側膨大。抱器形成寬瓣，末端截狀，有細鋸齒，背側末端有一向內摺疊之三角形突起。陽基軛片狹窄，Y 字形。陽莖粗壯、下彎，陽莖器短於陽莖基。陽莖

器末端分為背側和腹側區域，腹側為一對舌狀骨化突起；背側背緣有多排細齒。角狀器為具小刺棘之輕度骨化骨斑。

雌交尾器 (圖 514)：交尾囊球狀。花壁一對，位於交尾囊相對位置，形成內陷刺狀突起。交尾囊管短、膜質，後端漸細，近交尾孔處形成骨化環。交尾孔前板形成骨化圓頂，背側向後延伸；交尾孔後板膜質，有一對小囊。後內骨突長於肛突，纖細、筆直。肛突骨化，有毛。

世界分布：廣泛分布於東洋區低地及澳洲熱帶地區。

臺灣分布：僅見於臺東蘭嶼。

寄主植物：牛栓藤科之紅葉藤及無患子科之番龍眼。

生物學：本種為一年多世代物種。

註記：本種與大娜波灰蝶外觀相似，但可由以下特徵區分：1) 後翅腹面 M 室條紋後端趨近中室條；2) 雌蝶翅背面藍色斑外側有模糊弦月紋；3) 抱器末端無指狀突起。

本種亞種名 *leei* 為表彰首位在臺採集本種標本的知名鞘翅目學者李奇峰博士。

Nacaduba pactolus (Felder, 1860) (暗色娜波灰蝶 / 黑波紋小灰蝶)

Lycaena pactolus Felder, 1860: Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften 40 (11): 456. (Type locality: “Amboina”)

Ssp. *hainani* Bethune-Baker, 1914

PLATE 25, Figs. 180–181; PLATE 59, Fig. 386; PLATE 92, Fig. 515

Nacaduba hainani Bethune-Baker, 1914: Entomologische Mitteilungen 3 (4): 125. (Type locality: Formosa)

Specimens examined:

XINBEI CITY: 1♂, 2♀, Xindian, Hemeishan, 30. XI. 2019 (C. W. Huang & C. J. Chang) (genitalia preparation JYL684, 709). **NANTOU Co.:** 1♀, Puli, Nenggao Fall, 600m, 9. X. 2011 (J. H. Lin). **JIAYI Co.:** 2♂, Dapu, Zhutoushan, 17. X. 2000 (Y. F. Hsu); 1♀, same locality, 24. XI. 2002 (Y. F. Hsu); 3♀, Dapu, Zhutoushan, 300m, 22. VII.

2003, reared from *Entada rheedii*, emgd. 15. VIII. 2003, HSU 03G18 (Y. F. Hsu); 1♀, same locality, 10. XI. 2003 (Y. F. Hsu); 1♂, same locality, 28. VIII. 2004, reared from *E. rheedii*, emgd. 6. IX. 2004, HSU 04H39 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 2♂, Nanxi, Cengwen Dam, 11. VI. 1983 (C. T. Lu); 1♂, Dongshan, Wuchagou, 16. IX. 2000 (Y. F. Hsu); 5♂, same locality, 23/24. X. 2000 (Y. F. Hsu); 2♀, same locality, 25. X. 2002 (Y. F. Hsu); 1♀, same locality, 24. XI. 2002 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/ 900m, 14/17. III. 2008 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 14–17 mm. Sexual dimorphism present. Male (PLATE 25, Fig. 180): Head hairy, brown, with small medial white patch on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides deep purple. Wing undersides pale brown with white striae, discal bands present on both wings, subbasal band only on hindwing. Submarginal bands as two series of white narrow short lines, with proximal series more prominent. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 25, Fig. 181): Eyes less hairy, Protarsi not fused, wing uppersides with purple markings on wings proximally.

Male genitalia (PLATE 59, Fig. 386) – Tegumen narrow. Socii pea-shaped. Saccus vestigial. Brachium as simple hook with pointed, curved distal end. Vinculum enlarged laterally. Valva as elongate lobe, with distal tip forming a prominent spine with several minute teeth on outer surface. Juxta narrow, Y-shaped, with long arms. Phallus stout, down-curved, with aedeagus shorter than phallobase. Aedeagus with distal end divided into dorsal and ventral parts, with ventral part pointed distally; rows of minute teeth present externally on dorsal part, with a pair of rounded discs. Cornuti as a patch of lightly sclerotized band with minute teeth.

Female genitalia (PLATE 92, Fig. 515) – Corpus bursae bulbous. Signa as a pair of

internal, curved hook-like sclerites on opposite walls of corpus bursae. Ductus bursae short, membranous, attenuate posteriorly, connecting to a sclerotized ring. Sterigma with lamella antevaginalis as a dome with medial portion sclerotized, bulb-like; postvaginalis membranous with a pair of small sacs. Posterior apophyses longer than anal papillae, slender, straight. Anal papillae sclerotized, setose distally.

Global distribution. Widely distributed across lowlands in the Oriental region and tropical areas in the Australian region (Tite, 1963; Hsu, 2013).

Distribution in Taiwan. Low elevations in hillsides, more common in southern Taiwan (Hsu, 2006, 2013).

Larval Host plant(s). Fabaceae: *Entada rheedii* (Hsu *et al*., 2004; Hsu, 2006, 2013).

Biology. This species is multivoltine in occurrence (Hsu *et al*., 2004; Hsu, 2013).

Remarks. Subspecific name refers of Hainan Island, but the type series were all collected from Taiwan.

形態特徵：成蝶前翅長 13–16 mm。具雌雄二型性。雄蝶 (圖 180)：頭被毛、褐色；頭頂中央有白斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面深紫色。翅腹面底色淡褐色，有白色條紋組成之帶紋；但亞基部帶紋僅見於後翅；亞外緣帶紋由兩道白色短細線紋組成，於內側者較為鮮明；後翅臀區及 CuA_1 室各具黑色斑點及橙色紋。緣毛褐色。雌蝶 (圖 181)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面紫色斑紋位於翅內側。

雄交尾器 (圖 386)：背兜狹窄。背兜側突豌豆狀。囊突退化。顎形突鉤狀，末端尖、彎折。基腹弧兩側膨大。抱器長瓣狀，末端形成尖棘狀突起，其外側具有數個小齒。陽基軛片狹窄，Y 字形，形成長臂。陽莖粗壯，下彎，陽莖器短於陽莖基。陽莖器

末端可分為背側和腹側區域，腹側向後漸尖；背側背緣具多排細齒，先端有一對盤狀構造。角狀器為具小刺棘之輕度骨化骨斑。

雌交尾器 (圖 515)：交尾囊球根狀。花壁一對，位於交尾囊相對位置，形成內陷鉤狀突起。交尾囊管短、膜質，向後漸細，交尾孔處形成骨化環。交尾孔前板呈穹頂狀，中央具一球狀骨化結構；交尾孔後板膜質，具一對小囊。後內骨突長於肛突，纖細、直。肛突骨化，有毛。

世界分布：廣泛分布於東洋區低地及澳洲熱帶地區。

臺灣分布：分布於本島低海拔坡地，南部較為常見。

寄主植物：豆科之厚殼鴨腱藤。

生物學：本種為一年多世代物種。

註記：本種臺灣亞種名 *hainani* 意指海南島，但模式系列均採集自臺灣。

Genus *NOTHODANIS* Hirowatari, 1992

Type species: *Lycaena schaeffera* Eschscholtz, 1821

Diagnostic characters include the following: 1) distal portion of Sc barely joined with R_1 on forewing; 2) wing pattern as "*Danis* pattern"; 3) hindwing without tail-like projection; 4) sexual dimorphism present, bluish purple patch on wing uppersides in male.

The wing pattern of the sole member of the genus resembles that of *Danis* species, which is considered distasteful, and the wing pattern being the model for some mimetic species (Parsons, 1998). This genus was separated from the genus *Danis* Fabricius, 1807 by Hirowatari (1992) based on distinctions in genitalia.

Larval hostplants unknown.

Monotypical, distributed in the Oriental and Australian regions.

The sole representative species has been found from Lanyu, but apparently merely as rare strays thus far.

黑列波灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈略微接觸；2) 翅紋呈＂丹灰蝶樣式＂；3) 後翅無尾突；4) 具雌雄二型性，雄蝶翅背面具藍紫色斑塊。

本屬唯一成員翅斑紋與對天敵而言忌口之丹灰蝶屬成員相似，因此丹灰蝶翅紋被視為是某些物種之擬態對象。Hirowatari (1992) 依交尾器特徵將本屬從丹灰蝶屬 *Danis* Fabricius, 1807 中分離出來。

幼生期寄主尚未明悉。

本屬為單種屬，分布於東洋區及澳洲區。

本屬之唯一代表種曾見於蘭嶼，顯係僅有少數記錄之偶產種。

Nothodanis schaeffera (Eschscholtz, 1821) (黑列波灰蝶／蘭嶼小灰蝶)

PLATE 25, Figs. 182–183; PLATE 59, Fig. 387; PLATE 92, Fig. 516

Lycaena schaeffera Eschscholtz, 1821: in Kotzebue, Entdeckungsreise in die Süd-see 3: 216, pl. 5, f. 25a-b. (Type locality: “Manilla” [Philippines])

Danis absyrtus C. & R. Felder, 1859: Wiener entomologische monatschrift 3(9): 270. (Type locality: “Philippinen”)

Specimens examined:

TAODONG Co.: 1♀, Small Lanyu, 22. VII. 2009 (Y. T. Chung) (genitalia preparation JYL645); 2♂, 2♀, Lanyu, Qiwei, ca 200m, 17/18. V. 2009 (N. Y. Tsai & C. H. Lin, jr.) (male genitalia preparation JYL644); 1♀, same locality, 25/26. V. 2009 (Y. F. Hsu & N. Y. Tsai).

Description. Adult – Forewing length 16–19 mm. Sexual dimorphism present. Male (PLATE 25, Fig. 182): Head hairy, brown, with medial white patch mixed with metallic green on vertex, frons white with medial brown brush, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment small, oval, white but dark brown distad. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing broad, triangular, termen slightly convex. Hindwing rounded. Wing uppersides ground color dark brown, with purple patches proximally on both wings, more extensive on forewing. Grayish white scalings present within purple patch on forewing. Wing undersides ground color white, with prominent brown margins along costa and termen on forewing; three brown bands on hindwing, discal, subbasal, and along termen. A series of black spots present on hindwing distally; metallic yellowish green scalings present along costa of forewing proximally and basal area of hindwing. Fringe white. Female (PLATE 25, Fig. 183): Body and wing patterns of wing undersides similar to those of male, Protarsi not fused, wing uppersides with white patches instead of purple.

Male genitalia (PLATE 59, Fig. 387) – Tegumen narrow. Socii oblong, tapering mesad. Saccus vestigial. Brachium as simple hook with pointed distal end. Vinculum enlarged laterally. Valva forming elongate arm with three ridges at distal ends, with minute teeth along inner margin. Juxta narrow, V-shaped. Phallus stout, straight, with aedeagus shorter than phallobase. Distal end of aedeagus with prominent, produced, curved ventral processes and a small, short, straight dorsal process. Cornuti as patch of lightly sclerotized band with minute teeth.

Female genitalia (PLATE 92, Fig. 516) – Corpus bursae as elongate sac. Ductus bursae united with corpus bursae, membranous, attenuate posteriorly, connecting with sclerotized ring at ostium bursae. Sterigma with lamella antevaginalis as a slightly sclerotized, shallow, transverse dome with posterior margin smooth; lamella postvaginalis as narrow transverse folds. Posterior apophyses longer than anal papillae, straight, thick. Anal papillae heavily sclerotized basally, distal part membranous, setose.

Global distribution. Philippines, Sundaland, Sulawesi, New Guinea, Solomon Islands,

New Caledonia, etc. (Hsu, 2013)

Distribution in Taiwan. Recorded from Lanyu, Taidong (Hsu, 2013).

Larval Host plant(s). Unknown.

Biology. Evidently multivoltine (Hsu, 2013).

Remarks. This species was found from Lanyu in rare occasions, thus it may represent strays from the Philippines. Multiple individuals were observed in May, 2009 (Hsu, 2013) suggesting breeding possibly had occurred there. No additional sighting has been recorded since then, suggesting this species has probably not been established on the island.

形態特徵：成蝶前翅長 16–19 mm。具雌雄二型性。雄蝶 (圖 182)：頭被毛、褐色；頭頂中央有白斑，混有具金屬光澤綠色毛；額白色，中央有褐色毛束；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、橢圓形、白色但末端黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬闊，三角形，外緣微略突出。後翅圓形。翅背面黑褐色，內側有紫色斑塊，於前翅較廣且具淡灰色鱗。翅腹面底色白色，前翅前緣及外緣具鮮明褐色邊；後翅中央、亞基部及外緣各具一道褐色帶紋；後翅末端具一列黑色斑點；前翅內側及後翅基部有具金屬光澤黃綠色鱗。緣毛白色。雌蝶 (圖 183)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面斑紋白色而非紫色。

雄交尾器 (圖 387)：背兜狹窄。背兜側突橢圓形，向內側漸窄。囊突退化。顎形突鉤狀，末端尖。基腹弧側面寬。抱器長臂狀，末端有三稜脊，內緣有細鋸齒。陽基軛片狹窄，V 字形。陽莖粗壯、直，陽莖基長於陽莖器。陽莖器末端腹側有彎曲突起，背側有直短突。角狀器為具小刺棘之輕度骨化骨帶。

雌交尾器 (圖 516)：交尾囊與交尾囊管合呈長囊，膜質，向後漸細，交尾孔處形成骨化環。交尾孔前板為輕度骨化淺帳，後緣平坦；交尾孔後板為窄橫褶。後內骨突長於肛突、直、頗粗。肛突基部高度骨化，末端膜質、有毛。

世界分布：菲律賓、巽他陸塊、蘇拉威西、新幾內亞、所羅門群島、新喀里多尼亞。

臺灣分布：臺東蘭嶼有記錄。

寄主植物：未知。

生物學：本種顯然為一年多世代物種。

註記：本種於蘭嶼之發現記錄稀少，因此可能為來自菲律賓之偶產蝶。2009 年 5 月曾觀察到複數個體 (Hsu, 2013)，顯示其可能已在當地繁殖。然而，其後並無追加目擊或採集記錄，因此本種可能在蘭嶼並未成功立足。

Genus *CATOPYROPS* Toxopeus, 1929

Type species: *Lycaena ancyra* Felder, 1860

Diagnostic characters include the following: 1) distal portion of Sc joined with R_1 for short distance or nearly so on forewing; 2) Rs of hindwing long, joining with discoidal cell proximally; 3) small tail-like projection at distal end of CuA_2 of hindwing; 4) sexual dimorphism present, bluish purple patch on wing uppersides less extensive in female.

Recorded larval hostplants include Urticaceae, Sapindaceae, Cannabaceae, Euphorbiaceae, Fabaceae, etc. (Parsons, 1998; Braby, 2000)

Approximately 8 species are known from the Oriental and Australian regions.

The member of this genus was not known from Taiwan until it was found from Lanyu in 1998 (Lu & Hsu, 2002).

曲波灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈癒合或相近；2) 後翅 Rs 脈向內延伸，於中室近基部位置交會；3) 後翅 CuA_2 脈末端具小尾突；4) 具雌雄二型性，雌蝶翅背面藍紫色斑面積較小。

幼生期寄主包含蕁麻科、無患子科、大麻科、大戟科、豆科等。

本屬約有 8 種，分布於東洋區及澳洲區。

在臺灣，本屬成員於 1998 年才在蘭嶼發現。

Catopyrops ancyra (Felder, 1860) (曲波灰蝶／小灰蝶)

Lycaena ancyra Felder, 1860: Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften 40 (11): 457. (Type locality: Amboina)

Ssp. *almora* Druce, 1873

PLATE 25, Figs. 184–185; PLATE 60, Fig. 388; PLATE 93, Fig. 517

Cupido almora Druce, 1873: Proceedings of the Zoological Society of London 1873: 349, pl. 32, f. 7. (Type locality: Borneo)

Nacaduba pseustis Doherty, 1891: Journal of the Asiatic Society of Bengal 60 Pt. II (2): 182. (Type locality: Borneo)

Specimens examined:

TAIDONG Co.: 2♂, 1♀ Lanyu, Langdao, 18/22. VIII. 1998 (C. C. Lu & C. Y. Hung); 1♂, same locality, 12. VIII. 2000 (C. C. Lu); 2♂, same locality, 15. VIII. 2002 (C. Y. Hung); 1♂, same locality, 10. IV. 2007 (Y. F. Hsu); 2♂, Lanyu, Sidaogou, 11. VIII. 2000 (C. C. Lu); 1♂, same locality, 1/3. V. 2003 (Y. F. Hsu, Y. C. Hsu & Y. Lo); 2♂, 1♀, same locality, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♂, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 14/16. X. 2006 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂, same locality, 10. III. 2009 (Y. F. Hsu); 2♂, 1♀, Lanyu, Badai Bay, 13/15. VI. 2003 (Y. F. Hsu); 1♂, same locality, 13/15. VI. 2003, reared from *Pipturus arborescens*, emgd. 22. VI. 2003, HSU 03F14 (Y. F. Hsu); 1♂, Lanyu, Zhongaiqiao, 24. VIII. 2013 (C. L. Huang) (genitalia preparation JYL611); 1♀, same locality, 13. XI. 2013 (C. L. Huang) (genitalia preparation JYL610); 6♂, 1♀, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 1♂, Ludao, Hot Spring Village, 25/27. IX. 2004 (H. C. Huang).

Description. Adult – Forewing length 11–13 mm. Sexual dimorphism present. Male (PLATE 25, Fig. 184): Head hairy, brown, with medial white patch, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Small filiform projections at distal ends of CuA_2. Wing uppersides purple, with a dark brown spot at distal end of cell CuA_1 of hindwing. Wing undersides grayish brown with dark striae margined with white, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell. Submarginal bands as two series of white lunules. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe white mixed with brown. Female (PLATE 25, Fig. 185): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, blue patches of wing uppersides only present proximally.

Male genitalia (PLATE 60, Fig. 388) – Tegumen narrow. Socii oval, setose distally. Saccus short, with posterior margin rounded. Brachium relatively short, hook-like, with pointed distal end. Vinculum broad. Valva as rectangular lobe; ampulla produced, uneven; harpe forming a serrate, up-curved hook with sharp terminal end. Juxta narrow, U-shaped. Phallus stout, straight, tapering posteriorly, with aedeagus shorter than phallobase. Distal end of aedeagus with prominent, produced, curved ventral processes with sharp distal ends, and a small, short dorsal spine. Cornuti as patch of lightly sclerotized band with minute teeth.

Female genitalia (PLATE 93, Fig. 517) – Corpus bursae as elongate sac. Ductus bursae united with corpus bursae, membranous, attenuate posteriorly. Sterigma with lamella antevaginalis forming elaborated, dome-like structure with “W”- shape margin on ventral wall; lamella postvaginalis as flattened, medial, spoon-like sclerite, with anterior margin forming horn-like extensions, posterior margin rounded. Posterior apophyses longer than anal papillae, curved, with anterior ends bent into hooks. Anal papillae heavily sclerotized basally, distal part weakly sclerotized, setose.

Variation. Blue patches on wing uppersides of the females are more extensive in dry/colder seasons.

Global distribution. Widely distributed in Australian region, Sundaland, and Philippines (Braby, 2000).

Distribution in Taiwan. Lanyu and Ludao, Taidong (Lu & Hsu, 2002; Hsu, 2006, 2013).

Larval Host plant(s). Urticaceae: *Pipturus arborescens* (Hsu, 2006, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2006, 2013).

Remarks. This species was not found in Taiwan until 1998. It was suggested to have originated from the Philippines by natural means (Lu & Hsu, 2002). It is now commonly found along coastal areas of Lanyu and Ludao where the hostplant grows.

形態特徵：成蝶前翅長 11–13 mm。具雌雄二型性。雄蝶 (圖 184)：頭被毛、褐色、中央有白色斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 末端具絲狀小尾突。翅背面紫色，後翅 CuA_1 室末端具黑褐色斑點。翅腹面底色灰褐色，有鑲白邊之深色條紋組成中央、亞基部帶紋及中室末端短條；亞外緣帶紋由兩列白色弦月紋組成；後翅臀區及 CuA_1 室各具一黑色斑點及橙色斑紋。緣毛白色混褐色。雌蝶 (圖 185)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面僅內側有藍色斑。

雄交尾器 (圖 388)：背兜狹窄。背兜側突卵形，具剛毛。囊突短，前緣圓。顎形突短、基部膨大、上彎，末端尖。基腹弧寬闊。抱器矩形、瓣狀；抱器內突出、邊緣不平整；抱握鋏彎鉤狀，有鋸齒，末端尖。陽基軛片狹窄，U 字形。陽莖粗壯、直，向後漸細，陽莖器短於陽莖基。陽莖器末端背側有小刺突，腹側有末端尖銳之彎曲突起。角狀器為具小刺棘之輕度骨化骨帶。

雌交尾器 (圖 517)：交尾囊與交尾囊管合成長囊，膜質，向後漸細。花壁一對，位於交尾囊相對位置，形成小型凹陷盤彎狀小骨，上有小刺突。交尾孔前板呈複雜穹頂狀構造，腹側形成 W 形骨緣；交尾孔後板中央形成匙狀構造，前緣有角狀突，後緣圓弧狀。後內骨突長於肛突，前端彎鉤狀。肛突基部高度骨化，末端輕度骨化，有毛。

變異：乾季／低溫型雌蝶翅背面藍色斑面積較大。

世界分布：廣泛分布於澳洲區，巽他陸塊及菲律賓。

臺灣分布：見於臺東蘭嶼及綠島。

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：本種於 1998 年以前並未見於臺灣，後來可能藉自然途徑從菲律賓進入 (Lu & Hsu, 2002)。本種現常見於蘭嶼及綠島有其寄主植物生長之沿岸地帶。

Genus *PROSOTAS* Druce, 1891

Type species: *Prosotas caliginosa* Druce, 1891

Diagnostic characters include the following: 1) distal portion of Sc joined with proximal portion of R_1, and separated at terminal end on forewing; 2) wing undersides with parallel striae; 3) filiform tail-like projection at distal end of CuA_2 of hindwing if present; 4) sexual dimorphism present, purple or blue scalings more extensive in male; 5) valva forming pointed hook at distal end; 6) phallus with ventral branch at caudal end.

Larval hostplants include a variety of broad-leaved trees.

Approximately 20 species are known from the Oriental and Australian regions.

3 species are known from Taiwan, but one of them has thus far recorded only once.

波灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈基部相接，於末端分離；2) 翅腹面具平行波狀條紋；3) 若有尾突，則位於後翅 CuA_2 脈末端；4) 具雌雄二型性，雄蝶藍、紫色鱗占翅面較廣；5) 抱器末端鉤狀；6) 陽莖尾端腹側有突起。

幼蟲以多種闊葉植物為寄主。

本屬已知約 20 種，分布於東洋區及澳洲區。

臺灣已記錄 3 種，但其中 1 種迄今僅有一筆記錄。

Prosotas nora (Felder, 1860) (波灰蝶／姬波紋小灰蝶)

Lycaena nora Felder, 1860: Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. Mathematisch-Naturwissenschaftliche Classe 40 (11): 458. (Type locality: Amboina)

Ssp. *formosana* Fruhstorfer, 1916

PLATE 25, Figs. 186–187; PLATE 60, Fig. 389; PLATE 93, Fig. 518

Nacaduba nora formosana Fruhstorfer, 1916: Zoologische Mededeelingen 2 (2): 116. (Type locality: “Formosa”)

Nacaduba genji Naritomi, 1941: Insect World 10 (104) :649. (Type locality: “Formosa, Kuraru”)

Specimens examined:

JILONG CITY: 1♂, Pengjiayu, 18. VIII. 2011 (H. C. Huang). **TAIPEI CITY:** 1♂, Wenshan, Gongguan campus, NTNU, 17. VI. 2003 (Y. F. Hsu); 1♂, 3♀, Wenshan, Xianjiyan, 19. VI. 2003 (Y. F. Hsu & C. R. Chen); 3♂, 10♀, same locality, 30. VI. 2004, reared from *Itea oldhamii*, emgd. 17/24. VII. 2004, HSU 04F47.1 (Y. F. Hsu, J. R. Chen & C. T. Chaung); 3♂, 1♀, Beitou, Junjianyan, 180m, 13. VII. 2003, reared from *I. oldhamii*, emgd. 28/29. VII. 2003, HSU 03G9 (Y. F. Hsu); 2♂, 1♀, same locality, 13. VII. 2003, reared from *I. oldhamii*, emgd. 28. VII/4. VIII. 2003, HSU 03G9.1 (Y. F. Hsu); 1♀, same locality, 18. VII. 2003, reared from *I. oldhamii*, emgd. 28. VII. 2003, HSU 03G14 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Ronghua, 23. VI. 1987

(Y. F. Hsu); 1♂, same locality, 24. VI. 1987 (Y. F. Hsu); 1♀, Fuxing, Xuanyuan, 8. VII. 1987 (Y. F. Hsu); 1♂, same locality, 26. VII. 1987 (Y. F. Hsu); 3♂, 1♀, same locality, 1. XI. 1987 (Y. F. Hsu); 2♂, Fuxing, Daman/ Xuanyuan, 30. VIII. 1987 (Y. F. Hsu); 1♂, 1♀, Daxi, Dingliao, 19. VII. 2003 (Y. F. Hsu); 1♀, same locality, 7. XI. 2003 (Y. F. Hsu); 2♀, same locality, 200m, 7. XII. 2009 (Y. F. Hsu). **MIAOLI Co.:** 2♂, Nanzhuang, Jialishan, 2200m, 13. VII. 2004 (C. C. Lu & L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♀, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Songgang, 16. VII. 1983 (H. J. Shi); 1♂, same locality, 17. IX. 2003, reared from *Lespedeza formosa* [= *Lespedeza thunbergii formosa*], emgd. 29. XI. 2003, HSU 03J9 (Y. F. Hsu); 8♂, Renai, Nanshanxi, 26. IX. 1987 (Y. F. Hsu); 1♂, 2♀, Renai, Guandaoxi, 23. VI. 1988 (Y. F. Hsu); 1♂, Renai, Songgang, 1900m, 17. IX. 2003 (Y. F. Hsu); 1♂, 1♀, Jiji, 3/6. VI. 2004, reared from *Adenanthera microsperma*, emgd. 17/20. VI. 2004, HSU 04F3 (Y. F. Hsu); 2♀, same locality, 7. IX. 2004, reared from *A. microsperma*, emgd. 18/25. IX. 2004, HSU 04J5 (Y. F. Hsu). **JIAYI Co.:** 2♂, Dapu, Zhutoushan, 300m, 24. IX. 2003 (Y. F. Hsu); 1♂, 1♀, same locality, 29. X. 2003 (Y. F. Hsu); 1♂, 1♀, same locality, 10. XI. 2003 (Y. F. Hsu); 1♂, 1♀, Lantan, 1. V. 2006 (Y. F. Hsu); 2♀, Xingang, Yuemei, 15m, 11. VI. 2007 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Guanziling, 300m, 24. IX. 2003 (Y. F. Hsu); 3♂, 1♀, Dongshan, Baihe, Zhentoushan, 29. X. 2003 (Y. F. Hsu); 1♀, Guantian, Wushantou, 80m, 24. X. 2005, reared from *Acacia farnesiana*, emgd. 18. XI. 2005, HSU 05K37 (Y. F. Hsu); 5♂, 2♀, same locality, 19. XII. 2005, reared from *A. farnesiana*, emgd. 3/7. I. 2006, HSU 05M41 (Y. F. Hsu); 1♀, Guantian, Wushantou, 30m, 22. I. 2009 (Y. F. Hsu); 1♀, Xinhua, Dakeng, 10. XI. 2006, reared from *Mimosa diplotricha*, emgd. 24. XI. 2006, HSU 06L8 (Y. F. Hsu); 1♂, Nanhua, Fengshuilin, 22. I. 2007, reared from *A. farnesiana*, emgd. 18. II. 2007, HSU 07A40 (Y. F. Hsu); Danei, 30. I. 2008, reared from *A. farnesiana*, emgd. 2. III. 2008, HSU 08A27 (Y. F. Hsu); 1♀, Guanmiao, 40m, 2. III. 2008, reared from *Acacia confusa*, emgd. 14. III. 2008, HSU 08C2 (Y. F. Hsu); 1♂, Dongshan, Zengwen Dam, 24. IX. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 10♂, 16♀, Taoyuan, Baoshan, 1000/1100m, 11. XI. 2007, reared from *Castanopsis formosana*, emgd. 21/25. XI. 2007, HSU 07L5 (Y. F. Hsu); 2♀, Jiaxian, 11. XI. 2007, reared from *A. farnesiana*, emgd. 23. XI. 2007, HSU 07L8 (Y. F. Hsu); 1♂, Jiaxian, 250m, 29. VI. 2003 (Y. F. Hsu); 1♀, same locality, 11. XI. 2007, reared from *A. farnesiana*, emgd. 23. XI. 2007/2. I. 2008, HSU 07L8 (Y. F. Hsu); 1♂, Liugui, Nanfengshan, 26. IX. 1987 (Y.

F. Hsu); 1♂, 2♀, same locality, 6. VI. 1989 (Y. F. Hsu); 1♀, Tianliao, Dagangshan, 13. III. 2002 (Y. F. Hsu); 2♂, 1♀, Xiaogang, Dalinpu, 0/20m, 9/10. XI. 2003, reared from *A. farnesiana*, emgd. 21. XI. 2003, HSU 03L15.1 (Y. F. Hsu); 1♂, 1♀, same locality, 29. XI. 2003, reared from *A. farnesiana*, emgd. 12. XII. 2003, HSU 03L48.1 (Y. F. Hsu); 1♀, same locality, 29. XI. 2003, reared from *M. diplotricha*, emgd. 15. XII. 2003, HSU 03L56 (Y. F. Hsu); 1♂, same locality, 27. XII. 2003, reared from *A. farnesiana*, emgd. 15. I. 2004, HSU 03M17.1 (Y. F. Hsu); 1♀, Tianliao, 9. III. 2020, reared from *Bischofia javanica*, emgd. 19/20. III. 2020, HSU 20C11 (Y. F. Hsu). **HUALIAN Co.:** 2♂, 1♀, Xiulin, Dali, ca 800m, 3. VII. 2003 (J. R. Chen); 2♀, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai). **PINGDONG Co.:** 3♀, Hengchun, Kending, 17. VII. 1987 (Y. F. Hsu); 1♂, 2♀, Wutai, Wutoushan, 1200m, 26. VI. 2003 (C. L. Huang & L. W. Wu); 1♀, Meinon, Meinon Lake, 29. II. 2020, reared from *Calliandra surinamensis*, emgd. 14. III. 2020, HSU 20B39.1 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Yanping, Hongye, 16. V. 1988 (Y. F. Hsu); 1♀, same locaity, 15. VIII. 1999 (L. W. Wu); 2♀, same locality, 30. IX. 2000, reared from *Bauhinia championii* [= *Phanera championii*], emgd. 10. X. 2000, HSU 00J51 (Y. F. Hsu); 1♀, same locality, 450m, 28. IX. 2003, reared from *B. championii* [= *P. championii*], emgd. 20. X. 2003, HSU 03J33 (L. H. Wang); 6♂, Taoyuan, 15. V. 1988 (Y. F. Hsu); 11♂, 1♀, same locality, 17. V. 1988 (Y. F. Hsu); 1♂, Lanyu, Qiwei, 200m, 18. V. 2009 (N. Y. Tsai & C. H. Lin, jr.); 1♀, same locality, 25/26. V. 2009 (Y. F. Hsu & N. Y. Tsai); 1♀, Lanyu, Qiwei, 17/18. V. 2009 (N. Y. Tsai & C. H. Lin); 1♀, Lanyu, 14. VI. 2008 (Y. T. Lo); 2♂, 1♀, Ludao, Hot Spring Village, 30. IV. 2014 (H. C. Huang).

Description. Adult – Forewing length 9–13 mm. Sexual dimorphism present. Male (PLATE 25, Fig. 186): Head hairy, brown, with small medial white patch on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides deep bluish purple. Wing undersides grayish brown with dark striae margined with white, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell. Submarginal bands as two series of dark narrow short lines. A conspicuous black spot associated with metallic

markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 25, Fig. 187): Body and wing patterns of wing undersides similar to those of male, eyes less hairy, Protarsi not fused, wing uppersides uniformly brown or brown with proximal blue patches; wing undersides tinged with yellow.

Male genitalia (PLATE 60, Fig. 389) – Tegumen narrow. Socii pea-shaped. Saccus vestigial. Brachium as simple hook with pointed distal end. Vinculum enlarged laterally. Valva oblong at base, produced posteriorly, attenuate and strongly up-curved with distal portion as pointed spine. Juxta narrow, Y-shaped. Phallus stout, slightly down-curved, with aedeagus shorter than phallobase. Distal end of aedeagus with produced ventral process; a sclerite with minute teeth on external surface present dorsally. Cornuti as two sclerotized bands with spines of various sizes.

Female genitalia (PLATE 93, Fig. 518) – Corpus bursae as elongate sac. Ductus bursae united with corpus bursae, membranous, attenuate posteriorly, connecting with sclerotized band with funnel-like ostium bursae. Sterigma with lamella antevaginalis as a transverse band with posterior margin smooth; lamella postvaginalis as a sclerotized band extending caudally into ligulate process. Anterior apophyses present, as short rods. Posterior apophyses longer than anal papillae, straight. Anal papillae sclerotized, tapering caudally, shovel-like.

Variation. Blue patches on wing uppersides in females reduced and yellow scalings on wing undersides more extensive in wet season.

Global distribution. Throughout tropical areas in the Oriental and Austalian regions, to the East reaching Solomon Islands in West Pacifics and North to Yaeyama Islands of Japan (Tite, 1963; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations, including Lanyu, Ludao and Guishan Island (Hsu, 2013).

Larval Host plant(s). Larvae feed on flowers of a variety of plants, including Iteaceae: *Itea oldhamii*, *I. parviflora*; Phyllanthaceae: *Bischofia javanica*; Fabaceae: *Lespedeza thunbergii formosa*, *Adenanthera microsperma*, *Derris laxiflora*, *Acacia farnesiana*, *Ac. confusa*, *Albizia falcata*, *Al. lebbeck*, *Mimosa diplotricha*, *Phanera championi* and *Calliandra surinamensis*; Fagaceae: *Castanopsis formosana*, etc. (Hsu, 2006; Hsu & Yen, 2006)

Biology. This species is multivoltine in occurrence (Hsu & Yen, 2006; Hsu, 2013).

形態特徵：成蝶前翅長 9–13 mm。具雌雄二型性。雄蝶 (圖 186)：頭被毛、褐色；頭頂中央具白色小斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 末端具絲狀尾突。翅背面暗藍紫色。翅腹面底色灰褐色，有鑲白邊之暗色條紋組成中央、亞基部帶紋及中室末端短條；亞外緣帶紋由兩道褐色細短線紋組成；後翅臀區及 CuA_1 室各具一黑色點及橙色紋。緣毛褐色。雌蝶 (圖 187)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面無藍色斑紋或僅內側有之、翅腹面帶黃色調。

雄交尾器 (圖 389)：背兜狹窄。背兜側突豌豆狀。囊突退化。顎形突彎鉤狀，末端尖。基腹弧側面膨大。抱器長卵形，末端有強上彎尖刺。陽基軛片狹窄、Y 字形。陽莖粗壯，略下彎，陽莖器短於陽莖基。陽莖器腹側末端具突起；背側具帶細齒骨板。角狀器為兩道生滿刺棘之骨化帶。

雌交尾器 (圖 518)：交尾囊與交尾囊管合成長囊狀，膜質，向後漸細，近交尾孔處形成骨化環。交尾孔前板橫帶狀，末緣平；交尾孔後板向後延伸成舌狀突起。具前內骨突，呈桿狀。後內骨突長於肛突，頗直。肛突骨化，末端漸窄，呈鏟狀。

變異：雨季型雌蝶翅背面藍色斑塊退減、腹面黃色鱗較明顯。

世界分布：廣泛分布於東洋區及澳洲區之熱帶地區，往東至西太平洋之所羅門群島及八重山群島北部。

臺灣分布：分布於本島低至中海拔地區，蘭嶼、綠島及龜山島亦有記錄。

寄主植物：幼蟲取食多種植物之花與花苞，其寄主植物包括鼠刺科之鼠刺、小花鼠刺；葉下珠科之茄苳；豆科之毛胡枝子、小實孔雀豆、疏花魚藤、金合歡、相思樹、摩鹿加合歡、大葉合歡、美洲含羞草、菊花木、蘇利南合歡；殼斗科之臺灣栲等。

生物學：本種為一年多世代物種。

***Prosotas dubiosa* (Semper, 1879) (密紋波灰蝶／疑波灰蝶／密波紋小灰蝶)**

Lampides dubiosa Semper, 1879: Journal des Museum Godeffroy 5 (14): 159. (Type locality: "Bowen, Cooktown, Cap York")

Ssp. *asbolodes* Hsu & Yen, 2006

PLATE 26, Figs. 188–189; PLATE 60, Fig. 390; PLATE 93, Fig. 519

Prosotas dubiosa asbolodes Hsu & Yen, 2006: Zoological Studies 45 (3): 308–321. (Type locality: TAIWAN: Kaohsiung City, Xiaogang Dist., Dalinpu, 0–20 m)

Specimens examined:

JIAYI Co.: 3♂paratypes, Dapu, Zhutoushan, 300m, 24. IX. 2003 (Y. F. Hsu); 1♀paratype, same locality, 29. X. 2003 (Y. F. Hsu); 1♂paratype, same locality, 10. XI. 2003 (Y. F. Hsu); 1♂, Xingang, 10. VIII. 2007 (Y. F. Hsu); 2♂, 1♀, Xingang, Yuemei, 15m, 11. VI. 2007 (Y. F. Hsu); 1♀, Fanlu, Niupuzi, 200m, 25. VIII. 2007 (R. K. Dong). **TAINAN CITY [= TAINAN Co.]:** 1♀paratype, Dongshan, Baihe, 29. X. 2003 (Y. F. Hsu); 1♂, 1♀, Guantian, Wushantou, 80m, 19. XII. 2005 (Y. F. Hsu); 1♂, 1♀, same locality, 19. XII. 2005, reared from *Acacia farnesiana*, emgd. 7. I. 2006, HSU 05M41.1 (Y. F. Hsu); 1♂, Guantian, Wushantou, 30m, 22. I. 2007 (Y. F. Hsu); 2♂, same locality, 22. I. 2009 (Y. F. Hsu); 3♂, 2♀, same locality, 24. XI. 2009, reared from *Acacia farnesiana*, emgd. 25/30. XI. 2009, HSU 09L12 (Y. F. Hsu); 1♀, Guanmiao, 40m, 2. III. 2008, reared from *Ac. farnesiana*, emgd. 2. IV. 2008, HSU 08C3 (Y. F. Hsu); 2♂, same locality, 6. VI. 2008, reared from *Ac. confusa*, emgd. 18. VI. 2008, HSU 08F4 (Y. F. Hsu); 1♂, Xinhua, 20. X. 2008 (Y. F. Hsu); 8♂, 3♀, same locality, 27. IV. 2010 (Y. F. Hsu); 3♂, same locality, 27. V. 2010 (Y. F. Hsu); 2♂, 4♀, Yongkang, Sankandian, 23. I. 2010 (Y. F. Hsu); 1♀, same locality, 8. IV. 2010, reared from *Archidendron dulce* [= *Pithecellobium dulce*], emgd. 22. IV. 2010, HSU 10D4 (Y. F. Hsu); 1♀, Liujia, Chishan Longhuyan, 25. IV. 2016 (L. Huang) (genitalia preparation JYL403). **KAOHSIUNG**

CITY [= KAOHSIUNG Co.]: 6♂paratypes, 3♀paratypes, Xiaogang, Dalinpu, 0/20m, 9/10. XI. 2003, reared from *Ac*. *farnesiana*, emgd. 19/20. XI. 2003, HSU 03L15 (Y. F. Hsu); 1♂paratype, same locality, 9/10. XI. 2003 (Y. F. Hsu); 11♂paratypes, 3♀paratypes, same locality, 29. XI. 2003, reared from *Ac*. *farnesiana*, emgd. 11/12. XII. 2003, HSU 03L48 (Y. F. Hsu); 1♂paratype, 1♀paratype, same locality, 29. XI. 2003 (Y. F. Hsu); 4♂paratypes, 2♀paratypes, same locality, 27. XII. 2003, reared from *Ac*. *farnesiana*, emgd. 9/12. I. 2004, HSU 03M17 (Y. F. Hsu); 8♂paratypes, 2♀paratypes, same locality, 19. II. 2004, reared from *Ac*. *farnesiana*, emgd. 1/4. III. 2004, HSU 04B3 (Y. F. Hsu); 1♀paratype, same locality, 19. II. 2004 (Y. F. Hsu); 1♀paratype, Xiaogang, Dalinpu, 29. VIII. 2004, reared from *Samanea saman*, emgd. 13. IX. 2004, HSU 04H40 (Y. F. Hsu); 1♂paratype, same locality, 11. IX. 2004, reared from *S. saman*, emgd. 25. IX. 2004, HSU 04J15.1 (Y. F. Hsu); 2♀paratypes, same locality, 11. IX. 2004, reared from *S. saman*, emgd. 26/27. IX. 2004, HSU 04J15.2 (Y. F. Hsu); 1♂paratype, same locality, 11. IX. 2004, reared from *S. saman*, emgd. 25. IX. 2004, HSU 04J15.4 (Y. F. Hsu); 5♂, 3♀, same locality, 14. XI. 2005, reared from *Ac*. *farnesiana*, emgd. 25/30. XI. 2005, HSU 05L29 (Y. F. Hsu); 2♂paratypes, Taoyuan, Weijinxi, 1000m, 25. VI. 2003 (Y. F. Hsu); 3♂paratypes, Jiaxian, 250m, 25. VI. 2003 (Y. F. Hsu); 3♂paratypes, same locality, 25. VI. 2003, reared from *Ar*. *dulce* [= *P*. *dulce*], emgd. 8/9. VII. 2003, HSU 03F34 (Y. F. Hsu); 2♂paratypes, same locality, 29. VI. 2003 (Y. F. Hsu); 1♀paratype, same locality, 10. XII. 2003 (Y. F. Hsu & C. C. Heish); 1♀, same locality, 9. II. 2004, reared from *Ar*. *dulce* [= *P*. *dulce*], emgd. 1. III. 2004, HSU 04B6 (Y. F. Hsu); 1♀, Renwu, Kaotan, 8. III. 2003, reared from *Ac*. *farnesiana*, emgd. 23. III. 2003, HSU 03C37 (C. C. Hsieh); 3♂, Tianliao, 9. III. 2020 (Y. F. Hsu); 4♂, 3♀, Meinong, Meinong Lake, 29. II. 2020, reared from *Calliandra surinamensis*, emgd. 9/11. III. 2020, HSU 20B39 (Y. F. Hsu). **TAIDONG Co.:** 5♂paratypes, Lanyu, Sidaogou, 1/3. V. 2003 (Y. F. Hsu, Y. C. Hsu & Y. Lo); 2♀, same locality, 17. III. 2007 (Y. F. Hsu); 4♂, same locality, 10. IV. 2007 (Y. F. Hsu); 1♀, Lanyu, Qiwei, 200m, 18. V. 2009 (N. Y. Tsai & C. H. Lin, jr.); 1♀, Liyushan, 7. IX. 2009 (Y. F. Hsu & C. H. Lin).

Description. Adult – Forewing length 8–11 mm. Sexual dimorphism present. Male (PLATE 26, Fig. 188): Head hairy, brown, with small medial white patch on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially

dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Wing uppersides deep bluish purple. Wing undersides grayish brown with dark striae margined with white, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell. Submarginal bands as two series of dark narrow short lines. A conspicuous black spot associated with metallic markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 26, Fig. 189): Body and wing patterns of wing undersides similar to those of male, eyes less hairy, Protarsi not fused, wing uppersides brown with proximal blue patches.

Male genitalia (PLATE 60, Fig. 390) – Tegumen narrow. Socii pea-shaped. Saccus vestigial. Brachium as simple hook with pointed distal end. Vinculum enlarged laterally. Valva oblong at base, produced posteriorly, attenuate and strongly up-curved with distal portion as narrow, pointed spine. Juxta narrow, Y-shaped. Phallus stout, slightly down-curved, with aedeagus shorter than phallobase. Distal end of aedeagus with produced ventral process, enlarged distally. Cornuti as two prominent, sclerotized bands with spines of various sizes, associated with a distal spiny band.

Female genitalia (PLATE 93, Fig. 519) – Corpus bursae as elongate sac. Ductus bursae united with corpus bursae, membranous, attenuate posteriorly, connecting with sclerotized band with funnel-like ostium bursae. Sterigma with lamella antevaginalis as a transverse band with “W”-shaped, medial invagination along posterior margin; lamella postvaginalis as a sclerotized band extending caudally into ligulate process. Anterior apophyses present, as short rods. Posterior apophyses longer than anal papillae, straight. Anal papillae sclerotized, tapering caudally, shovel-like.

Global distribution. Throughout tropical areas in the Oriental and Austalian regions (Tite, 1963; Hsu, 2013).

Distribution in Taiwan. Mainly lowland of central and southern Taiwan, also Lanyu (Hsu & Yen, 2006; Hsu, 2013).

Larval Host plant(s). Fabaceae: *Pithecellobium dulce*, *Acacia farnesiana*, *Ac. confusa*, *Falcataria falcata*, *Albizia lebbeck*, *Calliandra surinamensis*, and *Samanea saman*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu & Yen, 2006; Hsu, 2013).

形態特徵：成蝶前翅長 8–11 mm。具雌雄二型性。雄蝶 (圖 188)：頭被毛、褐色；頭頂中央有白色小斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀。翅背面暗藍紫色。翅腹面底色灰褐色，有鑲白邊之暗色條紋組成中央、亞基部帶紋及中室末端短條；亞外緣帶紋由兩道褐色細短線紋組成；後翅臀區及 CuA_1 室各具一黑色斑點及橙色紋。緣毛褐色。雌蝶 (圖 189)：形態特徵與雄蝶相似，但複眼疏被毛、前足跗節不癒合、翅背面褐色，僅內側有藍色紋。

雄交尾器 (圖 390)：背兜狹窄。背兜側突豌豆狀。囊突退化。顎形突彎鉤狀，末端尖。基腹弧側面膨大。抱器長卵形，末端有強上彎尖刺。陽基軛片狹窄、Y 字形。陽莖粗壯，略下彎，陽莖器短於陽莖基。陽莖器腹側末端具突起，後端膨大；背側具帶細齒骨板。角狀器為兩道生滿刺棘之骨化帶。

雌交尾器 (圖 519)：交尾囊與交尾囊管合成長囊狀，膜質，向後漸細，近交尾孔處形成骨帶，交尾孔漏斗狀。交尾孔前板橫帶狀，後緣有 W 形內凹；交尾孔後板向後延伸成舌狀突起。具前內骨突，短棒狀。後內骨突長於肛突，頗直。肛突骨化，末端漸窄，呈鏟狀。

世界分布：廣泛分布於東洋區及澳洲區之熱帶地區。

臺灣分布：主要分布於本島中、南部低海拔地區，蘭嶼亦有分布。

寄主植物：豆科之金龜樹、金合歡、相思樹、摩鹿加合歡、大葉合歡、蘇利南合歡、雨豆樹等。

生物學：本種為一年多世代物種。

Genus *JAMIDES* Hübner, [1819]

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

Diagnostic characters include the following: 1) distal portion of Sc joined with a proximal point of R_1; 2) small tail-like projection at distal end of CuA_2 of hindwing; 3) sexual dimorphism present, with white or blue patch on wing uppersides usually more extensive in males.

Larval hostplants include Fabaceae and Zingiberaceae.

Over 60 species are known from the Oriental and Australian regions (Bascombe *et al*., 1999).

In Taiwan, 3 species are known. A doubtful record of an additional species also exists.

雅波灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈基部點狀接觸；2) 後翅 CuA_2 脈末端具小尾突；3) 具雌雄二型性，雄蝶翅背面白或藍色斑紋通常較大。

幼蟲寄主包括豆科及薑科植物。

已知種類超過 60 種，分布於東洋區及澳洲區。

臺灣有 3 種，另有一記錄存疑之種類。

Jamides bochus (Stoll, [1782]) (雅波灰蝶／雅灰蝶／琉璃波紋小灰蝶)

Papilio bochus Stoll, [1782]: in Cramer, De uitlandsche kapellen 4: 210, pl. 391, figs. C, D. (Type locality: “Ceylon”)

Ssp. *formosanus* Fruhstorfer, 1909

PLATE 26, Figs. 190–192; PLATE 60, Fig. 391; PLATE 93, Fig. 520

Jamides bochus formosanus Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116. (Type locality: Formosa)

Lampides bochus formosanus Fruhstorfer, 1915: Archiv für Naturgeschichte 81 A (6): 38. (Type locality: Formosa)

Ssp. *bochus* (Stoll, [1782])

PLATE 26, Figs. 193–195; PLATE 61, Fig. 392; PLATE 94, Fig. 521

Ssp. *herodicus* Fruhstorfer, 1915

PLATE 26, Figs. 196–197; PLATE 61, Fig. 393; PLATE 94, Fig. 522

Lampides bochus herodicus Fruhstorfer, 1915: Archiv für Naturgeschichte 81 A (6): 38. (Type locality: Luzon)

Specimens examined:

Ssp. *formosanus*: **NANTOU Co.:** 1♀, Renai, Beidongyanshan, 1500m, 1. IX. 2006 (L. H. Wang). **HUALIAN Co.:** 1♂, Xiulin, Huitouwan, 5. XII. 2005, reared from *Dumasia villosa*, emgd. 3. I. 2006, HSU 05M12. **ZHANGHUA Co.:** 3♂, 2♀, Baguashan, 17. XI. 1996, reared from *Pueraria montana*, emgd. 2/4. XII. 1996, HSU 96L15 (Y. F. Hsu). **JIAYI Co.:** 1♀, Dapu, Zhutoushan, 300m, 24. IX. 2003 (Y. F. Hsu); 1♀, Fanlu, Niupuzai, 1. I. 2009 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Zhentoushan, 8. X. 2002, reared from *P. montana*, emgd. 22. X. 2002, HSU 02K18.1 (Y. F. Hsu); 2♂, same locality, 25. X. 2002 (Y. F. Hsu); 1♂, same locality, 24. XI. 2002 (Y. F. Hsu); 1♀, same locality, 2. VII. 2003 (Y. F. Hsu); 1♂, Xinhua, Dakeng, 80m, 25. II. 2006 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Xiaogang, Dalinpu, 0/20m, 27. XII. 2003 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Liuqiu, Liuqiuyu, 7. III. 2010 (N. Y. Tsai); 1♂, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu).

Ssp. *plato*: **LIANJIANG:** 4♀, Beigan, Wusha, 7. IX. 2014 (C. L. Huang & H. Y. Lee); 1♂, Beigan, Leishan, 20. XI. 2013 (L. H. Wang & H. Y. Lee) (genitalia preparation JYL607). **JINMEN [= KINMEN] Co.:** 3♂, 2♀, Jinmen, 19. IX. 2013 (Y. F. Hsu & H. C. Huang) (female genitalia preparation JYL329).

Ssp. *herodicus*/*formosanus*: **YILAN Co.:** 1♂, Toucheng, Guishan Is., 5. XI. 2005 (H. C.

Huang). **TAIDONG Co.:** 2♂, 1♀, Lanyu, 29/31. III. 2008 (C. H. Lin, jr. & N. Y. Tsai); 1♀, same locality, 27. IV. 2009 (L. W. Wu); 1♂, Lanyu, Longmenqiao, 10. X. 1988 (C. F. Lee); 1♂, Lanyu, Zhongaiqiao, 12. III. 1994 (S. H. Yen); 1♀, same locality, 16. X. 1994 (S. H. Yen); 1♂, same locality, 9. X. 1988 (C. F. Lee); 11♂, 3♀, Lanyu, Sidaogou, 1/3. V. 2003 (Y. F. Hsu, Y. C. Hsu & Y. Lo) (male genitalia preparation JYL708); 1♂, 3♀, same locality, 13/15. VI. 2003 (Y. F. Hsu); 1♂, same locality, 18/20. III. 2006, reared from *Paraderris* ?*piscatoria*, emgd. 6. IV. 2006, HSU 06C17 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 2♂, 3♀, same locality, 17. III. 2007, reared from *Pa*. ?*piscatoria*, emgd. 4/29. IV. 2007, HSU 07C13 (Y. F. Hsu); 2♂, same locality, 17. III. 2007 (Y. F. Hsu); 1♂, 2♀, same locality, 10. IV. 2007 (Y. F. Hsu); 1♂, 2♀, same locality, 10/11. IV. 2007, reared from *Indigofera zollingeriana*, emgd. 30. IV./5. V. 2007, HSU 07D10 (Y. F. Hsu); 1♂, same locality, 10. III. 2009 (Y. F. Hsu); 1♂, same locality, 28. III. 2010 (Y. F. Hsu & J. H. Lin); 1♂, same locality, 30. III. 2010 (Y. F. Hsu & J. H. Lin); 1♂, Lanyu, Hongtouyan, 15. VI. 2003 (Y. F. Hsu); 1♂, 3♀, Lanyu, Badai Bay, 9. XI. 2004, reared from *Pongamia pinnata*, emgd. 25. XI. 2004, HSU 04L25 (C. C. Hsieh); 1♂, 1♀, Lanyu, Yeyou, 17/18. III. 2007, reared from *Po*. *pinnata*, emgd. 8. IV. 2007, HSU 07C9.1 (Y. F. Hsu); 1♂, Lanyu, Qiwei, ca 200m, 25/26. V. 2009 (Y. F. Hsu & N. Y. Tsai); 1♀, Lanyu, Central Cross Island Road, 14. XI. 2013 (C. L. Huang) (genitalia preparation JYL657).

Description. Adult – Forewing length 11–16 mm. Sexual dimorphism present. Male (PLATE 26, Figs. 190, 193, 196): Head hairy, brown, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, pointed at distal end, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides ground color dark brown, with metallic indigo patches covering much of hindwing and part of forewing. A dark brown spot at distal end of cell CuA_1 of hindwing. Wing undersides brown with dark striae margined with white, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell, but subbasal striae lacking on forewing. Submarginal bands as two series of faint, white lunules. A conspicuous black spot associated with orange markings

at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 26, Figs. 191–192, 194–195, 197): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, blue patches of wing uppersides not metallic, a series of white lunules present along termen of hindwing.

Male genitalia (PLATE 60, Fig. 391; PLATE 61, Figs. 392–393) – Tegumen narrow. Socii reniform. Brachium curved, with blunt distal end. Vinculum broad laterally. Valva as broad lobe with truncate posterior margin; ampulla forming a distal triangular and proximal digitate or fin-like processes; harpe as a thickened margin; sacculus triangular. Juxta narrow, V-shaped. Phallus stout, straight, tapering posteriorly, with aedeagus shorter than phallobase. Distal end of aedeagus with small dorsal process at distal end. Cornutus as a sclerite with a bundle of bristles.

Female genitalia (PLATE 93, Fig. 520; PLATE 94, Figs. 521–522) – Corpus bursae oval. Signa as a pair of internal curved spines on opposite walls of corpus bursae. Ductus bursae elongate, membranous, connecting to sterigma consisted of lamella antevaginalis forming a pair of small, medial sclerites; lamella postvaginalis as an open sclerotized ring in a membranous dome. Posterior apophyses longer than anal papillae, slightly curved, with anterior ends bent. Anal papillae heavily sclerotized basally, distal part weakly sclerotized, setose.

Variation. Blue patches on wing uppersides of females are reduced in wet/hot season.

Global distribution. Widely distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Shirôzu, 1960; Hsu, 1999a, 2013).

Distribution in Taiwan. Lower elevations, including associated island (Hsu, 1999a, 2013; Lu & Chen, 2014).

Larval Host plant(s). A variety of plants in Papilionoideae of Fabaceae, including *Crotalaria pallida*, *Pueraria montana*, *Pongamia pinnata*, *Paraderris* ?*piscatoria*, *Puhuaea sequax*, *Ohwia caudata*, *Maackia taiwanensis*, *Dendrolobium umbellatum*,

Sesbania cannabina, *Flemingia strobilifera*, *Ormocarpum cochinchinensis*, *Wisteriopsis reticulata*, etc. (Hsu, 1999a, 2013; Lu & Chen, 2014)

Biology. This species is multivoltine in occurrence (Hsu, 1999, 2013).

Remarks. The populations in main island of Taiwan are considered belonging to ssp. *formosanus*, those in Jinmen and Mazu Islands the nominotypical subspecies. The populations found from Lanyu, Ludao, and Guishan Island include individuals with markings typical of ssp. *formosanus*, some like ssp. *herodicus* Fruhstorfer, 1915 of the Philippines, and the other intermediate between these two subspecies, suggesting these islands may serve as a hybrid zone of ssp. *formosanus* and ssp. *herodicus*. Similar situation is found in the Yaeyama Islands and Okinawa of southwestern Japan (Shirôzu, 2006).

The populations in India, Indochina and southern China are sometimes assigned to ssp. *plato* Fabricius, 1793 (e.g., Fruhstorfer, 1992; Chou, 1992; Hsu *et al*., 2020).

形態特徵：成蝶前翅長 11–16 mm。具雌雄二型性。雄蝶 (圖 190、193、196)：頭被毛、褐色；複眼具白色輪緣。觸角黑褐色，有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、末端尖、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端向下彎曲、尖銳。前翅三角形，外緣微凸。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面黑褐色，前翅部分區域及後翅大部分區域覆具強烈金屬光澤之靛藍色斑塊；後翅 CuA_1 室末端具一黑褐色斑點。翅腹面底色褐色，有鑲白邊深色條紋組成中央、亞基部帶紋及中室末端短條，但前翅缺乏亞基部條紋；亞外緣帶紋由兩道淡白色弦月紋組成；後翅臀區及 CuA_1 室各具黑色斑點及橙色紋。緣毛褐色。雌蝶 (圖 191–192、194–195、197)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑紋缺乏金屬光澤、後翅背面外緣有一列白色弦月紋。

雄交尾器 (圖 391–393)：背兜狹窄。背兜側突腎形。顎形突彎曲、細長，末端鈍。基腹弧側面寬闊。抱器寬瓣狀，末端近截狀；抱器內突末端中央形成三角形突起，於基部有指狀突起；抱握鋏粗；抱器腹三角形。陽基軛片狹窄，V 字形。陽莖粗壯、筆直，向後漸細，陽莖器短於陽莖基。陽莖器末端背側具小突起。角狀器為具棘刺

之骨化帶。

雌交尾器 (圖 520–522)：交尾囊橢圓形。花壁一對，位於交尾囊相對位置，形成內陷、彎曲刺狀突起。交尾囊管修長、膜質，與交尾孔前板相接處形成一對小骨；交尾孔後板膜質圓頂狀，中央有一骨環。後內骨突長於肛突，略彎曲。肛突基部高度骨化，末端輕度骨化，有毛。

變異：高溫／雨季型雌蝶翅背面藍色斑紋退減。

世界分布：廣泛分布於東洋區及澳洲區。

臺灣分布：主要分布於本島低海拔地區，離島亦有分布。

寄主植物：取食多種豆科蝶形花亞科之植物，如黃野百合、山葛、水黃皮、蘭嶼魚藤、波葉山螞蝗、小槐花、島槐、白木蘇、臺灣山黑扁豆、田菁、佛來明豆、濱槐、老荊藤等。

生物學：本種為一年多世代物種。

註記：分布於本島之族群屬於亞種 ssp. *formosanus*，分布於金門及馬祖列嶼之族群屬於承名亞種，而分布於蘭嶼、綠島及龜山島之個體翅紋有些像是臺灣亞種 ssp. *formosanus*，有些則像菲律賓亞種 ssp. *herodicus* Fruhstorfer, 1915，也有中間型個體存在，因此這些島嶼可能為兩亞種之雜交帶，日本西南部之八重山群島及沖繩亦有類似狀況 (Shirôzu, 2006)。

印度、中南半島及華南族群有時被歸屬於另一亞種，稱為 ssp. *plato* Fabricius, 1793。

Jamides alecto (Felder, 1860) (淡青雅波灰蝶／素雅灰蝶／白波紋小灰蝶)

Lycaena alecto Felder, 1860: Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften 40 (11): 456. (Type locality: Amboina)

Lampides elpis rajatus Fruhstorfer, 1915: Archiv für Naturgeschichte 81 A (6): 19. (Type locality: "Malayische Halbinsel, Siam, Tonkin [Malay Peninsula, Thailand, Vietnam]")

Lampides buruana Holland, 1900: Novitates Zoologicae 7 (1): 76. (Type locality: Buru)

Lampides tertius Rothschild, 1915: Novitates Zoologicae 22 (1): 138. (Type locality: Manusela,

Central Ceram, 650m)

Ssp. *dromicus* Fruhstorfer, 1910

PLATE 27, Figs. 198–200; PLATE 61, Fig. 394; PLATE 94, Fig. 523

Lampides elpis dromicus Fruhstorfer, 1910: Entomologische Zeitschrift 23 (49): 219. (Type locality: Formosa, Kanshirei und Chip Chip)

Lampides elpis dromicus Fruhstorfer, 1915: Archiv für Naturgeschichte 81 A (6): 17. (Type locality: Formosa)

Specimens examined:

JILONG CITY: 1♂, Longgang Trail, 50m, 25. II. 2010 (C. H. Lin & W. H. Chien); 1♂, Longgang Trail, 6. XII. 2010 (J. H. Lin). **XIINBEI CITY [= TAIPEI Co.]:** 1♂, Xindian, Feicui Dam, 10. VII. 2006 (Y. F. Hsu); 1♀, same locality, 2. X. 2011 (Y. F. Hsu); 1♂, same locality, 13. X. 2011 (Y. F. Hsu); 1♂, Bali, Guanyinshan, 17. II. 2011 (Z. H. Yen); 1♂, Xindian, Sikanshui, 21. II. 2011 (C. Y. Yen); 1♂, Ruifang, Jiufen, 300m, 4. XI. 2011 (Y. F. Hsu); 1♀, Ruifang, Sandiaoling, 12. IX. 2015 (L. Huang) (genitalia preparation JYL327). **TAIPEI CITY:** 1♂, Wenshan, Xianjiyan, 22. II. 2002 (Y. F. Hsu); 1♂, Songshan, Hushan, 200m, 20. IV. 2010 (C. L. Huang); 1♂, same locality, 8. IX. 2010 (C. L. Huang); 1♂, Neihu, Neigou, 100m, 12. XII. 2010 (H. C. Huang); 1♂, same locality, 12. XII. 2010, reared from *Costus speciosus* [= *Hellenia speciosa*], emgd. 24. XII. 2010 (H. C. Huang). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, 4. X. 2015 (L. Huang) (genitalia preparation CJC143). **YILAN Co.:** 1♀, Datong, Siyuan, 25. VII. 2007 (L. H. Wang); 1♀, Toucheng, Guishan Is., 23. IX. 2006 (H. C. Huang); 1♀, same locality, 2. VI. 2001, emgd. 15. VI. 2001 (Y. T. Lo & J. S. Tung). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, 1♀, North Dist., NMNS, 15. VIII. 2008, reared from *Hedychium coronarium*, emgd. 19. VIII./1. IX. 2008, HSU 08H14 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Huisun, 29. IV. 2006 (Y. F. Hsu); 2♀, Jiantai Forest Trail, 1100/1200m, 4. XII. 2010 (J. H. Lin). **HUALIAN Co.:** 1♂, Xiulin, Wujiabengshan, 1900m, 15. VII. 2008 (L. H. Wang). **TAINAN CITY [= TAINAN Co.]:** 1♀, Dongshan, Kantoushan, 600/800m, 4. II. 2010 (Y. F. Hsu); 1♀, Guantian, Wushantou, 10. VIII. 2011 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Meishan, 800m, 26. II. 2011 (H. C. Huang). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, ca 1200m, 4. IV. 2002 (C. C. Lu). **TAIDONG Co.:** 2♀, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 1♂, Ludao, Transverse Trail, 28. IV. 2014 (H. C. Huang).

Description. Adult – Forewing length 14–22 mm. Sexual dimorphism present. Male

(PLATE 27, Figs. 198–199): Head hairy, brown, with a medial white patch on vertex, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, pointed at distal end, white but partially dark brown. Compound eyes hairy. Thorax dark brown dorsally, white ventrally; abdomen brown banded with white dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides blue, glossy, with narrow brown margin along termen on forewing, a series of brown spots along termen on hindwing. Wing undersides grayish brown with dark striae margined with white, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell, but subbasal striae lacking on forewing. Submarginal bands as two white lines. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 27, Fig. 200): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, blue patches of wing uppersides less extensive, a series of white lunules present along termen of hindwing.

Male genitalia (PLATE 61, Fig. 394) – Tegumen narrow. Socii parallelogrammatic. Brachium curved, slender, elongated with base enlarged, distal end pointed. Vinculum broad laterally. Valva as broad lobe with distal end nearly truncate, dorsal margin slightly convex, with a prominent spine-like process proximally; sacculus triangular. Juxta slender, elongate, V-shaped. Phallus stout, straight, with aedeagus shorter than phallobase. Distal end of aedeagus with ventral spine-like process at distal end. Cornuti as a partially sclerotized patch with spines and teeth.

Female genitalia (PLATE 94, Fig. 523) – Corpus bursae oval. Ductus bursae elongate, slender, membranous. Sterigma with lamella antevaginalis forming triangular, medial sclerite; lamella postvaginalis as sclerotized lobe with lateral folds and convex posterior margin. Anterior apophyses present, as short, stout rods with bases enlarged. Posterior apophyses longer than anal papillae, slightly curved. Anal papillae heavily sclerotized basally, distal part weakly sclerotized, setose.

Variation. Blue patches on wing uppersides of females are reduced in wet/hot season.

Global distribution. Widely distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Shirôzu, 1960; Hsu, 1999a, 2013).

Distribution in Taiwan. Low to moderate elevations; also recorded from Guishan Island, Ludao and Lanyu (Hsu, 1999a, 2014; Lu & Chen, 2014).

Larval Host plant(s). Zingiberaceae: *Alpinia zerumbet*, *A. formosana*, *A. uraiensis*, *Hedychium coronarium*, *Hellenia speciosa*, etc. (Hsu, 1999a, 2013; Lu & Chen, 2014)

Biology. This species is multivoltine in occurrence (Hsu, 1999a, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 14–22 mm。具雌雄二型性。雄蝶 (圖 198–199)：頭被毛、褐色；頭頂中央有白斑；複眼具白色輪緣。觸角黑褐色，有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、末端尖、白色但部分黑褐色。複眼被毛。胸部背面黑褐色、腹面白色。腹部背面褐色，有白色細帶紋、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面亮藍色，前翅外緣有褐色窄邊，後翅外緣有一列褐色斑點。翅腹面底色灰褐色，有鑲白邊暗色條紋組成中央、亞基部帶紋及中室末端短條，但前翅缺亞基部條紋；亞外緣帶紋由兩條白色線紋組成；後翅臀區及 CuA_1 室各具一黑色斑點及橙色紋。緣毛褐色。雌蝶 (圖 200)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑紋範圍較窄、後翅背面外緣具一列白色弦月紋。

雄交尾器 (圖 394)：背兜狹窄。背兜側突平行四邊形。顎形突彎曲、細長，基部膨大，末端尖。基腹弧側面寬。抱器寬瓣狀，末端近截狀，背緣略凸，基部有明顯刺狀突起；抱器腹三角形。陽基軛片狹窄，V 字形。陽莖粗壯、筆直，陽莖器長短於陽莖基。陽莖器末端腹側具刺狀突起。角狀器為具棘刺之骨化帶。

雌交尾器 (圖 523)：交尾囊卵形。無花壁。交尾囊管細長、膜質。交尾孔前板為三角形骨片；交尾孔後板骨化瓣狀，兩側有褶，後緣凸出。前內骨突粗壯、桿狀，基部膨大。後內骨突長於肛突，略彎曲。肛突基部高度骨化，末端輕度骨化，有毛。

變異：高溫／雨季型雌蝶翅背面藍色斑紋退減。

世界分布：廣泛分布於東洋區及澳洲區。

臺灣分布：主要分布於本島低至中海拔地區，龜山島、綠島、蘭嶼亦有記錄。

寄主植物：薑科之月桃、臺灣月桃、烏來月桃、穗花山奈、絹毛鳶尾等。

生物學：本種為一年多世代物種。

Jamides celeno (Cramer, [1775]) (白雅波灰蝶／錫冷雅灰蝶／小白波紋小灰蝶)

Papilio celeno Cramer, [1775]: De Uitlandsche Kapellen 1: 51, pl. 31, f. C, D. (Type locality: " Surinamen" [actually N. India])

Ssp. *lydanus* Fruhstorfer, 1910

PLATE 27, Figs. 201–204; PLATE 28, Fig. 205; PLATE 61, Fig. 395; PLATE 94, Fig. 524

Lampides celeno lydanus Fruhstorfer, 1910: Entomologische Zeitschrift 23 (49): 219. (Type locality: “Formosa, Takao [= Kaohsiung]”)

Lampides pura var. *taiwana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 631, pl. 49, fig. 7. (Type locality: “Horisha, Ako, Kanshirei”)

Specimens examined:

XIINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, 11. X. 1999 (Y. J. Chen); 1♀, Wulai, 300m, 14. XI. 2007 (C. K. Wang). **NANTOU Co.:** 1♂, 1♀, Yuchi, Houlongkeng, 550m, 17. IX. 2002 (Y. F. Hsu); 1♀, Renai, Jiantai Forest Trail, 1100/1200m, 4. XII. 2010 (J. H. Lin). **HUALIAN Co.:** 1♂, 1♀, Yuli, Antong, 30. I. 2017 (J. Y. Liang) (genitalia preparation JYL429, 435). **JIAYI Co.:** 1♀, Dapu, 21. IX. 2000 (Y. F. Hsu); 1♂, Dapu, Zhutoushan, 300m, 29. XI. 2003 (Y. F. Hsu); 2♀, Fanlu, Chukou, ca 350m, 19. XII. 2005 (Y. F. Hsu); 4♂, same locality, 250m, 16. V. 2012 (Y. F. Hsu); 2♂, 1♀, Fanlu, Niupuzai, 1. I. 2009 (Y. F. Hsu); 1♂, Fanlu, Chukou, Tufeshan, 300m, 3. IV. 2011 (Y. F. Hsu); 2♀, Zhongpu, Shekou, 100m, 3. IV. 2011 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, Dakeng, 20. I. 2007 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 4♂, 3♀, Meinong, Shuangxi, 150m, 31. XII. 2006 (Y. F. Hsu); 4♂, 1♀, same locality, 22. I. 2007 (Y. F. Hsu). **PINGDONG Co.:** 4♂, 1♀, Sandimen, 250m, 10. II. 2007 (Y.

F. Hsu). **TAIDONG Co.:** 2♂, 1♀, Yanping, Hongye, 2. I. 1988 (Y. F. Hsu); 2♂, same locality, 16. V. 1988 (Y. F. Hsu); 1♀, Lanyu, Badai Bay, 13/15. VI. 2003 (Y. F. Hsu); 1♂, Lanyu, Sidaogou, 15. X. 2006 (Y. F. Hsu, H. C. Huang & Y. C. Hsu); 1♀, Lanyu, Airport, 18. III. 2012 (Y. F. Hsu & H. C. Huang); 1♀, Lanyu, Central Transverse Road, 22. V. 2012 (J. Y. Liang).

Description. Adult – Forewing length 13–17 mm. Sexual dimorphism present. Male (PLATE 27, Figs. 201–202): Head hairy, brown, with a medial white patch on vertex, a medial white band on frons, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, pointed at distal end, white but partially dark brown. Compound eyes hairy. Thorax and abdomen gray dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides white tinged with blue, with brown margin along termen on forewing, a series of brown spots along termen on hindwing. Wing undersides white or pale brown with dark striae margined with white, consisted of discal and subbasal bands plus a short bar at distal end of discoidal cell, but subbasal striae lacking on forewing. Submarginal bands as two white lines. A conspicuous black spot associated with orange markings at tornus and in cell CuA_1 of hindwing. Fringe brown. Female (PLATE 27, Figs. 203–204; PLATE 28, Fig. 205): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides lacking blue hue, brown area on forewing uppersides wider, notably at apex.

Male genitalia (PLATE 61, Fig. 395) – Tegumen narrow. Socii ovate. Brachium curved, with pointed distal end. Vinculum broad laterally. Valva as broad lobe with distal end bifid; ventral process longer than dorsal one; sacculus triangular. Juxta narrow, V-shaped. Phallus stout, straight, with aedeagus shorter than phallobase. Distal end of aedeagus with ventral sword-like process at distal end. Cornuti as two sclerotized, elongate, spiny bands.

Female genitalia (PLATE 94, Fig. 524) – Corpus bursae oval. Signa as a pair of sclerotized, spiny patches on opposite walls of corpus bursae. Ductus bursae elongate,

membranous, with posterior part sclerotized. Sterigma as broad, weakly sclerotized dome. Anterior apophyses present, as short bars. Posterior apophyses longer than anal papillae, slightly curved, with anterior ends blunt. Anal papillae heavily sclerotized basally, distal part weakly sclerotized, setose.

Variation. Individuals dry/cold season have ground color of wing undersides nearly white in color, with markings darker.

Global distribution. Widely distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Lowland of main island of Taiwan and Lanyu, but rare in northern Taiwan (Hsu, 2002, 2013).

Larval Host plant(s). Larvae mainly feed on plants in the genus *Vigna* of Fabaceae, including *V. reflexo-pilosa*, *V. luteola*, etc. (Hsu, 2002, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013).

形態特徵：成蝶前翅長 13–17 mm。具雌雄二型性。雄蝶（圖 201–202）：頭被毛、褐色；頭頂中央具白斑；額中央有白帶；複眼具白色輪緣。觸角黑褐色，有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、末端尖、白色但部分黑褐色。複眼被毛。胸部及腹部背面灰色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面呈略帶藍色調之白色，前翅外緣有褐色邊，後翅外緣有一列褐色斑點。翅腹面底色白色或灰褐色，有鑲白邊暗色條紋組成中央、亞基部帶紋及中室末端短條，但前翅缺亞基部條紋；亞外緣帶紋由兩條白色線紋組成；後翅臀區及 CuA_1 室各具一黑色斑點及橙色紋。緣毛褐色。雌蝶（圖 203–205）：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面無藍色色調、前翅背面褐色邊較寬，且於翅頂處格外明顯。

雄交尾器（圖 395）：背兜狹窄。背兜側突卵形。顎形突彎曲，末端尖。基腹弧側面寬闊。抱器寬瓣狀，末端二分叉，腹側突起長於背側突起；抱器腹三角形。陽基軛

片狹窄、V 字形。陽莖粗壯、筆直，陽莖器短於陽莖基。陽莖器末端腹側有劍狀突起。角狀器為兩只具小齒之細長骨帶。

雌交尾器 (圖 524)：交尾囊卵形。花壁一對，位於交尾囊相對位置，形成有許多小棘刺之小骨。交尾囊管修長、膜質，後端骨化。交尾孔板寬大、輕度骨化，呈圓頂狀。前內骨突短桿狀。後內骨突長於肛突，略彎曲，前端鈍。肛突基部高度骨化，末端輕度骨化，具毛。

變異：低溫／乾季型個體翅腹面底色近白色、翅紋顏色較深。

世界分布：廣泛分布於東洋區及澳洲區。

臺灣分布：主要分布於本島低海拔地區及蘭嶼，但本島北部少見。

寄主植物：幼蟲主要取食豆科豇豆屬植物，包括曲毛豇豆、長葉豇豆等。

生物學：本種為一年多世代物種。

Genus *CATOCHRYSOPS* Boisduval, 1832

Type species: *Hesperia strabo* Fabricius, 1793

Diagnostic characters include the following: 1) distal portion of Sc joined with proximal portion of R_1, and separated at terminal end on forewing; 2) tail-like projection at distal end of CuA_2 of hindwing; 3) papillae anales elongate, sclerotized, with pointed distal tip; 4) sexual dimorphism present, blue patches on wing uppersides less extensive in female.

Larvae feed on plants in the family Fabaceae.

6 species are known from the Oriental and Australian regions.

2 species occur in Taiwan.

珈波灰蝶屬

形態特徵如下：1) 翅 Sc 脈端部與 R_1 脈基部相接，末端分離；2) 翅 CuA_2 脈末端具尾突；3) 突向尾端延伸，末端尖、骨化；4) 雌雄二型性，雌蝶翅背面斑紋較小。

幼生期以豆科植物為寄主。

本屬已知 6 種，分布於東洋區及澳洲區。

臺灣有 2 種。

Catochrysops panormus (Felder, 1860) (青珈波灰蝶／淡青長尾波紋小灰蝶／藍咖灰蝶)

Lycaena panormus Felder, 1860: Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften 40 (11): 455. (Type locality: Amboina)

Ssp. *exiguus* Distant, 1886

PLATE 28, Figs. 206–207; PLATE 62, Fig. 396; PLATE 95, Fig. 525

Everes exiguus Distant, 1886: Rhopalocera Malayana: 455, pl. 44, fig. 17. (Type locality: Malay Peninsula; Singapore)

Catochrysops perakana Corbet, 1938: Journal of the Federated Malay States Museums 18 (2): 251. (Type locality: Malay Peninsula)

Specimens examined:

XIINBEI CITY [= TAIPEI Co.]: 1♂, 1♀, Shiding, Ergeshan, 600m, 30. VII. 2009 (N. Y. Tsai). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Daxi, Dingliao, 200m, 7. XII. 2009 (Y. F. Hsu). **ZHANGHUA Co.:** 2♀, Zhanghua, Baguashan, 17. XI. 1996, reared from *Pueraria montana*, emgd. 2. XII. 1996, HSU 96L14 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Nanshanxi, 27. IX. 1987 (Y. F. Hsu). **JIAYI Co.:** 1♂, 1♀, Fanlu, Chukou, ca 350m, 19. XII. 2005 (Y. F. Hsu); 1♀, Xingang, Yuemei, 12. II. 2006 (Y. F. Hsu); 1♂, Fanlu, Niupuzai, 1. I. 2009 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Wuchagou, 17. XII. 2002 (Y. F. Hsu); 1♂, 1♀, Xinhua, 24. X. 2009 (Y. F. Hsu); 1♂, 1♀, same locality, 27. IV. 2010 (Y. F. Hsu); 3♂, same locality, 27. V. 2010 (Y. F. Hsu); 1♀, Guantian, Wushantou, 24. X. 2009 (Y. F. Hsu); 1♂, Xinhua, Zhiyi Forest Farm, 25. XI. 2016 (L. Huang) (genitalia preparation JYL320). **KAOHSIUNG**

CITY [= KAOHSIUNG Co.]: 1♂, Tianliao, Dagangshan, 13. III. 2002 (Y. F. Hsu); 1♂, 2♀, Meinong, Shuangxi, 150m, 22. I. 2007 (Y. F. Hsu); 2♀, Tianliao, 22. IV. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Hengchun, Kending, 20. VIII. 1985 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, Langdao, 18/22. VIII. 1998 (C. C. Lu & C. Y. Hung); 1♀, Lanyu, Hongtouyu, 15. VI. 2003 (Y. F. Hsu) (genitalia preparation JYL422); 1♀, Lanyu, Qiwei, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♂, 1♀, Lanyu, 21/23. IX. 2008 (Y. F. Hsu, H. C. Huang & C. H. Lin, jr.); 2♂, 3♀, same locality, 27. X. 2008 (C. H. Lin, jr.); 1♂, same locality, 30. X. 2009 (J. H. Lin); 1♂, Lanyu, Yenyin, 29. VII. 1988 (C. F. Lee); 1♂, Lanyu, Badai Bay, 13/15. VI. 2003 (Y. F. Hsu); 1♂, Lanyu, Sidaogou, 14/16. X. 2006 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂, 3♀, same locality, 30. III. 2010 (Y. F. Hsu & J. H. Lin).

Description. Adult – Forewing length 12–18 mm. Sexual dimorphism present. Male (PLATE 28, Fig. 206): Head hairy, brown, with medial white tinged with blue stripe, a pair of narrow, lateral, brown bands on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown dorsally; 3rd segment slender. Compound eyes densely hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides glossy blue, with a dark brown spot at distal end of cell CuA_1 of hindwing. Wing undersides ground color grayish white, with dark discal bands margined with white on both wings, a minute dot in cell R_3 of forewing. Short dark bars margined with white at distal ends of discoidal cells on both wings. Three subbasal dots present on hindwing. Submarginal bands as two series of dark bands. A conspicuous black spot crowned with orange lunule at distal end of cell CuA_1 of hindwing. Fringe white mixed with brown. Female (PLATE 28, Fig. 207): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides ground color dark brown, with blue patch in proximal areas of wings, submarginal white bands present on uppersides of both wings, black spot in CuA_1 crowned with orange lunule.

Male genitalia (PLATE 62, Fig. 396) – Tegumen short but wide, with prominent lateral processes. Socii rectangular. Brachium strongly curved, hook-like, with distal end

slightly bent, pointed. Vinculum narrow. Valva semispherical, with prominent, elongate, spine-like distal process; harpe weakly sclerotized, convex; sacculus triangular. Juxta narrow, Y-shaped. Phallus, straight, cylindrical, with aedeagus much shorter than phallobase. Distal end of aedeagus truncate. Cornuti as two bundles of spines; multiple rows of minute teeth present on membrane near caudal opening of aedeagus.

Female genitalia (PLATE 95, Fig. 525) – Corpus bursae as elongate sac. Signa as a pair of small, rounded, spiny sclerites on opposite walls of corpus bursae. Ductus bursae united with corpus bursae, membranous, thick. Sterigma with lamella antevaginalis forming heavily sclerotized, transverse sclerite with narrow, medial crevice at anterior margin; lamella postvaginalis as small, lightly sclerotized, transverse bar. Anterior apophyses present, as short rod with blunt distal ends. Posterior apophyses longer than anal papillae, straight, with anterior ends flattened, paddle-like. Anal papillae heavily sclerotized, elongate, tapering posteriorly to pointed end.

Global distribution. Sri Lanka, India, Indochina, Southeast Asia, Sulawesi, South China, Taiwan (Bascombe *et al*., 1999; Braby, 2000; Hsu, 2006, 2013).

Distribution in Taiwan. Low elevations, less common in northern Taiwan, also Ludao, Lanyu, and Guishan Island (Hsu, 2006, 2013).

Larval Host plant(s). Fabaceae: *Pueraria montana*, *Ohwia caudata*, *Flemingia strobilifera*, etc. (Hsu, 2006, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 12–18 mm。具雌雄二型性。雄蝶 (圖 206)：頭被毛、褐色；頭頂中央有帶藍色調白色條紋；額兩側有一對褐色窄帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但背面褐色；第三節細小。複眼密被毛。胸部及腹部背面黑褐色雜藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面亮藍色，

後翅 CuA_1 室末端有一黑褐色斑點。翅腹面底色灰白色，有鑲白邊暗色中央帶紋；前翅 R_3 室有一小點；中室末端有鑲白邊暗色短條紋；後翅亞基部有三只小點；亞外緣帶紋由兩道暗色帶紋組成；後翅 CuA_1 室末端具一冠橙色弦月紋之黑色斑點。緣毛白色雜褐色。雌蝶 (圖 207)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色黑褐色，內側有藍色斑塊、翅背面亞外緣有白色線紋、CuA_1 室黑色斑點冠橙色弦月紋。

雄交尾器 (圖 396)：背兜寬短，有明顯側突起。背兜側突矩形。顎形突強彎曲、鉤狀，末端尖、略彎。基腹弧狹窄。抱器半球形，末端具細長棘狀突起；抱握鋏輕度骨化，突出；抱器腹三角形。陽基軛片狹窄，Y 字形。陽莖圓柱形、筆直，陽莖器遠短於陽莖基。陽莖器末端截狀。角狀器為兩束棘刺，陽莖器末端開口處膜質部具許多小細齒。

雌交尾器 (圖 525)：交尾囊與交尾囊管合成長囊狀。花壁一對，位於交尾囊相對位置，形成有許多小棘刺之圓形小骨。交尾囊管結粗、膜質。交尾孔前板形成高度骨化橫走寬骨板，前緣中間有隙縫；交尾孔後板為輕度骨化小型橫走帶狀骨板。前內骨突短桿狀，前端鈍。後內骨突長於肛突、甚直，前端扁平，槳狀。肛突高度骨化，向後伸長，末端尖。

世界分布：斯里蘭卡、印度、中南半島、東南亞、華南、臺灣。

臺灣分布：主要分布於本島低海拔地區，但本島北部少見，綠島、蘭嶼及龜山島亦有分布。

寄主植物：豆科之山葛、小槐花、佛來明豆等。

生物學：本種為一年多世代物種。

Catochrysops strabo (Fabricius, 1793) (紫珈波灰蝶／紫長尾波紋小灰蝶／咖灰蝶)

Hesperia strabo Fabricius, 1793: Entomologia Systematica 3 (1): 287. (Type locality: "India orientali" [Tranquebar, S. India])

Lycaena kandarpa Horsfield, [1829]: Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 2: 82. (Type locality: India)

Lycaena asoka Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 419. (Type locality: Himal[aya], Massuri)

Lycaena didda Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 420. (Type locality: Himal[aya], Massuri)

Ssp. *luzonensis* Tite, 1959

PLATE 28, Figs. 208–209; PLATE 62, Fig. 397; PLATE 95, Fig. 526

Catochrysops strabo luzonensis Tite, 1959: Entomologist 92: 204. (Type locality: Luzon)

Ssp. *strabo* Fabricius, 1793

Specimens examined:

Ssp. *luzonensis*: **TAIDONG Co.:** 4♂, 2♀, Lanyu, Langdao, 18/22. VIII. 1998 (C. C. Lu & C. Y. Hung); 1♂, Lanyu, Badai Bay, 3/4. VII. 1998 (C. C. Lu); 1♂, Lanyu, Hongtouyan, 15. VI. 2003 (Y. F. Hsu); 1♂, Lanyu, Sidaogou, 28/29. IV. 2003 (Y. F. Hsu); 1♂, same locality, 10. IV. 2007 (Y. F. Hsu); 1♀, Lanyu, Yeyou, 15. X. 2006, reared from *Pongamia pinnata*, emgd. 30. X. 2006, HSU 06K23.1 (Y. F. Hsu, H. C. Huang & Y. C. Hsu); 1♀, same locality, 17/18. III. 2007, reared from *P. pinnata*, emgd. 8. IV. 2007, HSU 07C9 (Y. F. Hsu); 1♂, Lanyu, Qiwei, 6/8. VIII. 2004 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 3♂, same locality, 21/23. IX. 2008 (H. C. Huang & C. H. Lin, jr.); 1♀, same locality, 24. VIII. 2009, reared from *Dendrolobium umbellatum*, emgd. 5. IX. 2009, HSU 09H17 (Y. F. Hsu); 1♂, 1♀, same locality, 28. VII. 2010 (genitalia preparation JYL521, 522).

Ssp. *strabo* : **LIANJIANG Co.:** 1♂, Nangan, Jinsha, 11/13. X. 2014 (C. W. Huang & H. Y. Lee).

Description. Adult – Forewing length 12–16 mm. Sexual dimorphism present. Male (PLATE 28, Fig. 208): Head hairy, brown, with medial white tinged with purple stripe, a pair of narrow, lateral, brown bands on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown dorsally; 3rd segment slender. Compound eyes densely hairy. Thorax and abdomen dark brown mixed with purple dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing lobe-like. Filiform projections at distal ends of CuA_2. Wing uppersides glossy purple, with a dark brown spot at distal end of cell CuA_1 of hindwing. Wing undersides ground color grayish white, with dark discal bands margined with white on both wings, a minute

dot in cell R_3 of forewing. Short dark bars margined with white at distal ends of discoidal cells on both wings. Three subbasal dots present on hindwing. Submarginal bands as two series of dark bands. A conspicuous black spot crowned with orange lunule at distal end of cell CuA_1 of hindwing. Fringe white mixed with brown. Female (PLATE 28, Fig. 209): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides ground color dark brown, with blue patch in proximal areas of wings, submarginal white bands present on uppersides of both wings, black spot in CuA_1 crowned with orange lunule.

Male genitalia (PLATE 62, Fig. 397) – Tegumen short but wide, with prominent lateral processes. Socii rectangular. Brachium strongly curved, hook-like, with distal end pointed. Vinculum narrow. Valva oblong, tapering posteriorly, with prominent, elongate, spine-like distal process; harpe weakly sclerotized, not convex; sacculus triangular. Juxta narrow, Y-shaped. Phallus, straight, cylindrical, with aedeagus much shorter than phallobase. Distal end of aedeagus truncate. Cornuti as two bundles of spines; multiple rows of minute teeth present on membrane near caudal opening of aedeagus.

Female genitalia (PLATE 95, Fig. 526) – Corpus bursae as elongate sac. Signa as a pair of small, rounded, spiny sclerites on opposite walls of corpus bursae. Ductus bursae united with corpus bursae, membranous, thick. Sterigma with lamella antevaginalis forming heavily sclerotized, triangular sclerite with narrow, medial crevice at anterior margin; lamella postvaginalis as small, lightly sclerotized, disc. Anterior apophyses present, as short rod with blunt distal ends. Posterior apophyses longer than anal papillae, straight, with anterior ends flattened, paddle-like. Anal papillae heavily sclerotized, elongate, tapering posteriorly to pointed end.

Global distribution. Widely distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Hsu, 2013).

Distribution in Taiwan. The population from Lanyu has been identified as ssp. *luzonensis* (Hsu, 2013), also found from Mazu Island, identified as the nominotypical subspecies (Hsu, 2014).

Larval Host plant(s). Fabaceae: *Dendrolobium umbellatum*, *Pongamia pinnata*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. The females of *C. strabo* is similar to that of *C. panormus*, but the small dot in cell R_3 of forewing underside of this species is at a more proximal position, approximately in the middle between discoidal bar and discal band of forewing, whereas the dot is at a more distal position, close to discal band than to discoidal bar in *C. panormus*.

形態特徵：成蝶前翅長 12–16 mm。具雌雄二型性。雄蝶 (圖 208)：頭被毛、褐色；頭頂中央有帶藍色調白色條紋；額兩側有一對褐色窄帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但背面褐色；第三節細小。複眼密被毛。胸部及腹部背面黑褐色雜紫色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅葉狀，CuA_2 脈末端具絲狀尾突。翅背面亮紫色，後翅 CuA_1 室末端有一黑褐色斑點。翅腹面底色灰白色，有鑲白邊暗色中央帶紋；前翅 R_3 室有一小點；中室末端有鑲白邊暗色短條紋；後翅亞基部有三只小點；亞外緣帶紋由兩道暗色帶紋組成；後翅 CuA_1 室末端具一冠橙色弦月紋之黑色斑點。緣毛白色雜褐色。雌蝶 (圖 209)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色黑褐色，內側有藍色斑塊、翅背面亞外緣有白色線紋、CuA_1 室黑色斑點冠橙色弦月紋。

雄交尾器 (圖 397)：背兜寬短，有明顯側突起。背兜側突矩形。顎形突強彎曲、鉤狀，末端尖、略彎。基腹弧狹窄。抱器長卵形，向後漸細，末端具細長棘狀突；抱握鋏輕度骨化，不突出；抱器腹三角形。陽基軛片狹窄，Y 字形，基部短。陽莖圓柱形、筆直，陽莖器遠短於陽莖基。陽莖器末端截狀。角狀器為兩束棘刺，陽莖器末端開口處膜質部具許多小細齒。

雌交尾器 (圖 526)：交尾囊與交尾囊管合成長囊狀。花壁一對，位於交尾囊相對位置，形成有許多小棘刺之圓形小骨。交尾囊管結粗、膜質。交尾孔前板形成高度骨化三角形骨板，前緣中間有隙縫；交尾孔後板為輕度骨化小型碟狀骨板。前內骨突短桿狀，前端鈍。後內骨突長於肛突、甚直，前端扁平，槳狀。肛突高度骨化，向

後伸長，末端尖。

世界分布：廣泛分布於東洋區及澳洲區。

臺灣分布：臺東蘭嶼之族群被認為屬於 ssp. *luzonensis*，而馬祖發現者被認為屬於承名亞種。

寄主植物：豆科之白木蘇花、水黃皮等。

生物學：本種為一年多世代物種。

註記：本種雌蝶與青珈波灰蝶相似，但本種前翅腹面 R_3 室小點較靠內側，約位於中室短條紋及中央帶紋中央，青珈波灰蝶前翅腹面 R_3 室小點則較接近中央帶紋。

Genus *EUCHRYSOPS* Butler, 1900

Type species: *Hesperia cnejus* Felder, 1798

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) short tail-like projection at distal end of CuA_2 of hindwing; 3) valva elongate, slender; 4) sexual dimorphism present, bluish purple patch on wing uppersides less extensive in females.

Larvae feed on plants in Fabaceae.

Approximately 30 species, mostly in the Afrotropical region. Only one species occurs in the Oriental region (Bascombe *et al*., 1999; Braby, 2000).

1 species occurs in Taiwan.

奇波灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 後翅 CuA_2 脈末端具短尾突；3) 抱器細長；4) 具雌雄二型性，雌蝶翅背面藍紫色斑較小。

幼生期以豆科植物為寄主。

本屬已知約 30 種，主要分布於非洲區，僅 1 種分布於東洋區 (Bascombe *et al*., 1999; Braby, 2000)。

臺灣有 1 種。

Euchrysops cnejus (Fabricius, 1798) (奇波灰蝶／白尾小灰蝶／棕灰蝶)

PLATE 28, Figs. 210–211; PLATE 62, Fig. 398; PLATE 95, Fig. 527

Hesperia cnejus Fabricius, 1798: Entomolgiae systematicae, Supplementum: 430. (Type locality: “India Orientali”)

Lycaena pandia Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 418. (Type locality: “Himal[aya] Massuri”)

Lycaena patala Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 419. (Type locality: “Himal[aya] Massuri”)

Lycaena monica Reakirt, 1866: Proceedings of the Academy of Natural Sciences of Philadelphia 18 (3): 244. (Type locality: "California")

Lycaena hypoleuca Prittwitz, 1867: Entomologische Zeitung 28 (7–9): 273. (Type locality: “Botanybay”, [Australia]) (preoccupied)

Lycaena samoa Herrich-Schäffer, 1869: Entomologische Zeitung 30 (1–3): 73, pl. 4, fig. 18. (Type locality: Samoa)

Catochrysops hapalina Butler, 1883: Proceedings of the Zoological Society of London 1883 (2): 148, pl. 24, figs. 2, 3. (Type locality: “Mhow” [= Dr. Ambedkar Nagar, India])

Cupido amazara Kirby, 1871: A synonymic catalogue of diurnal Lepidoptera: 376. (replacement name for *Lycaena hypoleuca* Prittwitz, 1867)

Catochrysops trifracta Butler, 1884: The Annals and magazine of natural history; zoology, botany, and geology, series 5, 13 (75): 194. (Type locality: Rat Island, Straits of Malacca)

Catochrysops theseus Swinhoe, 1885: Proceedings of the Zoological Society of London 1885 (1): 131, pl. 9, fig. 8. (Type locality: Bombay)

Euchrysops suffusus Rothschild, 1915: Novitates Zoologicae 22 (1): 137. (Type locality: Bali)

Specimens examined:

JILONG CITY: 1♀, Mianhuayu, 8. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu); 3♂, Pengjiayu, 9. IX. 2008 (C. H. Yen & L. W. Wu); 1♂, Huapingyu, 8. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu). **YILAN Co.:** 1♂, 1♀, Toucheng, Guishan Is., 5/6.

XI. 2005 (H. C. Huang). **JIAYI Co.:** 1♂, 1♀, Fanlu, Niupuzai, 26. IX. 2010, reared from *Vigna* sp., emgd. 20. I. 2011, HSU 10J47 (L. H. Wang). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Tianliao, 100m, 27. IX. 2010 (Y. F. Hsu); 1♂, 3♀, Qijin, Nansha Is., Itu Aba Is., 5. II. 2005 (T. Y. Chang). **PINGDONG Co.:** 3♂, 1♀, Hengchun, Eluanbi, 7. IX. 2000, reared from *Vigna marina*, emgd. 7/23. IX. 2000, HSU 00J3 (Y. F. Hsu & C. R. Chen); 1♀, Hengchun, Kending, 7. IX. 2000 (Y. F. Hsu, M. H. Lin, C. C. Lu & C. M. Wu); 2♂, 1♀, Sandimen, 250m, 10. II. 2007 (Y. F. Hsu); 2♀, same locality, 200m, 26. III. 2011 (Y. F. Hsu); 1♂, Manzhou, Yongjing, 80m, 19. X. 2008 (Y. F. Hsu). **TAIDONG Co.:** 3♂, 4♀, Lanyu, Langdao, 18/22. VIII. 1998 (C. C. Lu & C. Y. Hung); 1♀, same locality, 15. VIII. 2002 (C. Y. Hung); 1♂, Lanyu, Badai Bay, 3/4. VII. 1998 (C. C. Lu); 1♀, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang). **PENGHU Co.:** 1♀, Xingren Dam, 19. XI. 2013 (C. L. Huang) (genitalia preparation JYL608). **JINMEN [= KINMEN] Co.:** 1♂, Jinsha, Tianpu, 27. V. 2011 (Y. F. Hsu); 1♂, Jinhu, Shenshiqiao, 28/29. VIII. 2011 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 10–16 mm. Sexual dimorphism present. Male (PLATE 28, Fig. 210): Head hairy, brown, with medial white stripe, a pair of narrow, lateral, brown bands on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 1st and 2nd segment white; 3rd segment slender, brown. Compound eyes smooth. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Short filiform projections at distal ends of CuA_2. Wing uppersides purple, with dark brown spot at distal end of cell CuA_1 and CuA_2 of hindwing. Wing undersides ground color creamy white, with a series of discal dark spots on both wings, spot by hindwing costa black. Short dark bars at distal ends of discoidal cells on both wings. Three black subbasal dots present on hindwing. Submarginal bands as two series of dark bands. Conspicuous black spots associated with orange markings and metallic green scalings at distal end of cells CuA_1 and CuA_2 of hindwing. Fringe gray. Female (PLATE 28, Fig. 211): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally, a series of white lunules along termen of hindwing.

Male genitalia (PLATE 62, Fig. 398) – Tegumen narrow. Socii as short, curved bar.

Brachium stout basally, tapering distally, hook-like, with distal end bent, pointed. Vinculum broad. Valva as elongate arm, with distal end enlarged, wrench-like. Juxta broad, flattened, V-shaped. Phallus straight, cylindrical, with aedeagus longer than phallobase. Distal end of aedeagus slightly enlarged. Cornuti as two curved blades, each associated with a membranous pad bearing many spines.

Female genitalia (PLATE 95, Fig. 527) – Corpus bursae oval, attenuate posteriorly. Ductus bursae narrow, slender, membranous. Sterigma forming large membranous chamber, with prominent sclerotized plate with rounded posterior margin. Anterior apophyses present, as small triangular lobe. Posterior apophyses longer than anal papillae, slender, straight, with posterior ends curved. Anal papillae mostly sclerotized, with posterior margin slightly sclerotized, setose.

Variation. Orange markings on wing undersides at tornus reduced in dry/cold season; blue patch on wing uppersides of females more extensive in dry/cold season.

Global distribution. Widely distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Braby, 2000; Hsu, 2006, 2013).

Distribution in Taiwan. Mainly in coastal areas and lowland, including associated islands; uncommon in northern part of main island of Taiwan (Hsu, 2006, 2013).

Larval Host plant(s). Fabaceae: *Vigna marina*, *V. minima*, *Macroptilium lathyroides*, etc. (Hsu, 2006, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 10–16 mm。具雌雄二型性。雄蝶 (圖 210)：頭被毛、褐色、中央具白色條紋；額兩側具一對褐色窄帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第一、第二節白色；第三節細小、褐色。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，具褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形，CuA_2 脈末端具絲狀短尾突。翅背面紫

色，後翅 CuA_1、CuA_2 室末端各具一黑褐色斑點。翅腹面底色乳白色，有一列暗色中央斑點，於後翅前緣者呈黑色；中室末端具暗色短條；後翅亞基部有三只小黑點；亞外緣帶紋由兩道暗色帶紋組成；後翅 CuA_1 及 CuA_2 室末端有一鑲橙色斑紋及具金屬光澤綠鱗之黑色斑點。緣毛灰色。雌蝶 (圖 211)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面內側有藍色斑紋、後翅背面外緣具一列白色弦月紋。

雄交尾器 (圖 398)：背兜狹窄。背兜側突短、彎曲。顎形突基部粗壯，向後漸細，鉤狀，末端尖、彎折。基腹弧寬闊。抱器細長、臂狀，尾端呈板手狀。陽基軛片寬扁，V 字形。陽莖圓柱狀、筆直，陽莖器長於陽莖基。陽莖器末端稍膨大。角狀器為兩枚彎刀狀骨片，並具有許多棘刺之膜墊。

雌交尾器 (圖 527)：交尾囊卵形。向後漸細。交尾囊管細長、膜質。交尾孔板為大腔室狀，附有後緣圓形骨板。前內骨突小、三角形。後內骨突長於肛突，細長、筆直，末端彎曲。肛突大部分骨化，尾端輕度骨化弱，有毛。

變異：低溫／乾季型個體後翅腹面臀區橙色紋退減，雌蝶翅背面藍色紋面積較大。

世界分布：廣泛分布於東洋區及澳洲區。

臺灣分布：主要分布於本島沿岸及低地但北部少見，周圍離島亦有分布。

寄主植物：豆科之濱豇豆、小豇豆、寬翼豆等。

生物學：本種為一年多世代物種。

Genus *LAMPIDES* Hübner, [1819]

Type species: *Papilio boeticus* Linnaeus, 1767

Diagnostic characters include the following: 1) androconia peculiar, with a bulbous base, tapering toward distal end; 2) Sc separated from R_1 of forewing; 3) short tail-like projection at distal end of CuA_2 of hindwing; 4) sexual dimorphism present, blue patch on wing uppersides less extensive in female.

Larvae feed on plants in Faboideae of the family Fabaceae.

A monotypical genus, but nearly cosmopolitan in distribution (Lohman *et al.*, 2008).

The sole representative species occurs in Taiwan.

豆波灰蝶屬

形態特徵如下：1) 發香鱗形狀特殊，似一長瓶；2) 前翅 Sc 脈與 R_1 脈分離；3) 後翅 CuA_2 脈末端具短尾突；4) 具雌雄二型性，雌蝶翅背面藍色斑紋較小。

幼生期以豆科之蝶形花亞科植物為寄主植物。

本屬為單種屬，卻近乎泛世界分布。

唯一代表種臺灣有分布。

Lampides boeticus (Linnaeus, 1767) (豆波灰蝶／波紋小灰蝶／亮灰蝶)

PLATE 29, Figs. 212–215; PLATE 62, Fig. 399; PLATE 95, Fig. 528

Papilio boeticus Linnaeus, 1767: Systema Naturae (Edition 12) 1 (2): 789. (Type locality: "Barbaria" [= Algeria])

Papilio damoetes Fabricius, 1775: Systema Entomologiae: 526. (Type locality: "nova Hollandia" [Australia])

Papilio coluteae Fuessly, 1775: Verzeichniss der ihm bekannten schweizerischen Insekten: 31, fig. 2. (Type locality: Switzerland)

Papilio archias Cramer, [1777]: De Uitlandsche Kapellen 2 (9–16): 129, pl. 181, fig. C. (Type locality: "Suriname")

Papilio pisorum Fourcroy, 1785: Entomologia Parisiensis 2: 242. (Type locality: Paris, France)

Hesperia boetica Fabricius, 1793: Entomologia Systematica 3 (1): 280. (Type locality: Europa australi; India)

Lycaena boetica var. *armeniensis* Gerhard, 1882: Berliner Entomologische Zeitschrift 26 (1): 125.

Polyommatus bagus Distant, 1886: The Annals and magazine of natural history; zoology, botany, and geology, series 5, 17 (102): 532. (Type locality: Province Wellesley [Seberang Perai], Malay Peninsula)

Polyommatus baeticus var. *yanagawensis* Hori, 1923: Insect World 27: 233. (Type locality: Yanaga-

wa, Chikugo, [Kyushu, Japan])
Lampides boeticus var. *obsoleta* Evans, 1925: Journal of the Bombay Natural History Society 30 (2): 351. (Type locality: Andamans)
Tarucus boeticus f. *pygmaea* Stauder, 1925: Entomologischer Anzeiger 5 (9): 68.
Tarucus boeticus f. *nigrita* Stauder, 1925: Entomologischer Anzeiger 5 (9): 68.
Tarucus boeticus f. *immarginata* Stauder, 1925: Entomologischer Anzeiger 5 (9): 68.
Tarucus boeticus f. *boeticoides* Stauder, 1925: Entomologischer Anzeiger 5 (9): 68.
Lampides boeticus infuscata Querci, 1932: Treballs del Museu de Ciències Naturals de Barcelona 14: 166. (Type locality: Montseny)
Lampides anamariae Gómez Bustillo, 1973: SHILAP Revta Lepidopterología 1 (1–2): 30. (Type locality: "España [Spain]")

Specimens examined:

JILONG CITY: 1♀, Pengjiayu, 9. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu); 1♂, same locality, 17. X. 2009 (H. C. Huang); 1♂, 1♀, Mianhuayu, 17. X. 2009 (H. C. Huang); 1♂, Jilongyu, 25. IX. 2011 (H. C. Huang); 1♂, Bisha Harbor, 9. XI. 2010 (W. H. Chien). **XINBEI CITY [= TAIPEI Co.]:** 1♀, Sanzhi, Datunshan, 800m, 15. VIII. 2011 (Y. F. Hsu); 1♀, Xindian, Yinhedong, 12. II. 2016 (Y. F. Hsu). **TAIPEI CITY:** 1♀, reared from *Dolichos lablab* [= *Lablab purpureus*], emgd. 28. II. 1983 (Y. F. Hsu); 1♂, Wenshan, Gongguan campus, NTNU, 9. I. 2007 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Jiuxianxi, 700m, 14/15. V. 2012 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Hualian, 7. I. 1996, reared from *Vigna marina*, emgd. 23. I. 1996, HSU 96A9 (Y. F. Hsu & M. Y. Lin). **JIAYI Co.:** 1♂, Xingang, Yuemei, 12. II. 2006 (Y. F. Hsu); 5♂, 3♀, Xingang, 16. II. 2008 (Y. F. Hsu); 1♀, Fanlu, Nuipuzai, 1. I. 2009 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Baihe, Guanziling, 23. XI. 2002 (Y. F. Hsu); 1♀, Yongkang, Sankandian, 23. I. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 4♀, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu); 1♀, Tianliao, 100m, 22. IV. 2011 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, 1100m, 11. V. 2007 (Y. F. Hsu); 1♂, Sandimen, 300m, 20. II. 2009 (Y. F. Hsu); 1♀, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, Sidaogou, 10. III. 2009 (Y. F. Hsu); 1♂, same locality, 16/18. III. 2010 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, Lanyu, Airport, 18. III. 2012 (Y. F. Hsu & H. C. Huang). **PENGHU Co.:** 1♂, Jingan, 20. XI. 2013 (C. L. Huang & C. W. Huang) (genitalia preparation JYL491). **JINMEN [= KINMEN] Co.:** 1♀, Jinhu, Taiwu Park, 28. V. 2011 (Y. F. Hsu & H. C. Huang); 1♀, Xiaojinmen, 26. X. 2011 (C. L. Huang).

Description. Adult – Forewing length 9–18 mm. Sexual dimorphism present. Male

(PLATE 29, Figs. 212–213): Head hairy, brown, with medial white stripe. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, white but partially dark brown. Compound eyes densely hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing triangular. Short filiform projections at distal ends of CuA_2. Wing uppersides purple tinged with blue, with dark brown spot at distal end of cell CuA_1 and CuA_2 of hindwing. Wing undersides ground color grayish brown, with a discal and subbasal dark band with medial white bands and margined with white on both wings. Submarginal bands as two white bands; distal band narrow and faint, proximal band thick and prominent. Conspicuous black spots associated with orange markings and metallic green scalings at distal end of cells CuA_1 and CuA_2 of hindwing. Fringe grayish white. Female (PLATE 29, Figs. 214–215): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally, a faint white, discal band and a series of white lunules along termen of hindwing.

Male genitalia (PLATE 62, Fig. 399) – Tegumen narrow, weakly sclerotized. Socii clavate, tapering proximally. Brachium represented as small, olive-shaped rod. Vinculum narrow dorsally, broad laterally. Valva forming prominent, elongate blade, with distal end curved inwards, pointed; caudal margin serrate. Juxta Y-shaped. Phallus short, stout, straight, cylindrical, with aedeagus approximately as long as phallobase. Distal end of aedeagus slightly enlarged. Cornuti as two folded sclerites plus multiple rows of minute teeth present on membrane near caudal opening of aedeagus.

Female genitalia (PLATE 95, Fig. 528) – Corpus bursae oval, elongate. Ductus bursae membranous, thick. Sterigma with lamella antevaginalis forming violin-shaped sclarite with prominent anterior invagination; lamella postvaginalis as a pair of large oblong sclerotized plates. Anterior apophyses as small flattened lobe with rounded distal ends. Posterior apophyses longer than anal papillae, very slender, nearly straight. Anal papillae with anterior half heavily sclerotized; posterior half weakly sclerotized, setose.

Variation. Markings at tornal areas on hindwing of individuals in dry/cold seasons are reduced.

Global distribution. A nearly cosmopolitan species, found everywhere except for habitats in extreme conditions like the polar areas (Lohman *et al*., 2008).

Distribution in Taiwan. Lowland to moderate elevations, including associated islands (Hsu, 2006, 2013; Lu & Chen, 2014).

Larval Host plant(s). Larvae utilize a variety of plants in Papilionaceae of the family Fabaceae, including *Lablab purpureus*, *Sesbania cannabina*, *Macroptilium atropurpureus*, *Crotalaria juncea*, *Cr. zanzibarica*, *Cr. pallida*, *Cr. verrucosa*, *Canavalia rosea*, *Puhuaea sequax*, *Ohwia caudata*, *Pueraria montana*, etc. (Hsu, 2006, 2013; Lu & Chen, 2014).

Biology. This species is multivoltine in occurrence (Hsu, 2006, 2013; Lu & Chen, 2014).

Remarks. This species is a notorious crop pest on cultivated beans, with a common named called “the pea blue butterfly” (Lohman *et al*., 2008). Lohman *et al*. (2008) have demonstrated that it lacks genetic and morphological diversity across its geographical range. This species is a well-known migratory species, with no subspecies recognized (Bascombe *et al*., 1999; Lohman *et al*., 2008).

形態特徵：成蝶前翅長 9–18 mm。具雌雄二型性。雄蝶 (圖 212–213)：頭被毛、褐色、中央有白色條紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、白色但部分黑褐色。複眼密被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅三角形，CuA_2 脈末端具絲狀短尾突。翅背面底色呈具藍色調之紫色，後翅 CuA_1、CuA_2 室末端各具一黑褐色斑點。翅腹面底色灰褐色，有深色中央及亞基部帶紋，帶紋有白邊及中央細白帶；亞外緣帶紋由兩道白色帶紋組成，外側帶紋較窄而模糊、內側帶紋較寬而鮮明；後翅 CuA_1 及 CuA_2 室末端有帶橙色紋及金屬光澤綠鱗片之黑色斑點。緣毛灰白色。雌蝶 (圖 214–215)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面內側有藍色斑紋、後翅背面中央有模糊白色帶紋，沿外緣有一列白色弦月紋。

雄交尾器 (圖 399)：背兜狹窄，輕度骨化。背兜側突寬帶狀。顎形突小型、橢圓桿狀。基腹弧背側窄，側面寬。抱器長而扁平，末端內彎、尖銳，後緣有鋸齒。陽基軛片 Y 字形。陽莖短圓柱狀、粗壯、筆直，陽莖器長度略與陽莖基等長。陽莖器末端略膨大。角狀器複雜，於陽莖器末端開口處有兩只摺疊骨片及多排細齒。

雌交尾器 (圖 528)：交尾囊橢圓形、修長。交尾囊管膜質、粗大。交尾孔前板形成小提琴狀骨板，前端具明顯內陷；交尾孔後板為一對大橢圓形骨片。前內骨突小型、扁平，前端圓。後內骨突長於肛突，纖細，甚直。肛突前半部高度骨化，後半部輕度骨化，有毛。

變異：低溫／乾季型個體翅後翅臀區斑紋減退。

世界分布：除極端環境如極地外，其餘地區皆可見。

臺灣分布：主要分布於本島低至中海拔地區，離島亦有分布。

寄主植物：幼蟲取食多種豆科蝶形花亞科之植物，包括鵲豆、田菁、賽芻豆、太陽麻、南美豬屎豆、黃野百合、大葉野百合、濱刀豆、波葉山螞蝗、小槐花、山葛等。

生物學：本種為一年多世代物種。

註記：本種為著名之豆科作物害蟲，英文俗名有「the pea blue butterfly」之稱 (Lohman *et al*., 2008)。Lohman *et al*. (2008) 之研究顯示本種在各地理區間缺乏遺傳及形態差異。本種遷移能力很強，因而無亞種分化 (Bascombe *et al*., 1999；Lohman *et al*., 2008)。

Genus *LEPTOTES* Scudder, 1876

Type species: *Lycaena theonus* Lucas, 1857

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2)

eyes densely hairy in both sexes; 3) short tail-like projection at distal end of CuA_2 of hindwing; 4) phallus very short; 5) sexual dimorphism prominent, females with blue scalings on brown ground color and white markings.

Larvae feed on plants in Fabaceae.

Approximately 21 species, pantropical in distribution, but most species are in Afrotropical and Neotropical regions.

1 species occurs in Taiwan.

細灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 雌、雄蝶複眼皆密被毛；3) 後翅 CuA_2 脈末端具短尾突；4) 陽莖很短；5) 雌雄二型性顯著，雌蝶翅背面底色褐色，上有藍色鱗及白紋。

幼生期以豆科植物為寄主。

本屬已知約 21 種，泛熱帶分布，但主要分布於非洲區及新熱帶區，而其他地理區亦有少數種類分布。

臺灣有 1 種。

***Leptotes plinius* (Fabricius, 1793) (細灰蝶 / 角紋小灰蝶)**

PLATE 29, Figs. 216–217; PLATE 63, Fig. 400; PLATE 96, Fig. 529

Hesperia plinius Fabricius, 1793: Entomologia Systematica 3 (1): 284. (Type locality: "Indiis")

Specimens examined:

YILAN Co.: 1♂, Lize, emgd. 27. III. 1987 (Y. F. Hsu); 1♀, Toucheng, Guishan Is., 401 highland, 22. I. 2005 (H. C. Huang, W. T. Wu & S. N. Hung). **TAOYUAN CITY:** 1♀, Fuxing, Baling, 10. V. 2017 (L. Huang) (genitalia preparation JYL467). **ZHANGHUA**

Co.: 2♀, Shetou, 16. III. 1996, reared from *Plumbago zeylanica*, emgd. 2. IV. 1996, HSU 96C1 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Huitouwan, 700m, 9. XII. 2007 (C. K. Wang). **TAINAN CITY [= TAINAN Co.]:** 1♀, Dongshan, Wuchagou, 26. VI. 2003, reared from *Glycine tomentella*, emgd. 8. VII. 2003, HSU 03F37 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Meinong, Shuangxi, 150m, 8. II. 2006 (Y. F. Hsu); 1♂, Liugui, Liuquiyu, 7. III. 2010 (N. Y. Tsai); 1♂, Liuqui, 300m, 11. XI. 2007 (Y. F. Hsu); 1♂, same locality, 25. XI. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Hengchun, 10. II. 2005, reared from *Sesbania cannabina*, emgd. 25. II. 2005 (Y. Y. Chuang); 1♂, Hengchun, Guijiao, 15. I. 2006, reared from *P. zeylanica*, emgd. 3. II. 2006, HSU 06A10 (Y. F. Hsu); 1♂, 1♀, Sandimen, 250m, 10. II. 2007 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, Sidaogou, 14/16. X. 2006 (Y. F. Hsu & H. C. Huang); 1♂, Samll Lanyu, 22. VIII. 2009 (Y. F. Hsu); 1♂, Haiduan, Tianlong Trail, 700m, 16. IV. 2011 (L. H. Wang). **PENGHU Co.:** 1♀, Xiyu, Xiyu East Fort, 18. XI. 2013 (C. L. Huang & C. W. Huang). **JINMEN [= KINMEN] Co.:** 1♀, Shishan, 4. XI. 2013, reared from *P. zeylanica*, HSU 13L04 (C. L. Huang & H. C. Huang); 1♂, Jinning, 5. XI. 2015 (H. C. Huang) (genitalia preparation JYL418). **LIANJIANG Co.:** 1♂, Beigan, Tangqi, 7. IX. 2014 (C. L. Huang & H. Y. Lee).

Description. Adult – Forewing length 9–14 mm. Sexual dimorphism present. Male (PLATE 29, Fig. 216): Head hairy, brown, with medial white patch, a white rim surrounding eyes. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, 3rd segment slender, rod-like, white but partially dark brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Small filiform projections at distal ends of CuA_2. Wing uppersides purple, with markings of undersides visible. Wing undersides ground color brown, with dark brown bands and spots edged with white present on both wings Submarginal bands as a series of distal small white circles and a prominent proximal white bands. Conspicuous black spots associated with orange markings and metallic green scalings at distal end of cells CuA_1 and CuA_2 of hindwing. Fringe white. Female (PLATE 29, Fig. 217): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, ground color of wing uppersides brown, decorated with white markings and brown spots and bands, with metallic scalings

only in proximal areas of wings.

Male genitalia (PLATE 63, Fig. 400) – Tegumen narrow. Socii slender proximally, enlarged laterally. Brachium as wing-shaped sclerite with several spines ventrally. Vinculum narrow dorsally, broad laterally, strongly curved. Valva forming elonagate arm with distal end bifid; ampulla axe-like; harpe digitate; sacculus parallelogrametric. Juxta narrow, U-shaped, with short stalk. Phallus short, stout, straight, with aedeagus much shorter than phallobase. Distal end of aedeagus with a pair of prominent ventral processes. Cornutus as a fork-shaped sclerite with horn-shaped stalk.

Female genitalia (PLATE 96, Fig. 529) – Corpus bursae oval. Ductus bursae elongate, slender, membranous, slightly enlarged posteriorly. Sterigma with lamella antevaginalis forming ligulate sclrite; lamella postvaginalis as membranous dome with medial sclerotized patch. Anterior apophyses present, as short rod. Posterior apophyses longer than anal papillae, straight. Anal papillae lobe-like, attenuate posteriorly, setose.

Global distribution. Widely distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Braby, 2000; Hsu, 2006, 2013).

Distribution in Taiwan. Widespread from lowland to high elevations, including associated islands (Hsu, 2006, 2013: Lu & Chen, 2014).

Larval Host plant(s). Plumbaginaceae: *Plumbago zeylanica*, *P. auriculata*; Fabaceae: *Lespedeza thunbergii formosa*, *Glycine tomentella*, *Indigofera suffruticosa*, *Sesbania cannabina*, etc. (Hsu, 2006, 2013; Lu & Chen, 2014)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 9–14 mm。具雌雄二型性。雄蝶 (圖 216)：頭被毛、褐色、中央有白斑；複眼具白色輪緣。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；

第三節細小、棒狀、白色但部分黑褐色。複眼被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形，CuA_2 脈末端具絲狀小尾突。翅背面底色紫色，可透視翅腹面斑紋。翅腹面底色褐色，有鑲白邊之黑褐色帶紋及斑點；亞外緣帶紋由外側一列白色小圈及內側一道鮮明白色帶紋組成；後翅 CuA_1 及 CuA_2 室末端有橙色紋及具金屬光澤綠鱗之黑色斑點。緣毛白色。雌蝶 (圖 217)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色並綴有白色斑紋及褐色斑點、帶紋、具金屬光澤斑紋僅見於翅內側。

雄交尾器 (圖 400)：背兜狹窄。背兜側突內細外粗。顎形突呈翼狀，腹緣具數刺。基腹弧背側狹窄，側面寬闊，強彎曲。抱器末端呈臂狀，末端二分。抱器內突斧狀；抱握鋏指狀；抱器腹呈平行四邊狀。陽基軛片狹窄，U 字形，具短柄。陽莖粗短、筆直，陽莖器遠短於陽莖基短。陽莖器腹側末端具一對長突起。角狀器為叉狀骨片，有角狀炳。

雌交尾器 (圖 529)：交尾囊橢圓形。交尾囊管細長、膜質，末端膨大。交尾孔前板為舌狀骨片；交尾孔後板為穹頂狀膜。前內骨突短桿狀，前端鈍。後內骨突長於肛突，筆直。肛突瓣狀，向後漸細，有毛。

世界分布：廣泛分布於東洋區及澳洲區。

臺灣分布：廣泛分布於本島低至高海拔地區，離島亦有分布。

寄主植物：藍雪科之烏面馬及藍雪花；豆科之毛胡枝子、闊葉大豆、野木藍、田菁等。

生物學：本種為一年多世代物種。

Genus *ZIZEERIA* Chapman, 1910

Type species: *Polyommatus karsandra* Moore, 1865

Diagnostic characters include the following: 1) Sc near or jointed with R_1 of forewing; 2) sexual dimorphism present, blue or purple on wing uppersides in males, brown with restricted proximal blue scalings in females.

One member, *Z. maha*, is sometimes placed in a monotypical genus *Pseudozizeeria* Beuret, 1955.

Larvae feed on a variety of herbaceous plants.

3–4 species, pantropical in distribution.

2 species occur in Taiwan.

藍灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈相近或相連；2) 具雌雄二型性，雄蝶翅背面藍色或紫色，雌蝶褐色並於近軀體處有藍色鱗。

本屬之藍灰蝶有時置於單種屬 *Pseudozizeeria* Beuret, 1955 中。

幼生期以多種草本植物為寄主。

本屬約 3–4 種，呈泛熱帶分布。

臺灣有 2 種。

Zizeeria maha (Kollar, [1844]) (藍灰蝶／沖繩小灰蝶／大和小灰蝶／酢醬灰蝶)

Lycaena maha Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 422. (Type locality: "Himal [aya] Massuri, [Mussoorie]")

Polyommatus chandala Moore, 1865: Proceedings of the Zoological Society of London 1865 (2): 504, pl. 31, f. 5. (Type locality: "Oudh, Punjab, and Lower Himalayas")

Lycaena opalina Poujade, 1885: Annales de la Société entomologique de France, série 6, 5: cxliii. (Type locality: "Mou-Pin [Baoxing, Sichuan]")

Lycaena marginata Poujade, 1885: Annales de la Société entomologique de France, série 6, 5: cli. (Type locality: "Mou-Pin [Baoxing, Sichuan]")

Plebeius albocoeruleus Röber, 1886: Correspondenz-blatt des Entomologischen Vereins Iris zu

Dresden (3): 59, pl. 4, f. 7. (Type locality: “Hongkong”)

Lycaena japonica Murray, 1874: The Entomologist's monthly magazine 11: 167. (Type locality: “Yokohama: Japan”)

Lycaena alope Fenton, [1882]: Proceedings of the Zoological Society of London 1881 (4): 851. (Type locality: “Oshiukaido crosses at Akutsu, Shimódzŭke, [Japan]”)

Ssp. *okinawana* Matsumura, 1929

PLATE 30, Figs. 218–221; PLATE 63, Fig. 401; PLATE 96, Fig. 530

Zizera maha f. *okinawana* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 105. (Type locality: Okinawa)

Ssp. *maha* Kollar, [1844]

PLATE 30, Figs. 222–225; PLATE 63, Fig. 402; PLATE 96, Fig. 531

Specimens examined:

Ssp. *okinawana*: **JILONG CITY:** 2♀, NTOU campus, 19. IX. 2006 (Y. F. Hsu); 6♂, Mianhuayu, 8. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu); 2♂, same locality, 17. X. 2009 (H. C. Huang); 1♂, 1♀, same locality, 18. VIII. 2011 (H. C. Huang); 1♂, 1♀, Huapingyu, 8. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu); 1♂, Pengjiayu, 17. X. 2009 (H. C. Huang). **TAIPEI CITY:** 1♀, Wenshan, Gongguan campus, NTNU, 20. VIII. 2004 (Y. F. Hsu); 1♂, same locality, 15. I. 2006 (C. T. Chang); 1♂, same locality, 9. I. 2007 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 21. II. 1987 (Y. F. Hsu); 1♂, same locality, 4. III. 1987 (Y. F. Hsu). **YILAN Co.:** 1♂, Lize, 15. III. 1987 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Dadu, Dadushan, 30. XII. 2006 (Y. F. Hsu); 1♂, Longjing, Longmujing Trail, 10. IV. 2010 (Y. F. Hsu). **JIAYI Co.:** 2♂, Fanlu, Chukou, ca 350m, 12. II. 2006 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 2♂, Dongshan, Wuchagou, 27. II. 2002 (Y. F. Hsu); 1♀, Guantian, Wushantou, 19. VIII. 2009 (Y. F. Hsu); 2♂, Yongkang, Sankandian, 23. I. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Meinong, Shuangxi, 150m, 31. XII. 2006 (Y. F. Hsu). **PINGDONG Co.:** 2♂, Fangliao, Yuquan, 21. I. 2007 (Y. F. Hsu); 1♂, Sandimen, 250m, 10. II. 2007 (Y. F. Hsu); 1♂, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2009 (Y. F. Hsu & H. C. Huang); 1♂, 2♀, Liuqiu, Liuqiuyu, 7. III. 2010 (N. Y. Tsai). **TAIDONG Co.:** 3♂, Lanyu, Badai Bay, 3/4. VII. 1988 (C. C. Lu); 1♀, Lanyu, Langdao, 18/22. VIII. 1998 (C. C. Lu & C. Y. Hung); 6♂, 4♀, same locality, 15. VIII. 2002 (C. Y. Hung); 1♂, Lanyu, Sidaogou, 11. VIII. 2000 (C. C. Lu); 2♂, same locality, 1/3. V. 2003 (Y. F. Hsu, Y. C. Hsu & Y. Lo); 2♂, same locality, 13/15. VI. 2003 (Y. F.

Hsu); 1♀, same locality, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♀, same locality, 28/29 IX. 2003 (Y. F. Hsu); 1♂, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 1♂, 1♀, same locality, 18. IV. 2006 (Y. F. Hsu); 1♀, same locality, 3/5. III. 2007 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 17. III. 2007 (Y. F. Hsu); 4♂, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂, Lanyu, Shuangshiyan, 29. VI. 2008 (C. H. Lin, jr.); 1♂, same locality, 13/15. VI. 2003 (Y. F. Hsu); 1♂, Lanyu, 18. VIII. 2008 (Y. F. Hsu); 2♂, same locality, 21/23. IX. 2008 (Y. F. Hsu, H. C. Huang & C. H. Lin, jr); 2♂, same locality, 28. XII. 2008 (C. H. Lin, jr. & N. Y. Tsai); 3♂, 2♀, Small Lanyu, 22. VIII. 2009 (Y. F. Hsu); 1♂, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 24/25. IX. 2005 (C. L. Huang); 2♂, 3♀, Taidong, 11. IV. 2007 (Y. F. Hsu); Donghe, Donghe Farm, 350m, 16. X. 2007 (Y. F. Hsu).

Ssp. *maha*: **LIANJIANG Co.:** 1♂, 3♀, Nangan, Fuao, 14. VI. 2000 (Y. F. Hsu); 1♀, Nangan, Zhuluo, 26. VII. 2000 (Y. F. Hsu); 2♂, 3♀, Beigan, Daqiu, 20. IV. 2007 (Y. F. Hsu & H. C. Huang); 1♂, Beigan, Qinbi, 21. IV. 2007 (Y. F. Hsu & H. C. Huang). **JINMEN [= KINMEN] Co.:** 1♂, Liangshan, 4. VI. 2000 (Y. F. Hsu); 1♀, Jinhu, Shenshiqiao, 27/28. V. 2011 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 10–14 mm. Sexual dimorphism present. Male (PLATE 30, Figs. 218–219, 222–223): Head hairy, brown, with medial white stripe. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect; 3rd segment slender, white but partially brown. Compound eyes smooth. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing broad, triangular, termen convex. Hindwing rounded. Wing uppersides blue, with brown margin along termen on forewing and a series of brown spots along termen on hindwing. Wing undersides ground color white to buff, with a series of discal dark spots on both wings. One dark subbasal dot on forewing and three on hindwing. Short, narrow dark bar present at distal end of discoidal cell of both wings. Submarginal bands as a series of proximal dark bands and a series of distal dark spots. Fringe white mixed with brown. Female (PLATE 30, Figs. 220–221, 224–225): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally.

Male genitalia (PLATE 63, Figs. 401–402) – Tegumen narrow dorsally, produced laterally. Socii produced laterally, lobe-like. Brachium enlarged basally, strongly bent, hook-like, with distal end pointed. Vinculum narrow dorsally, broad laterally. Valvae with sacculi fused, elongate, flattened, curved outwards, slightly tapering caudad with distal end truncate, bearing small teeth. Juxta narrow, V-shaped. Phallus stout, short, oblong, with aedeagus much shorter than phallobase. Distal end of aedeagus with prominent ventral spine-like process; dorsal part slightly produced. Cornuti as two spiny bands.

Female genitalia (PLATE 96, Figs. 530–531) – Corpus bursae as elongate sac. Ductus bursae slender, membranous, connecting to sclerotized ring at posterior end. Sterigma with lamella antevaginalis as broad sclerotized plate with posterior end produced; lamella postvaginalis as broader sclerotized piece with lateral folds posteriorly. Anterior apophyses present, as short processes with blunt distal ends. Posterior apophyses longer than anal papillae, with posterior end curved, flattened. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. Dark markings on wing undersides are reduced in dry/cold seasons; blue scaling on wing uppersides of the females are more extensive in dry/cold seasons.

Global distribution. West Asia, Middle Asia to East Asia, and recently introduced to Luzon of the Philippines (Hsu, 1999a, 2013).

Distribution in Taiwan. Widespread from lowland to moderate elevations, including most associated islands except Dongsha and Nansha Islands (Hsu, 1999a, 2013).

Larval Host plant(s). Oxalidaceae: *Oxalis corniculata* (Uchida, 1999; Hsu, 1999a, 2013; Lu & Chen, 2014).

Biology. This species multivotine in occurrence (Hsu, 1999a, 2013; Lu & Chen, 2014).

Remarks. The populations found in Jinmen and Mazu have been considered belonging

to the nominotypical subspecies; however, ssp. *okinawana* and the nominotypical subspecies are similar to each other, different only by having blue scalings of wing uppersides more extensive in female of ssp. *okinawana*.

This species is sometimes placed in a monotypical genus *Pseudozizeeria* Beuret, 1955.

形態特徵：成蝶前翅長 10–14 mm。具雌雄二型性。雄蝶 (圖 218–219、222–223)：頭被毛、褐色、中央有白色條紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、白色但部分褐色。複眼光滑。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬闊，三角形，外緣略突出。後翅圓形。翅背面籃色，前翅外緣有褐色邊、後翅外緣有一列褐色斑點。翅腹面底色白色至淺黃白色，中央有一列深色斑點；前翅亞基部有一個深色小點、後翅有三個深色小點；中室末端有深色短細條；亞外緣帶紋由內側深色帶紋及外側一列深色斑點組成。緣毛白色混褐色。雌蝶 (圖 220–221、224–225)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑紋位於內側。

雄交尾器 (圖 401–402)：背兜背側狹窄，側面突出。背兜側突側面突出，呈瓣狀。顎形突基部膨大，強彎曲、鉤狀，末端尖銳。基腹弧背側狹窄，側面寬闊。抱器基部癒合，長而扁平、外彎，向後漸窄，末端截狀、有鋸齒。陽基軛片狹窄，V 字形。陽莖粗短、長卵形，陽莖器遠短於陽莖基。陽莖器末端腹側具針狀突起，背側略突出。角狀器為兩枚具小刺棘之骨帶。

雌交尾器 (圖 530–531)：交尾囊長囊狀。交尾囊管纖細、膜質，交尾孔相接處形成骨化環狀。交尾孔前板寬骨板，後側張出；交尾孔後板為寬闊骨板，末端有側褶。前內骨突為短突起，前端鈍。後內骨突長於肛突，後端彎曲、扁平。肛突前部高度骨化，後部輕度骨化，有毛。

變異：低溫／乾季型個體翅腹面深色斑紋退減、雌蝶翅背面藍色鱗片較為擴散。

世界分布：西亞、中亞至東亞，近期入侵菲律賓之呂宋。

臺灣分布：廣泛分布於本島低至中海拔地區，周圍離島除東沙及南沙群島外皆有分

布。

寄主植物：酢漿草科之酢漿草 (黃花酢漿草)。

生物學：本種為一年多世代物種。

註記：分布於金門及馬祖列嶼之族群被認為是承名亞種，然而，除了雌蝶翅背面藍色鱗片較發達外，亞種 ssp. *okinawana* 與承名亞種頗為相似。

本種有時被置於單種屬 *Pseudozizeeria* Beuret, 1955 中。

Zizeeria karsandra (Moore, 1865) (莧藍灰蝶／濱大和小灰蝶／吉灰蝶／臺灣小灰蝶)

PLATE 30, Figs. 226–227; PLATE 63, Fig. 403; PLATE 96, Fig. 532

Polyommatus karsandra Moore, 1865: Proceedings of the Zoological Society of London 1865 (2): 505, pl. 31, f. 7. (Type locality: "N. W. India")

Lycaena conformis Butler, 1877: Proceedings of the Zoological Society of London 1877 (3): 469. (Type locality: Cape York)

Zizera ishigakiana Matsumura, 1929: Insecta Matsumurana 3 (2/3): 105. (Type locality: "Okinawa, Ishigakijima")

Lampides neis Walker, 1870: Entomologist 5 (76): 54. (Type locality: "Wâdy Gennèh, Arabia").

Zizera mora Swinhoe, [1885]: Proceedings of the Zoological Society of London 1884: 506, pl. 47, f. 2. (Type locality: "Kurrachee [Karachi, Pakistan]")

Specimens examined:

TAINAN CITY [= TAINAN Co.]: 1♂, 3♀, Anping, 16. IX. 2000, reared from *Tribulus taiwanense*, emgd. 23/24. IX. 2000, HSU 00J28 (Y. F. Hsu, C. C. Lu & C. J. Chen); 1♀, same locality, 24. IX. 2005 (Y. F. Hsu); 1♀, Yongkang, 29. VIII. 2008, reared from *Amaranthus spinosus*, emgd. 11. IX. 2008, HSU 08H24 (Y. F. Hsu); 4♂, 3♀, Yongkang, 10m, 30. VIII. 2008 (Y. F. Hsu); 1♀, Xinhua, 23. IV. 2011 (Y. F. Hsu); 1♀, Xinhua, Xinhua Forest Farm, 24. XI. 2019 (Y. F. Hsu) (genitalia preparation JYL678). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 2♂, 6♀, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu); 2♂, 7♀, same locality, 2/7. X. 2008, reared from *T. cistoides*, emgd. 7/14. X. 2008, HSU 08K7 (Y. F. Hsu); 2♂, 2♀, same locality, 3/4. IX. 2012, reared from *T. cistoides*, emgd. 10. IX. 2012, HSU 12J1 (Y. F. Hsu); 1♂, Xiaogang, Dalinpu, 0/20m, 29. XI. 2003 (Y. F. Hsu); 1♂, Tianliao, 100m, 9. IV. 2010 (Y. F. Hsu); 2♂, same locality,

26. IV. 2010 (Y. F. Hsu). **PINGDONG Co.:** 2♀, Hengchun, Kending, 2. VIII. 1987 (Y. F. Hsu); 1♂, same locality, emgd. 4. VIII. 1987 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Lanyu, Shidaogou, 3/5. III. 2007 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 9–12 mm. Sexual dimorphism present. Male (PLATE 30, Fig. 226): Head hairy, brown, with medial white stripe. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect; 3rd segment slender, white but partially brown. Compound eyes smooth. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing broad, triangular, termen convex. Hindwing rounded. Wing uppersides purple, with brown margin along termen on both wings. Wing undersides ground color grayish white to buff, with a series of discal dark brown spots on both wings. Two dark subbasal dots on forewing and three on hindwing. Short, narrow dark bar present at distal end of discoidal cell of both wings. Submarginal bands as a series of proximal brown bands and a series of distal brown spots. Fringe grayish white. Female (PLATE 30, Fig. 227): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally.

Male genitalia (PLATE 63, Fig. 403) – Tegumen narrow dorsally, produced laterally. Socii produced laterally, pea-like. Brachium enlarged basally, strongly bent, hook-like, with distal end pointed. Vinculum narrow dorsally, broad laterally. Valvae with sacculi fused, elongate, flattened, curved outwards, with distal end slightly twisted inwards with margin truncate and serrate. Juxta narrow, V-shaped. Phallus stout, short, oblong, with aedeagus much shorter than phallobase. Distal end of aedeagus with prominent ventral stub-like process; dorsal part slightly produced. Cornuti as two spiny bands.

Female genitalia (PLATE 96, Fig. 532) – Corpus bursae as elongate sac. Ductus bursae slender, membranous, connecting to sclerotized ring at posterior end. Sterigma with lamella antevaginalis as broad sclerotized plate lateral folds; lamella postvaginalis as broader sclerotized piece with lateral folds posteriorly. Anterior apophyses present, as short processes with blunt distal ends. Posterior apophyses longer than anal papillae, with posterior end curved, flattened. Anal papillae with anterior part heavily sclerotized;

posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Throughout tropical areas in the Old World (Braby, 2000; Hsu, 1999a, 2013).

Distribution in Taiwan. Lowlands, including associated islands, but seldom seen in northern Taiwan (Hsu, 1999a, 2013).

Larval Host plant(s). Herbacious plants in a variety of families, including Amaranthaceae: *Amaranthus spinosus*, *A. viridis*, *A. lividus*; Zygophyllaceae: *Tribulus taiwanense*, *T. cistoides*; Molluginaceae: *Glinus oppositifolius*; Polygonaceae: *Polygonum plebeium*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. This species is usually sympatric with other "grass blues", and superficially similar to those species, especially congeneric *Z. maha*. It may be distinguished from *Z. maha* by the following features: 1) discal spots of wing undersides darker than submarginal bands in *Z. karsandra*, whereas it is usually conformed to submarginal bands in color in *Z. maha*; 2) dark brown dot absent in cell CuA_2 of forewing undersides in *Z. karsandra*, but present in *Z. maha*; 3) purple patches present on wing uppersides in male of *Z. karsandra* versus blue patches in *Z. maha*.

形態特徵：成蝶前翅長 9–12 mm。具雌雄二型性。雄蝶 (圖 226)：頭被毛、褐色、中央有白色條紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、白色但部分褐色。複眼光滑。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬闊，三角形，外緣略突出。後翅圓形。翅背面紫色，外緣有褐色邊。翅腹面底色灰白色至淺黃白色，中央具一列黑褐色斑點；前翅亞基部有二個深色小點、後翅有三個深色小點；中室末端有深色短細條；亞外緣帶紋由內側褐色帶紋及外側一列褐色斑點組成。緣毛灰白色。雌蝶 (圖 227)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑紋位於內側。

雄交尾器 (圖 403)：背兜背側狹窄，側面突出。背兜側突側面突出，呈豌豆狀。顎形突基部膨大，強彎曲、鉤狀，末端尖銳。基腹弧背側狹窄，側面寬闊。抱器基部癒合，長而扁平、外彎，末端略向內扭曲，後緣截狀，有鋸齒。陽基軛片狹窄，V 字形。陽莖粗短、長卵形，陽莖器遠短於陽莖基。陽莖器末端腹側具椿狀突起，背側略突出。角狀器為兩只具小棘刺之骨帶。

雌交尾器 (圖 532)：交尾囊長囊狀。交尾囊管纖細、膜質，交尾孔相接處形成骨化環狀。交尾孔前板寬骨板，有側褶；交尾孔後板為寬闊骨板，末端有側褶。前內骨突為短突起，前端鈍。後內骨突長於肛突，後端彎曲、扁平。肛突前部高度骨化，後部輕度骨化，有毛。

世界分布：泛舊世界熱帶地區分布。

臺灣分布：分布於本島低海拔地區，但北部少見，離島亦有分布。

寄主植物：幼蟲取食多種草本植物，其寄主植物包括莧科之刺莧、野莧菜、凹葉野莧菜；蓼藜科之臺灣蓼藜、大花蓼藜；粟米草科之假繁縷；蓼科之假扁蓄等。

生物學：本種為一年多世代物種。

註記：本種常與其他棲息在草地環境的幾種灰蝶共域且相似，尤其是同屬之藍灰蝶。本種可藉由下列特徵與藍灰蝶區分：1) 本種中央斑列較亞外緣帶紋黑，藍灰蝶則顏色相似；2) 藍灰蝶前翅腹面 CuA_2 室具黑褐色小點，本種則無；3) 本種翅背面斑紋紫色，藍灰蝶則為藍色。

Genus *ZIZINA* Chapman, 1910

Type species: *Polyommatus labradus* Godart, [1824]

Diagnostic characters include the following: 1) asymmetrical androconia with a concave distal margin; 2) one or two long subbasal bristles present on the ventral margin of valva; 3) spot in cell Rs on hindwing undersides deviated proximally.

Larvae feed on plants in Fabaceae.

3 species, in tropical areas of the Old World (Yago *et al*., 2008).

1 species occurs in Taiwan.

折列藍灰蝶屬

形態特徵如下：1) 發香鱗不對稱，末端內凹；2) 抱器腹緣近基部處生一至二長針狀構造；3) 後翅腹面 Rs 室斑點向內偏移。

幼生期以豆科植物為寄主植物。

本屬已知 3 種，分布於舊世界之熱帶地區。

臺灣具有 1 種。

Zizina otis (Fabricius, 1787) (折列藍灰蝶／毛眼灰蝶／小小灰蝶)

Papilio otis Fabricius, 1787: Mantissa Insectorum 2: 73, no. 689. (Type locality: China)
Zizera sylvia Nakahara, 1922: Entomologist 55: 124. (Type locality: Kusakimura, Harima, Japan)

Ssp. *riukuensis* Matsumura, 1929

PLATE 31, Figs. 228–229; PLATE 64, Fig. 404; PLATE 97, Fig. 533

Zizera labradus f. *riukuensis* Matsumura, 1929: Insecta Matsumurana 3 (2/3): 106. (Type locality: Okinawa)

Ssp. *otis* Fabricius, 1787

PLATE 31, Figs. 230–231; PLATE 64, Fig. 405; PLATE 97, Fig. 534

Specimens examined:

Ssp. *riukuensis*: **JILONG CITY:** 1♀, Mianhuayu, 8. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu); 1♂, Pengjiayu, 9. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu); 1♂, same locality, 17. X. 2009 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Daxi, Dingliao, 7. XI. 2003 (Y. F. Hsu); 1♂, same locality, 15. XI. 2003 (Y. F. Hsu); 1♀, same

locality, 200m, 7. XII. 2009 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♀, Dadu, Dadushan, 10. XI. 2007 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Xinhua, 9. II. 2007 (Y. F. Hsu); 4♂, 1♀, Guantian, 40m, 2. III. 2008 (Y. F. Hsu); 1♂, 1♀, Guanmiao, 40m, 2. III. 2008 (Y. F. Hsu); 1♀, Guantian, Wushantou, 30m, 22. I. 2009 (Y. F. Hsu); 1♀, Yongkang, Sankandian, 23. I. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 1♀, Yanchao, 17. VII. 2009 (Y. F. Hsu); 1♀, Tianliao, 9. IV. 2010 (Y. F. Hsu); 2♂, same locality, 9. III. 2020 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Hengchun, 9. XI. 1995 (Y. F. Hsu); 1♂, same locality, 7. IX. 2000, reared from *Indigofera spicata*, emgd. 27. IX. 2000, HSU 00J2 (Y. F. Hsu, C. C. Lu, C. M. Wu & C. R. Chen); 2♂, 1♀, Manzhou, Yongjing, 80m, 19. X. 2008 (Y. F. Hsu); 1♀, Hengchun, Houbihu, 25. V. 2009 (Y. F. Hsu); 1♀, Liuqiu, Liuqiuyu, 7. III. 2010 (N. Y. Tsai). **TAIDONG Co.:** 1♀, Lanyu, Sidaogou, 28/29. IX. 2003 (Y. F. Hsu); 1♂, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂, Lanyu, Longmengang, 21/23. IX. 2008 (H. C. Huang); 1♀, Small Lanyu, 22. VIII. 2009 (Y. F. Hsu); 1♀, Lanyu, 29/31. III. 2008 (C. H. Lin, jr. & N. Y. Tsai); 1♂, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 2♂, 1♀, Fengnian, 24. VIII. 2009 (Y. F. Hsu); 1♂, Taidong, 11. IV. 2007 (Y. F. Hsu); 2♂, Taidong, Kangle, 24. VIII. 2009 (Y. F. Hsu); 5♂, 1♀, same locality, 4. X. 2010 (Y. F. Hsu); 1♀, same locality, 4. X. 2016 (Y. F. Hsu).

Ssp. *otis*: **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 11♂, 4♀, Qijin, Dongsha Is., 2/7. X. 2008 (Y. F. Hsu); 2♀, Qijin, Nansha Is., Itu Aba Is., 5. II. 2005 (T. Y. Chang). **JINMEN [= KINMEN] Co.:** 2♂, 1♀, Jinhu, Wujiangkou, 28. V. 2011 (Y. F. Hsu & H. C. Huang). **LIANJIANG Co.:** 1♂, 1♀, Nangan, Niujiao, 14/15. X. 2013 (M. Takahashi).

Description. Adult – Forewing length 8–12 mm. Sexual dimorphism present. Male (PLATE 31, Figs. 228, 230): Head hairy, brown, with medial white stripe. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect; 3rd segment slender, white but partially brown. Compound eyes hairy. Thorax and abdomen dark brown dorsally mixed with blue, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing broad, triangular, termen convex. Hindwing rounded. Wing uppersides purple tinged with blue, with prominent brown margin on both wings. Wing undersides ground color grayish white to buff, with a series of discal dark spots on both wings; spot in Rs of hindwing

underside deviated proximally. Three dark subbasal dots on hindwing and sometimes one on forewing. Short, narrow dark bar present at distal end of discoidal cell of both wings. Submarginal bands as a series of proximal dark bands and a series of distal dark spots. Fringe grayish white. Female (PLATE 31, Figs. 229, 231): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally.

Male genitalia (PLATE 64, Figs. 404–405) – Tegumen narrow. Socii cashew-shaped. Brachium slender, with distal end bent perpendicularly. Vinculum narrow dorsally, broad laterally. Valvae with sacculi fused, narrowed posteriorly; harpe forming a lobe proximally and an elongate process with hooked tip distally; a peculiar needle-like spine raised ventrally near base, longer than length of valve. Juxta as elongate sclerite with dorsal margin bifid. Phallus stout, short, oblong, with aedeagus much shorter than phallobase. Distal end of aedeagus with prominent ventral spine-like process. Cornuti as two elongate, spiny bands.

Female genitalia (PLATE 97, Figs. 533–534) – Corpus bursae as elongate sac. Signa as a pair of small, rounded, weakly sclerotized, spiny patches on opposite walls of corpus bursae. Ductus bursae membranous, sclerotized posteriorly. Sterigma forming prominent sclerotized pouch with numerous small, irregular, internal folds, and a medial sclerite with anterior end bi-lobed, posterior end pointed. Anterior apophyses present, as short processes with blunt distal ends. Posterior apophyses shorter than anal papillae, slender, slightly curved. Anal papillae lobe-like, setose.

Variation. In individuals in wet/hot season, ground color of wing undersides is paler and blue scalings on wing uppersides reduced in females.

Global distribution. Widely distributed in the Oriental, Australian and Afrotropical regions (Yago *et al*., 2008).

Distribution in Taiwan. Lowland, including associated islands (Hsu, 2006, 2013; Lu & Chen, 2014).

Larval Host plant(s). Fabaceae: *Grona triflora*, *G. heterocarpa*, *Indigofera spicata*, *I. trifoliata*, etc. (Hsu, 2006, 2013; Lu & Chen, 2014)

Biology. This species multivotine in occurrence (Hsu, 2006, 2013; Lu & Chen, 2014).

Remarks. The populations found from Jinmen, Mazu, Dongsha and Nansha Islands are considered belonging to the nominotypical subspecies, which has the ground color of wing undersides paler than ssp. *riukuensis* (Yago *et al*., 2008).

形態特徵：成蝶前翅長 8–12 mm。具雌雄二型性。雄蝶 (圖 228、230)：頭被毛、褐色、中央有白色條紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、白色但部分褐色。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬闊，三角形，外緣略突出。後翅圓形。翅背面紫藍色，外緣有褐色邊。翅腹面底色灰白色至淺黃色，中央有一列深色斑點，於後翅 Rs 室者內移；前翅亞基部有時具一只深色小點、後翅有三只深色小點；中室末端有深色細短條；亞外緣帶紋由內側深色帶紋及外側一列深色斑點組成。緣毛灰白色。雌蝶 (圖 229、231)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑紋位於內側。

雄交尾器 (圖 404–405)：背兜狹窄。背兜側突腎形。顎形突細長，末端直角彎曲。基腹弧背側狹窄，側面寬闊，強彎曲。抱器基部癒合，向後端狹窄。基部腹側基部葉狀，端部有一末端鉤狀之突起，腹側具一獨特長針狀構造，其長度長於抱器。陽基軛片形成背緣二分的長骨片。陽莖粗短，長卵形，陽莖器遠短於陽莖基。陽莖器末端腹側有刺突。角狀器為兩枚具小棘刺之骨帶。

雌交尾器 (圖 533–534)：交尾囊長囊狀。花壁一對，位於交尾囊相對位置，形成輕度骨化、有許多小棘刺之圓形小骨。交尾囊管纖細、膜質，後端骨化。交尾孔板形成骨化囊袋，內布不規則皺摺，中央具心形骨片。前內骨突短小，末端鈍突起。後內骨突短於肛突，纖細、略彎曲。肛突瓣狀，有毛。

變異：高溫／雨季型個體翅腹面底色較淺、雌蝶翅背面藍色鱗片減退。

世界分布：廣泛分布於東洋區、澳洲區及非洲區。

臺灣分布：分布於本島低海拔地區，離島亦有分布。

寄主植物：豆科之蠅翼草、假地豆、穗花木藍、三葉木藍等。

生物學：本種為一年多世代物種。

註記：分布於金門、馬祖列嶼、東沙群島及南沙群島之族群屬於承名亞種，該亞種翅腹面底色較分布於臺灣的亞種 ssp. *riukuensis* 來得淺 (Yago, 2008)。

Genus *FAMEGANA* Eliot, 1973

Type species: *Lycaena alsulus* Herrich-Schäffer, 1869

Diagnostic characters include the following: 1) distal portion of Sc joined with a proximal portion of R_1, and separated at terminal end on forewing; 2) sexual dimorphism present, blue or purple on wing uppersides in males, brown with restricted proximal purple scalings in females.

This genus was separated from *Zizina* and *Zizeeria* based on characters in male genitalia by Eliot (1973).

Larvae feed on plants in the family Fabaceae.

Monotypic, distributed in the Oriental and Australian regions (Bascombe *et al*., 1999; Braby, 2000).

The sole representative species was recorded in Taiwan.

單點藍灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈近基部位置相接，末端分離；2) 具雌雄二型性，雄蝶翅背面藍色或紫色，雌蝶翅背面褐色，僅翅基附近有紫色鱗。

Eliot (1973) 依雄蝶交尾器特徵將本屬從藍灰蝶屬及折列藍灰蝶屬分離。

幼生期以豆科植物為寄主。

本屬為單種屬，分布於東洋區及澳洲區。

唯一代表種臺灣曾有記錄。

Famegana nisa (Wallace, 1866) (單點藍灰蝶／黑星姬小灰蝶)

PLATE 31, Figs. 232–233; PLATE 64, Fig. 406; PLATE 97, Fig. 535

Lycaena nisa Wallace, 1866: Proceedings of the Zoological Society of London 1866: 360. (Type locality: "Takaw, Formosa [= Kaohsiung, Taiwan]")

Lycaena alsulus Herrich-Schäffer, 1869: Entomologische Zeitung 30 (1–3): 75. (Type locality: Rockhampton und Upolu [Australia])

Lycaena exilis Lucas, 1889: Proceedings of the Royal Society of Queensland 6 (4): 159, f. 13–15. (preoccupied by Boisduval, 1852) (Type locality: Cooktown to Bowen [Australia])

Lycaena lulu Mathew, 1889: Transactions of the Entomological Society of London 1889: 312. (Type locality: Tongatabu, [Tonga])

Lycaena gracilis Miskin, 1890: Proceedings of the Linnean Society of New South Wales 5, series 2 (1): 37. (Type locality: Brisbane to Cooktownn [Australia])

Lycaena exiloides Lucas, 1891: Proceedings of the Royal Society of Queensland 7 (1): 47. (replacement name for *Lycaena exilis* Lucas, 1889)

Zizera kalawarus Ribbe, 1926: Entomologische Mitteilungen 15: 155. (Type locality: Celebes)

Zizera taiwana Sonan, 1938: Zephyrus 7: 254. (Type locality:" 臺中州員林郡員林水源地 [Inrin, Taichu-shu, Formosa] [= Yuanlin, Taiwan])

Zizeeria alsulus eggletoni Corbet 1941: Hong Kong Naturalist 10 (3/4): 150. (Type locality: Hong Kong, New territory)

Specimens examined:

ZHANGHUA Co.: ♂holotype of *Zizera taiwana*, Inrin [= Yuanlin], 30. X. 1932 (J. Sonan); 1♀allotype, same data; 1♀paratype, same data (all in TARI).

Description. Adult – Forewing length 9–10 mm. Sexual dimorphism present. Male (PLATE 31, Fig. 232): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect; 3rd segment slender, pointed at distal end, white but partially brown. Compound eyes

smooth. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing broad, somewhat elongate, triangular, termen slightly convex. Hindwing rounded. Wing uppersides purple tinged with blue, with brown margin along termen on both wings, wider on forewing. Wing undersides ground color grayish white or gray, with blue gloss near wing bases, spotless except for submarginal bands consisted of a faint proximal narrow bands and a series of faint brown distal spots along termen of both wings; dot in CuA_1 prominent, black. Fringe white. Female (PLATE 31, Fig. 233): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides brown or with restricted purple scalings proximally.

Male genitalia (a specimen from Australia was used for reference; PLATE 64, Fig. 406) – Tegumen completely fused with brachia, forming stout lateral arms enlarged at "elbow" position, with distal, curved spine. Socii with broad base, forming prominent hook-like distal processes. Valvae with ampulla forming elongate setose arm with distal end clavate; harpe with triangular, setose, lobes. Juxta narrow, roughly U-shaped. Phallus slender, flattened posteriorly, with aedeagus slightly longer than phallobase. Distal end of aedeagus with dorsal opening.

Female genitalia (a specimen from Australia was used for reference; PLATE 97, Fig. 535) – Corpus bursae tear drop shaped. Signa as a pair of small, rounded, weakly sclerotized, spiny patches on opposite walls of corpus bursae. Ductus bursae slender, membranous, with posterior end sclerotized. Sterigma as weakly sclerotized dome. Anterior apophyses present, as small triangular lobes. Posterior apophyses longer than anal papillae, straight, with anterior ends clavate. Anal papillae shield-like, attenuate posteriorly, setose.

Global distribution. West Pacifics, Australia, New Guinea, Sulawesi, Philippines, Indochina and South China, Taiwan (Bascombe *et al*., 1999; Braby, 2000; Vane-Wright & de Jong, 2003; Hsu, 2020).

Distribution in Taiwan. Recorded from Yuanlin, Zhanghua of central Taiwan and Lanyu, Taidong (Yamanaka, 1980).

Larval Host plant(s). Not recorded in Taiwan.

Biology. Probably multivoltine.

Remarks. This species has been called by the name *Famegana alsulus* (Herrich-Schäffer, 1869) described from Australia for a long time until Hsu (2020) pointed out that the name *Lycaena nisa* Wallace, 1866 is a senior synonym of *Lycaena alsulus* Herrich-Schäffer, 1869, thus has the priority as a valid name over the latter.

No specimen of this species has been found from Taiwan since the type series of ssp. *taiwana* were collected in 1932 (Yamanaka, 1980).

形態特徵：成蝶前翅長 9–10 mm。具雌雄二型性。雄蝶 (圖 232)：頭被毛、褐色、額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、末端尖、白色但部分褐色。複眼光滑。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬闊、略修長、三角形，外緣略突出。後翅圓形。翅背面藍紫色，外緣有褐色邊，於前翅較寬。翅腹面底色灰白色或灰色，近翅基處具藍色光澤；除亞外緣帶紋由內側淡色帶紋及外側一列淡褐色斑點組成外無紋；於後翅 CuA_1 室黑斑點鮮明。緣毛白色。雌蝶 (圖 233)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面主要呈褐色，僅於翅基附近有紫色鱗。

雄交尾器 (圖 406) (參考澳洲產標本)：背兜與顎形突完全癒合，形成粗壯側臂，肘部膨大，末端彎曲、鉤狀。背兜側突寬闊，末端延伸成鉤狀突起。抱抱器內突形成長臂狀突起，末端棒狀；抱握鋏呈三角形、葉狀，具剛毛。陽基軛片狹窄，略呈 U 形。陽莖細長，後端扁平。陽莖器略長於陽莖基，陽莖器末端開口於背側。

雌交尾器 (圖 535) (參考澳洲產標本)：交尾囊水滴狀。花壁一對，位於交尾囊相對位置，形成輕度骨化、有許多小棘刺之圓形小骨。交尾囊管纖細、膜質，後側骨化。交尾孔板形成輕度骨化穹頂。前內骨突小、瓣狀、三角形。後內骨突長於肛突，筆直，前端棒狀。肛突盾狀，向後漸細，有毛。

世界分布：西太平洋、澳洲、新幾內亞、蘇拉維西、菲律賓、中南半島、華南、臺灣。

臺灣分布：記錄見於中臺灣彰化員林及臺東蘭嶼。

寄主植物：臺灣無紀錄。

生物學：本種應為一年多世代物種。

註記：本種學名長期被稱為記述自澳洲的 *Famegana alsulus* (Herrich-Schäffer, 1869)。Hsu (2020) 指出記述自臺灣高雄的 *Lycaena nisa* Wallace, 1866 是其首同物異名，因此有優先權而為有效名。

自 1932 年 *taiwana* Sonan, 1938 模式系列採集後，臺灣未再有本種記錄 (Yamanaka, 1980)。

Genus *ZIZULA* Chapman, 1910

Type species: *Lycaena gaika* Trimen, 1862

Diagnostic characters include the following: 1) Sc fused with R_1 distad on forewing; 2) no androconia; 3) sexual dimorphism present, blue or purple on wing uppersides in males, brown with restricted proximal blue scalings in females.

Larvae feed on herbaceous plants in the family Acanthaceae, Verbenaceae and Fabaceae and Oxalidaceae (Parsons, 1998; Lu & Chen, 2014).

2 species, pantropical in distribution.

1 species occurs in Taiwan.

迷你藍灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈端部接合；2) 無發香鱗；3) 具雌雄二型性，雄蝶翅背面具藍色或紫色斑塊，雌蝶褐色，僅翅基附近有藍色鱗。

幼生期寄主植物包括爵床科、馬鞭草科、豆科及酢漿草科植物。

本屬有 2 種，呈泛熱帶性分布。

臺灣有 1 種。

Zizula hylax (Fabricius, 1775) (迷你藍灰蝶／迷你小灰蝶／長腹灰蝶)

PLATE 31, Figs. 234–235; PLATE 64, Fig. 407; PLATE 97, Fig. 536

Papilio hylax Fabricius, 1775: Systema Entomologiae: 526. (Type locality: “Indi orientali”)

Cupido donovani Kirby, 1870: A synonymic catalogue of diurnal Lepidoptera: 346. (Type locality: India)

Lycaena gaika Trimen, 1862: Transactions of the Entomological Society of London, series 3, 1: 403. (Type locality: King William’s Town, S. Africa)

Lycaena mylica Guenée, 1862: in Maillard, Notes sur l'île de la Réunion (Bourbon) 2 (Lép.): G-18. (Type locality: “Bourbon”)

Lycaena cleodora Walker, 1870: Entomologist 5 (76): 54. (Type locality: “Cairo, Hor Tamanib, Harkeko, Wâdy Ferran, Mount Sinai” [Egypt])

Lycaena perparva Saalmüller, 1884: Lepidopteren von Madagascar, Vol 1: 98, pl. 1, f. 7. (Type locality: Madagascar)

Zizera gaika var. *horii* Matsumura, 1915: The Entomological magazine (Kyoto) 1 (2): 67–68. (Type locality: Saipan)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Shimen, Linshanbi, 2. X. 2010 (H. C. Huang). **TAIPEI CITY:** 1♀, Fuyang Park, 8. IX. 2002 (B. C. Lin). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Longtan, 27. IX. 2002 (Y. F. Hsu). **XINZHU Co.:** 1♀, Zhubei, Lianhuashi, 11. IX. 1999 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Dadu, Dadushan, 10. XI. 2007 (Y. F. Hsu); 1♂, same locality, 20. XII. 2009 (Y. F. Hsu). **NANTOU Co.:** 1♂, 1♀, Jiji, 20. XII. 2000, reared from *Hygrophila pogonocalyx*, emgd. 28. XII. 2000, HSU 00M8 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Dongshan, Zengwen Dam, 17. X. 2000 (Y. F. Hsu); 1♂, Xinhua,

Dakeng, 20. I. 2007 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Xizi Bay, 8. IX. 2000, reared from *Lantana camara*, emgd. 27. IX. 2000, HSU 00J23 (Y. F. Hsu, M. H. Lin & C. M. Wu); 1♂, Xiaogang, Dalinpu, 0/20m, 29. XI. 2003 (Y. F. Hsu); 1♂, 1♀, Liugui, 10. XII. 2003 (Y. F. Hsu); 1♀, Meinong, Shuangxi, 150m, 22. I. 2007 (Y. F. Hsu); 1♀, Liugui, 300m, 22. I. 2008 (Y. F. Hsu); 1♀, Qijin, Dongsha Is., 1. XI. 2010 (K. C. Hung). **PINGDONG Co.:** 1♂, Checheng, Xiaojianshan, 18. XII. 2005 (Y. F. Hsu); 1♀, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu); 1♂, same locality, 21. I. 2007 (Y. F. Hsu); 1♀, Hengchun, Sheding, 21. I. 2007, reared from *Blechum pyramidatum*, emgd. 28. I. 2007, HSU 07A31.1 (Y. F. Hsu); 1♂, 1♀, same locality 22. I. 2007 (Y. F. Hsu); 1♂, 1♀, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu); 1♀, same locality, 1. III. 2008 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Lanyu, Sidaogou, 28/29. IX. 2003 (Y. F. Hsu).

Description. Adult – Forewing length 9–11 mm. Sexual dimorphism present. Male (PLATE 31, Fig. 234): Head hairy, brown. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect; 3rd segment slender, pointed at distal end, white but partially brown. Compound eyes smooth. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing broad, somewhat elongate, triangular, termen slightly convex. Hindwing rounded. Wing uppersides purple tinged with blue, with brown margin along termen on both wings. Wing undersides ground color grayish white or gray, with a series of discal dark spots on both wings, extending into proximal half of costa on forewing. Basal and subbasal dots present on hindwing, absent on forewing. Short, narrow dark bar present at distal end of discoidal cell of both wings, associated with a white distal arrow on hindwing. Submarginal bands as a series of proximal dark bands and a series of distal dark spots, all margined with white. Fringe white. Female (PLATE 31, Fig. 235): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally.

Male genitalia (PLATE 64, Fig. 407) – Tegumen broad laterally. Socii produced posteriorly, with blunt processes. Brachium short, stout, curved, hook-like. Vinculum very narrow. Valvae broad basally, forming two distal processes with dorsal one bearling long setae; ampulla bearing two elongate setae, with outer one thickened, heavily

sclerotized, with apical end truncate. Phallus peculiar, bulbous. Distal end of aedeagus with ventral spine-like process; dorsal part forming two elongate, conical processes, with dorsal one longer.

Female genitalia (PLATE 97, Fig. 536) – Corpus bursae as elongate sac. Ductus bursae membranous, forming sclerotized tube posteriorly. Sterigma with lamella antevaginalis forming a largely membranous chamber; postvaginalis a medial sclerotized plate with funnel-like structure at entrance of ostium bursae. Anterior apophyses present, as relatively long and slender rods Posterior apophyses longer than anal papillae, straight, but bent near posterior ends. Anal papillae elongate, with rounded posterior margin, setose.

Variation. Ground color of wing undersides is paler, and blue scalings on wing uppersides of females reduced in wet/hot seasons.

Global distribution. Pantropical in the Old World (Braby, 2000; Hsu, 2013).

Distribution in Taiwan. Lowlands, including all associated islands, less common in northern Taiwan (Hsu, 2002, 2013; Lu & Chen, 2014).

Larval Host plant(s). Verbenaceae: *Lantana camara*; Acanthaceae: *Hygrophila pogonocalyx*, *Blechum pyramidatum*, *Dicliptera chinensis*, *Dipteracanthus repens*, *Ruellia brittoniana*, etc. (Hsu, 2002, 2013; Lu & Chen, 2014)

Biology. This species multivotine in occurrence (Hsu, 2002, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 9–11 mm。具雌雄二型性。雄蝶 (圖 234)：頭被毛、褐色。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸；第三節細小、末端尖、白色但部分褐色。複眼光滑。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬、修長、三角形，外緣略突出。後翅圓形。翅背面藍紫色調，外緣有褐色邊。翅腹面底色灰白色或灰色，中

央有一列深色斑點，沿前緣延伸至前翅內側；後翅有基部及亞基部斑點；中室末端有深色短條，於後翅者連接外指白色箭形紋；亞外緣帶紋由內側深色帶紋及外側一列深色斑點組成，均具白邊。緣毛白色。雌蝶 (圖 235)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑紋位於翅內側。

雄交尾器 (圖 407)：背兜側面寬闊。背兜側突向後延伸成鈍突起。顎形突短、粗壯、彎曲、呈鉤狀。基腹弧極狹窄。抱器基部寬闊，末端有兩突起，背側者生有長剛毛；抱器內突上生兩修長具剛毛，外側者粗、明顯骨化且先端截狀。陽莖形狀獨特，略呈球狀。陽莖器末端腹側具刺突，背側形成兩個細長圓錐狀突起，背側者較長。

雌交尾器 (圖 536)：交尾囊長囊狀。交尾囊管膜質，後部形成骨化管。交尾孔前板形成膜質腔室；交尾孔後板為一骨片，於交尾孔形成漏斗狀結構。前內骨突細長、棒狀。後內骨突長於肛突，筆直，末端彎曲。肛突長，後端圓，有毛。

變異：高溫／雨季型個體翅腹面底色較淺、雌蝶翅背面藍色鱗退減。

世界分布：舊世界之泛熱帶分布。

臺灣分布：分布於本島低海拔地區，但北部較少見，離島亦有分布。

寄主植物：馬鞭草科之馬櫻丹；爵床科之大安水蓑衣、賽山藍、華九頭獅子草、蘆利草、翠蘆利等。

生物學：本種為一年多世代物種。

Genus *EVERES* Hübner, [1819]

Type species: *Papilio amyntas* Denis & Schiffermüller, 1775

Diagnostic characters include the following: 1) distal portion of Sc joined with medial portion of R_1, and separated at terminal end on forewing; 2) dark brown spots crowned by orange markings in cell M_3 and CuA_1 of hindwing; 3) small tail-like projection at distal end of CuA_2 of hindwing; 4) uncus hood-like; 5) sexual dimorphism present, bluish purple patch on wing uppersides less extensive in females.

Kudrna (1986) assigned the Holarctic species *argiades* Pallas, 1771, which is the senior synonym of *amyntas*, to the genus *Cupido* Schrank, 1801 (type species: *Papilio minimus* Fuessly, 1775) in a preliminary checklist of European butterflies. Although *Everes* was not explicitly synonymized with *Cupido* in the work, it was interpreted as such and followed by a few subsequent authors (e.g., Leraut, 2016; Stradomsky, 2016).

Larvae feed on plants in Fabaceae and Cannabaceae (Shirôzu, 2006).

Approximately 5 species, distributed in Palearctic, Nearctic, Oriental and Australian regions (Parsons, 1998).

2 species occur in Taiwan.

燕藍灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈中段相接，於末端分離；2) 後翅 M_3 及 CuA_1 室有冠橙色斑紋之黑褐色斑點；3) 後翅 CuA_2 脈末端具小尾突；4) 鉤突罩狀；5) 具雌雄二型性，雌蝶翅背面藍紫色斑面積較小。

Kurdna (1986) 在一份歐洲蝴蝶名錄中將古北區之燕藍灰蝶置於枯灰蝶屬 *Cupido* 內。該著作並未明確將燕藍灰蝶屬處理為枯灰蝶屬之同物異名，但有部分後來研究者視為如此予以沿用。

幼生期以豆科及大麻科植物為寄主。

本屬已知約 5 種，分布於古北區、新北區、東洋區及澳洲區。

臺灣有 2 種。

***Everes argiades* (Pallas, 1771) (燕藍灰蝶／藍灰蝶／霧社燕小灰蝶)**

PLATE 31, Figs. 236–238; PLATE 65, Fig. 408; PLATE 98, Fig. 537

Papilio argiades Pallas, 1771: Reise durch verschiedene Provinzen des russischen Reichs, 1: 472. (Type locality: Russia)

Papilio amyntas Denis & Schiffermüller, 1775: Ankündung eines systematischen Werkes von den Schmetterlingen der Wienergegend: 185. (preoccupied by *Papilio amyntas* Poda, 1761)

Papilio amyntas Fabricius, 1775: Systema Entomologiae: 533. (Type locality: “America”) (preoccupied by *Papilio amyntas* Poda, 1761)

Papilio tiresias Rottemburg, 1775: Der Naturforscher 6: 23.

Papilio polysperchon Bergsträsser, [1779]: Nomenclatur und Beschreibung der Insecten in der Grafschaft Hanau-Münzenberg wie auch der Wetterau und der angränzenden Nachbarschaft dies und jenseits des Mains 2: 72 pl. 44, f. 3–5.

Papilio zachaeus Herbst, 1804: in Jablonsky, Natursystem aller bekannten in- und ausländischen Insekten 11: 195, pl. 311, f. 9–10.

Papilio idmon Hübner, [1823–1824]: Sammlung europäischer Schmetterlinge [1]: pl. 165, f. 820–821.

Lycaena amyntas var.? *myrmidon* de Sélys Longchamps, 1845: Mémoires de la Société Royale des Sciences de Liège 2: 31. (Type locality: “Belgique [Belgium]”)

Lycaena hellotia Ménétriés, 1857: Catalogue de la collection entomologique de l'Académie impériale des sciences de St.-Pétersbourg 2: 124, pl. 10, f. 6. (Type locality: Japon [Japan])

Lycaena praxiteles Felder, 1862: Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien 12 (1/2): 489. (Type locality: Shanghai)

Everes mureisana Matsumura, 1939: Bulletin of the Biogeographical Society of Japan 9 (20): 357. (Type locality: “Murei”)

Everes argiades f. *modestus* Lorković, 1943: Mitteilungen der Münchner Entomologischen Gesellschaft 33 (2): 442, pl. 24, f. 5–6. (Type locality: "Lwow [Lviv, Ukraine]")

Everes argiades nuditurca Lorković, 1943: Mitteilungen der Münchner Entomologischen Gesellschaft 33 (2): 443, pl. 24, f. 9–10. (Type locality: “Kuldscha [Yining, Xinjiang, China]”)

Everes argiades postnuditurca Lorković, 1943: Mitteilungen der Münchner Entomologischen Gesellschaft 33 (2): 443. (Type locality: “Dscharkent [Scharkent, Kazakhstan]”)

Everes argiades seidakkadaya Miyashita & Uémura, 1976: Tyô to Ga 27 (1): 33. (Type locality: “Tsuifeng, C. Formosa [Cuifeng, Nantou, Taiwan]”)

Specimens examined:

JILONG CITY: 1♀, NTOU campus, 19. IX. 2006 (Y. F. Hsu); 1♂, Chiuhong Lake, 8. X. 2010 (C. F. Sen); 1♂, Hongdanshan, 24. IX. 2011 (I. C. Chen). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Ruifang, Nanya, 9. X. 2010 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Lushan, 2. IV. 1984 (Y. F. Hsu). **JIAYI Co.:** 1♂, 2♀, Alishan, Shizhuo/ Dabang, 900/1000m, 2. V. 2010, reared from *Humulus scandens*, emgd. 23. V. 2010, HSU 10E11 (R. K. Dong & Y. F. Hsu) (genitalia preparation JYL527); 4♂, 2♀, same locality, 2. V. 2010 (R. K. Dong & Y. F. Hsu) (genitalia preparation JYL659). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 2♀, Taoyuan, Tianchi, ca 2200m, 6. V. 2003, reared from

Lespedeza cuneata, emgd. 27. V. /3. VI. 2003, HSU 03E69 (C. L. Huang & L. H. Wang); 1♂, 1♀, same locality, 4. V. 2004, reared from *L. cuneata*, emgd. 23. V. 2004, HSU 04E6 (L. H. Wang); 2♂, same locality, 2250m, 29. IV. 2005 (Y. F. Hsu). **JINMEN [= KINMEN] Co.:** 1♂, Jinhu, Shenshiqiao, 28/29. VIII. 2011 (Y. F. Hsu & H. C. Huang). **LIANJIANG Co.:** 1♀, Beigan, Qinbi, 22. IV. 2007 (Y. F. Hsu & H. C. Huang); 1♀, Nangan, 2. VI. 2010 (Y. F. Hsu); 1♀, Nangan, Jinsha, 3. IX. 2014 (C. L. Huang & H. Y. Lee).

Description. Adult – Forewing length 11–13 mm. Sexual dimorphism present. Male (PLATE 31, Figs. 236–237): Head hairy, brown, with medial white patch on vertex. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white with terminal end brown, 3rd segment slender, distal end pointed. Compound eyes smooth. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Short filiform projections at distal ends of CuA_2. Wing uppersides purple, with dark brown margins along termen in both wings. Wing undersides ground color grayish white, with a series of discal dark spots on both wings, in a curving row at distal area on forewing, in wavy arrangement on hindwing. Two black subbasal dots present on hindwing. Short dark brown bar at distal end of discoidal cells on both wings. Submarginal bands as two series of dark spots. Conspicuous black spots associated with orange markings and metallic green scalings at distal end of cells M_3 and CuA_1 of hindwing. Fringe white. Female (PLATE 31, Fig. 238): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally.

Male genitalia (PLATE 65, Fig. 408) – Tegumen moderately broad; spade-like, with medial invagination posteriorly. Socii fused with uncus, lobe-like. Brachium short, stout, curved, with blunt distal end. Vinculum narrow dorsally, broad laterally. Valvae elongate, bifurcate; ampulla narrow, recurved, with distal end spiny, pointed; harpe short, pad-like. Juxta Y-shaped. Phallus short, with aedeagus slightly shorter than phallobase. Aedeagus slightly down-tilted; distal end armed with minute teeth dorsally, slightly produced ventrally.

Female genitalia (PLATE 98, Fig. 537) – Corpus bursae bulbous. Ductus bursae elongate, membranous, connecting to sclerotized tube with small wings at posterior end. Sterigma forming prominent cup-like sclerite. Anterior apophyses present, as short processes with base widened. Posterior apophyses longer than anal papillae, slightly curved near posterior end. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. Markings on wing undersides reduced in individuals of dry/cold period; blue scalings on wing uppersides of females more extensive in dry/cold period.

Global distribution. Widespread across Eurasia (Shirôzu, 2006; Tolman, 1997).

Distribution in Taiwan. Higher elevations in montane zone of central and southern Taiwan, and northeast coast; also Jinmen and Mazu Islands (Hsu, 2013).

Larval Host plant(s). Fabaceae: *Lespedeza cuneata*; Cannabaceae: *Humulus scandens*.

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. The populations found in higher elevations of Taiwan are probably residential, but the populations found along northeast coasts of Taiwan usually appear in the fall, suggesting they may be immigrants with seasonal wind from Japan.

The populations found in Taiwan were recognized as a distinct subspecies, ssp. *seidakkadaya* Miyashita & Uémura, 1976 (e.g., Miyashita & Uémura, 1976; Yamanaka, 1980; Hamano, 1987). Shirôzu & Ueda (1992) synonymized *seidakkadaya* with *hellotia* Ménétriés, 1857 described from Japan. Shirôzu (2006) subsequently includes populations of the species in Japan in the nominotypical subspecies, accordingly the populations found in Taiwan should also belong to the nominotypical subspecies.

形態特徵：成蝶前翅長 11–13 mm。具雌雄二型性。雄蝶 (圖 236–237)：頭被毛、

褐色、頭頂中央有白斑。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但末端褐色；第三節細小、末端尖。複眼光滑。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形，CuA_2 脈末端具絲狀短尾突。翅背面紫色，外緣有黑褐色邊。翅腹面底色灰白色，中央有一列深色斑點，於前翅外側排成曲線、於後翅呈波浪狀；後翅亞基部有二只小黑點；中室末端有深褐色短線紋；亞外緣帶紋由兩列深色斑點組成；後翅 M_3 及 CuA_1 室末端有橙色紋及具金屬光澤綠鱗之黑色斑點。緣毛白色。雌蝶 (圖 238)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色紋位於翅內側。

雄交尾器 (圖 408)：背兜略寬闊、鏟狀，後端中央內凹。背兜側突與鉤突癒合，呈瓣狀。顎形突粗短、彎曲，末端鈍。基腹弧背側狹窄，側邊寬闊。抱器修長、叉狀。抱器內突狹長，彎曲成牛角狀，末端尖、具細刺；抱握鋏短、墊狀。陽基軛片 Y 字形。陽莖短，陽莖器略短於陽莖基。陽莖器略向下；末端開口背側具細齒，腹側略突出。

雌交尾器 (圖 537)：交尾囊球狀。交尾囊修長、膜質，近交尾孔處形成骨化管狀且管末端兩側具小型翼狀突起。交尾孔板形成杯狀骨化突起。前內骨突為短突起、基部寬。後內骨突長於肛突，後端略彎曲。肛突前半部高度骨化，後半部輕度骨化，有毛。

變異：低溫／乾季型個體翅腹面底色減退、雌蝶翅背面藍色鱗面積較大。

世界分布：廣泛分布於歐亞大陸。

臺灣分布：見於本島中南部海拔較高之山區及東北角，金門及馬祖列嶼亦有記錄。

寄主植物：豆科之鐵掃帚；大麻科之葎草。

生物學：本種為一年多世代物種。

註記：分布於臺灣較高海拔之族群可能是長駐性族群，而臺灣本島東北角之族群常於秋季出現，也許是藉由東北季風從日本遷入者。

臺灣的本種族群曾被視為是特有亞種，稱為 ssp. *seidakkadaya* Miyashita &

Uémura, 1976。Shirôzu & Ueda (1992) 將 ssp. *seidakkadaya* 處理為記述自日本的 *hellotia* Ménétriés, 1857 的同物異名，而 Shirôzu (2006) 將本種的日本族群全歸屬於承名亞種，從而臺灣的族群亦應當屬於承名亞種。

***Everes lacturnus* (Godart, [1824]) (南方燕藍灰蝶／長尾藍灰蝶／臺灣燕小灰蝶)**

Polyommate lacturnus Godart, [1824]: Encyclopédie Méthodique 9 (2): 608, 660, no. 148. (Type locality: Timor)

Plebejus polysperchinus Kheil, 1884: Die Rhopalocera der Insel Nias: 29, pl. 5, f. 36. (Type locality: Nias)

Everes tuarana Riley, 1923: Entomologist 56 (2): 37. (Type locality: N. Borneo)

Everes argiades lacturnus Fruhstorfer, [1924]: in Seitz, Die Grossschmetterlinge der Erde 9: 923.

Everes argiades yerta Fruhstorfer, [1924]: in Seitz, Die Grossschmetterlinge der Erde 9: 923, pl. 153 i.

Everes polysperchinus ottobonus Fruhstorfer, [1924]: in Seitz, Die Grossschmetterlinge der Erde 9: 924. (Type locality: ?)

Everes parrhasius pila Evans, 1925: Journal of the Bombay Natural History Society 30 (2): 340. (Type locality: Andamans and Nicobars)

Everes syntala Cantlie, 1963: The Lycaenidae portion (except the *Arhopala* group) of Brigadier Evans' The identification of Indian butterflies 1932 (India, Pakistan, Ceylon, Burma): 38. (Type locality: Sri Lanka; S. India)

Ssp. *rileyi* Godfrey, 1916

PLATE 32, Figs. 239–240; PLATE 65, Fig. 409; PLATE 98, Fig. 538

Everes rileyi Godfrey, 1916: The Journal of the Natural History Society of Siam 2 (2): 135. (Type locality: Bangkok, Thailand)

Specimens examined:

NANTOU Co.: 5♂, data missing ex. Mokuse Museum. **TAINAN CITY [= TAINAN Co.]:** 1♂, Zhuozhen, Caoshan, 1. V. 2018 (Y. F. Hsu) (genitalia preparation JYL428); 1♀, same locality, 28. IX. 2018, reared from *Desmodium gangeticum* [= *Pleurolobus gangeticus*], emgd. 16. X. 2018, HSU 18J19 (F. X. Su) (genitalia preparation JYL451). **TAIDONG Co.:** 1♂, 1♀, Yanping, Hongye, 300m, 27. VIII. 2009 (C. H. Lin & M. H. Sun); 1♂, 1♀, same locality, 7. IX. 2009, reared from *D. heterocarpon* [= *Grona heterocarpa*], emgd. 18/23. IX. 2009, HSU 09J1 (Y. F. Hsu & C. H. Lin); 3♂, 1♀, same locality, 13. IX. 2010, reared from *D. heterocarpon* [= *G. heterocarpa*], emgd. 24. IX./16. X. 2010, HSU 10J14 (Y. F. Hsu); 9♂, 3♀, same locality, 4. X. 2010, reared from *Codariocalyx motorius*, emgd. 18/27. X. 2010, HSU 10K10 (Y. F. Hsu); 1♂, 1♀, same locality, 4. X. 2010 (Y. F. Hsu).

Description. Adult – Forewing length 11–13 mm. Sexual dimorphism present. Male (PLATE 32, Fig. 239): Head hairy, brown, with medial white patch on vertex. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white with terminal end brown, 3rd segment slender, distal end pointed. Compound eyes smooth. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Short filiform projections at distal ends of CuA_2. Wing uppersides purple, with dark brown margins along termen in both wings. Wing undersides ground color grayish white, with a series of discal brown spots on both wings, in a curve row at distal area on forewing, in serpentine arrangement on hindwing, dot in front black. Short brown bar at distal end of discoidal cells on both wings. Two black subbasal dots present on hindwing. Submarginal bands as two series of dark spots. Conspicuous black spots associated with prominent orange markings and metallic green scalings at distal end of cells M_3 and CuA_1 of hindwing. Fringe white. Female (PLATE 32, Fig. 240): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally.

Male genitalia (PLATE 65, Fig. 409) – Tegumen moderately broad; uncus hood-like, with shallow medial invagination posteriorly. Socii fused with uncus, forming triangular lobes. Brachium short, stout, curved like an “elbow”. Vinculum narrow dorsally, broad laterally. Valvae elongate, bifurcate; ampulla narrow, strongly curved inwards; harpe broad, attenuate to blunt distal end, slightly curved inwards. Juxta narrow, V-shaped. Phallus short, with aedeagus shorter than phallobase. Aedeagus narrowed anteriorly, enlarged posteriorly; distal end divided, armed with minute teeth dorsally, slightly produced ventrally.

Female genitalia (PLATE 98, Fig. 538) – Corpus bursae bulbous. Ductus bursae slender, membranous, connecting to sclerotized tube at posterior end. Sterigma forming prominent sclerotized long chamber broad basally, narrowed posteriorly with square exit. Anterior apophyses present, as short processes with base widened. Posterior apophyses short, curved, approximately as along as anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Widely distributed in the Oriental and Australian regions; also southern Japan (Bascombe *et al*., 1999; Braby, 2000; Hsu, 2013).

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

Larval Host plant(s). Fabaceae: *Grona heterocarp*, *Pleurolobus gangeticus*, and *Codariocalyx motorius* (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. This species was considered a common species (e.g., Shirôzu, 1960), but now only found in a few scattered colonies.

形態特徵：成蝶前翅長 11–13 mm。具雌雄二型性。雄蝶 (圖 239)：頭被毛、褐色、頭頂中央有白斑。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但末端褐色；第三節細小、末端尖。複眼光滑。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形，CuA_2 脈末端具絲狀短尾突。翅背面紫色，外緣有黑褐色邊。翅腹面底色灰白色，中央有一列褐色斑點，於前翅外側排成曲線、於後翅蜿蜒排列，最前方者黑色；後翅亞基部有二只小黑點；中室末端有褐色短線紋；亞外緣帶紋由兩列褐色斑點組成；後翅 M_3 及 CuA_1 室末端有橙色紋及金屬光澤綠鱗之黑色斑點。緣毛白色。雌蝶 (圖 240)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色紋位於翅內側。

雄交尾器 (圖 409)：背兜略寬闊；鉤突罩狀，後緣中央有淺凹。背兜側突與鉤突癒合，瓣狀、三角形。顎形突粗短、彎曲，尖鉤狀。基腹弧背面窄，側面寬闊。抱器修長，叉狀。抱器內突狹長、針狀，向內彎曲；抱握鋏寬闊，向後漸窄，末端鈍，略內彎。陽基軛片狹窄，V 字形。陽莖短，陽莖器短於陽莖基。陽莖器細，後端膨大；末端開口背側具細齒，腹側略突出。

雌交尾器 (圖 538)：交尾囊球狀。交尾囊細長、膜質，近交尾孔處形成骨化管。交

尾孔板瓶狀，基部寬，向後漸窄，交尾孔方形。前內骨突為短突起，基部寬。後內骨突短，長於肛突，彎曲。肛突前半部高度骨化，後半部輕度骨化，有毛。

世界分布：廣泛分布於東洋區及澳洲區，日本南部亦有分布。

臺灣分布：分布於本島低至中海拔地區。

寄主植物：豆科之假地豆、大葉山螞蝗、鐘萼豆。

生物學：本種為一年多世代物種。

註記：本種往昔被認為是常見種 (如 Shirôzu, 1960)，現今僅見於少數零散棲地。

Genus *TONGEIA* Tutt, [1908]

Type species: *Lycaena fischeri* Eversmann, 1843

Diagnostic characters include the following: 1) distal portion of Sc joined with proximal portion of R_1, and separated at terminal end on forewing; 2) small tail-like projection at distal end of CuA_2 of hindwing; 3) wing uppersides dark brown; 4) sexual dimorphism absent.

Larvae feed on plants in Crassulaceae.

About a dozen species, distributed in Palearctic and northern Oriental regions.

2 species occur in Taiwan.

玄灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈近基部位置相接，於末端分離；2) 後

翅 CuA_2 脈末端具小尾突；3) 翅背面黑褐色；4) 缺乏雌雄二型性。

幼生期以景天科植物為寄主。

本屬已知十餘種，分布於古北區及東洋區北部。

臺灣有 2 種。

***Tongeia hainani* (Bethune-Baker, 1914) (臺灣玄灰蝶／臺灣黑燕小灰蝶／海南玄灰蝶)**

PLATE 32, Figs. 241–242; PLATE 65, Fig. 410; PLATE 98, Fig. 539

Everes hainani Bethune-Baker, 1914: Entomologische Mitteilungen 3 (4): 126. (Type locality: "Formosa: Kankau, Kosempo, Sokutsu")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Fuxing, Xuanyuan, 21. II. 1987 (Y. F. Hsu); 2♀, Fuxing, Baling/ Xuanyuan, 26. VI. 1988 (Y. F. Hsu); 1♀, Fuxing, Gaoyi, 18. XII. 2017 (L. Huang) (genitalia preparation JYL550). **NANTOU Co.:** 1♀, Renai, Nanshanxi, 14. III. 1996 (Y. F. Hsu); 2♂, Xinyi, Dongpu, 1200m, 31. VII. 2009 (Y. F. Hsu); 1♂, Renai, Jiuxianxi, 700m, 14/15. V. 2012 (Y. F. Hsu). **JIAYI Co.:** 1♀, Alishan, Shizhuo/ Dabang, 900/1000m, 8. V. 2010 (Y. F. Hsu); 3♂, 2♀, same locality, 25. IX. 2010 (Y. F. Hsu); 1♀, Fanlu, Gongtian, 25. XII. 1995, reared from *Kalanchoe spathulata* [= *K. integra*], emgd. 31. XII. 1995, HSU 95M20 (Y. F. Hsu). **PINGDONG Co.:** 1♂, 1♀, Donggang, Liuqiuyu, 9. IX. 1984 (Y. F. Hsu); 1♂, same locality, 7. III. 2010 (N. Y. Tsai); 1♂, 1♀, Dawu, Jiudawu, 1000m, 14/16. II. 2000 (Y. T. Lo); 1♂, Wutai, Wutoushan, 1200m, 4. IV. 2002 (Y. F. Hsu, C. C. Lu & C. L. Huang); 1♂, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, Chunri, Dahanshan, 1500m, 4. I. 2003 (Y. F. Hsu); 4♂, 1♀, same locality, 27. IV. 2011 (J. H. Lin); 1♂, Sandimen, ca 300m, 21. I. 2009, reared from *K. integra*, emgd. 25. II. 2009, HSU 09A43 (Y. F. Hsu); 1♂, same locality, 20. II. 2009 (Y. F. Hsu); 1♂, same locality, 200m, 26. III. 2011 (Y. F. Hsu); 1♂, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Yanping, Hongye, 7. II. 1988 (Y. F. Hsu); 1♂, same locality, 15. V. 1988 (Y. F. Hsu); 1♂, 2♀, Yanping, Hongye, 350m, 25. II. 2010 (L. H. Wang & M. H. Sun); 1♂, Haiduan, Tianlong Trail, 700m, 16. IV. 2011 (L. H. Wang).

Description. Adult – Forewing length 11–14 mm. Sexual dimorphism absent. Male (PLATE 32, Fig. 241): Head hairy, dark brown. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown dorsally, 3rd segment slender, elongate. Compound eyes smooth. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Short filiform projections at distal ends of CuA_2. Wing uppersides dark brown, with inconspicuous dark spots margined with white along termen of hindwing. Wing undersides ground color grayish white or buff, with a series of discal dark brown spots on both wings, in a relatively straight row at distal area on forewing, into several separated groups on hindwing. Short dark brown bar at distal end of discoidal cells on both wings. Three dark brown subbasal dots present on hindwing. Submarginal bands as two series of dark spots. Orange markings at distal end of cells M_3 and CuA_1 of hindwing. Fringe white. Female (PLATE 32, Fig. 242): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, termen of forewing more convex.

Male genitalia (PLATE 65, Fig. 410) – Tegumen moderately broad; uncus hood-like, with posterior end truncate. Socii fused with uncus, forming oval bumps densely hairy. Brachium with base completely fused with tegumen, distal end forming straight arm with distal tip slightly enlarged. Vinculum narrow dorsally, broad laterally, strongly curved. Valvae broad; ampulla as a lobe serrate along dorsal margin, with prominent spin pointing downwards; harpe fin-shaped; sacculus triangular. Juxta narrow, pincer-shaped. Phallus with aedeagus approximately as long as phallobase. Aedeagus down-curved, with dorsal distal opening; a ventral tooth present subapically.

Female genitalia (PLATE 98, Fig. 539) – Corpus bursae oval. Ductus bursae thick, membranous, attenuate posteriorly, connecting to lageniform sclerotized tube at caudal end. Sterigma forming pottery shaped sclerite with wide posterior opening. Anterior apophyses present, as short processes with base widened. Posterior apophyses short, curved, slightly longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. Markings on wing undersides paler, turning creamy yellow in individuals of

dry/cold seasons.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Hamano, 1987; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations of main island of Taiwan (Hsu, 1999a, 2013; Lu & Chen, 2014).

Larval Host plant(s). Crassulaceae: *Kalanchoe integra*, *K. garambiensis*, *K. daigremontiana*, *Bryophyllum pinnatum*, etc. (Hsu, 1999a, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 1999a, 2013; Lu & Chen, 2014).

Remarks. The subspecific name *hainani* refers to Hainan Island, but entire type series were collected from Taiwan according to Bethune-Baker (1914). This species has never been found from Hainan (Gu & Chen, 1997), and this species is now generally accepted as a species endemic to Taiwan.

形態特徵：成蝶前翅長 11–14 mm。無雌雄二型性。雄蝶 (圖 241)：頭被毛、黑褐色。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但背面黑褐色；第三節細長。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形，CuA_2 脈末端具絲狀短尾突。翅背面黑褐色，後翅外緣有鑲白邊深色斑點。翅腹面底色灰白色或淺黃白色，中央有一列黑褐色斑點，於後翅散布為幾群、於前翅則相對排列較直；後翅亞基部有三只黑褐色斑點；中室末端有褐色短線紋；亞外緣帶紋由兩列深色斑點組成；後翅 M_3 及 CuA_1 室末端有橙色斑紋。緣毛白色。雌蝶 (圖 242)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅外緣較突出。

雄交尾器 (圖 410)：背兜略寬；鉤突罩狀，後端截平。背兜側突與鉤突癒合形成橢圓形突，密被毛。顎形突基部與背兜癒合，末端形成修長直臂，末端棒狀。基腹弧背面狹窄，側面寬，強彎曲。抱器瓣狀；抱器內突沿背緣呈鋸齒狀，後端下彎成喙狀；抱握鋏鰭狀；抱器腹三角形。陽基軛片狹窄，鉗形。陽莖器與陽莖基略等長，陽莖

器略下彎，末端開口於背側，腹側近末端具 1 齒突。

雌交尾器 (圖 539)：交尾囊卵形。交尾囊管粗大、膜質，向後漸細，近交尾孔處形成壺狀骨管。交尾孔板形成甕狀骨，後側有寬開口。前內骨突為短突起，基部寬。後內骨突短，略長於肛突。肛突前半部高度骨化，後半部輕度骨化，有毛。

變異：低溫／乾季型個體翅腹面斑紋色彩較淺、呈淺黃褐色。

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：景天科之倒吊蓮、鵝鑾鼻燈籠草、銳葉掌上珠、落地生根等。

生物學：本種為一年多世代物種。

註記：本種種小名 *hainani* 意指海南島，但根據 Bethune-Baker (1914) 之本種模式系列標本皆採自臺灣。本種於海南島未曾有發現記錄 (Gu & Chen, 1997)，因此本種一般被認為是臺灣特有種。

Tongeia filicaudis (Pryer, 1877) (密點玄灰蝶／霧社黑燕小灰蝶)

Lampides filicaudis Pryer, 1877: Cistula Entomologica 2 (18): 231. (Type locality: North China)
Tongeia filicaudis changi Lee, 2000: Butterflies of Matsu Islands: 238. (Type locality: Tungyin [Dongyin])

Ssp. *mushanus* Tanikawa, 1940

PLATE 32, Figs. 243–244; PLATE 65, Fig. 411; PLATE 98, Fig. 540

Everes filicaudis mushanus Tanikawa, 1940: Taikou 16: 49. (Type locality: "near Musha [= Wushe, Central Taiwan]")

Ssp. *filicaudis* Pryer, 1877

PLATE 32, Figs. 245–246; PLATE 66, Fig. 412; PLATE 99, Fig. 541

Specimens examined:

Ssp. *mushanus*: **XINBEI CITY [= TAIPEI Co.]:** 1♂, Wulai, Jiajiuliao, 200m, 2. IX. 2010 (Y. F. Hsu); 1♂, 1♀, same locality, 22. X. 2011 (L. Huang) (genitalia preparation

JYL614, 615); 1♂, 2♀, Xidian, Feicui Dame, 17. XI. 2019 (Y. F. Hsu); 4♂, 3♀, Xidian, Feicui Dame, 17. XI. 2019, reared from *Sedum mexicanum*, emgd. 28. XI./28. XII. 2019, HSU 19L17 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Gaoyi, 8. XII. 2008 (L. H. Wang); 1♀, Fuxing, Gaoyi, 400m, 17. XII. 2008 (C. H. Lin, jr.); 1♀, same locality, 29. XII. 2008 (C. H. Lin, jr.). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 2♂, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Huitouwan, ca 800m, 23. VII. 2005 (Y. F. Hsu). **TAIDONG Co.:** 2♂, 1♀, Haiduan, Lidao, 1068m, 7. VI. 2020 (C. W. Huang, Y. F. Hsu & J. Y. Liang); 1♂, same locality, 18/19. VI. 2020 (Y. F. Hsu & C. W. Huang).

Ssp. *filicaudis*: **LIANJIANG Co.:** 1♂, 1♀, Dongyin, Dongyin Lighthouse, 10. IV. 2014 (H. Y. Lee); 1♂, 1♀, Beigan, Daqiu, 6. IX. 2014 (H. Y. Lee & C. L. Huang) (genitalia preparation JYL566, 567); 1♀, Beigan, Nigushan, 7. VI. 2020 (Y. C. Lin & R. J. Lin); 1♀, Beigan, Qinbi/Ankang, 9. VI. 2020, reared from *S. formosanum*, emgd. 10. VII. 2020 (Y. C. Lin & R. J. Lin); 1♂, same locality, 21. VII. 2020 (Y. F. Hsu & H. C. Huang); 1♀, same locality and date, reared from *S. matsuense*, emgd. 14. 2020 (Y. F. Hsu & H. C. Huang); 1♂, Beigan, Qinbi, 18. X. 2020, reared from *S. matsuense*, emgd. 6. XI. 2020, HSU 20K18 (Y. F. Hsu); 1♂, 1♀, Beigan, Dumping Area, 20. X. 2020 (Y. F. Hsu).

Description. Adult – Forewing length 11–13 mm. Sexual dimorphism absent. Male (PLATE 32, Figs. 243, 245): Head hairy, dark brown. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown dorsally, 3rd segment slender, elongate. Compound eyes smooth. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Short filiform projections at distal ends of CuA_2. Wing uppersides dark brown, with inconspicuous dark spots margined with white along termen of hindwing. Wing undersides ground color grayish white or buff, with a series of discal dark brown spots on both wings, in two rows on forewing, into several separated groups on hindwing. Short dark brown band at distal end of discoidal cell on both wings. Three dark brown subbasal dots present on hindwing; two on forewing. Submarginal bands as two series of dark spots. Orange markings at distal end of cells M_3 and CuA_1 of hindwing. Fringe white. Female (PLATE 32, Figs. 244, 246): Body and wing patterns of wing undersides similar

to those of male, Protarsi normal, termen of forewing more convex.

Male genitalia (PLATE 65, Fig. 411; PLATE 66, Fig. 412) – Tegumen moderately broad; uncus hood-like, with shallow medial invagination posteriorly. Socii fused with uncus, forming oval bumps densely hairy. Brachium with base completely fused with tegumen, distal end forming straight arm with distal end truncate. Vinculum narrow dorsally, broad laterally, strongly curved. Valvae broad; ampulla as a lobe serrate along dorsal margin, with prominent spin pointing downwards; harpe tongue-shaped; sacculus triangular. Juxta narrow, pincer-shaped. Phallus with aedeagus approximately as long as phallobase. Aedeagus slightly down-curved, with dorsal distal opening; a ventral tooth present subapically.

Female genitalia (PLATE 98, Fig. 540; PLATE 99, Fig. 541) – Corpus bursae oval. Ductus bursae thick, membranous, connecting to sclerotized tube with fin-shaped wings at caudal end. Sterigma with lamella antevaginalis forming a membranous dome with broad, transverse, sclerotized band; lamella postvaginalis as elongate sclerotized band, broad anteriorly, narrow posteriorly. Anterior apophyses present, as short processes with base widened. Posterior apophyses short, slightly longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Widely spread in mainland China, Taiwan (Shirôzu, 1960; Hsu, 2013); recently introduced to Japan (Kudo, 2018).

Distribution in Taiwan. Low to higher elevations, scattered and local in distribution; also Mazu Island (Hsu, 2013).

Larval Host plant(s). Crassulaceae: *Sedum actinocarpum*, *S. morrisonense*, *S. mexicanum*, *S. formosanum*, *S. matsuense*, etc.

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. Populations of this species from Mazu Islands were described as ssp. *changi*

(Lee, 2000), but no diagnostic feature is found between it and the nominotypical subspecies. Moreover, these islands are only about 15 km away from continental China. Ssp. *changi* was treated as a junior synonym of the nominotypical subspecies herein by Hsu *et al*. (2020).

形態特徵：成蝶前翅長 11–14 mm。無雌雄二型性。雄蝶 (圖 243、245)：頭被毛、黑褐色。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但背面黑褐色；第三節細長。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形，CuA_2 脈末端具絲狀短尾突。翅背面黑褐色，後翅外緣有鑲白邊深色斑點。翅腹面底色灰白色或淺黃色，中央有一列黑褐色斑點，於後翅散布為幾群、於前翅呈兩列；後翅亞基部有三只黑褐色斑點、前翅則有兩只黑褐色斑點；中室末端具褐色短線紋；亞外緣帶紋由兩列深色斑點組成；後翅 M_3 及 CuA_1 室末端有橙色斑紋。緣毛白色。雌蝶 (圖 244、246)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅外緣較突出。

雄交尾器 (圖 411–412)：背兜略寬；鉤突罩狀，末端具淺內凹。背兜側突與鉤突癒合形成橢圓形突，密被毛。顎形突基部與背兜癒合，末端形成修長直臂，末端截狀。基腹弧背面狹窄，側面寬，強彎曲。抱器瓣狀；抱器內突沿背緣呈鋸齒狀，後端下彎成喙狀；抱握鋏舌狀；抱器腹三角形。陽基軛片狹窄，鉗形。陽莖器與陽莖基略等長，陽莖器略下彎，末端開口於背側，腹側近末端具 1 齒突。

雌交尾器 (圖 540–541)：交尾囊卵形。交尾囊管粗大、膜質，近交尾孔處骨化管，後端兩側具一對鰭狀骨片。交尾孔前板形成膜質穹頂，有橫走骨帶，交尾孔後板縱走，前寬後窄。前內骨突為短突起，基部寬。後內骨突短，略長於肛突。肛突前半部高度骨化，後半部輕度骨化，有毛。

世界分布：廣泛分布於中國大陸及臺灣，近期已移入日本。

臺灣分布：分布於本島低至中海拔地區，散布於各處小範圍棲地，馬祖列嶼亦有分布。

寄主植物：景天科之星果佛甲草、玉山佛甲草、松葉佛甲草、臺灣佛甲草、馬祖佛甲草等。

生物學：本種為一年多世代物種。

註記：棲息於馬祖列嶼之族群曾被記述成亞種 ssp. *changi* Lee, 2000，但與承名亞種並無明顯差異，且馬祖列嶼離中國大陸僅 15 公里之遙，從而 ssp. *changi* 可視為承名亞種之次同物異名。

Genus *SHIJIMIA* Matsumura, 1910

Type species: *Lycaena moorei* Leech, 1889

Diagnostic characters include the following: 1) distal portion of Sc joined with proximal portion of R_1, and separated at terminal end on forewing; 2) sexual dimorphism absent, with wing uppersides dark brown.

This genus is similar to the genus *Everes* in venation and genitalia, and sometimes included in *Everes* (e.g., Evans, 1932; Cantlie, 1963; Inomata, 1990).

Larvae feed on plants in Lamiaceae and Gesneriaceae (Uchida, 1991).

Distributed in eastern Palearctic and northern Oriental regions.

1 species occurs in Taiwan.

森灰蝶屬

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈基部位置相接，於末端分離；2) 缺乏雌雄二型性，翅背面深褐色。

本屬翅脈及交尾器與燕藍灰蝶屬相似，有時被置於該屬內。

幼生期以唇形科及苦苣苔科植物為寄主植物。

分布於古北區東部及東洋區北部。

臺灣有 1 種。

Shijimia moorei **(Leech, 1889) (森灰蝶／棋石燕小灰蝶／臺灣棋石小灰蝶／山灰蝶)**

Lycaena moorei Leech, 1889: Transactions of the Entomological Society of London 1889 (1): 109, pl. 7, f. 3. (Type locality: "Kiukiang [Jiujiang, Jiangxi]")

Ssp. *taiwana* Matsumura, 1919

PLATE 32, Figs. 247–248; PLATE 66, Fig. 413; PLATE 99, Fig. 542

Shijimia moorei var. *taiwana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 655, Pl. 50, fig. 13. (Type locality: "Formosa (Horisha [Puli])")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Wulai, Fushan, 400m, 2. IX. 2011 (L. H. Wang); 1♂, Wulai, Tonghou Forest Trail, 400m, 18. VIII. 2010 (H. C. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 3♀, Fuxing, Baling, 29. V. 2002 (Y. F. Hsu); 1♀, Fuxing, Northern Cross-Island Road, 58K, 30. V. 2015 (C. W. Huang) (genitalia preparation JYL507). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 2♂, 2♀, Xueshanxi, reared from *Lysionotus pauciflorus*, emgd. 13. VIII. 1985 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, ca 1200m, 4. IV. 2002 (C. C. Lu); 1♂, same locality, 1100/1200m, 5. V. 2007 (Y. F. Hsu). **YILAN Co.:** 1♀, Datong, Mingchi, 1200m, 26. VII. 2011, reared from *Salvia arisanensis*, emgd. 5. VIII. 2011, HSU 11G28 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Zhuoxi, Zhongping Forest Trail, 1. VI. 2007 (L. H. Wang & C. C. Lu); 1♂, Wanrong, Wanrong Forest Trail, 15. IX. 2010 (Z. H. Yen).

Description. Adult – Forewing length 10–14 mm. Sexual dimorphism absent. Male (PLATE 32, Fig. 247): Head hairy, dark brown. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown dorsally, 3rd segment slender, elongate. Compound eyes smooth. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Wing uppersides dark brown, with inconspicuous dark spots margined with white along termen of hindwing. Wing undersides ground color white or grayish white,

with a series of discal dark brown spots on both wings, arranged in serpentine way, spot in front darkest, prominent. Two black subbasal dots present on hindwing. Short dark brown band at distal end of discoidal cell on both wings. Submarginal bands as two series of dark spots, distal spot in cell CuA_1 of hindwing dark and prominent. Fringe white. Female (PLATE 32, Fig. 248): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, termen of forewing more convex.

Male genitalia (PLATE 66, Fig. 413) – Tegumen moderately broad; uncus hood-like, with posterior end flat. Socii fused with uncus, forming bumps enlarged laterally. Brachium with base fused with tegumen, short, stout, curved, with distal end bearing a minute hook. Vinculum narrow dorsally, broad laterally. Valvae elongate, bifurcate; ampulla narrow, recurved, with distal end hook-like; harpe shorter, straight, with pointed distal end; sacculus as thickened margin. Juxta narrow, V-shaped. Phallus with both ends slightly narrowed; aedeagus shorter than phallobase. Aedeagus with distal end divided dorsally, armed with minute teeth.

Female genitalia (PLATE 99, Fig. 542) – Corpus bursae bulbous. Ductus bursae slender, membranous, connecting to sclerotized ring broken ventrally. Sterigma mostly a membranous chamber, with a weakly sclerotized, transverse band. Posterior apophyses short, curved, slightly longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Northeast India, West to Central China, Japan, Taiwan (Shirôzu, 2006; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Lamiaceae: *Salvia formosana*, *S. arisanensis*; Gesneriaceae: *Lysionotus pauciflorus* (Hsu, 2013).

Biology. This species is multivoltine, but overwintering as larvae (Hsu, 2013).

Remarks. This species is regarded as a member of the genus *Everes* by some authors (e.g., Evans, 1932; Cantlie, 1963; Inomata, 1990).

形態特徵：成蝶前翅長 10–14 mm。無雌雄二型性。雄蝶 (圖 247)：頭被毛、黑褐色。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但背面黑褐色，第三節細長。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形。翅背面黑褐色，後翅外緣有鑲白邊深色斑點。翅腹面底色白色或灰白色，中央有一列黑褐色斑點，蜿蜒排列，於前端者顏色深而鮮明；後翅亞基部有二只黑色斑點；中室末端具深褐色短線紋；亞外緣帶紋由兩列深色斑點組成，於後翅 CuA_1 室末端者顏色深而鮮明。緣毛白色。雌蝶 (圖 248)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅外緣較突出。

雄交尾器 (圖 413)：背兜略寬；鉤突罩狀，後端平。背兜側突與鉤突癒合，於兩側形成膨大突起。顎形突基部與背兜癒合，粗短、彎曲，末端形成小鉤。基腹弧背面狹窄，側面寬，強彎曲。抱器瓣狀；抱器內突沿背緣呈鋸齒狀，後端下彎成喙狀；抱握鋏鰭狀；抱器腹三角形。陽基軛片狹窄，鉗形。陽莖器與陽莖基略等長，陽莖器略下彎，末端開口於背側，腹側近末端具 1 齒突。

雌交尾器 (圖 542)：交尾囊球狀。交尾囊管纖細、膜質，近交尾孔處形成骨化環。交尾孔板形成膜質腔室，中央有輕度骨化橫骨帶。後內骨突短、彎曲，長度稍長於肛突。肛突前半部高度骨化，後半部輕度骨化，有毛。

世界分布：印度東北部、華西至華中、日本、臺灣。

臺灣分布：分布於本島低、中海拔山區。

寄主植物：唇形科之臺灣紫花鼠尾草、阿里山紫花鼠尾草；苦苣苔科之石吊蘭。

生物學：本種為一年多世代物種，但以幼蟲態越冬。

註記：部分研究者把本種置於燕藍灰蝶屬 *Everes* 內。

Genus *PITHECOPS* Horsfield, [1828]

Type species: *Pithecops hylax* (Horsfield, [1828])

The genus *Pithecops* Horsfield was established on the basis of a misidentified type species. A detailed discussion and explanation on this issue is given in Hemming (1967).

Diagnostic characters include the following: 1) distal portion of Sc joined with medial portion of R_1, and separated at terminal end on forewing; 2) 3rd segment of labial palpus slender, asymmetrical, with right one shorter; 3) a prominent dark brown spot at distal position near costa of hindwing undersides.

Larvae feed on plants in Fabaceae (Hsu, 2013).

5 species, distributed in the Oriental and Australian regions (Parsons, 1998).

2 species occur in Taiwan.

丸灰蝶屬

本屬建立基礎為一錯誤鑑定之模式種。Hemming (1967) 對此議題有詳盡的探討及解釋。

形態特徵如下：1) 前翅 Sc 脈端部與 R_1 脈中段相接，於末端分離；2) 下唇鬚第三節纖細且不對稱，右側者較短；3) 後翅腹面前緣外側有一鮮明黑褐色斑點。

幼生期以豆科植物為寄主。

本屬 5 種，分布於東洋區及澳洲區。

臺灣有 2 種。

Pithecops fulgens Doherty, 1889 (藍丸灰蝶 / 烏來黑星小灰蝶)

Pithecops fulgens Doherty, 1889: Journal of the Asiatic Society of Bengal 58 Pt. II (1): 127, pl. 10, f. 6. (Type locality: Margherita, Assam, [India])

Ssp. *urai* Bethune-Baker, 1913

PLATE 33, Figs. 249–250; PLATE 66, Fig. 414; PLATE 95, Fig. 543

Pithecops urai Bethune-Baker, 1913: The annals and magazine of natural history; zoology, botany, and geology, series 8, 11 (66): 565. (Type locality: "Urai, North Formosa")

Specimens examined:

JILONG CITY: 1♂, Nuannuan, Laoliaokeng, 9. XI. 2019 (L. Huang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, 1♀, Wulai, 16. X. 1986 (Y. F. Hsu); 1♂, same locality, 27. III. 1988 (Y. F. Hsu); 1♀, same locality, 23. X. 1988 (Y. F. Hsu); 1♀, Wulai, Fushan, 11. IV. 2004 (Y. F. Hsu); 1♀, same locality, 18. V. 2008, reared from *Desmodium laxum leptopus* [= *Hylodesmum leptopus*], emgd. 3. V. 2008, HSU 08E44 (C. H. Lin, jr.); 1♀, same locality, 9. VI. 2008, reared from *D. laxum leptopus* [= *H. leptopus*], emgd. 23. VI. 2008, HSU 08F9 (Y. F. Hsu); 1♂, same locality, 21. III. 2009 (C. H. Yen); 1♀, same locality, 11. IV. 2009, reared from *D. laxum leptopus* [= *H. leptopus*], emgd. 29. IV. 2009, HSU 09D23 (Y. F. Hsu); 1♂, same locality, 300m, 15. IV. 2011 (C. L. Huang); 1♀, Wulai, Jiajiuliao, 150m, 8. X. 2008 (Y. F. Hsu); 1♂, 2♀, Wulai, Xinxian, 250m, 17. III. 2009 (C. K. Wang); 1♀, Wulai, Fushan to Hapen, 7. IV. 2009, reared from *D. laxum leptopus* [= *H. leptopus*], emgd. 30. IV. 2009, HSU 09D15 (Y. F. Hsu); 2♀, Wulai, Fushan, Kalamoji Trail, 500m, reared from *D. laxum leptopus* [= *H. leptopus*], emgd. 1/2. V. 2009, HSU 09D5 (Y. F. Hsu); 1♀, 1♂, Wulai, Xinxian Trail, 20. III. 2013 (Y. F. Hsu); 1♀, Sanxia, Manyueyuan, 3. V. 2000, reared from *D. podocarpum* [= *H. podocarpum*], emgd. 22. V. 2000, HSU 00E1 (Y. F. Hsu, Y. T. Lo & C. Y. Hung); 1♂, Shiding, Ergeshan, ca 500m, 12. III. 2009 (N. Y. Tsai).

Description. Adult – Forewing length 8–14 mm. Sexual dimorphism present. Male (PLATE 33, Fig. 249): Head hairy, vertex brown, with medial white patch on vertex; frons white with medial brown band. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus porrect, white but dark brown dorsally, 3rd segment slender, right one shorter. Compound eyes smooth. Thorax and abdomen dark brown, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing broad, triangular, termen convex. Hindwing rounded.

Wing uppersides ground color dark brown, with proximal, metallic purple patch on both wings. Wing undersides ground color white, with a prominent black spot near distal end of costa on hindwing undersides. One or two black dots usually present near costa on forewing undersides. Submarginal bands as narrow, proximal, orange band and a series of black dots. Fringe white checked with brown on hindwing, brown on forewing. Female (PLATE 33, Fig. 250): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides without metallic purple patches.

Male genitalia (PLATE 66, Fig. 414) – Tegumen moderately broad; uncus with medial, shallow, V-shaped invagination. Socii fused with uncus, bump-like. Brachium with base fused with tegumen, short, stout, slightly curved, horn-like. Vinculum narrow dorsally, broad laterally. Valvae elongate, flattened, slightly concave on outer margins; ampulla forming serrate arch; harpe forming a lobe with truncate distal end; sacculus as thickened margin. Juxta pincer-shaped, with short stalk on a discd. Phallus with aedeagus shorter than phallobase. Aedeagus down-curved posteriorly. Cornutus as a narrow, spiny band.

Female genitalia (PLATE 99, Fig. 543) – Corpus bursae oval. Ductus bursae shorter than corpus bursae, membranous, sclerotized at posterior end. Sterigma forming a clay jar shaped sclerite with anterior opening in a membranous chamber. Posterior apophyses short, curved, slightly longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, with posterior end slightly convex, setose; inner setae long, outer setae short.

Global distribution. Northeast India, Vietnam, South and East China, Tsushima Island of Japan, Taiwan (Hsu, 2006, 2013; Shirôzu, 2006).

Distribution in Taiwan. Low elevations in hillsides and montane areas of northern Taiwan (Hsu, 2006, 2013).

Larval Host plant(s). Fabaceae: *Hylodesmum leptopus* and *H. podocarpum* (Hsu, 2006, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2006, 2013).

Remarks. The subspecific name *urai* refers to Wulai of northern Taiwan.

形態特徵：成蝶前翅長 8–14 mm。具雌雄二型性。雄蝶 (圖 249) : 頭被毛 ; 頭頂褐色，中央有白斑；額白色，中央有褐色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚前伸、白色但背面黑褐色；第三節細小、右側者較短。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬，三角形，外緣突出呈圓弧狀。後翅圓形。翅背面底色黑褐色，內側有具金屬光澤紫色斑塊。翅腹面底色白色，後翅前緣近末端處有一鮮明黑色斑點；前翅近前緣處常有一至二個黑色小點；亞外緣帶紋由內側橙色窄帶紋及外側一列黑色小斑點組成。前翅緣毛褐色、後翅緣毛白色嵌褐色。雌蝶 (圖 250) : 形態特徵與雄蝶相似，但前足跗節不癒合、翅背面無金屬光澤紫色斑塊。

雄交尾器 (圖 414) : 背兜略寬；鉤突末端有 V 形淺凹。背兜側突基部與鉤突癒合，呈瘤狀。顎形突基部與背兜癒合，粗短、彎曲、角狀。基腹弧背面狹窄，側面寬闊。抱器修長、扁平，外緣略凹 ; 抱器內突弓狀，末端具鋸齒緣 ; 抱握鋏瓣狀，末端截平 ; 抱器腹粗厚。陽基軛片鉗形，基部具短柄。陽莖器短於陽莖基，陽莖器下彎。角狀器形成帶小刺之窄骨帶。

雌交尾器 (圖 543) : 交尾囊橢圓形。交尾囊管短於交尾囊，膜質，末端骨化。交尾孔板呈壺狀、骨化，前端具開口。後內骨突短、彎曲，略長於肛突。肛突前半部高度骨化，後半部輕度骨化，有毛 ; 內側剛毛長，外側剛毛短。

世界分布：印度東北部、越南、華南及華東、日本對馬島、臺灣。

臺灣分布：分布於本島北部低海拔坡地及山區。

寄主植物：豆科之細梗山螞蝗及圓菱葉山螞蝗。

生物學：本種為一年多世代物種。

註記：亞種名 *urai* 意指北臺灣烏來地區。

Pithecops corvus Fruhstorfer, 1917 (黑丸灰蝶／琉球黑星小灰蝶)

Pithecops hylax corvus Fruhstorfer, 1917: Archiv für Naturgeschichte 83 A (1): 79, f. 1. (Type locality: "Sumatra, Nias, Nord-Borneo,")

Ssp. *cornix* Cowan, [1966]

PLATE 33, Figs. 251–252; PLATE 66, Fig. 415; PLATE 99, Fig. 544

Pithecops corvus cornix Cowan, [1966]: The Annals and magazine of natural history, zoology, botany, and geology, Series 13, 8: 421. (Type locality: Hainan)

Specimens examined:

TAOYUAN CITY: 1♀, Neikuihui, 13. IV. 2022 (C. W. Huang). **YILAN Co.:** 1♀, Suao, Wushibi, near sea level, 7. XI. 2006, reared from *Desmodium laxum leptopus* [= *Hylodesmum leptopus*], emgd. 22. XI. 2006, HSU 06L22 (L. H. Wang & L. W. Wu). **HUALIAN Co.:** 1♀, Xiulin, Shuiyuandi, 100m, 30. I. 2007, reared from *D. laxiflorum*, emgd. 19. II. 2007, HSU 07A47 (L. H. Wang & Y. F. Hsu); 1♂, 1♀, Xiulin, Huitouwan, 700m, 8. XII. 2007, reared from *D. laxiflorum*, emgd. 4. I. 2008, HSU 07M21 (C. L. Huang, C. K. Wang & N. Y. Tsai); 1♂, same locality, 9. XII. 2007 (C. K. Wang); 2♂, Xiulin, Shikongzai, 60m, 14. XII. 2008 (M. H. Sun); 1♂, Xiulin, Taroko, 9. XII. 2007 (C. K. Wang); 1♂, Xiulin, Heping Forest Trail, 30. VIII. 2010 (Z. H. Yen); 1♂, Zhuoxi, Zhongping Forest Trail, 14. IX. 2010 (Z. H. Yen). **JIAYI Co.:** 1♂, 1♀, Zhongpu, Shining Forest Station, 400m, 3. X. 2009, reared from *D. laxum leptopus* [= *H. leptopus*], emgd. 16. X. 2009, HSU 09J43 (R. K. Dong); 1♀, Fanlu, Chukou, 300m, 3. IV. 2011 (Y. F. Hsu); 1♂, Alishan, Chashan, 27. IX. 2019, reared from *D. laxum leptopus* [= *H. leptopus*], emgd. 10. X. 2019, HSU 19J42 (L. Huang); 1♂, Dapu, Qingyun Fall, 26. IX. 2019 (L. Huang). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Guangzhiling, 17. III. 1985 (C. T. Lu). **TAIDONG Co.:** 1♀, Donghe, Taiyuan, Hongyeliao, IV. 2000 (W. C. Tsai) (genitalia preparation JYL641); 1♂, Yanping, Hongye, 450/480m, 30. IX. 2000 (Y. F. Hsu).

Description. Adult – Forewing length 9–13 mm. Sexual dimorphism absent. Male (PLATE 33, Fig. 251): Head hairy, vertex brown, with medial white patch on vertex; frons white with medial brown band. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus porrect, white but dark brown dorsally, 3rd segment slender, right one shorter. Compound eyes smooth. Thorax and abdomen dark brown, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end

down-curved, pointed. Forewing broad, triangular, termen convex. Hindwing rounded. Wing uppersides ground color uniformly dark brown. Wing undersides ground color white, with a prominent black spot near distal end of costa on hindwing undersides. Two black dots present near costa on forewing undersides. Submarginal bands as narrow, proximal, orange band and a series of black dots. Fringe white checked with brown on hindwing, brown on forewing. Female (PLATE 33, Fig. 252): Body and wing patterns of wing undersides similar to those of male, Protarsi normal.

Male genitalia (PLATE 66, Fig. 415) – Tegumen moderately broad; uncus with distal end flat. Socii fused with uncus, bump-like, inner corner angled. Brachium with base fused with tegumen, short, stout, slightly curved, distal end blunt. Vinculum narrow dorsally, broad laterally. Valvae elongate, flattened, slightly concave on outer margins; ampulla forming curved, spiny arm with distal end blade-like; harpe forming a lobe with truncate distal end; sacculus as thickened margin. Juxta pincer-shaped, with short stalk on a discd. Phallus with aedeagus shorter than phallobase. Aedeagus down-curved posteriorly. Cornutus as a narrow, spiny band.

Female genitalia (PLATE 99, Fig. 544) – Corpus bursae oval. Ductus bursae longer than corpus bursae, membranous, sclerotized at posterior end. Sterigma forming a funnel shaped sclerite with wide anterior opening in a membranous chamber. Posterior apophyses slender, straight, slightly longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, with posterior end slightly convex, setose; inner setae long, outer setae short.

Global distribution. Indochina, Sundaland, Philippines, Okinawa and Yaeyama Islands of Japan, South China, and Taiwan (Shirôzu, 2006; Hsu, 2013).

Distribution in Taiwan. Low elevations in hillsides and montane areas. It mainly occurred in central and southern parts of Taiwan (Hsu, 2013), but has recently been found from a few northern sites.

Larval Host plant(s). Fabaceae: *Hylodesmum leptopus* and *Sohmaea laxiflora* (Hsu,

2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. This species is partially sympatric with *P. fulgens* in Taiwan, and sometimes confused with the latter, especially the females. It may be distinguished from the latter by using the following features: 1) metallic purple patches on wing uppersides in males of *fulgens*, but absent in *corvus*; 2) the most anterior spot in the distal margin of the submarginal band on hindwing underside is elongate, larger than the following spots in *P. fulgens*, whereas it is equal to the following spots in size in *P. corvus*.

形態特徵：成蝶前翅長 9–13 mm。具雌雄二型性。雄蝶 (圖 251)：頭被毛；頭頂褐色，中央有白斑；額白色，中央有褐色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚前伸、白色但背面黑褐色；第三節細小、右側者較短。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅寬，三角形，外緣突出呈圓弧狀。後翅圓形。翅背面底色黑褐色，無紋。翅腹面底色白色，後翅前緣近末端處有一鮮明黑色斑點；前翅近前緣處有二個黑色小點；亞外緣帶紋由內側橙色窄帶紋及外側一列黑色小斑點組成。前翅緣毛褐色、後翅緣毛白色嵌褐色。雌蝶 (圖 252)：形態特徵與雄蝶相似，但前足跗節不癒合。

雄交尾器 (圖 415)：背兜略寬；鉤突末端截平。背兜側突基部與鉤突癒合成瘤，內緣角狀。顎形突基部與背兜癒合，粗短、彎曲、末端鈍。基腹弧背面狹窄，側面寬闊。抱器修長、扁平，外緣略凹；抱器內突彎曲、臂狀，具棘刺，末端刃狀；抱握鋏瓣狀，末端截平；抱器腹粗厚。陽基軛片鉗形，基部具短柄。陽莖器短於陽莖基，陽莖器下彎。角狀器形成帶小刺之窄骨帶。

雌交尾器 (圖 544)：交尾囊橢圓形。交尾囊管短於交尾囊，膜質，末端骨化。交尾孔板呈漏斗狀、骨化，前端較寬。後內骨突細長，筆直，略長於肛突。肛突前半部高度骨化，後半部輕度骨化、略凸出，有毛；內側剛毛長，外側剛毛短。

世界分布：中南半島、巽他地區、菲律賓、日本沖繩及八重山群島、華南、臺灣。

臺灣分布：原本主要分布於本島中、南部低海拔坡地及山區，但近年來逐漸出現在

北部地區。

寄主植物：豆科之細梗山螞蝗及疏花山螞蝗。

生物學：本種為一年多世代物種。

註記：本種與藍丸灰蝶易混淆 (特別是雌蝶) 且部分共域，兩者可藉由下列特徵區分：1) 藍丸灰蝶雄蝶翅背面具金屬光澤紫色斑塊，黑丸灰蝶則否；2) 藍丸灰蝶亞外緣黑色小斑點位於最前方者較亞外緣其他斑點來得長、較大，而黑丸灰蝶亞外緣全部黑色小斑點大小均相似。

Genus *NEOPITHECOPS* Distant, 1884

Type species: *Pithecops dharma* Moore, [1881]

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) a white patch on ventral surface near club of antennae; 3) wing uppersides brown, with white discal patch on forewing.

Larvae feed on plants in Rutaceae.

5 species, distributed in Oriental and Australian regions (Eliot & Kawazoé, 1983).

1 species occurs in Taiwan.

黑點灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 觸角近錘部腹面有白斑；3) 翅背面褐色，前翅中央有白斑。

幼生期以芸香科植物為寄主。

本屬有 5 種，分布於東洋區及澳洲區。

臺灣有 1 種。

Neopithecops zalmora (Butler, [1870]) (黑點灰蝶／一點灰蝶／姬黑星小灰蝶)

PLATE 33, Figs. 253–254; PLATE 67, Fig. 416; PLATE 100, Fig. 545

Pithecops zalmora Butler, [1870]: Catalogue of diurnal Lepidoptera described by Fabricius in the collection of the British museum: 161. (Type locality: Moulmein, Burma [Mawlamyine, Myanmar])

Pithecops nihana Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 702. (Type locality: Hainan)

Neopithecops horsfieldi Distant, 1884: Rhopalocera Malayana: 210, pl. 22, f. 15. (Type locality: "Malay Peninsula; Singapore")

Pithecops (*Neopithecops*) *zalmora colutha* Fruhstorfer, 1917: Archiv für Naturgeschichte 83 A (1): 84. (Type locality: Palawan)

Neopithecops zalmora batuana Riley, [1945]: Transactions of the Royal Entomological Society of London 94 (2): 256. (Type locality: Batu Is.: Pulau Tello)

Pithecops (*Neopithecops*) *zalmora fedora* Fruhstorfer, 1917: Archiv für Naturgeschichte 83 A (1): 83. (Type locality: Formosa)

Pithecops (*Neopithecops*) *zalmora dolona* Fruhstorfer, 1917: Archiv für Naturgeschichte 83 A (1): 83. (Type locality: Hong Kong)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, 1♀, Wulai, 16. I. 2007 (Y. F. Hsu); 1♂, Wulai, Jiajiuliao, 150m, 21. VII. 2008 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Shilin, Zhishanyan, 15. I. 2007 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Kapu, 800m, 12. XI. 2007 (Y. F. Hsu). **JIAYI Co.:** 1♂, Dapu, Zhutoushan, 21. IX. 2000 (Y. F. Hsu); 1♀, same locality, 17. X. 2000 (Y. F. Hsu); 2♂, 1♀, same locality, 23. X. 2005 (Y. F. Hsu); 1♀, Fanlu, Chukou, 300m, 29. X. 2003 (Y. F. Hsu); 1♀, same locality, 11. X. 2004 (Y. F. Hsu); 1♂, 1♀, same locality, 29. VIII. 2008 (Y. F. Hsu); 1♂, Alishan, Danayigu, 500m, 10. V. 2011 (Y. F. Hsu); 1♂, Alishan, Danayigu, 12. XI. 2016 (Y. F. Hsu) (genitalia preparation JYL425). **TAINAN CITY [= TAINAN Co.]:** 1♂, Baihe, Guanzhiling, 300m, 13. IX. 2009 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Taroko, 7. III. 2006 (Y. F. Hsu). **TAIDONG Co.:** 1♂, Zhiben, 8. IX. 1988 (C. F. Lee); 3♂, 1♀, Yanping, Hongye, 450/480m, 30. IX. 2000 (Y. F. Hsu); 1♀, Donghe, Donghe Fram, 350m, 16. X. 2007 (Y. F. Hsu). **NANTOU Co.:** 1♂, 1♀, Lugu, Fenghuanggu Bird and Ecology Park, 10. VII. 1996

(Y. F. Hsu); 2♂, Renai, Huisun, 600/700m, 20. II. 2012 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 8–14 mm. Sexual dimorphism absent. Male (PLATE 33, Fig. 253): Head hairy, dark brown. Antennae dark brown, segmented with white, a white patch on ventral surface near club. Proboscis brown. Labial palpus hairy, porrect, white but distal end dark brown, 3rd segment slender, elongate. Compound eyes smooth. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown bands on tarsi, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, costa and termen slightly convex. Hindwing rounded. Wing uppersides dark brown, with faint, white discal patch on forewing. Wing undersides ground color white, with a series of dark brown discal spots on both wings, deviated distad, arranged in curves. A prominent black spot present near costa on hindwing undersides. Short, thin, dark brown band at distal end of discoidal cell on both wings. Submarginal bands as a proximal brown narrow band and a series of distal, dark brown spots. Fringe white. Female (PLATE 33, Fig. 254): Body and wing patterns of wing undersides similar to those of male, Protarsi normal.

Male genitalia (PLATE 67, Fig. 416) – Tegumen moderately broad; uncus with posterior margin slightly concave. Socii fused with uncus, forming thickened bands. Brachium vestigial. Vinculum narrow dorsally, broad and produced laterally. Valva elongate, curved outwards, narrowed distad, with distal end enlarged, ligulate. Juxta narrow, forming bifurcated hook. Phallus nearly straight; aedeagus much shorter than phallobase. Aedeagus with shallow depression dorsally at distal end. Cornutus as elongate band with numerous minute spines.

Female genitalia (PLATE 100, Fig. 545) – Corpus bursae oval. Signa as a pair of small, rounded sclerites with an inner spine on opposite walls of corpus bursae. Ductus bursae slender, mostly membranous, sclerotized near posterior end. Sterigma forming a conical sclerite with pointed distal tip. Anterior apophyses present, as short rods. Posterior apophyses slightly curved, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Throughout most of the Oriental region (Eliot & Kawazoé, 1983).

Distribution in Taiwan. Low to moderate elevations in hillsides and montane areas (Hsu, 2002, 2013).

Larval Host plant(s). Rutaceae: *Glycosmis citrifolia* and *G. parviflora* (Hsu, 2002, 2013; Lu & Chen, 2014).

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013).

形態特徵：成蝶前翅長 8–14 mm。無雌雄二型性。雄蝶 (圖 253)：頭被毛，黑褐色。觸角黑褐色、有白環、近錘部處腹面有白斑。口器褐色。下唇鬚被毛、前伸、白色但末端黑褐色；第三節細長。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，前緣及外緣略突出。後翅圓形。翅背面底色黑褐色，前翅中央有模糊白色斑紋。翅腹面底色白色，中央外側有一列黑褐色斑點，排列成曲線；後翅近前緣處有一鮮明黑色斑點；中室末端有黑褐色細短條紋；亞外緣帶紋由內側褐色窄帶紋及外側一列黑褐色斑點組成。緣毛白色。雌蝶 (圖 254)：形態特徵與雄蝶相似，但前足跗節不癒合。

雄交尾器 (圖 416)：背兜略寬；鉤突末端略凹。背兜側突基部與鉤突癒合、粗厚。顎形突退化消失。基腹弧背面狹窄，側面寬闊。抱器修長，向外彎曲，後側細，末端膨大、呈舌狀。陽基軛片細窄，雙鉤狀。陽莖略下彎，陽莖器遠短於陽莖基，陽莖器末端背側略凹。角狀器形成密生細刺之長骨帶。

雌交尾器 (圖 545)：交尾囊橢圓形。花壁一對，位於交尾囊相對位置，形成內陷刺狀小圓骨。交尾囊管纖細，大部分呈膜質，尾端前段骨化。交尾孔板三角錐狀，末端尖。前內骨突短桿狀。後內骨突彎曲，略長於肛突。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

世界分布：廣泛分布於東洋區。

臺灣分布：分布於本島低至中海拔坡地及山區。

寄主植物：芸香科之石苓舅及長果山桔。

生物學：本種為一年多世代物種。

Genus *MEGISBA* Moore, [1881]

Type species: *Megisba thwaitesi* Moore, [1881]

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) antenna considerably longer than discoidal cell of forewing; 3) a white patch on ventral surface near club of antennae; 4) wing uppersides ground color brown.

Larvae feed on plants in Euphorbiaceae, Rhamnaceae, Cannabaceae, Sapindaceae, etc.

2 species, distributed in Oriental and Australian regions (Eliot & Kawazoé, 1983).

1 species occurs in Taiwan.

黑星灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 觸角略長於前翅中室；3) 觸角近錘部腹面有白斑；4) 翅背面底色褐色。

幼生期取食大戟科、鼠李科、大麻科及無患子科等不同科植物。

本屬有 2 種，分布於東洋區及澳洲區。

臺灣有 1 種。

Megisba malaya (Horsfield, [1828]) (黑星灰蝶／美姬灰蝶／臺灣黑星小灰蝶)

Lycaena malaya Horsfield, [1828]: Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 1: 70. (Type locality: Java)

Ssp. *sikkima* Moore, 1884

PLATE 33, Figs. 255–256; PLATE 67, Fig. 417; PLATE 100, Fig. 546

Megisba sikkima Moore, 1884: Journal of the Asiatic Society of Bengal 53 Pt. II (1): 21. (Type locality: Sikkim)

Pathalia albidisca Moore, 1884: Journal of the Asiatic Society of Bengal 53 Pt. II (1): 21. (Type locality: Chittagong; Kurdah, Orissa; N. W. Himalaya)

Megisba malaya volubilis Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (12): 6. (Type locality: Formosa)

Megisba malaya velina Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (12): 6. (Type locality: "Nordost-Sumatra")

Megisba malaya infumata Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (12): 7. (Type locality: "S. Celebes")

Megisba malaya rosanna Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (12): 6. (Type locality: Mindoro)

Megisba malaya var. *iwasakii* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 643, pl. 49, f. 24. (Type locality: Okinawa ("Yayeyama" [Yaeyama]), [Japan])

Specimens examined:

JILONG CITY: 1♀, Jilongyu, 25. IX. 2011 (H. C. Huang). **XINBEI CITY [= TAIPEI Co.]:** 1♂, Wulai, Jiajiuliao, 150m, 21. VII. 2008 (Y. F. Hsu); 1♂, Wulai, Xinxian, ca 300m, 27. IX. 2014 (H. C. Huang); 1♀, Wanli, Fengguizui, 600m, 27. X. 2009 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Wenshan, Gongguan campus, NTNU, 22. X. 2008 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sanmin, Bianfudong, 350m, 8. IX. 2008 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂ Heping, Shangguguan, 900m, 25. IX. 2006 (Y. F. Hsu); 4♂, 5♀, West Dist., NMNS, Botanical Garden, 5. V. 2010, reared from *Allophylus timorensis*, emgd. 19/26. V. 2010, HSU 10E12 (J. H. Lin, L. W. Wu & Y. F. Hsu). **NANTOU Co.:** 1♂, Yuchi, Lianhuachi, 100m, 10. VI. 2001 (Y. F. Hsu); 1♀, Renai, Huisun, 700m, 14. XI. 2004 (Y. F. Hsu); 1♂, Renai, Nanshanxi, ca 900m, 1. IX. 2007 (Y. F. Hsu). **HUALIAN Co.:** 1♀, Xiulin, Heping Forest Trail, 16. IX. 2010 (Z. H. Yen). **JIAYI Co.:** 1♂, Dapu, Zhutoushan, 26. IX. 2005 (Y. F. Hsu); 1♂, Fanlu, Niupuzai, 1. I. 2009 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Guanmiao, 40m, 2. III. 2008 (Y. F. Hsu); 1♂, Guantian, Wushantou, 24. X. 2009 (Y. F. Hsu); 1♀, Xinhua, 150m, 23. IV. 2011 (Y. F. Hsu); 1♂, Baihe, Hongye Park, 29. X. 2016 (J. Y. Liang) (genitalia preparation JYL407). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Jiaxian, 250m, 29. VI. 2003 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2006 (Y. F. Hsu & H. C. Huang); 1♂, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu); 1♂, 1♀, same locality, 1. III. 2008 (Y. F. Hsu); 1♂, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu); 1♀, Sandimen, ca 300m, 2.

I. 2009 (Y. F. Hsu); 1♂, same locality, 200m, 26. III. 2011 (Y. F. Hsu). **TAIDONG Co.:** 2♀, Lanyu, Sidaogou, 17. III. 2007 (Y. F. Hsu); 1♀, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♀, same locality, 10. III. 2009 (Y. F. Hsu); 1♂, same locality, 26/18. III. 2012 (Y. F. Hsu & H. C. Huang); 1♂, Lanyu, 29/31. III. 2008 (C. H. Lin & N. Y. Tsai).

Description. Adult – Forewing length 9–14 mm. Sexual dimorphism absent or slight. Male (PLATE 33, Fig. 255): Head hairy, vertex brown, with medial white patch on vertex; frons white with medial brown band. Antennae dark brown, segmented with white, a white patch on ventral surface near club. Proboscis brown. Labial palpus hairy, porrect, white but dark brown dorsally, 3rd segment slender. Compound eyes smooth. Thorax dark brown dorsally, white ventrally. Abdomen dark brown banded with white dorsally, white ventrally. Legs white, with brown bands on tarsi, Protarsi fused, with distal end down-curved, pointed. Forewing triangular. Hindwing fan-like. A short tail-like projection at distal end of CuA_1 of hindwing. Wing uppersides dark brown, often with faint, white discal patch on forewing. Wing undersides ground color white, with a series of brown discal spots on both wings, deviated distad, arranged into a curve on forewing, serpentine on hindwing. A series of minute black dots along costa of forewing. A prominent black spot present near costa on hindwing undersides. Three black subbasal dots on hindwing. Short, thin, dark brown band at distal end of discoidal cell on both wings. Submarginal bands as a proximal brown narrow band and a series of distal, brown spots, spot at distal end of CuA_1 black, prominent. Fringe white, checkered with brown. Female (PLATE 33, Fig. 256): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, forewing termen more convex.

Male genitalia (PLATE 67, Fig. 417) – Tegumen short, produced laterally; posterior margin slightly concave. Socii prominent, lobe-like. Brachium reduced into a single tooth. Vinculum narrow very narrow. Valva elongate, with dorsal and ventral margins slightly concave, distal end nearly truncate, serrate. Juxta narrow, roughly V-shaped. Phallus down-curved; aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, spine-like process. Cornutus as elongate band with numerous minute spines.

Female genitalia (PLATE 100, Fig. 546) – Corpus bursae oval. Signa as a pair of small,

rounded sclerites with an inner spine on opposite walls of corpus bursae. Ductus bursae slender, mostly membranous, partially sclerotized near posterior end. Sterigma with lamella antevaginalis forming small oblong sclerite; lamella postvaginalis forming large, weakly sclerotized, oblong plate. Anterior apophyses present, as short rods with broad bases. Posterior apophyses slightly curved, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. Markings on wing undersides are reduced in dry/cold seasons.

Global distribution. Throughout the Oriental region west of Weber's Line (Bascombe *et al*., 1999; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations, including Lanyu and Guishan Island (Hsu, 2006, 2013).

Larval Host plant(s). Euphorbiaceae: *Mallotus japonicus*, *Ma. paniculatus*, *Ma. repandus*, *Macaranga tanarius*; Rhamnaceae: *Rhamnus formosana*; Sapindaceae: *Allophylus timorensis*; Cannabaceae: *Trema orientalis* (Hsu, 2006, 2013; Lu & Chen, 2014).

Biology. This species is multivoltine in occurrence (Hsu, 2006, 2013; Lu & Chen, 2014).

形態特徵：成蝶前翅長 9–14 mm。雌雄二型性缺乏或不明顯。雄蝶 (圖 255)：頭被毛；頭頂褐色，具白色中央斑塊；額白色具褐色中央帶紋。觸角黑褐色、有白環、近錘部處腹面有白斑。口器褐色。下唇鬚被毛、前伸、白色但背面黑褐色；第三節細。複眼光滑。胸部背面黑褐色、腹面白色。腹部背面黑褐色，有白色細帶紋，腹面白色。足白色，跗節有褐色帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形。後翅扇形，CuA_1 脈末端有短尾突。翅背面底色黑褐色，前翅中央常有模糊白色斑塊。翅腹面底色白色，有一列中央褐色斑點，於前翅外移，排成曲線、於後翅呈蜿蜒形；前翅前緣有一列小黑點；後翅近前緣處有一鮮明黑色斑點、亞基部有三只小黑點；中室末端有黑褐色細短條；亞外緣帶紋由內側褐色窄帶紋及外側一列黑褐斑點組成，

斑點於 CuA_1 室黑色、鮮明。緣毛白色嵌褐色。雌蝶 (圖 256)：形態特徵與雄蝶相似，但前足跗節不癒合、前翅外緣較突出。

雄交尾器 (圖 417)：背兜短，兩側突出，後緣略凹。背兜側突瓣狀。顎形突小型、單齒狀。基腹弧極狹窄。抱器修長，背緣和腹緣略凹，末端近截狀，有細鋸齒緣。陽基軛片細窄、略呈 V 字形。陽莖下彎，陽莖器遠短陽莖基，陽莖器末端腹側有棘刺狀突起。角狀器形成密生細刺之長骨帶。

雌交尾器 (圖 546)：交尾囊橢圓形。花壁一對，位於交尾囊相對位置，形成內陷刺狀小圓骨。交尾囊管纖細，大部分呈膜質，近末端處部分骨化。交尾孔前板形成橢圓形小骨片；交尾孔後板形成大型輕度骨化之長橢圓形骨片。前內骨突短錐狀，基部寬。後內骨突略彎曲，長於肛突。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

變異：低溫／乾季型個體翅腹面斑紋退減。

世界分布：東洋區韋伯氏地理線以西廣泛分布。

臺灣分布：分布於本島低至中海拔地區，蘭嶼及龜山島亦有分布。

寄主植物：大戟科之野桐、白匏子、扛香藤、血桐；鼠李科之桶鉤藤；無患子科之止宮樹；大麻科之山黃麻。

生物學：本種為一年多世代物種。

Genus *UDARA* Toxopeus, 1928

Type species: *Polyommatus dilectus* Moore, 1879

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) proximal band of submarginal bands on wing undersides absent or poorly developed; 3) larvae with tubercles on body.

Larvae feed on plants in Adoxaceae, Symplocaceae, Fagaceae, etc.

37 species, distributed in Oriental, Australian regions and western Pacific to Hawaii Islands (Eliot & Kawazoé, 1983).

2 species occur in Taiwan.

嫵琉灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 翅腹面亞外緣帶紋內側者消失或不顯著；3) 幼蟲體上具瘤突。

幼生期以五福花科、灰木科及殼斗科等植物為寄主。

本屬已知 37 種，分布於東洋區、澳洲區以及古北區西部至夏威夷群島。

臺灣有 2 種。

Udara dilecta (Moore, 1879) (嫵琉灰蝶／珍貴嫵灰蝶／達邦琉璃小灰蝶)

PLATE 33, Figs. 257–259; PLATE 67, Fig. 418; PLATE 100, Fig. 547

Polyommatus dilectus Moore, 1879: Proceedings of the Zoological Society of London 1879 (1): 139. (Type locality: Nepal)

Cyaniris dilectus hermonthis Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116. (Type locality: “Formosa, Polisha [Taiwan, Puli]”)

Cyaniris dilectus hainana Fruhstorfer, 1910: Entomologische Zeitung 71 (2): 289. (Type locality: “Insel Hainan”)

Lycaenopsis cardia dilectina Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (1): 14. (Type locality: Omei-Shan, China)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 6. VI. 1996, 1700/1727m (Y. F. Hsu); 1♀, same locality, 1500/1700m, 25/27. V. 2001 (Y. T. Lo). **TAIPEI CITY:** 3♂, Beitou, Yangmingshan, 16. V. 1999 (Y. T. Lo). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, 31. X 1987 (Y. F. Hsu); 1♂, same locality, 25. VI. 1988 (Y. F. Hsu). **XINZHU Co.:** 1♂, Jianshi, Zhenxibao, 24. V. 2003 (L. H. Wang); 1♀, same locality, 1600m, reared from *Castanopsis carlesii* [= *C. cuspidata* var. *carlesii*], emgd.

30. V. 2011, HSU 11E17 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 4♂, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **NANTOU Co.:** 2♂, Renai, Nanshanxi, 14. III. 1996 (Y. F. Hsu); 1♂, same locality, 1000m, 14. III. 1996 (Y. F. Hsu); 1♂, Renai, Hehuanxi, 2000m, 11. V. 2003 (C. C. Lu, J. R. Chen & Y. C. Yang); 1♂, 1♀, Renai, Biluxi, 2200m, 11. V. 2003, reared from *Quercus tatakaensis*, emgd. 22/23. V. 2003, HSU 03E29 (C. C. Lu, J. R. Chen & Y. C. Yang); 1♂, Renai, Songquangang, 2500m, 21. VII. 2003 (Y. F. Hsu); 1♂, Renai, Tunyuan, 18. III. 2006, reared from *Q. variabilis*, emgd. 6. IV. 2006, HSU 06C23 (C. C. Lu & J. R. Chen); 2♀, Renai, Tunyuan, 1500m, 12. IV. 2009, reared from *Lithocarpus hancei*, emgd. 30. IV. 2009, HSU 09D38 (Y. F. Hsu). **HUALIAN Co.:** 2♂, Xiulin, Qingshuishan, 4. VII. 2003 (Y. F. Hsu); 1♀, Xiulin, Xiaofengkou, 13. IX. 2006 (L. H. Wang); 1♂, Xiulin, Bilu, 2000m, 25. XI. 2006 (L. H. Wang & M. H. Sun); 1♀, Xiulin, Huoranting, 26. III. 2019 (C. W. Huang) (genitalia preparation JYL602). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, 2♀, Taoyuan, Baoshan, ca 1000/1100m, 11. XI. 2007, reared from *C. formosana*, emgd. 23/27. XI. 2007, HSU 07L7 (Y. F. Hsu); 1♀, Taoyuan, Baoshan/ Erjituan, ca 1250m, 25. XI. 2007, reared from *C. formosana*, emgd. 8. XII. 2007, HSU 07L25 (Y. F. Hsu); 1♂, same locality, 14. IV. 2009, reared from *C. formosana*, emgd. 8. V. 2009, HSU 09D37 (Y. F. Hsu); 1♀, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su); 1♂, 1♀, same locality, 30. IX. 2007 (Y. F. Hsu); 1♂, 1♀, same locality, 24. IX. 2007, reared from *L. corneus*, emgd. 11. X./11. XI. 2007, HSU 07J48 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Dawu, Yichangshan, 3. III. 2007 (C. C. Lu, L. H. Wang & J. M. Wu); 2♂, 2♀, same locality, 1100/1400m, 15/16. III. 2008, reared from *Q. dentata*, emgd. 7/12. IV. 2008. HSU 08C7 (L. W. Wu); 1♂, 2♀, Wutai, Wutoushan, 1100/1200m, 5. V. 2007 (Y. F. Hsu); 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. II. 2008 (Y. F. Hsu & H. C. Huang). **TAIDONG Co.:** 1♂, Haiduan, Liyuan, 1793m, 3. VIII. 2018 (J. Y. Liang) (genitalia preparation JYL334).

Description. Adult – Forewing length 11–16 mm. Sexual dimorphism present. Male (PLATE 33, Figs. 257–258): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed.

Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides purple tinged with blue, with very narrow dark brown margins along termen on forewing. White patch sometimes present in discal area of forewing and anterior area of hindwing. Wing undersides ground color white, with a series of dark brown discal spots on both wings, usually a few short bands in a line on forewing, serpentine on hindwing. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of obscure proximal lunules and a series of distal dark dots. Fringe white, brown at tips of veins. Female (PLATE 33, Fig. 259): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides ground color brown, with prominent proximal blue patch on forewing uppersides, and dull blue area covering much of hindwing uppersides; a white discal patch usually present on forewing uppersides.

Male genitalia (PLATE 67, Fig. 418) – Tegumen broad, produced into prominent projections latero-posteriorly; posterior margin flat. Socii prominent, lobe-like, tapering posteriorly. Vinculum narrow, strongly curved. Valva elongate, ovate basally, forming flattened bar distally, bearing a short dorsal hook at distal end; outer surface of hook serrate. Juxta Y-shaped. Phallus with anterior end of phallobase down-curved; aedeagus much shorter than phallobase. Distal end of aedeagus with prominent ventral, spine-like process and a dorsal, sclerotized cap. Cornuti consisted of rows of spines of various sizes.

Female genitalia (PLATE 100, Fig. 547) – Corpus bursae oblong. Signa as a pair of narrow, linear, spiny sclerotized bands on opposite walls of corpus bursae. Ductus bursae thick, elongate, membranous, with two narrow sclerotized bands near ostium bursae. Sterigma with lamella antevaginalis forming a dome with sclerotized, transverse band; lamella postvaginalis forming oval plate with medial notch at posterior end. Anterior apophyses present, as short processes with blunt distal ends and broad bases. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. White patches on wing uppersides vary considerably, but seemly unrelated to seasonality.

Global distribution. Widespread in the Oriental region, also southern Japan and New Guinea (Eliot & Kawazoé, 1983).

Distribution in Taiwan. Low to moderate elevations in montane zone, uncommon in northern Taiwan (Hsu, 2013).

Larval Host plant(s). Larval hostplants include various oaks (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 11–16 mm。具雌雄二型性。雄蝶 (圖 257–258)：頭被毛、褐色；額中央有白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅扇形。翅背面紫色帶藍色調，前翅外緣有黑褐色細邊，前翅中央及後翅前部有時具白色斑紋。翅腹面底色白色，有一列褐色中央斑點，於前翅常形成數個短紋排成一列、於後翅則蜿蜒排列；後翅亞基部有二至三褐色小點；中室末端有褐色短線紋；亞外緣帶紋由內側模糊弦月紋及外側一列深色點組成。緣毛白色、於翅脈處褐色。雌蝶 (圖 259)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色、前翅背面內側有藍色斑且中央常有白色斑塊、後翅背面大部分呈不鮮明藍色。

雄交尾器 (圖 418)：背兜寬闊，側後方明顯突出，後緣中央平坦。背兜側突瓣狀、向後漸窄。基腹弧狹窄，強彎曲。抱器修長，基部卵形，向後延伸成平板狀，末端背側具鉤狀突起。陽基軛 Y 字形。陽莖彎曲；陽莖器遠短於陽莖基，陽莖器末端腹側有棘刺狀突起，背側有帽狀骨。角狀器形成多列大小不同之細刺。

雌交尾器 (圖 547)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成線狀刺骨帶。交尾囊管粗、修長、膜質，近交尾孔處有一對縱走窄骨帶。交尾孔前板穹頂狀，具橫走骨化帶；交尾孔後板為橢圓形骨片，後端中央內凹。前內骨突短桿狀、基部寬，前端鈍。後內骨突甚直，長於肛突。肛突前半部高度骨化，後半部部分骨化，向後漸窄，有毛。

變異：翅背面白色斑紋大小多變異，似乎與季節無關。

世界分布：廣泛分布於東洋區，日本南部及新幾內亞亦有之。

臺灣分布：分布於本島低至中海拔山區，但北部少見。

寄主植物：多種殼斗科植物。

生物學：本種為一年多世代物種。

Udara albocaerulea (Moore, 1879) (白斑嫵琉灰蝶／白斑嫵灰蝶／白斑琉璃小灰蝶)

PLATE 34, Figs. 260–263; PLATE 67, Fig. 419; PLATE 100, Fig. 548

Polyommatus albocaeruleus Moore, 1879: Proceedings of the Zoological Society of London 1879 (1): 139. (Type locality: "Deyra Doon", [India])

Cyaniris ceyx amadis Fruhstorfer, 1910: Entomologische Zeitung 71 (2): 295. (Type locality: W. China)

Lycaenopsis albocoeruleus sauteri Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (1): 13. (Type locality: Formosa)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Sanxia, Beichatianshan, 1500/1700m, 17. V. 1999 (Y. T. Lo); 1♂, Wulai, Fushan, 300m, 15. IV. 2011 (C. L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Xuanyuan, 26. VI. 1986 (Y. F. Hsu); 1♂, same locality, 27. XII. 1987 (Y. F. Hsu); 1♀, Fuxing, Lalashan, 12. VI. 1988 (Y. F. Hsu); 1♀, same locality, 11. VII. 2009 (C. H. Lin, jr.). **YILAN Co.:** 1♂, 1♀, Toucheng, Guishan Is., 31. III. 2007 (H. C. Huang); 1♂, Datong, Mingchi, 1200m, 20. VI. 2003 (Y. F. Hsu). **XINZHU Co.:** 1♀, Jianshi, Yulao, 1200m, 15. III. 2006, reared from *Viburnum luzonicum*, emgd. 20. IV. 2006, HSU 06C34 (C. C. Lu). **NANTOU Co.:** 1♂, Renai, Huisun, ca 700m, 6/7. II. 2009 (N. Y. Tsai); 1♂, Renai, Huisun, 10. VI. 2018 (L. Huang) (genitalia preparation JYL483). **PINGDONG Co.:** 1♂, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu).

Description. Adult – Forewing length 13–17 mm. Sexual dimorphism present. Male (PLATE 34, Figs. 260–261): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides blue tinged with purple, with prominent dark brown margin distally on forewing, prominent white patch in discal area of forewing and extensive on hindwing. Wing undersides ground color white, with a series of dark brown discal spots on both wings, usually a few short bands in a line on forewing, serpentine on hindwing. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of distal dark dots. Fringe white, brown at tips of veins. Female (PLATE 34, Figs. 262–263): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing upperside ground color brown, with prominent blue and white patch on both wings.

Male genitalia (PLATE 67, Fig. 419) – Tegumen broad, produced into prominent projections latero-posteriorly; posterior margin flat. Socii prominent, forming flattened piece with down-pointing, fin-like projections, serrate on outer margins. Vinculum narrow, strongly curved. Valva short, broad basally, attenuate distally, with caudal end bearing small, up-curving tooth. Juxta V-shaped. Phallus with phallobase down-curved; aedeagus much shorter than phallobase. Distal end of aedeagus with prominent ventral, spine-like process and a dorsal, sclerotized band. Cornuti consisted of rows of minute spines.

Female genitalia (PLATE 100, Fig. 548) – Corpus bursae oblong. Signa as a pair of narrow, linear, spiny sclerotized bands on opposite walls of corpus bursae. Ductus bursae thick, elongate, membranous, with posterior end sclerotized. Sterigma with lamella antevaginalis forming a dome with sclerotized, transverse band slightly convex posteriorly; lamella postvaginalis forming depressed pouch with a flap ventrally and sclerotized patch dorsally. Anterior apophyses present, as short processes with blunt

distal ends and broad bases. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. White patches on wing uppersides are more extensive in dry/cold seasons.

Global distribution. Himalayas, Northeast India, Indochina, Sumatra, Java, Japan, West, Central, South China, and Taiwan (Shirôzu, 2006; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Adoxaceae: *Viburnum luzonicum* (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 13–17 mm。具雌雄二型性。雄蝶 (圖 260–261)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅扇形。翅背面紫藍色，前翅外側有明顯黑褐色邊；鮮明白色斑塊見於前翅中央及後翅大部分區域。翅腹面底色白色，有一列黑褐色中央斑點列，於前翅常形成短紋排成一列、於後翅蜿蜒排列；後翅亞基部有二至三褐色小點；中室末端有褐色短線紋；亞外緣帶紋由外側一列深色斑點組成。緣毛白色、於翅脈處褐色。雌蝶 (圖 262–263)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色，上有藍色及白色斑塊。

雄交尾器 (圖 419)：背兜寬闊，側後方明顯突出，後緣中央平坦。背兜側突扁片，形成下指之鰭狀突起，外緣鋸齒狀。基腹弧狹窄，強彎曲。抱器短，基部寬，向後漸窄，端部具一上彎齒突。陽基軛 V 形。陽莖彎曲；陽莖器遠短於陽莖基，陽莖器末端腹側有棘刺狀突起具突起，且背側有帶狀骨。角狀器形成多列細刺。

雌交尾器 (圖 548)：交尾囊橢圓形。花壁一對，位於交尾囊對應位置，形成線狀刺骨帶。交尾囊管粗、修長、膜質，後端骨化。交尾孔前板穹頂狀，具橫走骨化帶，其後端略凸;交尾孔後板形成凹袋，腹面有襟狀突，背側有骨化區。前內骨突短桿狀、基部寬，前端鈍。後內骨突甚直，長於肛突。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

變異：乾季／低溫型個體翅背面白紋面積較大。

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、日本、華西、華中、華南、臺灣。

臺灣分布：分布於本島低、中海拔山區。

寄主植物：五福花科之呂宋莢蒾。

生物學：本種為一年多世代物種。

Genus *ACYTOLEPIS* Toxopeus, 1927

Type species: *Polyommatus puspa* Horsfield, [1828]

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) white patch present on external surface of antennal club; 3) socius lacking hook-like process; 4) androconia absent.

Larvae feed on plants in many plant families.

3 species, mainly distributed in the Oriental region (Eliot & Kawazoé, 1983).

1 species occurs in Taiwan.

靛色琉灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 觸角錘部表面有白斑；3) 雄蝶交尾器背兜側突缺少鉤狀突起；4) 無發香鱗。

幼生期取食多種不同科之植物。

本屬 3 種，主要分布於東洋區。

臺灣有 1 種。

Acytolepis puspa (Horsfield, [1828]) (靛色琉灰蝶／鈕灰蝶／臺灣琉璃小灰蝶)

Polyommatus puspa Horsfield, [1828]: Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 1: 67. (Type locality: Java)

Ssp. *myla* Fruhstorfer, 1909

PLATE 34, Figs. 264–267; PLATE 68, Fig. 420; PLATE 101, Fig. 549

Cyaniris puspa myla Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 116. (Type locality: "Formosa, Polisha [Taiwan, Puli]")

Cyaniris postimacula Matsumura, 1929: Insecta Matsumurana 3 (2/3): 104. (Type locality: "Formosa, Baibara [Taiwan, Meiyuan]")

Celastrina puspa formosana Bethune-Baker, 1914: Entomologische Mitteilungen 3 (4): 127. (Type locality: "Formosa: Kosempo, Chip Chip, Pilam, Taihorin, Yamo, Polisha")

Ssp. *gisca* Fruhstorfer, 1910

PLATE 34, Fig. 268; PLATE 35, Fig. 269; PLATE 68, Fig. 421; PLATE 101, Fig. 550

Cyaniris puspa gisca Fruhstorfer, 1910: Entomologische Zeitung 71 (2): 285. (Type locality: Sikkim)

Lycaenopsis puspa gisca f. *artena* Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (1): 25.

Lycaenopsis puspa telis Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (1): 25. (Type locality: "Andamanen")

Celastrina puspa barneyi Corbet, 1941: Hongkong Naturalist 10 (3/4): 149. (Type locality: Hong Kong, Ting Wa Shan, Hai Kiang R.)

Specimens examined:

Ssp. *myla*: **XINBEI CITY [= TAIPEI Co.]:** 1♀, Wulai, reared from *Celtis formosana*, emgd. 7. I. 1982 (Y. F. Hsu); 1♀, same locality, reared from *Ce. formosana*, emgd. 12. I. 1984 (Y. F. Hsu); 1♀, same locality, 19. II. 1987 (Y. F. Hsu); 1♂, same locality, 16. I.

2007 (Y. F. Hsu); 1♂, Wulai, Jiajiuliao, 150m, 9. VI. 2008 (Y. F. Hsu); 1♂, same locality, 10. IX. 2008 (Y. F. Hsu); 1♂, Shiding, Ergeshan, 3. IX. 2014 (L. Huang). **TAIPEI CITY:** 1♀, Shilin, Tianxiyuan, ca 300m, 21. IX. 2010 (W. H. Chien). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Baling, 13. VII. 1987 (Y. F. Hsu); 1♀, Fuxing, Xuanyuan, 17. IV. 1989 (C. L. Li). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♀, Heping, Jiayang, 18. VIII. 1983 (Y. F. Hsu); 1♀, Heping, Shangguguan, 900m, 30. X. 2006 (Y. F. Hsu); 1♀, Longjing, Longmujing,Trail, 10. IV. 2010 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Huisun, 24. I. 1998, reared from *Quercus acutissima*, emgd. 15. II. 1998 (C. H. Tseng); 1♀, same locality, 700m, 14. XI. 2004 (Y. F. Hsu); 1♂, same locality, 7/8. II. 2009 (Y. F. Hsu); 1♂, Renai, Aowanda, 16. IV. 1999, reared from *Q. acutissima*, emgd. 26. IV. 1999, HSU 99D20 (Y. F. Hsu); 1♂, Renai, Nanshanxi, 11. I. 2000 (C. Y. Hung); 1♀, Renai, Beidongyanshan, 1500m, 28. X. 2006 (Y. F. Hsu); 1♀, Yuchi, Lianhuachi, 21. XI. 2001 (Y. F. Hsu & H. Chiba). **HUALIAN Co.:** 1♀, Xiulin, Luoshao, 1300/1400m, 28. III. 1988 (Y. F. Hsu); 1♂, Zhuoxi, Zhongping Forest Trail, 14. IX. 2010 (Z. H. Yen); 1♂, Zhuoxi, Nanan, 27. XI. 2014 (Y. F. Hsu). **ZHANGHUA Co.:** 1♀, Zhanghua, Baguashan, 13. IV. 1996 (Y. F. Hsu); 1♂, Zhanghua, NCUE campus, 7. VI. 1996 (Y. F. Hsu). **JIAYI Co.:** 1♀, Fanlu, Chukou, ca 350m, 19. XII. 2005 (Y. F. Hsu); 1♀, same locality, 300m, 10. V. 2011 (Y. F. Hsu); 1♂, Dapu. 21. IX. 2000 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♀, Guantian, Wushantou, 100m, 22. I. 2007 (Y. F. Hsu); 1♂, Xinhua, 17. II. 2008, reared from *Dimocarpus longan*, emgd. 9. III. 2008, HSU 08B9 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Tianliao, 100m, 26. IV. 2010 (Y. F. Hsu); 1♂, Meinong, Shuangxi, 150m, 22. I. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♂, Kending, 11. VII. 1983 (M. L. Lin); 1♂, 1♀, Wutai, Ali, 1200m, 5. III. 2011 (Y. F. Hsu); 1♀, Fangliao. Yuquan, 26. II. 2006 (Y. F. Hsu); 1♂, Sandimen, 200m, 26. III. 2011 (Y. F. Hsu). **TAIDONG Co.:** 1♀, Yanping, Hongye, 24. III. 2001, reared from *Hiptage benghalensis*, emgd. 5. IV. 2001, HSU 01C50 (C. C. Lu, Y. T. Lo, H. S. Chuen & L. W. Wu); 1♀, same locality, 24. III. 2001, reared from *Cycas taitungensis* [= *Cy. revoluta*], emgd. 5. IV. 2001, HSU 01C49 (C. C. Lu, Y. T. Lo, H. S. Chuen & L. W. Wu); 1♀, same locality, 300m, 7. IX. 2009 (Y. F. Hsu & C. H. Lin); 1♂, Jinfeng, Manuerxi, 8. IV. 2000 (Y. F. Hsu).

Ssp. *gisca*: **JINMEN [= KINMEN] Co.:** 1♀, Jincheng, Jincheng Junior High School, 29. V. 2011 (Y. F. Hsu); 1♂, Jincheng, Shuitou, 14. V. 2013 (Y. F. Hsu); 1♂, Jinhu,

Shenshiqiao, 12. V. 2013 (C. L. Huang). **LIANJIANG Co.:** 1♀, Nangan, Shengtian Rd., 21. VIII. 2014 (B. S. Lu).

Description. Adult – Forewing length 11–17 mm. Sexual dimorphism present. Male (PLATE 34, Figs. 264–265, 268): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides metallic indigo, with dark brown margins along termen on both wings. Obscure white patch sometimes present in discal area of forewing and anterior area of hindwing. Wing undersides ground color white, with a series of dark brown discal spots on both wings, usually 5 prominent spots arranged into two rows on forewing, with three in front; serpentine on hindwing. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of proximal lunules and a series of distal dark dots. Fringe white, mixed with brown. Female (PLATE 34, Figs. 266–267; PLATE 35, Fig. 269): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing upperside ground color brown, with proximal blue and white patches on both wings.

Male genitalia (PLATE 68, Figs. 420–421) – Tegumen broad, with prominent inner projections; posterior margin flat. Socii prominent, lobe-like, tapering posteriorly. Brachium reduced, represented by a small process with rounded distal end. Vinculum narrow, strongly curved. Valva elongate, broad, flattened; ampulla as prominent, down-pointing spine; harpe forming small lobe. Juxta Y-shaped. Phallus with anterior end of phallobase slightly down-curved. Distal end of aedeagus with ventral, rod-like process and a dorsal sclerotized band. Cornuti consisted of a band with two small weakly sclerotized patches and many minute spines.

Female genitalia (PLATE 101, Figs. 549–550) – Corpus bursae bulbous. Ductus bursae elongate, membranous, with one narrow sclerotized band near ostium bursae. Sterigma with lamella antevaginalis forming a dome with heavily sclerotized, transverse band;

lamella postvaginalis forming weakly sclerotized patch associate with some setae laterally. Anterior apophyses as short, small processes. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. Submarginal bands on wing undersides are reduced in dry/cold seasons. White patches on wing uppersides of females are more extensive in dry/cold seasons.

Global distribution. Throughout the Oriental region, also Moluccas and Japan (Eliot & Kawazoé, 1983).

Distribution in Taiwan. Ssp. *myla* inhabits Low to moderate elevations, also Guishan Island and Ludao (Hsu, 1999a, 2013). Ssp. *gisca* has been found from Jinmen Island.

Larval Host plant(s). Larvae feed on plants in many families: Cycadaceae: *Cycas revoluta*; Rosaceae: *Prunus campanulata*, *P. transarisanensis*, *P. persica*, *Rosa chinensis*; Euphorbiaceae: *Bridelia balansae*, *Glochidion rubrum*, *G. philippicum*, *G. zeylanicum*; Malpighiaceae: *Hiptage benghalensis*; Sapindaceae (including "Aceraceae"): *Dimocarpus longan*, *Litchi chinensis*, *Sapindus mukorossi*, *Acer albopurpurascens*, *A. morrisonense*; Malvaceae: *Hibiscus rosa-sinensis*; Cannabaceae: *Celtis formosana*; Fabaceae: *Peltophorum petrocarpum*; Fagaceae: *Quercus acutissima*, *Lithocarpus hancei*, etc. (Hsu, 1999a, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. The specimens from Jinmen Islands possess broader dark brown margins and more prominent white discal patch on forewing. They are considered belonging to ssp. *gisca*.

形態特徵：成蝶前翅長 11–17 mm。具雌雄二型性。雄蝶（圖 264–265、268）：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、

白色但部分黑褐色；第三節細小、棒狀。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅扇形。翅背面呈帶金屬光澤之靛色，外緣有黑褐色邊；前翅中央及後翅前部有模糊白斑。翅腹面底色白色，有一列黑褐色中央斑點列，於前翅由五只鮮明黑褐色斑點排成兩列，前三後二、於後翅蜿蜒排列；後翅亞基部有二至三只褐色小斑點；中室末端具褐色短線紋；亞外緣帶紋由內側弦月紋及外側一列深色斑點組成。緣毛白色混褐色。雌蝶 (圖 266–267、269)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色，內側具藍色及白色斑紋。

雄交尾器 (圖 420–421)：背兜寬闊，具明顯內突，後緣平坦。背兜側突瓣狀、向後漸窄。顎形突退化成小圓突。基腹弧狹窄，強彎曲。抱器修長、寬扁；抱器內突形成朝下之長刺突；抱握鋏小型、葉狀。陽基軛 Y 形。陽莖彎曲；陽莖器遠短於陽莖基，陽莖器末端腹側具桿狀突起，背側有帶狀骨。角狀器形成有兩片輕度骨化區及許多細刺的骨帶。

雌交尾器 (圖 549–550)：交尾囊球狀。交尾囊管膜質，修長，末端近交尾孔處有縱走窄骨帶。交尾孔前板穹頂狀，具橫走骨帶；交尾孔後板形成兩側生剛毛之骨斑。前內骨突短小。後內骨突甚直，長於肛突曲。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

變異：乾季／低溫型個體翅腹面亞外緣帶紋減退、雌蝶翅背面白色斑面積較大。

世界分布：廣泛分布於東洋區，摩鹿加群島及日本亦有分布。

臺灣分布：亞種 ssp. *myla* 分布於本島低至中海拔地區，龜山島及綠島亦有分布；亞種 ssp. *gisca* 分布於金門。

寄主植物：幼蟲取食多種不同科之植物，包括蘇鐵科之臺東蘇鐵；薔薇科之山櫻花、阿里山櫻花、桃、月季花；大戟科之刺杜密、細葉饅頭果、菲律賓饅頭果、錫蘭饅頭果；黃褥花科之猿尾藤；無患子科 (包含槭樹科) 之龍眼、荔枝、無患子、樟葉槭、臺灣紅榨槭；錦葵科之朱槿；大麻科之石朴；豆科之盾柱木；殼斗科之麻櫟、阿里山三斗石櫟等。

生物學：本種為一年多世代物種。

註記：金門產標本前翅黑褐色邊較寬、白色斑塊較為鮮明，屬於亞種 ssp. *gisca*。

Genus *CELATOXIA* Eliot & Kawazoé, 1983

Type species: *Cyaniris albidisca* Moore, [1884]

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) M_3 spot in discal series on forewing underside deviated distally; 3) androconia present, small; 4) valva elongate, with apical serrate spine.

Larvae are known to feed on plants in the family Fagaceae.

3 species, distributed in the Oriental region (Eliot & Kawazoé, 1983).

1 species occurs in Taiwan.

白紋琉灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 前翅腹面 M_3 室斑點向外偏移；3) 雄蝶具小型發香鱗；4) 抱器修長，頂端有帶鋸齒之刺突。

已知幼蟲寄主植物為殼斗科植物。

本屬已知 3 種，分布於東洋區。

臺灣有 1 種。

***Celatoxia marginata* (de Nicéville, [1884]) (白紋琉灰蝶／白紋琉璃小灰蝶)**
PLATE 35, Figs. 270–271; PLATE 68, Fig. 422; PLATE 101, Fig. 551

Cyaniris marginata de Nicéville, [1884]: Journal of the Asiatic Society of Bengal 52 Pt. II (2/3/4): 70, pl. 1, f. 9. (Type locality: Sikkim)

Cyaniris marginata Moore, [1884]: Proceedings of the Zoological Society of London 1883 (4): 523, pl. 48, f. 6. (Type locality: Darjiling, India) (synonymy)

Cyaniris victoria Swinhoe, 1893: Transactions of the Entomological Society of London: 232. (Type locality: "Shillong [Khasia Hills]")

Celastrina carna marata Corbet, 1936: Proceedings of the Entomological Society of London (B) 5: 186. (replacement name for *marginata* Moore, [1884])

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♂, Sanxia, Beichatianshan, 25. VI. 1989 (Y. F. Hsu); 2♂, Sanxia, Beichatianshan, 1700m, 29. V. 1992 (Y. F. Hsu); 1♂, Sanxia, Beichatianshan, 1700/1727m, 20. V. 1996 (Y. F. Hsu); 2♂, same locality, 6. VI. 1996 (Y. F. Hsu); 1♂, Sanxia, Beichatianshan, 1500/1700m, 17. V. 2004 (L. H. Wang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Ronghua, 26. V. 1986 (Y. F. Hsu); 1♀, Fuxing, Lalashan, 4. VI. 1988 (Y. F. Hsu); 1♀, same locality, 25. VI. 1988 (Y. F. Hsu); 1♂, same locality, 14. X. 1999 (Y. J. Chen); 1♀, Fuxing, Sileng, 27. III. 1999, reared from *Lithocarpus kawakamii*, emgd. 17. IV. 1999, HSU 99C23 (Y. F. Hsu); 1♂, Fuxing, Beidelamanshan, 1400m, 23. VI. 2017 (L. Huang) (genitalia preparation JYL560). **YILAN Co.:** 1♂, Nanao, Shenmi Lake, 1100m, 5. VI. 1999 (Y. F. Hsu). **XINZHU Co.:** 1♂, Jianshi, Lidongshan, ca 1500m, 3. IX. 2005 (Y. F. Hsu); 1♂, Jianshi, Zhenxibao, 1600m, 18. V. 2008, reared from *Quercus tatakaensis*, emgd. 28. V. 2008, HSU 08E28 (L. H. Wang). **MIAOLI Co.:** 2♂, Nanzhuang, Jialishan, ca 2200m, 13. VII. 2004 (C. C. Lu & L. H. Wang). **NANTOU Co.:** 1♂, Renai, Benbuxi, 7. IV. 1989 (C. L. Li); 1♂, Renai, Nanshanxi, 900m, 8. III. 1997 (Y. F. Hsu).

Description. Adult – Forewing length 15–17 mm. Sexual dimorphism present. Male (PLATE 35, Fig. 270): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing lobe-like. Wing uppersides metallic indigo, with broad dark brown margins along costa and termen on both wings. Prominent white patch sometimes present in discal area of forewing and anterior area of hindwing. Wing

undersides ground color white, with a series of brown discal spots on both wings, M_3 spot on forewing deviated distally; serpentine in arrangement on hindwing. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of proximal lunules and a series of distal dark dots. Fringe white, mixed with brown. Female (PLATE 35, Fig. 271): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing shape broader and rounded, wing upperside ground color brown, with prominent white patches on uppersides with poorly developed blue scalings.

Male genitalia (PLATE 68, Fig. 422) – Tegumen broad, with small medial process posteriorly. Socii prominent, lobe-like, with recurved spines. Brachium as short, fin-shaped process. Vinculum narrow, strongly curved. Valva elongate, with inner margin straight, outer margin slightly concave; distal end forming prominent spine pointing inwards, with outer margin of spine serrate. ampulla as prominent, down-pointing spine; harpe forming small lobe. Juxta narrow, V-shaped. Phallus nearly straight, with phallobase enlarged anteriorly. Distal end of aedeagus with ventral, rod-like process and a small dorsal sclerotized band. Cornuti consisted of multiple rows of small spines and a band of fine, hair-like sclerites.

Female genitalia (PLATE 101, Fig. 551) – Corpus bursae oval. Ductus bursae elongate, membranous, with posterior end sclerotized. Sterigma with lamella antevaginalis forming diamond-shaped sclerite with small medial notch anteriorly; lamella postvaginalis forming small, oval, longitudinal sclerite. Anterior apophyses as short, small rod. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, setose.

Variations. Markings on wing undersides are reduced, and white patches of female more extensive in dry/cold seasons.

Global distribution. Himalayas, Indochina, Malaya, West to East China, and Taiwan (Eliot & Kawazoé, 1983).

Distribution in Taiwan. Moderate elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Fagaceae: *Lithocarpus kawakamii*, *Quercus morii*, *Q. tatakaensis*, etc. (Hsu, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. In Taiwan, the species most similar to this species in appearance is *Acytolepis puspa*, but they can be separated by the following features: 1) M_3 spot of forewing underside is deviated outwards in *C. marginata*, whereas it is in line with M_1 and M_2 spots in *A. puspa*; 2) dark brown margin of forewing uppersides in male of *C. marginata* is broader than that in *A. puspa*; 3) hypothetical line projecting by connecting CuA_1 and CuA_2 of forewing underside extending to apex of forewing in *C. marginata*, but to costa of forewing in *A. puspa*.

形態特徵：成蝶前翅長 15–17 mm。具雌雄二型性。雄蝶 (圖 270)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，具褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅葉狀。翅背面有帶金屬光澤靛色紋，前緣及外緣有黑褐色寬邊；前翅中央及後翅前部有鮮明白色斑塊。翅腹面底色白色，有一列黑褐色中央斑點列，於前翅 M_3 室者外移、於後翅蜿蜒排列；後翅亞基部有二至三只褐色小斑點；中室末端有褐色短線紋；亞外緣帶紋由內側一列弦月紋及外側一列深色點組成。緣毛白色混褐色。雌蝶 (圖 271)：形態特徵與雄蝶相似，但前足跗節不癒合、翅輪廓較寬圓、翅背面底色褐色，有鮮明白色斑塊，藍色鱗少。

雄交尾器 (圖 422)：背兜寬闊，後緣中央突出。背兜側突葉狀，具反曲棘刺。顎形突短、鰭狀。基腹弧狹窄，強彎曲。抱器修長，內緣直線狀、外緣略凹；抱器內突末端有向內之棘刺且後緣呈鋸齒狀；抱握鋏小型、瓣狀。陽基軛狹窄、V 字形。陽莖甚直，陽莖基前端膨大；陽莖器遠短於陽莖基，陽莖器末端腹側具短桿狀突起，背側有帶狀骨。角狀器由成列細刺及一束毛狀骨構成。

雌交尾器 (圖 551)：交尾囊卵形。交尾囊管細長、膜質，後端骨化。交尾孔前板形成菱形骨片，前端有小凹；交尾孔後板形成縱走橢圓形小骨。前內骨突為短桿狀突

起。後內骨突長於肛突，甚直。肛突前半部高度骨化，後半部輕度骨化，有毛。

變異：乾季／低溫型個體翅腹面斑紋減退、雌蝶翅背面白色斑塊面積較大。

世界分布：喜瑪拉雅地區、中南半島、馬來亞、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：殼斗科之大葉石櫟、森氏櫟、銳葉高山櫟等。

生物學：本種為一年多世代物種。

註記：在臺灣地區與本種外觀最為近似的種類是靛色琉灰蝶兩者可用以下特徵區別：1) 本種前翅腹面 M_3 室外側斑點外偏，靛色琉灰蝶的 M_3 則與 M_1 及 M_2 斑紋成一直線排列；2) 本種雄蝶翅背面黑邊較寬闊；3) 本種前翅腹面 CuA_1 及 CuA_2 斑點之假想連結線向前延伸至前翅翅端，在靛色琉灰蝶則延伸至前翅前緣。

Genus *CELASTRINA* Tutt, 1906

Type species: *Papilio argiolus* Linnaeus, 1758

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) androconia present, small; 3) valva with spinous apical process.

Larvae are known to feed on various families of plants.

16 species, distributed in the Holarctic, Oriental, and northern Australian regions (Eliot & Kawazoé, 1983).

4 species occur in Taiwan.

琉灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 雄蝶具小型發香鱗；3) 抱器頂端有刺狀突起。

幼蟲取食多種不同科之植物。

本屬已知 16 種，分布於全北區、東洋區及澳洲區北部。

臺灣有 4 種。

Celastrina argiolus (Linnaeus, 1758) (琉灰蝶／琉璃小灰蝶／琉璃灰蝶)

Papilio argiolus Linnaeus, 1758: Systema Naturae, 10th Edition, 1: 483. (Type locality: "Europa")
Papilio cleobis Sulzer, 1776: Abgekürzte Geschichte der Insecten: 146, pl. 18, figs. 13–14. (Type locality: Swizerland)
Papilio argyphontes Bergsträsser, [1779]: Nomenclatur und Beschreibung der Insecten in der Grafschaft Hanau-Münzenberg wie auch der Wetterau und der angränzenden Nachbarschaft dies und jenseits des Mains 2: 15, pl. 58, f. 5–6. (Type locality: "Hanau-Münzenberg" [Germany])
Papilio argalus Bergsträsser, [1779]: Nomenclatur und Beschreibung der Insecten in der Grafschaft Hanau-Münzenberg wie auch der Wetterau und der angränzenden Nachbarschaft dies und jenseits des Mains 2: 18, pl. 60, f. 4–5. (Type locality: "Hanau-Münzenberg" [Germany])
Papilio thersanon Bergsträsser, [1779]: Nomenclatur und Beschreibung der Insecten in der Grafschaft Hanau-Münzenberg wie auch der Wetterau und der angränzenden Nachbarschaft dies und jenseits des Mains 2: 4, pl. 49, f. 5–6. (Type locality: "Hanau-Münzenberg" [Germany])
Papilio argus marginatus Retzius, 1783: Genera et species insectorum e generosissimi auctoris scriptis: 30. (Type locality: [Sweden])
Papilio acis Fabricius, 1787: Mantissa Insectorum 2: 73, n. 687. (Type locality: Wien [Vienna])
Plebeius argiolus var. *paraleuca* Röber, 1897: Entomologische Nachrichten 23 (17–18): 270.
Celastrina argiolus var. *kobei* Tutt, [1908]: A natural history of the British Lepidoptera 9: 401. (Type locality: Kobe, [Japan])

Ssp. *caphis* Fruhstorfer, 1922

PLATE 35, Figs. 272–273; PLATE 68, Fig. 423; PLATE 101, Fig. 552

Lycaenopsis argiolus caphis Fruhstorfer, 1922: in Seitz, Die Grossschmetterlinge der Erde 9: 871. (Type locality: "Omishan und Ningpo")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♀, Daman, 27. II. 1988 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Guguan, 5. VI.

1996 (Y. F. Hsu); 2♀, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu); 1♂, Heping, Shaolai Trail, 6. VIII. 2010 (Y. F. Hsu) (genitalia preparation JYL577). **NANTOU Co.:** 1♂, Renai, Hewangshan, 22. V. 1984 (Y. F. Hsu); 2♂, Renai, Nanshanxi, 30. VII. 1985 (Y. F. Hsu); 1♂, same locality, 5. IV. 1986 (Y. F. Hsu); 1♂, same locality, 27. IX. 1987 (Y. F. Hsu); 1♀, Xinyi, Dongpu, 1500m, 19. VI. 2010 (N. Y. Tsai); 1♀, same locality, 5. III. 2011 (C. C. Lu, jr). **LIANJIANG Co.:** 1♀, Nangan, Shengtian Park, 17. IV. 2014 (C. L. Huang) (genitalia preparation JYL559).

Description. Adult – Forewing length 13–17 mm. Sexual dimorphism present. Male (PLATE 35, Fig. 272): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides blue tinged with purple, with narrow dark brown margins along termen on forewing. Wing undersides ground color white, with a series of brown discal spots on both wings, as a few short bands in a row on forewing, serpentine on hindwing; two spots in cell CuA_2 of hindwing separated. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of proximal lunules and a series of distal dark dots. Fringe white, brown at tips of veins. Female (PLATE 35, Fig. 273): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides ground color brown, with blue scalings much less extensive, only in proximal areas of both wings.

Male genitalia (PLATE 68, Fig. 423) – Tegumen broad, produced laterally; posterior margin flat. Socii prominent, robust at base, bent perpendicularly to inner horn-like processes with apical end pointed. Brachium vestigial. Vinculum narrow, strongly curved. Valva broad, with two prominent distal processes; ampulla as prominent spine with distal end pointed; harpe forming small triangular process. Juxta Y-shaped. Phallus straight, tapering posteriorly, with aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, spine-like process and a dorsal hood-like sclerite. Cornuti consisted of multiple rows of spines and a bundle of hair-like sclerites.

Female genitalia (PLATE 101, Fig. 552) – Corpus bursae oval, attenuate posteriorly. Ductus bursae elongate, membranous, connecting to sclerotized ring at posterior end. Sterigma with lamella antevaginalis forming a dome with heavily sclerotized, narrow, transverse band; lamella postvaginalis forming boomerang-shaped sclerite immediately outside of ostium bursae. Anterior apophyses as short, flattened lobe with blunt distal ends. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Widespread in Palearctic, Oriental and Nearctic regions. (Eliot & Kawazoé, 1983).

Distribution in Taiwan. Moderate elevations in montane zone of central Taiwan, also found from Mazu Islands (Hsu, 2013).

Larval Host plant(s). Fabaceae: *Indigofera venulosa* (Hsu, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 13–17 mm。具雌雄二型性。雄蝶 (圖 272)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅扇形。翅背面紫藍色，前翅外緣有黑褐色窄邊。翅腹面底色白色，有一列黑褐色中央斑點，於前翅形成數個短紋排成一列、於後翅蜿蜒排列；後翅 CuA_2 室兩斑點分離。前後翅中室端均有短褐條。後翅亞基部有二至三只褐色小斑點；中室末端具褐色短線紋；亞外緣帶紋由內側一列弦月紋及外側一列深色斑點組成。緣毛白色，翅脈處褐色。雌蝶 (圖 273)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色、藍色鱗僅見於翅內側。

雄交尾器 (圖 423)：背兜寬闊，側面突出，後緣平坦。背兜側突基部粗壯，末端延伸成垂直內彎之尖角狀突起。顎形突退化。基腹弧狹窄，強彎曲。抱器寬闊，末端

有兩明顯突起；抱器內突為長棘狀突起，末端尖；抱握鋏為三角形小突起。陽基軛片Y字形。陽莖甚直，向後漸細；陽莖器遠短於陽莖基，陽莖器末端腹側具刺狀突起，背側有罩狀骨。角狀器由多排細刺及一束毛狀骨組成。

雌交尾器(圖 552)：交尾囊卵形，向後漸縮。交尾囊管細長、膜質，末端形成骨化環。交尾孔前板穹頂狀，有橫走細骨帶；交尾孔後板於交尾孔兩側形成一對似迴旋鏢狀之小骨。前內骨突短、扁平、葉狀。後內骨突長於肛突，略彎曲。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

世界分布：廣泛分布於古北區、東洋區及新北區。

臺灣分布：分布於本島中部中海拔山區，馬祖地區亦有分布。

寄主植物：豆科之脈葉木藍。

生物學：本種為一年多世代物種。

Celastrina sugitanii (Matsumura, 1919) (杉谷琉灰蝶／杉谷琉璃小灰蝶)

Cyaniris sugitanii Matsumura, 1919: Zoological Magazine, Tokyo, 31 (368): 173. (Type locality: 京都府下貴船 [Kyoto, Shimokibune, Honshu, Japan])

Ssp. *shirozui* Hsu, 1987

PLATE 35, Figs. 274–275; PLATE 69, Fig. 424; PLATE 102, Fig. 553

Cerastrina [sic] *sugitanii shirozui* Hsu, 1987: Tyô to Ga 38 (1): 5. (Type locality: "between Palin, Taoyuan and Chihtuan, Ilan, N. Formosa")

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 8♂, Fuxing, Xuanyuan, 900–1000m, 27/28. II. 1988 (Y. F. Hsu); 2♂, same locality, 10. III. 2000 (Y. F. Hsu); 1♀, Fuxing, Lalashan, 1500m, 24. IV. 1999, reared from *Cornus controversa*, emgd. 29. V. 1999, HSU 99D26 (Y. F. Hsu); 2♀, same locality, 1500m, 29. III. 2003 (J. R. Chen); 3♂, Fuxing, Sule, 15. III. 2001 (C. C. Lu); 1♂, Fuxing, Sileng, ca 1000m, 5. III. 2009 (C. H. Lin, jr.). **XINZHU Co.:** 1♂, Jianshi, Yulao, ca 1200m, 11. III. 2004 (Y. F. Hsu); 2♀, Jianshi, Zhenxibao, 1600m, 23. III. 2009 (Y. F. Hsu & L. H. Wang); 1♂, same locality, 2. III. 2010 (Y. F. Hsu); 2♂, same locality, 1500m, 21. III. 2011 (L. H. Wang); 1♂, 1♀, same locality, 30.

III. 2016 (C. W. Huang, L. H. Wang & Y. M. Hsu) (genitalia preparation JYL592, 593). **NANTOU Co.:** 2♂, Renai, Nanshanxi, 15. III. 1994 (J. L. Jan); 4♂, same locality, 14. III. 1996 (Y. F. Hsu); 2♂, same locality, 900m, 8. III. 1997 (Y. F. Hsu).

Description. Adult – Forewing length 13–16 mm. Sexual dimorphism present. Male (PLATE 35, Fig. 274): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides purple, with very narrow dark brown margins along termen on forewing. Wing undersides ground color white, tinged with indigo proximally, with a series of discal brown spots on both wings, usually a few short bands arranged into two rows on forewing, serpentine on hindwing; two spots in cell CuA_2 of hindwing fused, spot in cell M_2 elongate. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of obscure proximal lunules and a series of distal dark dots. Fringe white, brown at tips of veins. Female (PLATE 35, Fig. 275): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing upperside ground color brown, with blue scalings, less extensive than male, white scalings present on forewing.

Male genitalia (PLATE 69, Fig. 424) – Tegumen broad, produced laterally; posterior margin flat. Socii prominent, forming horn-like process pointing inwards, robust at base, tapering distally. Brachium vestigial. Vinculum narrow, strongly curved. Valva broad, with two prominent distal processes; ampulla as prominent spine with distal end pointed; harpe forming small triangular process. Juxta Y-shaped. Phallus straight, tapering posteriorly, with aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, spine-like process and a dorsal hood-like sclerite. Cornuti consisted of multiple rows of spines and a bundle of hair-like sclerites.

Female genitalia (PLATE 102, Fig. 553) – Corpus bursae oval, attenuate posteriorly.

Ductus bursae elongate, membranous, connecting to sclerotized ring at posterior end. Sterigma with lamella antevaginalis as a dome with heavily sclerotized, narrow, transverse band, convex posteriorly with medial notch; lamella postvaginalis forming arc-shaped sclerite immediately outside of ostium bursae. Anterior apophyses as short, flattened lobe with blunt distal ends. Posterior apophyses slightly curved, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Japan, Korea, West, Central and South China, and Taiwan (Eliot & Kawazoé, 1983; Hsu, 2006, 2013; Shirôzu, 2006).

Distribution in Taiwan. Low to moderate elevations in montane zones on main island of Taiwan (Hsu, 2006, 2013).

Larval Host plant(s). Cornaceae: *Cornus controversa* (Hsu, 2006, 2013).

Biology. Univoltine, with adults on wing in spring (Hsu, 2006, 2013).

形態特徵：成蝶前翅長 13–16 mm。具雌雄二型性。雄蝶 (圖 274)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅扇形。翅背面紫色，前翅外緣有黑褐色細邊。翅腹面底色白色，內側帶靛色色調，有一列黑褐色中央斑點列，於前翅形成數個短紋排成二列、於後翅蜿蜒排列，後翅 CuA_2 室兩斑點融合、M_2 室斑點伸長；後翅亞基部有二至三只黑褐色小斑點；中室末端有褐色短線紋；亞外緣帶紋由內側一列模糊弦月紋及外側一列深色點組成。緣毛白色，翅脈處褐色。雌蝶 (圖 275)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色、藍色鱗少、前翅有白紋。

雄交尾器 (圖 424)：背兜寬闊，側面突出，後緣平坦。背兜側突基部粗壯，末端延伸成內彎之尖角狀突起。顎形突退化。基腹弧狹窄，強彎曲。抱器寬闊，末端有兩明顯突起；抱器內突為長棘狀突起，末端尖；抱握鋏為三角形小突起。陽基軛片 Y

字形。陽莖甚直，向後漸細；陽莖器遠短於陽莖基，陽莖器末端腹側具刺狀突起，背側有罩狀骨。角狀器由多排細刺及一束毛狀骨組成。

雌交尾器 (圖 553)：交尾囊橢圓形，向後漸縮。交尾囊管細長、膜質，末端形成骨化環。交尾孔前板穹頂狀，有橫走細骨帶，其後側突出內凸，中央；交尾孔後板於交尾孔兩側形成一對弧形小骨。前內骨突短、扁平、葉狀。後內骨突長於肛突，略彎曲。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

世界分布：日本、朝鮮半島、華西、華中及華南、臺灣。

臺灣分布：分布於本島低至中海拔山區。

寄主植物：山茱萸科之燈台樹。

生物學：本種為一年一世代物種，成蝶於春季活動。

Celastrina oreas (Leech, [1893]) (大紫琉灰蝶／阿里山琉璃小灰蝶)

Cyaniris oreas Leech, [1893]: Butterflies from China, Japan and Corea (2): 321, pl. 31, f. 12, 15. (Type locality: China, Ta-Chien-Lu)

Ssp. *arisana* Matsumura, 1910

PLATE 35, Figs. 276–277; PLATE 69, Fig. 425; PLATE 102, Fig. 554

Cyaniris arisanus Matsumura, 1910: Entomologische Zeitschrift 23 (50): 221. (Type locality: Formosa)

Lycaenopsis (*Cyaniris*) *coelestina kankonis* Matsumura, 1926: Insecta Matsumura 3 (2/3): 30, Pl. II, fig. 9. (Type locality: "Formosa (Kanko)")

Specimens examined:

XINZHU Co.: 2♂, Wufeng, Guanwu, 2100m, 8. IX. 2010 (C. Y. Liao & L. H. Wang). **NANTOU Co.:** 1♀, Renai, Hehuanxi, ca 2000m, 17. IX. 2003 (Y. F. Hsu); 1♂, same locality, 6. X. 2013 (J. Y. Liang); 2♂, 3♀, Renai, Yuanfeng, 6. IV. 2002, reared from *Prinsepia scandens*, emgd. 21/28. IV. 2002, HSU 02D15 (C. C. Lu, C. L. Huang & W. J. Chang); 2♂, 1♀, Renai, Yuanfeng, 2700m, 5. IX. 2011, reared from *P. scandens*, emgd. 25. IX./15. X. 2011, HSU 11J7 (Y. F. Hsu). **HUALIAN Co.:** 1♂, Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai).

Description. Adult – Forewing length 16–18 mm. Sexual dimorphism present. Male (PLATE 35, Fig. 276): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides purple, with very narrow dark brown margins along termen on forewing. Wing undersides ground color white, tinged with indigo proximally, with a series of brown discal spots on both wings, usually a few short bands in a row on forewing, serpentine on hindwing; two spots in cell CuA_2 of hindwing fused or separated. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of proximal lunules and a series of distal dark dots. Fringe white, brown at tips of veins. Female (PLATE 35, Fig. 277): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing upperside ground color brown, with purple scalings lighter in color and less extensive than male.

Male genitalia (PLATE 69, Fig. 425) – Tegumen broad, produced laterally; posterior margin flat. Socii prominent, stout and spherical basally, tapering to horn-like process distally. Brachium reduced to inconspicuous extension. Vinculum narrow, strongly curved. Valva broad, moderately long, with distal end forming prominent spine curved inwards, outer surface of spine serrate. Juxta Y-shaped. Phallus straight, with anterior end considerably enlarged; aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, spine-like process and dorsal scleotized band. Cornuti consisted of multiple rows of spines and a bundle of hair-like sclerites.

Female genitalia (PLATE 102, Fig. 554) – Corpus bursae oval, attenuate posteriorly. Ductus bursae elongate, narrow, membranous, partially sclerotized at posterior end. Sterigma with lamella antevaginalis as a dome with broad, sclerotized, transverse band, inner folds present; lamella postvaginalis forming arc-like sclerites immediately outside of ostium bursae. Anterior apophyses as short, flattened lobe with blunt distal ends. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. Northeast India, Myanmar, Korea, West, Central, and East China, Taiwan (Eliot & Kawazoé, 1983).

Distribution in Taiwan. High elevations in montane zone of main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Rosaceae: *Prinsepia scandens* (Uchida, 1991; Hsu, 2013; Lu & Chen, 2014). Moreover, Hamano (1987) recorded *Eurya strigillosa* and *E. acuminata* (Theaceae) as the hostplants.

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 16–18 mm。具雌雄二型性。雄蝶 (圖 276)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅扇形。翅背面紫色，前翅外緣具黑褐色細邊。翅腹面底色白色，內側帶靛色調，具一列褐色中央斑點列，於前翅形成數個短紋排成一列、於後翅蜿蜒排列，後翅 CuA_2 室兩斑點融合或分離；後翅亞基部有二至三只褐色小斑點；中室末端具褐色短線紋；亞外緣帶紋由內側一列弦月紋及外側一列深色點組成。緣毛白色，翅脈處褐色。雌蝶 (圖 277)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色、紫色鱗色彩較淺，範圍較窄。

雄交尾器 (圖 425)：背兜寬闊，側面突出，後緣平坦。背兜側突基部球狀、粗壯，末端延伸成內彎之尖角狀突起。顎形突退化。基腹弧狹窄，強彎曲。抱器寬闊，長度中庸，末端形成向內彎曲之刺狀尖突，其外緣有鋸齒。陽基軛片 Y 字形。陽莖直，前端顯著膨大；陽莖器遠短於陽莖基，陽莖器末端腹側具刺狀突起，背側有帶狀骨。角狀器由多排細刺及一束毛狀骨組成。

雌交尾器 (圖 554)：交尾囊卵形，向後漸縮。交尾囊管細長、膜質，後端部分骨化。交尾孔前板穹頂狀，有橫走細骨帶及骨褶；交尾孔後板於交尾孔兩側形成一對弧狀小骨。前內骨突短、扁平、葉狀。後內骨突長於肛突，略彎曲。肛突前半部高度骨化，

後半部輕度骨化，向後漸窄，有毛。

世界分布：印度東北部、緬甸、朝鮮半島、華西、華中及華東、臺灣。

臺灣分布：分布於本島高海拔山區。

寄主植物：薔薇科之假皂莢。Hamano (1987) 另記錄山茶科之粗毛柃木及銳葉柃木為寄主。

生物學：本種為一年多世代物種。

Celastrina lavendularis (Moore, 1877) (細邊琉灰蝶/薰衣琉璃灰蝶/埔里琉璃小灰蝶)

Polyommatus lavendularis Moore, 1877: The Annals and magazine of natural history; zoology, botany, and geology, series 4, 20 (118): 341. (Type locality: Ceylon)

Ssp. *himilcon* Fruhstorfer, 1909

PLATE 36, Figs. 278–279; PLATE 69, Fig. 426; PLATE 102, Fig. 555

Cyaniris himilcon Fruhstorfer, 1909: Entomologische Zeitschrift 23 (25): 117. (Type locality: Formosa, Chip-Chip [Jiji])

Lycaenopsis argiolus crimissa Fruhstorfer, 1916: Archiv für Naturgeschichte 82 A (1): 28. (Type locality: Formosa)

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Wulai, ca 200m, 27. III. 1988 (Y. F. Hsu); 1♂, same locality, 8. V. 1999, reared from *Eurycorymbus cavaleriei*, emgd. 18. V. 1999, HSU 99E9 (Y. F. Hsu & J. J. Young); 1♂, 1♀, same locality, 23. IV. 2003, reared from *E. cavaleriei*, emgd. 27. V. 2003, HSU 03D33 (Y. F. Hsu); 1♀, same locality, 26. IV. 2004, reared from *E. cavaleriei*, emgd. 3. V. 2004, HSU 04D55.1 (Y. F. Hsu); 1♂, same locality, 16. I. 2007 (Y. F. Hsu); 3♂, 1♀, Wulai, ca 200m, 2. V. 2005, reared from *E. cavaleriei*, emgd. 16/19. V. 2005, HSU 05E2 (Y. F. Hsu, C. L. Huang & C. M. Wu); 1♂, Wulai, Fushan, 15. IV. 2005 (Y. F. Hsu); 1♂, same locality, 12. IV. 2009 (C. H. Lin, jr.); 1♂, Wulai, Jiajiuliao, 150m, 9. VI. 2008 (Y. F. Hsu); 1♀, Shiding, Ergeshan, ca 650m, 25. V. 2004 (Y. F. Hsu); 1♀, Sanxia, Beichatianshan, ca 1500/1700m, 25/27. V. 2001 (Y. T. Lo). **TAIPEI CITY:** 2♂, Yangmingshan, 16. V. 1999 (Y. T. Lo). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 1000m, 20. VI. 2003 (Y. F. Hsu).

YILAN Co.: 1♂, Toucheng, Guishan Is., 401 highland, 22. I. 2005 (H. C. Huang, W. T. Wu & S. N. Hung). **XINZHU Co.:** 1♂, Zhudong, 11. IV. 2006 (Y. F. Hsu); 1♀, Jianshi, Zhenxibao, ca 1500m, 5. V. 2004 (L. H. Wang); 1♂, Xinfeng, Niuguling, 100m, 5. VI. 2010 (Y. F. Hsu & H. C. Huang). **MIAOLI Co.:** 1♂, Taian, Dalu Forest Trail, "East Branch", 3km, 25. III. 2009, reared from *Prunus phaeosticta*, emgd. 25. IV. 2009, HSU 09C61 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Beitun, Dakeng, 13. VI. 2004 (Y. F. Hsu); 1♂, Heping, 710 Forest Trail, ca 2100m, 1. VII. 2005 (L. H. Wang); 2♀, Heping, Siyuan, 25. VII. 2007 (L. H. Wang). **NANTOU Co.:** 1♀, Renai, Beidongyanshan, 1500m, 28. X. 2006 (Y. F. Hsu). **HUALIAN Co.:** 2♀, Xiulin, Bilu, ca 2200m, 20. VII. 2007 (Y. F. Hsu); 1♂, Xiulin, Huitouwan, 29. VII. 2005, reared from *Rhynchosia volubilis*, emgd. 11. VIII. 2005, HSU 05G21 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]:** 1♂, Dongshan, Wuchagou, 27. II. 2002 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Taoyuan, Fenggangshan, 1300m, 24. IX. 2007 (Y. F. Hsu & G. P. Su); 1♀, Taoyuan, Baoshan/ Erjituan, ca 1250m, 25. XI. 2007 (Y. F. Hsu). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu); 1♀, same locality, 4. IV. 2002 (C. C. Lu); 1♀, same locality, 1100/1200m, 5. V. 2007 (Y. F. Hsu); 1♂, same locality, 11. V. 2007 (L. H. Wang); 1♀, same locality, 1200m, 6. VI. 6. 2009 (Y. F. Hsu); 1♂, Wutai, Ailiaobeixi/ Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 14/17. III. 2008 (Y. F. Hsu & H. C. Huang); 1♂, Wutai, Yichangshan, 1100/1400m, 15/16. III. 2008 (Y. F. Hsu & H. C. Huang). **TAIDING Co.:** 1♀, Lanyu, Zhongaiqiao, 4. IV. 1990 (C. F. Lee); 2♂, 2♀, Lanyu, Sidaogou, 10. IV. 2007 (Y. F. Hsu); 1♂, Haiduan, Tianlong Trail, 5. V. 2019 (J. Y. Liang) (genitalia preparation JYL449).

Description. Adult – Forewing length 12–17 mm. Sexual dimorphism present. Male (PLATE 36, Fig. 278): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides deep purple, with very narrow dark brown margins along termen on forewing. Wing undersides ground color white, tinged with indigo proximally, with a series of brown discal spots on both

wings, usually a few short bands in a row on forewing, serpentine on hindwing, anterior spot prominent, black; two spots in cell CuA_2 of hindwing fused. Short brown bar at distal end of discoidal cells on both wings. Two or three brown subbasal dots present on hindwing. Submarginal bands as a series of proximal lunules and a series of distal dark dots. Fringe white, brown at tips of veins. Female (PLATE 36, Fig. 279): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing upperside ground color brown, with blue scalings, less extensive than male, white scalings usually present.

Male genitalia (PLATE 69, Fig. 426) – Tegumen broad, produced laterally; posterior margin flat. Socii prominent, tapering distally, forming spine pointing inwards. Brachium reduced to inconspicuous triangular extension. Vinculum narrow, strongly curved. Valva broad, elongate, with distal end narrowed, curved inwards, forming small hook-like process with outer surface spiny. Juxta fork-like, strongly bent. Phallus straight, with anterior end considerably enlarged; aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, spine-like process down-curved at tip and small, dorsal hood-like sclerite. Cornuti consisted of multiple rows of spines.

Female genitalia (PLATE 102, Fig. 555) – Corpus bursae oval, attenuate posteriorly. Ductus bursae elongate, narrow, membranous, connecting to trumpet-like sclerite at posterior end. Sterigma with lamella antevaginalis forming a dome with broad, heavily sclerotized, transverse band; lamella postvaginalis forming a pair of remiform sclerites immediately outside of ostium bursae. Anterior apophyses as short, flattened lobe with blunt distal ends. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. India, Sri Lanka, Indochina, Southeast Asia, New Guinea, West, South, East China, Taiwan (Eliot & Kawazoé, 1983; Hsu, 2006, 2013).

Distribution in Taiwan. Low to moderate elevations, including Ludao, Lanyu, and Guishan Island (Hsu, 2006, 2013).

Larval Host plant(s). Sapindaceae: *Eurycorymbus cavaleriei*; Fabaceae: *Rhynchosia volubili*s, *Dumasia villosa bicolor*; Rosaceae: *Prunus phaeosticta*, etc. (Hsu, 2006, 2013)

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 12–17 mm。具雌雄二型性。雄蝶 (圖 278)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼披毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅扇形。翅背面深紫色，前翅外緣具黑褐色細邊。翅腹面底色白色，內側帶靛色調，具一列褐色中央斑點列，於前翅形成數個短紋排成一列、於後翅蜿蜒排列，且最前方斑點格外鮮明，呈黑色，後翅 CuA_2 室兩斑點融合；後翅亞基部有二至三只褐色小斑點；中室末端具褐色短線紋；亞外緣帶紋由內側一列弦月紋及外側一列深色點組成。緣毛白色，翅脈處褐色。雌蝶 (圖 279)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面底色褐色、藍色鱗範圍較窄、常有白紋。

雄交尾器 (圖 426)：背兜寬闊，側面突出，後緣平坦。背兜側突末端延伸成長刺突。顎形突退化成明顯三角形突起。基腹弧狹窄，強彎曲。抱器寬闊，延長，末端向內彎曲成鉤狀，表面有棘刺。陽基軛片叉狀，強彎曲。陽莖直，前端膨大；陽莖器遠短於陽莖基，陽莖器末端腹側具下彎刺突，背側有罩狀骨。角狀器由多排細刺組成。

雌交尾器 (圖 555)：交尾囊卵形，向後漸縮。交尾囊管細長、膜質，末端形成喇叭狀骨。交尾孔前板穹頂狀，有橫走寬骨帶；交尾孔後板於交尾孔外側形成一對腎形小骨。前內骨突短、扁平、葉狀。後內骨突長於肛突，略彎曲。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

世界分布：印度、斯里蘭卡、中南半島、東南亞、新幾內亞、華西、華南及華東、臺灣。

臺灣分布：分布於本島低至中海拔地區，綠島、蘭嶼、龜山島亦有分布。

寄主植物：無患子科之賽欒華；豆科之鹿藿、臺灣山黑扁豆；薔薇科之黑星櫻等。

生物學：本種為一年多世代物種。

Genus *CALLENYA* Eliot & Kawazoé, 1983

Type species: ***Cyaniris melaena*** **Doherty, 1889**

Diagnostic characters include the following: 1) Sc with distal portion near but separated from R_1 on forewing; 2) a white patch on ventral surface near antennal club; 3) brown margin of forewing upperside in males broad, extending along costa to wing base; 4) androconia absent; 5) sexual dimorphism prominent, with no blue patch on wing uppersides of females.

Larvae feed on plants in the family Fagaceae.

3 species, distributed in the Oriental region (Eliot & Kawazoé, 1983).

1 species occurs in Taiwan.

寬邊琉灰蝶屬

形態特徵如下：1) 前翅 Sc 脈末端與 R_1 脈趨近，但未接觸；2) 觸角近錘部處腹面有白斑；3) 雄蟲前翅背面有寬褐邊，沿前緣延伸至翅基；4) 無發香鱗；5) 雌雄二型性顯著，雌蝶翅背面無藍斑。

幼生期取食殼斗科植物

本屬有 3 種，分布於東洋區。

臺灣有 1 種。

Callenya melaena (Doherty, 1889) (寬邊琉灰蝶／寬邊琉璃小灰蝶)

Cyaniris melaena Doherty, 1889: Journal of the Asiatic Society of Bengal 58 Pt. II (4): 434, pl. 23, f. 13. (Type locality: Tenasserim, [Myanmar])

Ssp. *shonen* Esaki, 1932

PLATE 36, Figs. 280–281; PLATE 69, Fig. 427; PLATE 102, Fig. 556

Cyaniris latimargo Matsumura, 1929: Insecta Matsumurana 3 (2/3): 105. (Type locality: "Formosa, Kanko") (preoccupied by *Cyaniris latimargo* Moore, [1884])
Lycaenopsis transpectus shonen Esaki, 1932: Zephyrus 4: 14. (replacement name)

Specimens examined:

NANTOU Co.: 1♀, Yuchi, Lianhuachi, 600m, 12. IV. 2000 (Y. F. Hsu); 1♀, Yuchi, Lianhuachi, 21. XI. 2001 (Y. F. Hsu & H. Chiba); 1♀, same locality, 21. VIII. 2002 (Y. F. Hsu) (genitalia preparation JYL640); 1♂, same locality, 29. IV. 2003 (Y. F. Hsu) (genitalia preparation JYL594); 1♂, same locality, 700m, 17. IX. 2002 (Y. F. Hsu); 1♂, 1♀, same locality, 8. X. 2002, reared from *Quercus pachyloma*, emgd. 30. IX./25. X. 2008, HSU 02K21 (Y. F. Hsu); 1♀, same locality, reared from *Q. pachyloma*, emgd. 12. III. 2016, HSU 16B20 (L. H. Wang).

Description. Adult – Forewing length 11–14 mm. Sexual dimorphism present. Male (PLATE 36, Fig. 280): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white, a white patch on ventral surface near base of club. Proboscis brown. Labial palpus hairy, porrect, white but partially brown, 3rd segment small, rod-like. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Wing uppersides ground color dark brown, with metallic blue patches on both wings. Dark margins prominent, present from wing base along costa and termen on forewing, further extensive on hindwing. Wing undersides ground color white, with a series of brown discal spots on both wings, arranged into a curve on forewing, serpentine on hindwing; anterior spot of hindwing prominent, black. Short brown bar at distal end of discoidal cells on both wings. Two dark brown subbasal dots present on hindwing. Submarginal bands as a series of proximal lunules and a series of distal dark dots. Fringe white, brown at distal ends of veins. Female (PLATE 36, Fig. 281): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing shape rounded, wing upperside brown, without metallic blue patches, white patches sometimes present.

Male genitalia (PLATE 69, Fig. 427) – Tegumen broad, produced laterally; posterior margin flat. Socii short, with inner hook-like processes. Brachium vestigial. Vinculum narrow, strongly curved. Valva broad basally, slightly attenuate posteriorly; 3 to 4 spines present distal end, with inner one longest. Juxta Y-shaped. Phallus slightly down-curved; aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, spine-like process and dorsal scleotized cap. Cornuti consisted of multiple rows of minute spines.

Female genitalia (PLATE 102, Fig. 556) – Corpus bursae spherical. Ductus bursae elongate, very narrow, membranous, sclerotized at posterior end. Sterigma with lamella antevaginalis as weakly sclerotized dome with narrow sclerotized, transverse band, with a pair of sclerotized bumps anteriorly; lamella postvaginalis forming short, transverse band with a pair of oval invaginations. Anterior apophyses present, as shor processes with blunt distal ends. Posterior apophyses slender, bent, approximately as long as anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. White patches on wing uppersides of females are more extensive in dry/cold season.

Global distribution. Northeast India, northern Indochina, Hainan, Taiwan (Eliot & Kawazoé, 1983; Hsu, 2002, 2013).

Distribution in Taiwan. Low elevations in hillsides of central Taiwan (Hsu, 2002, 2013).

Larval Host plant(s). Fagaceae: *Quercus pachyloma* (Hsu, 2002, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

形態特徵：成蝶前翅長 11–14 mm。具雌雄二型性。雄蝶 (圖 280)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環，近錘部處腹面有白斑。口器褐色。下唇

鬚被毛、前伸、白色但部分黑褐色；第三節細小、棒狀。複眼披毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形。翅背面深褐色，有具金屬光澤藍色斑紋，暗色邊明顯，於前翅自翅基沿前緣至外緣、後翅暗色邊更寬。翅腹面底色白色，有一列褐色中央斑點列，於前翅排成曲線、於後翅蜿蜒排列，最前方斑點格外鮮明；後翅亞基部有二只褐色小斑點；中室末端具褐色短線紋；亞外緣帶紋由內側一列弦月紋及外側一列深色斑點組成。緣毛白色，翅脈處褐色。雌蝶 (圖 281)：形態特徵與雄蝶相似，但前足跗節不癒合、翅形較圓、翅背面褐色、無藍色斑紋、有時具白紋。

雄交尾器 (圖 427)：背兜寬闊，兩側突起，末端平坦。背兜側突短，具向內之鉤狀突起。顎形突退化。基腹弧狹窄，強彎曲。抱器基部寬擴，向後略窄形，末端具 3 至 4 枚棘刺，內側者最長。陽基軛 Y 字形。陽莖略下彎；陽莖器遠短於陽莖基，陽莖器末端腹側具刺狀突起，背側有帽狀骨。角狀器由多排細刺組成。

雌交尾器 (圖 556)：交尾囊球形。交尾囊管甚細長、膜質，後端骨化。交尾孔前板穹頂狀，輕度弱骨化，有橫走細骨帶，前端有一對小骨突；交尾孔後板形成橫走短帶，有一對卵形凹陷。前內骨突為短桿狀突起，前端鈍。後內骨突長度略與肛突等長，纖細、彎曲。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

變異：乾季／低溫型雌蝶翅背面白色紋較明顯。

世界分布：印度東北部、中南半島北部、海南島及臺灣。

臺灣分布：分布於本島中部低海拔山地。

寄主植物：殼斗科之捲斗櫟。

生物學：本種為一年多世代物種。

Genus *PHENGARIS* Doherty, 1891

Type species: *Lycaena atroguttata* Oberthür, 1876

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing;

2) multiple rows of dark spots on wing undersides; 3) valva large, rectangular; 4) androconia present.

Previously 4 Oriental species were placed in the genus, but phylogenetic work by Als *et al*., 2004 suggested that *Maculinea* van Eecke, 1915 should be included in this genus, so species number of the genus may increase to 15 or 16, and the geographical range will cover a vast area of the Palearctic region.

Early instar larvae feed on flowers of plants in the family Rosaceae, Lamiaceae, and Gentianaceae, elder larvae enter nests of ants preying upon ant larvae or obtaining diets by stomodeal trophallaxis (Als *et al*., 2004).

2 species occur in Taiwan.

雀斑灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 翅腹面有數列黑色斑點；3) 抱器大而呈矩形；4) 有發香鱗。

本屬原本僅包含 4 種分布於東洋區的種類，然而，Als *et al*. (2004) 之親緣關係研究認為大藍灰蝶屬 *Maculinea* van Eecke, 1915 應併入此屬，若依此說，本屬成員會增至 15–16 種，且分布可涵蓋古北區廣大地區。

幼生期早期取食薔薇科、龍膽科及唇形科植物的花，後期則進入蟻巢取食螞蟻幼蟲或由螞蟻交哺餵食。

臺灣有 2 種。

Phengaris daitozana Wileman, 1908 (白雀斑灰蝶／白雀斑小灰蝶／臺灣白灰蝶)

PLATE 36, Figs. 282–283; PLATE 70, Fig. 428; PLATE 103, Fig. 557

Phengaris atroguttata var. *daitozana* Wileman, 1908: Annotationes Zoologicae Japonenses 6 (5): 323. (Type locality: “Formosa, Daitozan, 8500 ft; Jūjimichi, 5025 ft”)

Phengaris moltrechti Oberthür, 1909: Bulletin de la Société entomologique de France 1909: 48. (Type locality: "Central Formose; Arrizan. vis-àvis le Mont-Morrison : District Kaji; 8.000 pieds")

Phengaris moltrechti Druce, 1909: The Annals and magazine of natural history; zoology, botany, and geology, series 8, 4 (23): 416. (Type locality: "Arrizan, Kagi District, Central Formosa, 8000-10,000 feet")

Phengaris atroguttata daitozana f. *marginata* Sonan, 1926: Transactions of the Natural History Society of Formosa 16 (86): 182. (Type locality: "Nôkô-san, 10,000 ft")

Specimens examined:

JIAYI Co.: 1♀, Alishan, Zizhong, 2300m, 8. VIII. 2004 (S. C. Chen) (genitalia preparation JYL624). **NANTOU Co.:** 1♀, Puli, Guandaoshan, 1500m, 16. VII. 2011 (L. H. Wang); 5♂, 1♀, Renai, Beidongyanshan, 1500m, 1. IX. 2006 (L. H. Wang). **YILAN Co.:** 1♂, Datong, Siyuan, 2000m, 31. VII. 2007 (L. H. Wang) (genitalia preparation JYL623). **TAIDONG Co.:** 1♂, 2♀, Haiduan, Xiangyang, 4. VIII. 2018 (J. Y. Liang).

Description. Adult – Forewing length 20–26 mm. Sexual dimorphism present. Male (PLATE 36, Fig. 282): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, mostly white, brown distally, 3rd segment small, pointed at distal end. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, tarsus with brown bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen convex. Hindwing rounded. Wing uppersides ground white, markings on undersides visible; prominent dark brown margin present along termen to apex on forewing. A minute dark brown spot at distal end of discoidal cell. Wing undersides ground color white, with dark brown spots arranged into 3-4 series. Dark brown spot present at distal end of discoidal cells on both wings. Fringe white, banded with brown. Female (PLATE 36, Fig. 283): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing upperside with dark brown margins present on both wings.

Male genitalia (PLATE 70, Fig. 428) – Tegumen narrow mesad, with posterior end slightly convex; narrow transverse fold present. Socii prominent, slightly enlarged ventrad. Brachium strongly curved, with distal end slightly narrow, flattened, with blunt tip. Vinculum narrow, strongly curved. Valva broad, with outer margin slightly concave

near caudal end; ampulla forming prominent, inward-pointing spine; harpe as lobe with rounded margin; costa as thickened sclerotized band; cucculus lobe-like. Juxta V-shaped. Phallus straight, with anterior end enlarged; aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, lobe-like process and dorsal, hood-like sclerite bearing narrow, tail-like projections caudally. Cornuti consisted of two linear, spiny narrow bands; dorsal one shorter.

Female genitalia (PLATE 103, Fig. 557) – Corpus bursae oval. Ductus bursae very short, much shorter than corpus bursae, enlarged at ostium bursae. Sterigma with lamella antevaginalis as broad sclerite with posterior end concave mesad; lamella postvaginalis forming weakly sclerotized patch with transverse wrinkles and medial sclerotized disc. Anterior apophyses as short, flattened lobe, attenuate anteriorly. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, with posterior end rounded, setose.

Global distribution. Endemic to Taiwan (Shirôzu, 1960; Als *et al*., 2004; Hsu, 2013).

Distribution in Taiwan. Higher elevations in montane zone (Hsu, 2013).

Larval Host plant(s). Early instar larvae feed on flowers and flower buds of *Tripterospermum taiwanense* in Gentianaceae, grown-up larvae (4th instar) dwell in ant nests of *Myrmica pulchella* (Jean, 1997), devouring immatures of ants.

Biology. Univoltine, with adults on wing in summer (Jean, 1997; Hsu, 2013).

形態特徵：成蝶前翅長 20–26 mm。具雌雄二型性。雄蝶 (圖 282)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、大部分呈白色、末端褐色；第三節細小、末端尖。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面白色。足白色，跗節有褐色帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣突出。後翅圓形。翅背面底色白色，可透視翅腹面斑紋，前翅外緣至翅頂有鮮明黑褐色邊；中室末端有一黑褐色小斑點。翅腹面底色白色，黑褐色斑點排成三至四列；中室末端有黑褐色斑點。緣毛白褐相間。雌蝶 (圖 283) : 形態特徵與雄蝶相似，

但前足跗節不癒合、前後翅背面外緣均有黑褐色邊。

雄交尾器 (圖 428)：背兜中央窄，後端略突出，有細橫摺。背兜側突明顯，腹側略膨大。顎形突呈臂狀、強彎曲，端部略窄、扁平、頂端鈍。基腹弧狹窄，強彎曲。抱器寬闊，外緣略凹。抱器內突形成向內之棘狀突起；抱握鋏葉狀，後緣圓糊形；抱器背形成粗骨帶；抱器腹葉狀。陽基軛片 V 字形。陽莖直，前端膨大；陽莖器遠短於陽莖基，陽莖器末端腹側有瓣狀突起，背側有罩狀骨及尾狀突。角狀器為兩道密生細刺之骨帶，背側帶較短。

雌交尾器 (圖 557)：交尾囊橢圓形。交尾囊管甚短，遠短於交尾囊長度，近交尾孔處擴大。交尾孔前板形成寬骨板，末端中央有凹陷；交尾孔後板為輕度骨化骨斑，有橫向皺褶，中央有盤狀小骨。前內骨突短、扁平、向前漸窄。後內骨突長於肛突，甚直。肛突前半部高度骨化，後半部輕度骨化，後端圓，有毛。

世界分布：本種為臺灣特有種。

臺灣分布：分布於本島高海拔山區。

寄主植物：早齡幼蟲取食龍膽科臺灣肺形草之花及花苞，幼蟲後期 (4 齡蟲) 棲息於蓬萊家蟻之巢中，捕食螞蟻幼期個體。

生物學：本種為一年一世代物種，成蟲於夏天活動。

Phengaris atroguttata (Oberthür, 1876) (青雀斑灰蝶／淡青雀斑小灰蝶／白灰蝶)

Lycaena atroguttata Oberthür, 1876: Études d'Entomologie 2: 21, pl. 1, f. 4a-b. (Type locality: Moupin)

Lycaena (*Phengaris*) *moltrechti* var. *intermedia* Oberthür, 1916: Études de lépidoptérologie comparée 12 (2): 42.

Ssp. *formosana* Matsumura, 1926

PLATE 36, Figs. 284–285; PLATE 70, Fig. 429; PLATE 103, Fig. 558

Lycaena (*Phengaris*) *atroguttata formosana* Matsumura, 1926: Insecta Matsumurana 1 (1): 26, pl. 2, f. 10. (Formosa, Horisha; Mashitarun (馬西塔隆社或毛食打碖社))

Cupido (*Lycaena*) *atroguttata hiemalis* Niepelt, 1934: Internationale entomologische Zeitschrift 28:

54. (Type locality: Formosa)

Phengaris atroguttata matsumurai Sonan, 1926: Transactions of the Natural History Society of Formosa 16 (86): 181. (Type locality: "Nôkô-san, 10,000 ft; Tatt[a]ka, 7,500 ft")

Specimens examined:

YILAN Co.: 2♂, Datong, Siyuanyakou, 11. VII. 2004 (J. R. Chen); 1♂, Datong, Taipingshan, 11. VII. 2004 (L. H. Wang); 1♀, Datong, Siji Forest Trail, 9. VIII. 2005 (L. H. Wang); 1♀, Datong, Siyuan, 2000m, 31. VII. 2007 (L. H. Wang); 1♀, Nanao, Cuifenghu, Beech Trail, ca 2100m, 6. IX. 2010 (C. L. Huang). **HUALIAN Co.:** 1♀, Xiulin, Bilu, ca 2200m, 29. VII. 2005 (Y. F. Hsu); 1♂, same locality, 20. VII. 2007 (Y. F. Hsu); 1♀, same locality, 5. V. 2015 (L. Huang, H. C. Huang & J. M. Wu) (genitalia preparation JYL486).

Description. Adult – Forewing length 19–25 mm. Sexual dimorphism present. Male (PLATE 36, Fig. 284): Head hairy, brown, with medial white band on frons. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, brown but white laterally, 3rd segment small, pointed at distal end. Compound eyes hairy. Thorax and abdomen dark brown mixed with blue dorsally, white ventrally. Legs white, tarsus with brown bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen convex. Hindwing rounded. Wing uppersides ground pale blue tinged with white, markings on undersides visible; dark brown margin present along termen to apex on forewing. Wing undersides ground color white, with dark brown spots arranged into 3-4 series. Dark brown spot present at distal end of discoidal cells on both wings. Fringe white, banded with brown. Female (PLATE 36, Fig. 285): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing upperside with blue scalings less extensive; dark brown markings presents, prominent; dark brown margins present along termen on both wings.

Male genitalia (PLATE 70, Fig. 429) – Tegumen narrow mesad, with posterior end slightly convex; narrow transverse fold present. Socii prominent, trapezoid. Brachium perpendicularly bent, with distal end slightly narrowed, flattened, with blunt tip. Vinculum narrow, strongly curved. Valva broad, with outer margin slightly concave near caudal end; ampulla forming prominent, inward-pointing spine armed with minute teeth; harpe as lobe with angled margin; costa as thickened sclerotized band;

cucculus triangular. Juxta Y-shaped, with short stalk. Phallus straight, with anterior end considerably enlarged; aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, rod-like process and dorsal, hood-like sclerite bearing narrow, tail-like projections caudally. Cornuti elaborated; consisted of two linear, spiny narrow bands, a pair of dorsal, spiny round discs, and a ventral, spiny sclerotized patch associated with several sacs near distal end.

Female genitalia (PLATE 103, Fig. 558) – Corpus bursae oval. Ductus bursae short, approximately as long as corpus bursae, enlarged at ostium bursae. Sterigma with lamella antevaginalis as cardioid sclerite; lamella postvaginalis forming weakly sclerotized patch with transverse wrinkles and small medial sclerotized round patch. Anterior apophyses as short, flattened, triangular lobe. Posterior apophyses nearly straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, with posterior end rounded, setose.

Global distribution. West China and Taiwan (Shirôzu, 1960; Als *et al*., 2004; Hsu, 2013).

Distribution in Taiwan. Higher elevations in montane zone (Hsu, 2013).

Larval Diets. Early instar larvae feed on flowers and flower buds of plants in Lamiaceae, including *Clinopodium laxiflorum*, *C. chinense*, *Melissa axillaris* and *Rabdosia lasiocarpa*, grown-up larvae (3rd to 4th instar) dwell in ant nests of *Myrmica pulchella* and *M. arisana* , fed by the ants via oral trophollaxia or devouring larvae and pupae of the ants (Jean, 1997).

Biology. Univoltine, with adults on wing in summer (Jean, 1997; Hsu, 2013).

形態特徵：成蝶前翅長 19–25 mm。具雌雄二型性。雄蝶 (圖 284)：頭被毛、褐色；額中央具白色帶紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、褐色但側面白色；第三節細小、末端尖。複眼被毛。胸部及腹部背面黑褐色混藍色、腹面

白色。足白色，跗節有褐色帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣突出。後翅圓形。翅背面底色藍白色，可透視翅腹面斑紋，前翅外緣至翅頂有黑褐色邊。翅腹面底色白色，黑褐色斑點排成三至四列；中室末端有黑褐色斑點。緣毛白色，具褐色帶。雌蝶 (圖 285)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色鱗範圍較窄、前後翅外緣均有明顯黑褐色邊。

雄交尾器 (圖 429)：背兜中央窄，後端略突出，有細橫摺。背兜側突呈梯形。顎形突呈垂直彎曲，臂狀，向後略細，扁平，頂端鈍。基腹弧狹窄，強彎曲。抱器寬闊，外緣略凹。抱器內突形成向內之棘狀突起，後緣有細鋸齒；抱握鋏葉狀，後緣有角狀突；抱器背形成粗骨帶；抱器腹三角形。陽基軛片短、Y 字形。陽莖直，前端膨大；陽莖器遠短於陽莖基，陽莖器末端腹側有桿狀突起，背側有罩狀骨，附有尾狀突起。角狀器複雜，兩條線狀、布滿細刺之骨帶，背側有一對密生微刺之盤狀骨，及腹側末端之帶刺骨斑與囊狀構造。

雌交尾器 (圖 558)：交尾囊橢圓形。交尾囊管短，略與交尾囊等長，近交尾孔處擴大。交尾孔前板呈心形骨板；交尾孔後板為輕度骨化骨斑，有橫向皺褶，中央有盤狀小骨。前內骨突短、扁平、三角形。後內骨突長於肛突，甚直。肛突前半部高度骨化，後半部輕度骨化，後端圓，有毛。

世界分布：華西及臺灣。

臺灣分布：分布於本島高海拔山區。

寄主植物：早齡幼蟲取食唇形科疏花風輪菜、風輪菜、蜜蜂花、毛果延命草之花及花苞，幼蟲後期 (3–4 齡蟲) 棲息在蓬萊家蟻及阿里山家蟻巢內，由螞蟻喂食或捕食螞蟻之幼蟲和蛹。

生物學：本種為一年一世代物種，成蟲於夏天活動。

Genus *CHILADES* Moore, [1881]

Type species: *Papilio laius* Stoll, [1780]

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2)

eyes sparsely hairy; 3) a series of dark spots along termen of hindwing uppersides; 4) sexual dimorphism present, metallic purple patch on wing uppersides in males, blue in females.

Some species are sometimes placed in a separate genus *Luthrodes* Druce, 1895 (Type species: *Polyommatus cleotas* Guérin-Méneville, [1831])(e.g., Williams, 2020). Talavera *et al*. (2013) proposed to transfer some members usually included in *Chilades* to *Luthrodes*, but *Chilades–Luthrodes* was recognized as a monophyletic group in the phylogeny shown by the work, and they addressed that "the question may be better assessed after a study including additional species".

Larvae feed on plants in Fabaceae, Cycadaceae and Rutaceae.

Number of species varies depending on the concept of the genus, distributed in the Oriental, Australian and Afrotropical regions.

2 species occur in Taiwan.

綺灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 複眼疏被毛；3) 後翅背面外緣有一列黑色斑點；4) 具雌雄二型性，雄蝶翅背面有帶金屬光澤紫色斑紋，雌蝶則為藍色。

本屬部分物種有時被置於 *Luthrodes* 屬內。Talavera *et al*. (2013) 建議將本屬部分種類移至 *Luthrodes* 屬，但該研究的親緣關係樹仍顯示 *Chilades–Luthrodes* 成一單系群。該論文也陳述此問題應加入更多相關蝶種作進一步研究。

幼生期以豆科、蘇鐵科及芸香科為寄主。

本屬種類數依屬概念的不同而有異，分布於東洋區、澳洲區及非洲區。

臺灣有 2 種。

Chilades lajus (Stoll, [1780]) (綺灰蝶／紫灰蝶／恆春琉璃小灰蝶)

Papilio lajus Stoll, [1780]: in Cramer, De uitlandsche kapellen 4: 62, pl. 319, f. D, E. (Type locality: Tranquebar, Coromandel)

Hesperia cajus Fabricius, 1793: Entomologia Systematica 3 (1): 296. (Type locality: "India Orientali")

Lycaena brahmina C. & R. Felder, [1865]: Reise der Österreichischen Fregatte Novara Bd 2 (Abt. 2): 279, pl. 35, f. 15–16. (Type locality: "Bengalia")

Polyommatus varunana Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 772, pl. 41, f. 6. (Type locality: Bengal)

Polyommatus kandura Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 772, pl. 41, f. 7. (Type locality: Bengal)

Ssp. *koshunensis* Matsumura, 1919

PLATE 37, Figs. 286–289; PLATE 70, Fig. 430; PLATE 103, Fig. 559

Chilades laius var. *koshunensis* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 662, pl. 53, f. 6. (Type locality: Formosa (Koshun [Hengchun]))

Specimens examined:

TAINAN CITY [= TAINAN Co.]: 3♂, Guantian, Wushantou, 17. X. 2000 (Y. F. Hsu); 2♂, same locality, ca 80m, 26. IX. 2005 (Y. F. Hsu); 1♂, 1♀, same locality, 24. X. 2005 (Y. F. Hsu); 1♂, same locality, ca 80m, 19. XII. 2005 (Y. F. Hsu); 1♂, same locality, 19. XII. 2005, reared from *Severinia buxifolia*, emgd. 20. I. 2006, HSU 05M38 (Y. F. Hsu); 4♂, 3♀, same locality, 24. X. 2009 (Y. F. Hsu); 3♂, same locality, 10. VIII. 2011 (Y. F. Hsu); 2♂, Guantian, Xinhua, 24. X. 2009 (Y. F. Hsu); 1♂, Zuozhen, Ganglin 13. II. 2012 (Y. F. Hsu); 1♂, Liuying, Yanhoupi, 29. XII. 2012 (Y. F. Hsu); 1♀, Liujia, Longhuyan Temple, 12. VII. 2014 (Y. F. Hsu); 1♂, 3♀, same locality, 23. VIII. 2014 (Y. F. Hsu) (female genitalia preparation JYL680); 1♂, same locality, 25. IV. 2016 (L. Huang) (genitalia preparation JYL580). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Gushan Dist., Chaishan, 30. III. 1997 (Y. F. Hsu); 1♂, Tianliao, 80m, 1. VI. 2012 (Y. F. Hsu). **PINGDONG Co.:** 2♂, 1♀, Checheng, Xiaojianshan, 18. XII. 2005 (Y. F. Hsu); 1♀, same locality, 18. XII. 2005, reared from *S. buxifolia*, emgd. 17. I. 2006, HSU 05M36 (Y. F. Hsu); 2♂, 1♀, Hengchun, Dajianshan, 5. I. 2006 (Y. F. Hsu); 1♂, same locality, 5. I. 2006, reared from *S. buxifolia*, emgd. 6. II. 2006, HSU 06A3 (Y. F. Hsu). **TAIDONG Co.:** 2♀, Ludao, Old Transverse Trail, 28/30. IV. 2014 (H. C. Huang).

Description. Adult – Forewing length 11–16 mm. Sexual dimorphism present. Male (PLATE 37, Figs. 286–287): Head hairy, brown, with medial white stripe. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown distally; 3rd segment slender. Compound eyes sparsely hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Wing uppersides metallic purple, with dark brown margins on both wings. A series of dark spots along termen of hindwing, spot in cell CuA_1 most prominent, black. Wing undersides ground color grayish white or buff, with a series of discal dark brown spots margined with white on both wings, spot by costa black. Three black subbasal dots present on hindwing. Submarginal bands as a proximal series of dark brown lunules and distal series of spots, all margined with white. Fringe white. Female (PLATE 37, Figs. 288–289): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally, a series of white lunules along termen of hindwing.

Male genitalia (PLATE 70, Fig. 430) – Tegumen narrow, produced laterally; posterior margin concave. Socii as elongate spine with blunt distal end. Brachium bent at base, forming elongate spine with distal end hook-like, extending beyond socii. Vinculum broad laterally, curved. Valva broad, elongate; a membrane present on outer surface distally with margin over edge of harpe; costa+ampulla forming elongate band with distal blade-like extension; harpe as broad lobe; sacculus as a thickened sclerotized band. Juxta V-shaped. Phallus slightly down-curved; aedeagus much shorter than phallobase. Distal end of aedeagus with ventral, rod-like process and dorsal scleotized band.

Female genitalia (PLATE 103, Fig. 559) – Corpus bursae oval. Signa as a pair of small, invaginated, rounded, spiny sclerites on opposite walls of corpus bursae. Ductus bursae elongate, membranous, partially sclerotized at posterior end. Sterigma with lamella antevaginalis as large pocket-like pouch with wide anterior opening; lamella postvaginalis as a pair of lateral, sclerotized bands. Anterior apophyses as short rods. Posterior apophyses nearly straight, bent at both ends, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. Markings on wing undersides are paler, with additional dark shade on posterior half of hindwing in dry/cold seasons.

Global distribution. India, Sri Lanka, Indochina, Philippines, South China, and Taiwan (Bascombe *et al*., 1999; Hsu, 2013).

Distribution in Taiwan. Mainly in lowlands of southern Taiwan (Hsu, 2002, 2013).

Larval Host plant(s). Rutaceae: *Severinia buxifolia* (Uchida, 1991; Hsu, 2002, 2013; Lu & Chen, 2014).

Biology. This species is multivoltine in occurrence (Hsu, 2013).

Remarks. The specific name of this species is sometimes misspelt as *laius* (e.g. Matsumura, 1919; Shirôzu & Ueda, 1992).

形態特徵：成蝶前翅長 11–16 mm。具雌雄二型性。雄蝶 (圖 286–287)：頭被毛、褐色、中央具白色條紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但末端褐色；第三節細小。複眼被疏毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形。翅背面呈帶金屬光澤之紫色，有黑褐色邊，後翅外緣有一列深色斑點，於 CuA_1 室者黑色、最明顯。翅腹面底色灰白色或淺黃褐色，有一列鑲白邊之黑褐色斑點、於前緣者黑色；後翅亞基部有三枚黑色斑點；亞外緣帶紋由內側黑褐色弦月紋及一列外側斑點組成、均鑲白緣。緣毛白色。雌蝶 (圖 288–289)：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色斑紋見於內側、後翅外緣有一列白色弦月紋。

雄交尾器 (圖 430)：背兜窄，兩側突出，後緣凹陷。背兜側突形成長刺突，末端鈍。顎形突基部彎曲，長刺狀，延伸超出背兜側突，末端鉤狀。基腹弧側面寬闊，彎曲。抱器寬闊、延長，抱握鋏外側後端有膜質區；抱器背 + 抱器內突細長、帶狀，末端延伸成刃狀突起；抱握鋏寬瓣狀；抱器腹粗厚。陽基軛 V 字形。陽莖下彎，陽莖器遠短於陽莖基，陽莖器末端腹側具短桿狀突起，背側有小骨帶。

雌交尾器 (圖 559)：交尾囊卵形。花壁一對，位於交尾囊對應位置，形成內陷、生有小刺之小圓骨。交尾囊管修長、膜質，末端部分骨化。交尾孔前板形成大行囊袋，前端有寬開口；交尾孔後板形成一對側骨化。前內骨突形成短桿狀突起。後內骨突長度較肛突長，甚直，兩端彎曲。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

變異：乾季／低溫型個體翅腹面斑紋色彩較淡、且後翅後側有暗影。

世界分布：印度、斯里蘭卡、中南半島、菲律賓、華南及臺灣。

臺灣分布：分布於本島南部低地。

寄主植物：芸香科之烏柑仔。

生物學：本種為一年多世代物種。

註記：本種種小名常被誤拼為 *laius*。

Chilades pandava (Horsfield, [1829]) (蘇鐵綺灰蝶／曲紋紫灰蝶／東陞蘇鐵小灰蝶)

Lycaena pandava Horsfield, [1829]: Descriptive catalogue of the lepidopterous insects contained in the Museum of the Honourable East-India Company 2: 84. (Type locality: “Java”)

Catochrysops nicola Swinhoe, 1885: Proceedings of the Zoological Society of London 1885: 132. (Type locality: Poona, [India])

Catochrysops bengalia de Nicéville, 1885: Journal of the Asiatic Society of Bengal 54 Pt. II (1): 47. (Type locality: Calcutta)

Euchrysops insularis Riley, [1945]: Transactions of the Royal Entomological Society of London 94 (2): 257. (Type locality: Sipora, [Indonesia])

Ssp. *peripatria* Hsu, 1989

PLATE 37, Figs. 290–293; PLATE 70, Fig. 431; PLATE 103, Fig. 560

Chilades peripatria Hsu, 1989: Bulletin of the Institute of Zoology, Academia Sinica (Taipei) 28 (l): 56, Figs. 1–4. (Type locality: “Taiwan, Taitung, Yenping, Taoyuan”)

Ssp. *pandava* Horsfield, [1829]

PLATE 37, Figs. 294–295; PLATE 71, Fig. 432; PLATE 104, Fig. 561

Specimens examined:

Ssp. *peripatria*: **JILONG CITY:** 1♂, 1♀, Pengjiayu, 9. IX. 2008, reared from *Cycas revoluta*, emgd. 13. IX. 2008, HSU 08J19 (C. H. Yen, N. Y. Tsai & L. W. Wu); 1♀, same locality, 17. VIII. 2013, reared from *C. revoluta*, emgd. 30. VIII. 2013 (H. C. Huang). **TAIPEI CITY:** 2♂, 1♀, Daan, NTU campus, emgd. 10. IX. 2009 (M. H. Sun); 1♂, 1♀, Nangang, Academia Sinica, reared from *C. revoluta*, emgd. 27/29. X. 2009 (M. H. Sun). **PINGDONG Co.:** 2♂, Liuqiu, Liuqiuyu, 7. III. 2010 (N. Y. Tsai). **TAIDONG Co.:** 1♂, "Kaede, Riran, Taito [= Taidong], 390m, 19. VII. 1937, M. Yamanaka/ Euchrysops yamanakai Sonan DET J SONAN " (TARI); 154♂paratypes, 100♀paratypes, Yanping, Taoyuan, 9. II. 1988, reared from *C. taitungensis* [= *C. revoluta*], emgd. 14. II./29. V. 1988 (Y. F. Hsu); 1♂, 1♀, same locality, 13. III. 1988 (T. H. Lee); 1♀, Lanyu, 23. VII. 2009, reared from *C. revoluta*, emgd. 3. VIII. 2009, HSU 09G11 (L. W. Wu & C. H. Lin, jr.); 2♂, Yanping, Hongye, 500m, 28. I. 2009 (M. H. Sun); 1♂, 1♀, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang).

Ssp. *pandava*: **JINMEN [= KINMEN] Co.:** 9♂, 12♀, Jinning, Cihu, 11. IX. 2007, reared from *C. revoluta*, emgd. 5. X. 2007, HSU 07J40.1 (L. W. Wu); 1♀, Jinning, Zhongshan Forest, 10m, 17. VIII. 2015 (L. Huang) (genitalia preparation JYL424); 1♀, 22. VII. 2009, reared from *C. revoluta*, emgd. 3. VIII. 2009, HSU 09G12 (L. W. Wu); 2♂, 3♀, VIII. 2008 (W. T. Chen); 1♂, Jincheng, Zhaishan, 28. V. 2011 (Y. F. Hsu).

Description. Adult – Forewing length 10–16 mm. Sexual dimorphism present. Male (PLATE 37, Figs. 290–291, 294): Head hairy, brown, with medial white stripe. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown distally; 3rd segment slender. Compound eyes sparsely hairy. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Short filiform projections at distal ends of CuA_2. Wing uppersides metallic purple, with dark brown margins on both wings. A series of dark spots along termen of hindwing, spot in cell CuA_1 most prominent, black. Wing undersides ground color buff, with a series of discal dark spots margined with white on both wings, spot by costa black. Two or three black subbasal dots present on hindwing. Submarginal bands as a proximal series of dark lunules and distal series of dark spots,

all margined with white. Conspicuous black spots associated with orange markings and metallic green scalings at distal end of cells CuA_1 and CuA_2 of hindwing. Fringe white. Female (PLATE 37, Figs. 292–293, 295): Body and wing patterns of wing undersides similar to those of male, Protarsi normal, wing uppersides with blue patches present proximally, a series of white lunules along termen of hindwing.

Male genitalia (PLATE 70, Fig. 431; PLATE 71, Fig. 432) – Tegumen narrow, produced laterally; posterior margin concave. Socii as elongate spine with blunt distal end. Brachium bent at base, forming elongate spine with distal end hook-like, extending beyond socii. Vinculum broad laterally, curved. Valva broad, elongate, convex dorsally; a membrane present on outer surface distally with margin edge of harpe; costa+ampulla forming elongate band with down-curved, digitate process; harpe as broad lobe; sacculus as a thickened sclerotized band. Juxta V-shaped. Phallus with aedeagus shorter than phallobase. Aedeagus up-curved, sclerotized near caudal end; distal end with ventral spine-like process, dorsal broad sclerite with distal needle-like process.

Female genitalia (PLATE 103, Fig. 560; PLATE 104, Fig. 561) – Corpus bursae oval. Signa as a pair of small, invaginated, rounded, spiny sclerites on opposite walls of corpus bursae. Ductus bursae elongate, membranous. Sterigma with lamella antevaginalis as elongate, conical sclerite; lamella postvaginalis as a pair of lateral, sclerotized bands. Anterior apophyses as short, flattened lobe. Posterior apophyses slightly curved, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Variation. Blue patches on wing uppersides and submarginal white bands are more extensive in dry/cold season.

Global distribution. Originally in the Oriental region west of the Wallace Line (Eliot, 1992), but now introduced to many parts of the world (Wu *et al*., 2010).

Distribution in Taiwan. Originally in native cycad colonies in Taidong (Hsu, 1989), now spread throughout the island (Wu *et al*., 2010). Populations in mainland island of

Taiwan are considered as ssp. *peripatria* (Shirôzu & Ueda, 1992; Wu *et al*., 2010; Hsu, 2002, 2013), whereas those found from Jinmen Islands belong to the nominotypical subspecies (Wu *et al*., 2009)

Larval Host plant(s). Cycadaceae: *Cycas revoluta* (Hsu, 1989, 2002).

Biology. This species is multivoltine in occurrence (Hsu, 1989, 2002).

Remarks. This species has been regarded as one of the major pests on cycads, invading many parts of the world via natural or anthropogenic pathways (Wu *et al*., 2010). In Taiwan, it was a seldom seen rare butterfly until 1990s when it suddenly became a common pest, likely involving extensive utilization of cycad plants for horticultural practice.

Some authors (e.g., Chang, 2011; Fukuda, 2016) suggested that the populations found in Taiwan may be recently introduced with cultivated cycads in 1970s, but it has been demonstrated that the populations found in Taiwan possessing genetic make-up distinct from populations found in other geographical areas (Wu *et al*., 2009, 2010). Moreover, specimens of this species were collected from native cycad colonies in Taidong in 1937 (TARI specimens) long before 1970, suggesting that this species is aboriginal in Taiwan.

形態特徵：成蝶前翅長 10–16 mm。具雌雄二型性。雄蝶（圖 290–291、294）：頭被毛、褐色、中央具白色條紋。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但末端褐色；第三節細。複眼疏被毛。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形，CuA_2 脈末端具絲狀短尾突。翅背面呈帶金屬光澤之紫色，有黑褐色邊，後翅外緣有一列深色斑點，於 CuA_1 室者黑色、明顯。翅腹面底色淺黃褐色，有一列鑲白邊之黑褐色斑點、於前緣者黑色；後翅亞基部有二至三枚黑色斑點；亞外緣帶紋由內側深色弦月紋及一列外側深色斑點組成、均鑲白緣；後翅 CuA_1 及 CuA_2 室末端有橙色紋及帶金屬光澤綠色鱗之黑色斑點。緣毛白色。雌蝶（圖 292–293、295）：形態特徵與雄蝶相似，但前足跗節不癒合、翅背面藍色紋見於內側、後翅外緣有一列白色弦月紋。

雄交尾器 (圖 431–432)：背兜窄，兩側突出，後緣凹陷。背兜側突形成長刺突，末端鈍。顎形突基部彎曲，長刺狀，延伸超出背兜側突，末端鉤狀。基腹弧側面寬闊，彎曲。抱器寬闊、延長，背側凸，抱握鋏外側後端有膜質區；抱器背 + 抱器內突細長、帶狀，末端延伸成下彎之指狀突起；抱握鋏寬瓣狀；抱器腹粗厚。陽基軛 V 字形。陽莖器短於陽莖基，陽莖器上彎，近末端處骨化。陽莖器末端腹側具刺狀突起，背側有寬骨帶，其端部有針狀突起。

雌交尾器 (圖 560–561)：交尾囊卵形。花壁一對，位於交尾囊對應位置，形成內陷、生有小刺之小圓骨。交尾囊管修長、膜質。交尾孔前板形成圓錐狀長骨；交尾孔後板形成一對側骨化。前內骨突短、扁平、瓣狀。後內骨突長度較肛突長，略彎曲。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

變異：乾季／低溫型個體翅背面藍色斑紋面積較大，亞外緣白色帶紋較寬。

世界分布：原本分布於東洋區 (Eliot, 1992)，現已入侵許多其他地區 (Wu *et al*., 2010)。

臺灣分布：原產於臺東之蘇鐵原生棲地，現已分布於全島。分布於臺灣之族群屬於亞種 ssp. *peripatria*，而分布於金門之族群則屬於承名亞種。

寄主植物：蘇鐵科之蘇鐵。

生物學：本種為一年多世代物種。

註記：本種被認為是蘇鐵之主要害蟲之一，並經由自然或人為途徑入侵許多地區 (Wu *et al*., 2010)。本種在臺灣於 1990 年代以前原為稀有種，而後快速擴散而成為常見害蟲，可能涉及蘇鐵科園藝植物之擴大利用。

有些研究者認為臺灣族群可能是 1970 年代隨著蘇鐵科園藝植物引進 (如 Chang, 2011；Fukuda, 2016)，但已有研究證明臺灣族群與其他地區族群存在遺傳差異 (Wu *et al*., 2009, 2010)，且本種於 1937 年早已有從臺東之蘇鐵原生族群生長處採集之標本 (農試所標本)，遠早於 1970 年代，因此本種應是臺灣原生種。

Genus *FREYERIA* Courvoisier, 1920

Type species: *Lycaena trochylus* Freyer, 1845

Diagnostic characters include the following: 1) Sc separated from R_1 on forewing; 2) eyes sparsely smooth; 3) a series of dark spots along termen of hindwing undersides; 4) sexual dimorphism absent.

Members of the species are sometimes included in the genus *Chilades* (e.g., Larsen, 2005).

Larvae feed on plants in Fabaceae and Heliotropiaceae.

3 species, distributed in the Oriental, Australian and Afrotropical regions (Parsons, 1998).

1 species occurs in Taiwan.

晶灰蝶屬

形態特徵如下：1) 前翅 Sc 脈與 R_1 脈分離；2) 複眼光滑；3) 後翅腹面外緣有一列黑色斑點；4) 無雌雄二型性。

本屬成員有時被置於綺灰蝶屬中。

幼生期以豆科及天芹菜科植物為寄主。

本屬有 3 種，分布於東洋區、澳洲區及非洲區。

臺灣有 1 種。

Freyeria putli (Kollar, [1844]) (東方晶灰蝶／臺灣姬小灰蝶／普福來灰蝶)

Lycaena putli Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4 (2): 422. (Type locality: "Himal[aya] Massuri [Mussoorie]")

Ssp. *formosanus* Matsumura, 1919

PLATE 38, Figs. 296–297; PLATE 71, Fig. 433; PLATE 104, Fig. 562

Chiliades trochilus var. *formosanus* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 663, pl. 10, f. 9. (Type locality: "Koshun" [= Hengchun, Pingdong, Taiwan])

Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 1♂, Daxi, Dingliao, 200m, 21. IX. 2009 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Jiaxian, 250m, 25. VI. 2003 (Y. F. Hsu); 1♀, Tianliao, 8. III. 2020, reared from *Heliotropium procumbens*, emgd. 27. III. 2020, HSU 20C28 (Y. F. Hsu); 1♀, Meinong, Meinong Lake, 29. II. 2020 (Y. F. Hsu); 1♂, 1♀, same locality, 29. II. 2020, reared from *H. procumbens*, emgd. 17/18. III. 2020, HSU 20B38 (Y. F. Hsu). **PINGDONG Co.:** 2♂, 6♀, Hengchun, 9. XI. 1995 (Y. F. Hsu); 1♂, same locality, 7. IX. 2000, reared from *Indigofera spicata*, emgd. 13/27. IX. 2000, HSU 00J1 (Y. F. Hsu, C. C. Lu, J. M. Wu & C. R. Chen); 2♂, Manzhou, Yongjing, 80m, 19. X. 2008 (Y. F. Hsu); 1♂, 1♀, Manzhou, Maocaopu, 19. X./11. XI. 2008, reared from *Phyllodium pulchellum*, emgd. 30. X. 2008, HSU 08K39 (Y. F. Hsu); 1♂, 1♀, Checheng, 9. IX. 2009 (Y. F. Hsu) (genitalia preparation JYL524, 526); 1♂, Checheng, Xiaojianshan, 23. X. 2009 (Y. F. Hsu); 1♂, Liuqiu, Liuqiuyu, 7. III. 2010 (N. Y. Tsai). **TAIDONG Co.:** 1♀, Beinan, Taian, 1. X. 2000 (Y. F. Hsu); 1♂, 1♀, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang).

Description. Adult – Forewing length 6–9 mm. Sexual dimorphism present. Male (PLATE 38, Fig. 296): Head hairy, brown, with medial white stripe. Antennae dark brown, segmented with white. Proboscis brown. Labial palpus hairy, porrect, white but dark brown distally; 3rd segment slender. Compound eyes smooth. Thorax and abdomen dark brown dorsally, white ventrally. Legs white, with brown stripes and bands, Protarsi fused, with distal end down-curved, pointed. Forewing triangular, termen slightly convex. Hindwing rounded. Wing uppersides ground color brown, with faint, dark brown spots along termen of hindwings. Wing undersides ground color buff, with a series of discal dark brown spots margined with white on both wings, spot by costa black. Three dark

subbasal dots present on hindwing. Submarginal bands as two series of spots margined with white on forewing; four black spots crowned with orange lunules replacing distal series along termen on hindwing. Fringe brown. Female (PLATE 38, Fig. 297): Body and wing patterns of wing undersides similar to those of male, Protarsi normal.

Male genitalia (PLATE 71, Fig. 433) – Tegumen narrow, produced laterally; posterior margin concave. Socii as elongate spine with blunt distal end. Brachium with base enlarged, strongly curved to slender straight arm, attenuate to hook-like distal end, not extending beyond socii. Vinculum broad laterally, curved. Valva broad, elongate, convex ventrally; a membrane present on outer surface distally with margin edge of harpe; costa+ampulla forming elongate band with spoon-shaped process; harpe as broad lobe attenuate caudally; sacculus as a thickened sclerotized band. Juxta V-shaped, with tips curved outwards. Phallus with aedeagus approximately as long as phallobase. Aedeagus down-curved, sclerotized laterally near caudal end.

Female genitalia (PLATE 104, Fig. 562) – Corpus bursae oval. Ductus bursae short, membranous. Sterigma forming enormous pouch with wide anterior opening, narrow posteriorly. Anterior apophyses as short processes with base enlarged. Posterior apophyses straight, longer than anal papillae. Anal papillae with anterior part heavily sclerotized; posterior part weakly sclerotized, attenuate caudally, setose.

Global distribution. India, Indochina, Southeast Asia, New Guinea, northern Australia, South China, Taiwan (Bascombe *et al*., 1999; Braby, 2000; Hsu, 2013).

Distribution in Taiwan. Mainly in lowlands and hillsides of central and southern Taiwan; also Ludao and Liuqiuyu (Hsu, 2002, 2013).

Larval Host plant(s). Fabaceae: *Indigofera spicata*, *I. hirsuta*, *Phyllodium pulchellum*; Heliotropiaceae: *Heliotropium procumbens* (Hsu, 2002, 2013).

Biology. This species is multivoltine in occurrence (Hsu, 2002, 2013).

形態特徵：成蝶前翅長 6–9 mm。具雌雄二型性。雄蝶 (圖 296)：頭被毛、褐色、中央具白色條。觸角黑褐色、有白環。口器褐色。下唇鬚被毛、前伸、白色但末端黑褐色；第三節細小。複眼光滑。胸部及腹部背面黑褐色、腹面白色。足白色，有褐色條紋及帶紋；前足跗節癒合，末端下彎、尖銳。前翅三角形，外緣略突出。後翅圓形。翅背面底色褐色，後翅外緣有模糊黑褐色斑點。翅腹面底色淺黃褐色，有一列鑲白邊黑褐色斑點、於前緣者黑色；後翅亞基部有三枚深色點；前翅亞外緣帶紋由兩道鑲白邊斑點組成、後翅則為內側鑲白邊斑點及外側四只冠橙色弦月紋之黑色斑點組成。緣毛褐色。雌蝶 (圖 297)：形態特徵與雄蝶相似，但前足跗節不癒合。

雄交尾器 (圖 433)：背兜狹窄，兩側突出，後緣凹陷。背兜側突形成長刺突，末端鈍。顎形突基部膨大、彎曲、後部挺直、臂狀，未超出背兜側突，末端鉤狀。基腹弧側面寬闊，彎曲。抱器寬闊、延長，腹側凸，抱握鋏外側後端有膜質區；抱器背 + 抱器內突細長、帶狀，末端延伸成匙狀突起；抱握鋏寬瓣狀，後端漸窄；抱器腹粗厚。陽基軛片 V 字形，兩端向外彎曲。陽莖之陽莖器約與陽莖基等長，陽莖器向下彎曲，末端兩側骨化。

雌交尾器 (圖 562)：交尾囊卵形。交尾囊管短、膜質。交尾孔板形成大囊袋，前端有寬闊開口，後端狹窄。前內骨突形成短桿狀突起，基部寬。後內骨突長於肛突，挺直。肛突前半部高度骨化，後半部輕度骨化，向後漸窄，有毛。

世界分布：印度、中南半島、東南亞、新幾內亞、澳洲北部、華南及臺灣。

臺灣分布：主要分布於本島中、南部低地及坡地，綠島及琉球嶼亦有記錄。

寄主植物：豆科之穗花木藍、毛木藍、排錢樹；天芥菜科之伏毛天芥菜。

生物學：本種為一年多世代物種。

Family RIODINIDAE Grote, 1895

The members in the family are called the metalmarks, referring to the small, metallic spots commonly found on their wings. Scoble (1992) treated metalmarks as a subfamily of Lycaenidae. Ackery *et al*. (1999) accepted the treatment and listed a few diagnostic characters for this group: 1) male prothoracic leg less than one half the length of the pterothoracic legs (but also in Nymphalidae); 2) trichoid sensilla of female foretarsus arranged in a single cluster; 3) posterior apophyses of female genitalia absent (such loss also found in a few species of Poritinae). Metalmarks are regarded as a family Riodinidae in some recent phylogenetic works (e.g., Seraphim *et al*., 2018; Espeland *et al*., 2018; Kawahara *et al*., 2023). This family is usually divided into three subfamilies viz., Riodininae, Nemeobiinae and Euselasiinae (e.g., Callaghan & Lamas, 2004; Espeland *et al*., 2018), or two subfamilies, namely, Riodininae and Nemeobiinae (e.g., Stichel, 1928, 1930-1931; Kawahara *et al*., 2023). Myrmecophily associated with mymecophilous organs in larvae is found in some groups in the subfamily, and has been suggested to have independently evolved several times by Espeland *et al*. (2018).

Approximately 1500 species of metalmarks are known, with over 90% of the species inhabit the New World, with merely about 7% of the species found in the Old World (Espeland *et al*., 2018). Espeland *et al*. (2018) proposed that this family has a Neotropical origin, with dispersal across the Beringia land bridge into the Old World, following by a recolonization back to the New World during the Oligocene.

2 species in 2 genera are known from main island of Taiwan, with one additional species recently found from Mazu islands.

蜆蝶科

本科成員由於翅面上常有金屬色小斑，所以英文名被稱為「metalmarks」。Scoble (1992) 將蜆蝶類蝴蝶視為灰蝶內的一亞科，Ackery *et al*. (1999) 贊同該處理並列出數個鑑別特徵：1) 雄蟲胸部前足長度短於生翅胸足的一半 (亦見於蛺蝶科)；2) 雌蝶前足跗節之毛狀感覺器聚成單一毛簇；3）雌蟲交尾器無後內骨突 (亦見於錦

灰蝶亞科部分種類)。其他研究者則將蜆蝶視為單獨的科。蜆蝶科常被分為三亞科：蜆蝶亞科 Riodininae，古蜆蝶亞科 Nemeobiinae 及優蜆蝶亞科 Euselasiinae，或兩亞科：蜆蝶亞科 Riodininae，古蜆蝶亞科 Nemeobiinae

。本科部分類群幼蟲有「喜蟻性」並有相關的喜蟻器官，但 Espeland *et al*. (2018) 認為蜆蝶的喜蟻性是多次獨立演化的結果。

蜆蝶已知種約 1500 種，90% 以上種類棲息於新世界，只有不到 7% 種類見於舊世界。Espeland *et al*. (2018) 提出推論認為蜆蝶科起源自新熱帶區，藉由白令陸橋擴散至舊世界後，又回頭拓殖新世界。

在臺灣本島已知 2 屬 2 種，另有 1 種近年見於馬祖。

Subfamily NEMEOBIINAE Bates, 1868

This subfamily includes all Old World metalmarks and two Neotropical genera *Styx* and *Corrachia* (Seraphim *et al*., 2018; Espeland *et al*., 2018). Harvey (1987) gave a diagnostic feature for this subfamily: pointed, beak-like posterior projection of uncus (but also seen in *Curetis* of Lycaenidae and Charitini of Riodininae). He also mentioned a few additional features: 1) spine-like scales on ventral abdominal segments; 2) small patches of androchonial scales on basal area of ventral forewing and dorsal hindwing; 3) R_1 and M_1 of hindwing stalked (exception in some species of *Dodona*).

Approximately 110 species, including all Old World genera and species, plus two Neotropical species (genera).

Hostplants of this subfamily are plants in the family Primulaceae.

古蜆蝶亞科

本亞科成員包括所有舊世界蜆蝶及兩個新世界屬：絲蜆蝶屬 *Styx* 及珂蜆蝶 *Corrachia* 屬。Harvey (1987) 述及本亞科之特徵為雄蝶交尾器鉤突尖銳而呈喙狀 (亦見於灰蝶科銀灰蝶屬及蜆蝶亞科奼蜆蝶族 Charitini)，此外還列出幾個參考特徵：1) 腹節腹面具針狀鱗，2) 前翅腹面及後翅背面基部有一片發香鱗，3) 後翅 R_1 及 M_1 脈共柄 (部分尾蜆蝶種類例外)。雖然中文名稱稱為「古蜆蝶」，但 Espeland *et al*. (2018) 指出蜆蝶科起源自新熱帶區，而古蜆蝶亞科是後來藉由白令陸橋來到舊世界的。

約有 110 種，包括所有舊世界蜆蝶及 2 種 (屬) 新熱帶區種類。

幼蟲寄主植物為報春花科植物。

Genus *SIBOSIA* Espeland, Huang & Inayoshi, 2024

Type species: *Taxila burnii* de Nicéville, 1895

Diagnostic characters include the following: 1) mesotibiae and metatibiae with terminal spurs; 2) a pair of black submarginal spots present in cell CuA_2; 3) discal and postdiscal bands on the forewing underside as short and discontinuous white short lines or dots; 4) absence of the tail-like projection on the hindwing.

Huang *et al*. (2024) recognized the genus as monobasic, containing only one species, *Sibosia burnii* (de Nicéville, 1895).

The only representative species of the genus occurs in Taiwan.

白點褐蜆蝶屬

形態特徵如下：1) 中足及後足脛節有端距；2) 後翅 CuA_2 室亞外緣有一對黑色斑點；3) 前翅中央及其外側帶紋白色、短線或斑點；4) 後翅無尾突。

Huang *et al*. (2024) 說明本屬為單種屬，僅包含白點褐蜆蝶 *Sibosia burnii* (de Nicéville, 1895) 一種。

本屬唯一代表種臺灣有分布。

***Sibosia burnii* (de Nicéville, 1895) (白點褐蜆蝶／阿里山小灰蛺蝶)**

Taxila burnii de Nicéville, 1895: Journal of the Bombay Natural History Society 9 (3): 266, pl. N, f. 9. (Type locality: "Loi Maw, 5000 ft, Katha District, Upper Burma")

Ssp. *etymander* Fruhstorfer, 1908

PLATE 38, Figs. 298–299; PLATE 71, Fig. 434; PLATE 104, Fig. 563

Taxila burni etymander Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 48. (Type locality: "Kanshirei")

Abisara burnii formosana Stichel, 1914: Entomologische Mitteilunge 3: 121. (Type locality: "Formosa, Taihorin")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 1♀, Wulai, Kuaishan, 24. VI. 1987 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Lalashan, 9. VII. 1982 (Y. F. Hsu). **NANTOU Co.:** 1♂, 1♀, Renai, Nanshanxi, 24. XII. 1983 (Y. F. Hsu); 1♀, Renai, Renlun Forest Trail, 1600/1700m, 4. X. 2010 (N. Y. Tsai); 1♂, Xinyi, Dongpu, 1500m, 19. VI. 2010 (N. Y. Tsai). **PINGDONG Co.:** 1♂, Wutai, Old Dawu/ Bayouxi, 500/900m, 20. III. 2010 (N. Y. Tsai). **TAIDONG Co.:** 1♂, Yanping, Hongye, 7. II. 1988 (Y. F. Hsu); 1♀, same locality, 8. II. 1988 (Y. F. Hsu); 2♀, same locality, 15. V. 1988 (Y. F. Hsu); 1♀, same locality, 500m, 25. VI. 2010 (Y. T. Lo).

Description. Adult – Forewing length 21–26 mm. Sexual dimorphism weakly present. Male (PLATE 38, Fig. 298): Head hairy, with vertex brown, frons brown edged by white. Antennae slender, dark brown banded with white. Proboscis brown. Labial palpus porrect, 1st, 2nd segment robust, white, 3rd segment minute, dark brown. Compound eyes covered by short setae. Thorax covered by brown hairs dorsally, white ventrally. Abdomen brown dorsally, white ventrally. Legs brown dorsally, white ventrally; prolegs modified, with tarsus vestigial, cover by white hairs mixed with brown. Forewing triangular. Hindwing fan-like, slightly wavy along termen. Wing uppersides ground color ochreous, with orange or pale brown submarginal bands edged by white line along inner margin. A discal band consisted of white dots present. Black spots encircled by orange margins present at distal end of cell M_1 and M_2. Wing underside ground color paler; white markings well-developed. Fringe brown. Female (PLATE 38, Fig. 299): Similar to male, but forelegs with tarsus normal and ground color of wings paler.

Male genitalia (PLATE 71, Fig. 434) – Tegumen with a pair of membranous windows near posterior margin. Uncus attenuate into a caudal beak. Saccus vestigial. Brachium enlarged basally, curved, hook-like. Vinculum barrow. Valva elongate, ampulla as setose, conica process; harpe elongate, branch-like, up-curved, setose ventrally, tapering distad; sacculus heavily sclerotized. Juxta vestigial. Phallus stout, with phallobase slightly longer than aedeagus tubular, slightly curved mesad. Cornutus as an elongate spiny band.

Female genitalia (PLATE 104, Fig. 563) – Corpus bursae elongate, oval. Signa as a

pair of small sclerotized patches near base of corpus bursae, each with a prominent spine. Ductus bursae elongate, wrinkled. Sterigma with lamella antevaginalis weakly sclerotized, bearing a bundle of bristles near ostium bursae. Anal papillae setose distally, sclerotized, semi-circular.

Global distribution. Northeast India, Indochina, West to East China, Taiwan (Shirôzu, 1960; Hsu, 2013).

Distribution in Taiwan. Low to moderate elevations in montane zone on main island of Taiwan (Hsu, 2013).

Larval Host plant(s). Primulaceae: *Embelia lenticellata* (Igarashi & Fukuda, 2000; Hsu, 2002, 2013).

Biology. Multivoltine (Hsu, 2002, 2013).

形態特徵：成蝶前翅長 21–26 mm。雌雄二型性不明顯。雄蝶 (圖 298)：頭被毛、頭頂褐色、額褐色，有白邊。觸角細、黑褐色，有白環。口器褐色。下唇鬚前伸，第一、二節粗壯、白色；第三節細小、黑褐色。複眼被短毛。胸部背面覆黑褐色毛、腹面白色。腹部背面褐色、腹面白色。足背面褐色、腹面白色；前足跗節退化，覆白毛混褐色。前翅三角形。後翅扇形，外緣略呈波浪狀。翅背面底色土黃色，後翅具橙色或淡褐色之亞外緣帶紋、內側具白線；中央帶紋由白色點組成；後翅 M_1 及 M_2 室末端具由橙色邊環繞之黑色斑點。翅腹面底色較淡，白色斑紋較發達。緣毛褐色。雌蝶 (圖 299)：形態特徵與雄蝶相似，但前足跗節分節，翅底色較淡。

雄交尾器 (圖 434)：背兜近後緣處具一對膜質區。鉤突末端驟縮成喙狀。囊突退化。顎形突基部膨大、彎曲，呈鉤狀。基腹弧狹窄。抱器寬闊，抱握鋏 + 抱器腹骨化，抱器背於腹側擴大。陽基軛片大型、突出，形成 4 分支，外側分支鉤狀，末端尖。陽莖管狀，末端上彎，陽莖基寬大。具陽莖端器，呈板狀。角狀器為具小刺之骨帶，。

雌交尾器 (圖 563)：交尾囊球狀。花壁近交尾囊基部，為一對具刺小骨。交尾囊管修長，具皺褶。交尾孔板為一個骨化室；前板寬闊，其後緣呈 V 字形；後板鏟狀。

肛突半圓形、骨化，末端具毛。

世界分布：印度東北部、中南半島、華西至華東、臺灣。

臺灣分布：主要分布於本島低、中海拔山區。

寄主植物：報春花科之賽山椒。

生物學：本種為一年多世代物種。

Genus *ZEMEROS* Boisduval, [1836]

Type species: *Papilio allica* Fabricius, 1787

Diagnostic characters include the following: 1) mesotibiae and metatibiae without terminal spurs; 2) hindwing not produced; 3) wings brown, marked with black spots and white dots.

This genus is consisted of two species distributed in the Oriental region (Eliot, 1992; Boscombe *et al.*, 1999; Espeland *et al*., 2015).

1 species has been recently found from Mazu Islands.

波蜆蝶屬

形態特徵如下：1) 中足及後足脛節端無端距；2) 後翅不延長；3) 翅底色褐色，綴有黑色及白色斑點。

本屬 2 種，分布於東洋區。

晚近於馬祖發現 1 種。

***Zemeros flegyas* (Cramer, [1780]) (波蜆蝶)**

PLATE 38, Figs. 300–301; PLATE 71, Fig. 435; PLATE 104, Fig. 564

Papilio flegyas Cramer, [1780]: De uitlandsche kapellen 3 (23–24): 158, pl. 280, f. E, F. (Type locality: "China")

Specimens examined:

LIANJIANG Co.: 1♂, Beigan, Leishan, 20. XI. 2013 (Y. F. Hsu).

Description. Adult – Forewing length 15–20 mm. Sexual dimorphism weakly present. Male (PLATE 38, Fig. 300): Head with vertex ochreous, frons creamy yellow with double dark brown bands. Antennae slender, dark brown banded with white or creamy yellow. Proboscis brown. Labial palpus porrect, stout, 3rd segment minute, white dorsally, orange ventrally. Compound eyes nearly smooth, sparsely bearing fine, short setae. Thorax covered by brown hairs dorsally, creamy yellow ventrally. Abdomen brown dorsally, creamy yellow ventrally. Legs covered by orange scalings, segmented with brown in tarsus; prolegs modified, with tarsus vestigial, covered by creamy yellow hairs. Forewing triangular, with tornus indented, termen wavy. Hindwing fan-like, indented at distal end of cell M_1, M_2. Wing uppersides ground color brown, with several series of black markings and white dots roughly parallel to termen. A faint discal band sometimes present. Wing underside ground color paler, ochreous, with markings as uppersides. Fringe brown checkered with white. Female (PLATE 38, Fig. 301): Similar to male, but fore legs with tarsus normal, ground color of wings paler, and discal band on wings more prominent.

Male genitalia (PLATE 71, Fig. 435) (based on specimen from Guizhou) – Tegumen broad. Uncus broad, abruptly narrowed to a small pointed tip at caudal end. Saccus vestigial. Brachium curved, hook-like. Vinculum barrow. Valva short, costa extending ventrad, harpe lobate with truncate end, sacculus digitate. Juxta forming a flat, sclerotized plate, enlarged and truncate distally. Phallus elongate, slightly curved mesad. Cornutus as an elongate, slender sclerite with pointed distal tip.

Female genitalia (PLATE 104, Fig. 564) (based on specimen from Hong Kong) – Corpus bursae elongate, oval. Signa as two small sclerotized patches on opposite walls, each

armored with multiple horizontal serrate sclerites. Ductus bursae wrinkled posteriorly. Sterigma forming a prominent, large sclerotized dome at end end of ductus bursae, associated a pair of semi-circular sclerites on tergum of abdominal segment VIII. Anal papillae ovate, setose and sclerotized at distal margin.

Global distribution. India, Indochina, Sundaland, West to East China (Eliot, 1992; Bascombe *et al*., 1999).

Distribution in Taiwan. Recently found from Mazu Islands (Hsu, 2014).

Larval Host plant(s). Not recorded. Various species of *Maesa* elsewhere (Eliot, 1992; Bascombe *et al*., 1999; Igarashi & Fukuda, 2000).

Biology. This species should be multivoltine in occurrence.

形態特徵：成蝶前翅長 15–20 mm。雌雄二型性不顯著。雄蝶 (圖 300) : 頭頂土黃色、額乳黃色，具兩道黑褐色條帶。觸角細、黑褐色，有白色或乳白色環紋。口器褐色。下唇鬚前伸、粗壯、第三節細小、背面白色、腹面橙色。複眼近乎光滑、疏被短細毛。胸部背面覆褐色毛、腹面乳黃色。腹部背面褐色、腹面乳黃色。足覆橙色鱗、跗節節間褐色；前足跗節退化，覆乳黃色毛。前翅三角形，臀區內縮、外緣波浪狀。後翅扇形，M_1 及 M_2 室端部內縮。翅背面底色褐色，具數列黑色斑紋及白色點，約略與外緣平行；有時具模糊中央帶紋。翅腹面底色較淺、土黃色，斑紋與翅背面相同。緣毛褐白相間。雌蝶 (圖 301) : 形態特徵與雄蝶相似，但前足跗節分節，翅底色較淺，中央斑帶較鮮明。

雄交尾器 (圖 435) (根據貴州產標本) : 背兜寬闊。鉤突基部寬，末端驟縮成尖尾狀。囊突退化。顎形突彎曲、鉤狀。基腹弧狹窄。抱器短，抱器背腹側張出。抱握鋏葉狀，末端截狀。抱器腹指狀。陽基顎片板狀，末端擴大、緣截狀。陽莖細長，略彎曲。角狀器為細長骨片，末端尖。

雌交尾器 (圖 564) (根據香港產標本) : 交尾囊長卵形。花壁位於交尾囊相對位置，為兩只位於交尾囊相對位置的小骨，其上有水平排列之鋸齒狀小骨片。交尾囊管末

端有皺褶，近交尾孔處膨大、骨化。交尾孔板為一骨化腔，於第 8 腹節背板上具一對半圓形骨片。肛突卵形、末端骨化，具毛。

世界分布：印度、中南半島、巽他陸塊、華西至華東。

臺灣分布：晚近曾於馬祖列嶼發現。

寄主植物：馬祖地區尚無紀錄，其他地區取食各種山桂花屬植物。

生物學：應為一年多世代物種。

Genus *DODONA* Hewitson, 1861

Type species: *Melitaea durga* Kollar, [1844]

Diagnostic characters include the following: 1) mesotibiae and metatibiae without terminal spurs; 2) tarsal claws simple; 3) hindwing produced posteriorly, lobed at tornus.

Approximately 20 species are known (Nakamura, 2019), distributed in the Oriental region.

1 species occurs in Taiwan.

尾蜆蝶屬

形態特徵如下：1) 中足及後足脛節末端不具端距；2) 跗節爪構造簡單；3) 後翅向後延伸，臀區具葉狀突。

本屬已知約 20 種，分布於東洋區。

臺灣有 1 種。

Dodona formosana Matsumura, 1919 (臺灣尾蜆蝶／臺灣小灰蛺蝶／小灰蛺蝶)

PLATE 38, Figs. 302–303; PLATE 72, Fig. 436; PLATE 105, Fig. 565

Dodona eugenes var. *formosana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 591, pl. 46, f. 4–5. (Type locality: Shito[Sidu 四堵], Tōchoshi)

Dodona eugenes matsumurana Kano, 1930: Zephyrus 2 (3): 157–159, pl. 8, f. 1. (Type locality: Oowaki, Chikuto, Shinchiku Pref.)

Dodona eugenes esakii Shirôzu, 1953: Sieboldia 1 (1952): 23. (Type locality: "Taikokei Valley and Heiganzan in Taichû Pref.")

Specimens examined:

XINBEI CITY [= TAIPEI Co.]: 2♂, Wulai, Kuaishan, 4. VI. 1988 (Y. F. Hsu); 1♀, Shiding, Ergeshan, 500/650m, 26. V. 2000 (Y. T. Lo); 1♂, same locality, 650m, 25. V. 2004 (Y. F. Hsu); 6♂, 2♀, same locality, 25. V. 2004, reared from *Myrsine seguinii*, emgd. 7/20. VII. 2004, HSU 04E73 (Y. F. Hsu); 1♀, same locality, 25. V. 2004 (Y. F. Hsu); 1♀, same locality, 15. VI. 2004 (Y. F. Hsu); 1♂, same locality, 12. VII. 2008 (K. H. Chen); 1♂, Sanzhi, Datunshan, 950m, 16. VI. 2008 (Y. F. Hsu); 1♀, Fushan, Kalamoji Trail, 550m, 25. V. 2012 (Y. F. Hsu); 1♂, Sanxia, Beichatianshan, 800m, 28. V. 1992 (Y. F. Hsu). **TAIPEI CITY:** 2♂, 2♀, Beitou, Zhuzihu, 4. VIII. 1986 (Y. F. Hsu); 3♂, 1♀, same locality, 6. VIII. 1986 (Y. F. Hsu); 1♀, Beitou, Datunshan, 23. VI. 1986 (Y. F. Hsu); 1♂, Neihu, Dalunweishan, 26. VI. 1981 (Y. F. Hsu); 1♀, same locality, 3. VII. 1986 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Sileng, 27. VI. 1988 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Hehuanxi, 2000m, 11. V. 2003 (C. C. Lu, J. R. Chen & Y. C. Yang); 2♂, Xinyi, Dongpu, 1500m, 19. VI. 2010 (N. Y. Tsai); 1♂, same locality, 18. IX. 2010 (C. Z. Lu). **PINGDONG Co.:** 1♀, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (Y. F. Hsu); 1♀, Chunri, Dahanshan, 18. V. 2008 (R. K. Dong).

Description. Adult – Forewing length 17–26 mm. Sexual dimorphism present. Male (PLATE 38, Fig. 302): Head with vertex brown, frons white with double dark brown bands. Antennae slender, dark brown banded with white. Proboscis brown. Labial palpus porrect, 1st, 2nd segment robust, white, 3rd segment minute, dark brown. Compound eyes covered by short setae. Thorax covered by brown hairs dorsally, white ventrally. Abdomen brown dorsally, white ventrally. Legs with femur white, tibia and tarsus brown; prolegs modified, with tarsus vestigial, covered by white hairs. Forewing triangular. Hindwing ovate, produced posteriad, termen serrate with small projections at distal end of veins, a "tail-like" projection at 1A+2A. Wing uppersides ground color brown, with

small spots arranged into several lines, mostly orange but white near apex of forewing and costa of hindwing. Wing undersides ground color dark brown, with white and creamy white bands. Black spots present at distal end of cell M_1, M_2, and at tornus of hindwing. Fringe white checkered with brown. Female (PLATE 38, Fig. 303): Similar to male, but fore legs with tarsus normal and markings on wings larger.

Male genitalia (PLATE 72, Fig. 436) – Tegumen with a pair of membranous windows near posterior margin. Uncus abruptly attenuate into a caudal beak. Saccus vestigial. Brachium enlarged basally, curved, hook-like. Vinculum barrow. Valva broad, sclerotized in harpe+sacculus; costa extending ventrad. Juxta large, prominent, forming a 4-branched structure, with external branches hook-like, pointed at distal end. Phallus tubular, enlarged in phallobase, up-curved toward distal end. Carina penis present, as a sclerotized plate. Cornutus as a sclerotized band bearing many spines.

Female genitalia (PLATE 105, Fig. 565) – Corpus bursae bulbous. Signa as a pair of small, spiny sclerotized patches near base of corpus bursae. Ductus bursae elongate, wrinkled. Sterigma as a sclerotized chamber; lamella antevaginalis as a broad plate with V-shaped posterior margin; lamella postvaginalis shovel-like. Anal papillae setose distally, sclerotized, semi-circular.

Global distribution. Endemic to Taiwan (Wu *et al*., 2018).

Distribution in Taiwan. Low to moderate elevations in montane habitats (Hsu, 2013).

Larval Host plant(s). Primulaceae: *Myrsine seguinii* and *M. africana* (Hsu, 2006).

Biology. Multivoltine (Hsu, 2006).

Remarks. *Dodona formosana* was considered a subspecies of *D. eugenes* Bates, [1868] for a long time due to the similarity of wing shape and patterns of the two. Based on both of molecular and morphological evidence, Wu *et al*. (2018) recognized *D. egeon* (Westwood, 1852) as the species most closely related to *D. formosana* and synonymized the two previously recognized subspecies. Nakamura (2019) treated *formosana* as a

subspecies of *D. egeon* excluding molecular evidence.

形態特徵：成蝶前翅長 17–26 mm。具雌雄二型性。雄蝶 (圖 302)：頭頂褐色、額白色，具兩道黑褐色條帶。觸角細、黑褐色，有白環。口器褐色。下唇鬚前伸，第一、第二節粗，白色；第三節細小、黑褐色。複眼被短毛。胸部背面覆蓋褐色毛、腹面白色。腹部背面褐色、腹面白色。足腿節白色、脛節及跗節褐色；前足跗節退化，覆白毛。前翅三角形。後翅卵形，向後延伸。外緣翅脈端突起，呈鋸齒狀，1A+2A 脈末端具尾突。翅背面底色褐色，小斑點排成數道線紋，多呈橙色、但前翅近翅頂處及後翅近前緣處呈白色。翅腹面底色黑褐色，具白色及乳白色條紋；後翅 M_1、M_2 室及臀區有黑色斑點。緣毛白褐相間。雌蝶 (圖 303)：形態特徵與雄蝶相似，但前足跗節正常、翅紋較大。

雄交尾器 (圖 436)：背兜近後緣處具一對膜質區。鉤突末端驟縮成喙狀。囊突退化。顎形突基部膨大、彎曲，呈鉤狀。基腹弧狹窄。抱器寬闊，抱握鋏 + 抱器腹骨化，抱器背於腹側擴大。陽基軛片大型、突出，形成 4 分支，外側分支鉤狀，末端尖。陽莖管狀，末端上彎，陽莖基寬大。具陽莖端器，呈板狀。角狀器為具小刺之骨帶，。

雌交尾器 (圖 565)：交尾囊球狀。花壁近交尾囊基部，為一對具刺小骨。交尾囊管修長，具皺褶。交尾孔板為一個骨化室；前板寬闊，其後緣呈 V 字形；後板鏟狀。肛突半圓形、骨化，末端具毛。

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山區。

寄主植物：報春花科之大明橘及小葉鐵仔。

生物學：本種為一年多世代物種。

註記：臺灣尾蜆蝶由於翅輪廓及斑紋與銀紋尾蜆蝶 *D. eugenes* Bates, [1868] 相似，而長期被視為銀紋尾蜆蝶之亞種。Wu *et al.* (2018) 根據分子及形態證據，認為大斑尾蜆蝶 *D. egeon* (Westwood, 1852) 與臺灣尾蜆蝶關係最近，並將原先的兩亞種視為同物異名。Nakamura (2019) 摒除分子證據，而將臺灣尾蜆蝶視為大斑尾蜆蝶之亞種。

Supplementary Notes

A few lycaenid species were recorded from Taiwan in literature, but in rare occasions or not recorded for a long time after their first observation, thus perhaps involving mis-labelling, doubtful sources of specimens, or rare straying species. They are discussed as the following:

Flos abseus (Hewitson, 1862) (三尾花灰蝶)

A specimen of "*Amblypodia birmana uchidae*" [*Arhopala birmana asakurae*] shown in Hirayama (1933) appears to be an individual of *Flos abseus* (Hewitson) (Yamanaka, 1980; Shirôzu & Ueda, 1992), a species widespread in tropical Southeast Asia (Eliot, 1992; Igarashi & Fukuda, 1997). The specimen bears data as "13-7-1937, 臺灣霧社 [13. VII. 1937, Taiwan, Nantou, Wushe]." *F. abseus* was long called *Arhopala abseus* until Megens *et al*. (2004) discovered that it should belong to the genus *Flos*. *F. abseus* has never been formally recorded from Taiwan, and it is quite unlikely to occur at the locality indicated by data shown above as it is a montane, cool site with temperate vegetation, not suitable for this tropical species. The photograph shown in Hirayama (1933) thus probably represents a mis-labelled specimen from SE Asia.

Neozephyrus japonicus (Murray, 1874) (日本榿翠灰蝶)

Specimens of both sexes of this species are illustrated in D'Abrera (1986: pp. 555) as "*Neozephyrus taxilia* Bremer, 1861", with locality given as "Taiwan". There is no doubt that these specimens represent mis-labelled individuals from Japan, and Koiwaya (2007) excludes this species from fauna of Taiwan in his monograph of the Theclini hairstreaks of the world.

Prosotas gracilis gracilis (Röber, 1886) (窄翅波灰蝶)

PLATE 39, Fig. 304

One female specimen of this species was collected on March, 18/20th, 2006 from Lanyu, Taidong (Hsu & Huang, 2013). No additional specimen has been found since then. The sole known specimen is currently in NTNU. This lycaenid is generally rare across its distributional range in Southwest Asia, thus it is premature to decide whether this species

is residential in Lanyu island as straying species are usually abundant, common species in their native ranges.

Lycaena phlaeas (Linnaeus, 1761) (紅灰蝶)

PLATE 39, Fig. 305

One male specimen of this species was collected from "Tonpo, Formosa [= Dongpu, Xinyi, Nantou]" on July, 24th, 1940 (Yamanaka, 1980). No additional observation of this species exists besides this sole specimen in Taiwan, and *Lycaena phlaeas* is widely distributed in Eurasia, North America and North Africa, and generally common throughout its range, suggesting that this lycaenid is not residential in Taiwan. There is no conceivable difference between this specimen and those from Japan in wing patterns, thus it may represent a mis-labelled specimen or accidentally introduced as immature attached with crops or other plants by agricultural or horticultural practice as many plants were introduced from Japan to Taiwan for economic reason when Taiwan was ruled by Japan in early part of the 20th century. Many subspecies of *L. phlaeas* have been recognized (Bozano & Weidenhoffer, 2001). The populations of Japan, where the specimen found in Taiwan was probably originated from, has been considered belonging to ssp. *daimio* Seitz, [1909] (e.g., Shirôzu, 2006), ssp. *japonica* Ford, 1924 (e.g., Ford, 1924), or ssp. *chinensis* Felder, 1862 (e.g., Bozano & Weidenhoffer, 2001).

Jamides cleodus (C. & R. Felder, [1865]) (閃雅波灰蝶)

PLATE 39, Fig. 306

Jamides cleodus is a lycaenid butterfly commonly found in the Philippines (Shirôzu, 1986). The only account of this species from Taiwan was given by Fruhstorfer (1916), in which he stated "Neuerdings wurdesie auch auf Formosa entdeckt." (It was recently found in Formosa) and listed "Luzon, Formosa" as distributional range for "*L. cleodus cleodus* Feld. 1865." No further details were provided besides the information, and no voucher specimen was retrieved after this literature. The possibility that specimens of *J. celeno* collected from Taiwan had been mis-identified as this species cannot be ruled out since *J. celeno* demonstrates considerable seasonal variation, with the wet season form of its females particularly similar to the females of *J. cleodus*.

***Niphanda fusca formosensis* Matsumura, 1929 (黑灰蝶)**

PLATE 39, Fig. 307

Niphanda fusca formosensis Matsumura, 1929: 103. (Type locality: "Formosa; Mt. Kohagi")

Niphanda fusca (Bremer & Grey, 1853) is a lycaenid butterfly distributed in eastern Asia. Matsumura (1929) described a subspecies of *N. fusca* from "Mt. Kohagi" of Taiwan based on a specimen obtained from an insect specimen dealer. The name of the type locality "Kohagi" cannot be located in Taiwan, but may be found in Japan and Korea, thus the specimen may have actually come from Japan or Korea, and mis-labelled as from "Formosa". *N. fusca* is known as a species obligatorily associated with *Camponotus japonica* ants, with elder larvae obtaining diet from regurgitations of the ants (Shirôzu & Hara, 1960; Fiedler, 1991; Hirukawa, 2008). The ant *C. japonica* is not known to occur in Taiwan, thus it seems unlikely for *N. fusca* to inhabit Taiwan.

補充註記

在文獻中有些灰蝶種類在臺灣曾有記錄，但觀察記錄極少或長期沒有再被發現，因此或許涉及標籤錯誤、來源有疑問的標本或稀有的偶發性迷蝶，這些種類概要討論如下：

***Flos abseus* (Hewitson, 1862) (三尾花灰蝶)**

Hirayama (1933) 書中圖示的小紫灰蝶標本顯係廣泛分布於東南亞熱帶的三尾花灰蝶 (Yamanaka, 1980; Shirôzu & Ueda, 1992)。該標本採集資料被記為 1937 年 7 月 13 日採自南投霧社，當地海拔偏高，植被較偏溫帶，不大可能適合熱帶性的三尾紫灰蝶棲息，因此書中圖示的標本或許是標籤弄錯的東南亞標本。本種長期被置於紫灰蝶屬內，Megens *et al*. (2004) 發現應屬於花灰蝶屬。

***Neozephyrus japonicus* (Murray, 1874) (日本楤翠灰蝶)**

D'Abrera (1986: pp. 555) 書中刊載產地記為「臺灣」的日本楤翠灰蝶雌雄標本，無疑是標籤錯誤的日本產標本，隨後 Koiwaya (2007) 在其世界翠灰蝶族專著中將臺灣排除在本種產地之外。

***Prosotas gracilis gracilis* (Röber, 1886) (窄翅波灰蝶)**

PLATE 39, Fig. 304

本種曾在 2006 年 3 月 18/20 日於臺東蘭嶼採集到一隻雌蝶，自此再無其他採集記錄，該標本目前存放於國立臺灣師範大學。本種在其分布之東南亞地區皆為稀有種，而稀有種成為偶發性迷蝶的機率很低，因此目前要判斷該種是否棲息於蘭嶼似乎尚言之過早。

***Lycaena phlaeas* (Linnaeus, 1761) (紅灰蝶)**

PLATE 39, Fig. 305

本種曾於 1940 年 7 月 24 日在南投縣信義鄉東埔採集過一隻雄蝶，除此之外無其他觀察紀錄。本種廣泛分布於歐亞大陸、北美及北非，一般屬常見種，因此本種在臺灣應非原生蝶種。該標本在翅紋上與日本族群並無差異，或可推斷其為標籤錯誤，或於日本統治之 20 世紀初期幼期個體附在從日本引進至臺灣之經濟或園藝植物而造成的偶發性移入。本種有許多亞種 (Bozano & Weidenhoffer, 2001)。該標本可能來源之日本族群屬於亞種 ssp. *daimio* Seitz, [1909] (如 Shirôzu, 2006)，亞種 ssp. *japonica* Ford, 1924 (如 Ford, 1924)，或亞種 ssp. *chinensis* Felder, 1862 (如 Bozano & Weidenhoffer, 2001)。

***Jamides cleodus* (C. & R. Felder, [1865]) (閃雅波灰蝶)**

PLATE 39, Fig. 306

本種為菲律賓常見灰蝶。在臺灣，唯一記錄記載於 Fruhstorfer (1916) 之報告中，該報告中描述本種「近期於臺灣發現」，且將呂宋及臺灣列於本種之分布範圍，除此之外無其他參考資料，亦無証據標本可供驗證。該記錄或許源自白雅波灰蝶雨季型雌蝶與閃雅波灰蝶雌蝶相似而造成之錯誤鑑定。

***Niphanda fusca formosensis* Matsumura, 1929 (黑灰蝶)**

PLATE 39, Fig. 307

本種為分布於東亞之蝶種。Matsumura (1929) 根據昆蟲標本商提供之標本描述了產於臺灣“Mt. Kohagi”之亞種。在臺灣無法找到符合這個產地的地名，卻可以在日本或朝鮮半島找到符合這個地名的地點，因此該標本可能實際上源自日本或朝鮮半島，但標籤誤為臺灣產。本種已知幼生期與日本巨山蟻 *Camponotus japonica* 專性共生，其幼蟲後期須依靠螞蟻餵食，但日本巨山蟻並不產於臺灣，因此本種應不可能棲息在臺灣。

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COLOUR PLATES

Note. Scale bars represent 1 cm.

 : **Uppersides**

 : **Undersides**

1. *Curetis acuta formosana* Fruhstorfer, 1908 銀灰蝶
♂. XINBEI CITY, Xindian, Feicui Dam, 18. IV. 2012 (Y. F. Hsu).

2. *Curetis acuta formosana* Fruhstorfer, 1908 (WSF) 銀灰蝶 (高溫 / 雨季型)
♀. TAIPEI CITY, Songshan, Hushan, 8. VI. 2010 (C. H. Lin).

3. *Curetis acuta formosana* Fruhstorfer, 1908 (DSF) 銀灰蝶 (低溫 / 乾季型)
♀. JILONG CITY, Haimentianxian, 26. IX. 2006 (Y. F. Hsu).

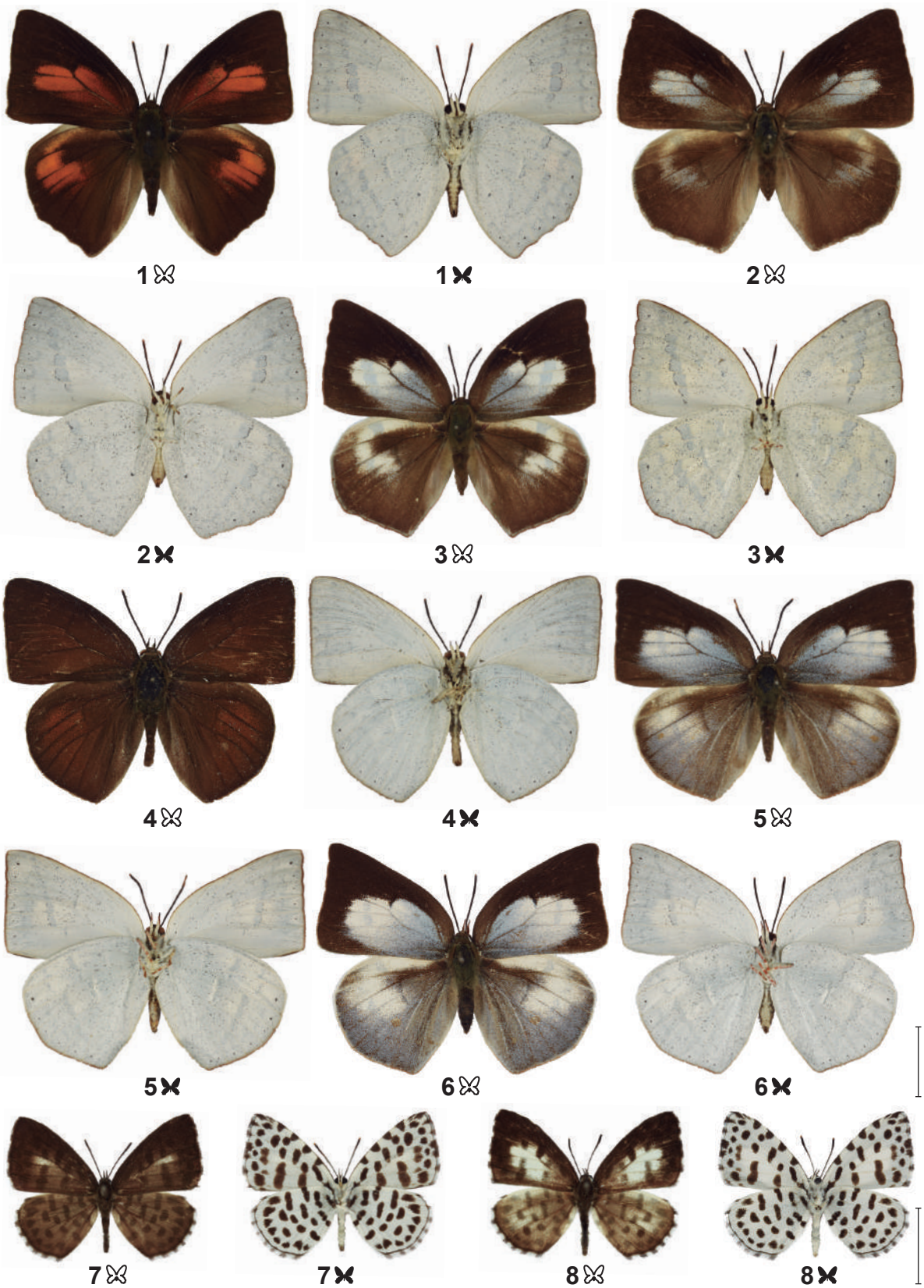
4. *Curetis brunnea* Wileman, 1909 臺灣銀灰蝶
♂. PINGDONG Co., Chunri, Dahan Forest Trail, 5. VII. 2015 (C. W. Huang & T. Y. Liu).

5. *Curetis brunnea* Wileman, 1909 (WSF) 臺灣銀灰蝶 (高溫 / 雨季型)
♀. PINGDONG Co., Chunri, Dahan Forest Trail, 5. VII. 2015 (C. W. Huang & T. Y. Liu).

6. *Curetis brunnea* Wileman, 1909 (DSF) 臺灣銀灰蝶 (低溫 / 乾季型)
♀. TAIDONG Co., Yanping, Hongye, 11. I. 2009 (C. H. Lin, jr).

7. *Taraka hamada thalaba* Fruhstorfer, 1922 蚜灰蝶
♂. TAINAN CITY, Xinhua, 200m, 10/11. II. 2006, reared from *Astegopteryx bambusifoliae* on *Dendrocalamus latiflorus*, emgd. 27. II. 2006, HSU 06B16 (Y. F. Hsu).

8. *Taraka hamada thalaba* Fruhstorfer, 1922 蚜灰蝶
♂. TAINAN CITY, Xinhua, 200m, 31. I. 2008, reared from *Astegopteryx bambusifoliae* on *Dendrocalamus latiflorus*, emgd. 15. II. 2008, HSU 08A29 (Y. F. Hsu).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9. *Taraka hamada thalaba* Fruhstorfer, 1922 蚜灰蝶
♀. JIAYI Co., Fanlu, Chukou, Tufeishan, 400m, 16. X. 2011, reared from *Astegopteryx bambusifoliae*, emgd. 27. X. 2011, HSU 11K24 (Y. F. Hsu).

10. *Taraka hamada thalaba* Fruhstorfer, 1922 蚜灰蝶
♀. TAINAN CITY, Xinhua, 200m, 10/11. II. 2006, reared from *Astegopteryx bambusifoliae* on *Dendrocalamus latiflorus*, emgd. 19. II. 2006, HSU 06B16 (Y. F. Hsu).

11. *Taraka hamada isona* Fruhstorfer, 1922 蚜灰蝶
♂. LIANJIANG Co., Nangan, Jinsha, Shengtian Road, 14. IV. 2014, reared from *Astegopteryx* sp., emgd. 27. IV. 2014, HSU 14D14 (Y. F. Hsu, H. C. Huang & C. L. Huang).

12. *Taraka hamada isona* Fruhstorfer, 1922 蚜灰蝶
♀. JINMEN Co., Jinhu, Botanical Garden, 7. VII. 2014, emgd. 15. VII. 2014, HSU 14F22.2 (C. L. Huang & H. C. Huang).

13. *Spalgis epeus dilama* (Moore, 1878) 熙灰蝶
♂. KAOHSIUNG CITY, Meinong, Zhuzimen, ca 100m, 16. I. 2006, reared from *Phenacoccus madeirensis* on *Bidens pilosa*, emgd. 20. II. 2006, HSU 06A9 (Y. F. Hsu).

14. *Spalgis epeus dilama* (Moore, 1878) 熙灰蝶
♀. PINGDONG Co., Sandimen, 250m, 10. II. 2007 (Y. F. Hsu).

15. *Cigaritis lohita formosanus* (Moore, 1877) 虎灰蝶
♂. XINBEI CITY, Wulai, Baoqinggong, 6. VIII. 2015, reared from *Mallotus paniculatus*, emgd. 12. X. 2015, HSU 15H16.1 (C. W. Huang & Y. H. Lin).

16. *Cigaritis lohita formosanus* (Moore, 1877) 虎灰蝶
♀. TAIPEI CITY, Beitou, Junjianyan, 17. V. 2015, reared from *Mallotus paniculatus*, emgd. 4. VIII. 2015 (L. Huang).



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17. *Cigaritis kuyanianus* (Matsumura, 1919) 蓬萊虎灰蝶
♂. NANTOU Co., Renai, Huisun, Qinglonggu, 4. VII. 2011, reared from *Rhus chinensis roxburghiana*, emgd. 21. X. 2011, HSU 11G3 (M. K. Liao, C. M. Su & C. Y. Liao).

18. *Cigaritis kuyanianus* (Matsumura, 1919) 蓬萊虎灰蝶
♀. NANTOU Co., Renai, Huisun, Qinglonggu, 22. VII. 2011, reared from *Mallotus japonicus*, emgd. 15. IX. 2011, HSU 11G3 (M. K. Liao & C. M. Su).

19. *Cigaritis syama lamuae* Hsu & Liang, 2020 (WSF) 三斑虎灰蝶 (高溫 / 雨季型)
♂. PINGDONG Co., Chunri, Dahanshan, 4. IX. 2009, reared from *Ardisia squamulosa*, emgd. 21. I. 2010, HSU 09J5 (N. Y. Tsai).

20. *Cigaritis syama lamuae* Hsu & Liang, 2020 (DSF) 三斑虎灰蝶 (低溫 / 乾季型)
♂. KAOHSIUNG CITY, Meinong, Shuangxi, 150m, 8. II. 2006, paratype (Y. F. Hsu).

21. *Cigaritis syama lamuae* Hsu & Liang, 2020 (WSF) 三斑虎灰蝶 (高溫 / 雨季型)
♀. JILONG CITY, Longgang Trail, 2. IX. 2006, paratype (Y. F. Hsu).

22. *Cigaritis syama lamuae* Hsu & Liang, 2020 (DSF) 三斑虎灰蝶 (低溫 / 乾季型)
♀. KAOHSIUNG CITY, Meinong, Shuangxi, 150m, 8. II. 2006, paratype (Y. F. Hsu).

23. *Heliophorus ila matsumurae* (Fruhstorfer, 1908) 紫日灰蝶
♂. NANTOU Co., Lugu, 4. V. 2019 (C. W. Huang).

24. *Heliophorus ila matsumurae* (Fruhstorfer, 1908) 紫日灰蝶
♀. XINBEI CITY, Sanzhi, Datunshan, 1080m, 11. VI. 2017 (L. Huang).

25. *Heliophorus ila chinensis* (Fruhstorfer, 1908) 紫日灰蝶
♂. LIANJIANG Co., Nangan, 1. V. 2010, reared from *Polygonum chinense*, emgd. 29. VI. 2010, HSU 10F4 (Y. F. Hsu).

26. *Heliophorus ila chinensis* (Fruhstorfer, 1908) 紫日灰蝶
♀. LIANJIANG Co., Nangan, Jinsha, 23. V. 2014 (C. L. Huang).



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19♂ 19♀ 20♂ 20♀



21♂ 21♀ 22♂ 22♀



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27. *Arhopala ganesa formosana* Kato, 1930 蔚青紫灰蝶
♂. TAOYUAN CITY, Fuxing, Lalashan, 12. VII. 2019, reared from *Quercus glauca*, emgd. 30. VIII. 2019 (Z. Y. Shen & Z. L. Chen).

28. *Arhopala ganesa formosana* Kato, 1930 蔚青紫灰蝶
♀. TAOYUAN CITY, Fuxing, Lalashan, 12. VII. 2019, reared from *Quercus glauca*, emgd. 30. VIII. 2019 (Z. Y. Shen & Z. L. Chen).

29. *Arhopala birmana asakurae* (Matsumura, 1910) 小紫灰蝶
♂. TAIZHONG CITY, Heping, Guguan, 15. VII. 2018 (Y. F. Hsu).

30. *Arhopala birmana asakurae* (Matsumura, 1910) 小紫灰蝶
♀. HUALIAN Co., Zhuoxi, Nanan, 9. IV. 2016, reared from *Quercus glauca*, emgd. 7. V. 2016, HSU 16D29 (J. Y. Liang).

31. *Arhopala japonica* (Murray, 1875) 日本紫灰蝶
♂. XINBEI CITY, Wulai, Xinxian, 1. V. 2017, reared from *Quercus glauca*, emgd. 17. V. 2017, HSU 17E2 (L. Huang).

32. *Arhopala japonica* (Murray, 1875) 日本紫灰蝶
♀. TAIPEI CITY, Neihu, Dagouxi, 2. IV. 2018, reared from *Quercus glauca*, emgd. 16. IV. 2018 (L. Huang).

33. *Arhopala paramuta horishana* Matsumura, 1910 暗色紫灰蝶
♂. PINGDONG Co., Shizi, Shuangliu, 200/400m, 30. IV. 2006 (Y. F. Hsu).

34. *Arhopala paramuta horishana* Matsumura, 1910 暗色紫灰蝶
♀. KAOHSIUNG CITY, Jiaxian, Southern Cross-Island Road, 64.7K, 3. IV. 2016, reared from *Castanopsis formosana*, emgd. 20. IV. 2016, HSU 16D42 (C. C. Lu, jr).


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35. *Arhopala bazalus turbata* (Butler, [1882]) 燕尾紫灰蝶
♂. TAOYUAN CITY, Fuxing, Xuewunao, 1. IV. 2018, reared from *Lithocarpus hancei*, emgd. 14. IV. 2018, HSU 18D20 (C. W. Huang).

36. *Arhopala bazalus turbata* (Butler, [1882]) 燕尾紫灰蝶
♀. TAOYUAN CITY, Fuxing, Ronghua, 9. IV. 2018, reared from *Lithocarpus hancei*, emgd. 28. IV. 2018, HSU 18D19 (C. W. Huang, C. J. Chang & H. Y. Chen).

37. *Arhopala rama ramosa* (Evans, 1925) 短尾紫灰蝶
♂. JINMEN Co., Jinhu, Zhongshan Forest, 19/20. XI. 2013 (Y. F. Hsu & H. C. Huang).

38. *Arhopala rama ramosa* (Evans, 1925) 短尾紫灰蝶
♀. JINMEN Co., Gugang Lake, 5. XI. 2013 (C. L. Huang & H. C. Huang).

39. *Mahathala ameria hainani* Bethune-Baker, 1903 凹翅紫灰蝶
♂. TAIPEI CITY, Beitou, Xingyi Rd., 8. IX. 2018, reared from *Mallotus repandus*, emgd. 20/22. IX. 2018 (L. Hunag).

40. *Mahathala ameria hainani* Bethune-Baker, 1903 凹翅紫灰蝶
♀. TAIZHONG CITY, Fengyuan, Zhongzhen Park, 1. VIII. 2015, reared from *Mallotus repandus*, emgd. 19. VIII. 2015 (L. Huang).



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41. *Iraota timoleon* (Stoll, [1790]) (DSF) 異灰蝶 (低溫 / 乾季型)
♂. JINMEN Co., Jinsha, Shishan, 29. X. 2014 (Y. F. Hsu).

42. *Iraota timoleon* (Stoll, [1790]) (WSF) 異灰蝶 (高溫 / 雨季型)
♂. JINMEN Co., Jinhu, Qionglin, 22. V. 2018, reared from *Ficus subpisocarpa*, emgd. 12. VI. 2018, HSU 18E15 (H. C. Huang).

43. *Iraota timoleon* (Stoll, [1790]) (DSF) 異灰蝶 (低溫 / 乾季型)
♀. JINMEN Co., Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang).

44. *Iraota timoleon* (Stoll, [1790]) (WSF) 異灰蝶 (高溫 / 雨季型)
♀. JINMEN Co., Jinhu, Qionglin, 22. V. 2018, reared from *Ficus subpisocarpa*, HSU 18E15 (H. C. Huang).

45. *Japonica patungkoanui* Murayama, 1956 臺灣焰灰蝶
♂. XINBEI CITY, Sanxia, Beichatianshan, 1500/1700m, 17. V. 2004 (L. H. Wang).

46. *Japonica patungkoanui* Murayama, 1956 臺灣焰灰蝶
♀. XINZHU Co., Jianshi, Zhenxibao, 18. V. 2008 (L. H. Wang).



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47. *Ussuriana michaelis takarana* (Araki & Hirayama, 1941) 赭灰蝶
♂. NANTOU Co., Renai, Tunyuan, 3. II. 2012, reared from *Fraxinus insularis*, emgd. 5. IV. 2012, HSU 12B02 (L. H. Wang).

48. *Ussuriana michaelis takarana* (Araki & Hirayama, 1941) 赭灰蝶
♂. TAOYUAN CITY, Fuxing, Lian, 20. II. 2017, reared from *Fraxinus insularis*, emgd. 3. V. 2017, HSU 17B47 (L. Huang).

49. *Ussuriana michaelis takarana* (Araki & Hirayama, 1941) 赭灰蝶
♀. NANTOU Co., Renai, Tunyuan, 3. II. 2012, reared from *Fraxinus insularis*, emgd. 5. IV. 2012, HSU 12B02 (L. H. Wang).

50. *Cordelia comes wilemaniella* (Matsumura, 1929) 珂灰蝶
♂. NANTOU Co., Renai, Tunyuan, 27. V. 2011 (L. H. Wang).

51. *Cordelia comes wilemaniella* (Matsumura, 1929) 珂灰蝶
♀. HUALIAN Co., Xiulin, Xinbaiyang, 30. X. 1999, reared from *Carpinus kawakamii*, emgd. 24. IV. 2000, HSU 99K41 (C. C. Lu & Y. T. Lo).

52. *Araragi enthea morisonensis* (Inoue, 1942) 墨點灰蝶
♂. HUALIAN Co., Xiulin, Xinbaiyang, 2. V. 2012, reared from *Juglans cathayensis*, emgd. 24. V. 2012, HSU 12E4 (L. H. Wang).

53. *Araragi enthea morisonensis* (Inoue, 1942) 墨點灰蝶
♀. HUALIAN Co., Xiulin, Xinbaiyang, 22. III. 2012, reared from *Juglans cathayensis*, emgd. 9. V. 2012, HSU 12C30 (L. H. Wang & H. Y. Lee).

54. *Antigius attilia obsoletus* (Takeuchi, 1929) 折線灰蝶
♂. NANTOU Co., Renai, Tunyuan, 18. V. 2017 (C. W. Huang).

55. *Antigius attilia obsoletus* (Takeuchi, 1929) 折線灰蝶
♀. NANTOU Co., Renai, Tunyuan, 1550m, 4. VI. 2006 (C. C. Lu).


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56. *Antigius jinpingi* Hsu, 2009 錦平折線灰蝶
♂. PINGDONG Co., Wutai, Wutoushan, 1200m, 8. VI. 2009 (C. H. Lin, Jr).

57. *Antigius jinpingi* Hsu, 2009 錦平折線灰蝶
♀. PINGDONG Co., Wutai, Wutoushan, 20. V. 2009 (G. P. Su).

58. *Wagimo insularis* Shirôzu, 1957 臺灣線灰蝶
♂. YILAN Co., Datong, Siyuanyakou, 1800m, 2. XII. 2005, reared from *Quercus stenophylloides*, emgd. 19. IV. 2006, HSU 05M15 (C. C. Lu & H. Y. Li).

59. *Wagimo insularis* Shirôzu, 1957 臺灣線灰蝶
♀. HUALIAN Co., Xiulin, Xinbaiyang, 1600/1700m, 3. VII. 2008 (L. H. Wang).

60. *Leucantigius atayalicus* (Shirôzu & Murayama, 1943) 瓏灰蝶
♂. HUALIAN Co., Xiulin, Huoranting, ca 900m, 3. IV. 2009, reared from *Quercus glauca*, emgd. 17. IV. 2009, HSU 09D6 (C. K. Wang).

61. *Leucantigius atayalicus* (Shirôzu & Murayama, 1943) 瓏灰蝶
♀. HUALIAN Co., Xiulin, Huoranting, ca 900m, 3. IV. 2009, reared from *Quercus glauca*, emgd. 17. IV. 2009, HSU 09D6 (C. K. Wang).

62. *Ravenna nivea* (Nire, 1920) 朗灰蝶
♂. XINZHU Co., Jianshi, Yulao, 21. II. 2010, reared from *Quercus sessilifolia*, emgd. 24. III. 2010, HSU 10B11 (L. H. Wang).

63. *Ravenna nivea* (Nire, 1920) 朗灰蝶
♀. XINBEI CITY, Wulai, Badaoershan, 19. I. 2009, reared from *Quercus sessilifolia*, emgd. 23. III. 2009, HSU 09A26 (L. H. Wang).



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64. *Iratsume orsedice suzukii* (Sonan, 1940) 珠灰蝶
♂. HUALIAN Co., Xiulin, Bilu, 22. III. 2012, reared from *Sycopsis sinensis*, emgd. 20. IV. 2012, HSU 12C28 (L. H. Wang & H. Y. Lee).

65. *Iratsume orsedice suzukii* (Sonan, 1940) 珠灰蝶
♀. HUALIAN Co., Xiulin, Bilu, 31. I. 2009, reared from *Sycopsis sinensis*, emgd. 1. IV. 2009, HSU 09A37 (L. H. Wang).

66. *Euaspa milionia formosana* Nomura, 1931 銼灰蝶
♂. HUALIAN Co., Xiulin, Bilu, 25. VI. 2015 (L. H. Wang).

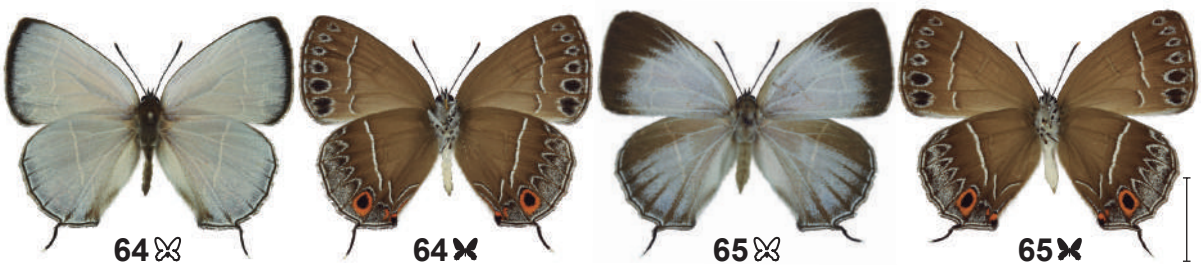
67. *Euaspa milionia formosana* Nomura, 1931 銼灰蝶
♀. HUALIAN Co., Xiulin, Bilu, 4. VII. 2016 (L. H. Wang).

68. *Euaspa forsteri* (Esaki & Shirôzu, 1943) 伏氏銼灰蝶
♂. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 56K, 5. I. 2017, reared from *Castanopsis cuspidata*, HSU 17A5 (C. W. Huang & C. J. Chang).

69. *Euaspa forsteri* (Esaki & Shirôzu, 1943) 伏氏銼灰蝶
♀. TAOYUAN CITY, Fuxing, Sileng. 19. I. 2009, reared from *Castanopsis cuspidata*, emgd. 3. IV. 2009, HSU 09A31(L. H. Wang).

70. *Euaspa tayal* (Esaki & Shirôzu, 1943) 泰雅銼灰蝶
♂. XINBEI CITY, Wulai, Fushan, reared from *Castanopsis uraiana*, emgd. 3. IV. 2015 (G. P. Su).

71. *Euaspa tayal* (Esaki & Shirôzu, 1943) 泰雅銼灰蝶
♀. XINBEI CITY, Wulai, Mogushan, 3. VII. 1980 (H. L. Huang).



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72. *Teratozephyrus arisanus* (Wileman, 1909) 阿里山鐵灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 1600m, 29. V. 2008 (L. H. Wang).

73. *Teratozephyrus arisanus* (Wileman, 1909) 阿里山鐵灰蝶
♀. XINBEI CITY, Wulai, Lalashan, reared from *Quercus stenophylloides*, emgd. 7. V. 1987 (Y. F. Hsu).

74. *Teratozephyrus yugaii* (Kano, 1928) 臺灣鐵灰蝶
♂. YILAN Co., Datong, Siyuanyakou, 1600m, 2. XII. 2005, reared from *Quercus stenophylloides*, emgd. 22. IV. 2006, HSU 05M5 (C. C. Lu & H. Y. Li).

75. *Teratozephyrus yugaii* (Kano, 1928) 臺灣鐵灰蝶
♀. NANTOU Co., Renai, Songquangang, 2500m, 21. V. 2006, reared from *Quercus stenophylloides*, emgd. 15. VI. 2006, HSU 06E21 (L. H. Wang).

76. *Teratozephyrus elatus* Hsu & Lu, 2005 高山鐵灰蝶
♂. HUALIAN Co., Xiulin, Guanyuan, 2600/2700m, 16. V. 2002, reared from *Quercus spinosa*, emgd. 3/6. VI. 2002, HSU 02E37, paratype (Y. F. Hsu).

77. *Teratozephyrus elatus* Hsu & Lu, 2005 高山鐵灰蝶
♀. HUALIAN Co., Xiulin, Guanyuan, 3. VI. 2012, reared from *Quercus spinosa*, emgd. 12. VI. 2012, HSU 12F3 (L. H. Wang & H. Y. Lee).



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78. *Neozephyrus taiwanus* (Wileman, 1908) 臺灣榿翠灰蝶
♂. HUALIAN Co., Xiulin, Bilu, 15. VII. 2019 (J. Y. Liang).

79. *Neozephyrus taiwanus* (Wileman, 1908) (B form) 臺灣榿翠灰蝶 (B 型)
♀. TAIZHONG CITY, Heping, Anmashan, 25. IV. 1997, reared from *Alnus formosana*, emgd. 13. VI. 1997, HSU 97D67 (C. C. Lu & C. Y. Hung).

80. *Neozephyrus taiwanus* (Wileman, 1908) (AB form) 臺灣榿翠灰蝶 (AB 型)
♀. HUALIAN Co., Xiulin, Bilu, 15/16. VII. 2019 (C. W. Huang).

81. *Chrysozephyrus teisoi* (Sonan, 1941) 碧翠灰蝶
♂. HUALIAN Co., Xiulin, Bilu, 4. VII. 2016 (L. H. Wang).

82. *Chrysozephyrus teisoi* (Sonan, 1941) 碧翠灰蝶
♀. TAIZHONG CITY, Heping, Anmashan, 1/2. VI. 1996 (Y. C. Huang).



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83. *Chrysozephyrus nishikaze* (Araki & Sibatani, 1941) 西風翠灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 18. V. 2018 (C. W. Huang).

84. *Chrysozephyrus nishikaze* (Araki & Sibatani, 1941) 西風翠灰蝶
♀. HUALIAN Co., Xiulin, Xinbaiyang, 9. I. 2019, reared from *Prunus campanulata*, emgd. 4. III. 2019, HSU TRK19A15 (C. W. Huang).

85. *Chrysozephyrus kabrua niitakanus* (Kano, 1928) 黃閃翠灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 17. V. 2011 (L. H. Wang).

86. *Chrysozephyrus kabrua niitakanus* (Kano, 1928) 黃閃翠灰蝶
♀. HUALIAN Co., Xiulin, Guangbeibabiao, 16. VII. 2008 (L. H. Wang).

87. *Chrysozephyrus disparatus pseudotaiwanus* (Howarth, 1957) 小翠灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 1500m, 10. I. 2009, reared from *Quercus longinux*, emgd. 13. IV. 2009, HSU 09A17 (L. H. Wang).



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88. *Chrysozephyrus disparatus pseudotaiwanus* (Howarth, 1957) (AB form) 小翠灰蝶 (AB 型)
♀. XINZHU Co., Jianshi, Zhenxibao, 1600m, 3. VI. 2009 (L. H. Wang).

89. *Chrysozephyrus disparatus pseudotaiwanus* (Howarth, 1957) (A form) 小翠灰蝶 (A型)
♀. HUALIAN Co., Xiulin, Huoranting, 28. IV. 2019, reared from *Quercus glauca*, emgd. 15. V. 2019, HSU 19D26 (C. C. Lu, jr).

90. *Chrysozephyrus rarasanus* (Matsumura, 1939) 拉拉山翠灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 18. V. 2018 (C. W. Huang).

91. *Chrysozephyrus rarasanus* (Matsumura, 1939) 拉拉山翠灰蝶
♀. TAOYUAN CITY, Fuxing, near Beichatianshan, 5. III. 2012, reared from *Quercus sessilifolia*, emgd. 9. IV. 2012, HSU 12C5.1 (L. H. Wang, W. Y. Wang, T. L. Chen & J. Y. Liang).

92. *Chrysozephyrus yuchingkinus* Murayama & Shimonoya, 1960 清金翠灰蝶
♂. TAOYUAN CITY, Fuxing, Xiaowulai, 29. II. 2012, reared from *Quercus sessilifolia*, emgd. 3. IV. 2012, HSU 12B28.1 (L. H. Wang).

93. *Chrysozephyrus yuchingkinus* Murayama & Shimonoya, 1960 清金翠灰蝶
♀. TAOYUAN CITY, Fuxing, near Beichatianshan, 5. III. 2012, reared from *Quercus sessilifolia*, emgd. 14. IV. 2012, HSU 12C5.2 (L. H. Wang, W. Y. Wang, T. L. Chen & J. Y. Liang).

94. *Chrysozephyrus splendidulus* Murayama & Shimonoya, 1965 單線翠灰蝶
♂. TAOYUAN CITY, Fuxing, Xuanyuan, 26. XII. 2018, reared from *Quercus gilva*, emgd. 28. IV. 2019, HSU 18M24 (C. W. Huang).



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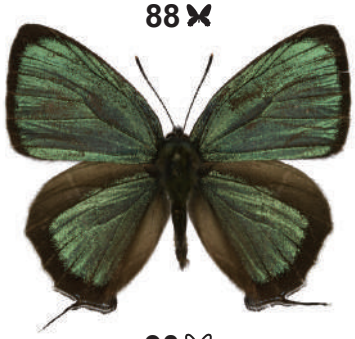

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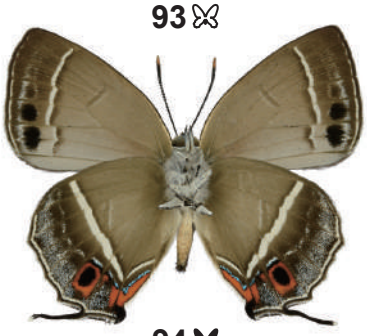

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95. *Chrysozephyrus splendidulus* Murayama & Shimonoya, 1965 單線翠灰蝶
♀. TAOYUAN CITY, Fuxing, Xuanyuan, 10. VI. 2011 (L. H. Wang).

96. *Chrysozephyrus lingi* Okano & Okura, 1969 白芒翠灰蝶
♂. XINZHU Co., Jianshi, Yulao, 1400m, 14. II. 2006, reared from *Quercus gilva*, emgd. 9. IV. 2006, HSU 06B26 (L. H. Wang).

97. *Chrysozephyrus lingi* Okano & Okura, 1969 白芒翠灰蝶
♀. XINZHU Co., Jianshi, Yulao, 1500m, 25. II. 2009, reared from *Quercus gilva*, emgd. 3. IV. 2009, HSU 09B34.2 (L. H. Wang).

98. *Chrysozephyrus mushaellus* (Matsumura, 1938) 霧社翠灰蝶
♂. TAOYUAN CITY, Fuxing, Sileng, 2. III. 2011, reared from *Lithocarpus brevicaudatus*, emgd. 1. IV. 2011, HSU 11C03 (L. H. Wang).

99. *Chrysozephyrus mushaellus* (Matsumura, 1938) (B form) 霧社翠灰蝶 (B 型)
♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 56K, 22. II. 2015, reared from *Lithocarpus* sp., emgd. 8. IV. 2015 (W. J. Lin, H. C. Huang & C. W. Huang).

100. *Chrysozephyrus mushaellus* (Matsumura, 1938) (AB form) 霧社翠灰蝶 (AB 型)
♀. TAOYUAN CITY, Fuxing, Sileng, 21. II. 2012, reared from *Lithocarpus brevicaudatus*, emgd. 3. IV. 2012, HSU 12B23 (L. H. Wang).



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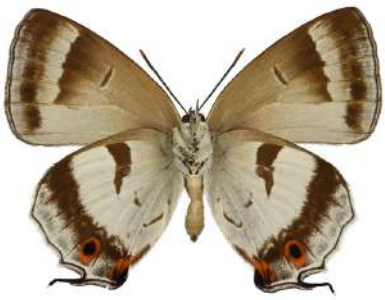

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101. *Sibataniozephyrus kuafui* Hsu & Lin, 1994 夸父璀灰蝶
♂. XINBEI CITY, Sanxia, Beichatianshan, 11. IV. 2018, emgd. 3. V. 2018 (Y. M. Hsu).

102. *Sibataniozephyrus kuafui* Hsu & Lin, 1994 夸父璀灰蝶
♀. YILAN Co., Nanao, Tongshan, 14. III. 2017, reared from *Fagus hayatae*, emgd. 22. IV. 2017, HSU 17C7 (L. H. Wang, Y. M. Hsu & L. Huang).

103. *Amblopala avidiena y-fasciata* (Sonan, 1929) 尖灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 1600m, 28. II. 2010 (Y. F. Hsu).

104. *Amblopala avidiena y-fasciata* (Sonan, 1929) 尖灰蝶
♀. XINZHU Co., Jianshi, Lidongshan, 1600m, 15. III. 2006 (Y. F. Hsu, C. C. Lu & L. H. Wang).

105. *Tajuria yajna caerulea* Nire, 1920 褐翅青灰蝶
♂. MIAOLI Co., Taian, Dabicuo, 1660m, 16. XI. 2016, reared from *Taxillus theifer*, emgd. 5. I. 2017, HSU 16L26 (H. C. Huang).

106. *Tajuria yajna caerulea* Nire, 1920 褐翅青灰蝶
♀. HUALIAN Co., Xiulin, Guanyuan, 1. VII. 2019, reared from *Taxillus rhododendricolus* , emgd. 6. VIII. 2019 (Z. L. Chen).

107. *Tajuria diaeus karenkonis* Matsumura, 1929 白腹青灰蝶
♂. TAIZHONG CITY, Heping, Lishan, 1780m, 6. VII. 2017, reared from *Taxillus* sp., emgd. 11. VIII. 2017, HSU 17G01 (L. Huang)

108. *Tajuria diaeus karenkonis* Matsumura, 1929 白腹青灰蝶
♀. NANTOU Co., Renai, Qingjing, 18. XI. 2005, reared from *Taxillus ritozanensis,* emgd. 18. I. 2006, HSU 05L32 (L. H. Wang).

109. *Tajuria diaeus karenkonis* Matsumura, 1929 白腹青灰蝶
♀. HUALIAN Co., Xiulin, Guanyuan, 2300m, 26. V. 2005, reared from *Taxillus rhododendricola*, emgd. 26. V. 2005, HSU 05E28 (Y. F. Hsu).



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110. *Tajuria illurgis tattaka* (Araki, 1949) 漣紋青灰蝶
♂. YILAN Co., Datong, Tuleng, 1600m, 6. VIII. 2009, reared from *Taxillus* sp. at 15℃ , emgd. 8. II. 2009, HSU 09H4 (N. Y. Tsai).

111. *Tajuria illurgis tattaka* (Araki, 1949) 漣紋青灰蝶
♀. HUALIAN Co., Xiulin, Bilu, 2000m, 13. IX. 2006, reared from *Taxillus rhododendricola*, emgd. 8. X. 2006, HSU 06J31 (L. H. Wang).

112. *Ancema ctesia cakravasti* (Fruhstorfer, 1909) 鈿灰蝶
♂. TAIDONG Co., Yanping, Hongye, 21. IX. 2002, reared from *Viscum articulatum*, emgd. 18. X. 2002, HSU 02J36 (L. W. Wu).

113. *Ancema ctesia cakravasti* (Fruhstorfer, 1909) 鈿灰蝶
♀. TAIDONG Co., Yanping, Hongye, ca 500m, 27. VII. 2002, reared from *Viscum articulatum*, emgd. 25. VIII. 2002, HSU 02G53 (L. W. Wu).

114. *Ancema ctesia cakravasti* (Fruhstorfer, 1909) 鈿灰蝶
♀. XINZHU Co., Xinpu, 15. XII. 2018, reared from *Viscum angulatum*, emgd. 3. II. 2019, HSU 18M3 (H. C. Huang).

115. *Hypolycaena kina inari* (Wileman, 1908) (WSF) 蘭灰蝶 (高溫 / 雨季型)
♂. TAOYUAN CITY, Fuxing, Hualing, 29. XI. 2017 (L. Huang).

116. *Hypolycaena kina inari* (Wileman, 1908) (DSF) 蘭灰蝶 (低溫 / 乾季型)
♂. TAOYUAN CITY, Fuxing, Sileng, ca 1000m, 5. III. 2009 (C. H. Lin, jr).

117. *Hypolycaena kina inari* (Wileman, 1908) (WSF) 蘭灰蝶 (高溫 / 雨季型)
♀. TAOYUAN CITY, Fuxing, Hualing, 29. XI. 2017 (L. Huang).

118. *Hypolycaena kina inari* (Wileman, 1908) (DSF) 蘭灰蝶 (低溫 / 乾季型)
♀. NANTOU Co., Renai, Aowanda National Forest Recreation Area, 1200m, 2. IV. 2016 (H. C. Huang).



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119. *Hypolycaena othona* Hewitson, [1865] 熱帶蘭灰蝶

♂. CHINA, YUNNAN PROV., Xishuangbanna Zhou, Mengla Xian, Menglun, 570m, 24/28. III. 2012, reared from *Dendrobium* sp., emgd. 25. IV. 2012, HSU 12C46 (Y. F. Hsu).

120. *Hypolycaena othona* Hewitson, [1865] 熱帶蘭灰蝶

♀. CHINA, YUNNAN PROV., Xishuangbanna Zhou, Mengla Xian, Menglun, 570m, 24/28. III. 2012, reared from *Dendrobium* sp., emgd. 24. IV. 2012, HSU 12C46 (Y. F. Hsu).

121. *Deudorix epijarbas menesicles* Fruhstorfer, 1912 玳灰蝶

♂. TAIDONG Co., Yanping, Hongye, 24. XII. 2000, reared from *Diospyros morrisiana*, emgd. 4. II. 2001, HSU 00M15 (L. W. Wu & H. S. Chuen).

122. *Deudorix epijarbas menesicles* Fruhstorfer, 1912 玳灰蝶

♀. XINBEI CITY, Wulai, Zhongzhi, 6. X. 2010, reared from *Koelreuteria henryi*, emgd. 13. XI. 2010, HSU 10K19 (C. L. Huang).

123. *Deudorix sankakuhonis* (Matsumura, 1938) 三角峰玳灰蝶

♂. TAOYUAN CITY, Fuxing, 11. IX. 2019, reared from *Quercus glauca*, emgd. 4. XI. 2019, HSU 19J01 (L. H. Wang).

124. *Deudorix sankakuhonis* (Matsumura, 1938) 三角峰玳灰蝶

♀. TAOYUAN CITY, Fuxing, 11. IX. 2019, reared from *Quercus glauca*, emgd. 11. XI. 2019, HSU 19J01 (L. H. Wang)



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125. *Deudorix rapaloides* (Naritomi, 1941) 淡黑玳灰蝶
♂. TAIPEI CITY, Shilin, Neishuangxi, 7. X. 2006 (H. C. Huang, L. Huang & Y. F. Hsu).

126. *Deudorix rapaloides* (Naritomi, 1941) 淡黑玳灰蝶
♀. TAOYUAN CITY, Fuxing, Sileng, 10. IX. 2015, reared from *Polyspora axillaris*, emgd. 7. X. 2015, HSU 15J20 (W. J. Lin, C. W. Huang, C. J. Chang, Y. M. Hsu & H. Y. Chen).

127. *Artipe eryx horiella* (Matsumura, 1929) 綠灰蝶
♂. TAIDONG Co., Lanyu, Central Cross-Island Road, 4. V. 2019 (W. Y. Wang).

128. *Artipe eryx horiella* (Matsumura, 1929) 綠灰蝶
♀. TAIDONG Co., Lanyu, Central Cross-Island Road, 4. V. 2019 (W. Y. Wang).

129. *Artipe eryx eryx* (Linnaeus, 1771) 綠灰蝶
♂. LIANJIANG Co., Nangan, 2. V. 2010, reared from *Gardenia jasminoides*, emgd. 14. VI. 2010, HSU 10F9 (Y. F. Hsu).

130. *Artipe eryx eryx* (Linnaeus, 1771) 綠灰蝶
♀. LIANJIANG Co., Nangan, 2. V. 2010, reared from *Gardenia jasminoides*, emgd. 15. VI. 2010, HSU 10F9 (Y. F. Hsu).



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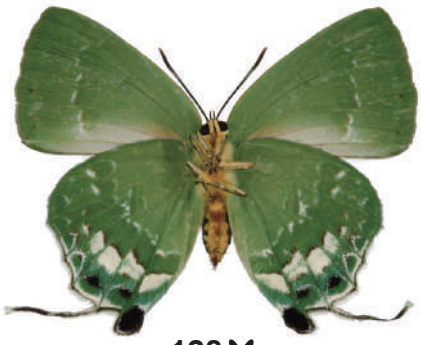

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131. *Sinthusa chandrana kuyaniana* (Matsumura, 1919) 閃灰蝶
♂. TAOYUAN CITY, Longtan, 350m, 7. VI. 2002 (Y. F. Hsu).

132. *Sinthusa chandrana kuyaniana* (Matsumura, 1919) 閃灰蝶
♀. TAIDONG Co., Haiduan, Xiangyang, 2350m, 3. VII. 2016 (J. Y. Liang).

133. *Rapala caerulea liliacea* Nire, 1920 堇彩燕灰蝶
♂. NANTOU Co., Renai, Songgang, 3. IX. 2019, reared from *Lespedeza thunbergii formosa*, emgd. 30. IX. 2019 (J. Y. Liang & Z. L. Chen).

134. *Rapala caerulea liliacea* Nire, 1920 堇彩燕灰蝶
♀. NANTOU Co., Renai, Songgang, 1900m, 14. VII. 2003, reared from *Lespedeza thunbergii formosa*, emgd. 30. VII. 2003, HSU 03G10 (Y. F. Hsu).

135. *Rapala varuna formosana* Fruhstorfer, 1912 燕灰蝶
♂. KAOHSIUNG CITY, Tianliao, 100m, 10. V. 2011 (Y. F. Hsu).

136. *Rapala varuna formosana* Fruhstorfer, 1912 燕灰蝶
♀. TAIPEI CITY, Wenshan, Gongguan campus, NTNU, VI. 2017, reared from *Lagerstroemia subcostata*, emgd. 12. VII. 2017, HSU 17F80 (C. W. Huang).

137. *Rapala nissa hirayamana* Matsumura, 1926 霓彩燕灰蝶
♂. TAOYUAN CITY, Fuxing, Xuewunao, 7. VI. 2017, reared from *Lagerstroemia subcostata*, emgd. 25. VI. 2017, HSU 17F22 (C. W. Huang).

138. *Rapala nissa hirayamana* Matsumura, 1926 霓彩燕灰蝶
♀. TAOYUAN CITY, Fuxing, Xuewunao, 7. VI. 2017, reared from *Lagerstroemia subcostata*, emgd. 26. VI. 2017, HSU 17F22 (C. W. Huang).



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139. *Rapala takasagonis* Matsumura, 1929 高砂燕灰蝶
♂. YILAN Co., Nanao, Dabaishan, 20. VII. 2016 (C. W. Huang).

140. *Rapala takasagonis* Matsumura, 1929 高砂燕灰蝶
♀. YILAN Co., Nanao, Dabaishan, 20. VII. 2016 (C. W. Huang).

141. *Rapala manea schistacea* (Moore, 1879) 泥黃燕灰蝶
♂. JINMEN Co., Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang).

142. *Rapala manea schistacea* (Moore, 1879) 泥黃燕灰蝶
♀. JINMEN Co., Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang).

143. *Satyrium formosanum* (Matsumura, 1919) 臺灣灑灰蝶
♂. TAOYUAN CITY, Fuxing, Baling, 16. V. 2015 (C. W. Huang).

144. *Satyrium formosanum* (Matsumura, 1919) 臺灣灑灰蝶
♀. TAIDONG Co., Haiduan, Lidao, 22. V. 2017 (C. W. Huang).



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145. *Satyrium eximium mushanum* (Matsumura, 1929) 秀灑灰蝶
♂. NANTOU Co., Renai, Tunyuan, 1700m, 5. V. 2010 (L. H. Wang).

146. *Satyrium eximium mushanum* (Matsumura, 1929) 秀灑灰蝶
♀. NANTOU Co., Renai, Tunyuan, 1700m, 11. V. 2010 (L. H. Wang & C. L. Huang).

147. *Satyrium tanakai* (Shirôzu, 1943) 田中灑灰蝶
♂. TAOYUAN CITY, Fuxing, Daman, 8. III. 1998, reared from *Acer albopurpurascens*, emgd. 7. IV. 1998, HSU 98C7 (Y. F. Hsu).

148. *Satyrium tanakai* (Shirôzu, 1943) 田中灑灰蝶
♀. TAOYUAN CITY, Fuxing, Xuanyuan, 900m, 4. V. 1997 (Y. F. Hsu).

149. *Satyrium esakii* (Shirôzu, 1942) 江崎灑灰蝶
♂. TAIDONG Co., Haiduan, Liyuan/Xiangyang, 17. VI. 2020 (C. W. Huang).

150. *Satyrium esakii* (Shirôzu, 1942) 江崎灑灰蝶
♀. TAIDONG Co., Haiduan, Liyuan, 19. VI. 2022 (K. D. He).

151. *Satyrium inouei* (Shirôzu, 1959) 井上灑灰蝶
♂. HUALIAN Co., Xiulin, Bilu/ Guanyuan, 125/125.5 km, ca 2100m, 2. VII. 2008 (C. C. Lu, jr).

152. *Satyrium inouei* (Shirôzu, 1959) 井上灑灰蝶
♀. HUALIAN Co., Xiulin, Bilu, 21. VI. 2004 (G. P. Su).



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153. *Satyrium austrinum* (Murayama, 1943) 南方灑灰蝶
♂. TAOYUAN CITY, Fuxing, Xuanyuan, 12. III. 2020, reared from *Zelkova serrata*, emgd. 24. III. 2020, HSU 20C13 (C. W. Huang & Z. L. Chen).

154. *Satyrium austrinum* (Murayama, 1943) 南方灑灰蝶
♀. TAOYUAN CITY, Gaoyi, 600m, 12. IV. 1997 (Y. F. Hsu).

155. *Fixsenia watarii* (Matsumura, 1927) 渡氏烏灰蝶
♂. TAOYUAN CITY, Fuxing, Ronghua, 10. V. 2017 (L. Huang).

156. *Fixsenia watarii* (Matsumura, 1927) 渡氏烏灰蝶
♀. NANTOU Co., Renai, Tunyuan, 1550m, 4. VI. 2006 (C. C. Lu).

157. *Horaga onyx moltrechti* Matsumura, 1919 (WSF) 鑽灰蝶 (高溫 / 雨季型)
♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 1. VII. 2004, reared from *Mangifera indica*, emgd. 10. VIII. 2004, HSU 04G4 (L. H. Wang & J. R. Chen).

158. *Horaga onyx moltrechti* Matsumura, 1919 (DSF) 鑽灰蝶 (低溫 / 乾季型)
♂. TAOYUAN CITY, Fuxing, Ronghua, 8. II. 2019 (C. W. Huang).

159. *Horaga onyx moltrechti* Matsumura, 1919 (WSF) 鑽灰蝶 (高溫 / 雨季型)
♀. KAOHSIUNG CITY, Tianliao, 100m, 9. IV. 2010 (Y. F. Hsu).

160. *Horaga onyx moltrechti* Matsumura, 1919 (DSF) 鑽灰蝶 (低溫 / 乾季型)
♀. TAIPEI CITY, Beitou, Shipai, 18. VI. 2016, reared from *Peltophorum inerme* (21℃), emgd. 15. VIII. 2016, HSU 16F55 (L. Huang).



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161. *Horaga albimacula triumphalis* Murayama & Shibatani, 1943 (WSF) 小鑽灰蝶 (高溫 / 雨季型)
♂. XINBEI CITY, Wulai, Qingwagu, 3. VIII. 2006, reared from *Rhamnus formosana*, emgd. 3. IX. 2006, HSU 06H21 (L. W. Wu).

162. *Horaga albimacula triumphalis* Murayama & Shibatani, 1943 (DSF) 小鑽灰蝶 (低溫 / 乾季型)
♂. NANTOU Co., Renai, Beidongyanshan, 1500m, 28. X. 2006, reared from *Glochidion rubrum* (21℃), emgd. 2. XI./2. XII. 2006, HSU 06K41 (Y. F. Hsu).

163. *Horaga albimacula triumphalis* Murayama & Shibatani, 1943 (WSF) 小鑽灰蝶 (高溫 / 雨季型)
♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 11. VI. 2002, reared from *Peltophorum petrocarpum* (26℃), emgd. 30. VI./14.VII. 2002, HSU 02F13 (C. L. Huang & W. J. Chang).

164. *Horaga albimacula triumphalis* Murayama & Shibatani, 1943 (DSF) 小鑽灰蝶 (低溫 / 乾季型)
♀. XINBEI CITY, Xindian, Fecui Dam, 6. IV. 2018, reared from *Pongamia pinnata* (21℃), emgd. 27. IV. 2018, HSU 18D22 (C. W. Huang, Y. M. Hsu, Z. Y. Shen & C. Y. Yeh).

165. *Horaga rarasana* Sonan, 1936 拉拉山鑽灰蝶
♂. XINBEI CITY, Sanxia, Beichatianshan, emgd. 21. V. 2001 (Y. T. Lo).

166. *Horaga rarasana* Sonan, 1936 拉拉山鑽灰蝶
♀. XINBEI CITY, Sanxia, Beichatianshan, reared from *Symplocos macrostroma*, emgd. 30. III. 2006 (L. H. Wang).

167. *Horaga rarasana* Sonan, 1936 ('Yellow form') 拉拉山鑽灰蝶 (黃色型)
♀. XINBEI CITY, Sanxia, Beichatianshan, 19. IV. 2014, reared from *Symplocos macrostroma*, emgd. 7. V. 2014 (C. W. Huang).



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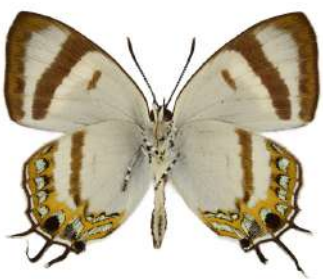

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168. *Catapaecilma major moltrechti* (Wileman, 1908) 三尾灰蝶
♂. TAIDONG Co., Lanyu, Sidaogou, 19. II. 2012, reared from *Coccus hesperidum* ex *Crematogaster roegenhoferi* shelters, emgd. 20. III. 2013, HSU 13B22 (Y. F. Hsu).

169. *Catapaecilma major moltrechti* (Wileman, 1908) 三尾灰蝶
♀. PINGDONG Co,, Sandimen, ca 300m, 21. I. 2009, reared from *Mallotus paniculatus* assoc. with *Crematogaster rogenhoferi*, emgd. 16. III. 2009, HSU 09A7 (Y. F. Hsu).

170. *Orthomiella rantaizana* Wileman, 1910 巒大鋸灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 10. IV. 2019 (C. W. Huang).

171. *Orthomiella rantaizana* Wileman, 1910 巒大鋸灰蝶
♀. XINZHU Co., Jianshi, Zhenxibao, 1600m, 23. III. 2009 (Y. F. Hsu & L. H. Wang).

172. *Nacaduba kurava therasia* Fruhstorfer, 1916 大娜波灰蝶
♂. XINBEI CITY, Wulai, Fushan, 24. V. 2019, reared from *Ardisia sieboldii*, emgd. 4. VI. 2019, HSU 19E19 (C. W. Huang).

173. *Nacaduba kurava therasia* Fruhstorfer, 1916 (WSF) 大娜波灰蝶 (高溫 / 雨季型)
♀. TAIDONG Co., Lanyu, Sidaogou, 30. III. 2010 (Y. F. Hsu & J. H. Lin).

174. *Nacaduba kurava therasia* Fruhstorfer, 1916 (DSF) 大娜波灰蝶 (低溫 / 乾季型)
♀. TAIPEI CITY, Songshan, Hushan, 6. II. 2010 (C. H. Lin).

175. *Nacaduba kurava euplea* Fruhstorfer, 1916 大娜波灰蝶
♀. LIANJIANG Co., Beigan, Daqiu, 11/13. VII. 2003 (L. W. Wu & Y. A. Lin).

176. *Nacaduba beroe asakusa* Fruhstorfer, 1916 南方娜波灰蝶
♂. NANTOU Co., Renai, Huisun, 4. V. 2019 (C. W. Huang).

177. *Nacaduba beroe asakusa* Fruhstorfer, 1916 南方娜波灰蝶
♀. PINGDONG Co., Wutai, Yichangshan, 1100/1400m, 15/16. III. 2009, reared from *Quercus dentata*, emgd. 5. IV. 2009, HSU 09C31 (Y. F. Hsu & H. C. Huang).


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178. *Nacaduba berenice leei* Hsu, 1990 熱帶娜波灰蝶
♂. TAIDONG Co., Lanyu, Badai Bay, 6/8. VIII. 2004, reared from *Rourea minor*, emgd. 20. VIII. 2004, HSU 04H5 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang).

179. *Nacaduba berenice leei* Hsu, 1990 熱帶娜波灰蝶
♀. TAIDONG Co., Lanyu, Sidaogou, 30. III. 2010 (Y. F. Hsu & J. H. Lin).

180. *Nacaduba pactolus hainani* Bethune-Baker, 1914 暗色娜波灰蝶
♂. TAINAN CITY, Dongshan, Wuchagou, 23/24. X. 2000 (Y. F. Hsu).

181. *Nacaduba pactolus hainani* Bethune-Baker, 1914 暗色娜波灰蝶
♀. XINBEI CITY, Xindian, Hemeishan, 30. XI. 2019 (C. W. Haung & C. J. Chang).

182. *Nothodanis schaeffera* (Eschscholtz, 1821) 黑列波灰蝶
♂. TAIDONG Co., Lanyu, Qiwei, ca 200m, 18. V. 2009 (N. Y. Tsai & C. H. Lin, jr).

183. *Nothodanis schaeffera* (Eschscholtz, 1821) 黑列波灰蝶
♀. TAIDONG Co., Lanyu, Qiwei, ca 200m, 18. V. 2009 (N. Y. Tsai & C. H. Lin, jr).

184. *Catopyrops ancyra almora* (Druce, 1873) 曲波灰蝶
♂. TAIDONG Co., Lanyu, Langdao, 18/22. VIII. 1998 (C. C. Lu & C. Y. Hung).

185. *Catopyrops ancyra almora* (Druce, 1873) 曲波灰蝶
♀. TAIDONG Co., Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang).

186. *Prosotas nora formosana* (Fruhstorfer, 1916) 波灰蝶
♂. XINBEI CITY, Wulai, Hapen, 9. VI. 2019 (J. Y. Liang).

187. *Prosotas nora formosana* (Fruhstorfer, 1916) 波灰蝶
♀. KAOHSIUNG CITY, Jiaxian, 11. XI. 2007, reared from *Acacia farnesiana*, emgd. 23. XI. 2007, HSU 07L8 (Y. F. Hsu).


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188. *Prosotas dubiosa asbolodes* Hsu & Yen, 2006 密紋波灰蝶
♂. TAINAN CITY, Guantian, Wushantou, 30m, 22. I. 2009 (Y. F. Hsu).

189. *Prosotas dubiosa asbolodes* Hsu & Yen, 2006 密紋波灰蝶
♀. KAOHSIUNG CITY, Xiaogang, Dalinpu, 0/20m, 29. XI. 2003, reared from *Acasia farnesiana*, emgd. 11. XII. 2003, HSU 03L48, paratype (Y. F. Hsu).

190. *Jamides bochus formosanus* Fruhstorfer, 1909 雅波灰蝶
♂. PINGDONG Co., Sandimen, ca 300m, 2. I. 2009 (Y. F. Hsu).

191. *Jamides bochus formosanus* Fruhstorfer, 1909 (WSF) 雅波灰蝶 (高溫 / 雨季型)
♀. TAINAN CITY, Baihe, Zhentoushan, 2. VII. 2003 (Y. F. Hsu).

192. *Jamides bochus formosanus* Fruhstorfer, 1909 (DSF) 雅波灰蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Baihe, Zhentoushan, 23. XI. 2002 (Y. F. Hsu).

193. *Jamides bochus bochus* (Stoll, [1782]) 雅波灰蝶
♂. JINMEN Co., Jinsha, Shishan, 19. XI. 2013 (Y. F. Hsu & H. C. Huang).

194. *Jamides bochus bochus* (Stoll, [1782]) (WSF) 雅波灰蝶 (高溫 / 雨季型)
♀. LIANJIANG Co., Beigan, Wusha, 7. IX. 2014 (C. L. Huang & H. Y. Lee).

195. *Jamides bochus bochus* (Stoll, [1782]) (DSF) 雅波灰蝶 (低溫 / 乾季型)
♀. JINEMN Co., Jinhu, Botanical Garden, 18. XI. 2013 (Y. F. Hsu).

196. *Jamides bochus herodicus* (Fruhstorfer, 1915) 雅波灰蝶
♂. TAIDONG Co., Lanyu, Badai Bay, 9. XI. 2004, reared from *Pongamia pinnata*, emgd. 25. XI. 2004, HSU 04L 25 (C. C. Hsieh).

197. *Jamides bochus herodicus* (Fruhstorfer, 1915) 雅波灰蝶
♀. TAIDONG Co., Lanyu, Sidaogou, 17. III. 2007, reared from *Paraderris* ?*piscatoria*, emgd. 4/29. IV. 2007, HSU 07C13 (Y. F. Hsu).



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198. *Jamides alecto dromicus* (Fruhstorfer, 1910) (WSF) 淡青雅波灰蝶 (高溫 / 雨季型)
♂. NANTOU Co., Yuchi, Lianhuachi, 23. VI. 2016 (J. Y. Liang).

199. *Jamides alecto dromicus* (Fruhstorfer, 1910) (DSF) 淡青雅波灰蝶 (低溫 / 乾季型)
♂. XINBEI CITY, Xindian, Sikanshui, 21. II. 2011 (C. Y. Yen).

200. *Jamides alecto dromicus* (Fruhstorfer, 1910) 淡青雅波灰蝶
♀. TAIPEI CITY, Wenshan, NTNU, Goungguan campus, 20. X. 2018 (L. Huang).

201. *Jamides celeno lydanus* (Fruhstorfer, 1910) (WSF) 白雅波灰蝶 (高溫 / 雨季型)
♂. JIAYI Co., Alishan, Chashan Tribe, 27. IX. 2019 (L. Huang).

202. *Jamides celeno lydanus* (Fruhstorfer, 1910) (DSF) 白雅波灰蝶 (低溫 / 乾季型)
♂. KAOHSIUNG CITY, Meinong, Shunagxi, 150m, 22. I. 2007 (Y. F. Hsu).

203. *Jamides celeno lydanus* (Fruhstorfer, 1910) (WSF) 白雅波灰蝶 (高溫 / 雨季型)
♀. PINGDONG Co., Sandimen, 250m, 10. II. 2007 (Y. F. Hsu).

204. *Jamides celeno lydanus* (Fruhstorfer, 1910) (DSF) 白雅波灰蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Nanxi, Meiling, 28. XI. 2019 (C. W. Huang & H. Y. Chen).



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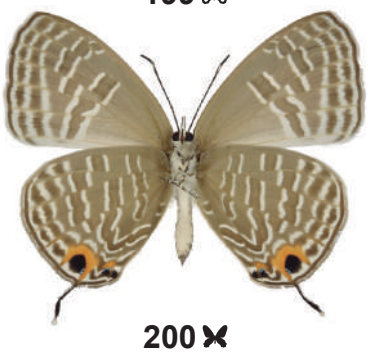

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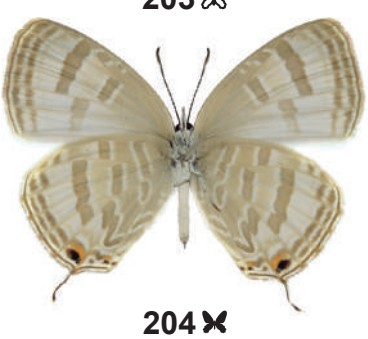

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205. *Jamides celeno lydanus* (Fruhstorfer, 1910) (DSF) 白雅波灰蝶 (低溫 / 乾季型)
♀. TAIZHONG CITY, Fengyuan, Zhongzhen Park, 2. XI. 2019 (L. Huang).

206. *Catochrysops panormus exiguus* (Distant, 1886) 青珈波灰蝶
♂. TAINAN CITY, Xinhua, 24. X. 2009 (Y. F. Hsu).

207. *Catochrysops panormus exiguus* (Distant, 1886) 青珈波灰蝶
♀. TAIDONG Co., Lanyu, Sidaogou, 30. III. 2010 (Y. F. Hsu & J. H. Lin).

208. *Catochrysops strabo luzonensis* Tite, 1959 紫珈波灰蝶
♂. TAIDONG Co., Lanyu, Sidaogou, 10. IV. 2007 (Y. F. Hsu).

209. *Catochrysops strabo luzonensis* Tite, 1959 紫珈波灰蝶
♀. TAIDONG Co., Lanyu, Yeyou, 15. X. 2006, reared from *Pongamia pinnata*, emgd. 30. X. 2006, HSU 06K23.1 (Y. F. Hsu, H. C. Huang & Y. C. Hsu).

210. *Euchrysops cnejus* (Fabricius, 1798) 奇波灰蝶
♂. JIAYI Co., Fanlu, Niupuzai, 26. IX. 2010, reared from *Vigna* sp., emgd. 20. I. 2011, HSU 10J47 (L. H. Wang).

211. *Euchrysops cnejus* (Fabricius, 1798) 奇波灰蝶
♀. PINGDONG Co., Hengchun, Eluanbi, 7. IX. 2000, reared from *Vigna marina*, emgd. 23. IX. 2000, HSU 00J3 (Y. F. Hsu & C. R. Chen).



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212. *Lampides boeticus* (Linnaeus, 1767) 豆波灰蝶
♂. JILONG CITY, Jilongyu, 25. IX. 2011 (H. C. Huang).

213. *Lampides boeticus* (Linnaeus, 1767) 豆波灰蝶
♂. JIAYI Co., Xingang, 16. II. 2008 (Y. F. Hsu).

214. *Lampides boeticus* (Linnaeus, 1767) 豆波灰蝶
♀. TAIPEI CITY, Zhongshan, Dajia Riverside Park, 31. III. 2018, reared from *Vigna luteola*, emgd. 6/16. IV. 2018, HSU 18C17 (L. Huang).

215. *Lampides boeticus* (Linnaeus, 1767) 豆波灰蝶
♀. TAINAN CITY, Yongkang, Sankandian, 23. I. 2010 (Y. F. Hsu).

216. *Leptotes plinius* (Fabricius, 1793) 細灰蝶
♂. HUALIAN Co., Zhuoxi, Nanan, 15. X. 2019 (J. Y. Liang).

217. *Leptotes plinius* (Fabricius, 1793) 細灰蝶
♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 32K, 1. X. 2018 (C. W. Huang).



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218. *Zizeeria maha okinawana* (Matsumura, 1929) (WSF) 藍灰蝶 (高溫 / 雨季型)
♂. TAIPEI CITY, Beitou, Shipai, 19. VI. 2017, reared from *Oxalis corniculata*, HSU 17F72 (L. Huang).

219. *Zizeeria maha okinawana* (Matsumura, 1929) (DSF) 藍灰蝶 (低溫 / 乾季型)
♂. TAIZHONG CITY, Dadu, Dadushan, 30. XII. 2006 (Y. F. Hsu).

220. *Zizeeria maha okinawana* (Matsumura, 1929) (WSF) 藍灰蝶 (高溫 / 雨季型)
♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 20 VIII. 2004 (Y. F. Hsu).

221. *Zizeeria maha okinawana* (Matsumura, 1929) (DSF) 藍灰蝶 (低溫 / 乾季型)
♀. JIAYI Co., Fanlu, Chukou, ca 350m, 12. II. 2006 (Y. F. Hsu).

222. *Zizeeria maha maha* (Kollar, [1844]) (WSF) 藍灰蝶 (高溫 / 雨季型)
♂. LIANJIANG Co., Nangan, Fuao, 14. VI. 2000 (Y. F. Hsu).

223. *Zizeeria maha maha* (Kollar, [1844]) (DSF) 藍灰蝶 (低溫 / 乾季型)
♂. LIANJIANG Co., Beigan, Daqiu, 20. IV. 2007 (Y. F. Hsu & H. C. Huang).

224. *Zizeeria maha maha* (Kollar, [1844]) (WSF) 藍灰蝶 (高溫 / 雨季型)
♀. JINMEN Co., Jinhu, Shenshiqiao, 27/28. V. 2011 (Y. F. Hsu & H. C. Huang).

225. *Zizeeria maha maha* (Kollar, [1844]) (DSF) 藍灰蝶 (低溫 / 乾季型)
♀. LIANJIANG Co., Beigan, Daqiu, 20. IV. 2007 (Y. F. Hsu & H. C. Huang).

226. *Zizeeria karsandra* (Moore, 1865) 莧藍灰蝶
♂. TAINAN CITY, Yongkang, 10m, 30. VIII. 2008 (Y. F. Hsu).

227. *Zizeeria karsandra* (Moore, 1865) 莧藍灰蝶
♀. TAINAN CITY, Yongkang, 10m, 30. VIII. 2008 (Y. F. Hsu).


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228. *Zizina otis riukuensis* (Matsumura, 1929) 折列藍灰蝶
♂. TAIDONG Co., Taidong, Kangle, 24. VIII. 2009 (Y. F. Hsu).

229. *Zizina otis riukuensis* (Matsumura, 1929) 折列藍灰蝶
♀. KAOHSIUNG CITY, Meinong, Meinong Lake, 29. II. 2020 (Y. F. Hsu).

230. *Zizina otis otis* (Fabricius, 1787) 折列藍灰蝶
♂. JINEMN Co., Jinhu, Wujiangkou, 28. V. 2011 (Y. F. Hsu & H. C. Huang).

231. *Zizina otis otis* (Fabricius, 1787) 折列藍灰蝶
♀. JINEMN Co., Jinhu, Wujiangkou, 28. V. 2011 (Y. F. Hsu & H. C. Huang).

232. *Famegana nisa* (Wallace, 1866) 單點藍灰蝶
♂. HONGKONG, Yuenlong District, Shekwuwai, 14. X. 2009 (Y. F. Lo & W. L. Hui).

233. *Famegana nisa* (Wallace, 1866) 單點藍灰蝶
♀. HONGKONG, Shingmun Country park, 500m, 20. X. 2009 (W. L. Hui).

234. *Zizula hylax* (Fabricius, 1775) 迷你藍灰蝶
♂. KAOHSIUNG CITY, Liugui, 10. XII. 2003 (Y. F. Hsu).

235. *Zizula hylax* (Fabricius, 1775) 迷你藍灰蝶
♀. PINGDONG Co., Hengchun, Sheding, 22. I. 2007 (Y. F. Hsu).

236. *Everes argiades* (Pallas, 1771) 燕藍灰蝶
♂. JIAYI Co., Alishan, Shizhuo/ Dabang, 900/1000m, 2. V. 2010, reared from *Humulus scandens*, emgd. 14. VI. 2010, HSU 10E11 (R. K. Dong & Y. F. Hsu).

237. *Everes argiades* (Pallas, 1771) 燕藍灰蝶
♂. LIANJIANG Co., Nangan, Jinsha, 1. IX. 2014 (C. L. Huang & H. Y. Lee).

238. *Everes argiades* (Pallas, 1771) 燕藍灰蝶
♀. LIANJIANG Co., Nangan, Jinsha, 3. IX. 2014 (C. L. Huang & H. Y. Lee).


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239. *Everes lacturnus rileyi* Godfrey, 1916 南方燕藍灰蝶
♂. TAIDONG Co., Yanping, Hongye, 300m, 4. X. 2010, reared from *Codaricalyx motorius*, emgd. 21. X. 2010, HSU 10K10 (Y. F. Hsu).

240. *Everes lacturnus rileyi* Godfrey, 1916 南方燕藍灰蝶
♀. TAIDONG Co., Yanping, Hongye, 300m, 4. X. 2010, reared from *Codaricalyx motorius*, emgd. 22. X. 2010, HSU 10K10 (Y. F. Hsu).

241. *Tongeia hainani* (Bethune-Baker, 1914) 臺灣玄灰蝶
♂. PINGDONG Co., Chunri, Dahanshan, 27. IV. 2011 (J. H. Lin).

242. *Tongeia hainani* (Bethune-Baker, 1914) 臺灣玄灰蝶
♀. JIAYI Co., Alishan, Shizhuo/ Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu).

243. *Tongeia filicaudis mushanus* (Tanikawa, 1940) 密點玄灰蝶
♂. TAOYUAN CITY, Fuxing, Lian, 22. V. 2019, reared from *Sedum actinocarpum*, emgd. 2. VI. 2019, HSU 19E13 (Y. F. Hsu).

244. *Tongeia filicaudis mushanus* (Tanikawa, 1940) 密點玄灰蝶
♀. TAOYUAN CITY, Fuxing, Lian, 22. V. 2019, reared from *Sedum actinocarpum*, emgd. 3. VI. 2019, HSU 19E13 (C. W. Huang).

245. *Tongeia filicaudis filicaudis* (Pryer, 1877) 密點玄灰蝶
♂. LIANJIANG Co., Dongyin, Dongyin Lighthouse, 10. IV. 2014 (H. Y. Lee).

246. *Tongeia filicaudis filicaudis* (Pryer, 1877) 密點玄灰蝶
♀. LIANJIANG Co., Dongyin, Dongyin Lighthouse, 10. IV. 2014 (H. Y. Lee).

247. *Shijimia moorei taiwana* Matsumura, 1919 森灰蝶
♂. XINBEI CITY, Wulai, Fushan, 400m, 2. IX. 2011 (L. H. Wang).

248. *Shijimia moorei taiwana* Matsumura, 1919 森灰蝶
♀. HUALIAN Co., Xiulin, Xinbaiyang, 31. V. 2019 (J. Y. Liang).


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249. *Pithecops fulgens urai* Bethune-Baker, 1913 藍丸灰蝶
♂. JILONG CITY, Nuannuan, Laoliaokeng, 3. X. 2019 (L. Huang).

250. *Pithecops fulgens urai* Bethune-Baker, 1913 藍丸灰蝶
♀. XINBEI CITY, Wulai, Fushan, 18. V. 2008, reared from *Hylodesmum leptopus*, emgd. 3. V. 2008, HSU 08E44 (C. H. Lin, jr).

251. *Pithecops corvus cornix* Cowan, [1966] 黑丸灰蝶
♂. HUALIAN Co., Xiulin, Taroko, 9. XII. 2007 (C. K. Wang).

252. *Pithecops corvus cornix* Cowan, [1966] 黑丸灰蝶
♀. YILAN Co., Suao, Wushibi, 7. XI. 2006, reared from *Hylodesmum leptopus*, emgd. 22. XI. 2006, HSU 06L22 (L. H. Wang & L. W. Wu).

253. *Neopithecops zalmora* (Butler, [1870]) 黑點灰蝶
♂. TAINAN CITY, Baihe, Guanzhiling, 300m, 13. IX. 2009 (Y. F. Hsu).

254. *Neopithecops zalmora* (Butler, [1870]) 黑點灰蝶
♀. HUALIAN Co., Zhuoxi, Nanan, 9. II. 2016 (J. Y. Liang).

255. *Megisba malaya sikkima* Moore, 1884 黑星灰蝶
♂. TAINAN CITY, Guantian, Wushantou, 24. X. 2009 (Y. F. Hsu).

256. *Megisba malaya sikkima* Moore, 1884 黑星灰蝶
♀. TAIZHONG CITY, West Dist, NMNS, Botanical Garden, 5. V. 2010, reared from *Allophylus timorensis*, emgd. 26. V. 2010, HSU 10E12 (J. H. Lin, L. W. Wu & Y. F. Hsu).

257. *Udara dilecta* (Moore, 1879) 嫵琉灰蝶
♂. NANTOU Co., Renai, Huisun, 4. V. 2019 (C. W. Huang).

258. *Udara dilecta* (Moore, 1879) 嫵琉灰蝶
♂. HUALIAN Co., Xiulin, Huoranting, 3. IV. 2019 (C. W. Huang).

259. *Udara dilecta* (Moore, 1879) 嫵琉灰蝶
♀. KAOHSIUNG CITY, Taoyuan, Baoshan/ Erjituan, ca 1250m, 25. XI. 2007, reared from *Castanopsis formosana*, emgd. 8. XII. 2007, HSU 07L25 (Y. F. Hsu).


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260. *Udara albocaerulea* (Moore, 1879) (WSF) 白斑嫵琉灰蝶 (高溫 / 雨季型)
♂. YILAN Co., Datong, Mingchi, 1200m, 20. VI. 2003 (Y. F. Hsu).

261. *Udara albocaerulea* (Moore, 1879) (DSF) 白斑嫵琉灰蝶 (低溫 / 乾季型)
♂, NANTOU Co., Renai, Huisun, ca 700m, 6/7. II. 2009 (N. Y. Tsai).

262. *Udara albocaerulea* (Moore, 1879) (WSF) 白斑嫵琉灰蝶 (高溫 / 雨季型)
♀. XINZHU Co., Jianshi, Yulao, 1200m, 15. III. 2006, reared from *Viburnum luzonicum,* emgd. 20. IV. 2006, HSU 06C34 (C. C. Lu).

263. *Udara albocaerulea* (Moore, 1879) (DSF) 白斑嫵琉灰蝶 (低溫 / 乾季型)
♀. YILAN Co., Toucheng, Guishan Is., 31. III. 2007 (H. C. Huang).

264. *Acytolepis puspa myla* (Fruhstorfer, 1909) (WSF) 靛色琉灰蝶 (高溫 / 雨季型)
♂. XINZHU Co., Xinfeng, 2. IV. 2019, reared from *Quercus aliena*, emgd. 17. IV. 2019, HSU 19D11.7M (L. H. Wang & Y. M. Hsu).

265. *Acytolepis puspa myla* (Fruhstorfer, 1909) (DSF) 靛色琉灰蝶 (低溫 / 乾季型)
♂. XINBEI CITY, Wulai, 16. I. 2007 (Y. F. Hsu).

266. *Acytolepis puspa myla* (Fruhstorfer, 1909) (WSF) 靛色琉灰蝶 (高溫 / 雨季型)
♀. TAOYUAN CITY, Fuxing, Xuewunao, 22. V. 2019, reared from *Acer albopurpurascens*, emgd. 7. VI. 2019, HSU 19E18 (C. W. Huang).

267. *Acytolepis puspa myla* (Fruhstorfer, 1909) (DSF) 靛色琉灰蝶 (低溫 / 乾季型)
♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 9. IV. 2019 (C. J. Chang, C. W. Huang & H. Y. Chen).

268. *Acytolepis puspa gisca* (Fruhstorfer, 1910) 靛色琉灰蝶
♂. JINMEN Co., Jincheng, Shuitou, 14. V. 2013 (C. L. Huang).


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269. *Acytolepis puspa gisca* (Fruhstorfer, 1910) 靛色琉灰蝶
♀. LIANJIANG Co., Nangan, Shengtian Rd., 21. VIII. 2014 (B. S. Lu).

270. *Celatoxia marginata* (de Nicéville, 1884) 白紋琉灰蝶
♂. XINBEI CITY, Sanxia, Beichatianshan, 1500/1700m, 2/4. VI. 2000 (Y. T. Lo).

271. *Celatoxia marginata* (de Nicéville, 1884) 白紋琉灰蝶
♀. XINZHU Co., Jianshi, Zhenxibao, 1600m, 30. V. 2008, reared from *Quercus tatakaensis*, emgd. 15. VI. 2008, HSU 08E46 (L. H. Wang).

272. *Celastrina argiolus caphis* (Fruhstorfer, 1922) 琉灰蝶
♂. TAIZHONG CITY, Guguan, 5. VI. 1996 (Y. F. Hsu).

273. *Celastrina argiolus caphis* (Fruhstorfer, 1922) 琉灰蝶
♀. NANTOU Co., Xinyi, Dongpu, 1500m, 5. III. 2011 (C. C. Lu, jr).

274. *Celastrina sugitanii shirozui* Hsu, 1987 杉谷琉灰蝶
♂. XINZHU Co., Jianshi, Zhenxibao, 1500m, 21. III. 2011 (L. H. Wang).

275. *Celastrina sugitanii shirozui* Hsu, 1987 杉谷琉灰蝶
♀. TAOYUAN CITY, Fuxing, Lalashan, 1500m, 29. III. 2003 (J. R. Chen).

276. *Celastrina oreas arisana* (Matsumura, 1910) 大紫琉灰蝶
♂. NANTOU Co., Renai, Hehuanshan, 6. X. 2013 (J. Y. Liang).

277. *Celastrina oreas arisana* (Matsumura, 1910) 大紫琉灰蝶
♀. NANTOU Co., Renai, Hehuanxi, 1. VIII. 2018 (H. C. Huang).


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278. *Celastrina lavendularis himilcon* (Fruhstorfer, 1909) 細邊琉灰蝶
♂. TAOYUAN CITY, Fuxing, Xuanyuan, 1000m, 20. VI. 2003 (Y. F. Hsu).

279. *Celastrina lavendularis himilcon* (Fruhstorfer, 1909) 細邊琉灰蝶
♀. HUALIAN Co., Xiulin, Huoranting, 1. VI. 2019 (J. Y. Liang).

280. *Callenya melaena shonen* (Esaki, 1932) 寬邊琉灰蝶
♂. NANTOU Co.,Yuchi, Lianhuachi, 700m, 8. X. 2002, reared from *Quercus pachyloma*, emgd. 30. IX./25. X. 2008, HSU 02K21 (Y. F. Hsu).

281. *Callenya melaena shonen* (Esaki, 1932) 寬邊琉灰蝶
♀, NANTOU Co.,Yuchi, Lianhuachi, 700m, 19. II. 2016, reared from *Quercus pachyloma*, emgd. 12. III. 2016, HSU 16B20 (L. H. Wang).

282. *Phengaris daitozana* Wileman, 1908 白雀斑灰蝶
♂. TAIDONG Co., Haiduan, Xiangyang, 4. VIII. 2018 (J. Y. Liang).

283. *Phengaris daitozana* Wileman, 1908 白雀斑灰蝶
♀. TAIDONG Co., Haiduan, Xiangyang, 4. VIII. 2018 (J. Y. Liang).

284. *Phengaris atroguttata formosana* (Matsumura, 1926) 青雀斑灰蝶
♂. HUALIAN Co., Xiulin, Bilu, 5. VII. 2015 (L. Huang, J. M. Wu & H. C. Huang).

285. *Phengaris atroguttata formosana* (Matsumura, 1926) 青雀斑灰蝶
♀. HUALIAN Co., Xiulin, Guanyuan, 8. VII. 2018 (C. W. Huang).



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286. *Chilades lajus koshunensis* Matsumura, 1919 (WSF) 綺灰蝶 (高溫 / 雨季型)
♂. TAINAN CITY, Liujia, Chishan Longhuyan, 27. XI. 2019, reared from *Severinia buxifolia*, emgd. 11. XII. 2019, HSU 19L19 (C. W. Huang & H. Y. Chen).

287. *Chilades lajus koshunensis* Matsumura, 1919 (DSF) 綺灰蝶 (低溫 / 乾季型)
♂. HUALIAN Co., Zhuoxi, Nanan, 15. X. 2019 (J. Y. Liang).

288. *Chilades lajus koshunensis* Matsumura, 1919 (WSF) 綺灰蝶 (高溫 / 雨季型)
♀. TAINAN CITY, Liujia, Chishan Longhuyan, 27. XI. 2019, reared from *Severinia buxifolia*, emgd. 12. XII. 2019, HSU 19L19 (C. W. Huang & H. Y. Chen).

289. *Chilades lajus koshunensis* Matsumura, 1919 (DSF) 綺灰蝶 (低溫 / 乾季型)
♀. TAINAN CITY, Liujia, Chishan Longhuyan, 27. XI. 2019 (C. W. Huang & H. Y. Chen).

290. *Chilades pandava peripatria* Hsu, 1989 (WSF) 蘇鐵綺灰蝶 (高溫 / 雨季型)
♂. TAIPEI CITY, Daan, NTU, 4. X. 2018, reared from *Cycas revoluta*, emgd. 21. X. 2018 (L. Huang).

291. *Chilades pandava peripatria* Hsu, 1989 (DSF) 蘇鐵綺灰蝶 (低溫 / 乾季型)
♂. TAIDONG Co., Yanping, Hongye, 500m, 28. I. 2009 (M. H. Sun).

292. *Chilades pandava peripatria* Hsu, 1989 (WSF) 蘇鐵綺灰蝶 (高溫 / 雨季型)
♀. TAINAN CITY, Dongshan, 25. IV. 2016 (H. C. Huang & L. Huang).

293. *Chilades pandava peripatria* Hsu, 1989 (DSF) 蘇鐵綺灰蝶 (低溫 / 乾季型)
♀. JIAYI Co., Lantan campus, NCYU, 30. XII. 2016 (L. Huang).

294. *Chilades pandava pandava* (Horsfield, [1829]) 蘇鐵綺灰蝶
♂. JINMEN Co., Jinning, Cihu, 11. IX. 2007, reared from *Cycas revoluta*, emgd. 5. X. 2007, HSU 07J40.1 (L. W. Wu).

295. *Chilades pandava pandava* (Horsfield, [1829]) 蘇鐵綺灰蝶
♀. JINEMN Co., VIII. 2008 (Y. T. Chen).


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296. *Freyeria putli formosanus* (Matsumura, 1919) 東方晶灰蝶
♂. TAIDONG Co., Taidong, Taidong Forest Park, 30. X. 2015 (L. Huang).

297. *Freyeria putli formosanus* (Matsumura, 1919) 東方晶灰蝶
♀. KAOHSIUNG CITY, Tianliao, 9. III. 2020, reared from *Heliotropium procumbens*, emgd. 27. III. 2020, HSU 20C28 (Y. F. Hsu).

298. *Sibosia burnii etymander* (Fruhstorfer, 1908) 白點褐蜆蝶
♂. TAIDONG Co., Yanping, Hongye, 20. IV. 2010, emgd. 10. V. 2010 (L. H. Wang).

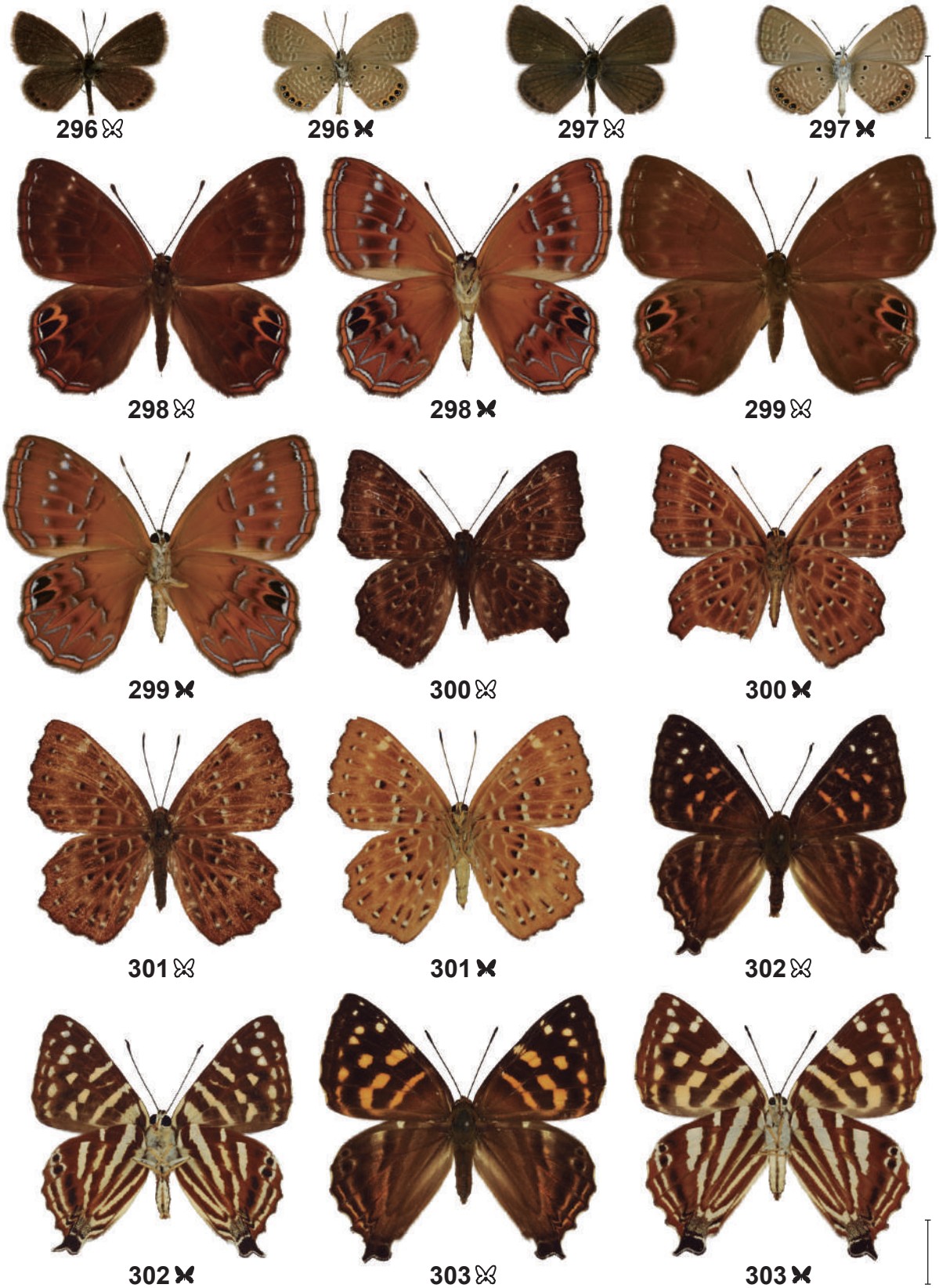
299. *Sibosia burnii etymander* (Fruhstorfer, 1908) 白點褐蜆蝶
♀. TAIDONG Co., Yanping, Hongye, 500m, 25. VI. 2010 (Y. T. Lo).

300. *Zemeros flegyas* (Cramer, [1780]) 波蜆蝶
♂. LIANJIANG Co., Beigan, Leishan, 20. XI. 2013 (L. H. Wang & H. Y. Lee).

301. *Zemeros flegyas* (Cramer, [1780]) 波蜆蝶
♀. HONGKONG: Saikung, Yungshueo, 18. XII. 2018 (Y. F. Hsu).

302. *Dodona formosana* Matsumura, 1919 臺灣尾蜆蝶
♂. XINBEI CITY, Shiding, Ergeshan, 25. V. 2004, reared from *Myrsine seguinii*, emgd. 7. VII. 2004, HSU 04E73 (Y. F. Hsu).

303. *Dodona formosana* Matsumura, 1919 臺灣尾蜆蝶
♀. XINBEI CITY, Fushan, Kalamoji Trail, 550m, 25. V. 2012 (Y. F. Hsu).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304. *Prosotas gracilis gracilis* (Röber, 1886) 窄翅波灰蝶

♀. TAIDONG Co., Lanyu, Sidaogou, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang).

305. *Lycaena phlaeas* (Linnaeus, 1761) 紅灰蝶

♂. Tongpo, Formosa [= NANTOU Co., Xinyi, Dongpu], 24. VII. 1940 (K. Kodahira) (TARI).

306. *Jamides cleodus* (C. & R. Felder, [1865]) 閃雅波灰蝶

♀. PHILIPPINES, BATANES Prov., Sabtang Is., 19. III. 2014, reared from *Millettia pinnata*, emgd. 8. IV. 2014, HSU 14C30 (C. L. Huang & H. C. Huang).

307. *Niphanda fusca formosensis* Matsumura, 1929 黑灰蝶

♀. Holotype, "*Niphanda fusca formosensis* n. det. Matsumura", "Formosa Matsumura 3. VII. 21" (SEHU).



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Note. Scale bars represent 1 mm.

308. *Curetis acuta formosana* Fruhstorfer, 1908 銀灰蝶

♂. HUALIAN Co., Zhuoxi, Nanan, 9. II. 2016 (J. Y. Liang) (genitalia preparation JYL445).

309. *Curetis brunnea* Wileman, 1909 臺灣銀灰蝶

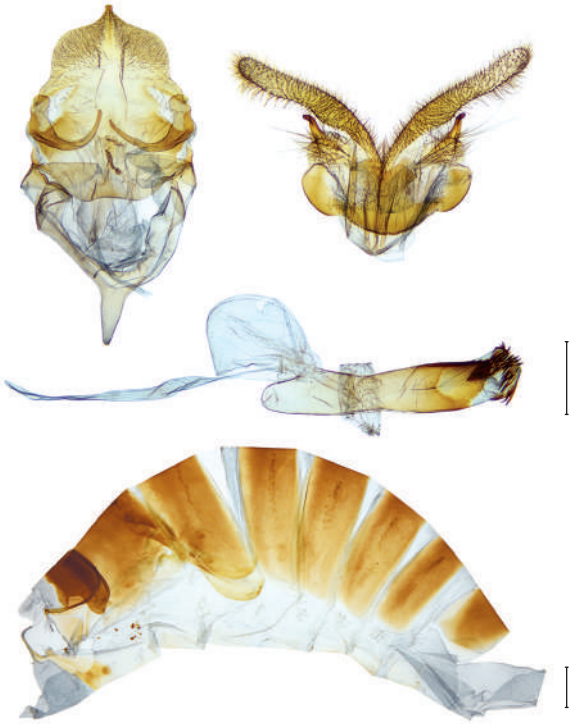
♂. TAIDONG Co., Zhangbin, Ningpu, 2. IX. 2017 (J. Y. Liang) (genitalia preparation JYL323).

310. *Taraka hamada thalaba* Fruhstorfer, 1922 蚜灰蝶

♂. HUALIAN Co., Yuli, Chikeshan, 30. VI. 2016 (J. Y. Liang) (genitalia preparation JYL402).

311. *Taraka hamada isona* Fruhstorfer, 1922 蚜灰蝶

♂. CHINA: FUJIAN Prov., NANPING CITY, Wiyishan, 200/300m, 25/26. X. 2007 (Y. F. Hsu) (genitalia preparation JYL626).



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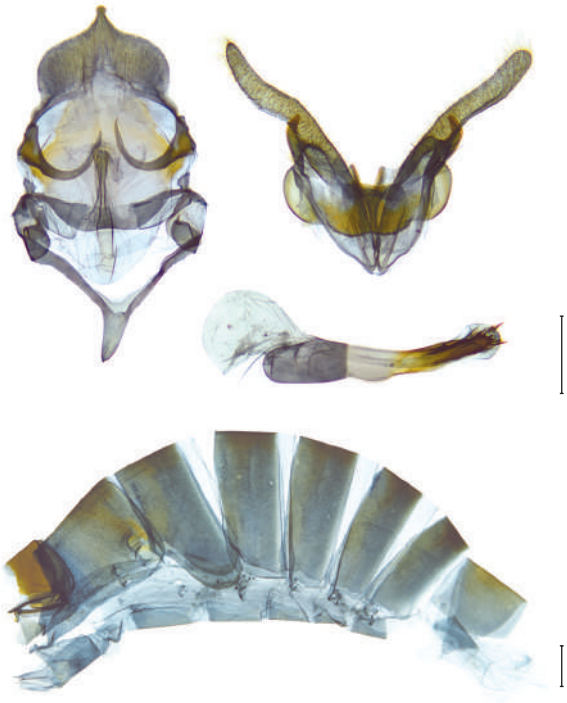

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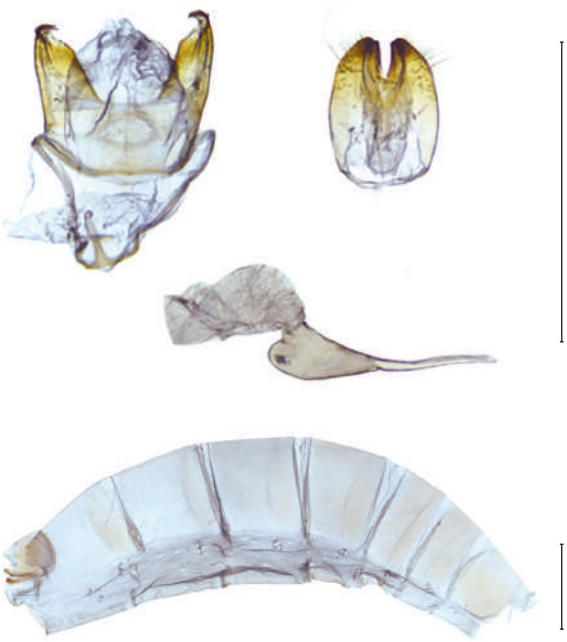

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312. *Spalgis epeus dilama* (Moore, 1878) 熙灰蝶

♂. TAINAN CITY, Xinhua, Luguxilaya, 31. VII. 2016 (L. Huang) (genitalia preparation JYL408).

313. *Cigaritis lohita formosanus* (Moore, 1877) 虎灰蝶

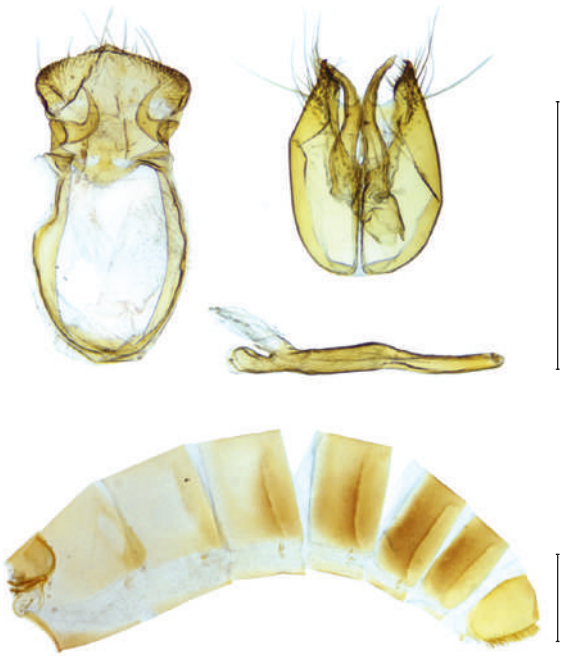
♂. TAIPEI CITY, Nangang, Academia Sinica, 18. V. 2015 (L. Huang) (genitalia preparation CJC120).

314. *Cigaritis kuyanianus* (Matsumura, 1919) 蓬萊虎灰蝶

♂. NANTOU Co., Renai, Huisun, 5. VIII. 2010 (C. L. Huang) (genitalia preparation CJC110).

315. *Cigaritis syama lamuae* Hsu & Liang, 2020 三斑虎灰蝶

♂. NANTOU CO., Renai, Wushe, 26. VII. 2016 (J. Y. Liang) (genitalia preparation JYL446).



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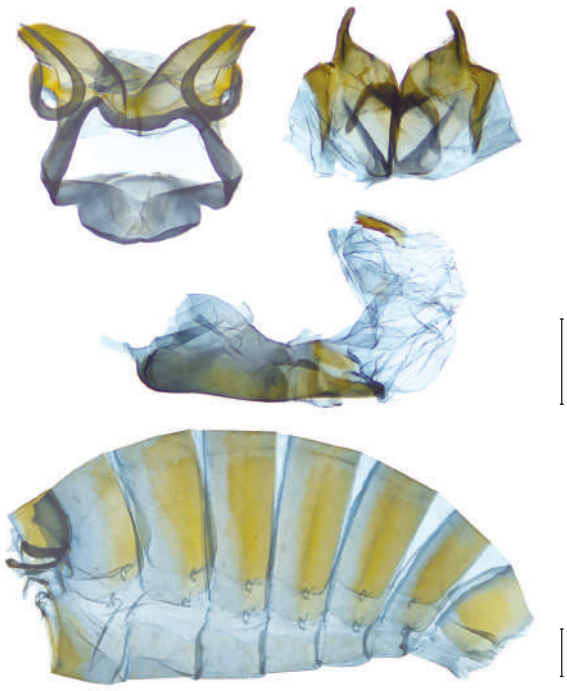

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316. *Heliophorus ila matsumurae* (Fruhstorfer, 1908) 紫日灰蝶

♂. TAIDONG Co., Haiduan, Liyuan, 1793m, 3. VIII. 2018 (J. Y. Liang) (genitalia preparation JYL332).

317. *Heliophorus ila chinensis* (Fruhstorfer, 1908) 紫日灰蝶

♂. LIANJIANG Co., Nangan, 9. IV. 2014 (H. Y. Lee) (genitalia preparation JYL465).

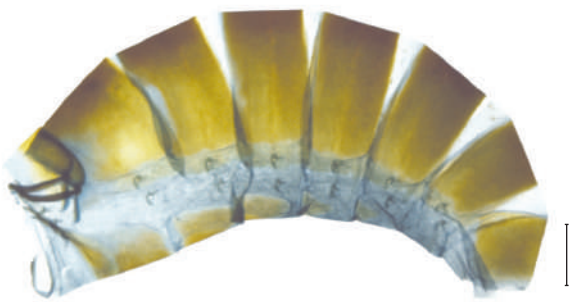
318. *Arhopala ganesa formosana* Kato, 1930 蔚青紫灰蝶

♂. KAOHSIUNG CITY, Tengzhi/ Shishan, 18. VI. 1989 (T. C. Li) (genitalia preparation JLY693).

319. *Arhopala birmana asakurae* (Matsumura, 1910) 小紫灰蝶

♂. NANTOU Co., Renai, Huisun, 4. XI. 2018 (Y. F. Hsu) (genitalia preparation JYL583).





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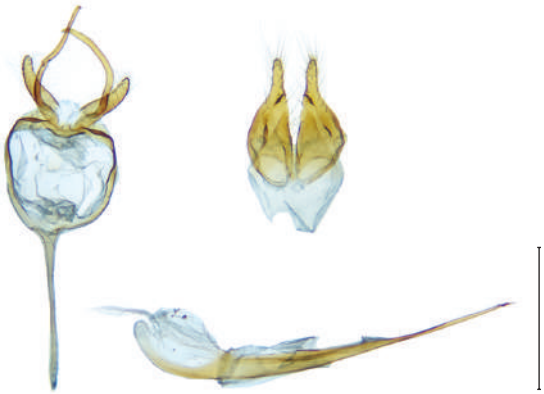



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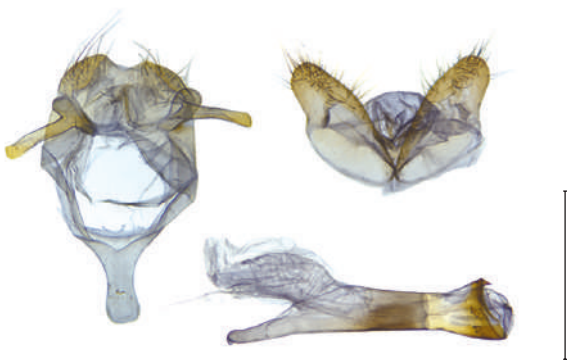



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320. *Arhopala japonica* (Murray, 1875) 日本紫灰蝶

♂. TAIZHONG CITY, Heping, Malunshan, 2. IV. 2015 (genitalia preparation CJC114).

321. *Arhopala paramuta horishana* Matsumura, 1910 暗色紫灰蝶

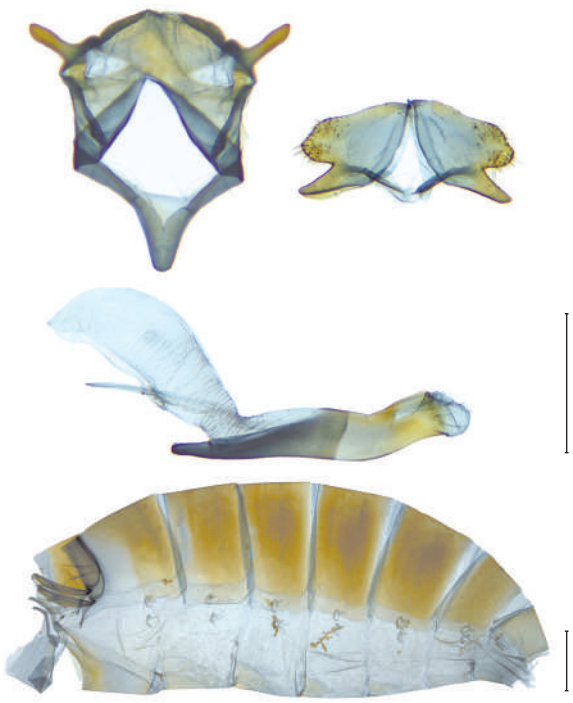
♂. PINGDONG Co., Shizi, Shuangliu, 200/400m, 30. IV. 2006 (Y. F. Hsu) (genitalia preparation JYL710).

322. *Arhopala bazalus turbata* (Butler, [1882]) 燕尾紫灰蝶

♂. XINBEI CITY, Wulai, Fushan, 16. VII. 2019 (C. W. Huang & H. Y. Chen) (genitalia preparation JYL530).

323. *Arhopala rama ramosa* (Evans, 1925) 短尾紫灰蝶

♂. CHINA: FUJIAN Prov., FUZHOU CITY, Fuzhou Forest Park, 16. I. 2018 (Y. F. Hsu) (genitalia preparation JYL682).



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324. *Mahathala ameria hainani* Bethune-Baker, 1903 凹翅紫灰蝶

♂. TAIPEI CITY, Beitou, Erziping, 15. IV. 2005, reared from *Mallotus repandus*, emgd. 16. V. 2005, HSU 05D30 (J. M. Wu, C. L. Huang & W. C. Chang) (genitalia preparation JYL581).

325. *Iraota timoleon* (Stoll, [1790]) 異灰蝶

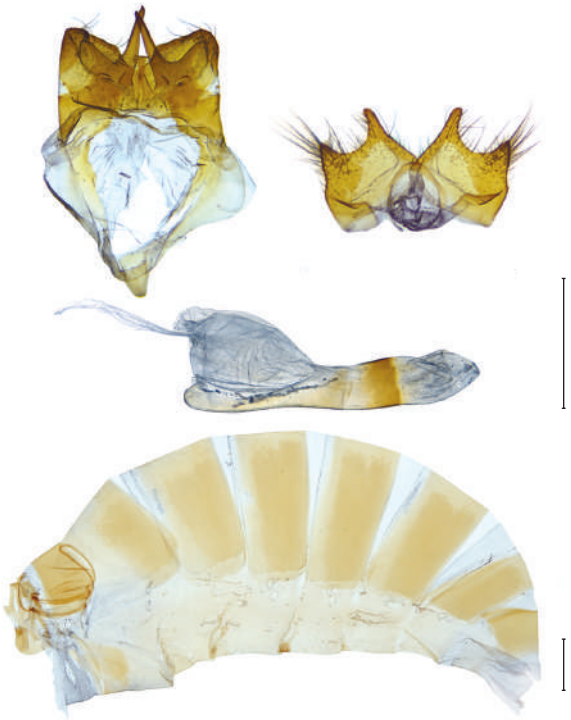
♂. JINMEN Co., Jinhu, Botanical Garden, 18/20. XI. 2013 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL629).

326. *Japonica patungkoanui* Murayama, 1956 臺灣焰灰蝶

♂. NANTOU Co., Renai, Songgang, 21. V. 2005 (L. H. Wang) (genitalia preparation JYL598).

327. *Ussuriana michaelis takarana* (Araki & Hirayama, 1941) 赭灰蝶

♂. NANTOU Co., Renai, Tunyuan, 3. II. 2012, reared from *Fraxinus insularis*, emgd. 4. IV. 2012, HSU 12B02 (L. H. Wang) (genitalia preparation JYL597).



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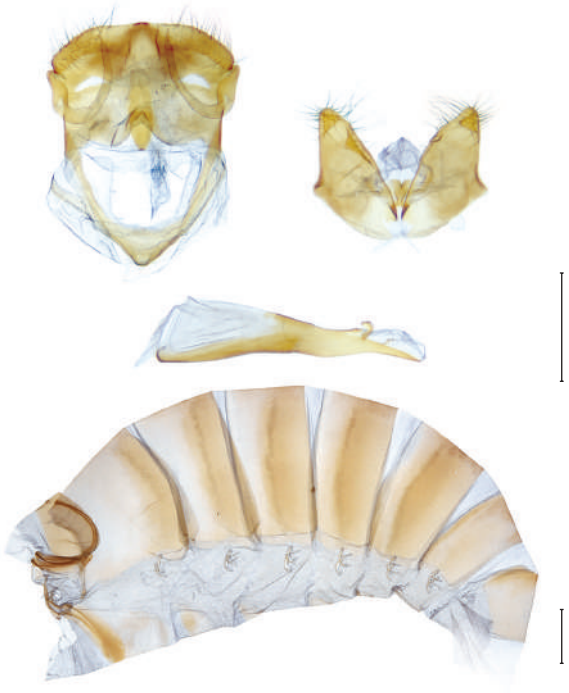

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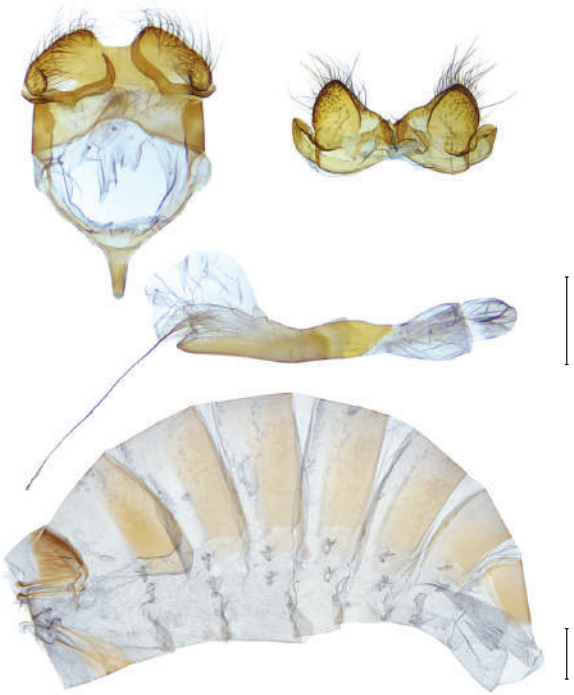

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328. *Cordelia comes wilemaniella* (Matsumura, 1929) 珂灰蝶

♂. HUALIAN Co., Xiulin, Wujiabengshan, 1900m, 15. VII. 2008 (L. H. Wang) (genitalia preparation JYL650).

329. *Araragi enthea morisonensis* (Inoue, 1942) 墨點灰蝶

♂. HUALIAN Co., Xiulin, Bilu, 10. V. 2015 , reared from *Juglans cathayensis*, emgd. 2. VI. 2015, HSU 15E80 (L. H. Wang, R. J. Lin & Y. C. Lin) (genitalia preparation JYL588).

330. *Antigius attilia obsoletus* (Takeuchi, 1929) 折線灰蝶

♂. NANTOU Co., Renai, Youshi/Songgnag, data missing, ex Mokusei Museum Collection (genitalia preparaion JYL696).

331. *Wagimo insularis* Shirôzu, 1957 臺灣線灰蝶

♂. YILAN Co., Datong, Siyuanyakou, 1800m, VII. 2018 (Y. C. Hong) (genitalia preparation JYL674).



328



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332. *Leucantigius atayalicus* (Shirôzu & Murayama, 1943) 瓏灰蝶

♂. HUALIAN Co., Xiulin, Huoranting, 31. V. 2019 (C. W. Huang) (genitalia preparation JYL472).

333. *Ravenna nivea* (Nire, 1920) 朗灰蝶

♂. TAIZHONG CITY, Heping, Malunshan, 23. II. 2018, reared from *Quercus glauca*, emgd. 13. IV. 2018, HSU 18B6 (H. Y. Lin) (genitalia preparation JYL655).

334. *Iratsume orsedice suzukii* (Sonan, 1940) 珠灰蝶

♂. HUALIAN Co., Xiulin, Bilu, 9. VII. 2018 (C. W. Huang) (genitalia preparation JYL454).

335. *Euaspa milionia formosana* Nomura, 1931 銼灰蝶

♂. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 23. VI. 2006 (genitalia preparation JYL673).



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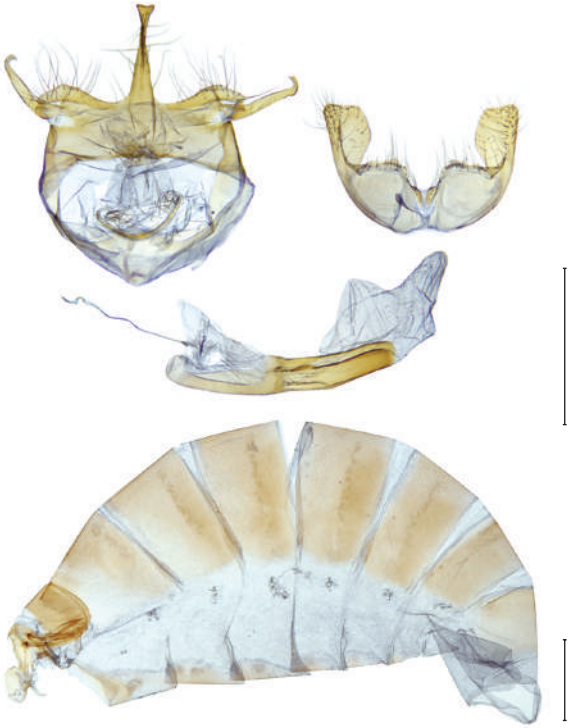

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336. *Euaspa forsteri* (Esaki & Shirôzu, 1943) 伏氏錚灰蝶

♂. TAOYUAN CITY, Fuxing, Sileng, 1200m, 22. II. 2005, reared from *Castanopsis carlesii* [= *Castanopsis cuspidata*], emgd. 20. IV. 2005, HSU 05B25 (L. H. Wang & C. L. Huang) (genitalia preparation JYL697).

337. *Euaspa tayal* (Esaki & Shirôzu, 1943) 泰雅錚灰蝶

♂. XINBEI CITY, Wulai, Mogushan, 1. VII. 1981 (H. L. Huang) (genitalia preparation JYL715).

338. *Teratozephyrus arisanus* (Wileman, 1909) 阿里山鐵灰蝶

♂. HUALIAN Co., Xiulin, Bilu, 26. V. 1982 (Y. F. Hsu) (genitalia preparation JYL622).

339. *Teratozephyrus yugaii* (Kano, 1928) 臺灣鐵灰蝶

♂. HUALIAN Co., Xiulin, Panshishan, 3300m, 20. VII. 2009 (N. Y. Tsai) (genitalia preparation JYL621).



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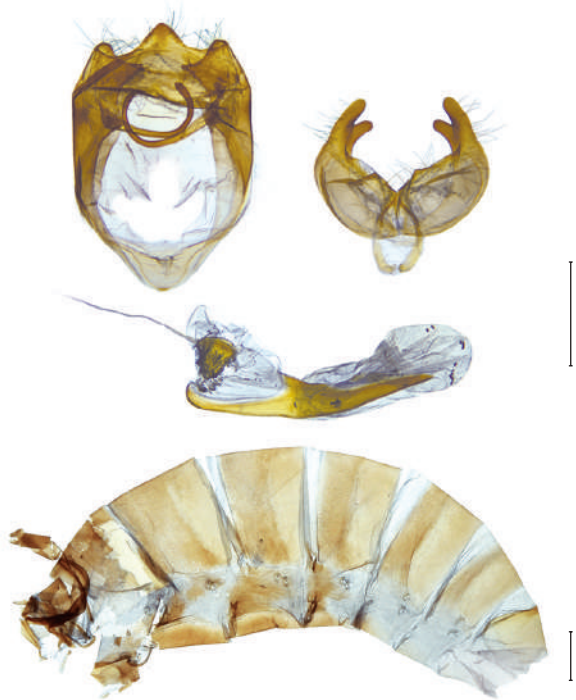

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340. *Teratozephyrus elatus* Hsu & Lu, 2005 高山鐵灰蝶

♂. HUALIAN Co., Xiulin, Guanyuan, 2600/2700m, 19. V. 2000, reared from *Quercus spinosa*, emgd. 17/18. VI. 2000, HSU 00E22, paratype (Y. F. Hsu, C. C. Lu & C. Y. Hung) (genitalia preparation JYL627).

341. *Neozephyrus taiwanus* (Wileman, 1908) 臺灣楹翠灰蝶

♂. HUALIAN Co., Xiulin, Bilu, 14/15. VII. 2019 (C. W. Huang) (genitalia preparation JYL617).

342. *Chrysozephyrus teisoi* (Sonan, 1941) 碧翠灰蝶

♂. HUALIAN Co., Xiulin, Bilu, 2. VII. 2018 (L. H. Wang) (genitalia preparation JYL505).

343. *Chrysozephyrus nishikaze* (Araki & Sibatani, 1941) 西風翠灰蝶

♂. HUALIAN Co., Xiulin, Bilu, 9. VII. 2018 (C. W. Huang) (genitalia preparation JLY586).



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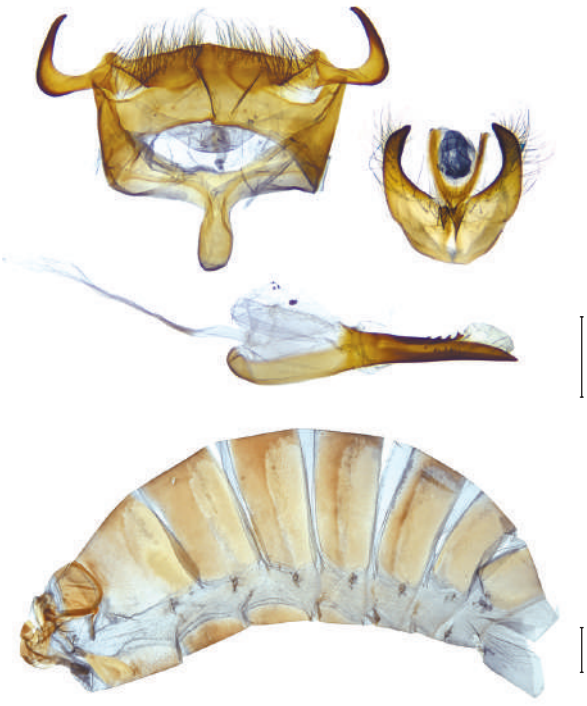

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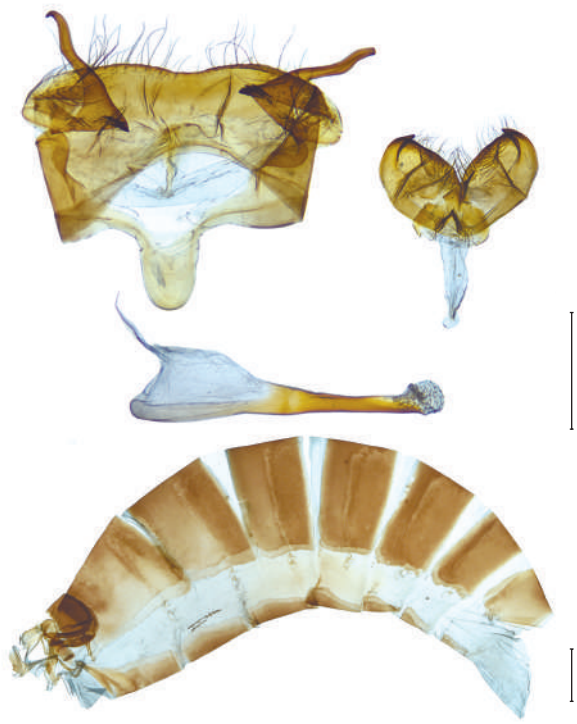

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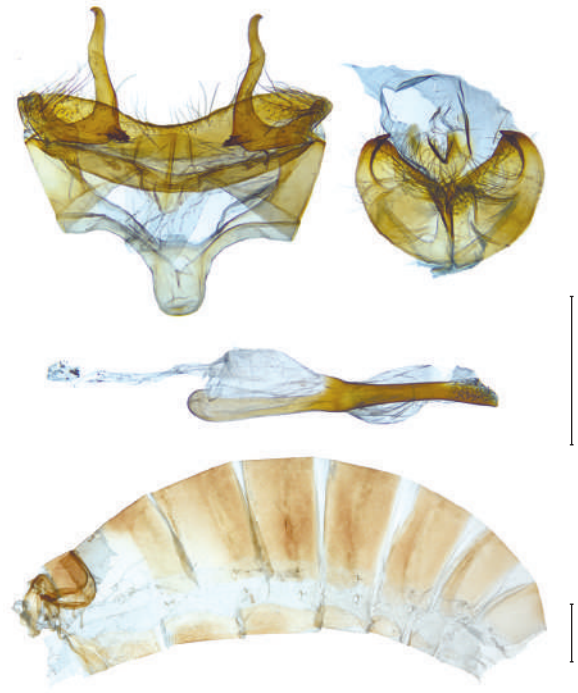
344. *Chrysozephyrus kabrua niitakanus* (Kano, 1928) 黃閃翠灰蝶
♂. KAOHSIUNG CITY, Taoyuan, Zhongzhiguan, 3. VII. 2015 (C. W. Huang & A. L. Hui) (genitalia preparation JYL512).

345. *Chrysozephyrus disparatus pseudotaiwanus* (Howarth, 1957) 小翠灰蝶
♂. XINZHU Co., Jianshi, Xiuluan, 19. V. 2019 (Z. L. Chen) (genitalia preparation JYL504).

346. *Chrysozephyrus rarasanus* (Matsumura, 1939) 拉拉山翠灰蝶
♂. TAOYUAN CITY, Fuxing, Beichatianshan, 19. VI. 2019 (L. H. Wang) (genitalia preparation JYL489).

347. *Chrysozephyrus yuchingkinus* Murayama & Shimonoya, 1960 清金翠灰蝶
♂. XINBEI CITY, Sanxia, Beichatianshan, 1500/1700m, 2/4. VI. 2000 (C. Y. Hung, C. C. Lu & Y. T. Lo) (genitalia preparation JYL635).



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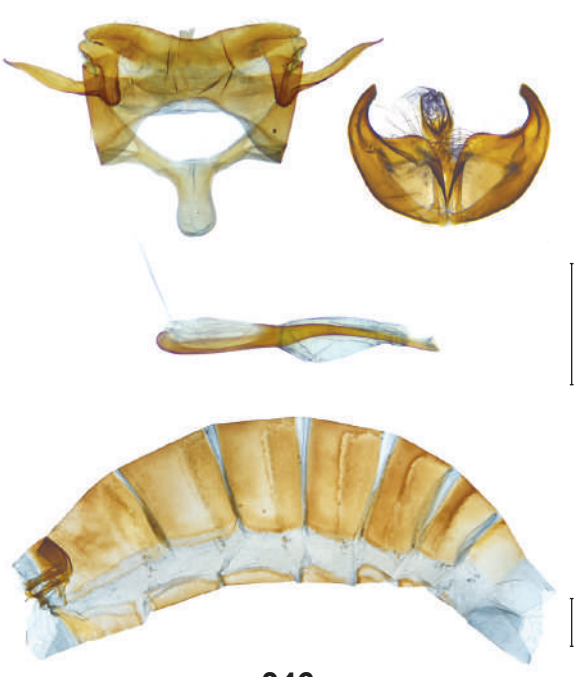

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348. *Chrysozephyrus splendidulus* Murayama & Shimonoya, 1965 單線翠灰蝶
♂. TAOYUAN CITY, Fuxing, Fufushan, 17. I. 2018, reared from *Quercus gilva*, emgd. VI. 2018, HSU 18A6.1 (C. J. Chang, L. H. Wang, H. Y. Lee &. C. W. Huang) (genitalia preparation JYL552).

349. *Chrysozephyrus lingi* Okano & Okura, 1969 白芒翠灰蝶
♂. TAOYUAN CITY, Fuxing, Lalashan, 14. VI. 1986 (C. K. Lo) (genitalia preparation JYL631).

350. *Chrysozephyrus mushaellus* (Matsumura, 1938) 霧社翠灰蝶
♂. TAIDONG Co., Haiduan, Southern Cross-Island Road, 160K, 23/24. VI. 2016 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL456).

351. *Sibataniozephyrus kuafui* Hsu & Lin, 1994 夸父璀灰蝶
♂. YILAN Co., Nanao, Cuifenghu, 2019 (L. H. Wang) (genitalia preparation JYL576).



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352. *Amblopala avidiena y-fasciata* (Sonan, 1929) 尖灰蝶

♂. NANTOU Co., Renai, Tunyuan, 1500m, 26. II. 2011 (Y. F. Hsu) (genitalia preparation JYL698).

353. *Tajuria yajna caerulea* Nire, 1920 褐翅青灰蝶

♂. TAOYUAN CITY, Fuxing, Baling, 30. VII. 2018 (L. Huang) (genitalia preparation JYL492).

354. *Tajuria diaeus karenkonis* Matsumura, 1929 白腹青灰蝶

♂. TAOYUAN CITY, Fuxing, Xuewunao, 7. VI. 2017 (C. W. Huang) (genitalia preparation JYL457).

355. *Tajuria illurgis tattaka* (Araki, 1949) 漣紋青灰蝶

♂. TAOYUAN CITY, Fuxing, Xuewunao, 2. VI. 2019 (Y. Q. Yeh) (genitalia preparation JYL618).



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356. *Ancema ctesia cakravasti* (Fruhstorfer, 1909) 鈿灰蝶

♂. XINZHU Co., Jianshi, 13. VII. 2019 (Y. Q. Yeh) (genitalia preparation JYL654).

357. *Hypolycaena kina inari* (Wileman, 1908) 蘭灰蝶

♂. NANTOU Co., Yuchi, Lianhuachi, 22. VI. 2016 (W. Y. Wang) (genitalia preparation JYL410).

358. *Hypolycaena othona* Hewitson, [1865] 熱帶蘭灰蝶

♂. THAILAND: LOEI Prov., Phi Hin Rong, la Nat'l Park, Lan Hin Tak, 1100m, 14. IX. 2007 (Y. F. Hsu) (genitalia preparation JYL706).

359. *Deudorix epijarbas menesicles* Fruhstorfer, 1912 玳灰蝶

♂. TAIDONG Co., Lanyu, Zhongaiqiao, 20. VIII. 2015 (R. Z. Chang) (genitalia preparation CJC116).



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360. *Deudorix sankakuhonis* (Matsumura, 1938) 三角峰玳灰蝶

♂. TAOYUAN CITY, Fuxing, Baling, 2. X. 2018, reared from *Quercus glauca*, emgd. 30. XII. 2018, HSU 18K01 (L. H. Wang) (genitalia preparation JYL653).

361. *Deudorix rapaloides* (Naritomi, 1941) 淡黑玳灰蝶

♂. TAIPEI CITY, Shilin, Tianxiyuan, ca 300m, 21. IX. 2010 (W. H. Chien) (genitalia preparation JYL699).

362. *Artipe eryx horiella* (Matsumura, 1929) 綠灰蝶

♂. TAIPEI CITY, Neihu, Daluntou, 29. IX. 2014, reared from *Gardenia jasminoides*, emgd. 19. X. 2014, HSU 14J77 (W. J. Lin) (genitalia preparation JYL542).

363. *Artipe eryx eryx* (Linnaeus, 1771) 綠灰蝶

♂. LIANJIANG Co., Beigan, Qinbi, 26. VI. 2019 (Y. Y. Lu) (genitalia preparation JYL494).



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364. *Sinthusa chandrana kuyaniana* (Matsumura, 1919) 閃灰蝶

♂. TAOYUAN CITY, Fuxing, Xuanyuan, 5. IV. 2017 (L. Huang) (genitalia preparation JYL468).

365. *Rapala caerulea liliacea* Nire, 1920 堇彩燕灰蝶

♂. NANTOU Co., Renai, Qingjing Farm, 1920m, 8. V. 2011 (C. C. Lu) (genitalia preparation JYL556).

366. *Rapala varuna formosana* Fruhstorfer, 1912 燕灰蝶

♂. PINGDONG Co., Chunri, Dahan Forest Trail, 20K, 5. VII. 2015 (C. W. Huang) (genitalia preparation CJC118).

367. *Rapala nissa hirayamana* Matsumura, 1926 霓彩燕灰蝶

♂. HUALIAN Co., Xiulin, Lushui, 9. V. 2018 (Y. C. Lin, R. J. Lin & C. J. Chang) (genitalia preparation JYL533).



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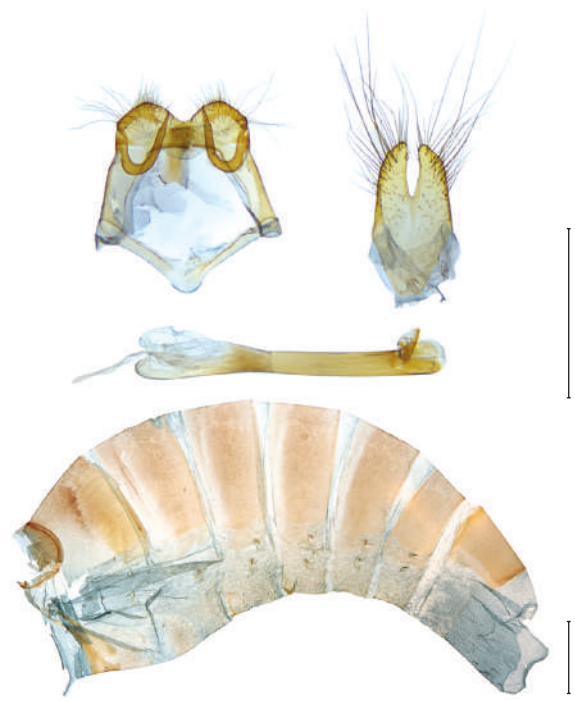

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368. *Rapala takasagonis* Matsumura, 1929 高砂燕灰蝶

♂. YILAN Co., Nanao, Dabaishan, 1200m, 3. VIII. 2016 (L. Huang) (genitalia preparation JYL554).

369. *Rapala manea schistacea* (Moore, 1879) 泥黃燕灰蝶

♂. JINEMN Co., 19. XI. 2013 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL565).

370. *Satyrium austrinum* (Murayama, 1943) 南方灑灰蝶

♂. TAOYUAN CITY, Fuxing, Ronghua, 9. IV. 2018 (C. J. Chang, C. W. Huang & H. Y. Chen) (genitalia preparation JYL510).

371. *Satyrium formosanum* (Matsumura, 1919) 臺灣灑灰蝶

♂. HUALIAN Co., Guangfu, Maogongyue, 5. V. 2018 (J. Y. Liang) (genitalia preparation JYL311).



368



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372. *Satyrium eximium mushanum* (Matsumura, 1929) 秀灑灰蝶

♂. NANTOU Co., Renai, Tunyuan, 25. V. 2010 (C. L. Huang & C. K. Wang) (genitalia preparation CJC149).

373. *Satyrium tanakai* (Shirôzu, 1943) 田中灑灰蝶

♂. PINGDONG Co., Chunri, Dahan Forest Trail 18+K, 14/19. V. 2016 (C. W. Haung & T. Y. Liu) (genitalia preparation JYL515).

374. *Satyrium esakii* (Shirôzu, 1942) 江崎灑灰蝶

♂. TAIDONG Co., Haiduan, Xiangyang, ca 2300m, 11. VI. 2002 (J. P. Su) (genitalia preparation JYL700).

375. *Satyrium inouei* (Shirôzu, 1959) 井上灑灰蝶

♂. HUALIAN Co., Xiulin, Bilu/ Guanyuan, 125/125.5 km, ca 2100m, 2. VII. 2008 (C. C. Lu, jr) (genitalia preparation JYL702).



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376. *Fixsenia watarii* (Matsumura, 1927) 渡氏烏灰蝶

♂. NANTOU Co., Renai, Tunyuan, 25. V. 2010 (C. L. Huang) (genitalia preparation CJC124).

377. *Horaga onyx moltrechti* Matsumura, 1919 鑽灰蝶

♂. XINBEI CITY, Xindian, Hemeishan, 5. V. 2018 (Z. Y. Shen) (genitalia preparation JYL569).

378. *Horaga albimacula triumphalis* Murayama & Shibatani, 1943 小鑽灰蝶

♂. TAIPEI CITY, Neihu, Jiannan, 3. VII. 2019 (L. Huang) (genitalia preparation JYL518).

379. *Horaga rarasana* Sonan, 1936 拉拉山鑽灰蝶

♂. YILAN Co., Yuanshan, Caopi, 700m, 9. V. 2011 (W. Y. Wang) (genitalia preparation JYL543).



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380. *Catapaecilma major moltrechti* (Wileman, 1908) 三尾灰蝶

♂. NANTOU Co., Renai, Huisun, 10. VII. 2015 (R. Z. Chang) (genitalia preparation JYL478).

381. *Orthomiella rantaizana* Wileman, 1910 巒大鋸灰蝶

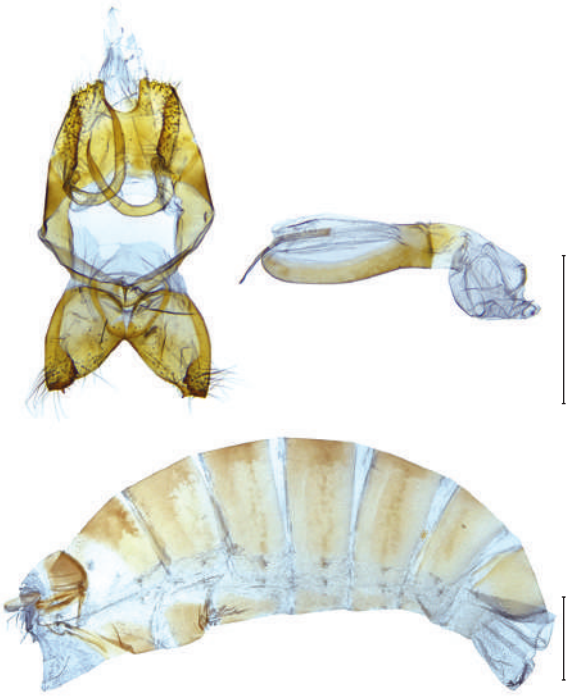
♂. XINZHU Co., Jianshi, Zhenxibao, 10. IV. 2019 (C. W. Huang) (genitalia preparation JYL591).

382. *Nacaduba kurava therasia* Fruhstorfer, 1916 大娜波灰蝶

♂. PINGDONG Co., Shizi, Shuangliu, 9. VI. 2019 (Y. F. Hsu) (genitalia preparation JYL568).

383. *Nacaduba kurava euplea* Fruhstorfer, 1916 大娜波灰蝶

♂. CHINA: GUANGZHOU CITY, Baiyunshan, 100m (Y. F. Hsu) (genitalia preparation JYL704).



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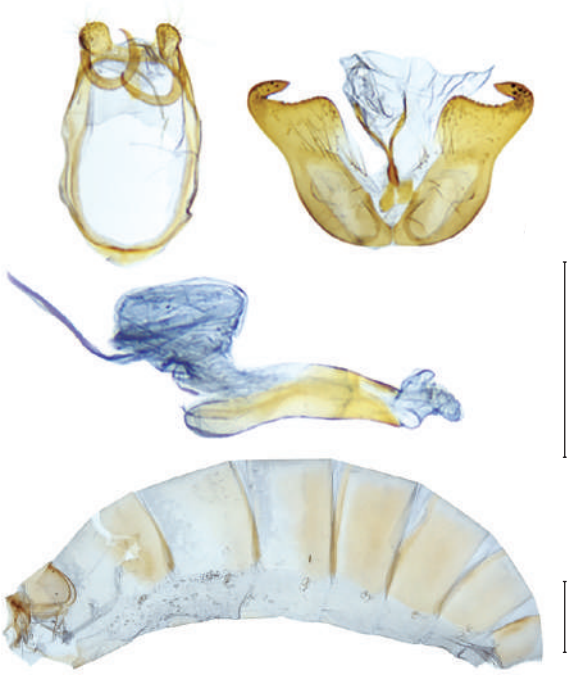

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384. *Nacaduba beroe asakusa* Fruhstorfer, 1916 南方娜波灰蝶

♂. KAOHSIUNG CITY, Taoyuan, Meishan, 850m, 30. III. 2017 (L. Huang & H. C. Huang) (genitalia preparation JYL578).

385. *Nacaduba berenice leei* Hsu, 1990 熱帶娜波灰蝶

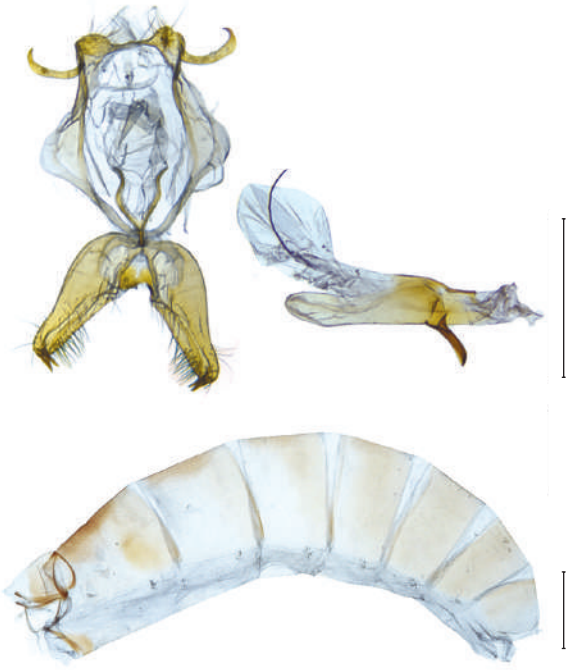
♂. TAIDONG Co., Lanyu, Zhongaiqiao, 28. VIII. 2015 (L. Huang) (genitalia preparation JYL497).

386. *Nacaduba pactolus hainani* Bethune-Baker, 1914 暗色娜波灰蝶

♂. XINBEI CITY, Xindian, Hemeishan, 30. XI. 2019 (C. W. Huang & C. J. Chang) (genitalia preparation JYL709).

387. *Nothodanis schaeffera* (Eschscholtz, 1821) 黑列波灰蝶

♂. TAIDONG Co., Lanyu, Qiwei, ca 200m, 17/18. V. 2009 (N. Y. Tsai & C. H. Lin, jr) (genitalia preparation JYL644).



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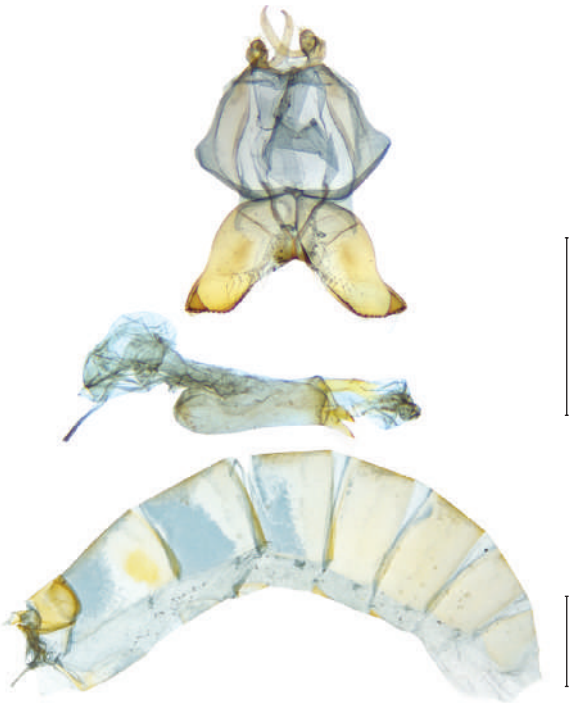

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388. *Catopyrops ancyra almora* (Druce, 1873) 曲波灰蝶

♂. TAIDONG Co., Lanyu, Zhongaiqiao, 24. VIII. 2013 (C. L. Huang) (genitalia preparation JYL611).

389. *Prosotas nora formosana* (Fruhstorfer, 1916) 波灰蝶

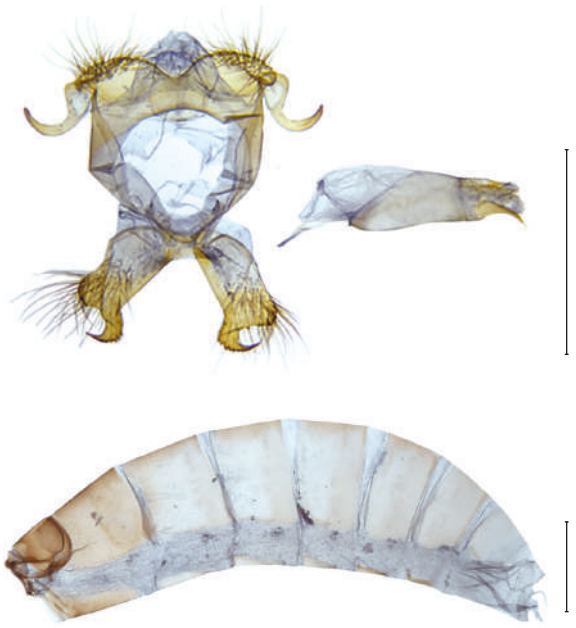
♂. NANTOU Co., Renai, Huisun, 4. XI. 2018 (Y. F. Hsu) (genitalia preparation JYL432).

390. *Prosotas dubiosa asbolodes* Hsu & Yen, 2006 密紋波灰蝶

♂. TAINAN CITY, Liujia, Chishan Longhuyan, 24. IV. 2019 (L. Huang) (genitalia preparation JYL450).

391. *Jamides bochus formosanus* Fruhstorfer, 1909 雅波灰蝶

♂. TAOYUAN CITY, Fuxing, Shangbaling, 14. VII. 2015 (R. Z. Chang) (genitalia preparation JYL427).



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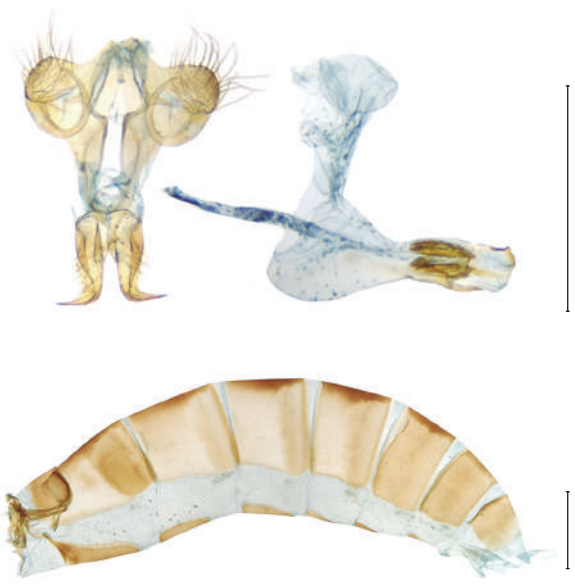

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392. *Jamides bochus bochus* (Stoll, [1782]) 雅波灰蝶

♂. LIANJIANG Co., Beigan, Leishan, 20. XI. 2013 (L. H. Wang & H. Y. Lee) (genitalia preparation JYL607).

393. *Jamides bochus herodicus* (Fruhstorfer, 1915) 雅波灰蝶

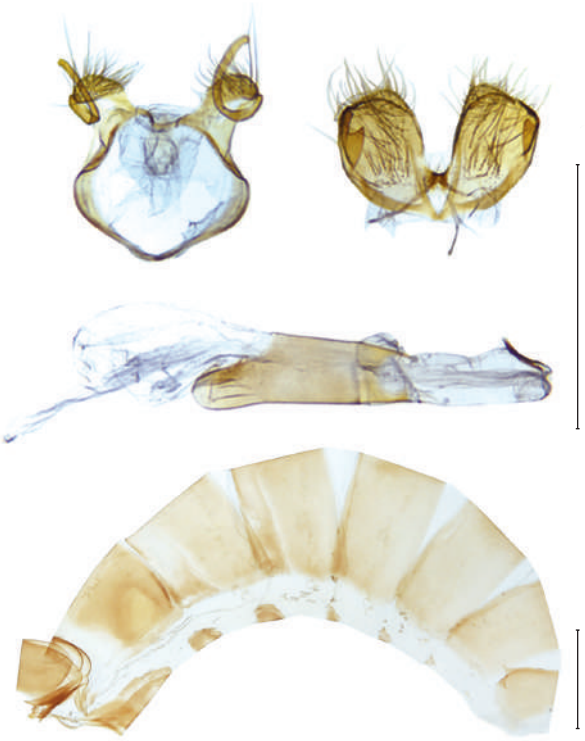
♂. TAIDONG Co., Lanyu, Sidaogou, 1/3. V. 2003 (Y. F. Hsu, Y. C. Hsu & Y. Lo) (genitalia preparation JYL708).

394. *Jamides alecto dromicus* (Fruhstorfer, 1910) 淡青雅波灰蝶

♂. XINZHU Co., Jianshi, Lidongshan, 4. X. 2015 (L. Huang) (genitalia preparation CJC143).

395. *Jamides celeno lydanus* (Fruhstorfer, 1910) 白雅波灰蝶

♂. HUALIAN Co., Yuli, Antong, 30. I. 2017 (J. Y. Liang) (genitalia preparation JYL435).



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396. *Catochrysops panormus exiguus* (Distant, 1886) 青珈波灰蝶

♂. TAINAN CITY, Xinhua, Zhiyi Forest Farm, 25. XI. 2016 (L. Huang) (genitalia preparation JYL320).

397. *Catochrysops strabo luzonensis* Tite, 1959 紫珈波灰蝶

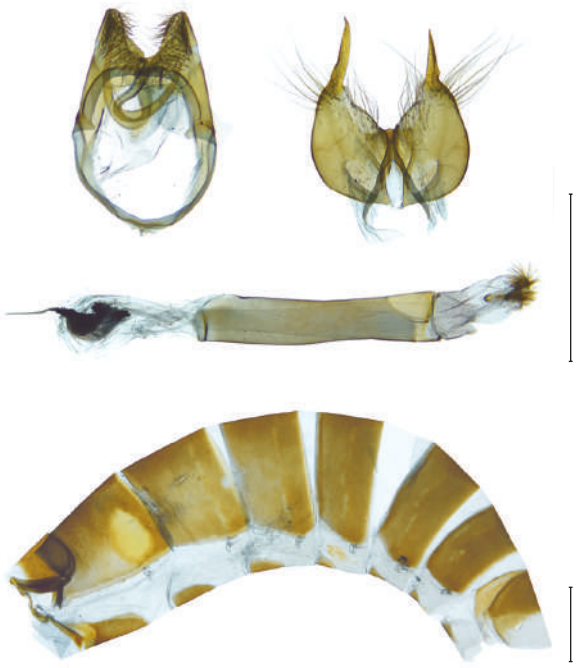
♂. TAIDONG Co., Lanyu, 28. VII. 2010 (genitalia preparation JYL522).

398. *Euchrysops cnejus* (Fabricius, 1798) 奇波灰蝶

♂. JINMEN Co., Jincheng, Gugang, 15. VIII. 2015 (L. Huang) (genitalia preparation JYL539).

399. *Lampides boeticus* (Linnaeus, 1767) 豆波灰蝶

♂. PENGHU Co., Jingan, 20. XI. 2013 (C. L. Huang & C. W. Huang) (genitalia preparation JYL491).



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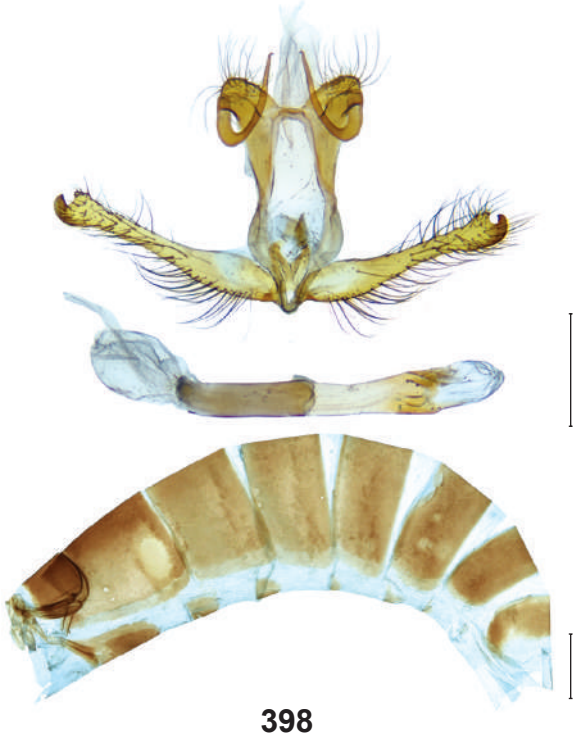

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400. *Leptotes plinius* (Fabricius, 1793) 細灰蝶

♂. JINMEN Co., Jinning, 5. XI. 2015 (H. C. Huang) (genitalia preparation JYL418).

401. *Zizeeria maha okinawana* (Matsumura, 1929) 藍灰蝶

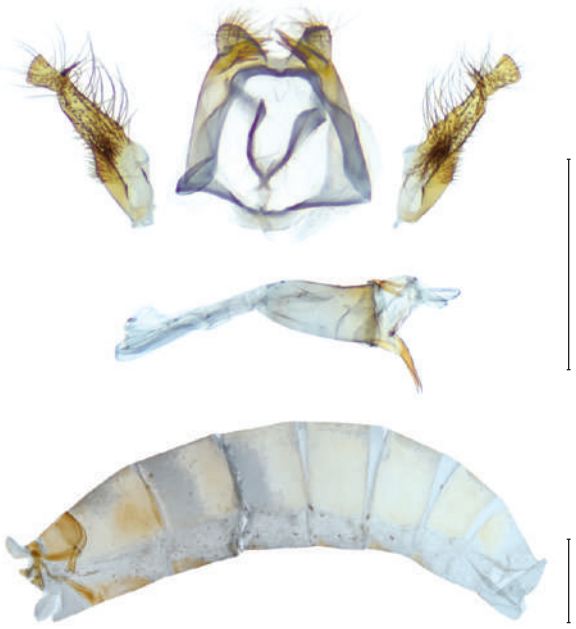
♂. PENGHU Co., Xiyu, Xiyu West Fort, 11. VI. 2014 (J. Y. Liang) (genitalia preparation JYL419).

402. *Zizeeria maha maha* (Kollar, [1844]) 藍灰蝶

♂. JINEMN Co., Jinhu, Gugnag, 15. VIII. 2015 (L. Huang) (genialia preparation JYL415).

403. *Zizeeria karsandra* (Moore, 1865) 莧藍灰蝶

♂. JINMEN Co., Jinhu, Shenshiqiao, 13. VIII. 2015 (L. Huang) (genitalia preparation JYL413).



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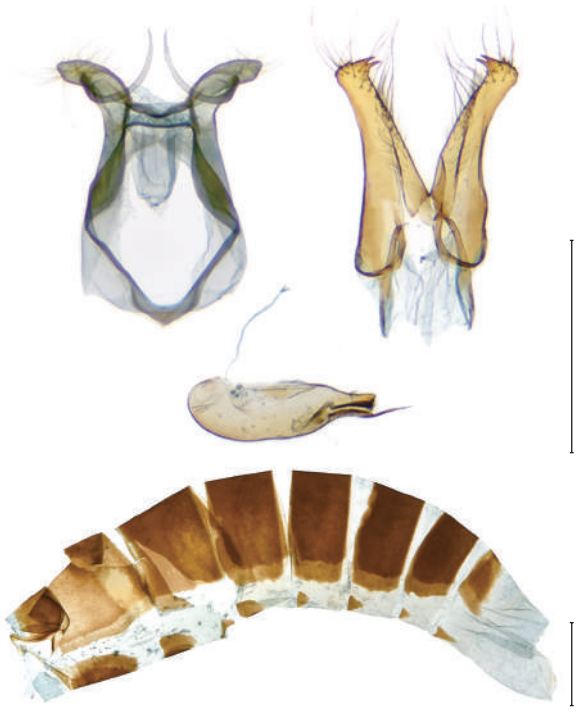

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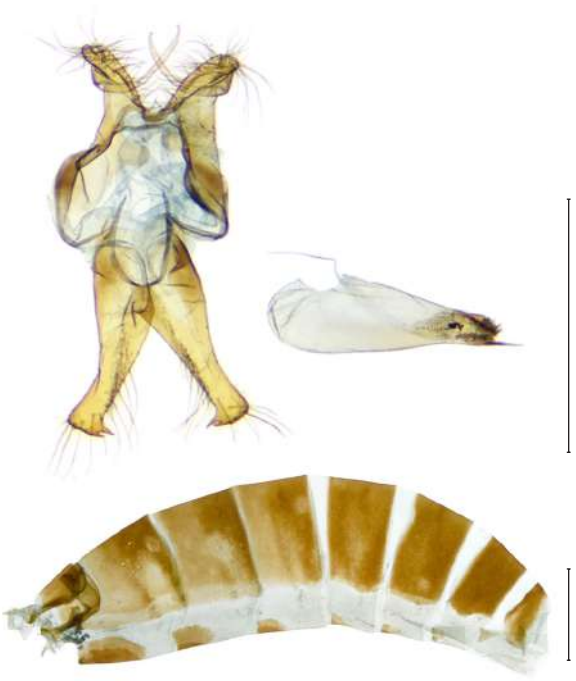

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404. *Zizina otis riukuensis* (Matsumura, 1929) 折列藍灰蝶

♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 26. X. 2019 (Y. C. Wang) (gneitalia preparation JYL638).

405. *Zizina otis otis* (Fabricius, 1787) 折列藍灰蝶

♂. LIANJIANG Co., Beigan, Daqiu, 6. IX. 2014 (C. L. Huang) (genitalia preparation JYL398).

406. *Famegana nisa* (Wallace, 1866) 單點藍灰蝶

♂. AUSTRALIA: QUEENSLAND, Mt. Stuart, 26. III. 2017 (Y. F. Hsu) (genitalia preparation JYL681).

407. *Zizula hylax* (Fabricius, 1775) 迷你藍灰蝶

♂. MIAOLI Co., Sanyi, Zhentoushan, 13. IX. 2015 (L. Huang) (genitalia preparation JYL411).



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408. *Everes argiades* (Pallas, 1771) 燕藍灰蝶

♂. JIAYI Co., Alishan, Shizhuo/ Dabang, 900/1000m, 2. V. 2010, reared from *Humulus scandens*, emgd. 23. V. 2010, HSU 10E11 (R. K. Dong & Y. F. Hsu) (genitalia preparation JYL527).

409. *Everes lacturnus rileyi* Godfrey, 1916 南方燕藍灰蝶

♂. TAINAN CITY, Zhouzhen, Caoshan, 1. V. 2018 (Y. F. Hsu) (genitalia preparation JYL428).

410. *Tongeia hainani* (Bethune-Baker, 1914) 臺灣玄灰蝶

♂. PINGDONG Co., Sandimen, 10. VI. 2019 (Y. F. Hsu) (genitalia preparation JYL484).

411. *Tongeia filicaudis mushanus* (Tanikawa, 1940) 密點玄灰蝶

♂. XINBEI CITY, Wulai, Jiajiuliao, 22. X. 2011 (L. Huang) (genitalia preparation JYL615).



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412. *Tongeia filicaudis filicaudis* (Pryer, 1877) 密點玄灰蝶

♂. LIANJIANG Co., Beigan, Daqiu, 6. IX. 2014 (H. Y. Lee & C. L. Huang) (genitalia preparation JYL566).

413. *Shijimia moorei taiwana* Matsumura, 1919 森灰蝶

♂. YILAN Co., Datong, Mingchi, 26. VII. 2019, reared from *Salvia arisanensis*, emgd. 1. VIII. 2019, HSU 19G21 (C. W. Huang, Y. F. Hsu, Y. Y. Lu & Y. M. Hsu) (genitalia preparation JYL555).

414. *Pithecops fulgens urai* Bethune-Baker, 1913 藍丸灰蝶

♂. XINBEI CITY, Wulai, Jiajiuliao, 14. IV. 2015 (F. Ho) (genitalia preparation JYL471).

415. *Pithecops corvus cornix* Cowan, [1966] 丸灰蝶

♂. JIAYI Co., Alishan, Shanmei, 25. V. 2019 (Y. F. Hsu) (genitalia preparation JYL574).



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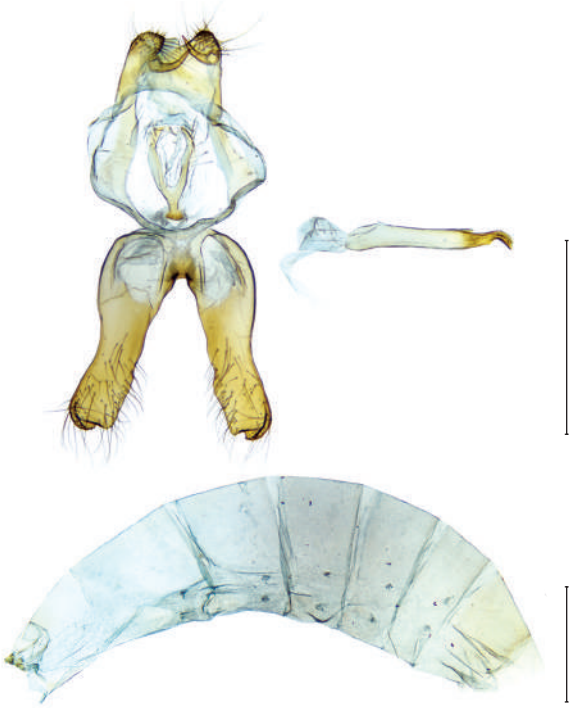

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416. *Neopithecops zalmora* (Butler, [1870]) 黑點灰蝶

♂. JIAYI Co., Alishan, Danayigu, 12. XI. 2016 (Y. F. Hsu) (genitalia preparation JYL425).

417. *Megisba malaya sikkima* Moore, 1884 黑星灰蝶

♂. TAINAN CITY, Baihe, Hongye Park, 29. X. 2016 (J. Y. Liang) (genitalia preparation JYL407).

418. *Udara dilecta* (Moore, 1879) 嫵琉灰蝶

♂. TAIDONG Co., Haiduan, Liyuan, 1793m, 3. VIII. 2018 (J. Y. Liang) (genitalia preparation JYL334).

419. *Udara albocaerulea* (Moore, 1879) 白斑嫵琉灰蝶

♂. NANTOU Co., Renai, Huisun, 10. VI. 2018 (L. Huang) (genitalia preparation JYL483).



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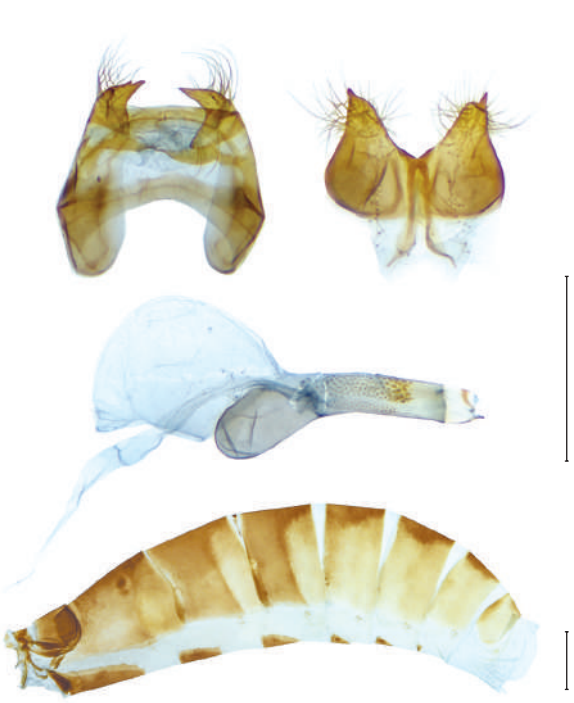

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420. *Acytolepis puspa myla* (Fruhstorfer, 1909) 靛色琉灰蝶

♂. HUALIAN Co., Xiulin, Huoranting, 5. I. 2019 (C. W. Huang) (genitalia preparation JYL469).

421. *Acytolepis puspa gisca* (Fruhstorfer, 1910) 靛色琉灰蝶

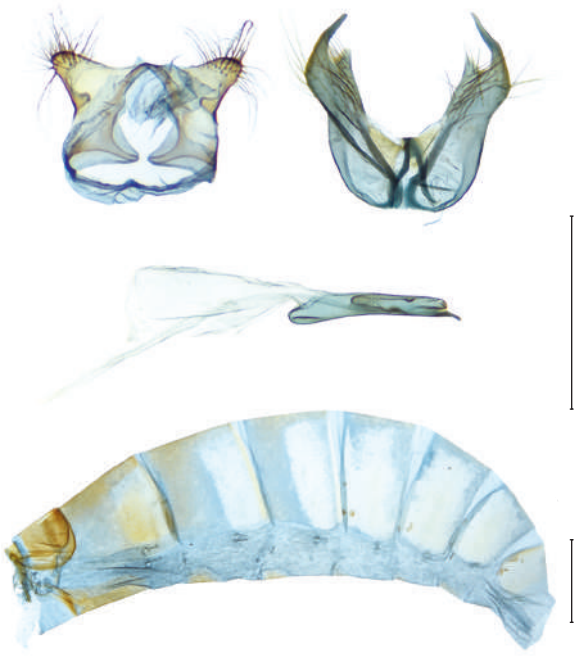
♂. LIANJIANG Co., Nangan, Shengtian Park, 20. VII. 2020 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL1091).

422. *Celatoxia marginata* (de Nicéville, 1884) 白紋琉灰蝶

♂. TAOYUAN CITY, Fuxing, Beidelamanshan, 1400m, 23. VI. 2017 (L. Huang) (genitalia preparation JYL560).

423. *Celastrina argiolus caphis* (Fruhstorfer, 1922) 琉灰蝶

♂. TAIZHONG CITY, Heping, Shaolai Trail, 6. VIII. 2010 (genitalia preparation JYL577).



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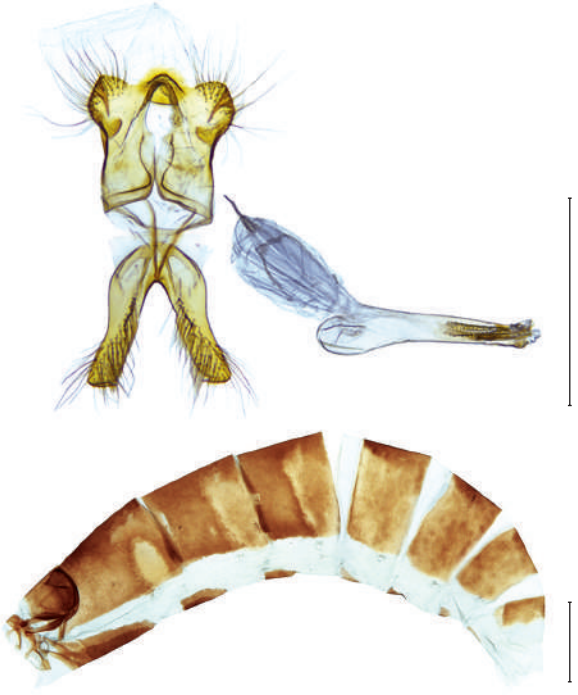

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424. *Celastrina sugitanii shirozui* Hsu, 1987 杉谷琉灰蝶

♂. XINZHU Co., Jianshi, Zhenxibao, 1500m, 30. III. 2016 (C. W. Huang, L. H. Wang & Y. M. Hsu) (genitalia preparation JYL592).

425. *Celastrina oreas arisana* (Matsumura, 1910) 大紫琉灰蝶

♂. HUALIAN Co., Xiulin, Bilu, 5. VII. 2015 (L. Huang) (genitalia preparation CJC145).

426. *Celastrina lavendularis himilcon* (Fruhstorfer, 1909) 細邊琉灰蝶

♂. TAIDONG Co., Haiduan, Tianlong Trail, 5. V. 2019 (J. Y. Liang) (genitalia preparation JYL449).

427. *Callenya melaena shonen* (Esaki, 1932) 寬邊琉灰蝶

♂. NANTOU Co., Yuchi, Lianhuachi, 29. IV. 2003 (Y. F. Hsu) (genitalia preparation JYL594).



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428. *Phengaris daitozana* Wileman, 1908 白雀斑灰蝶

♂. YILAN Co., Datong, Siyuan, 2000m, 31. VII. 2007 (L. H. Wang) (genitalia preparation JYL623).

429. *Phengaris atroguttata formosana* (Matsumura, 1926) 青雀斑灰蝶

♂. KAOHSIUNG CITY, Taoyuan, Southern Cross-Island Road, 130K, 4. VII. 2015 (C. W. Huang) (genitalia preparation JYL442).

430. *Chilades lajus koshunensis* Matsumura, 1919 綺灰蝶

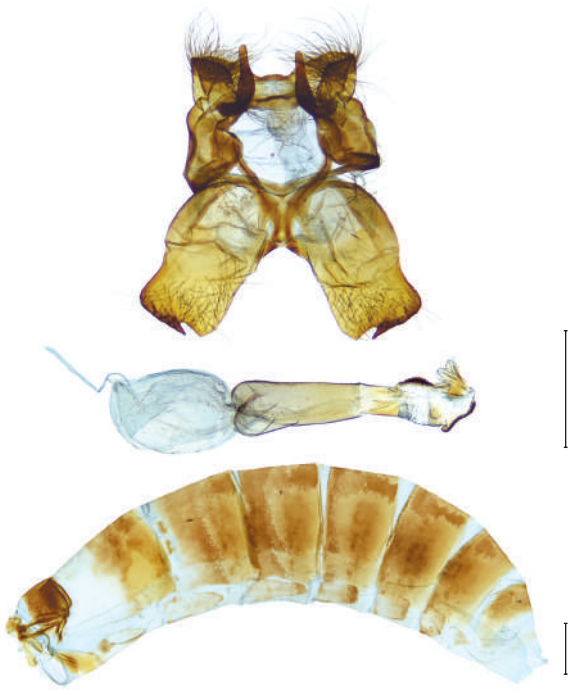
♂. TAINAN CITY, Liujia, Longhuyan, 25. IV. 2016 (Y. F. Hsu) (genitalia preparation JYL580).

431. *Chilades pandava peripatria* Hsu, 1989 蘇鐵綺灰蝶

♂. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 18. VI. 2015 (L. Huang) (gneitalia preparation CJC136).



428



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432. *Chilades pandava pandava* (Horsfield, [1829]) 蘇鐵綺灰蝶

♂. JINMEN Co., Jinning, Zhongshan Forest, 15. VIII. 2015 (H. C. Huang & L. Huang) (genitalia preparation CJC147).

433. *Freyeria putli formosanus* (Matsumura, 1919) 東方晶灰蝶

♂. PINGDONG Co., Checheng, 9. IX. 2009 (genitalia preparation JYL526).

434. *Sibosia burnii etymander* (Fruhstorfer, 1908) 白點褐蜆蝶

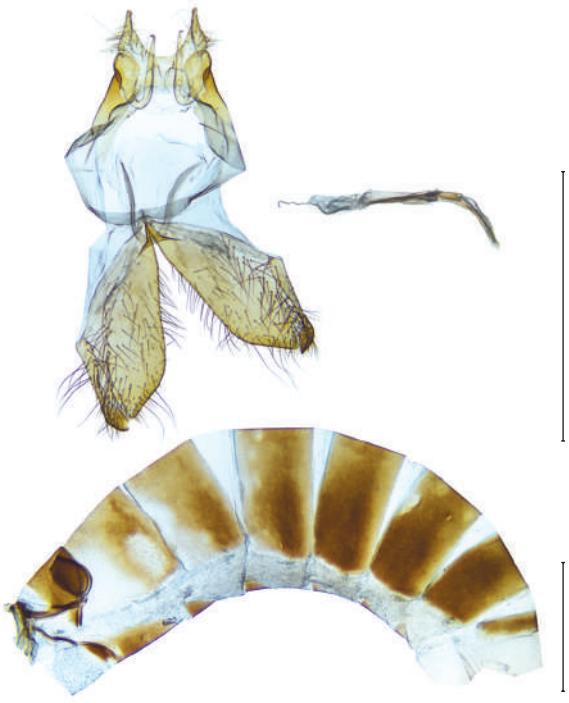
♂. TAIZHONG CITY, Heping, Daxueshan Forest Trail, 2. IV. 2015 (J. Y. Liang) (genitalia preparation JYL500).

435. *Zemeros flegyas* (Cramer, [1780]) 波蜆蝶

♂. CHINA: GUIZHOU Prov., Lipo Xian, Maolan, Dongma, 500m, 24. VIII. 2011 (Y. F. Hsu) (genitalia preparation JYL658).



432



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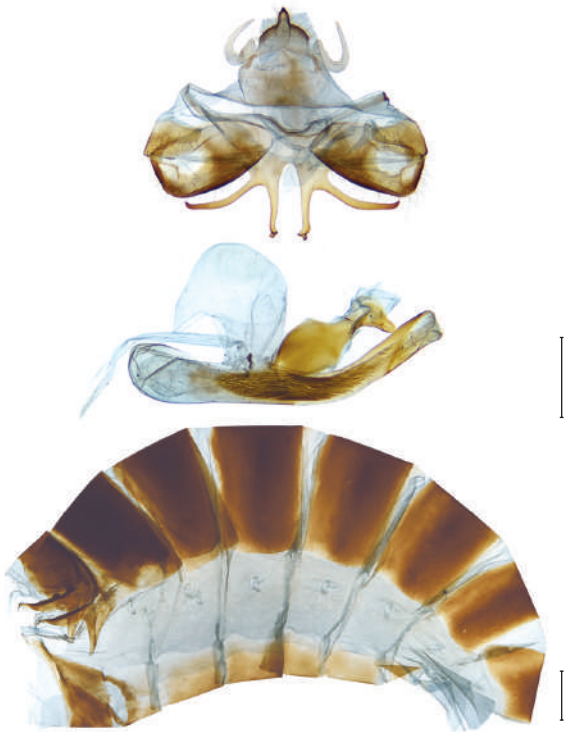
436. *Dodona formosana* Matsumura, 1919 臺灣尾蜆蝶

♂. TAIPEI CITY, Neihu, Daluntou, 24. V. 2014 , reared from *Myrsine seguinii*, HSU 14E49 (W. J. Lin) (genitalia preparation JYL480).



436

FEMALE GENITALIA

Note. Scale bars represent 1 mm.

437. *Curetis acuta formosana* Fruhstorfer, 1908 銀灰蝶

♀. HUALIAN Co., Fengbin, Maogongyue, 8. VII. 2018 (J. Y. Liang) (genitalia preparation JYL313).

438. *Curetis brunnea* Wileman, 1909 臺灣銀灰蝶

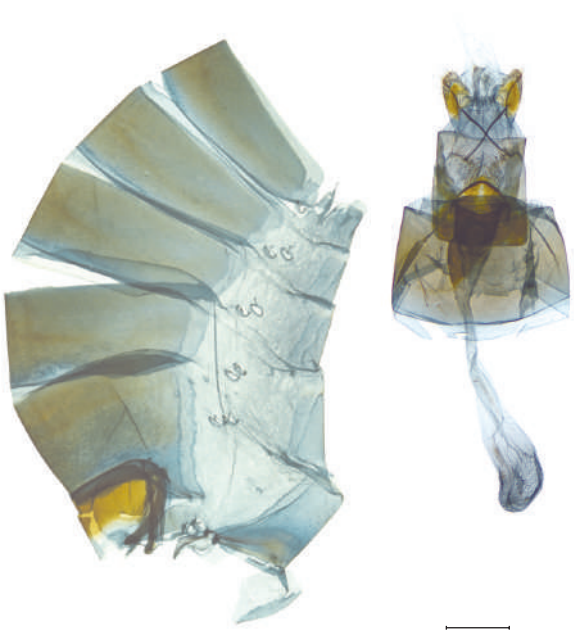
♀. KAOHSIUNG CITY, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu) (genitalia preparation JYL628).

439. *Taraka hamada thalaba* Fruhstorfer, 1922 蚜灰蝶

♀. YUNLIN Co., Linnei, Longguomai Trail, 7. X. 2018 (L. Huang) (genitalia preparation JYL476).

440. *Taraka hamada isona* Fruhstorfer, 1922 蚜灰蝶

♀. CHINA: FUJIAN Prov., NANPING CITY, Wiyishan, 200/300m, 25/26. X. 2007 (Y. F. Hsu) (genitalia preparation JYL625).



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441. *Spalgis epeus dilama* (Moore, 1878) 熙灰蝶

♀. HUALIAN Co., Zhuoxi, Nanan, 9. II. 2016 (J. Y. Liang) (genitalia preparation JYL409).

442. *Cigaritis lohita formosanus* (Moore, 1877) 虎灰蝶

♀. MIAOLI Co., Sanyi, Guandaoshan, 4. VII. 2015 (L. Huang) (genitalia preparation CJC121).

443. *Cigaritis kuyanianus* (Matsumura, 1919) 蓬萊虎灰蝶

♀. NANTOU Co., Renai, Huisun, Qinglonggu, 25. IV. 2010 (C. Y. Liao) (genitalia preparation CJC111).

444. *Cigaritis syama lamuae* Hsu & Liang, 2020 三斑虎灰蝶

♀. NANTOU CO., Renai, Wushe, 26. VII. 2016 (J. Y. Liang) (genitalia preparation JYL447).



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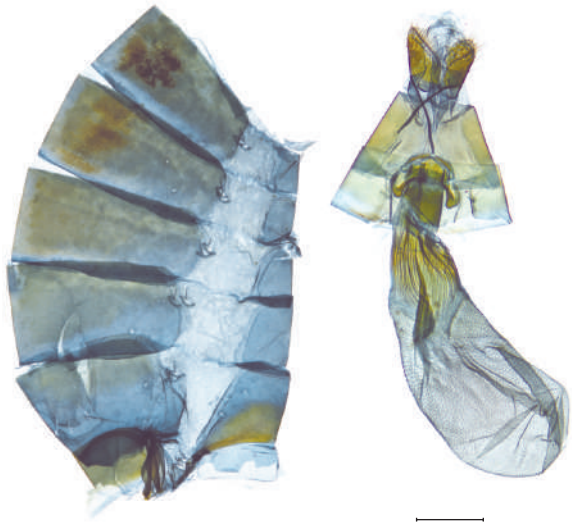

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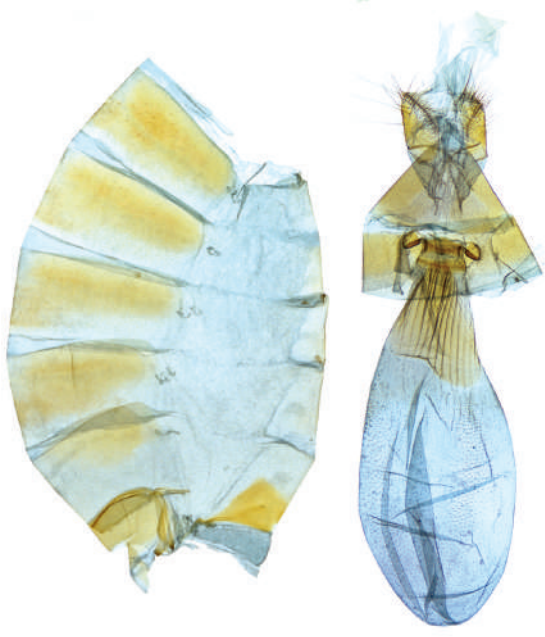

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445. *Heliophorus ila matsumurae* (Fruhstorfer, 1908) 紫日灰蝶

♀. PINGDONG Co., Checheng, Sichongxi, 24. II. 2014 (C. L. Huang) (genitalia preparation CJC113).

446. *Heliophorus ila chinensis* (Fruhstorfer, 1908) 紫日灰蝶

♀. LIANJIANG Co., Beigan, Wusha, 15. IV. 2014 (C. L. Huang, H. C. Huang & Y. F. Hsu) (genitalia preparation JYL466).

447. *Arhopala ganesa formosana* Kato, 1930 蔚青紫灰蝶

♀. HUALIAN Co., Xiulin, Bilu, 14. VII. 2019 (J. Y. Laing & C. W. Huang) (genitalia preparation JYL516).

448. *Arhopala birmana asakurae* (Matsumura, 1910) 小紫灰蝶

♀. HUALIAN Co., Zhuoxi, Nanan, 9. II. 2016 (J. Y. Liang) (genitalia preparation JYL434).



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449. *Arhopala japonica* (Murray, 1875) 日本紫灰蝶

♀. TAOYUAN CITY, Fuxing, Dongyanshan, 3. IV. 2015 (genitalia preparation CJC115).

450. *Arhopala paramuta horishana* Matsumura, 1910 暗色紫灰蝶

♀. KAOHSIUNG CITY, Jiaxian, Southern Cross-Island Road, 64.7K, 3. IV. 2016, reared from *Castanopsis formosana*, emgd. 20. IV. 2016, HSU 16D42 (C. C. Lu, jr) (genitalia preparation JYL520).

451. *Arhopala bazalus turbata* (Butler, [1882]) 燕尾紫灰蝶

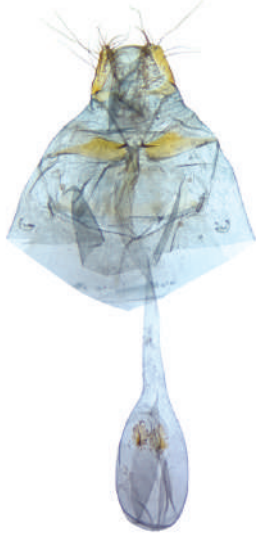
♀. XINBEI CITY, Wulai, Xinxian, 5. IV. 2014 (L. Huang) (genitalia preparation JYL318).

452. *Arhopala rama ramosa* (Evans, 1925) 短尾紫灰蝶

♀. CHINA: FUJIAN Prov., NANPING CITY, Wiyishan, 200/300m, 25/26. X. 2007 (Y. F. Hsu) (genitalia preparation JYL683).




449

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453. *Mahathala ameria hainani* Bethune-Baker, 1903 凹翅紫灰蝶

♀. HUALIAN Co., Zhuoxi, Nanan, 26. VI. 2015 (J. Y. Liang) (genitalia preparation JYL501).

454. *Iraota timoleon* (Stoll, [1790]) 異灰蝶

♀. JINMEN Co., Jinsha, Shishan, 18. XI. 2013 (Y. F. Hsu) (genitalia preparation JYL613).

455. *Japonica patungkoanui* Murayama, 1956 臺灣焰灰蝶

♀. HUALIAN Co., Xiulin, Bilu, 2150m, 5. VII. 2015 (L. Huang) (genitalia preparation JYL549).

456. *Ussuriana michaelis takarana* (Araki & Hirayama, 1941) 赭灰蝶

♀. TAOYUAN CITY, Fuxing, Baling, 4. VI. 2018 (L. Huang) (genitalia preparation JYL609).



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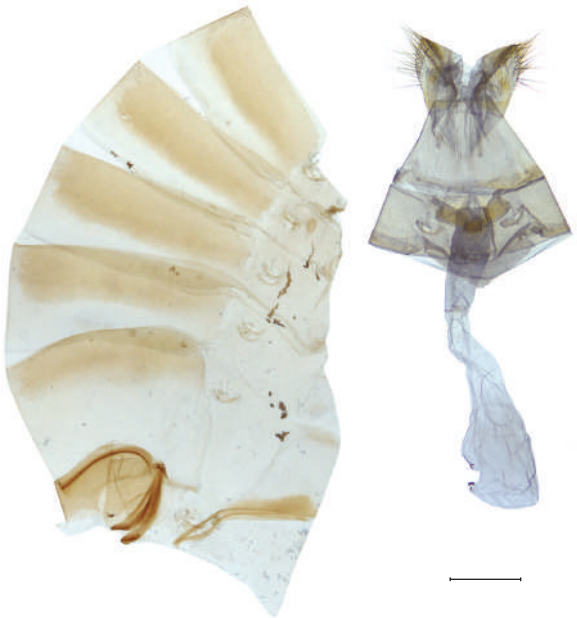

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457. *Cordelia comes wilemaniella* (Matsumura, 1929) 珂灰蝶

♀. NANTOU Co., Renai, Tunyuan, 18. VIII. 2018 (L. Huang) (genitalia preparation JYL538).

458. *Araragi enthea morisonensis* (Inoue, 1942) 墨點灰蝶

♀. YIALN Co., Datong, Tuleng, 8. VIII. 2018 (C. W. Huang & L. H. Wang) (genitalia preparation JYL532).

459. *Antigius attilia obsoletus* (Takeuchi, 1929) 折線灰蝶

♀. NANTOU Co., Renai, Tunyuan, 2018 (Y. C. Hong) (genitalia preparation JYL675).

460. *Wagimo insularis* Shirôzu, 1957 臺灣線灰蝶

♀. HUALIAN Co., Xiulin, Bilu, 2150m, 6. VII. 2015 (J. M. Wu) (genitalia preparation JYL551).



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461. *Leucantigius atayalicus* (Shirôzu & Murayama, 1943) 瓏灰蝶

♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 47K, 16. V. 2015 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL509).

462. *Ravenna nivea* (Nire, 1920) 朗灰蝶

♀. NANTOU Co., Renai, Nanshanxi, reared from *Quercus glauca*, emgd. 24. V. 2000 (C. Y. Hung) (genitalia preparation JYL584).

463. *Iratsume orsedice suzukii* (Sonan, 1940) 珠灰蝶

♀. HUALIAN Co., Xiulin, Bilu, 9. VII. 2018 (C. W. Huang) (genitalia preparation JYL455).

464. *Euaspa milionia formosana* Nomura, 1931 銼灰蝶

♀. TAOYUAN CITY, Fuxing, Lalashan, VI. 2019 (Y. C. Hong) (genitalia preparation JYL672).



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465. *Euaspa forsteri* (Esaki & Shirôzu, 1943) 伏氏銼灰蝶

♀. TAOYUAN CITY, Fuxing, Sileng, 1200m, 22. II. 2005, reared from *Castanopsis carlesii* [= *Castanopsis cuspidata*], emgd. 20. IV. 2005, HSU 05B25 (L. H. Wang) (genitalia preparation JYL596).

466. *Euaspa tayal* (Esaki & Shirôzu, 1943) 泰雅銼灰蝶

♀. XINBEI CITY, Wulai, Mogushan, 3. VII. 1980 (H. L. Huang) (genitalia preparation JYL686).

467. *Teratozephyrus arisanus* (Wileman, 1909) 阿里山鐵灰蝶

♀. YILAN Co., Datong, Siyuan, VII. 2018 (Y. C. Hong) (genitalia preparation JLY647).

468. *Teratozephyrus yugaii* (Kano, 1928) 臺灣鐵灰蝶

♀. NANTOU Co., Renai, Yuanfeng, 2700m, 14. IX. 2005 (C. C. Lu & C. L. Huang) (genitalia preparation JYL620).



465



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469. *Teratozephyrus elatus* Hsu & Lu, 2005 高山鐵灰蝶

♀. HUALIAN Co., Xiulin, Guanyuan, 2300m, 26. XI. 2006 (L. H. Wang & M. H. Sun) (genitalia preparation JYL619).

470. *Neozephyrus taiwanus* (Wileman, 1908) 臺灣榿翠灰蝶

♀. HUALIAN Co., Xiulin, Bilu, 2100m, 5. VII. 2015 (L. Huang, H. C. Huang & J. M. Wu) (genitalia preparation JYL547).

471. *Chrysozephyrus teisoi* (Sonan, 1941) 碧翠灰蝶

♀. HUALIAN Co., Xiulin, Guangbeibabiao, 16. VII. 2008 (L. H. Wang) (genitalia preparation JYL600).

472. *Chrysozephyrus nishikaze* (Araki & Sibatani, 1941) 西風翠灰蝶

♀. YILAN Co., Datong, Siyuanyakou, 27. I. 2004, reared from *Prunus campanulata*, emgd. 25. III. 2004, HSU 04A9 (C. L. Huang, L. H. Wang & G. M. Wu) (genitalia preparation JYL630).



469



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473. *Chrysozephyrus kabrua niitakanus* (Kano, 1928) 黃閃翠灰蝶
♀. YILAN Co., Datong, Siyuan, VII. 2018 (Y. C. Hong) (genitalia preparation JYL646).

474. *Chrysozephyrus disparatus pseudotaiwanus* (Howarth, 1957) 小翠灰蝶
♀. XINZHU Co., Jianshi, Zhenxibao, 5. VI. 2004 (L. H. Wang) (genitalia preparation JYL603).

475. *Chrysozephyrus rarasanus* (Matsumura, 1939) 拉拉山翠灰蝶
♀. XINZHU Co., Jianshi, Zhenxibao, 27. II. 2001, reared from *Quercus longinux*, emgd. 30. V. 2002, HSU 01B35.1 (C. C. Lu, Y. T. Lo & H. S. Chuen) (genitalia preparation JYL634).

476. *Chrysozephyrus yuchingkinus* Murayama & Shimonoya, 1960 清金翠灰蝶
♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 1. X. 2004 (genitalia preparation JYL636).



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477. *Chrysozephyrus splendidulus* Murayama & Shimonoya, 1965 單線翠灰蝶

♀. TAOYUAN CITY, Fuxing, Lalashan, 15. VI. 1986 (C. K. Lo) (genitalia preparation JYL633).

478. *Chrysozephyrus lingi* Okano & Okura, 1969 白芒翠灰蝶

♀. TAOYUAN CITY, Fuxing, Lalashan, 17. VI. 1986 (C. K. Lo) (genitalia preparation JYL632).

479. *Chrysozephyrus mushaellus* (Matsumura, 1938) 霧社翠灰蝶

♀. TAOYUAN CITY, Fuxing, Xuanyuan, 19. VII. 2018 (C. W. Huang) (genitalia preparation JYL462).

480. *Sibataniozephyrus kuafui* Hsu & Lin, 1994 夸父璀灰蝶

♀. YILAN Co., Nanao, Taipingshan, 1800m, 14. III. 2017 (L. H. Wang, Y. M. Hsu & L. Huang) (genitalia preparation JYL562).



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481. *Amblopala avidiena y-fasciata* (Sonan, 1929) 尖灰蝶

♀. XINZHU Co., Jianshi, Zhenxibao, 10. IV. 2019 (C. W. Huang) (genitalia preparation JYL590).

482. *Tajuria yajna caerulea* Nire, 1920 褐翅青灰蝶

♀. TAOYUAN CITY, Fuxing, Baling, 660m, 18. II. 2011 (C. C. Lu, jr) (genitalia preparation JYL561).

483. *Tajuria diaeus karenkonis* Matsumura, 1929 白腹青灰蝶

♀. NANTOU Co., Renai, Guantoushan, 27. VII. 2016 (J. Y. Liang) (genitalia preparation JYL436).

484. *Tajuria illurgis tattaka* (Araki, 1949) 漣紋青灰蝶

♀. NANTOU CO., Xinyi, Dongpu, 1200m, 4. IV. 2011 (C. C. Lu, jr) (genitalia preparation JYL589).



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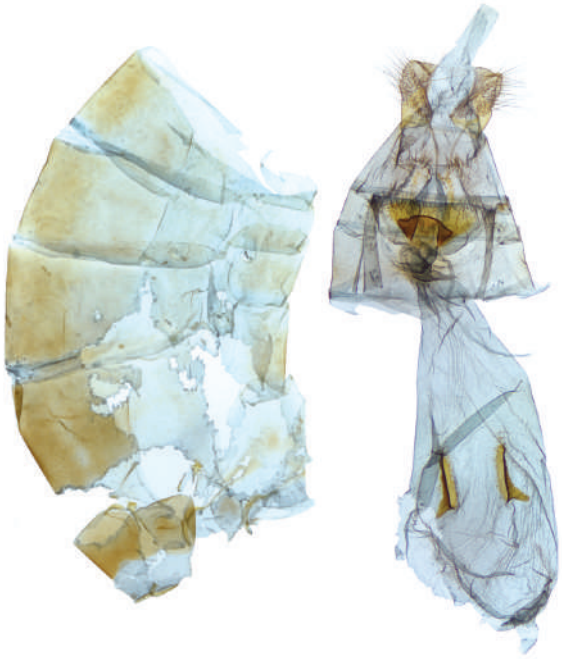

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485. *Ancema ctesia cakravasti* (Fruhstorfer, 1909) 鈿灰蝶

♀. XINZHU Co., Xinpu, 15. XII. 2018, reared from *Viscum diospyrosicolum* [= *Viscum angulatum*], emgd. 3/11. II. 2018, HSU 18M3 (H. C. Huang) (genitalia preparation JYL649).

486. *Hypolycaena kina inari* (Wileman, 1908) 蘭灰蝶

♀. XINZHU Co., Jianshi, Shuitian Forest Trail, 31. VII. 2015 (C. W. Huang) (genitalia preparation JYL511).

487. *Hypolycaena othona* Hewitson, [1865] 熱帶蘭灰蝶

♀. CHINA: YUNNAN Prov., Xishuangbanna, Menglun, 570m, 24/28. III. 2012 (Y. F. Hsu) (genitalia preparation JYL707).

488. *Deudorix epijarbas menesicles* Fruhstorfer, 1912 玳灰蝶

♀. TAIPEI CITY, Neihu, Academia Sinica, 19. VIII. 2014 (C. L. Huang) (genitalia preparation CJC117).



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489. *Deudorix sankakuhonis* (Matsumura, 1938) 三角峰玳灰蝶

♀. NANTOU Co., Renai, Gaofengshan, ca 1500m , 5. VII. 2006 (C. K. Lo) (genitalia preparation JYL648).

490. *Deudorix rapaloides* (Naritomi, 1941) 淡黑玳灰蝶

♀. XINBEI CITY, Xizhi, Wuzhishan, 24. IX. 2019 (Y. Q. Yeh) (genitalia preparation JYL637).

491. *Artipe eryx horiella* (Matsumura, 1929) 綠灰蝶

♀. TAIPEI CITY, Neihu, Daluntou, 29. IX. 2014, reared from *Gardenia jasminoides*, emgd. 19. X. 2014, HSU 14J77 (W. J. Lin) (genitalia preparation JYL541).

492. *Artipe eryx eryx* (Linnaeus, 1771) 綠灰蝶

♀. JINMEN Co., Jinsha, Wuhushan, 22. I. 2019 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL443).



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493. *Sinthusa chandrana kuyaniana* (Matsumura, 1919) 閃灰蝶

♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 33K, 19. IV. 2017 (C. W. Huang) (genitalia preparation JYL452).

494. *Rapala caerulea liliacea* Nire, 1920 堇彩燕灰蝶

♀. NANTOU Co., Renai, Songgang, 1900m, 18. X. 2005, reared from *Lespedeza thunbergii*, emgd. 10. XI. 2005 (C. C. Lu) (genitalia preparation JYL687).

495. *Rapala varuna formosana* Fruhstorfer, 1912 燕灰蝶

♀. YILAN Co., Jiaoxi, 19. VII. 2015 (L. Huang) (genitalia preparation CJC119).

496. *Rapala nissa hirayamana* Matsumura, 1926 霓彩燕灰蝶

♀. TAIDONG Co., Haiduan, Liyuan, 1793m, 3. VIII. 2018 (J. Y. Liang) (genitalia preparation JYL333).



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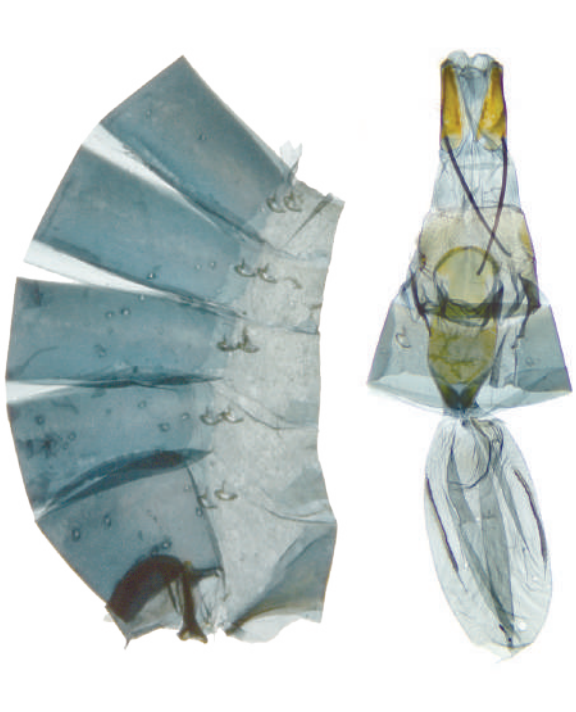

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497. *Rapala takasagonis* Matsumura, 1929 高砂燕灰蝶

♀. YILAN Co., Nanao, Dabaishan, 1200m, 3. VIII. 2016 (L. Huang) (genitalia preparation JYL553).

498. *Rapala manea schistacea* (Moore, 1879) 泥黃燕灰蝶

♀. JINMEN Co., Jinhu, Botanical Garden, 5. XI. 2015 (L. Huang) (genitalia preparation JYL441).

499. *Satyrium austrinum* (Murayama, 1943) 南方灑灰蝶

♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 48K, 16. IV. 2015 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL440).

500. *Satyrium formosanum* (Matsumura, 1919) 臺灣灑灰蝶

♀. TAIDONG Co., Haiduan, Lidao, 1020m, 22. V. 2017 (L. Huang) (genitalia preparation JYL563).



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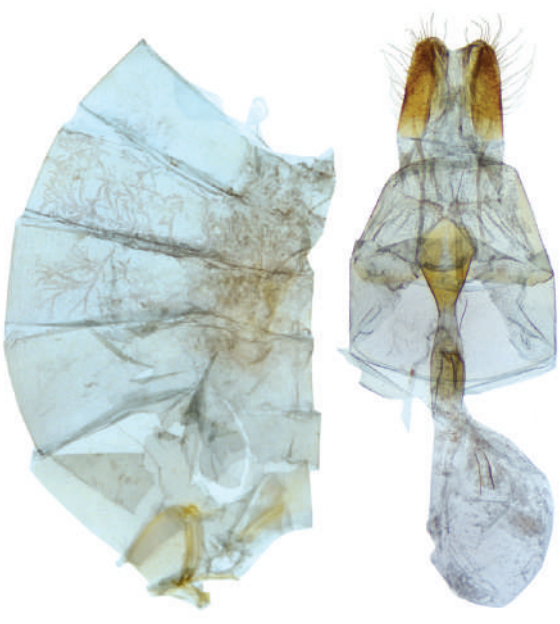

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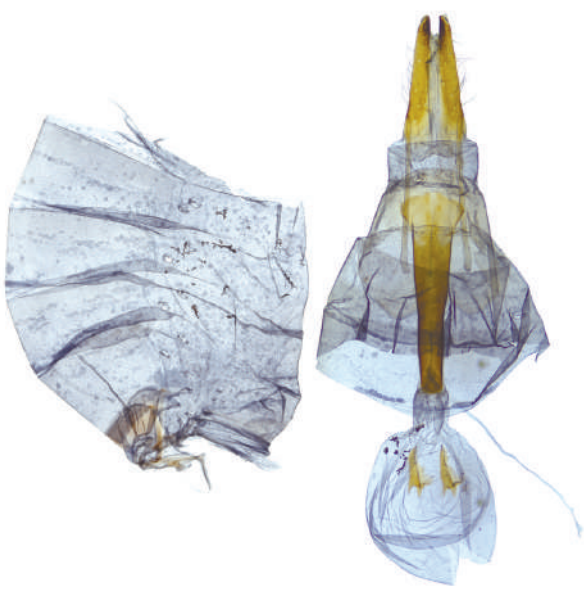

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501. *Satyrium eximium mushanum* (Matsumura, 1929) 秀灑灰蝶

♀. NANTOU Co., Renai, Tunyuan, 25. V. 2010 (C. L. Huang & C. K. Wang) (genitalia preparation JYL488).

502. *Satyrium tanakai* (Shirôzu, 1943) 田中灑灰蝶

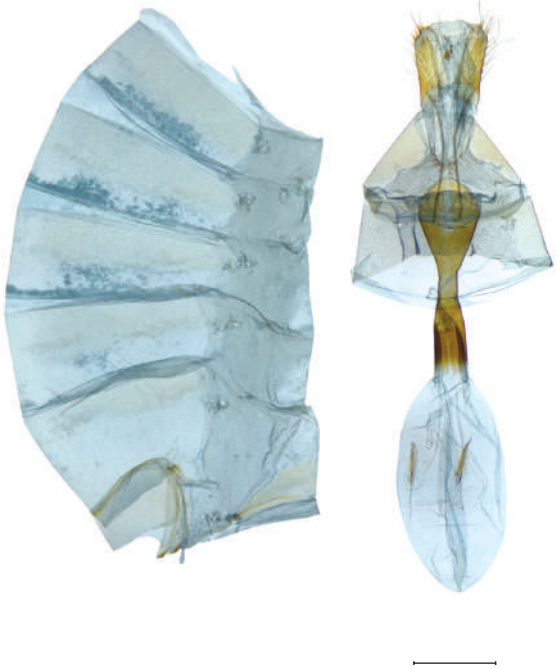
♀. TAIDONG Co., Haiduan, Southern Cross-Island Road, 160K, 23/24. VI. 2016 (C. W. Huang & T. Y. Liu) (genitalia preparation JYL319).

503. *Satyrium esakii* (Shirôzu, 1942) 江崎灑灰蝶

♀. TAIDONG Co., Haiduan, Liyuan, 1793m, 2. VII. 2016 (J. Y. Liang) (genitalia preparation JYL701).

504. *Satyrium inouei* (Shirôzu, 1959) 井上灑灰蝶

♀. HUALIAN Co., Xiulin, Guanyuan, 2300m, 5. VII. 2015 (L. Huang) (genitalia preparation JYL548).



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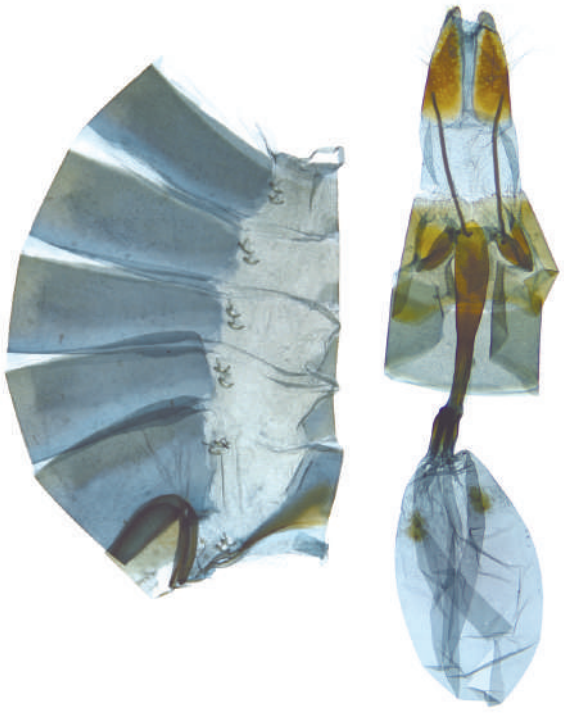

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505. *Fixsenia watarii* (Matsumura, 1927) 渡氏烏灰蝶

♀. PINGDONG Co., Wutai, Ali, 2. VI. 2014 (C. L. Huang) (genitalia preparation JYL444).

506. *Horaga onyx moltrechti* Matsumura, 1919 鑽灰蝶

♀. XINBEI CITY, Wulai, 12. V. 1987 (Y. F. Hsu) (genitalia preparation JYL703).

507. *Horaga albimacula triumphalis* Murayama & Shibatani, 1943 小鑽灰蝶

♀. HUALIAN Co., Fengbin, Maogongyue, 8. VII. 2018 (J. Y. Liang) (genitalia preparation JYL309).

508. *Horaga rarasana* Sonan, 1936 拉拉山鑽灰蝶

♀. TAOYUAN CITY, Fuxing, Beichatianshan, 19. VI. 2019 (L. H. Wang) (genitalia preparation JYL495).



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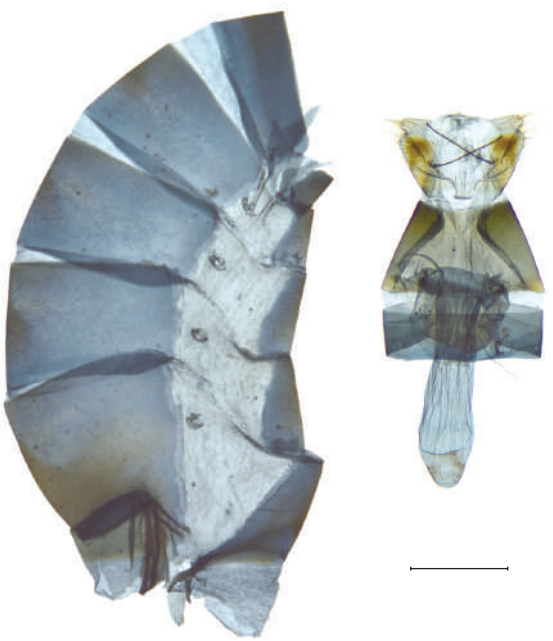

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509. *Catapaecilma major moltrechti* (Wileman, 1908) 三尾灰蝶

♀. TAOYUAN CITY, Fuxing, Xuewunao, 1. IV. 2018 (C. J. Chang) (genitalia preparation JYL616).

510. *Orthomiella rantaizana* Wileman, 1910 巒大鋸灰蝶

♀. XINZHU Co., Jianshi, Zhenxibao, 10. IV. 2019 (C. W. Huang & L. H. Wang) (genitalia preparation JYL448).

511. *Nacaduba kurava therasia* Fruhstorfer, 1916 大娜波灰蝶

♀. XINBEI CITY, Wulai, Xinxian, 18. V. 2019 (J. Y. Liang) (genitalia preparation JYL477) .

512. *Nacaduba kurava euplea* Fruhstorfer, 1916 大娜波灰蝶

♀. JINMEN Co., Jinhu, Zhongshan Forest, 19/20. XI. 2013 (Y. F. Hsu & H. C. Huang) (genitalia preparation JYL705).



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513. *Nacaduba beroe asakusa* Fruhstorfer, 1916 南方娜波灰蝶

♀. TAIDONG Co., Haiduan, Tianlong, 5. V. 2019 (C. W. Huang) (genitalia preparation JYL601).

514. *Nacaduba berenice leei* Hsu, 1990 熱帶娜波灰蝶

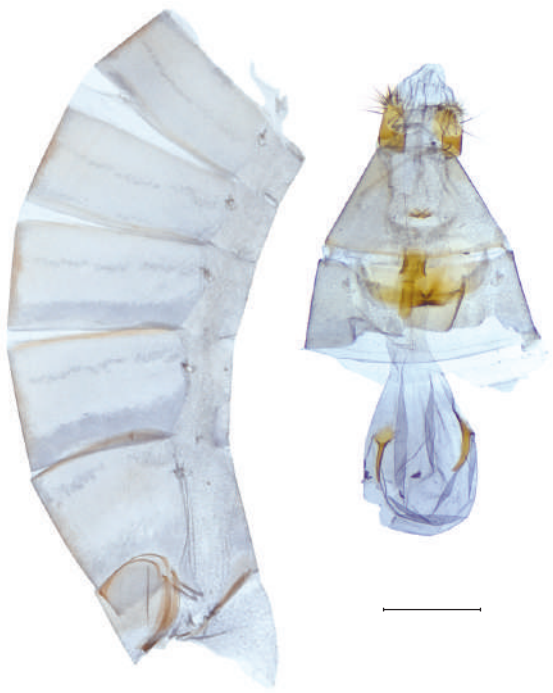
♀. TAIDONG Co., Lanyu, Zhongaiqiao, 4. IV. 2015 (C. L. Huang) (genitalia preparation JYL496).

515. *Nacaduba pactolus hainani* Bethune-Baker, 1914 暗色娜波灰蝶

♀. XINBEI CITY, Xindian, Hemeishan, 30. XI. 2019 (C. W. Huang & C. J. Chang) (genitalia preparation JYL684).

516. *Nothodanis schaeffera* (Eschscholtz, 1821) 黑列波灰蝶

♀. TAIDONG Co., Small Lanyu, 22. VII. 2009 (Y. T. Chung) (genitalia preparation JYL645).



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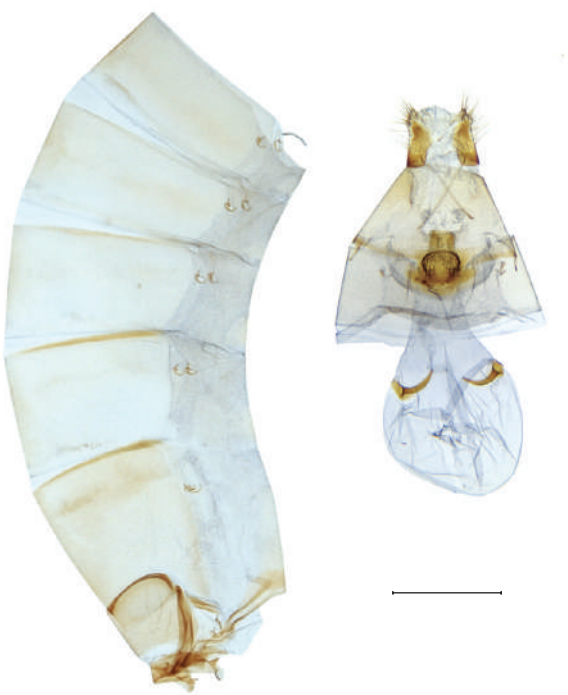

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517. *Catopyrops ancyra almora* (Druce, 1873) 曲波灰蝶

♀. TAIDONG Co., Lanyu, Zhongaiqiao, 13. XI. 2013 (C. L. Huang) (genitalia preparation JYL610).

518. *Prosotas nora formosana* (Fruhstorfer, 1916) 波灰蝶

♀. HUALIAN Co., Yuli, Yuancheng, 300m, 2. I. 2015 (Y. F. Hsu & J. Y. Liang) (genitalia preparation JYL433).

519. *Prosotas dubiosa asbolodes* Hsu & Yen, 2006 密紋波灰蝶

♀. TAINAN CITY, Liujia, Chishan Longhuyan, 25. IV. 2016 (L. Huang) (genitalia preparation JYL403).

520. *Jamides bochus formosanus* Fruhstorfer, 1909 雅波灰蝶

♀. NANTOU Co., Xinyi, Heshe, Shalixian Trail, 6. VII. 2014 (L. Huang) (genitalia preparation CJC127).



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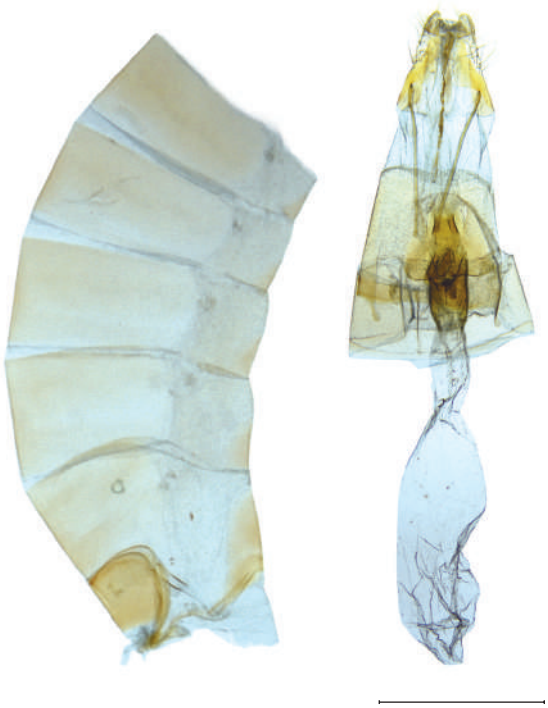

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521. *Jamides bochus bochus* (Fabricius, 1793) 雅波灰蝶

♀. JINMEN Co., Jinning, Zhongshan Forest, 19. XI. 2013 (Y. F. Hus & H. C. Huang) (genitalia preparation JYL329).

522. *Jamides bochus herodicus* (Fruhstorfer, 1915) 雅波灰蝶

♀. TAIDONG Co., Lanyu, Central Cross- Island Road, 14. XI. 2013 (C. L. Huang) (genitalia preparation JYL657).

523. *Jamides alecto dromicus* (Fruhstorfer, 1910) 淡青雅波灰蝶

♀. XINBEI CITY, Ruifang, Sandiaoling, 12. IX. 2015 (L. Huang) (genitalia preparation JYL327).

524. *Jamides celeno lydanus* (Fruhstorfer, 1910) 白雅波灰蝶

♀. HUALIAN Co., Yuli, Antong, 30. I. 2017 (J. Y. Liang) (genitalia preparation JYL429).



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525. *Catochrysops panormus exiguus* (Distant, 1886) 青珈波灰蝶

♀. TAIDONG Co., Lanyu, Hongtouyu, 15. VI. 2003 (Y. F. Hsu) (genitalia preparation JYL422).

526. *Catochrysops strabo luzonensis* Tite, 1959 紫珈波灰蝶

♀. TAIDONG Co., Lanyu, 28. VII. 2010 (genitalia preparation JYL521).

527. *Euchrysops cnejus* (Fabricius, 1798) 奇波灰蝶

♀. PENGHU Co., Xingren Dam, 19. XI. 2013 (C. L. Huang) (genitalia preparation JYL608).

528. *Lampides boeticus* (Linnaeus, 1767) 豆波灰蝶

♀. PENGHU Co., Xiyu, Xiyu East Fort, 11. VI. 2014 (C. W. Huang) (genitalia preparation JYL490).



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529. *Leptotes plinius* (Fabricius, 1793) 細灰蝶

♀. TAOYUAN CITY, Fuxing, Baling Ancient Road Ecological Park, 10. V. 2017 (L. Huang) (genitalia preparation JYL467).

530. *Zizeeria maha okinawana* (Matsumura, 1929) 藍灰蝶

♀. TAIPEI CITY, Beitou, Shipai, 19. V. 2017, reared from *Oxalis corniculata*, HSU 17F72 (L. Huang) (genitalia preparation JYL397).

531. *Zizeeria maha maha* (Kollar, [1844]) 藍灰蝶

♀. JINEMN Co., Jinhu, Gugang, 15. VIII. 2015 (L. Huang) (genialia preparation JYL416).

532. *Zizeeria karsandra* (Moore, 1865) 莧藍灰蝶

♀. TAINAN CITY, Xinhua, Xinhua Forest Farm, 24. XI. 2019 (Y. F. Hsu) (genitalia preparation JYL678).



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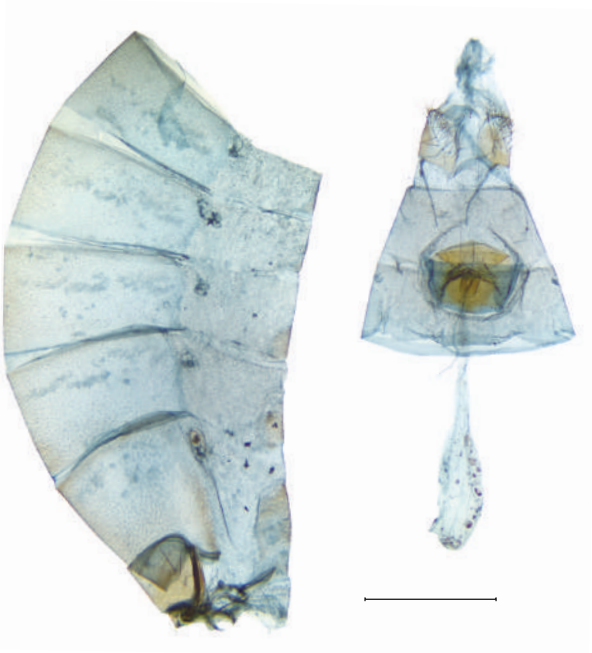

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533. *Zizina otis riukuensis* (Matsumura, 1929) 折列藍灰蝶

♀. TAIPEI CITY, Wenshan, NTNU, Gongguan campus, 13. X. 2019 (Y. C. Wang) (gneitalia preparation JYL642).

534. *Zizina otis otis* (Fabricius, 1787) 折列藍灰蝶

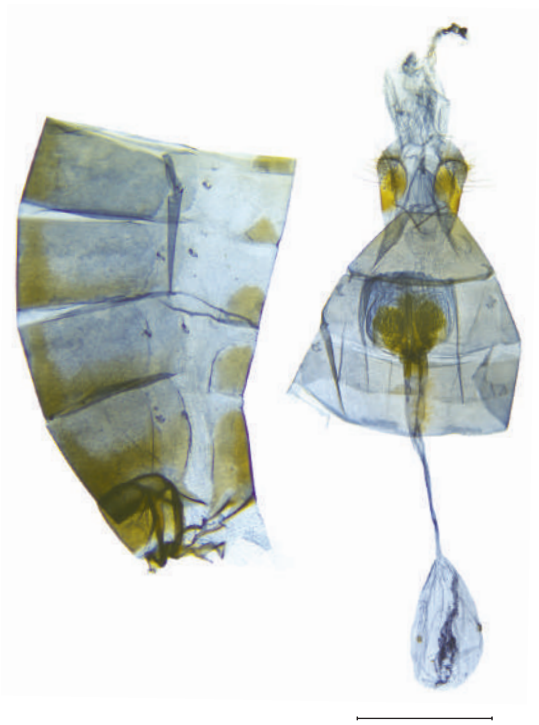
♀. LIANJIANG Co., Nangan, Niujiao, 14/15. X. 2013 (M. Takahashi) (genitalia preapration JYL651).

535. *Famegana nisa* (Wallace, 1866) 單點藍灰蝶

♀. AUSTRALIA: QUEENSLAND, Cairns, 30. III. 2017 (Y. F. Hsu) (genitalia preparation JYL652).

536. *Zizula hylax* (Fabricius, 1775) 迷你藍灰蝶

♀. MIAOLI Co., Sanyi, Liyutan, 300m, 13. IX. 2015 (L. Huang) (genitalia preparation JYL605).



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537. *Everes argiades* (Pallas, 1771) 燕藍灰蝶

♀. JIAYI Co., Alishan, Shizhuo/ Dabang, 900/1000m, 2. V. 2010 (R. K. Dong & Y. F. Hsu) (genitalia preparation JYL659).

538. *Everes lacturnus rileyi* Godfrey, 1916 南方燕藍灰蝶

♀. KAOHSIUNG CITY, Neimen, Donggualiao, 28. IX. 2018, reared from *Pleurolobus gangeticus*, emgd. 16. X. 2018, HSU 18J19 (F. X. Su) (genitalia preparation JYL451).

539. *Tongeia hainani* (Bethune-Baker, 1914) 臺灣玄灰蝶

♀. TAOYUAN CITY, Fuxing, Gaoyi, 18. XII. 2017 (L. Huang) (genitalia preparation JYL550).

540. *Tongeia filicaudis mushanus* (Tanikawa, 1940) 密點玄灰蝶

♀. XINBEI CITY, Wulai, Jiajiuliao, 22. X. 2011 (L. Huang) (genitalia preparation JYL614).



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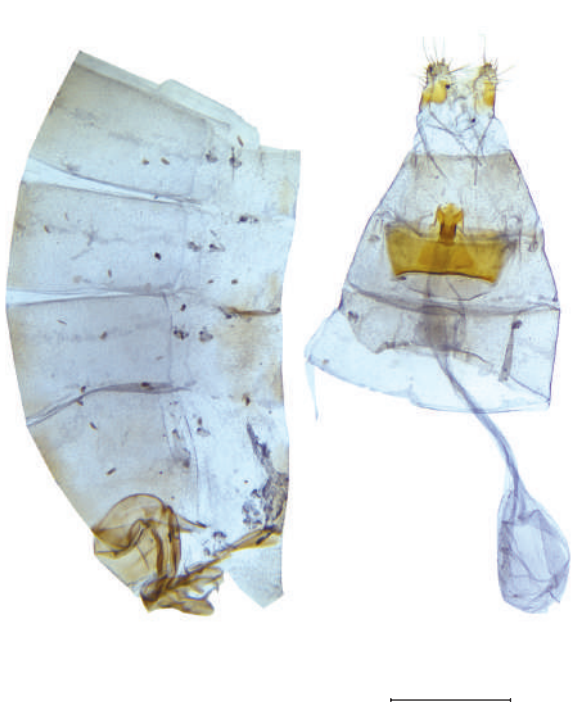

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541. *Tongeia filicaudis filicaudis* (Pryer, 1877) 密點玄灰蝶

♀. LIANJIANG Co., Beigan, Daqiu, 6. IX. 2014 (H. Y. Lee & C. L. Huang) (genitalia preparation JYL567).

542. *Shijimia moorei taiwana* Matsumura, 1919 森灰蝶

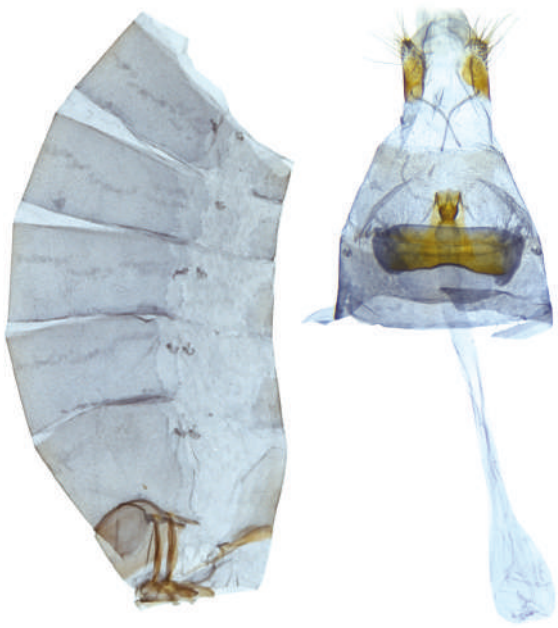
♀. TAOYUAN CITY, Fuxing, Northern Cross-Island Road, 58K, 30. V. 2015 (C. W. Huang) (genitalia preparation JYL507).

543. *Pithecops fulgens urai* Bethune-Baker, 1913 藍丸灰蝶

♀. XINBEI CITY, Wulai, Fushan, 6. VI. 2016 (C. W. Huang) (genitalia preparation JYL487).

544. *Pithecops corvus cornix* Cowan, [1966] 黑丸灰蝶

♀. TAIDONG Co., Donghe, Taiyuan, Hongyeliao, IV. 2000 (W. C. Tsai) (genitalia preparation JYL641).



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545. *Neopithecops zalmora* (Butler, [1870]) 黑點灰蝶

♀. TAIPEI CITY, Shilin, Zhishanyan, 1. VI. 2015 (L. Huang) (genitalia preparation JYL459).

546. *Megisba malaya sikkima* Moore, 1884 黑星灰蝶

♀. TAIPEI CITY, Beitou, Junjianyan, 17. VI. 2015 (L. Huang) (genitalia preparation JYL420).

547. *Udara dilecta* (Moore, 1879) 嫵琉灰蝶

♀. HUALIAN Co., Xiulin, Huoranting, 26. III. 2019 (C. W. Huang) (genitalia preparation JYL602).

548. *Udara albocaerulea* (Moore, 1879) 白斑嫵琉灰蝶

♀. YILAN Co., Datong, Tuleng, 8. VIII. 2018 (L. H. Wang & C. W. Huang) (genitalia preparation JYL482).



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549. *Acytolepis puspa myla* (Fruhstorfer, 1909) 靛色琉灰蝶

♀. YILAN Co., Datong, Tuleng, 8. VIII. 2018 (C. W. Huang & L. H. Wang) (genitalia preparation JYL470).

550. *Acytolepis puspa gisca* (Fruhstorfer, 1910) 靛色琉灰蝶

♀. JINMEN Co., Jincheng Junior High School, 29. V. 2011 (Y. F. Hsu) (genitalia preparation JYL1092).

551. *Celatoxia marginata* (de Nicéville, 1884) 白紋琉灰蝶

♀. TAOYUAN CITY, Fuxing, Shangbaling, 13. V. 2019 (G. Y. Chen) (genitalia preparation JYL572).

552. *Celastrina argiolus caphis* (Fruhstorfer, 1922) 琉灰蝶

♀. LIANJIANG Co., Nangan, Shengtian Park, 17. IV. 2014 (C. L. Huang) (genitalia preparation JYL559).



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552

553. *Celastrina sugitanii shirozui* Hsu, 1987 杉谷琉灰蝶

♀. XINZHU Co., Jianshi, Zhenxibao, 1500m, 30. III. 2016 (C. W. Huang, L. H. Wang & Y. M. Hsu) (genitalia preparation JYL593).

554. *Celastrina oreas arisana* (Matsumura, 1910) 大紫琉灰蝶

♀. NANTOU Co., Renai, Songquangang, 13. VI. 2018 (C. W. Huang) (genitalia preparation JYL582).

555. *Celastrina lavendularis himilcon* (Fruhstorfer, 1909) 細邊琉灰蝶

♀. HUALIAN Co., Xiulin, Bilu, 14/15. VII. 2019 (C. W. Huang) (genitalia preparation JYL529).

556. *Callenya melaena shonen* (Esaki, 1932) 寬邊琉灰蝶

♀. NANTOU Co., Yuchi, Lianhuachi, 21. VIII. 2002 (Y. F. Hsu) (genitalia preparation JYL640).



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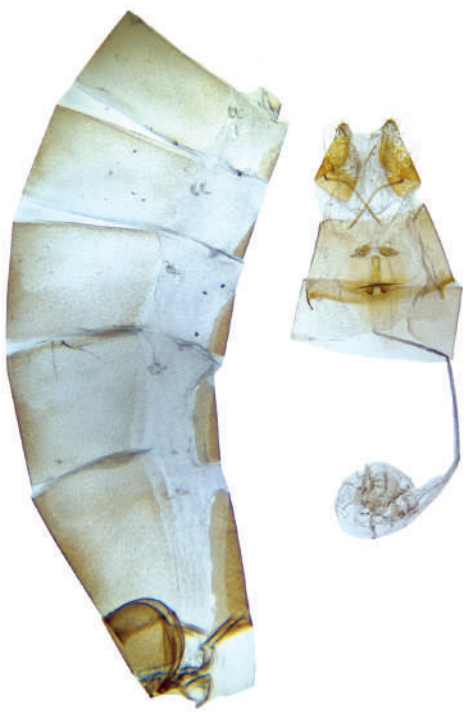

556

557. *Phengaris daitozana* Wileman, 1908 白雀斑灰蝶

♀. JIAYI Co., Alishan, Zizhong, 2300m, 8. VIII. 2004 (S. C. Chen) (genitalia preparation JYL624).

558. *Phengaris atroguttata formosana* (Matsumura, 1926) 青雀斑灰蝶

♀. HUALIAN Co., Xiulin, Bilu, 5. V. 2015 (L. Huang, H. C. Huang & J. M. Wu) (genitalia preparation JYL486).

559. *Chilades lajus koshunensis* Matsumura, 1919 綺灰蝶

♀. TAINAN CITY, Liujia, Longhuyan, 23. VIII. 2014 (Y. F. Hsu) (genitalia preparation JYL680).

560. *Chilades pandava peripatria* Hsu, 1989 蘇鐵綺灰蝶

♀. TAIPEI CITY, Daan Dist., NTU campus, 16. VI. 2015 (L. Huang) (genitalia preparation JYL423).



557



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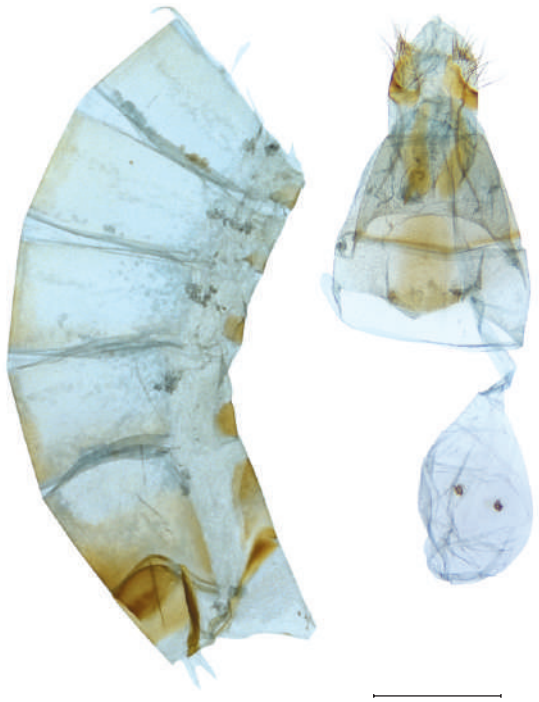


560

561. *Chilades pandava pandava* (Horsfield, [1829]) 蘇鐵綺灰蝶

♀. JINMEN Co., Jinning, Zhongshan Forest, 10m, 17. VIII. 2015 (L. Huang) (genitalia preparation JYL424).

562. *Freyeria putli formosanus* (Matsumura, 1919) 東方晶灰蝶

♀. PINGDONG Co., Checheng, 9. IX. 2009 (genitalia preparation JYL524).

563. *Sibosia burnii etymander* (Fruhstorfer, 1908) 白點褐蜆蝶

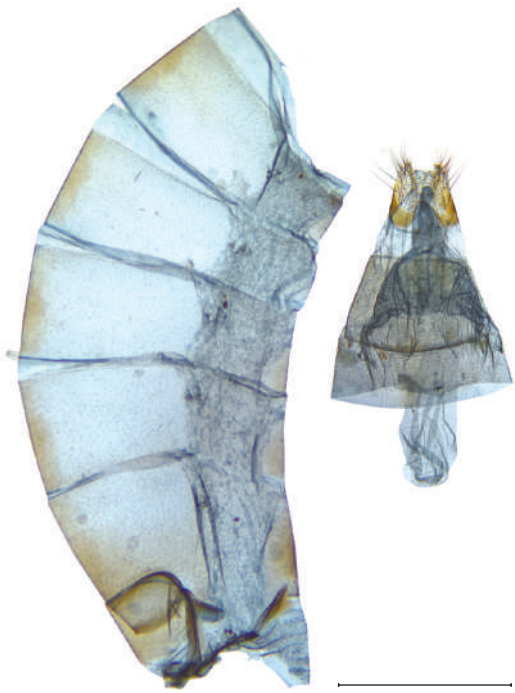
♀. TAIDONG Co., Haiduan, Southern Cross-Island Road, 161K, 20/21. V. 2017 (C. W. Huang) (genitalia preparation JYL498).

564. *Zemeros flegyas* (Cramer, [1780]) 波蜆蝶

♀. HONG KONG: Keiling, Halowei, 18. XII. 2018 (Y. F. Hsu) (genitalia preparation JYL660).



561



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564

565. *Dodona formosana* Matsumura, 1919 臺灣尾蜓蝶

♀. XINBEI CITY, Sanzhi, Datunshan, 1. VI. 2014 (L. Huang) (genitalia preparation JYL479).



565

Index

A

abseus, **463**
acuta, **5**, 479, 559, 627
Acytolepis, **402**
albimacula, **253**, 523, 593, 661
albocaerulea, **399**, 545, 613, 681
alecto, **308**, 531, 601, 669
almora, *ancyra*, **290**, 527, 599, 667
ameria, **64**, 487, 567, 635
Ancema, **177**
ancyra, **290**, 527, 599, 667
Antigius, **85**
Araragi, **82**
argiades, **359**, 539, 609, 677
argiolus, **413**, 547, 615, 683
Arhopala, **42**
arisana, *oreas*, **419**, 547, 617, 685
arisanus, **115**, 497, 573, 641
Artipe, **198**
asakurae, *birmana*, **46**, 485, 563, 631
asakusa, *beroe*, **275**, 525, 597, 665
asbolodes, *dubiosa*, **299**, 529, 599, 667
atayalicus, **95**, 493, 571, 639
atroguttata, **433**, 549, 619, 687
attilia, **86**, 491, 569, 637
austrinum, **227**, 521, 589, 657
avidiena, **164**, 507, 581, 649

B

bazalus, **57**, 487, 565, 633
berenice, **279**, 527, 597, 665
beroe, **275**, 525, 597, 665
birmana, **46**, 485, 563, 631
bochus, **303**, 529, 599, 667
bochus, *bochus*, **304**, 529, 601, 669
boeticus, **328**, 535, 603, 671
brunnea, **9**, 479, 559, 627
burnii, **453**, 553, 621, 689

C

caerulea, **208**, 515, 587, 655
caerulea, *yajna*, **167**, 507, 581, 649
cakravasti, *ctesia*, **177**, 509, 583, 651
Callenya, **426**
caphis, *argiolus*, **413**, 547, 615, 683
Catapaecilma, **261**
Catochrysops, **315**
Catopyrops, **289**
Celastrina, **412**
Celatoxia, **408**
celeno, **312**, 531, 601, 669
chandrana, **204**, 515, 587, 655
Chilades, **436**
chinensis, *ila*, **38**, 483, 563, 631
Chrysozephyrus, **129**
Cigaritis, **23**
cleodus, **464**, 555
cnejus, **324**, 533, 603, 671
comes, **79**, 491, 569, 637
Cordelia, **78**
cornix, *corvus*, **383**, 543, 611, 679
corvus, **383**, 543, 611, 679
ctesia, **177**, 509, 583, 651
Curetis, **5**

D

daitozana, **430**, 549, 619, 687
Deudorix, **188**
diaeus, **170**, 507, 581, 649
dilama, *epeus*, **19**, 481, 561, 629
dilecta, **395**, 543, 613, 681
disparatus, **140**, 501, 577, 645
Dodona, **459**
dromicus, *alecto*, **309**, 531, 601, 669
dubiosa, **299**, 529, 599, 667

E

elatus, **121**, 497, 575, 643
enthea, **82**, 491, 569, 637
epeus, **19**, 481, 561, 629
epijarbas, **189**, 511, 583, 651
eryx, **199**, 513, 585, 653
eryx, *eryx*, **199**, 513, 585, 653
esakii, **239**, 519, 591, 659
etymander, *burnii*, **453**, 553, 621, 689
Euaspa, **105**
Euchrysops, **323**
euplea, *kurava*, **271**, 525, 595, 663
Everes, **358**

exiguus, *panormus*, **316**, 533, 603, 671
eximium, **233**, 519, 591, 659

F

Famegana, **350**
filicaudis, **371**, 541, 609, 677
filicaudis, *filicaudis*, **371**, 541, 611, 679
Fixsenia, **245**
flegyas, **457**, 553, 621, 689
Flos, **163**
formosana, *acuta*, **5**, 479, 559, 627
formosana, *atroguttata*, **433**, 549, 619, 687
formosana, **460**, 553, 623, 691
formosana, *ganesa*, **43**, 485, 563, 631
formosana, *milionia*, **106**, 495, 571, 639
formosana, *nora*, **294**, 527, 599, 667
formosana, *varuna*, **211**, 515, 587, 655
formosanum, **230**, 517, 589, 657
formosanus, *bochus*, **304**, 529, 599, 667
formosanus, *lohita*, **24**, 481, 561, 629
formosanus, *putli*, **447**, 553, 621, 689
formosensis, *fusca*, **465**, 555
forsteri, **109**, 495, 573, 641
Freyeria, **446**
fulgens, **380**, 543, 611, 679
fusca, **465**, 555

G

ganesa, **43**, 485, 563, 631
gisca, *puspa*, **403**, 545, 615, 683
gracilis, **463**, 555
gracilis, *gracilis*, **463**, 555

H

hainani, **368**, 541, 609, 677
hainani, *ameria*, **64**, 487, 567, 635
hainani, *pactolus*, **282**, 527, 597, 665
hamada, **14**, 479, 559, 627
Heliophorus, **37**
herodicus, *bochus*, **304**, 529, 601, 669
himilcon, *lavendularis*, **422**, 549, 617, 685
hirayamana, *nissa*, **215**, 515, 587, 655
Horaga, **249**
horiella, *eryx*, **199**, 513, 585, 653
horishana, *paramuta*, **54**, 485, 565, 633
hylax, **355**, 539, 607, 675
Hypolycaena, **180**

I

ila, **37**, 483, 563, 631
illurgis, **173**, 509, 581, 649
inari, *kina*, **182**, 509, 583, 651
inouei, **242**, 519, 591, 659
insularis, **91**, 493, 569, 637
Iraota, **67**
Iratsume, **102**
isona, *hamada*, **15**, 479, 559, 627

J

Jamides, **303**
japonica, **50**, 485, 565, 633
Japonica, **71**
japonicus, **463**
jinpingi, **88**, 493

K

kabrua, **137**, 501, 577, 645
karenkonis, *diaeus*, **170**, 507, 581, 649
karsandra, **342**, 537, 605, 673
kina, **182**, 509, 583, 651
koshunensis, *lajus*, **438**, 551, 619, 687
kuafui, **160**, 507, 579, 647
kurava, **271**, 525, 595, 663
kuyaniana, *chandrana*, **204**, 515, 587, 655
kuyanianus, **27**, 483, 561, 629

L

lacturnus, **364**, 541, 609, 677
lajus, **438**, 551, 619, 687
Lampides, **327**
lamuae, *syama*, **31**, 483, 561, 629
lavendularis, **422**, 549, 617, 685
leei, *berenice*, **279**, 527, 597, 665
Leptotes, **332**
Leucantigius, **94**
liliacea, *caerulea*, **208**, 515, 587, 652
lingi, **152**, 505, 579, 647
lohita, **24**, 481, 561, 629
luzonensis, *strabo*, **320**, 533, 603, 671

Lycaena, **464**
lydanus, *celeno*, **312**, 531, 601, 669

M

maha, **337**, 537, 605, 673
maha, *maha*, **338**, 537, 605, 673
Mahathala, **63**
major, **262**, 525, 595, 663
malaya, **390**, 543, 613, 681
manea, **223**, 517, 589, 657
marginata, **408**, 547, 615, 683
matsumurae, *ila*, **37**, 483, 563, 631
Megisba, **390**
melaena, **426**, 549, 617, 685
menesicles, *epijarbas*, **189**, 511, 583, 651
michaelis, **75**, 491, 567, 635
milionia, **106**, 495, 571, 639
moltrechti, *major*, **262**, 525, 595, 663
moltrechti, *onyx*, **250**, 521, 593, 661
moorei, **376**, 541, 611, 679
morisonensis, *enthea*, **82**, 491, 569, 637
mushaellus, **155**, 505, 579, 647
mushanum, *eximium*, **233**, 519, 591, 659
mushanus, *filicaudis*, **371**, 541, 609, 677
myla, *puspa*, **403**, 545, 615, 683

N

Nacaduba, **270**
Neopithecops, **386**
Neozephyrus, **124**
niitakanus, *kabrua*, **137**, 501, 577, 645
Niphanda, **465**
nisa, **351**, 539, 607, 675
nishikaze, **134**, 501, 575, 643
nissa, **215**, 515, 587, 655
nivea, **99**, 493, 571, 639
nora, **294**, 527, 599, 667
Nothodanis, **285**

O

obsoleta, *attilia*, **86**, 491, 569, 637
okinawana, *maha*, **338**, 537, 605, 673
onyx, **250**, 521, 593, 661
oreas, **419**, 547, 617, 685
orsedice, **102**, 495, 571, 639
Orthomiella, **267**
othona, **185**, 511, 583, 651
otis, **346**, 539, 607, 675
otis, *otis*, **346**, 539, 607, 675

P

pactolus, **282**, 527, 597, 665
pandava, **441**, 551, 619, 687
pandava, *pandava*, **441**, 551, 619, 687
panormus, **316**, 533, 603, 671
paramuta, **54**, 485, 565, 633
patungkoanui, **71**, 489, 567, 635
peripatria, *pandava*, **441**, 551, 619, 687
Phengaris, **429**
phlaeas, **464**, 555
Pithecops, **379**
plinius, **333**, 535, 605, 673
Prosotas, **293**
pseudotaiwanus, *disparatus*, **140**, 501, 577, 645
puspa, **403**, 545, 615, 683
putli, **447**, 553, 621, 689

R

rama, **60**, 487, 565, 633
ramosa, *rama*, **60**, 487, 565, 633
rantaizana, **267**, 525, 595, 663
Rapala, **207**
rapaloides, **195**, 513, 585, 653
rarasana, **257**, 523, 593, 661
rarasanus, **143**, 503, 577, 645
Ravenna, **98**
rileyi, *lacturnus*, **364**, 541, 609, 677
riukuensis, *otis*, **346**, 539, 607, 675

S

sankakuhonis, **192**, 511, 585, 653
Satyrium, **226**
schaeffera, **286**, 527, 597, 665
schistacea, *manea*, **223**, 517, 589, 657
Shijimia, **375**
shirozui, *sugitanii*, **416**, 547, 617, 685
shonen, *melaena*, **427**, 549, 617, 685
Sibataniozephyrus, **159**
Sibosia, **453**
sikkima, *malaya*, **390**, 543, 613, 681

Sinthusa, **203**
Spalgis, **18**
splendidulus, **149**, 503, 579, 647
strabo, **319**, 533, 603, 671
strabo, *strabo*, **320**
sugitanii, **416**, 547, 617, 685
suzukii, *orsedice*, **102**, 495, 571, 639
syama, **31**, 483, 561, 629

T

taiwana, *moorei*, **376**, 541, 611, 679
taiwanus, **126**, 499, 575, 643
Tajuria, **166**
takarana, *michaelis*, **75**, 491, 567, 635
takasagonis, **219**, 517, 589, 657
tanakai, **236**, 519, 591, 659
Taraka, **14**
tattaka, *illurgis*, **173**, 509, 581, 649
tayal, **111**, 495, 573, 641
teisoi, **130**, 499, 575, 643
Teratozephyrus, **114**
thalaba, *hamada*, **14**, 479, 559, 627
therasia, *kurava*, **271**, 525, 595, 663
timoleon, **68**, 489, 567, 635
Tongeia, **367**
triumphalis, *albimacula*, **253**, 523, 593, 661
turbata, *bazalus*, **57**, 487, 565, 633

U

Udara, **394**
urai, *fulgens*, **380**, 543, 611, 679
Ussuriana, **74**

V

varuna, **211**, 515, 587, 655

W

Wagimo, **91**
watarii, **246**, 521, 593, 661
wilemaniella, *comes*, **79**, 491, 569, 637

Y

y-fasciatus, *avidiena*, **164**, 507, 581, 649
yajna, **167**, 507, 581, 649
yuchingkinus, **146**, 503, 577, 645
yugaii, **118**, 497, 573, 641

Z

zalmora, **387**, 543, 613, 681
Zemeros, **456**
Zizeeria, **336**
Zizina, **345**
Zizula, **354**

索引

三劃

三尾灰蝶 , **262**, 525, 595, 663
三尾灰蝶屬 , **262**
三尾花灰蝶 , **463**
三角峰玳灰蝶 , **192**, 511, 585, 653
三斑虎灰蝶 , **31**, 483, 561, 629
大娜波灰蝶 , **271**, 525, 595, 663
大紫琉灰蝶 , **419**, 547, 617, 685
小紫灰蝶 , **46**, 485, 563, 631
小翠灰蝶 , **140**, 501, 577, 645
小鑽灰蝶 , **253**, 523, 593, 661
丸灰蝶屬 , **379**

四劃

井上灑灰 , **242**, 519, 591, 659
日本紫灰蝶 , **50**, 485, 565, 633
日本榿翠灰蝶 , **463**
日灰蝶屬 , **37**

五劃

凹翅紫灰蝶 , **64**, 487, 567, 635
凹翅紫灰蝶屬 , **63**
田中灑灰蝶 , **236**, 519, 591, 659
白芒翠灰蝶 , **152**, 505, 579, 647
白紋琉灰蝶 , **408**, 547, 615, 683
白紋琉灰蝶屬 , **408**
白雀斑灰蝶 , **430**, 549, 619, 687
白斑嫵琉灰蝶 , **399**, 545, 613, 681
白雅波灰蝶 , **312**, 531, 601, 669
白腹青灰蝶 , **170**, 507, 581, 649
白點褐蜆蝶 , **453**, 555, 623, 691
白點褐蜆蝶屬 , **453**
玄灰蝶屬 , **367**

六劃

西風翠灰蝶 , **134**, 501, 575, 643
夸父璀灰蝶 , **160**, 507, 579, 647
灰蝶屬 , **466**
尖灰蝶 , **164**, 507, 581, 649
尖灰蝶屬 , **163**
曲波灰蝶 , **290**, 527, 599, 667
曲波灰蝶屬 , **289**
伏氏鎲灰蝶 , **109**, 495, 573, 641
江崎洒灰蝶 , **239**, 519, 591, 659

七劃

折列藍灰蝶 , **346**, 539, 607, 675
折列藍灰蝶屬 , **346**
折線灰蝶 , **86**, 491, 569, 637
折線灰蝶屬 , **86**
杉谷琉灰蝶 , **416**, 547, 617, 685
豆波灰蝶 , **328**, 535, 603, 671
豆波灰蝶屬 , **328**
秀灑灰蝶 , **233**, 519, 591, 659
尾蜆蝶屬 , **459**
阿里山鐵灰蝶 , **115**, 497, 573, 641

八劃

青灰蝶屬 , **167**
青珈波灰蝶 , **316**, 533, 603, 671
青雀斑灰蝶 , **433**, 549, 619, 687
拉拉山翠灰蝶 , **143**, 503, 577, 645
拉拉山鑽灰蝶 , **257**, 523, 593, 661
東方晶灰蝶 , **447**, 553, 621, 689
奇波灰蝶 , **324**, 533, 603, 671
奇波灰蝶屬 , **323**
虎灰蝶 , **24**, 481, 561, 629
虎灰蝶屬 , **23**
波灰蝶 , **294**, 527, 599, 667
波灰蝶屬 , **294**
波蜆蝶 , **457**, 555, 623, 691
波蜆蝶屬 , **456**
泥黃燕灰蝶 , **223**, 517, 589, 657

九劃

玳灰蝶 , **189**, 511, 583, 651
玳灰蝶屬 , **189**
珂灰蝶 , **79**, 491, 569, 637
珂灰蝶屬 , **78**
珈波灰蝶屬 , **316**
南方娜波灰蝶 , **275**, 525, 597, 665
南方燕藍灰蝶 , **364**, 541, 609, 677
南方灑灰蝶 , **227**, 521, 589, 657
紅灰蝶 , **466**, 555
娜波灰蝶屬 , **270**
迷你藍灰蝶 , **355**, 539, 607, 675
迷你藍灰蝶屬 , **355**

十劃

泰雅鍠灰蝶 , **111**, 495, 573, 641
珠灰蝶 , **102**, 495, 571, 639
珠灰蝶屬 , **102**
莧藍灰蝶 , **342**, 537, 605, 673
蚜灰蝶 , **14**, 479, 559, 627
蚜灰蝶屬 , **14**
烏灰蝶屬 , **246**
高山鐵灰蝶 , **121**, 497, 575, 643
高砂燕灰蝶 , **219**, 517, 589, 657
窄翅波灰蝶 , **463**, 555
朗灰蝶 , **99**, 493, 571, 639
朗灰蝶屬 , **98**
閃灰蝶 , **204**, 515, 587, 655
閃灰蝶屬 , **204**
閃雅波灰蝶 , **464**, 555

十一劃

琉灰蝶 , **413**, 547, 615, 683
琉灰蝶屬 , **413**
堇彩燕灰蝶 , **208**, 515, 587, 655
雀斑灰蝶屬 , **430**
異灰蝶 , **68**, 489, 567, 635
異灰蝶屬 , **67**
細灰蝶 , **333**, 535, 605, 673
細灰蝶屬 , **333**
細邊琉灰蝶 , **422**, 549, 617, 685
密紋波灰蝶 , **299**, 529, 599, 667
密點玄灰蝶 , **371**, 541, 609, 677
淡青雅波灰蝶 , **309**, 531, 601, 669
淡黑玳灰蝶 , **195**, 513, 585, 653
清金翠灰蝶 , **146**, 503, 577, 645

十二劃

森灰蝶 , **376**, 541, 611, 679
森灰蝶屬 , **375**
黃閃翠灰蝶 , **137**, 501, 577, 645
雅波灰蝶 , **303**, 529, 599, 667
雅波灰蝶屬 , **303**
紫日灰蝶 , **37**, 483, 563, 631
紫灰蝶屬 , **42**
紫珈波灰蝶 , **319**, 533, 603, 671
單線翠灰蝶 , **149**, 503, 579, 647
單點藍灰蝶 , **351**, 539, 607, 675
單點藍灰蝶屬 , **350**
晶灰蝶屬 , **446**
黑丸灰蝶 , **383**, 543, 611, 679
黑列波灰蝶 , **286**, 527, 597, 665
黑列波灰蝶屬 , **286**
黑灰蝶 , **466**, 555
黑灰蝶屬 , **466**
黑星灰蝶 , **390**, 543, 613, 681
黑星灰蝶屬 , **390**
黑點灰蝶 , **387**, 543, 613, 681
黑點灰蝶屬 , **386**
短尾紫灰蝶 , **60**, 487, 565, 633
焰灰蝶屬 , **71**
渡氏烏灰蝶 , **246**, 521, 593, 661

十三劃

蓬萊虎灰蝶 , **27**, 483, 561, 629
暗色娜波灰蝶 , **282**, 527, 597, 665
暗色紫灰蝶 , **54**, 485, 565, 633
鈿灰蝶 , **177**, 509, 583, 651
鈿灰蝶屬 , **177**

漣紋青灰蝶 , **173**, 509, 581, 649

十四劃

碧翠灰蝶 , **130**, 499, 575, 643
榿翠灰蝶屬 , **125**
臺灣玄灰蝶 , **368**, 541, 609, 677
臺灣尾蜆蝶 , **460**, 555, 625, 693
臺灣焰灰蝶 , **71**, 489, 567, 635
臺灣榿翠灰蝶 , **126**, 499, 575, 643
臺灣銀灰蝶 , **9**, 479, 559, 627
臺灣線灰蝶 , **91**, 493, 569, 637
臺灣鐵灰蝶 , **118**, 497, 573, 641
臺灣灑灰蝶 , **230**, 517, 589, 657
蔚青紫灰蝶 , **43**, 485, 563, 631
熙灰蝶 , **19**, 481, 561, 629
熙灰蝶屬 , **18**
綺灰蝶 , **438**, 551, 619, 687
綺灰蝶屬 , **437**
錏灰蝶 , **106**, 495, 571, 639
錏灰蝶屬 , **106**
銀灰蝶 , **5**, 479, 559, 627
銀灰蝶屬 , **5**
褐翅青灰蝶 , **167**, 507, 581, 649
寬邊琉灰蝶 , **426**, 549, 617, 685
寬邊琉灰蝶屬 , **426**
翠灰蝶屬 , **130**
綠灰蝶 , **199**, 513, 585, 653
綠灰蝶屬 , **199**

十五劃

璀灰蝶屬 , **159**
熱帶娜波灰蝶 , **279**, 527, 597, 665
熱帶蘭灰蝶 , **185**, 511, 583, 651
赭灰蝶 , **75**, 491, 567, 635
赭灰蝶屬 , **75**
墨點灰蝶 , **82**, 491, 569, 637
墨點灰蝶屬 , **82**
嫵琉灰蝶 , **395**, 543, 613, 681
嫵琉灰蝶屬 , **395**
線灰蝶屬 , **91**

十六劃

靛色琉灰蝶 , **403**, 545, 615, 683
靛色琉灰蝶屬 , **403**
燕灰蝶 , **211**, 515, 587, 655
燕灰蝶屬 , **208**
燕尾紫灰蝶 , **57**, 487, 565, 633
燕藍灰蝶 , **359**, 539, 609, 677
燕藍灰蝶屬 , **359**
霓彩燕灰蝶 , **215**, 515, 587, 655
鋸灰蝶屬 , **267**
錦平折線灰蝶 , **88**, 493

十七劃

藍丸灰蝶 , **380**, 543, 611, 679
藍灰蝶 , **337**, 537, 605, 673
藍灰蝶屬 , **337**

十八劃

霧社翠灰蝶 , **155**, 505, 579, 647

十九劃

蘇鐵綺灰蝶 , **441**, 551, 619, 687

二十劃

瓏灰蝶 , **95**, 493, 571, 639
瓏灰蝶屬 , **95**
蘭灰蝶 , **182**, 509, 583, 651
蘭灰蝶屬 , **181**

二十一劃

鐵灰蝶屬 , **115**

二十二劃

巒大鋸灰蝶 , **267**, 525, 595, 663
灑灰蝶屬 , **227**

二十七劃

鑽灰蝶 , **250**, 521, 593, 661
鑽灰蝶屬 , **250**

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