

# 臺灣蝶類誌

BUTTERFLY FAUNA  
OF  
TAIWAN

弄蝶科

HESPERIIDAE

第三卷

Vol. III



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行政院農業委員會林務局



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COUNCIL OF AGRICULTURE EXECUTIVE YUAN  
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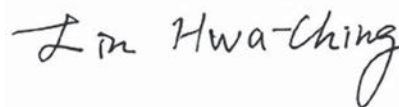
## Foreword

The island of Taiwan is about 36,000 km<sup>2</sup>, 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 Bureau is actively planning the publication of the “Biota”. The Forestry Bureau 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 Forestry Bureau 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, with the hope to complete in six or seven years. This year, the volume three HesperIIDae 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.

Direct General



Forestry Bureau, Council of Agriculture, Executive Yuan

## 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。林務局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》也正籌備中。

就蝴蝶分類研究而言，自日籍學者白水隆教授 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。本局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，期於六、七年間出版完成。本年出版第三卷弄蝶科，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。

行政院農業委員會林務局 局長

 謹識

2018 年 12 月

## 臺灣弄蝶大百科

常跑野外或喜歡拍照的朋友常常問我：「為什麼弄蝶身材粗粗壯壯的，翅膀又那麼短，還是飛得那麼好，那麼自在？」我不是昆蟲生理專家，但曾解剖過弄蝶，所以常以弄蝶體內飛翔肌肉發達胡回應。的確，從外型而言，摺疊背部如三角翼般的雙翅和胖胖的身材是弄蝶給人最深刻的印象。比起鳳蝶、斑蝶飛翔起來曼妙的舞姿，一看到弄蝶飛起衝來衝去，令人莞爾！

年初堉峰來電，得知「臺灣蝶類誌第三卷」是以弄蝶科為主題，即將付梓，希望我為文推薦，我很樂意！這本書延續前兩本書的精隨，涵蓋 4 個亞科 36 屬 66 種，也補充註記 3 屬 3 種；書中並對最新學名演變作了修訂，這對學術或科普而言，應是臺灣弄蝶科最完整的介紹。堉峰在蝶類方面的研究不但是國內翹楚，在國際上也很著名，所以我常笑稱他是「國際牌」的學者。難能可貴的是，他對人和出版的熱忱、做研究的嚴謹、對後輩的提攜及諄諄教誨，立人折服。

所以喜歡蝴蝶、喜歡大自然，尤其對弄蝶科特別感到興趣的朋友，絕不能錯過這本兼具學術和應用價值的好書！

國立台灣大學生物資源暨農學院 名譽教授



謹記

2019.1.22



## Preface

The preparation of volume 3, HesperIIDae part, of the book series “Butterfly Fauna of Taiwan” initiated when the previous volumes were about to be published. During the process, text of the draft required frequent adjustment because of surfacing new literature due rapid progress on research on systematics and phylogenetics of skippers. I invited two prominent skipper researchers, Dr. Hideyuki Chiba and Mr. Hiroshi Tsukiyama, as collaborators of this volume. A co-author of previous volumes, Dr. Chia-Lung Huang, has left postdoctoral work in my laboratory for his career. Mr. Chi-Wei Huang, a lab assistant just graduated from our department has taken the translation work and data documentation for this volume. 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; for instance, specimens of *Burara gomata* from Hong Kong and Guizhou and *Coladenia hoenei* from Zhejiang were used for plates and genitalia preparation. We hope this volume may serve to provide update information about skippers of Taiwan to anyone who concerns about these lovely creatures.



National Taiwan Normal University, Taipei

## 作者序

「臺灣蝶類誌」第三卷弄蝶科的撰寫工作開始於前兩卷發行之際。編寫過程中，文稿內容不斷因新發表的文獻進行調整，說明近年來弄蝶科分類與親緣關係研究已有長足進展。為讓內容更加正確與充實，我邀請兩位國際知名的弄蝶專家加入本書的編撰，他們是千葉秀幸博士及築山 洋先生。前兩卷的主要共同作者黃嘉龍博士由於另有高就已離開我研究室，他負責的部分由甫自我系畢業，現擔任研究助理的黃智偉先生接手。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，如香港及貴州產的白傘弄蝶以及浙江產的花窗弄蝶。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。



2019. 1. 30. 於師大分部

## Acknowledgments

Many friends and students provide assistance to this book volume, on assistance of chores, 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), Mr. Motoki Saito (Japan), Mr. Gian Cristoforo Bozano (Italy), Mr. James Young (Hong Kong), Mr. Philip Yik-Fui Lo (Hong Kong), Dr. Chin-sheng Wu (mainland China), 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. Hao Huang (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 Hang Li, Mr. Yu-Jung Hung, and Mr. Yung-Jen Chang. Members and ex-members of my laboratory include Mr. Li-Hao Wang, Ms. Yu-Chi Lin, Ms. Jung-Chun Lin, Mr. Cheng-Jui Chang, Mr. Wen-Chieh Lin, Mr. Li Huang, Mr. Yu-Ming Hsu, Ms. Ke-Yi Ho, 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. Chia-Lung Huang and Dr. Li-Wei Wu. I am here to express my cordial thanks to all of them. Conservation Section of Forestry Department, Council of Agriculture (COA) 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、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，中國大陸的武春生博士、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、黃灝博士、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、洪裕榮先生及張永仁先生。臺灣師範大學研究團隊的成員則有王立豪先生、林育綺小姐、林容諄小姐、張宸睿先生、林文傑先生、黃黎先生、許育銘先生、何可慧小姐、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、黃嘉龍博士及吳立偉博士。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。



2019. 1. 30. 於師大分部

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## **Family HESPERIIDAE Latreille, [1809]**

The family consists of about 3500 species distributed worldwide (Ackery *et al.* (1999). The common name for the members of the family, skippers, comes from their darting, irregular flight (Scoble, 1992). A few authors exclude the family from “butterflies” (e. g. D’Abrera, 1998) and classify them into a separate superfamily Hesperioidea, but Heikkilä *et al.* (2012)’s molecular phylogeny argues that HesperIIDae is sister to all butterfly families excluding Papilionidae.

The monophyly of HesperIIDae is well supported by both morphological evidence (e. g. Ackery *et al.*, 1999) and molecular data (e. g. Wahlberg *et al.*, 2005; Heikkilä, *et al.*, 2012). Unique synapomorphies of this family at least include the following characters: 1) antennae at least twice the width of the scape apart; 2) eyes with a complete marginal ring of reduced ommatidial facets; 3) third axillary sclerite of forewing base Y-shaped, indented anteriorly.

Based on morphological features, Ackery *et al.* (1999) recognize six subfamilies in the family: Coeliadinae, Pyrrhopyginae, Pyrginae, Heteropterinae, Trapezitinae, and HesperIinae, but they also pointed out that Pyrginae and HesperIinae may have been paraphyletic. The Agavaceae-associated New World giant skippers are sometimes regarded as a distinct family Megathymidae (e. g. Garth & Tilden, 1986) or a subfamily Megathyminae (e. g. Miller & Brown, 1981; Scott, 1986; Borror *et al.*, 1989), but Ackery *et al.* (1999) concluded that it should be a group within HesperIinae. Based on molecular evidence, Warren *et al.* (2008) recognized only 5 subfamilies, by relocating Pyrrhopyginae sensu Ackery *et al.* (1999) as a tribe Pyrrhopygini within Pyrginae, and the giant skippers sunk to a lineage within HesperIinae. Subsequently Warren *et al.* (2009) combined molecular and morphological evidence, revising this classification, with Euschemoninae and Eudaminae regarded as distinct subfamilies, so a total of seven subfamilies of HesperIIDae are recognized: Coeliadinae, Euschemoninae, Eudaminae, Pyrginae, Heteropterinae, Trapezitinae, and HesperIinae. Warren *et al.* (2009) ’s scheme for classification of HesperIIDae has been confirmed by subsequent researches based on molecular phylogeny (Yuan *et al.*, 2015b; Sahoo *et al.*, 2016; Toussaint *et al.*, 2018).

A total of 66 species of skippers thrive in Taiwan and its associated islands, with 3 additional species of uncertain sources or accidental stray from areas outside of Taiwan.

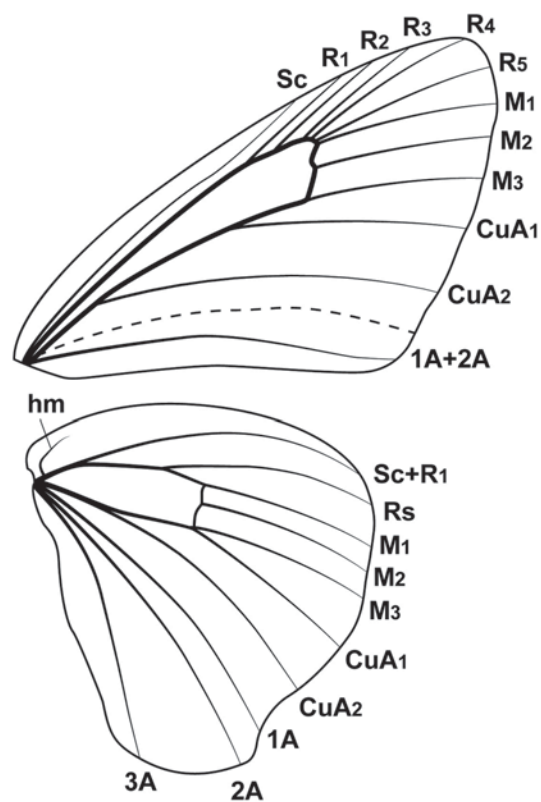
## 弄蝶科

本科成員呈泛世界分布，約有 3500 種 (Ackery *et al.*, 1999)。此科成員的英文俗名稱為 *skipper*，有「跳躍者」的意味，源自其迅速且不規則的飛行模式 (Scoble, 1992)。有些研究者將弄蝶科排除在蝶類之外 (如 D'Abrera, 1998)，並將其放在單獨的弄蝶總科之中。然而，在 Heikkilä *et al.* (2012) 的分子系統發育研究中，弄蝶科卻成為鳳蝶科外所有其他蝶類科的姊妹群。

無論是形態證據 (如 Ackery *et al.*, 1999) 或是分子資料 (如 Wahlberg *et al.*, 2005; Heikkilä *et al.*, 2012) 均充分支持弄蝶科為單系群。此科成員包含了下列數個共衍徵：1) 觸角至少為柄節間距兩倍寬；2) 複眼外圍小眼眼面縮小，形成完整輪緣；3) 前翅翅基第 3 腋骨呈 Y 字形，前側凹陷。

Ackery *et al.* (1999) 根據形態特徵將弄蝶科分為 6 個亞科，分別是大弄蝶亞科 Coeliadinae、美洲大弄蝶亞科 Pyrrhopyginae、花弄蝶亞科 Pyrginae、鏈弄蝶亞科 Heteropterinae、澳洲弄蝶亞科 Trapezitinae 及弄蝶亞科 Hesperinae，不過他們同時也指出花弄蝶亞科和弄蝶亞科可能是並系群。新世界特有，以龍舌蘭科植物為寄主植物的巨弄蝶有時會被處理為不同於弄蝶科的巨弄蝶科 Megathymidae 或弄蝶科下的 1 亞科 Megathyminae，但 Ackery *et al.* (1999) 的研究結果認為它應當被置於弄蝶亞科內。Warren *et al.* (2008) 根據分子證據將 Ackery *et al.* (1999) 定義的美洲大弄蝶亞科視為花弄蝶亞科的一群，將弄蝶科僅分為 5 個亞科，並將巨弄蝶降為弄蝶亞科弧弄蝶族的一支。隨後 Warren *et al.* (2009) 合併形態及分子證據，修正舊有分類，分離出壯弄蝶亞科 Eudaminae 及具纒弄蝶亞科 Euschemoninae，弄蝶科因而有 7 亞科，分別為：大弄蝶亞科、壯弄蝶亞科、具纒弄蝶亞科、花弄蝶亞科、鏈弄蝶亞科、澳洲弄蝶亞科及弄蝶亞科。Warren *et al.* (2009) 對於弄蝶的分類處理也受一些近期之分子系統發育研究支持 (例如 Yuan *et al.*, 2015b; Sahoo *et al.*, 2016; Toussaint *et al.*, 2018)。

臺灣及其離島地區共計有 66 種弄蝶棲息，此外有 3 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 HesperIIDAE (*Choaspes benjaminii*).**

弄蝶科翅脈脈相圖（綠弄蝶為例）

## Subfamily COELIADINAE, Evans, [1937]

Ackery *et al.* (1999) and Warren *et al.* (2009) state that the subfamily is defined by a single, unique, and universal characters: third segment of labial palpus long, slender, awl-like, perpendicular to the erect second segment. Secondary sexual characters in the subfamily comprise bands and stigmata on wing uppersides and tibial hair tufts. Phylogenetically, the subfamily branches off at the base of HesperIIDae. A fossil, estimated 55 million years old, belonging to the subfamily was found from Europe (de Jong, 2016).

The members of this subfamily are mainly tropical in the Old World, but a few species are found in temperate zones in East Asia. The host plants of the subfamily are dicotyledons.

In Taiwan, a total of 10 species in 4 genera are known.

## 大弄蝶亞科

Ackery *et al.* (1999) 及 Warren *et al.* (2009) 指出此亞科為唯一通則性且獨特的特徵所定義：下唇鬚第 3 節修長而呈尖錐形，並與直立之第 2 節成直角。此亞科的第二性徵由翅背面的帶狀或塊狀性標，以及脛節毛束所組成。本亞科在系統發育關係上位於弄蝶科基部分支。近年從歐洲考古研究出土本亞科之弄蝶化石，估算距今已有 5500 萬年 (de Jong, 2016)。

此亞科成員主要分布在舊世界的熱帶地區，但少數種類分布在東亞的溫帶地區。此亞科成員以雙子葉植物為寄主植物。

在臺灣地區，已知共有 4 屬 10 種。

## Genus *BURARA* Swinhoe, 1893

**Type species:** *Ismene vasutana* Moore, 1866

Diagnostic characters include the followings: 1) origin of CuA<sub>1</sub> distad of vein R<sub>5</sub> on forewing, origin of vein Rs closer to CuA<sub>2</sub> than CuA<sub>1</sub>; 2) sexual dimorphism prominent; 3) crepuscular in activity; 4) no discal band on wing underside (Eliot, 1992; Chiba, 2009).

Members of this genus have been included in the genus *Bibasis* Moore [1881] which possesses narrow wings, sexes alike, and diurnal in activity. Chiba (2009) advocates separation of the genus from *Bibasis* following suggestion by Eliot (1992).

Chiba (2009) recognized 14 species, distributed in the Oriental Region.

In Taiwan, one species occurs on main island, with the other species occasionally found from Jinmen and Mazu Islands.

## 傘弄蝶屬

形態特徵如下：1) 前翅 CuA<sub>1</sub> 脈基部遠離 R<sub>5</sub> 脈，Rs 脈基部距離 CuA<sub>2</sub> 脈較 CuA<sub>1</sub> 脈近；2) 雌雄二型性顯著；3) 晨昏活動；4) 翅腹面無中央斑帶 (Eliot, 1992; Chiba, 2009)。

本屬成員曾被置於擁有窄翅、雌雄相似以及日間活動的鉤紋弄蝶屬 *Bibasis* 當中。Chiba (2009) 主張依循 Eliot (1992) 的建議將傘弄蝶屬從鉤紋弄蝶屬分離。

Chiba (2009) 將本屬分為 14 種，分布於東洋區。

臺灣本島有 1 種，另有 1 種偶見於金馬地區。

***Burara jaina* (Moore, [1866])** ( 橙翅傘弄蝶 / 鸞褐弄蝶 / 橙翅暮弄蝶 )

*Ismene jaina* Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 782. (Type

locality: “Darjeeling”)

*Ismene jaina vasundhara* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25(5): 59.

(Type locality: “Assam”)

**Ssp. *formosana* Fruhstorfer, 1911**

**PLATE 1, Figs. 1-2; PLATE 19, Fig. 150; PLATE 37, Fig. 220**

*Ismene jaina formosana* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25(5): 59.

(Type locality: “Formosa”)

**Specimens examined:**

**XINBEI CITY [NEW TAIPEI CITY/TAIPEI Co.]:** 1♀, Xindian, Sikanshui, 22. XI. 2008, reared from *Hiptage benghalensis*, emgd. 5. I. 2009, HSU 08L6 (Y. F. Hsu & C. H. Yen), 1♀, Wulai, Jiajiuliao, 14. II. 2003, reared from *H. benghalensis*, emgd. 26. III. 2003, HSU 03B15 (H. S. Chuen & F. Z. Lin). **HUALIAN Co.:** 1♂, Xiulin, Shikongzai, 60m, 25. IV. 2008, reared from *H. benghalensis*, emgd. 27. V. 2008, HSU 08D18 (L. H. Wang).

**Description.** Adult – Forewing length 19–27 mm. Sexual dimorphism moderately present. Male (PLATE 1, Fig. 1): Head hairy, brown. Antennae with apiculus prominent, hooked, scalings brown on outer surface, creamy yellow on inner surface; a naked area present on inner surface distad. Proboscis brown. Labial palpus erect, with 3rd segment porrect; 1st and 2nd segments hairy, creamy yellow, with an orange stripe and a brown stripe distally; 3rd segment minute, rod-like, smooth and brown. Thorax covered by brown hairs. Abdomen brown, with narrow, longitudinal, orange band medio-ventrally. Legs creamy yellow mixed with orange. Forewing with costa, dorsum nearly straight; termen somewhat convex. Hindwing slightly lobed at tornus. Wing uppersides bearing brown hairs proximally, with ground color brown, decorated with faint, pale markings. Ground color of wing undersides brown, with a prominent creamy white patch posteriad, a creamy yellow discal band, and a creamy white spot at end of discoidal end on forewing; narrow linear stripes in cells of hindwing. Fringe brown except orange around hindwing tornus. A patch of black sexual brand present in Cu cells of forewing. Female (PLATE 1, Fig. 2): Body and wing patterns similar to those of male, but creamy white markings on forewing undersides less extensive. No sexual brand on forewing upperside.

Male genitalia (PLATE 19, Fig. 150) – Tegumen broad, with uncus as bifid lobe forming

shallow V-shaped cleft medially. Gnathos broad, with a patch of sclerotized area armed with minute spines posteriad. Saccus short. Valva simple, attenuated posteriorly into a single horn. Sacculus enlarged proximally. Phallus up-curved, with phallobase shorter than aedeagus. Juxta as a V-shaped sclerite.

Female genitalia (PLATE 37, Fig. 220) – Corpus bursae oval, with signum as prominent, elongate, sclerotized band bearing minute spines. Ductus bursae membranous, with caudal end forming a sclerotized tube. Sterigma forming a heavily sclerotized area connecting ductus bursae, bearing a pair of lobes posteriad. Anal papillae setose. Posterior apophyses elongate, straight, with anterior ends enlarged. Anterior apophyses short, flattened.

**Global distribution.** Himalayas, Northeast and South India, Indochina, Borneo, South China, and Taiwan (Hsu, 2013).

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

**Larval Host plant(s).** Malpighiaceae: *Hiptage benghalensis* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence, overwintering as young larva (Hsu, 1999).

**形態特徵：**成蝶前翅長 19-27 mm。雌雄略有二型性。雄蝶 (圖 1)：頭被毛，褐色。觸角褐色，尖頂明顯呈鉤狀，外側覆褐色鱗，內側覆乳黃色鱗；末端內側有一裸區。口器褐色。下唇鬚上舉，第 3 節前伸；第 1 及第 2 節披毛，乳黃色，於末端有一黑色及一橙色條；第 3 節甚小、棒狀、平滑，呈褐色。胸部覆有褐色毛。腹部褐色，腹部腹面中央有橙色細縱條。足乳黃色混橙色。前翅前緣及後緣直；外緣略突出。後翅臀區略呈葉狀。翅背面底色褐色，近翅基處有褐色毛，綴有模糊淡色斑紋。翅腹面底色褐色，前翅後端有一鮮明的乳白色斑塊，翅中央有淺黃色帶，中室末端有一白斑；各翅室內有細直條。緣毛除了後翅臀區呈橙色外，其餘呈褐色。前翅有一黑色性標。雌蝶 (圖 2)：形態特徵與雄蝶相似，但前翅腹面乳白色紋較不發達，前翅背面無性標。

雄交尾器 (圖 150): 背兜寬闊。鉤突分叉、葉狀，於中間形成 V 形淺凹。顎形突寬闊，具一骨化區，末端具細刺。囊突短。抱器簡單。向末端漸細、角狀。抱器腹向基部漸粗大。陽莖上彎，陽莖基短於陽莖器。陽基顎片為 V 形骨片。

雌交尾器 (圖 220): 交尾囊橢圓形；花壁骨化明顯，呈細長帶狀，上有許多細刺。交尾囊管膜質，尾端骨化、管狀。交尾孔板連接交尾囊管處成高度骨化區，後端具一對葉狀片。肛突具毛。前內骨突短、扁平。後內骨突修長、筆直，前端膨大。

**世界分布：**喜馬拉雅地區、印度東北部及南部、中南半島、婆羅洲、華南及臺灣。

**臺灣分布：**本島低至中海拔地區

**幼蟲寄主植物：**黃耨花科之猿尾藤。

**生物學：**本種是一年多代物種，以幼蟲態越冬 (Hsu, 1999)。

***Burara gomata* (Moore, [1866]) (白傘弄蝶)**

**PLATE 1, Figs. 3-4; PLATE 19, Fig. 151; PLATE 37, Fig. 221**

*Ismene gomata* Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 783.  
(Type locality: “N. E. Bengale”)

**Specimens examined:**

“FUCHIEN [= FUJIAN PROV.], CHINMEN [= JINMEN Co.]”: 2♂, emgd. 5. I. 1999  
(C. S. Lin) (NMNS-ENT 3124-646; NMNS-ENT 3124-647).

**Description.** Adult – Forewing length 21–24 mm. Sexual dimorphism prominent. Male (PLATE 1, Fig. 3): Head hairy, creamy white with brown scalings. Antennae with apiculus prominent, hooked, brown; a naked area present on inner surface distad. Proboscis pale brown. Labial palpus erect, with 3rd segment porrect; 1st and 2nd segments hairy, creamy yellow, with narrow brown stripe laterally; 3rd segment rod-like, brown. Thorax covered by brown hairs. Abdomen brown banded with narrow, creamy white annuli, with longitudinal, orange band medio-ventrally. Legs dark brown with creamy yellow scalings. Forewing with costa, dorsum nearly straight; termen

somewhat convex. Hindwing slightly lobed at tornus. Wing uppersides bearing brown hairs proximally, with ground color brown, with faint, radial creamy white striae in cells; an extensive creamy white patch present along hindwing costa. Wing undersides ground color dark indigo, with radial creamy striae on both wings; a prominent creamy white stripe from wing base through discoidal cell and cell M<sub>1</sub>/M<sub>2</sub> to termen on hindwing. Prominent brown hair pencil and a band of shining specialized scales on metatibia. Fringe creamy white to brown. Female (PLATE 1, Fig. 4): Body and patterns of wing undersides similar to those of male, but ground color of wing uppersides metallic indigo tinged with purple, with green hue proximally. Two faint, creamy white spots present, in cell M<sub>3</sub> and CuA<sub>1</sub>; spotless on hindwing. No secondary sexual characters on metatibia.

Male genitalia (PLATE 19, Fig. 151) – Tegumen broad, tapering to bifid uncus forming shallow V-shaped cleft medially. Gnathos broad, with a patch of sclerotized area armed with minute spines posteriad. Saccus short, lobe-like. Valva elongate, dagger-like; costa forming a prominent process conjoined with juxta; sacculus bearing elongate, highly sclerotized process, ribbon-like with acute distal end. Phallus up-curved, with phallobase longer than aedeagus. Cornuti as a patch of minute spines. Juxta as V-shaped sclerite.

Female genitalia (PLATE 37, Fig. 221) – Corpus bursae elongate, wrinkled, with signum as prominent, elongate, sclerotized band bearing minute spines. Ductus bursae membranous, with caudal half forming a sclerotized tube enlarged posteriad. Sterigma forming a pair of heavily sclerotized, setose lobes with truncated posterior margin. Anal Papillae elongate. Anterior apophyses short, weakly sclerotized. Posterior apophyses elongate, straight.

**Global distribution.** India, Himalayas, Indochina, Sumatra, Java, Borneo, Philippines, Sulawesi, West to South China (Evans, 1949; Bascombe *et al.*, 1999).

**Distribution in Taiwan.** Chang (2001) reported it from Jinmen (Kinmen) Islands. Hsu *et al.* (2009) reported it from Mazu Islands.

**Larval Host plant(s).** *Schefflera arboricola* (Chang, 2001).

**Biology.** This species is probably multivoltine when it occurs at Jinmen (Kinmen) and Mazu Islands.

**Remarks.** The population found from Jinmen and Mazu Islands may not be residential as they were not seen in surveys conducted in recent years (e.g. Hsu, 2014).

**形態特徵：**成蝶前翅長 21-24 mm。雌雄二型性顯著。雄蝶 (圖 3)：頭被毛，呈乳白色而有褐色鱗。觸角褐色，尖頂明顯呈鉤狀；內側表面末端有一裸露之區域。口器褐色。下唇鬚上舉，第 3 節前伸；第 1 及第 2 節被毛，呈乳黃色，側面有褐色條；第三節棒狀、褐色。胸部覆褐色毛。腹部褐色並有乳白色細環，腹部腹面中央有橙色縱帶。足黑褐色，帶乳黃色鱗。前翅前緣及後緣直；外緣略突出。後翅臀區略呈葉狀。翅背面底色呈褐色，有模糊乳輻射狀白條，後翅前緣有一片乳白色斑。翅腹面底色深藍色，前後翅皆具有輻射狀乳白色條紋；後翅有一鮮明乳白色條紋由翅基貫穿中室及  $M_1/M_2$  室至外緣。後足脛節有褐色毛束及銀白色特化鱗帶。緣毛白色至褐色。雌蝶 (圖 4)：軀體及翅腹面與雄蝶相似，但翅背面具金屬光澤，呈帶紫色調之靛色，近翅基處呈綠色並覆有褐色毛。 $M_3$  室及  $CuA_1$  室各有一模糊乳白色斑；後翅缺少斑紋。後足脛節無第二性徵。

雄交尾器 (圖 151)：背兜寬闊，鉤突漸窄、二分，中央開口呈淺 V 形。顎形突寬闊，具一骨化區，末端具細刺。囊突短、葉狀。抱器長，匕首狀。抱器瓣背側邊緣形成突起，並與陽基顎片癒合。抱器腹向上延伸、高度骨化、條狀，末端銳尖。陽莖上彎，陽莖基較陽莖器長。角狀器形成一片由小刺形成之構造。陽基顎片為 V 形骨片。

雌交尾器 (圖 221)：交尾囊修長橢圓形，有皺褶；花壁骨化明顯，呈細長帶狀且有許多小刺。交尾囊管膜質，尾端一半處高度骨化。交尾孔板呈一對高度骨化、後緣截平的被毛葉狀片。肛突長。前內骨突短、輕度骨化。後內骨突長、筆直。

**世界分布：**印度、喜馬拉雅地區、中南半島、蘇門答臘、爪哇、婆羅洲、菲律賓、蘇拉威西、華西至華南。

**臺灣分布：**Chang (2001) 報告本種在金門地區發生的記錄。Hsu *et al.* (2009) 報告馬祖地區亦曾發現。

**幼蟲寄主植物：**五加科之鵝掌藤。

**生物學：**本種在金馬地區發生時可能一年多代。

**註記：**由於近年調查缺乏觀察採集記錄，本種在金門及馬祖地區可能尚無常駐族群。

## Genus *HASORA* Moore, [1881]

**Type species:** *Goniloba badra* Moore, 1858

Diagnostic characters include the followings: 1) vein 1A+2A of forewing distorted at base; 2) forewing apex pointed; 3) hindwing lobate; 4) wing uppersides dark brown, with pale hyaline spots prominent on forewings in most species of females; 5) Sexual brands usually running from CuA<sub>1</sub> to dorsum on forewing uppersides in males (Eliot, 1992; Chiba, 2009).

Chiba (2009) recognized 29 species, distributed in the Oriental, Australian, and Eastern Palearctic Regions.

In Taiwan, five species occur.

## 絨弄蝶屬

形態特徵如下：1) 前翅 1A+2A 脈基部彎曲；2) 前翅翅端尖銳；3) 後翅有葉狀突；4) 翅背面黑褐色，多數種類之雌蝶前翅具有明顯半透明斑點；5) 雄蝶性標通常於前翅背面 CuA<sub>1</sub> 脈延伸至後緣 (Eliot, 1992; Chiba, 2009)。

Chiba (2009) 將本屬分為 29 種，分布於東洋區、澳洲區及舊北區東部。

臺灣有 5 種。

***Hasora badra* (Moore, [1858]) (鐵色絨弄蝶 / 鐵色絨毛弄蝶 / 三斑趾弄蝶)****PLATE 1, Figs. 5-6; PLATE 19, Fig. 152; PLATE 37, Fig. 222**

*Goniloba badra* Moore, [1858]: A catalogue of the lepidopterous insects in the museum of the Hon. East-India Company: 245, pl. 7, f. 3, 3a. (Type locality: Java)

*Ismene certhia* Plötz, [1883]: Entomologische Zeitung 45 (1-3): 59. (Type locality: "Philippinen")

*Hasora badra godana* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (5): 65. (Type locality: Formosa)

*Hasora badra sankarya* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (5): 66. (Type locality: Engano)

**Specimens examined:**

**TAIPEI CITY:** 1♀, Wenshan, Xianjiyan, 30. IX. 2009 (Y. F. Hsu), 1♂, 1♀, Wenshan, Gongguan campus, NTNU, 10. XI. 2015, reared from *Paraderris pictoria*, emgd. 26/29. X. 2015, 15L39 (L. Huang & L. H. Wang). **XINBEI CITY [= NEW TAIPEI CITY/TAIPEI Co.]:** 1♂, Wulai, 1. V. 1999 (L. W. Wu & F. C. Hsu); 1♂, same locality, 15. V. 2007, reared from *Millettia pachycarpa*, emgd. 7. VI. 2007, 07E26 (L. H. Wang). **TAINAN CITY [TAINAN Co.]:** 1♀, Baihe, Zhentoushan, 24. XI. 2002 (Y. F. Hsu, HSU's LAB), 1♀, Baihe, Guanzhiling, reared from *Derris laxiflora*, emgd. 20. VII. 2003, 03G5, (Y. F. Hsu), Xinhua, 8. XII. 2009 (Y. F. Hsu).

**Description.** Adult – Forewing length 20–24 mm. Sexual dimorphism prominent. Male (PLATE 1, Fig. 5): Head hairy, brown. Antennae with apiculus prominent, hooked, brown mixed with creamy yellow scalings ventrad. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow; 3rd segment minute, awl-like, smooth and brown. Thorax covered by brown hairs dorsally, grayish brown ventrally. Abdomen brown dorsally, brown banded with creamy white ventrally. Legs creamy yellow. Forewing triangular, apex obtuse, costa and dorsum straight, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Wing uppersides bearing yellowish brown hairs proximally, with surface brown. Wing undersides ground color brown tinged with purple, mottled with pale scalings; a dark patch present at tornus of hindwing. A white dash present in cell CuA<sub>2</sub>. A white dot at distal end of discoidal cell. A creamy yellow patch present along dorsum of forewing underside. Fringe brown. Female (PLATE 1, Fig. 6): Body and general wing patterns similar to those of male, but prominent creamy yellow, hyaline spot in cell M<sub>3</sub>, CuA<sub>1</sub> and distal area of discoidal cell in forewing. A few small, creamy yellow spots present subapically on forewing.

Male genitalia (PLATE 19, Fig. 152) – Tegumen broad, with uncus as a pair of widely separate, short processes. Gnathos broad, slightly protruded posteriad. Saccus short. Valva elongate, with bifid ampulla, forming two arm-like extensions. Harpe tapering caudad, with distal ends bearing minute teeth. Phallus straight, stout, with phallobase less than 2X length of aedeagus.

Female genitalia (PLATE 37, Fig. 222) – Ductus bursae oval. Signum forming a small, weakly sclerotized patch. Ductus bursae elongate, membranous. Sterigma as a pair of sclerotized plate surrounding ostium bursae. A ventral, lobe-like plate with prominent caudal cleft present posterior to abdominal segment VIII, presumably derived from sternite IX. Anal papillae setose, sclerotized, shovel-like, pointed at caudal end. Anterior apophyses vestigial. Posterior apophyses slender, elongate.

**Global distribution.** South India, Sri Lanka, Himalayas, Indochina, Indonesia, Palawan, Sulawesi, South China, Taiwan; recently immigrated to Iriomote Island, Japan (Tsukiyama *et al.*, 1997).

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

**Larval Host plant(s).** Fabaceae: *Millettia pachycarpa*, *Derris laxiflora*. (Hsu, 2013).

**Biology.** Multivoltine in occurrence (Hsu, 2013).

**形態特徵：**成蝶前翅翅長 20-24 mm。雌雄二型性顯著。雄蝶 (圖 5)：頭被毛，褐色。觸角褐色，尖頂明顯呈鉤狀，腹面雜乳黃色鱗。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，乳黃色；第 3 節甚小、錐狀、平滑，呈褐色。胸部背面被褐色毛，腹面呈灰褐色。腹部褐色，腹面有乳白色細橫帶。足乳黃色。前翅呈三角形，翅頂鈍，前緣及後緣直，外緣近翅頂處略突出。後翅橢圓形，臀區有葉狀突。翅背面褐色，近翅基處有黃褐色毛。翅腹面底色褐色帶紫色調，雜灰白色鱗；後翅臀區有一暗色區。CuA<sub>2</sub> 室有一白色細短紋。中室末端有一白色小斑點。前翅腹面後緣有一乳黃色斑。緣毛褐色。雌蝶 (圖 6)：形態特徵與雄蝶相似，但前翅 M<sub>3</sub> 室、CuA<sub>1</sub> 室及中室末端處有乳黃色透明斑。前翅近翅頂處乳黃色小斑點。

雄交尾器 (圖 152)：背兜寬闊，鉤突為一對分離短突起。顎形突寬闊，後端略突起。囊突短。抱器長，抱器內突二分，形成兩支臂狀延伸。抱握鈹向後漸窄，末端具細齒。陰莖筆直、粗壯，陽莖基長度短於陽莖器兩倍長度。

雌交尾器 (圖 222)：交尾囊橢圓形。花壁呈一輕度骨化小區。交尾囊管長、膜質。交尾孔板形成一對硬骨片環繞交尾孔。交尾孔板後板葉狀，後緣有明顯凹陷。肛突骨化、具毛、鏟狀，末端尖。前內骨突退化；後內骨突細長。

**世界分布：**印度南部、斯里蘭卡、喜馬拉雅地區、中南半島、印尼、巴拉望、蘇拉威西、華南及臺灣；近年來已遷入日本西表島 (Tsukiyama *et al.*, 1997)。

**臺灣分布：**低至中海拔地區。

**寄主植物：**豆科之臺灣魚藤及疏花魚藤。

**生物學：**一年多世代物種。

***Hasora mixta* (Mabille, 1876) (南風絨弄蝶 / 迷趾弄蝶)**

*Ismene mixta* Mabille, 1876: Annales de la Société entomologique de France 5(6): 267. (Type locality: “Manille”)

*Ismene philetas* (Plötz, [1883]): Entomologische Zeitung 45 (1-3): 56. (Type locality: “Philippinen”)

*Hasora mixta cirta* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (5): 68. (Type locality: Insel Bazilan)

***Ssp. limata* Hsu & Huang, 2008**

**PLATE 1, Fig. 7; PLATE 2, Fig. 8; PLATE 19, Fig. 153; PLATE 37, Fig. 223**

*Hasora mixta limata* Hsu & Huang, 2008: Zoological Studies 47: 223, Figs. 1, 2, 5, 6. (Type locality: TAIWAN: TAIDONG Co., Lanyu, Sidougou)

**Specimens examined:**

**TAIDONG [=TAITUNG] Co.:** 2♂, 5♀, Lanyu, Sidaogou, 18/20. III. 2006, reared from *Paraderris ?piscatoria* emgd. 12/13. IV. 2006, HSU 06C16, (paratypes) (Y. F. Hsu & H. C. Huang); 1♂, same locality, same collecting date (paratype) (Y. F. Hsu & H. C. Huang) (genitalia YFH1402); 1♂, same locality, 18. IV. 2006, (paratype) (Y. F. Hsu) (genitalia YFH1405); 6♂, 9♀, same locality, 3/5. III. 2007, reared from *P. ?piscatoria*, emgd. 1/14. IV. 2007, 07C3 (paratype) (Y. F. Hsu & H. C. Huang); 3♂, 3♀, same locality, 17. III. 2007, reared from *P. ?piscatoria*, emgd. 17/26. IV. 2007, 07C14 (paratype) (Y. F. Hsu.);

1♀, same locality, 10/11. IV. 2007, reared from *P. ?piscatoria*, emgd. 18. V. 2007, 07D9 (paratype) (Y. F. Hsu); 1♂, Lanyu, 21/23. IX. 2008 (H. C. Huang & C. H. Lin jr); 1♀, same locality, same collecting date (C. H. Lin, jr & C. L. Huang); 1♂, same locality, 28. III. 2010, reared from *P. ?piscatoria*, emgd. 1. IV. 2010, HSU 10C47 (Y. F. Hsu & J. H. Lin); 2♂, same locality, 10. III. 2009, reared from *P. ?piscatoria*, emgd. 9/14. IV. 2009, HSU 09D8 (Y. F. Hsu).

**Description.** Adult – Forewing length 19–24 mm. Sexual dimorphism prominent. Male (PLATE 1, Fig. 7): Head hairy, brown. Antennae with apiculus prominent, hooked, brown mixed with creamy yellow scalings ventrad. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow; 3rd segment minute, awl-like, smooth and brown. Thorax covered by brown hairs dorsally, grayish brown ventrally. Abdomen brown dorsally, pale yellowish brown ventrally. Legs creamy yellow. Forewing triangular, costa and dorsum straight, termen slightly convex near apex. Hindwing ovate, lobed at tornus. Wing uppersides bearing yellowish brown hairs proximally, with surface brown. Wing undersides ground color brown, overlaid with bluish purple scalings; a dark patch present at tornus of hindwing. A creamy yellow dash present in cell CuA<sub>2</sub>. A dark brown, slightly curved, narrow linear sexual brand on forewing upperside. Fringe pale brown. Female (PLATE 2, Fig. 8): Body and general wing patterns similar to those of male, but prominent creamy yellow, hyaline spot present in cell M<sub>3</sub>, CuA<sub>1</sub> and distal area of discoidal cell on forewing; no sexual brand on forewing.

Male genitalia (PLATE 19, Fig. 153) – Tegumen broad, extending cephalad into a vault-like structure. Caudal end of uncus forming elongate, lateral, straight, digitate arms. Socii forming a pair of horns with distal end slightly beyond terminal end of uncus. Gnathos strongly bent upwards, sclerotized, ventral surface densely covered with minute hairs. Valva elongate, with bifid style, slightly serrate dorsally; dorsal extension elongate, digitate, ventral extension broad, axe-like; harpe elongate, tapering toward caudal end, with circular, serrate distal end. Phallus straight, shorter than length of valva, with phallobase approximately 2X length of aedeagus.

Female genitalia (PLATE 37, Fig. 223) – Ductus bursae oval. Signum forming a narrow, elongate, sclerotized band ventrally. Ductus bursae elongate, slender, with ductus

seminalis near posterior end. Sterigma as a pair of sclerotized plate surrounding ostium bursae. A ventral, lobe-like plate with narrow caudal cleft present posterior to abdominal segment VIII, presumably derived from sternite IX. Anal papillae setose, sclerotized, shovel-like, pointed at caudal end. Anterior apophyses vestigial. Posterior apophyses slender, elongate, approximately as long as anal papillae.

**Global distribution.** Sundalands, Philippines, Sulawesi, Moluccas, Taiwan (Hsu & Huang, 2008)

**Distribution in Taiwan.** Lanyu, Taidong (Hsu & Huang, 2008)..

**Larval Host plant(s).** Fabaceae: *Paraderis ?piscatoria* (Hsu & Huang, 2008).

**Biology.** Multivoltine (Hsu & Huang, 2008).

**形態特徵：**成蝶前翅長 19-24 mm。雌雄二型性顯著。雄蝶 (圖 7)：頭被毛，褐色。觸角褐色，尖頂明顯呈鉤狀，腹面雜乳白色鱗。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，乳黃色；第 3 節甚小、錐狀、平滑，呈褐色。胸部背面覆褐色毛，腹面呈灰褐色。腹部背面褐色，腹面淡黃褐色。足乳黃色。前翅呈三角形，前緣及後緣直，外緣近翅頂處略突出。後翅橢圓形，臀區有葉狀突。翅背面褐色，近翅基處覆有黃褐色毛。翅腹面底色褐色，覆藍紫色鱗；後翅臀區有一暗色區。CuA<sub>2</sub> 室有一乳黃色細短紋。前翅背面有一黑褐色、略彎之線狀性標。緣毛淺褐色。雌蝶 (圖 8)：形態特徵與雄蝶相似，但前翅 M<sub>3</sub> 室、CuA<sub>1</sub> 室及中室末端處有鮮明乳黃色透明斑，無性標。

**雄交尾器 (圖 153)：**背兜寬闊，延伸至頂端成拱頂狀構造。鉤突兩側末端形成細長筆直之指狀突起。背兜側突為一對末端略超出鉤突的角狀突起。顎形突上彎、骨化，腹面密被細毛。抱器長，內突二分，背側略帶鋸齒；背側突起細長、指狀，腹側突起較寬、斧狀；抱握鈎長，末端漸細，後緣圓弧形、具鋸齒。陽莖直，長度短於抱器，陽莖基約陽莖器兩倍長度。

**雌交尾器 (圖 223)：**交尾囊橢圓形。花壁呈一狹長骨化帶。交尾囊管細長，精管末端近後端。交尾孔板具一對硬骨片環繞交尾孔。交尾孔板後板形成葉狀板，後緣有

狹窄凹陷。肛突具剛毛，骨化、鏟狀，末端尖。內骨突退化；前內骨突細長，略與肛突等長。

**世界分布：**巽他陸塊、菲律賓、蘇拉威西、摩鹿加及臺灣。

**臺灣分布：**本亞種分布於臺東蘭嶼。

**寄主植物：**豆科之蘭嶼魚藤。

**生物學：**一年多代物種。

***Hasora anura* de Nicéville, 1889 (無尾絨弄蝶 / 無尾絨毛弄蝶 / 無趾弄蝶)**

*Hasora anura* de Nicéville, 1889: The Journal of the Bombay Natural History Society 4 (3): 170, pl. B, f. 1, 5. (Type locality: “Sikkim, Khasi Hills”)

***Ssp. taiwana* Hsu, Tsukiyama & Chiba, 2005**

**PLATE 2, Figs. 9-10; PLATE 20, Fig. 154; PLATE 38, Fig. 224**

*Hasora anura taiwana* Hsu, Tsukiyama & Chiba, 2005: Zoological Studies 44: 202, Figs. 2, 3, 10, 11. (Type locality: Taiwan: Taizhong Co., Heping, Anmashan, 2000 m)

**Specimens examined:**

**NANTOU Co.:** 8♂, 5♀, Yuchi, Lianhuachi, 700m, 13. V. 2004, reared from *Ormosia formosana*, emgd. 31/9. V/VI. 2004, HSU 04E25 (Y. F. Hsu) (paratypes).

**Description.** Adult – Forewing length 19–24 mm. Sexual dimorphism prominent. Male (PLATE 2, Fig. 9): Head hairy, brown. Antennae with apiculus prominent, hooked, brown mixed with creamy yellow scalings ventrad. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow; 3rd segment minute, awl-like, smooth and brown. Thorax covered by brown hairs dorsally, grayish brown ventrally. Abdomen brown. Legs creamy yellow. Forewing triangular, apex obtuse, margins straight. Hindwing ovate, slightly lobed at tornus. Wing uppersides bearing yellowish brown hairs proximally, with surface brown. A few small, creamy yellow spots present subapically on forewing. Wing undersides ground color brown, mottled with pale scalings; a dark patch present at tornus of hindwing. A creamy yellow dash present in cell CuA<sub>2</sub>. A creamy

yellow dot at distal end of discoidal cell. Fringe pale brown. Female (PLATE 2, Fig. 10): Body and general wing patterns similar to those of male, but prominent creamy yellow, hyaline spot present in cell  $M_3$ ,  $CuA_1$  and distal area of discoidal cell in forewing. A pale creamy yellow patch present along dorsum of forewing underside.

Male genitalia (PLATE 20, Fig. 154) – Tegumen broad, extending cephalad into a vault. Uncus bearing small, setaceous, lateral bump basad; caudal end of uncus forming elongate, lateral, flattened arms, each twisted at terminal end and with a medial, outer protrusion. Gnathos strongly protruding posteriad, extending beyond caudal end of uncus. Valva elongate, with bifid ampulla, forming a shallow, V-shaped depression at caudal end; dorsal extension triangular with a sharp point, ventral extension slightly serrate, circular; harpe slightly serrate dorsad, broad at base, bearing a flattened arm leading to a dorsal, elongate, triangular extension and a distal, broad, downcurved extension. Phallus straight, shorter than length of valva, with phallobase more than 2X length of aedeagus.

Female genitalia (PLATE 38, Fig. 224) – Corpus bursae elongate. Signum as a small sclerotized patch. Ductus bursae membranous, wrinkled by serpentine folds. Sterigma forming a sclerotized wall with transverse, linear folds, forming a pair of setose lobe posterior to ostium bursae; narrow area surrounding ostium bursae membranous. Papillae anales lobe-like, setose. Anterior apophyses vestigial, posterior apophyses elongate, straight, with cephalic ends flattened, slightly enlarged.

**Global distribution.** Himalayas, Northeast India, Northern India, Indochina, West to East China, Taiwan (Hsu, *et al.*, 2005a).

**Distribution in Taiwan.** Montane habitats from moderate to higher elevations in central Taiwan (Hsu, *et al.*, 2005a).

**Larval Host plant(s).** Fabaceae: *Ormosia formosana* (Uchida 1988, 1991, 1995; Igarashi & Fukuda 2000; Hsu, *et al.*, 2005a).

**Biology.** Univoltine, diapause in winter as adults (Hsu, *et al.*, 2005a).

**Remarks.** The population in Taiwan was long regarded as belonging to ssp. *china* Evans, 1949 (Type locality: Ta Tsien Lu [Kangding, Sichuan, western China]) until Hsu *et al.* (2005) determined it should be a subspecies endemic to Taiwan based on evidence from morphology of genitalia and immature biology.

**形態特徵：**成蝶前翅長 19-24mm。雌雄二型性顯著。雄蝶 (圖 9)：頭被毛，褐色。觸角褐色，尖頂明顯呈鉤狀，腹面雜乳白色鱗。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，乳黃色；第 3 節甚小、錐狀、平滑，呈褐色。胸部背面覆褐色毛，腹面呈灰褐色。腹部褐色。足乳黃色。前翅呈三角形，翅頂鈍，翅緣直。後翅橢圓形，臀區略呈具葉狀突出。翅背面褐色，近翅基處覆有黃褐色毛。前翅近翅頂處有乳黃色小斑點。翅腹面底色褐色，雜灰白色鱗；後翅臀區有一暗色區。 $CuA_2$  室有一乳黃色細短紋。中室末端有一乳黃色斑點。緣毛淺褐色。雌蝶 (圖 10)：形態特徵與雄蝶相似，但前翅  $M_3$  室、 $CuA_1$  室及中室末端處有乳黃色透明斑。另前翅腹面後緣有一淡黃色斑塊。

雄交尾器 (圖 154)：背兜寬闊，向前延伸成拱頂。鉤突基部兩側有生毛小突起；鉤突末端形成細長扁平的側生臂狀突，末端內側成扭曲狀，並於外側中央具突起。顎形突末端具明顯突出，向後延伸超過鉤突後端。抱器長。抱器基突二分，末端有淺 V 形凹陷；背側延伸部呈三角形，有一尖角；腹側延伸部圓，略呈鋸齒狀；抱握鉗背側略呈鋸齒狀，基部寬闊，向尾端形成扁平延伸，背部有修長三角形突起，後端則有下彎突起。陽莖直，長度短於抱器，陽莖基長於陽莖器兩倍。

雌交尾器 (圖 224)：交尾囊修長。花壁為一小骨化區。交尾囊管細長、膜質，具彎曲皺褶。交尾孔板形呈具橫摺的骨壁，並於交尾孔後側形呈一對具毛突起；交尾孔周圍有膜質狹窄區域。肛突葉狀、有毛。前內骨突退化；前內骨突修長、筆直，先端扁平，略膨大。

**世界分布：**喜馬拉雅地區、印度北部及東北部、中南半島、華西至華東、臺灣。

**臺灣分布：**本島中部中至高海拔山區。

**寄主植物：**豆科之臺灣紅豆樹。

**生物學：**一年一世代物種。

註記：臺灣地區之無尾絨弄蝶以往被歸屬於中國大陸分布的亞種 *ssp. china* , Hsu *et al.* (2005a) 根據交尾器形態特徵及幼生期資料判定臺灣族群為特有亞種。

***Hasora chromus* (Cramer, [1780]) ( 尖翅絨弄蝶 / 沖繩絨毛弄蝶 / 銀針趾弄蝶 )**

**PLATE 2, Figs. 11-12; PLATE 20, Fig. 155; PLATE 38, Fig. 225**

*Papilio chromus* Cramer, [1780]: De uitlandsche kapellen 3 (23-24): 163, pl. 284, fig. E. (Type locality: “Coromandel”)

*Papilio alexis* Fabricius, 1775 Systema Entomologiae: 533. (preoccupied)

*Ismene contempta* Plötz, [1883]: Entomologische Zeitung 45 (1-3): 56. (Type locality: “Cape York”)

*Hasora inermis* Elwes & Edwards, 1897: Transactions of the Zoological Society of London 14: 301. (Type locality: “Riu Kiu Islands”)

*Ismene lucescens* Lucas, 1900: Proceedings of the Royal Society of Queensland 15: 138. (Type locality: Cairns)

*Hasora attenuata* Mabille, 1904 in Wytzman, Genera Insectorum 17 (B): 86. (preoccupied)

*Hasora alexis ganapata* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (5): 72. (Type locality: “Dutch New Guinea”)

**Specimens examined:**

**TAIPEI CITY:** 5♂, 2♀, New Taipei Park [= 228 Peace Memorial Park], emgd. 1/12. XII. 1987. **ZHANGHUA Co [= CHANGHUA]:** 1♂, 2♀, Zhanghua, 22. XII. 1995, reared from *Pongamia pinnata*, emgd. 25/3. XII/I. 1995/1996, HSU 95M13 (Y. F. Hsu). **TAIDONG [=TAITUNG] Co.:** 1♂, Lanyu, Sidaogou, 29. III. 2010 (Y. F. Hsu), 1♂, 3♀, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang), 1♂, same locality, 15. X. 2006, reared from *P. pinnata*, emgd. 30. X. 2006, HSU 06K22 (Y. F. Hsu, H. C. Huang & Y. C. Hsu), 1♂, Lanyu, 28. II. 2010 (J. H. Lin).

**Description.** Adult – Forewing length 17–24 mm. Sexual dimorphism prominent. Male (PLATE 2, Fig. 11): Head hairy, brown tinged with green. Antennae with apiculus prominent, hooked, brown mixed with creamy white scalings ventrad. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy white with narrow brown stripe laterally; 3rd segment minute, awl-like, smooth and brown. Thorax covered with brown, tinged with green hairs. Abdomen brown dorsally, creamy white ventrally. Legs creamy white. Forewing triangular, somewhat elongate, apex pointed, margins straight. Hindwing ovate, lobed at tornus. Wing uppersides bearing pale brown hairs proximally, with surface of wings brown but a dark patch present proximally on

forewing. Wing undersides ground color pale brown; a dark patch present at tornus of hindwing. A narrow, white, discal line on hindwing. Fringe brown. A grayish brown, slightly curved, narrow linear sexual brand on forewing upperside. Female (PLATE 2, Fig. 12): Body and wing patterns similar to those of male, but creamy white, hyaline spot in cell  $M_3$  and  $CuA_1$  of forewing, and forewing upperside without dark area; no sexual brand.

Male genitalia (PLATE 20, Fig. 155) – Tegumen narrowed caudad, with uncus bifid. Gathos broad, slightly serrate along posterior margin. Saccus short. Valva elongate; Harpe elongate with caudal end truncate, dorsal margin serrate. Ampulla lobe-like, with caudal end bearing minute teeth. Phallus short, stout, with phallobase approximately 2X of aedeagus.

Female genitalia (PLATE 38, Fig. 225) – Corpus bursae elongate, oval, wrinkled. Signum as a pair of small sclerotized patches at opposite walls. Ductus bursae elongate, membranous, wrinkled by serpentine folds. Sterigma forming a sclerotized wall with surrounding membranous ostium bursae, setose posteriorly. Anal papillae semi-circular, setose. Anterior Apophyses vestigial, posterior apophyses elongate, slightly curved.

**Global distribution.** Pakistan, India, Sri Lanka, Himalayas, Indochina, Southeast Asia, New Guinea, North Australia, Vanuatu, Fiji, Japan (Yaeyamas, Okinawa), South China, Taiwan (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland Taiwan, including associated islands (Hsu, 2013).

**Larval Host plant(s).** Fabaceae: *Pongamia pinnata* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** This species was restricted to coastal areas and mostly found in southern Taiwan (Shirôzu, 1960), but after the hostplant became a popular garden plant, it is now

commonly found in many disturbed areas, including urban habitats (Hsu, 2013).

**形態特徵：**成蝶前翅長 17-24 mm。雌雄二型性顯著。雄蝶 (圖 11)：頭被毛，泛綠色調之褐色。觸角褐色，尖角明顯呈鉤狀，腹面雜白色鱗。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛、白色，側面有褐色條；第 3 節甚小、錐狀、平滑，褐色。胸部被帶綠色調之褐色毛。腹部背面褐色，腹面乳白色。足乳白色。前翅三角形，略延長，翅頂尖，翅緣直。後翅橢圓形，臀區有葉狀突。翅背面近翅基處覆有褐色毛，前翅背面褐色，內側暗色。翅腹面底色淺褐色；後翅臀區有一黑色區。後翅中央有一細白帶。緣毛褐色。前翅背面有一灰褐色、略彎曲之狹窄線狀性標。雌蝶 (圖 12)：形態特徵與雄蝶相似，但前翅  $M_3$  室及  $CuA_1$  室有透明乳白色斑點，且前翅背面無暗色區及性標。

**雄交尾器 (圖 155)：**背兜尾端漸縮；鉤突分叉狀。顎形突寬，後緣有小鋸齒。囊突短。抱器長；抱握鈎長，末端截狀，背緣鋸齒狀。抱器內突葉狀，末端具細齒。陽莖短、粗壯，陽莖基長度約陽莖器兩倍長。

**雌交尾器 (圖 225)：**交尾囊長橢圓形、有皺褶。花壁為一對小骨片，位於交尾囊相對位置。交尾囊管細長、膜質，具彎曲皺褶。交尾孔板骨化，交尾孔周圍膜質，後端具毛。肛突半圓形、有毛。前內骨突退化；後內骨突修長、略彎曲。

**世界分布：**巴基斯坦、印度、斯里蘭卡、喜馬拉雅地區、中南半島、東南亞、新幾內亞、澳洲北部、萬那杜、斐濟、日本 (八重山群島及沖繩)、華南、臺灣。

**臺灣分布：**分布於低至中海拔地區及離島。

**寄主植物：**豆科之水黃皮。

**生物學：**本種是一年多代之物種。

**註記：**本種原先主要分布於南台灣沿海地區，但自從寄主植物成為廣受歡迎的園藝植物後，本種已廣泛出現在許多干擾地，包括都會地區 (Hsu, 2013)。

***Hasora taminatus* (Hübner, 1818) (圓翅絨弄蝶 / 臺灣絨毛弄蝶 / 雙斑趾弄蝶)**

*Coeliades taminatus* Hübner, 1818: *Zuträge zur Sammlung exotischer Schmettlinge* 1: 31, fig. 193-194. (Type locality: "Surinam" [error, S. India])

*Hesperia butleri* Aurivillius, 1898: *Entomologisk tidskrift* 18: 150. (Type locality: not stated)

***Ssp. vairacana* Fruhstorfer, 1911****PLATE 2, Figs. 13-14; PLATE 20, Fig. 156; PLATE 38, Fig. 226**

*Hasora alexis vairacana* Fruhstorfer, 1911: *Deutsche entomologische Zeitschrift, Iris* 25 (5): 70. (Type locality: Formosa, Chip-Chip [= Jiji])

**Specimens examined:**

**TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Fuxing, Gaoyi, 26. IV. 1986 (HSU), 1♂, Fuxing, Sule, 28. IV. 1997, reared from *Millettia pachycarpa*, emgd. 24. V. 1997, HSU 97D78 (Y. F. Hsu & J. J. Young). **NANTOU Co.:** 1♀, Renai, Shimenshan, 3200m, 20. VII. 2006 (L. H. Wang). **HUALIEN Co.:** 1♀, Xiulin, W. peak of Panshishan, 3300m, 26. VII. 2003 (C. L. Huang). **TAINAN CITY [TAINAN Co.]:** 1♀, Baihe, Zhentoushan, 500m, 15. X. 2002 (Y. F. Hsu). **TAIDONG [TAITUNG] Co.:** 1♂, Jinfeng, Bilu Spring, 9. XII. 2000 (C. C. Lu), 1♀, Yangping, Hongye, 500m, 4. VIII. 2009 (C. H. Lin jr.), 1♀, Donghe, Donghe Farm, 350m, 16. X. 2007, (Y. F. Hsu). **PINGDONG [PINGTUNG Co.]:** 1♀, Wutai, Old Dawu- Bayouxi, 500-900m, 17. III. 2009 (Y. F. Hsu & H. C. Huang), 1♀, Shizi, Shuangliu, 200m, 10. VI. 2007 (Y. F. Hsu).

**Description.** Adult – Forewing length 16–22 mm. Sexual dimorphism prominent. Male (PLATE 2, Fig. 13): Head hairy, brown. Antennae with apiculus prominent, hooked, brown mixed with creamy white scalings ventrad. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy white with narrow brown stripe laterally; 3rd segment minute, awl-like, smooth and brown. Thorax covered by brown hairs. Abdomen brown dorsally, creamy white ventrally. Legs creamy white. Forewing triangular, apex brown, margins straight. Hindwing ovate, lobed at tornus. Wing uppersides bearing pale brown hairs proximally, with surface of brown but a dark patch present proximally on forewing. Wing undersides ground color pale brown; a dark patch present at tornus of hindwing. A narrow, white, discal line on hindwing. Fringe brown. A black, slightly curved, narrow linear sexual brand on forewing upperside. Female (PLATE 2, Fig. 14): Body and wing patterns similar to those of male, but creamy white, hyaline spot present in cell M<sub>3</sub> and CuA<sub>1</sub> of forewing, and forewing upperside without dark area; no sexual brand.

Male genitalia (PLATE 20, Fig. 156) – Tegumen narrowed caudad, with uncus forming a pair of widely separated horns, bearing long, stiff setae at base. Gnathos broad, protruded posteriad. Saccus short. Valva elongate. Costa+ampulla lobe-like, hook-like procees dorsally. Harpe elongate, with dorsal portion knife-like, produced into a circular lobe ventrad. Phallus short, stout, with phallobase longer than aedeagus.

Female genitalia (PLATE 38, Fig. 226) – Corpus bursae oval. Signum as a slender sclerotized patch. Ductus bursae elongate, membranous. Sterigma forming a sclerotized wall with surrounding membranous ostium bursae, setose posteriorly. Anal papillae anales semi-circular, setose. Anterior apophyses vestigial, posterior apophyses elongate, straight, with anterior end clubbed.

**Global distribution.** Himalayas, India, Sri Lanka, Indochina, Southeast Asia, Waigeo, West and South China, Taiwan (Hsu, 2013).

**Distribution in Taiwan.** Montane habitats from lowland to moderate elevations (Hsu, 2013).

**Larval Host plant(s).** Fabaceae: *Millettia pachycarpa* and *Derris laxiflora* (Hsu, 2013).

**Biology.** Multivoltine in occurrence (Hsu, 2013).

**形態特徵：**成蝶前翅長 16-22 mm。雌雄二型性顯著。雄蝶 (圖 13)：頭被毛，褐色。觸角褐色，尖頂明顯，呈鉤狀，腹面雜乳白色鱗。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，乳白色，側面有褐色細條；第 3 節甚小、錐狀、平滑，呈褐色。胸部覆有褐色毛。腹部背面褐色，腹面乳白色。足乳白色。前翅呈三角形，翅頂褐色，翅緣直。後翅橢圓形，臀區有葉狀突。翅背面褐色，近翅基處覆有淡褐色毛，前翅內側有暗色區。翅腹面底色淺褐色，後翅臀區處有一暗色區，中央有一白色細帶。緣毛褐色。前翅背面有一黑褐色、略彎曲之線狀性標。雌蝶 (圖 14)：形態特徵與雄蝶相似，但前翅  $M_3$  室及  $CuA_1$  室有透明乳黃色斑、前翅背面無暗色區及性標。

雄交尾器 (圖 156)：背兜向後漸窄，鉤突為一對分離角狀突起，基部具硬剛毛。顎

形突寬闊，向後側突出。囊突短。抱器長。抱器內突 + 抱握鈎背側延伸成葉狀，其背側著生一鈎狀小突起。抱握鈎長，背側刃狀，腹側圓葉狀。陽莖短、粗壯，陽莖基長度長於陽莖器。

雌交尾器 (圖 226)：交尾囊橢圓形。花壁呈一細長骨化區。交尾囊管細長、膜質。交尾孔板骨化，交尾孔周圍膜質，後緣有毛。肛突半圓形，具毛。前內骨突退化；後內骨突細長、筆直，前端棒狀。

**世界分布：**喜馬拉雅地區、印度、中南半島、東南亞、華西、華南及臺灣。

**臺灣分布：**本島低至中海拔地區。

**寄主植物：**豆科之臺灣魚藤及疏花魚藤。

**生物學：**一年多世代物種。

## Genus *BADAMIA* Moore, [1881]

**Type species:** *Papilio exclamationis* (Fabricius, 1775)

Diagnostic characters include the followings: 1) wings very elongate; 2) hindwing caudate at 1+2A, strongly excavate between CuA<sub>2</sub> and 1+2A; 3) male hindtibia bearing a pencil of stiff bristles in a groove between metathorax and abdomen (Eliot, 1992).

Two species are included in the genus (Eliot, 1992; Bascombe *et al.*, 1999; Chiba, 2009).

In Taiwan, one species occurs.

## 長翅弄蝶屬

形態特徵如下：1) 翅膀十分修長；2) 後翅於 1+2A 脈處呈尾狀，CuA<sub>2</sub> 脈及 1+2A 脈之間明顯內凹；3) 雄蝶後足脛節生有一叢硬毛束收納於後胸及腹部之間的溝槽 (Eliot, 1992)。

本屬共有 2 種，臺灣有 1 種 (Eliot, 1992; Bascombe *et al.*, 1999; Chiba, 2009)。

***Badamia exclamationis* (Fabricius, 1775) (長翅弄蝶 / 淡綠弄蝶)**

*Papilio exclamationis* Fabricius, 1775: Systema Entomologiae: 530, no. 373. (Type locality: India)

*Papilio ladon* Cramer, [1780]: De uitlandsche kapellen 3 (23-24): 164, pl. 284, f. G. (Type locality: “Coromandel”) (preoccupied)

*Hesperia ericus* Fabricius, 1798: Systema Entomologiae (Supplementum): 432. (Type locality: “India Orientali”)

*Calpodes forulus* Hübner, [1819]: Verzeichniss bekannter Schmettlinge (7): 107, n. 1147. (Type locality: Java)

*Ismene thymbron* Felder, 1860: Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften 40 (11): 461. (Type locality: Amboina)

**PLATE 3, Figs. 15-16; PLATE 20, Fig. 157; PLATE 38, Fig. 227**

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY /TAIPEI Co.]:** 1♀, Ruifang, Nanya, 12. X. 2010 (J. H. Lin), 1♂, Wulai, Feicui Dam, 300m, 27. VII. 1999 (Y. T. Lo), 1♀, Wulai, 16. X. 1986. **PINGDONG [= PINGTUNG] Co.:** 1♂, 4♀, Shizi, Shuangliu, 200m, 10. VI. 2007, reared from *Hiptage benghalensis*, emgd. 21. VI. 2007, 07F7 (Y. F. Hsu), 2♂, 3♀, Shizi, Shuangliu, 500m, 10. VI. 2007, reared from *H. benghalensis*, emgd. 19. VI. 2007, 07F7 (Y. F. Hsu), 1♂, Shizi, Shuangliu, 18. XII. 2005 (Y. F. Hsu), 1♂, Wutai, Wutoushan, 1100/1200m, 5. V. 2007 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 1♂, 1♀, Yanping, Hongye, emgd. 11. V. 2001 (H. S. Chen), 2♀, Beinan, Binlang, 22. XI. 2007, reared from *Malpighia emarginata* (= *M. glabra*), emgd. 28. XI. 2007, 07L21 (Y. F. Hsu), 1♀, Lanyu, Sidaogou, 29. III. 2010 (Y. F. Hsu); 2♂, 1♀, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 2♂, same locality, 18. IV. 2006, (Y. F. Hsu); 1♂, same locality, 16/18. III. 2012 (Y. F. H & H. C. Huang).

**Description.** Adult – Forewing length 22–29 mm. Sexual dimorphism prominent. Male (PLATE 3, Fig. 15): Head hairy, creamy white with dark brown markings. Antennae with apiculus prominent, hooked, brown mixed with creamy yellow scalings ventrad. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy white; 3rd segment minute, rod-like, smooth and brown. Thorax covered by pale brown tinged with green hairs. Abdomen dark brown banded with creamy white. Legs creamy yellow or creamy white. Forewing elongate, with termen convex. Hindwing strongly excavate between CuA<sub>2</sub> and 1A+2A. Wing uppersides bearing pale yellowish brown tinged with green hairs proximally, with surface brown. A few small, creamy yellow, hyaline spots in cell M<sub>3</sub>, CuA<sub>1</sub> and distal area of discoidal cell in forewing. Wing undersides ground color

pale grayish brown; a dark patch present at tornus of hindwing. A faint, creamy yellow dash present in cell CuA<sub>2</sub>. A pale creamy yellow patch present along dorsum of forewing underside. Fringe brown but creamy yellow at tornus. Female (PLATE 3, Fig. 16): Body and general wing patterns similar to those of male, but creamy yellow spots in cell M<sub>3</sub>, CuA<sub>1</sub> and distal area of discoidal cell in forewing much more prominent.

Male genitalia (PLATE 20, Fig. 157) – Tegumen somewhat enlarged laterally near base, tapering caudad, with uncus slender with rounded tip. Gnathos narrow, extending beneath tegumen. Saccus short. Valva large, lobe-like. Ampulla small, bearing a rod-like process with several long setae. Harpe large, fin-like. Phallus short, with phallobase nearly equal to aedeagus in length. Juxta as a narrow, V-shaped sclerite.

Female genitalia (PLATE 38, Fig. 227) – Corpus bursae oval. Ductus bursae membranous. Signum as a sclerotized rod-like bar. Sterigma forming a sclerotized, wrinkled wall with an invagination connecting ductus bursae. Anal papillae semi-circular, setose. Anterior Apophyses vestigial. Posterior apophyses elongate, slightly curved with anterior end club-like.

**Global distribution.** Widespread throughout the Oriental and Australian Region, also western Pacific (Chiba, 2009).

**Distribution in Taiwan.** Lowland to moderate elevations, including Lanyu (Hsu, 2013).

**Larval Host plant(s).** Malpighiaceae: *Hiptage benghalensis* (Hsu, 2013) and cultivated *Malpighia emarginata*.

**Biology.** Multivoltine in occurrence (Hsu, 2013).

**形態特徵：**成蝶前翅長 22-29 mm，雌雄二型性顯著。雄蝶（圖 15）：頭被毛，乳白色而有黑褐色斑。觸角褐色，尖頂明顯呈鉤狀，腹面雜乳黃色鱗。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，乳白色；第 3 節極小，褐色、平滑、棒狀。胸部被

帶綠色調之淡褐色。腹部暗褐色，有白條。足乳白色或乳黃色。前翅狹長，外緣突出。後翅  $CuA_2$  及  $1A+2A$  脈之間凹陷。翅背面褐色，近翅基處覆有帶綠色調之淡黃褐色毛。前翅  $M_3$  室、 $CuA_1$  室及中室末端有乳黃色透明斑。翅腹面淡灰褐色；後翅臀區具有一塊暗色斑。 $CuA_2$  室有一模糊乳黃色短紋。前翅腹面後緣有一淡乳黃色斑塊。雌蝶 (圖 16)：與雄蝶相似，但前翅  $M_3$  室、 $CuA_1$  室及中室末端的乳黃色透明斑較雄蝶鮮明。

雄交尾器 (圖 157)：背兜近基部處略寬，向尾端漸細；鉤突修長，末端圓鈍。顎形突狹小，朝背兜下方延伸。囊突短。抱器大型、葉狀。抱器內突小，呈棒狀並具長剛毛。抱握夾大型、鰭狀。陽莖短，陽莖基與陽莖器的長度約略相等。陽基軛片呈窄 V 形骨片。

雌交尾器 (圖 227)：交尾囊橢圓形。交尾囊管膜質。花壁棒狀、骨化。交尾孔板形成骨化皺壁，具一內凹與交尾囊管連接。肛突半圓形，具剛毛。前內骨突退化。後內骨突長，略彎曲，前端棒狀。

**世界分布：**廣泛分布於東洋區、澳洲區及西太平洋。

**臺灣分布：**分布於低至中海拔地區，蘭嶼亦有分布。

**寄主植物：**黃耨花科之猿尾藤及栽植種西印度櫻桃。

**生物學：**一年多代物種。

## Genus *CHOASPES* Moore, [1881]

**Type species:** *Hesperia benjaminii* Guérin-Ménéville, 1843

Diagnostic characters include the followings: 1) body and at least the basal areas of wing undersides bluish green, with tornus of hindwing yellow or orange; 2) hind tibia bearing erectile hair tuft fitting into a thoracic pouch; 3) a long recumbent hair pencil present on hind tibia, associated with abdominal groove filled with shining scales. (Eliot, 1992); 4) Compound eyes hairy.

Chiba (2009) recognized 8 species, distributed in the Oriental and Australian Regions, but some subspecific taxa in his work have been given specific status by other authors (e. g. de Jong & Treadaway, 1993b).

In Taiwan, two species occur.

## 綠弄蝶屬

形態特徵如下：1) 軀體、至少翅腹面基部呈藍綠色，後翅臀區黃色或橘色；2) 後足脛節覆有直立毛簇，可收納放入胸袋；3) 後足脛節有一束長毛，聯繫腹部填滿亮鱗之溝槽；4) 複眼有毛。

Chiba (2009) 列有 8 種，分布於東洋區與澳洲區，但其中有些亞種被其他研究者被認可視為獨立種 (e. g. de Jong & Treadaway, 1993b)。

臺灣有 2 種。

### *Choaspes benjaminii* (Guérin-Ménéville, 1843) ( 綠弄蝶 / 大綠弄蝶 )

*Hesperia* (*Thymele*) *benjaminii* Guérin-Ménéville, 1843: in Delessert, Souvenirs d'un voyage dans l'Inde exécuté de 1834 à 1839 (2): 79, pl. 22, f. 2. (Type locality: "Neelgheries" [=Nilgiris, S. India])

### *Ssp. formosana* Fruhstorfer, 1911

#### PLATE 3, Figs. 17-18; PLATE 21, Fig. 158; PLATE 39, Fig. 228

*Rhopalocampta benjaminii formosana* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25(6): 78. (Type locality: "Formosa, Chip-Chip [= Jiji]")

#### Specimens examined:

**TAIPEI CITY:** 1♀, Yangmingshan, 14. V. 1987 (Y. F. Hsu), 1♂, Nangang, Academia Sinica, 25. II. 2015 (C. W. Huang) (genitalia preparation JYL236). **XINBEI CITY** [=NEW TAIPEI CITY /TAIPEI Co.]: 1♂, Shiding, Ergeshan, 5. VIII. 2008 (N. Y. Tsai), 1♀, Sanzhi, Sanbanqiao, 17. VI. 2016 (J. Y. Liang) (genitalia preparation JYL235), 1♂, Wulai, Fushan, 16. VI. 2016 (C. W. Huang) (genitalia preparation JYL237). **TAOYUAN CITY** [TAOYUAN Co.]: 2♂, Fuxing, Daman, 6. VIII. 1987 (Y. F. Hsu), 1♂, Fuxing, Sule, 26. VI. 21. 1987 (Y. F. Hsu). **TAIDONG Co.** [= TAITUNG Co.]: 1♂, Yanping,

Lijia Trail, 1100m, 9. IX. 1999 (Y. F. Hsu).

**Description.** Adult – Forewing length 22–27 mm. Sexual dimorphism not prominent. Male (PLATE 3, Fig. 17): Head hairy, brown tinged with green. Antennae with apiculus prominent, hooked, brown in color. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, orange with narrow brown stripe laterally; 3rd segment minute, awl-like, smooth and brown. Thorax covered with brown, tinged with green hairs. Abdomen brown, with narrow, longitudinal, orange band medio-ventrally. Legs brown, with metatibia bearing two brown hair pencils proximally. Forewing with costa, dorsum nearly straight; termen somewhat convex. Hindwing slightly lobed at tornus. Wing uppersides bearing brown hairs proximally, with surface bluish green sheen. Wing undersides ground color green, glossy, with veins darkened. A patch of orange with dark brown spots around tornus of hindwing. Fringe brown except orange around hindwing tornus. Female (PLATE 3, Fig. 18): Body and wing patterns similar to those of male, but wing uppersides with ground color brown, with proximal hairs bluish green. No hair pencil on metatibiae.

Male genitalia (PLATE 21, Fig. 158) – Tegumen broad, with uncus elongate, tapering caudad, slightly down-curved. Gnathos broad, slightly serrate along posterior margin. Saccus short. Valva elongate; harpe produced into a broad, triangular piece, with a prominent dorsal beak-like spine; ampulla lobe-like, with caudal end rounded or truncated. Phallus short, stout, with phallobase slightly longer than aedeagus. Juxta as a narrow, V-shaped sclerite.

Female genitalia (PLATE 39, Fig. 228) – Corpus bursae oval. Ductus bursae membranous. Sterigma forming a sclerotized, wrinkled dome, two deep pouches by corners around posterior margin. Signum as a wrinkled wall with a patch of minute spines. Anal papillae setose. Anterior apophyses vestigial. Posterior apophyses elongate, straight.

**Global distribution.** Himalayas, Northeast and South India, Malay Peninsula, Indochina, Sumatra, Japan, West to East China, and Taiwan (Tsukiyama *et al.*, 1997).

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

**Larval Host plant(s).** Sabiaceae: *Meliosma pinnata* [= *Meliosma rhoifolia*], *M. squamulata*, *M. simplicifolia* [= *Meliosma rigida*], *M. callicarpifolia* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** Some authors regard ssp. *formosana* as a climatic form and, therefore, a synonym of ssp. *japonica* Murray, 1875 (e. g. Tsukiyama *et al.*, 1997).

**形態特徵：**成蝶前翅長 22-27 mm。雌雄二型性不顯著。雄蝶 (圖 17)：頭被毛，呈帶綠色調之褐色。觸角褐色，尖頂明顯呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛、橙色，側面有褐色帶；第 3 節甚小、錐狀、平滑，呈褐色。胸部被帶綠色調之褐色毛。腹部褐色，腹部腹面中央具有橙色縱帶。足褐色，後足脛節基部有兩束褐色長毛束。前翅前緣及後緣接近直線狀，外緣略突出。後翅臀區略有葉狀突。翅背面有藍綠色光澤，近翅基處覆有褐色毛。翅腹面底色為帶有光澤的綠色，翅脈暗黑色。後翅臀區附近有橙色區，上綴黑褐色斑點。緣毛於臀區處橙色，其餘褐色。雌蝶 (圖 18)：形態特徵與雄蝶相似，但翅背面底色褐色，近翅基處有藍綠色毛。後足脛節無長毛束。

雄交尾器 (圖 158)：背兜寬闊，鉤突長，向末端漸窄，略下彎。顎形突寬闊，後緣有細鋸齒。囊突短。抱器長。抱握鉞為闊三角形，背側有喙狀突起；抱器內突葉狀，末端圓弧狀或截狀。陽莖短、粗壯，陽莖基長度略長於陽莖器。陽基軛片為狹窄 V 形骨片。

雌交尾器 (圖 228)：交尾囊橢圓形。交尾囊管膜質。交尾孔板為骨化皺摺的半圓狀，末端環繞兩個帶囊。花壁為一皺摺且佈滿小刺的區塊。肛突具剛毛。前內骨突僅留遺痕；後內骨突細長，筆直。

**世界分布：**喜馬拉雅地區、印度東北部及南部、馬來半島、中南半島、蘇門答臘、日本、華西至華東及臺灣。

**臺灣分布：**分布於低至中海拔地區。

**寄主植物：**清風藤科之山豬肉、綠樟、筆羅子及紫珠葉泡花。

**生物學：**一年多世代物種。

**註記：**有些學者認為亞種 *ssp. formosana* 為一氣候型，而為亞種 *ssp. japonica* 之同物異名 (例如 Tsukiyama *et al.*, 1997)。

***Choaspes xanthopogon* (Kollar, [1844]) (褐翅綠弄蝶)**

*Hesperia xanthopogon* Kollar, [1844]: in Hügel, Kaschmir und das Reich der Siek 4: 453, pl. 18.

(Type locality: “Himaleya” [Himalaya])

*Choaspes similis* Evans, 1932: Identification of Indian Butterflies (edn. 2): 320. (Type locality: “Assam”)

***Ssp. chrysopterus* Hsu, 1988**

**PLATE 3, Figs. 19-20; PLATE 21, Fig. 159; PLATE 39, Fig. 229**

*Choaspes xanthopogon chrysopterus* Hsu, 1988: Bulletin of the Institute of Zoology, Academia Sinica 27: 237, figs.3-6. 25(6): 78. (Type locality: Mt. Lala, Taoyuan, Taiwan)

**Specimens examined:**

**XINBEI CITY [=NEW TAIPEI CITY/TAIPEI Co.]:** 2♀, Wulai, Datongshan, 13. IV. 2007, reared from *Sabia swinhoei*, emgd. 19/26. V. 2007, HSU 07D15 (L. H. Wang), 1♂, 2♀, Wulai, Badaoershan, 26. IV. 2007, reared from *S. swinhoei*, emgd. 25/26/29. V. 2007, HSU 07D25 (L. H. Wang), 1♂, Sanxia, Beichatianshan, 1500/1600m, 7/10.VI. 2001 (Y. T. Lo), 1♂, Shiding, Ergeshan, 1. IV. 2003, reared from *S. swinhoei*, emgd. 5. V. 2003, HSU 03D1 (L. W. Wu). **YILAN Co.:** 1♂, Datong, Siyuan, 27. VII. 2007 (Y. F. Hsu). **TAOYUAN CITY [TAOYUAN Co.]:** 1♀, Fuxing, Lalashan, 9. VII. 1997, reared from *S. transarisanensis*, emgd. 18. VIII. 1997, HSU 97G4 (Y. F. Hsu & C. Y. Hung).

**Description.** Adult – Forewing length 20–24 mm. Sexual dimorphism moderately present. Male (PLATE 3, Fig. 19): Head hairy, brown tinged with green. Antennae with apiculus prominent, hooked, brown in color. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, orange with narrow brown stripe laterally; 3rd segment minute, awl-like, smooth and brown. Thorax covered with brown, tinged with green hairs. Abdomen brown, with narrow, longitudinal, orange band medio-ventrally. Legs brown, with metatibia bearing two brown hair pencils proximally. Forewing with

costa, dorsum nearly straight; termen somewhat convex. Hindwing slightly lobed at tornus. Wing uppersides bearing green hairs proximally, with surface brown. Wing undersides ground color green, glossy, with veins darkened. A patch of orange with dark brown spots around tornus of hindwing. Fringe brown except orange around hindwing tornus. Female (PLATE 3, Fig. 20): Body and wing patterns similar to those of male, but hairs on body and wings blue instead of green. No hair pencils on metatibiae.

Male genitalia (PLATE 21, Fig. 159) – Tegumen broad, with uncus straight; distal end of uncus blunt. Gnathos broad, slightly serrate along posterior margin. Saccus short. Valva elongate; harpe with dorsal edge thickened, bearing minute teeth; ampulla lobe-like, with caudal end truncated. Costa extending into a sheet with serrate margin. Sacculus forming a flattened band. Phallus short, stout, with phallobase longer than aedeagus. Juxta narrow.

Female genitalia (PLATE 39, Fig. 229) – Corpus bursae oval. Ductus bursae membranous. Signum as a wrinkled wall with a patch of minute spines. Sterigma with lamella antevaginalis forming prominent, sclerotized, hairy, wrinkled structure, with a pair of smooth, heavily sclerotized plates at lateral corners of posterior margin; lamella postvaginalis as a winged sclerite with medial ditch. Anal papillae setose. Posterior apophyses elongate, narrow, abruptly bent halfway.

**Global distribution.** Himalayas, Northeast India, northern Indochina, West to Southwest China, and Taiwan (Hsu, 2013).

**Distribution in Taiwan.** Montane habitats from low to moderate elevations.

**Larval Host plant(s).** Sabiaceae: *Sabia transarisanensis* and *S. swinhoei* (Hsu, 2013).

**Biology.** Bivoltine or more generations per year in occurrence (Hsu, 2013).

**Remarks.** Some authors regard *chrysopterus* Hsu, 1988 as a synonym of the nominotypical subspecies (e. g. Tsukiyama, 1992; Chiba, 2009). *Choaspes estrella* de Jong, 1980 from the Philippines is sometimes considered a subspecies of *C. xanthopogon*

(e. g. Hsu, 1988; Chiba, 2009).

**形態特徵：**成蝶前翅長 20–24 mm。雄蝶 (圖 19)：頭被毛，呈帶綠色調之褐色。觸角褐色。尖頂明顯呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛、橙色，側面有褐色細帶；第 3 節甚小、錐狀、平滑，呈褐色。胸部被帶綠色調之褐色毛。腹部褐色，腹部腹面中央有橙色縱帶。足褐色，後足脛節基部有兩束褐色長毛束。前翅前緣及後緣接近直線狀，外緣略突出。後翅臀區略呈葉狀。翅背面褐色，近翅基處覆有綠色毛。翅腹面底色為帶光澤之綠色，翅脈黑褐色。後翅臀區附近有一橙色區，上綴黑褐色斑點。緣毛於臀區處橙色，其餘褐色。雌蝶 (圖 20)：形態特徵與雄蝶相似，但軀體及翅上毛呈藍色而非綠色。後足脛節無長毛束。

雄交尾器 (圖 159)：背兜寬闊，鉤突直、末端鈍。顎形突寬闊，後緣有細鋸齒。囊突短。抱器長，抱握鈎背側增厚而有細鋸齒；抱器內突葉狀，末端平截。抱器辦背側邊緣具鋸齒。抱器腹狹長扁平。陽莖粗短，陽莖基長於陽莖器。陽基軛片狹窄。

雌交尾器 (圖 229)：交尾囊橢圓形。交尾囊管膜質。花壁為一皺摺且佈滿小刺的區塊。交尾孔板前片形成明顯骨化、皺摺、具毛之構造，後緣側邊具一對高度骨化之平滑骨板；交尾孔板後片形成一中間具溝之翼狀骨片。肛突具毛。後內骨突修長，中途彎曲。

**世界分布：**喜馬拉雅地區、印度東北部、中南半島北部、華西至華西南及臺灣。

**臺灣分布：**分佈於本島低至中海拔山區

**寄主植物：**清風藤科之阿里山清風藤及臺灣清風藤。

**生物學：**一年至少有兩代。

**註記：**有些研究認為亞種 *chrysopterus* Hsu, 1988 是承名亞種的同物異名 (例如 Tsukiyama, 1992; Chiba, 2009)。菲律賓的 *Choaspes estrella* de Jong, 1980 有時被視為褐翅綠弄蝶的亞種 (例如 Hsu, 1988; Chiba, 2009)。

## Subfamily EUDAMINAE Mabille, 1877

Members of Eudaminae were placed with Pyrginae (e. g. Ackery *et al.*, 1999; Warren *et al.*, 2008) until Warren *et al.* (2009) revised them to subfamily level. Recent works support this treatment (Yuan *et al.*, 2015b; Sahoo *et al.*, 2016; Toussaint *et al.*, 2018). Warren *et al.* (2009) could not identify morphological synapomorphies for this subfamily, but stated some diagnostic characters: discoidal cell of forewing shorter than dorsum; long hindwings, produced at the tornus with the dorsum longer than the abdomen; lack of meso- and metatibial spines. However, all these characters have exceptions found in some members in this subfamily.

Eudaminae is strictly distributed in the New World except for the Asian genus *Lobocla*. Adults of most Eudaminae rest with wings folded erect over the thorax, except for some American “Celaenorrhinus” group and the Augiades group, which rest with wings spread. Larval host plants of Eudaminae are mostly dicot families, but a few species are known to be monocot obligates.

In Taiwan, one species in one genus is known.

## 壯弄蝶亞科

壯弄蝶亞科 Eudaminae 的成員原先被置於花弄蝶亞科中 (如 Ackery *et al.*, 1999; Warren *et al.*, 2008)，直到 Warren *et al.*, (2009) 將它們修訂至亞科層級。近期的研究均支持此一處理 (Yuan *et al.*, 2015b; Sahoo *et al.*, 2016; Toussaint *et al.*, 2018)。Warren *et al.*, (2009) 無法找出本亞科成員在形態上之共衍徵，但列舉了一些鑑別特徵：前翅中室長度較後緣短；後翅長，臀區突出、後緣長度長於腹部；中足及後足脛節缺少棘刺列。然而，此等特徵均在本亞科某些成員有例外。

除了帶弄蝶屬 *Lobocla* 分布於亞洲外，本亞科成員全分布於新世界。壯弄蝶亞科的大部分種類休息時會將翅豎立於胸部背側合攏，不過有些美洲的 “Celaenorrhinus” 類群以及 Augiades 類群會在休息時將翅膀平展。幼蟲寄主植物大多為雙子葉植物，但有少數種類已知專食單子葉植物。

在臺灣地區有 1 屬 1 種。

## Genus **LOBOCLA** Moore, 1884

**Type species:** *Plesioneura liliana* Atkinson, 1871

Diagnostic characters include the followings: 1) antenna arcuate; 2) wings brown with hyaline white spots, sometimes conjoining into a band; 3) underside of hindwing with dark markings; 4) forewing with a costal fold (Evans, 1949; Yuan *et al.*, 2015a).

Seven species are known (Evans, 1949).

In Taiwan, one species occurs.

### 帶弄蝶屬

形態特徵如下：1) 觸角弓形；2) 翅褐色帶有白色透明斑點，有時連成一斑帶；3) 後翅腹面有黑色斑紋；4) 前翅具前緣褶 (Evans, 1949; Yuan *et al.*, 2015a)。

Evans (1949) 將本屬分為 7 種。

臺灣有 1 種。

#### ***Lobocla bifasciata* (Bremer & Grey, 1853) ( 雙帶弄蝶 / 白紋弄蝶 )**

*Eudamus bifasciatus* Bremer & Grey, 1853: in Motschulsky, Etudes entomologiques 1: 60. (Type locality: “Peking” [Beijing, China])

*Lobocla bifasciata disparalis* Murayama, 1995: The Nature and Insects 30(14): 32. (Type locality: Tuguancun, Yunnan [ 雲南土官村 ])

#### **Ssp. *kodairai* Sonan, 1936**

**PLATE 3, Fig. 21; PLATE 4, Fig. 22; PLATE 21, Fig. 160; PLATE 39, Fig. 230**

*Lobocla kodairai* Sonan, 1936: Zephyrus 6: 209. (Type locality: Hori, Formosa [Puli, Taiwan])

#### **Specimens examined:**

**TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Fuxing, Baling, 29. IV. 1997 (genitalia preparation JYL297) (Y. F. Hsu). **MIAOLI Co.:** 1♂, 1♀, Taian, Henglongshan, 1400m,

19. VI. 2004, reared from *Dumasia miaoliensis*, emgd. 27/IV- 26/V. 2005, HSU 04F4 (S. C. Chen, C. C. Lu & L. L. Yang). **NANTOU Co.:** 1♂, Beidongyanshan, 2. VII. 1989 (Y. F. Hsu); 1♀, Renai, Lushan, 21. VI. 1999 (Y. Ohara); 1♀, Renai, Songgang, 22. VII. 2000 (H. W. Cheng) (genitalia preparation JYL298); 1♂, Renai, Tunyuan, 2000m, 6. VII. 2012 (Y. F. Hsu); 1♂, Renai, Tunyuan, 1500m, 3. VII. 2013 (Y. F. Hsu).

**Description.** Adult – Forewing length 19–24 mm. Sexual dimorphism not prominent. Male (PLATE 3, Fig. 21): Head hairy, brown, with some white scalings notably surrounding eyes and at base of antenna. Antennae with apiculus prominent, hooked, brown mixed with white scalings ventrad. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, white with brown; 3rd segment minute, rod-like, smooth and brown. Thorax covered by brown tinged with green hairs. Abdomen brown, scattered with white scalings. Legs creamy brown. Forewing triangular, apex obtuse, margins nearly straight. Hindwing fanlike, slightly produced near tornus. Wing uppersides bearing brown hairs proximally and along dorsum on hindwing. Ground color brown, with several hyaline markings conjoined into a tilted band on forewing. Three small dots of same color arranged into a row present subapically. Two additional small dots in cell M<sub>1</sub> and M<sub>2</sub>. Wing undersides ground color brown, scattered with grayish white scalings, forming distinctive pattern of dark bands in white shade on hindwing. Fringe brown, checkered with white. A costal fold containing pale brown androconia present on forewing. Female (PLATE 4, Fig. 22): Body and wing patterns similar to those of male, but forewing termen more rounded; no costal fold on forewing.

Male genitalia (PLATE 21, Fig. 160) – Tegumen broad, produced laterally, with uncus thick, beak-like, with distal end pointed. Gnathos membranous mesad, forming a pair of sclerotized arms conjoined distally. Numerous, fine spines present on dorsal surfaces of these arms; broad, slightly serrate along posterior margin. Saccus up-curved. Valva broad, divided distally; harpe produced into a broad, triangular piece, with a prominent dorsal beak-like spine; ampulla thick basally, tapering into a strongly up-curved, digitate process bearing numerous, small spines. Phallus short, stout, with phallobase slightly longer than aedeagus. Juxta as a ventral, plate-like sclerite and a dorsal, U-shaped sclerit.

Female genitalia (PLATE 39, Fig. 230) – Corpus bursae oval. Ductus bursae

membranous, wrinkled. Signum elaborate. Lamella antevaginalis forming a pair of large, triangular sclerites with caudal end extending into a elongate blade; posterior and inner margin slightly serrate, anterior margin with a fold. Lamella postvaginalis forming a broad piece with prominent, medial invagination produced into a hood behind ostium bursae. Anal papillae setose, forming prominent, triangular lobes. Posterior apophyses short, curved.

**Global distribution.** West, South, Central to North China, Indochina, Far East Russia, Korea and Taiwan (Shirôzu, 1960).

**Distribution in Taiwan.** Montane areas of moderate altitudes (Hsu, 2013).

**Larval Host plant(s).** Fabaceae: *Indigofera venulosa*, *Dumasia villosa* and *D. miaoliensis* (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence, with adult on the wing in summer. Mature larva enters diapause in debris in winter (Hsu, 2013).

**形態特徵：**成蝶前翅長 19-24 mm。雌雄二型性不顯著。雄蝶 (圖 21) 頭被毛，褐色，複眼周圍及觸角基部明顯有白色鱗。觸角褐色，尖頂明顯呈鉤狀，腹面雜白色鱗。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，白色帶褐色；第 3 節甚小、桿狀、平滑，呈褐色。胸部褐色帶些許綠色毛。腹部褐色並有白色鱗粉散布。足乳褐色。前翅呈三角形，翅頂鈍，翅緣近直線狀。後翅扇形，臀區略延長。翅背面底色褐色，近翅基處及後翅後緣覆有褐色毛，前翅有數個透明斑點連成一斜帶。近翅頂處有三只同色小斑點排成一行。另有兩個小點位於  $M_1$  及  $M_2$  室內。翅腹面底色褐色，散布灰白色鱗，於後翅形成獨特白霜狀綴黑褐色帶之花紋。緣毛褐白相間。前翅有具淡褐色發香鱗之前緣褶。雌蝶 (圖 22) 形態特徵與雄蝶相似，惟前翅外緣較圓且無前緣褶。

雄交尾器 (圖 160)：背兜寬闊，兩側張出；鉤突厚、喙狀，末端尖。顎形突中央膜質，形成一對骨化臂於末端相連。臂背側具許多細刺，後緣寬闊，略呈鋸齒狀。囊突上彎。抱器寬闊，末端中分；抱握缺闊三角形，背側具喙狀突起；抱器內突基部厚，

漸細並明顯上彎為具許多小刺之指狀突起。陽莖短、粗壯，陽莖基長度略長於陽莖器。陽基軛片於腹側成一板狀骨片，背側則成一 U 形骨板。

雌交尾器 (圖 230)：交尾囊橢圓形。交尾囊管膜質，具皺摺。交尾孔板複雜；交尾孔前板形成一對大形三角形骨板，末端延伸成長刀狀；後緣和內緣略具鋸齒狀，前緣具褶。交尾孔後板形成一個寬闊明顯的骨片，中央凹陷，並於交尾孔後方形形成一個兜狀構造。肛突為三角形葉狀，具毛。後內骨突短、彎曲。

**世界分布：**華西、華南、華中至華北、中南半島、俄羅斯遠東地區、朝鮮半島及臺灣。

**臺灣分布：**本島中海拔山區。

**寄主植物：**豆科之脈葉木藍、臺灣山黑扁豆及苗栗野紅豆。

**生物學：**本種為一年一世代物種，成蝶夏季出現。冬季以老熟幼蟲態於落葉下休眠越冬 (Hsu, 2013)。

## Subfamily PYRGINAE Burmeister, 1878

This subfamily does not appear as a monophyletic group in early phylogenetic studies excluding the members of Pyrrhopygini (Ackery *et al.*, 1999; Warren *et al.*, 2008) but forms a monophyletic assemblage in some recent studies (e. g. Warren *et al.*, 2009; Sahoo *et al.*, 2016; Toussaint *et al.*, 2018). Warren *et al.* (2009) stated that no morphological synapomorphies are known for this subfamily. A few secondary sexual character are unique to this subfamily but absent in many species: Male forewing with costal fold containing androconial scales; females with an abdominal pheromone gland at tergum VII. Males of many species possess metatibial tufts with associated abdominal modifications, which are also found in some members of Coeliadinae.

Warren *et al.* (2008, 2009) pointed out a few genera in “Celaenorrhinus group” under this subfamily sensu Evans (1949, 1952), including several American genera and Asian *Lobocla*, belong to Eudaminae.

The members of this subfamily are cosmopolitan, with more than 1000 species known, but species diversity of the Neotropical region seems the highest. Many species rest on the underside of leaves, with wings spread out flat. The host plants of the subfamily are mainly dicotyledons, but a few genera are known to be specialists on monocotyledons.

In Taiwan, a total of 16 species in 9 genera are known.

## 花弄蝶亞科

早期的系統發育研究將美洲大弄蝶族視為獨立亞科時，花弄蝶亞科並非單系群 (Ackery *et al.*, 1999; Warren *et al.*, 2008)，但近期的研究將兩亞科合併後則成一單系群 (例如 Warren *et al.*, 2009; Sahoo *et al.*, 2016; Toussaint *et al.*, 2018)。Warren *et al.* (2009) 指出此亞科缺乏形態上的共衍徵。有些第二性徵是本亞科獨有的，但有許多種類上欠缺此等性徵：雄蝶前翅具有前緣褶，內含發香鱗；雌蝶於腹部的第 7 背板具有可釋放費洛蒙之腺體。許多種類的雄蝶後足脛節有毛束，並於腹部有相關特化構造，此類毛束也見於大弄蝶亞科的某些成員。

Warren *et al.* (2008, 2009) 指出 Evans (1949, 1952) 所定義之花弄蝶亞科星弄蝶群 “*Celaenorrhinus group*” 的一部分（包含一些美洲屬及亞洲之帶弄蝶屬）應當屬於壯弄蝶亞科。

本亞科成員呈泛世界分布，擁有超過 1000 種已知種類，但新熱帶地區的物種多樣性似乎最高。多數種類於葉背休息將翅平展。本亞科主要以雙子葉植物為寄主植物，但有少數屬已知專食單子葉植物。

在臺灣地區，共有 9 屬 16 種。

## Genus *PYRGUS* Hübner, [1819]

**Type species:** *Papilio alveolus* Hübner, [1800-1803]

Diagnostic characters include the followings: 1) club of antenna arcuate; 2) wings dark brown with white spots; 3) spots in cell M<sub>1</sub> and M<sub>2</sub> detached from spots in cell M<sub>3</sub> and CuA; 4) most species with secondary sexual characters in male, including a forewing costal fold and metatibial hair tuft (de Jong, 1982).

A speciose genus with most species found in the Holarctic Region, but some species are found in the Neotropics. The number of species is over 40 (Tsukiyama *et al.* 1997).

One species occurs in Jinmen islands.

## 花弄蝶屬

鑑別特徵如下：1) 觸角錘部弓形；2) 翅褐色，綴白色斑點；3) M<sub>1</sub> 及 M<sub>2</sub> 室斑點與 M<sub>3</sub> 及 CuA 室斑點分離；4) 多數種類雄蝶具第二性徵，包含前翅前緣褶及後足脛節之毛叢 (de Jong, 1982)。

本屬種類繁多，已知超過 40 種 (Tsukiyama *et al.* 1997)，多數種類分布於古北區，少數種類分布於新熱帶區。

金門有 1 種。

### *Pyrgus maculatus* (Bremer & Grey, 1853) (花弄蝶)

*Syrichtus maculatus* Bremer & Grey, 1853: In Motschulsky, Etudes Entomologiques 1: 61. (Type locality: Pekin [= Beijing, China])

*Scelothrix zona* Mabille, 1875: Annales de la Société entomologique de France 5(5): CCXIV. (Type locality: Asia Centrali ad orientem; Peking?)

*Scelothrix (Pyrgus) albistriga* Mabille, 1876: Annales de la Société entomologique de France 5(6): XXVII. (Type locality: “Asia orientali”)

*Pyrgus sinicus* Butler, 1877: The Annals and magazine of natural history; zoology, botany, and geology 4(19): 96. (Type locality: not stated, probably Japan)

*Scelothrix Maculatus* var. *Amurensis* Staudinger, 1892: Mémoires sur les lépidoptères 6: 216. (Type locality: Amur)

*Hesperia maculatus tokachianus* Matsumura, 1930: Insecta Matsumurana 5: 100, 5. (Type locality: Hokkaido, Japan)

*Pyrgus maculatus shikokuensis* Fujioka, 1981: Butterflies of Japan (Revised Edition): 282. (Type locality: Kochi, Japan)

**Ssp. *bocki* Oberthür, 1912**

**PLATE 4, Figs. 23-24; PLATE 21, Fig. 161; PLATE 39, Fig. 231**

*Syrichthus bocki* Oberthür, 1912: Etudes de lépidoptérologie comparée 6: 71. (Type locality: Kiang-Si [= Jiangxi, Central China])

**Specimens examined:**

**JINMEN [= KINMEN] Co.:** 1♀, Wuhushan, 22. VII. 2000, reared from *Rubus parvifolius*, emgd. 6. IX. 2000, HSU 00G32 (Y. F. Hsu & C. C. Lu); 1♂, same locality, 17. VIII. 2000, reared from *R. parvifolius*, emgd. 20. IX. 2000, HSU 00H2 (Y. F. Hsu).

**Description.** Adult – Forewing length 12–14 mm. Sexual dimorphism not prominent. Male (PLATE 4, Fig. 23): Head hairy, brown mixed with creamy white. Antennae brown banded with white dorsally, white, banded with brown ventrally; apiculus prominent, bent, naked, with distal end blunt. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy white; 3rd segment minute, brown. Thorax and abdomen brown dorsally, creamy white ventrally. Legs creamy white. Forewing triangular, termen slightly convex, with a costal fold containing creamy white androconia. Hindwing fan-like. Ground color of wings brown, decorated with white markings. On forewing, white markings roughly arranged into a discal band and a postbasal band; former serpentine, latter more or less in line. On hindwing, white markings arranged into a band proximally. Wing undersides with patterns similar to those on uppersides, but with extensive white scalings, notably along termen of forewing and on hindwing; dark areas partially tinged with red. White marking on hindwing forming a single bar. Fringe white checkered with brown. Metatibia with hair brush. Female (PLATE 4, Figs. 24): Body and wing patterns similar to those of male, but wings broader, forewing without costal fold, no hair brush.

Male genitalia (PLATE 21, Fig. 161) – Tegumen slender, flatten dorsally; uncus beak-like. Gnathos as sclerotized, transverse band with medial, spiny area. Saccus short. Valva elongate, ampulla with distal end and pointed proximal end. Harpe enlarged distad, club-

like, with dorsal margin serrate with minute teeth. Phallus with phallobase shorter than aedeagus; aedeagus down-curved with distal end spoon-like. Juxta as broad, partially sclerotized piece, with dorsal notch.

Female genitalia (PLATE 39, Fig. 231) – Corpus bursae oval. Ductus bursae membranous, attenuate caudad. Sterigma forming a weakly sclerotized dome, with a heavily sclerotized, medial, cordate sclerite at posterior margin. Anal papillae lobe-like, setose. Posterior apophyses elongate, slightly curved.

**Global distribution.** Far East Russia, Mongolia, Korea, Japan, and continental China (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Only found on Jimmen Islands (Hsu, 2013).

**Larval Host plant(s).** Rosaceae: *Rubus parvifolius* (Lee & Wang, 1995; Hsu *et al.*, 2004).

**Biology.** This species is known to be multivoltine in occurrence, overwintering as pupa (Lee & Wang, 1995).

**形態特徵：**成蝶前翅長 12-14 mm。雌雄二型性不顯著。雄蝶 (圖 23) 頭被毛，褐色雜乳白色。觸角背面褐色，鑲細白環，腹面白色，鑲褐色環；尖頂明顯，裸露、彎曲，末端鈍。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，乳白色；第 3 節甚小，褐色。胸部及腹部背面褐色，腹面乳白色。足乳白色。前翅呈三角形，外緣略突出，前緣有包藏乳白色發香鱗之前緣褶。後翅呈扇形。翅膀底色褐色，綴有白色斑紋。前翅白色斑紋排成中央帶紋及亞基帶紋，前者排列彎曲蜿蜒，後者近直線狀。後翅白紋於翅基附近排成帶狀。翅背面斑紋與翅腹面相似，但密布白色鱗，於前翅外緣及後翅格外鮮明；部分暗色區域帶紅色，後翅白斑形成一帶紋。緣毛白色嵌褐色。後足脛節具毛束。雌蝶 (圖 24) 形態特徵與雄蝶相似，但翅較寬，前翅無前緣褶，後足脛節無毛束。

雄交尾器 (圖 161)：背兜狹窄，背部扁平。鉤突喙狀。顎形突骨化為中央具刺棘之

橫帶。囊突短。抱器長，抱器內突末端圓而基部尖。抱握鉗末端膨大、棒狀，背緣具小鋸齒。陽莖基長度比陽莖器短；陽莖器下彎，末端勺狀。陽基軛片寬闊，部分骨化，背側有凹陷。

雌交尾器(圖 231):交尾囊卵圓形。交尾囊管膜質，向後漸狹窄。交尾孔板輕度骨化、圓頂狀，中間具一個高度骨化心形骨片。肛突葉狀，具毛。後內骨突修長，略彎曲。

**世界分布：**俄羅斯遠東地區、蒙古、朝鮮半島、日本、中國大陸。

**臺灣分布：**見於金門。

**寄主植物：**薔薇科之紅梅消。

**生物學：**本種為一年多世代物種，蛹越冬 (Lee & Wang, 1995)。

## Genus *CELAENORRHINUS* Hübner, [1819]

**Type species:** *Papilio eligius* Stoll, [1781]

Diagnostic characters include the followings: 1) forewing costa evenly arched; 2) wings brown with hyaline white or yellow spots on forewing, sometimes conjoining into a band; 3) underside of hindwing frequently with numerous small yellow non-hyaline spots; 4) most species with secondary sexual characters in male, including a patch of specialized scales on venter of metathorax, a pair of linear scent pouches on the underside of second abdominal segment, and a pair of metatibial hair tuft (de Jong, 1982).

A large and speciose genus with pantropical distribution. Over a hundred species are known, but some taxa in Africa used to belong to the genus has recently been re-assign to different genera by Libert (2014).

In Taiwan, six species occur, with an additional doubtful taxon.

## 星弄蝶屬

鑑別特徵如下：1) 前翅前緣弧形；2) 翅褐色，前翅有透明白色或黃色斑，有時連成一斑帶；3) 後翅腹面常有許多不透明黃色斑點；4) 多數種類雄蝶具第二性徵，包含後胸腹面具特化鱗、第 2 腹節具一對線形發香袋及後足脛節具一長毛束 (de Jong, 1982)。

本屬種類繁多，已知超過 100 種，近年來 Libert (2014) 已將部分非洲種類移出本屬。本屬呈泛熱帶分布。

臺灣有 6 種，另有 1 種疑問種。

### *Celaenorrhinus pulomaya* (Moore, [1866]) (尖翅星弄蝶/蓬萊黃紋弄蝶/尖翅小星弄蝶)

*Plesioneura pulomaya* Moore, [1866]: Proceedings of the Zoological Society of London 1865: 787. (Type locality: “Darjeeling”)

#### *Ssp. formosanus* Fruhstorfer, 1909

#### PLATE 4, Figs. 25-26; PLATE 22, Fig. 162; PLATE 40, Fig. 232

*Celaenorrhinus maculicornis formosanus* Fruhstorfer, 1909: Entomologische Zeitschrift 23 (30): 135. (Type locality: Formosa, Polisha [= Puli], 4000')

#### Specimens examined:

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]**: 1♂, Wuali, Lalashan, 10. VII. 1982 (Y. F. Hsu); 2♂, Wulai, Lalashan/ Kuaishan, 24. VII. 1987 (Y. F. Hsu); 1♂, Sanxia, Manyueyuan, 21. V. 1994 (S. H. Yen); 1♂, Sanxia, Beichatianshan, 28/29. V. 1992 (Y. F. Hsu & M. Y. Lin). **YILAN Co.**: 1♀, Nanshan, 24. VI. 1988 (Y. F. Hsu); 1♂, Datong, Shenmazhenshan, 6. VIII. 1990 (C. L. Li); 3♂, Datong, Chiduan [= Mingchi], 8. IX. 1994 (S. H. Yen); 2♂, Datong, Siji Forest Trail. 9. VIII. 2005 (L. H. Wang); 1♂, 1♀, Datong, Siyuanyakou, 1650m, 22. VII. 2001 (W. I. Chou); 1♀, Datong, Tuleng, 1600m, 11. VIII. 2009 (Y. F. Hsu). **TAOYUAN CITY [TAOYUAN Co.]**: 1♀, Lalashan, 7. VII. 1987 (Y. F. Hsu); 1♀, Fuxing, Xuanyuan, 20. VIII. 1994 (S. H. Yen). **XINZHU [= HSINCHU] Co.**: 1♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu). **TAIZHONG CITY [=TAICHUNG CITY/ TAICHUNG Co.]**: 1♂, Shishanxi, 29. VII. 1997 (C. Y. Hung); 3♂, 1♀, Heping, Anmashan, 220 Trail, ca 2000m, 20. III.

1997, reared from *Strobilanthes formosanus*, emgd. 16/20. V/VII. 1997, HSU 97C32 (Y. F. Hsu); 2♂, same locality, 10. V. 1997, reared from *S. flexicaulis*, emgd. 22/24. VI. 1997, HSU 97E19 (Y. F. Hsu, C. C. Lu, S. C. Chen & Y. H. Du); 1♀, Heping, Anmashan, 2000m, 28. VII. 2003 (H. C. Huang & Y. C. Hsu). **NANTOU Co.:** 1♂, Xinyi, Lele, 20. VIII. 1982 (Y. F. Hsu); 2♂, same locality, 17. VIII. 1989 (C. L. Li); 2♂, Xinyi, Lele/Batongguan, 16. VIII. 1989 (C. F. Lee); 1♀, Xinyi, Batongguan, 18. VIII. 1989 (W. B. Huang); 2♂, Xinyi, Duiguan, 18. VIII. 1989 (C. L. Li); 1♀, Xinyi, Tatjia Saddle, 7. IX. 1989 (C. L. Li); 1♂, Xinyi, Heshe, 660m, 5. IX. 1997 (S. W. Loh); 3♂, 1♀, Hewangshan, IX. 1993 (S. H. Yen); 1♀, Renai, Biluxi, VIII. 1993 (S. H. Yen); 1♂, Renai, Biluxi, 2200m, 31. VIII. 2008 (L. H. Wang); 1♂, 1♀, Renai, Songgang, 6. VI. 1994 (S. H. Yen); 1♂, Renai, Cuifeng, 6. VI. 1994 (S. H. Yen); 1♂, Renai, Wushe, 1500m, 2. X. 1995 (S. H. Yen). **HUALIAN [= HUALIEN] Co.:** 1♂, Xiulin, Luoshao/ Xinbaiyang, Rt. 8, 146km, 1450m, 18. V. 1997, reared from *S. rankanensis*, emgd. 12. VI. 1997, HSU 97E36 (C. Y. Hung); 1♂, 2♀, Xiulin, Xinbaiyang, Rt. 8, 135.5km, 1800m, 18. V. 1997, reared from *S. rankanensis*, emgd. 28/1. VI/VII. 1997, HSU 97E37.1 (Y. F. Hsu & C. Y. Hung); 1♀, Xiulin, Xinbaiyang, Rt. 8, 135.5km, 1850m, 18. V. 1997, reared from *S. rankanensis*, emgd. 22. VI. 1997, HSU 97E38 (C. C. Lu & Y. F. Hsu). **JIAYI [= CHIAYI] Co.:** 1♂, Alishan, Shizilu, ca 1500m, 18/19. VII. 2004 (R. K. Dong); 1♀, Alishan, Shizilu, 1600m, 30. VI. 2006 (R. K. Dong); 1♀, Alishan, Zhushan, 2400m, 1. VIII. 2006 (R. K. Dong). **KAHHSIUNG CITY [KAHHSIUNG Co.]:** 2♂, Taoyuan, Tengchih, 7. VIII. 1990 (C. L. Li). **PINGDONG [=PINGTUNG] Co.:** 3♂, Wutai, Wutoushan, 1200/1300m, 8. IX. 1998 (Y. F. Hsu); 1♀, same locality, same collecting date (W. I. Chou). **TAIDONG [= TAITUNG] Co.:** 1♂, Haiduan, Lidao, ca 1500m, 2/3. VII. 2014 (C. W. Huang).

**Description.** Adult – Forewing length 18–21 mm. Sexual dimorphism not prominent. Male (PLATE 4, Figs. 25): Head brown. Antennae with apiculus prominent, hooked, brown, but with small patch of faint, creamy yellow scalings subapically. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy white ventrally; 3rd segment minute, very short, brown. Thorax brown dorsally, covered by brown hairs ventrally. Abdomen brown with narrow, faint, orange annules. Legs brown. Forewing nearly triangular, with termen longer than or nearly equal to dorsum in length; termen slightly convex, costa and dorsum nearly straight. Hindwing fan-like. Wing uppersides ground color brown, with hindwing bearing orange hairs proximally. Forewing with hyaline markings; one at distal end of discoidal cell, one each in cell M<sub>3</sub> and CuA<sub>1</sub>

proximally. Two small spots in cell CuA<sub>2</sub> distally, with outer one hyaline, inner one yellow. Hyaline dots in cell R<sub>3</sub>-R<sub>5</sub> in a row; two small dots in cell M<sub>1</sub> and M<sub>2</sub>. Fringe brown but outer cilia yellow in cell CuA<sub>2</sub>. Hindwing with many small, orange spots; fringe brown checkered with yellow. Secondary sexual characteristics: metatibia bearing creamy yellow hair brushes; a pair of metathoracic silvery white patches of specialized scales, and an opening of linear scent pouches on 2nd abdominal segment ventrally. Undersides similar to uppersides in patterns. Female (PLATE 4, Figs. 26): similar to male in wing shape and pattern; no secondary sexual characteristics.

Male genitalia (PLATE 22, Fig. 162) – Tegumen broad with caudal margin truncated, angled at corners, bearing lateral, digitate processes. Gnathos forming a pair of sclerotized bands connected with broad membranous area. Saccus elongate. Valva simple, forming erect process with distal end acute, a small tooth present subapically. Phallus elongate, bearing prominent, heavily sclerotized fin on left surface of aedeagus. Cornutus represented as a conical, spiny sclerite. Pincer-like sclerite.

Female genitalia (PLATE 40, Fig. 232) – Corpus bursae elongate with cephalic end enlarged, golf club-like. Ductus bursae elongate, sclerotized. Sterigma forming a sclerotized dome with deep invagination surrounding ostium bursae. Anal papillae lobe-like, setose. Posterior apophyses elongate.

**Global distribution.** Himalayas, Southwest China, Taiwan (Shirôzu, 1960).

**Distribution in Taiwan.** Moderate to higher elevations in montane areas in Taiwan (Hsu, 2013).

**Larval Host plant(s).** Acanthaceae: *Strobilanthes formosanus*, *S. flexicaulis*, and *S. rankanensis* (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence (Hsu, 2013).

**Remarks.** The race of this species in Taiwan is superficially similar to sympatric *C.*

*kurosawai* in wing patterns, but shape of forewing and the inner spot in cell CuA<sub>2</sub> of forewing yellow instead of hyaline provide reliable diagnosis.

**形態特徵：**成蝶前翅長 18-21 mm。雌雄二型性不顯著。雄蝶 (圖 25) 頭部褐色。觸角尖頂明顯、褐色，呈鉤狀，亞尖頂位置有有小片白色鱗。口器褐色。下唇鬚前伸，第 1 及第 2 節被毛，腹面黃白色；第 3 節微小、褐色。胸部背面褐色，腹面覆黃白色及褐色毛。腹部褐色，鑲模糊橙色細環。足褐色。前翅近三角形，外緣略突出，長度較後緣長或與之等長，後緣近直線狀。後翅呈扇形。翅背面底色褐色，後翅近翅基處有橙色毛。前翅有透明斑紋：中室末端、M<sub>3</sub> 及 CuA<sub>1</sub> 室內側各有一斑紋；CuA<sub>2</sub> 室外側有兩小斑點，外側者白色透明、內側者黃色不透明；R<sub>3</sub> 至 R<sub>5</sub> 室各有一小透明斑點排成一列；M<sub>1</sub> 及 M<sub>2</sub> 室各有一小斑點。緣毛褐色，但 CuA<sub>2</sub> 室之外緣毛黃色。後翅有許多橙色小斑點；緣毛褐色嵌黃色。第二性徵：後足脛有黃白色毛束，後胸具成對銀白色特化鱗塊，第 2 腹節腹面具一對線形發香袋開口。翅腹面斑紋與翅背面相似。雌蝶 (圖 26) 形態特徵與雄蝶相似，惟缺乏第二性徵。

**雄交尾器 (圖 162)：**背兜寬闊，末端截狀，左右兩端角狀，兩側具指狀突起。顎形突為一對骨化帶與寬闊膜質區相連。囊突長。抱器末端形成末端尖銳之向上突起，近末端處具一齒突。陽莖長，陽莖器左側具明顯骨化之鰭狀凸起。角狀器骨化圓錐狀，具刺棘。

**雌交尾器 (圖 232)：**交尾囊長，前端膨大，球桿狀。交尾囊管細長、骨化。交尾孔板圓頂狀、骨化，於交尾孔周圍向內凹陷。肛突葉狀，具毛。後內骨突修長。

**世界分布：**喜馬拉雅地區、華西南、臺灣。

**臺灣分布：**本島中至高海拔山區。

**寄主植物：**爵床科之臺灣馬蘭、曲莖馬蘭及蘭坎馬蘭。

**生物學：**本種為一年一世代物種。

**註記：**本種與同域分布之黑澤星弄蝶極為相似，但前翅翅形及 CuA<sub>2</sub> 室內側斑點黃色非透明提供可靠的鑑定依據。

***Celaenorrhinus kurosawai* Shirôzu, 1960 (黑澤星弄蝶 / 姬黃紋弄蝶)****PLATE 4, Figs. 27-28; PLATE 22, Fig. 163; PLATE 40, Fig. 233**

*Celaenorrhinus kurosawai* Shirôzu, 1960: Butterflies of Formosa in Colour: 378. (Type locality: “Taiheizan (Tamonkei - Bunahankei), Taihoku Pref. N.-C. Formosa” [= Yilan Co., Duowenxi-Siyuanyakou].)

**Specimens examined:**

**XINBEI CITY** [= **NEW TAIPEI CITY/ TAIPEI Co.**]: 1♂, Manyueyuan waterfall, 21. V. 1994, (S. H. Yen); 1♀, Wulai, Kuaishan, 23. VIII. 1984, (Y. F. Hsu); 1♂, same locality, 29. VIII. 1987, (Y. F. Hsu). **TAOYUAN CITY** [= **TAOYUAN Co.**]: 4♂, Lalashan, 24/25. VII. 1987, (Y. F. Hsu). **XINZHU** [= **HSINCHU**] **Co.**: 1♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu); 2♂, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 21. VIII. 2002 (Y. F. Hsu). **TAIZHONG CITY** [= **TAICHUNG City/TAICHUNG Co.**]: 1♂, Heping, Siyuanyakou, 1. VIII. 1990 (C. L. Li); 2♂, Heping, Anmashan, 2000m, 28. VII. 2003 (H. C. Huang & Y. C. Hsu). **YILAN Co.**: 1♂, Datong, Siji Forest Trail, 9. VIII. 2005 (L. H. Wang); 7♂, 1♀, Datong, Siyuan, 2000m, 31. VII. 2007 (L. H. Wang); 3♂, Datong, Tuleng, 3. VIII. 2009 (L. H. Wang & C. H. Lin, jr); 1♀, same locality, 11. VIII. 2009 (Y. F. Hsu); 1♂, Datong, Tuleng, 1700m, 3. VIII. 2009 (L. H. Wang & C. H. Lin, jr). **HUALIAN** [= **HUALIEN**] **Co.**: 1♀, Xiulin, Cien, Rt. 8, 136km, 1850/1900m, 1. I. 1997, reared from *Strobilanthes flexicaulis*, emgd. 26. IV. 1997, HSU 97A2 (Y. F. Hsu); 1♂, Xiulin, Xinbaiyang, Rt. 8, 141.5km, 1670m, 1. I. 1997, reared from *S. flexicaulis*, emgd. 22. V. 1997, HSU 97A4 (Y. F. Hsu); 1♂, 2♀, Xiulin, Xinbaiyang, Rt. 8, 135.5km, 1800m, 18. V. 1997, reared from *S. rankanensis*, emgd. 22/9. VI/VII. 1997, HSU 97E37, (Y. F. Hsu & C. Y. Hung); 1♀, Xiulin, Xinbaiyang, Rt. 8, 135.5km, 1850m, 18. V. 1997, reared from *S. rankanensis*, emgd. 3. VII. 1997, HSU 97E38.1, (C. C. Lu & Y. F. Hsu); 1♂, Xiulin, Bilu, ca 2200m, 20. VII. 2007 (Y. F. Hsu); 1♂, 3♀, Xiulin, Kuailin, 2100m, 10. IX. 2008 (L. H. Wang).

**Description.** Adult – Forewing length 17–19 mm. Sexual dimorphism not prominent. Male (PLATE 4, Fig. 27): Head brown. Antennae with apiculus prominent, hooked, brown but with faint, white scalings subapically. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy white ventrally; 3rd segment minute, very short, brown. Thorax brown dorsally, covered by creamy white and brown hairs ventrally. Abdomen brown with white annules, more prominent on venter. Legs brown with

creamy white scalings. Forewing nearly triangular, with termen slightly convex, costa and dorsum nearly straight. Hindwing fan-like. Wing uppersides ground color brown, with hindwing bearing brown hairs proximally. Forewing with hyaline markings; one at distal end of discoidal cell, one each in cell  $M_3$  and  $CuA_1$  proximally; two small ones in  $CuA_2$  distally. Hyaline dots in cell  $R_3$ - $R_5$  in a row; two small dots in  $M_1$  and  $M_2$ . Fringe brown but outer cilia white in cell  $CuA_2$ . Hindwing scattered with faint, small, orange spots; fringe brown checkered with white. Wing undersides with markings similar to those of uppersides, but orange spots of hindwing more prominent. Secondary sexual characteristics: metatibia bearing creamy yellow hair brushes; a pair of metathoracic silvery white patches of specialized scales, and an opening of linear scent pouches on 2nd abdominal segment ventrally. Undersides similar to uppersides in patterns. Female (PLATE 4, Fig. 28): similar to male in wing shape and pattern; no secondary sexual characteristics.

Male genitalia (PLATE 22, Fig. 163) – Tegumen swollen posteriorly, with uncus forming deeply divided cleft caudad, with tips of distal ends bifid. Gnathos as broad bands with narrow, elongate posterior extension conjoined caudad. Saccus elongate, rod-like. Valva bifid caudally, pincer-like; harpe curved upwards; ampulla curved inwards. Phallus short, stout, with phallobase slightly shorter than aedeagus. Cornuti as a pair of sclerites with distal ends pointed; anterior one elongate, slender, posterior one short, up-curved distally. Juxa as a narrow, U-shaped sclerite.

Female genitalia (PLATE 40, Fig. 233) – Corpus bursae oval with large appendix bursae. Signum as a long, slender, linear sclerotized band with minute spines. Ductus bursae heavily sclerotized, curved, with caudal end membranous. Ostium bursae sclerotized. Sterigma forming a broad sclerotized with two wing-like lateral lobes; median portion with caudal margin slightly convex. Anal papillae setose. Posterior apophyses elongate, slender, straight.

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

**Distribution in Taiwan.** Moderate elevations in montane areas in Taiwan (Hsu, 2013).

**Larval Host plant(s).** Acanthaceae: *Strobilanthes flexicaulis* and *S. rankanensis* (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence, on the wing in summer (Hsu, 1999).

**Remarks.** Although not explicitly addressed in the original description by Shirôzu (1960), the specific name of the species appeared to be given in honor of a prominent Japanese entomologist, Yoshihiko Kurosawa.

**形態特徵：**成蝶前翅長 17-19 mm。雌雄二型性不顯著。雄蝶 (圖 27) 頭部褐色。觸角尖頂明顯、褐色，呈鉤狀，亞尖頂位置有有小片白色鱗。口器褐色。下唇鬚前伸，第 1 及第 2 節被毛，腹面白色；第 3 節微小、褐色。胸部背面褐色，腹面覆黃白色及褐色毛。腹部褐色，鑲白色細環，於腹面較為鮮明。足褐色，覆白色鱗。前翅近三角形，外緣略突出，後緣近直線狀。後翅呈扇形。翅背面底色褐色，後翅近翅基處有褐色毛。前翅有透明斑紋：中室末端、 $M_3$  及  $CuA_1$  室內側各有一斑紋； $CuA_2$  室外側有兩小斑點； $R_3$  至  $R_5$  室各有一小透明斑點排成一列； $M_1$  及  $M_2$  室各有一小斑點。緣毛褐色，但  $CuA_2$  室之外緣毛白色。後翅有模糊橙色小斑點；緣毛褐色嵌白色。第二性徵：後足脛有黃白色毛束，後胸具成對銀白色特化鱗塊，第 2 腹節腹面具一對線形發香袋開口。翅腹面斑紋與翅背面相似。雌蝶 (圖 28) 形態特徵與雄蝶相似，惟缺乏第二性徵。

雄交尾器 (圖 163)：背兜末端膨大，鉤突間深凹陷，末端二分。顎形突寬帶狀，延伸變細而末端相連。囊突長、棒棍狀。抱器末端二分，鉗狀；抱握鈹上彎，抱器內突內彎。陽莖短、粗壯，陽莖基長度略短於陽莖器。角狀器為一對末端尖銳之骨片；前骨片細長，後骨片短，後端上彎。陽基軛片為狹窄 U 形骨片。

雌交尾器 (圖 233)：交尾囊橢圓形，具大型附囊。花壁成一細長、線狀骨化帶，具細棘。交尾囊管高度骨化、彎曲，後端膜質。交尾孔骨化。交尾孔板寬闊、骨化，兩側形成翼狀瓣，後緣中央略凸起。肛突具毛。後內骨突細長、筆直。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**分布於中海拔山區。

**寄主植物：**爵床科之臺灣馬蘭及蘭炭馬蘭。

**生物學：**本種為一年一世代物種，成蝶見於夏季。

**註記：**雖然 Shirôzu (1960) 在命名、記述時並未說明本種種小名含意，但 *kurosawai* 應是獻名，表彰日本著名昆蟲學者黑澤良彥之貢獻。

***Celaenorrhinus ratna* Fruhstorfer, 1908 (小星弄蝶 / 白鬚黃紋弄蝶)**

**PLATE 4, Figs. 29-30; PLATE 22, Fig. 164; PLATE 40, Fig. 234**

*Celaenorrhinus sumitra ratna* Fruhstorfer, 1908: Entomologische Zeitschrift 22 (12): 49. (Type locality: Formosa, Kagi [Jiayi])

*Notocrypta kawakamii* Matsumura, 1907: Insect world: 11: 50. (Type locality: “達邦社 [Tappan-sha]”)

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, 1♀, Wulai, Lalashan/ Kuaishan, 29. VIII. 1987 (Y. F. Hsu); 1♂, Wulai, Kuaishan, 25. VII. 1997 (C. Y. Hung); 2♂, 1♀, Wulai, Lalashan/ Kuaishan, 1500/1200m, 15. VII. 2000 (Y. F. Hsu); 1♂, Sanxia, Beichatianshan, 9. III. 1997, reared from *Strobilanthes formosanus*, emgd. 9. V. 1997, HSU 97C3 (Y. F. Hsu); 1♂, Sanxia, Beichatianshan, 21. VII. 1996 (C. Y. Hung). **TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Lalashan, 10. VII. 1982 (Y. F. Hsu); 1♂, same locality, 12. VII. 1986 (Y. F. Hsu); 1♂, same locality, 7. VII. 1987 (Y. F. Hsu); 3♂, 3♀, same locality, 24/25. VII. 1987 (Y. F. Hsu); 1♂, 1♀, same locality, 22. XII. 1996, reared from *S. formosanus*, emgd. 25/2. IV/V. 1997, HSU 96M18 (Y. F. Hsu); 5♂, Fuxing, Baling/ Chiduan, 11. VII. 1985 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.:** 2♂, 1♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu); 4♂, same locality, 21. VIII. 2002 (Y. F. Hsu). **YILAN Co.:** 1♂, Nanshan, 24. VI. 1988 (Y. F. Hsu); 1♂, 1♀, Datong, Siji Forest Trail, 9. VIII. 2005 (L. H. Wang); 1♂, 1♀, Nanao, Shenmi Lake, 1100m, 24. VII. 1999 (Y. F. Hsu); 1♂, Nanao, Shenmihu, 1100m, 29. VI. 2001 (Y. F. Hsu & C. C. Lu). **NANTOU Co.:** 1♂, Hewangshan, 11. VII. 1998 (H. Y. Lee); 1♂, Lugu, Xitou, 1100m, 20. IV. 2012, reared from *S. flexicaulis*, emgd. 22. VI. 2012, HSU 12D16 (C. Y. Yen & L. H. Wang); 1♂, Xinyi, Shenmu Village, 30. VI. 1987 (Y. F. Hsu); 1♂, Xinyi, Lele, 20. VIII. 1982 (Y. F. Hsu); 1♂, Xinyi, Dongpu/Duiguan, 1. IX. 2008 (C.

L. Huang); 1♀, Zhushan, Shanlinxi, 8. VIII. 1986 (C. L. Li). **HUALIAN** [= **HUALIEN**] Co.: 3♂, Qilai, 1300m, 11. VII. 1991 (Y. F. Hsu & C. L. Li); 1♂, Zhouxi, Zhongping Forest Trail, 1100/1200m, 16. VII. 2004 (L. H. Wang). **JIAYI** [= **CHIAYI**] Co.: 1♂, Zhuqi, Fenqihu, 28. VI. 1987 (C. F. Lee); 2♂, same locality, 9. IX. 1989 (C. L. Li), 2♀, Alishan, Shizilu, 19. IX. 2004 (R. K. Dong). **KAOSIUNG CITY** [= **KAOSIUNG Co.**]: 1♂, Taoyuan, Tengchih, 7. VIII. 1990 (C. L. Li). **PINGDONG** [= **PINGTUNG**] Co.: 2♂, Wutai, Wutoushan, 1200/1300m, 8. IX. 1998 (W. I. Chou); 6♂, Wutai, 8. IX. 1998 (C. Y. Hung); 1♂, Wutai, Wutoushan, 1200m, 26. VI. 2003 (C. L. Huang & L. W. Wu); 2♀, Chunri, Dahanshan, 1400m, 19. VII. 2001 (W. I. Chou). **TAIDONG** [= **TAITUNG**] Co.: 7♂, Beinan, Lijia Trail, 1100/1300m, 9. IX. 1999 (Y. F. Hsu); 1♂, Jinfeng, Jianshan, 7. IV. 2000, reared from *S. flexicaulis*, emgd. 7. V. 2000, HSU 00D8 (Y. F. Hsu & C. C. Lu).

**Description.** Adult – Forewing length 21–23 mm. Sexual dimorphism not prominent. (PLATE 4, Fig. 29): Head brown. Antennae with apiculus prominent, hooked, brown but with prominent white scalings subapically. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow ventrally; 3rd segment minute, very short, brown. Thorax brown dorsally, covered by yellow and brown hairs ventrally. Abdomen brown with orange annules. Legs brown with creamy yellow scalings. Forewing nearly triangular, with termen slightly convex, costa and dorsum nearly straight. Hindwing fan-like. Wing uppersides ground color brown, with hindwing bearing orange hairs proximally. Forewing with hyaline markings; one at distal end of discoidal cell, one each in cell M<sub>3</sub> and CuA<sub>1</sub> proximally; two small ones in cell CuA<sub>2</sub> distally. Hyaline dots in cell R<sub>3</sub>–R<sub>5</sub> in a row; two small dots in M<sub>1</sub> and M<sub>2</sub>. Additional yellow dot sometimes in cell CuA<sub>2</sub> proximally. Fringe brown but outer cilia yellow in cell CuA<sub>2</sub>. Hindwing with many small, orange spots; fringe brown checkered with yellow. Secondary sexual characteristics: metabibia bearing creamy yellow hair brushes; a pair of metathoracic silvery white patches of specialized scales, and an opening of linear scent pouches on 2nd abdominal segment ventrally. Undersides similar to uppersides in patterns. Female (PLATE 4, Fig. 30): similar to male in wing shape and pattern; no secondary sexual characteristics.

Male genitalia (PLATE 22, Fig. 164) – Tegumen swollen posteriorly, with uncus forming

deeply divided V-shape cleft caudad, with tips of distal ends bifid. Gnathos as broad bands with narrow, elongate posterior extension conjoined caudad. Saccus elongate, rod-like. Valva bifid caudally, pincer-like; harpe curved upwards; ampulla curved inwards. Phallus short, stout, with phallobase slightly shorter than aedeagus. Cornuti as a pair of sclerites with distal ends pointed; anterior one elongate, slender, posterior one short, straight distally. Juxta as a narrow, U-shaped sclerite.

Female genitalia (PLATE 40, Fig. 234) – Corpus bursae oval with large appendix bursae. Signum as a long, slender, linear sclerotized band with minute spines. Ductus bursae heavily sclerotized, curved, with caudal end membranous. Ostium bursae sclerotized. Sterigma forming a broad sclerotized with two circular lateral lobes; median portion with caudal margin slightly convex. Anal papillae setose. Posterior apophyses elongate, slender, straight.

**Global distribution.** Himalayas, Southwest China, Taiwan (Shirôzu, 1960; Hsu, 2013).

**Distribution in Taiwan.** Moderate elevations in montane areas in Taiwan (Hsu, 2013).

**Larval Host plant(s).** Acanthaceae: *Strobilanthes formosanus*, *S. flexicaulis*, and *S. rankanensis* (Hsu, 2013).

**Biology.** This species is known to be bivoltine in occurrence (Hsu, 1999).

**Remarks.** Hsu *et al.* (2006) recognized the name *Notocrypta kawakamii* Matsumura, 1907 as conspecific with *Celaenorrhinus ratna* Fruhstorfer, 1908, and proposed to conserve the name *Celaenorrhinus ratna*. Subsequently the name *Notocrypta kawakamii* Matsumura, 1907 was suppressed under the plenary power of the International Commission on Zoological Nomenclature (ICZN, 2008).

**形態特徵：**成蝶前翅長 21-23 mm。雌雄二型性不顯著。雄蝶 (圖 29)：頭部褐色。觸角尖頂明顯、褐色，呈鉤狀，亞尖頂位置有有小片白色鱗。口器褐色。下唇鬚前伸，第 1 及第 2 節被毛，腹面黃白色；第 3 節微小、褐色。胸部背面褐色，腹面覆黃白

色及褐色毛。腹部褐色，鑲橙色細環。足褐色，覆黃色鱗。前翅近三角形，外緣略突出，後緣近直線狀。後翅呈扇形。翅背面底色褐色，後翅近翅基處有橙色毛。前翅有透明斑紋：中室末端、 $M_3$  及  $CuA_1$  室內側各有一斑紋； $CuA_2$  室外側有兩小斑點； $R_3$  至  $R_5$  室各有一小透明斑點排成一列； $M_1$  及  $M_2$  室各有一小斑點。 $CuA_2$  室內側有時有黃色小斑點。緣毛褐色，但  $CuA_2$  室之外緣毛黃色。後翅有許多橙色小斑點；緣毛褐色嵌黃色。第二性徵：後足脛有黃白色毛束，後胸具成對銀白色特化鱗塊，第 2 腹節腹面具一對線形發香袋開口。翅腹面斑紋與翅背面相似。雌蝶 (圖 30)：形態特徵與雄蝶相似，惟缺乏第二性徵。

雄交尾器 (圖 164)：背兜後端膨大，鉤突末端形成深 V 形開口，末端二分。顎形突寬帶狀，向後延伸變窄並左右相連。囊突長、棒狀。抱器末端二分、鉗狀；抱握鈹上彎；抱器內突內彎。陽莖短、粗壯，陽莖基長度略短於陽莖器。角狀器為一對末端尖銳狀之骨片；前骨片細長，後骨角短，末端直。陽基軛片為狹窄 U 形骨片。

雌交尾器 (圖 234)：交尾囊橢圓形，具大型附囊。花壁為細長、線狀骨化帶，具微刺。交尾囊管高度骨化、彎曲，末端膜質。交尾孔骨化。交尾孔板寬闊、骨化，兩側具圓形瓣；後緣中央略凸起。肛突具毛。後內骨突細長、筆直。

**世界分布：**喜馬拉雅地區、華西南、臺灣。

**臺灣分布：**本島中海拔山區。

**寄主植物：**爵床科之臺灣馬蘭、曲莖馬蘭及蘭炭馬蘭。

**生物學：**本種為一年兩世代物種。

**生物學：**Hsu *et al.* (2006) 提出 *Notocrypta kawakamii* Matsumura, 1907 與小星弄蝶同種的看法，並主張保留 *Celaenorrhinus ratna* 之學名。隨後國際動物命名會議通過壓制學名 *Notocrypta kawakamii* Matsumura, 1907 (ICZN, 2008)。

***Celaenorrhinus horishanus* Shirôzu, 1960 (埔里星弄蝶/埔里黃紋弄蝶/臺灣星弄蝶)**

**PLATE 5, Figs. 31-32; PLATE 22, Fig. 165; PLATE 40, Fig. 235**

*Celaenorrhinus horishanus* Shirôzu, 1960: Butterflies of Formosa in Colour: 381. (Type locality: “Baibara, Taichû Pref., C. Formosa” [Nantou Co., Meiyuan])

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Sanxia, Zhulushan, 23. V. 2004 (R. K. Dong); 2♂, Sanxia, Beichatianshan, 22. V. 1993 (Y. F. Hsu & M. Y. Lin); 1♂, Sanxia, Beichatianshan, 1000m, 28/29. V. 1992 (Y. F. Hsu & M. Y. Lin); 1♂, same locality, 6. XII. 1997, reared from *Strobilanthes formosanus*, emgd. 2. IV. 1998, HSU 97M9 (Y. F. Hsu); 1♀, Sanzhi, Erziping, 30. VI. 2015, reared from *S. rankanensis*, emgd. 4. III. 2015, 15F52 (Y. F. Hsu). **XINZHU [=HSINCHU] Co.:** 1♀, Jianshi, Lidongshan, ca1500m, 26. VI. 2005 (H. C. Huang). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♀, Shishanxi, 29. VII. 1997 (C. Y. Hung); 1♀, Anmashan, 30. VIII. 1996, reared from *S. formosanus*, emgd. 27. XII. 1996, HSU 96H22 (C. L. Zhan). **NANTOU Co.:** 1♂, Renai, Nanshanx, ca1000m, 19. IX. 1997, reared from *S. flexicaulis*, HSU 97J32 (C. C. Lu & C. Y. Hung); 1♂, Nanshanxi, 8. IV. 1997 (C. Y. Hung); 1♂, Puli, Hewangshan, 18. IV. 1984 (C. K. Ra); 1♀, same locality, 14. IX. 1984 (C. K. Ra); 1♀, Renai, Hewang, 1600m, 3. VI. 2003 (Y. F. Hsu); 1♂, Renai, Guandaoshan, 28. V. 1997 (Y. F. Hsu); 1♀, Renai, Songgang, 27. VI. 1997 (C. C. Lu); 1♀, Lugu, Xitou, 1050m, 18. IX. 1997, reared from *S. flexicaulis*, emgd. 18. IX. 1997, HSU 97J30 (C. C. Lu & C. Y. Hung); 1♂, Fonghuanggu, 5. V. 1997 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 1♂, Xiulin, Qilai, 1500m, 4. VII. 2007 (L. H. Wang). **JIAYI [=CHIAYI] Co.:** 4♀, Alishan, Shizilu, 18. VII. 2004 (R. K. Dong); 3♂, 7♀, Alishan, Shizilu, ca 1500m, 18/19. VII. 2004 (R. K. Dong). **PINGDONG [= PINGTUNG] Co.:** 1♂, Wutai, Wutoushan, 1200/1400m, 23. V. 1998 (C. Y. Hung); 4♀, Wutai, Wutoushan, 23. V. 1998 (C. C. Lu); 3♂, 2♀, Wutai, Wutoushan, 1200m, 28/29. IV. 2002 (C. C. Lu & C. L. Huang); 1♀, same locality, 26. VI. 2003 (C. L. Huang & L. W. Wu); 1♂, 1♀, same locality, 7/8. V. 2006 (Y. F. Hsu); 1♂, 1♀, Wutai, Ali, 25. V. 2006 (L. W. Wang); 2♂, 3♀, Wutai, Wutoushan, 1100/1200m, 5. V. 2007 (Y. F. Hsu); 1♀, Wutai, Ali, ca1000m, 31. V. 2006 (L. H. Wang & C. C. Lu); 5♀, Shizi, Lilongshan, 9. IX. 1998, reared from *S. flexicaulis*/ *S. longesplicatus*, emgd. 5/20. XII/I. 1998/1999, HSU 98J18 (Y. F. Hsu & C. C. Lu); 1♀, Shizi, Lilongshan, 600/700m, 25. VIII. 2007, reared from *S. longesplicatus*, emgd. 8. III. 2008, HSU 07H38 (Y. F. Hsu); 1♀, Shizi, Lilongshan, 1050m, 25. VIII. 2007, reared from *S. flexicaulis*, emgd. 13. XII. 2007, HSU 07H39 (Y. F. Hsu); 1♀, Shizi, Lilongshan, 800/1050m, 25. VIII. 2007, reared from *S. flexicaulis*, emgd. 28. III. 2008, HSU 07H39 (Y. F. Hsu); 5♂, 1♀, Chunri, Dahan Forest Trail, 23km, 1270m, 6. V. 2002 (C. L. Li). **TAIDONG [= TAITUNG] Co.:** 1♀, Beinan, Lijia Froest Trail, 1050/1300m, 27. VIII. 1998, reared from *S. flexicaulis*, emgd. 27. III. 1999, HSU 98H18 (Y. F. Hsu); 2♂, Beinan, Lijia Froest Trail, 1300m, 9. IX.

1999, reared from *S. flexicaulis*, emgd. 9/13. XII. 1999, HSU 99J16.1 (Y. F. Hsu & C. C. Lu).

**Description.** Adult – Forewing length 20–23 mm. Sexual dimorphism not prominent. Male (PLATE 5, Fig. 31): Head brown. Antennae with apiculus prominent, hooked, brown but with creamy yellow scalings subapically. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy white ventrally; 3rd segment minute, very short, brown. Thorax brown dorsally, covered by creamy white and brown hairs ventrally. Abdomen brown with white annules, more prominent on venter. Legs brown with creamy white scalings. Forewing nearly triangular, with termen slightly convex, costa and dorsum nearly straight. Hindwing fan-like. Wing uppersides ground color brown, with hindwing bearing brown hairs proximally. Forewing with hyaline markings; one at distal end of discoidal cell, one each in cell  $M_3$  and  $CuA_1$  proximally, with  $M_3$  spot square,  $CuA_1$  spot rectangle in shape; two small ones in  $CuA_2$  distally. Hyaline dots in cell  $R_3$ – $R_5$  in a row; two small dots in  $M_1$  and  $M_2$ . A small, linear, yellow stripe frequently present in front of hyaline spot of discoidal cell. Fringe brown but outer cilia creamy yellow in cell  $CuA_2$ . Hindwing scattered with faint, small, orange spots; fringe brown checkered with creamy yellow. Wing undersides with markings similar to those of uppersides. Secondary sexual characteristics: metatibia bearing creamy yellow hair brushes; a pair of metathoracic silvery white patches of specialized scales, and an opening of linear scent pouches on 2nd abdominal segment ventrally. Undersides similar to uppersides in patterns. Female (PLATE 5, Fig. 32): similar to male in wing shape and pattern; no secondary sexual characteristics.

Male genitalia (PLATE 22, Fig. 165) – Tegumen swollen posteriorly, with uncus forming deeply divided U-shaped cleft caudad, with tips of distal ends bifid. Gnathos as broad bands with narrow, elongate posterior extension conjoined caudad. Saccus, rod-like. Valva with caudal part divided; harpe as elongate process, curved upwards, with distal end pointed; ampulla curved inwards, bearing a small tooth subapically. Phallus short, stout, with phallobase shorter than aedeagus. Cornuti as a pair of sclerites with distal ends pointed; anterior one elongate, slender, posterior one short, up-curved distally. Juxa as a plate with shallow, U-shaped depression dorsally.

Female genitalia (PLATE 40, Fig. 235) – Corpus bursae oval with large appendix bursae.

Signum as a long, broad, linear sclerotized band with minute spines. Ductus bursae elaborated, membranous, narrow anteriorly, heavily sclerotized posteriorly. Ostium bursae sclerotized. Sterigma sclerotized, elaborated. Lamella antevaginalis forming a shield-like, heavily sclerotized piece; lamella postvaginalis less sclerotized, forming a large plate with lateral fold. Anal papillae lobe-like, setose. Posterior apophyses elongate, slender, straight but slightly enlarged at base.

**Global distribution.** Currently recognized as a species endemic to Taiwan.

**Distribution in Taiwan.** Low to moderate elevations in montane areas of Taiwan (Hsu, 2013).

**Larval Host plant(s).** Acanthaceae: *Strobilanthes formosanus*, *S. flexicaulis*, and *S. rankanensis*, *S. longespicaus* (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence, with adults on the wing in spring to early summer (Hsu, 1999).

**Remarks.** Hsu (2013) suggested that *Celaenorrhinus consanguinea* Leech, 1891 should probably be closely related to this species, and the taxonomic status of *C. chihhsiaoi* Hsu, 1990 is doubtful, involving this species.

**形態特徵：**成蝶前翅長 20-23 mm。雌雄二型性不顯著。雄蝶 (圖 31)：頭部褐色。觸角尖頂明顯、褐色，呈鉤狀，亞尖頂位置有有小片白色鱗。口器褐色。下唇鬚前伸，第 1 及第 2 節被毛，腹面黃白色；第 3 節微小、褐色。胸部背面褐色，腹面覆黃白色及褐色毛。腹部褐色，鑲白色細環。足褐色，覆白色鱗。前翅近三角形，外緣略突出，後緣近直線狀。後翅呈扇形。翅背面底色褐色，後翅近翅基處有褐色毛。前翅有透明斑紋：中室末端、 $M_3$  及  $CuA_1$  室內側各有一斑紋； $CuA_2$  室外側有兩小斑點，外側者白色透明、內側者黃色不透明； $R_3$  至  $R_5$  室各有一小透明斑點排成一列； $M_1$  及  $M_2$  室各有一小斑點；中室透明斑點前常具黃色線形小紋。緣毛褐色，但  $CuA_2$  室之外緣毛黃白色。後翅散布模糊橙色小斑點；緣毛褐色嵌黃白色。第二性徵：後足

脛有黃白色毛束，後胸具成對銀白色特化鱗塊，第 2 腹節腹面具一對線形發香袋開口。翅腹面斑紋與翅背面相似。雌蝶 (圖 32)：形態特徵與雄蝶相似，惟缺乏第二性徵。

雄交尾器 (圖 165)：背兜向末端膨大，與鉤突形成 U 形深裂，末端尖雙叉。顎形突寬帶狀，延伸變細而末端相連。囊突棒棍狀。抱器末端二分；抱握鈹為細長突起，上彎、末端尖；抱器內突內彎，近先端處具一小齒。陽莖短、粗壯，陽莖基長度短於陽莖器。角狀器為一對末端尖之骨片；前骨片細長，後骨片短，後端上彎。陽基軛片為背側具淺 U 形凹陷之骨片。

雌交尾器 (圖 235)：背兜向末端膨大，與鉤突形成 U 形深裂，末端尖雙叉。顎形突寬帶狀，延伸變細而末端相連。囊突棒棍狀。抱器末端二分；抱握鈹為細長突起，上彎、末端尖；抱器內突內彎，近先端處具一小齒。陽莖短、粗壯，陽莖基長度短於陽莖器。角狀器為一對末端尖之骨片；前骨片細長，後骨片短，後端上彎。陽基軛片為背側具淺 U 形凹陷之骨片。

**世界分布：**本種目前被視為臺灣特有種。

**臺灣分布：**本島低至中海拔山區。

**寄主植物：**爵床科之臺灣馬蘭、曲莖馬蘭、蘭炭馬蘭及長穗馬蘭。

**生物學：**本種為一年一世代物種，成蝶見於春季至初夏。

**註記：**Hsu (2013) 指出同宗星弄蝶 *Celaenorrhinus consanguinea* Leech, 1891 可能與本種近緣；由本種分出之魑魅星弄蝶 *C. chihhsiao* Hsu, 1990 分類地位存疑。

***Celaenorrhinus major* Hsu, 1990 (臺灣流星弄蝶 / 江崎黃紋弄蝶 / 臺灣射紋星弄蝶)**

**PLATE 5, Figs. 33-34; PLATE 23, Fig. 166; PLATE 41, Fig. 236**

*Celaenorrhinus osculus major* Hsu, 1990: Bulletin of the Institute of Zoology, Academia Sinica 29: 143. (Type locality: ILAN: Nanshan).

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Lalashan, 9. VII. 1997; 5♂, 1♀, Wulai, Kuaishan, 1400m, 4. IV.1998, reared from *Pilea aquarum brevicornuta*, emgd. 1/15. V. 1998, HSU 98D1 (Y. F. Hsu); 1♀, same collecting data (Y. F. Hsu); 1♂, 1♀, Wuali, Lalashan/ Kuaishan, 1500/1200m, 15. VII. 2000 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Lalashan, 6. VII. 1990 (C. L. Li). **XINZHU [= HSINCHU] Co.:** 1♂, Jianshi, Lidongshan, ca 1550m, 16. VII. 2005 (H. C. Huang); 1♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 21. VIII. 2002 (C. Y. Hung). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♀, Lishan, 9. VIII. 1989 (Y. F. Hsu); 1♀, Shishanxi, 18. VII. 1997 (C. Y. Hung); 2♂, same locality, 29. VII. 1997 (C. Y. Hung); 1♂, Heping, Shishanxi, 1200m, reared from *P. matsudae*, emgd. 7. V. 1999, HSU 99E3 (Y. F. Hsu & C. C. Lu); 1♂, same locality, reared from *P. rotundinucula*, emgd. 5. V. 1999, HSU 99E31 (Y. F. Hsu & C. C. Lu); 1♂, Heping, Siyuan, 25. VII. 2007 (L. H. Wang); 2♂, 1♀, same locality, 27. VII. 2007 (Y. F. Hsu). **YILAN Co.:** 2♂, 2♀, Datong, Siyuan, 2000m, 31. VII. 2007 (L. H. Wang). **NANTOU Co.:** 1♂, Renai, Songgang, 27. VI. 1997 (C. Y. Hung). **HUALIAN [= HUALIEN] Co.:** 3♂, 1♀, Xiulin, Qilai, 1500m, 4. VII. 2007 (L. H. Wang); 1♀, Xiulin, Xinbaiyan, ca 1700m, 20. VII. 2007 (Y. F. Hsu); 1♂, Xiulin, Bilu, 2300m, 8. VII. 1991 (Y. F. Hsu & C. L. Li); 2♂, Xiulin, Bilu, ca 2200m, 20. VII. 2007 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 1♂, Haiduan, Lidao, ca 1500m, 2/3. VII. 2014 (C. W. Huang).

**Description.** Adult – Forewing length 20–22 mm. Sexual dimorphism not prominent. Male (PLATE 5, Fig. 33): Head brown. Antennae with apiculus prominent, hooked, brown, but with a small patch of faint, creamy white scalings subapically. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow ventrally; 3rd segment minute, very short, brown. Thorax brown dorsally, covered by creamy yellow and brown hairs ventrally. Abdomen brown with creamy white annules. Legs brown with creamy yellow scalings. Forewing nearly triangular, with termen slightly convex, costa and dorsum nearly straight. Hindwing fan-like. Wing uppersides ground color brown, with hindwing bearing orange hairs proximally. Forewing with hyaline markings; one at distal end of discoidal cell, one each in cell  $M_3$  and  $CuA_1$  proximally; two small ones in cell  $CuA_2$  distally. Hyaline dots in cell  $R_3$ – $R_5$  in a row; two small dots in  $M_1$  and  $M_2$ .  $M_1$  spot larger than or nearly equal to  $CuA_2$  spots in size. Spots in discoidal cell, cell  $M_3$ ,  $CuA_1$  sometimes conjoined. Additional white dot sometimes in cell  $CuA_2$  proximally. Fringe brown but outer cilia yellow in cell  $CuA_2$ . Hindwing with many orange spots;

fringe brown checkered with yellow. Secondary sexual characteristics: metatibia bearing white hair brushes; a pair of metathoracic silvery white patches of specialized scales, and an opening of linear scent pouches on 2nd abdominal segment ventrally. Undersides similar to uppersides in patterns, but spots on hindwing paler, with yellow stripes present proximally. Female (PLATE 5, Fig. 34): similar to male in wing shape and pattern; no secondary sexual characteristics.

Male genitalia (PLATE 23, Fig. 166) – Tegumen with uncus forming a pair of hook-like processes. Gnathos as elongate sclerotized band with numerous spines. Saccus short. Valva elongate, slender, up-curved, tapering toward caudal end into two small processes. Phallus stout, with phallobase slightly down-curved. Cornutus prominent, as a curved, tubular sclerite. Juxta as a small V-shaped piece connecting to heavily sclerotized manica. Manica forming 2 long, slender arms, tapering to pointed tip.

Female genitalia (PLATE 41, Fig. 236) – Corpus bursae wrinkled, ovate with tubular appendix bursae. Ductus bursae short, with anterior part bulbous, membranous; posterior part sclerotized, funnel-like. Signum elaborate, with lamella anteriores forming trumpet-like structure; lamella posteriors as a sclerotized dome with a prominent, transverse, heavily sclerotized band. Anal papillae lobe-like, setose. Posterior apophyses short, slender.

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

**Distribution in Taiwan.** Moderate elevations in montane areas of Taiwan (Hsu, 2013).

**Larval Host plant(s).** Urticaceae: *Pilea aquarum brevicornuta*, *P. matsudae*, and *P. rotundinucula*.

**Biology.** This species is known to be uniivoltine in occurrence (Hsu, 1999).

**Remarks.** This species was identified as *C. oscula* Evans, 1949 (type locality: “Tien Tsuen” [= Tianchuan, Sichuan]) by Shirôzu (1960). Hsu (1990) described it as ssp.

*major*, which was subsequently revised to specific status by Devyatkin (2000).

**形態特徵：**成蝶前翅長 20-22 mm。雌雄二型性不顯著。雄蝶 (圖 33)：頭部褐色。觸角尖頂明顯、褐色，呈鉤狀，但亞尖頂位置有有小片模糊白色鱗。口器褐色。下唇鬚前伸，第 1 及第 2 節被毛，腹面乳黃色；第 3 節微小、褐色。胸部背面褐色，腹面覆黃白色及褐色毛。腹部褐色，有白色細環。足褐色，覆黃色鱗。前翅近三角形，外緣略突出，後緣近直線。後翅呈扇形。翅背面底色褐色，後翅近翅基處覆有橙色毛。前翅有透明斑紋：中室末端、 $M_3$  及  $CuA_1$  室內側各有一斑點； $CuA_2$  室外側有兩只小斑點； $R_3$  至  $R_5$  室各有一小透明斑點排成一列； $M_1$  及  $M_2$  室各有一小斑點。於  $M_1$  室者較  $CuA_2$  室者大或相等。中室、 $M_3$  及  $CuA_1$  室斑點有時融合。 $CuA_2$  室內側有時有額外白色小斑點。緣毛褐色，但  $CuA_2$  室之外緣毛黃色。後翅有許多橙色斑點；緣毛褐色嵌黃色。第二性徵：後足脛節有褐色毛束；後胸有成對銀白色特化鱗塊；第 2 腹節腹面具一對線形發香袋開口。翅腹面斑紋與翅背面相似，但後翅斑點色調較淺，近翅基處有黃色條紋。雌蝶 (圖 34)：形態特徵與雄蝶相似，惟缺乏第二性徵。

**雄交尾器 (圖 166)：**鉤突形成一對鉤狀構造。顎形突為細長骨化帶，具許多棘刺。囊突短、錐狀。抱器細長、上彎，向後漸細並於後端形成兩只小齒突。陽莖粗壯，陽莖基略下彎。角狀器明顯，為一彎曲管狀骨。陽基軛片細小，V 形，與高度骨化之陽莖鞘相連。陽莖鞘形成兩細長骨臂，向末端漸尖。

**雌交尾器 (圖 236)：**交尾囊卵狀，有皺摺，具管狀附囊。交尾囊管短，前部泡狀、膜質；後部骨化，漏斗狀。交尾孔板複雜，前板喇叭狀；後板圓頂狀、骨化，具一個明顯高度骨化橫帶。肛突葉狀，具毛。後內骨突短，纖細。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島中海拔山區。

**寄主植物：**蕁麻科之短角冷水麻、細尾冷水麻及圓果冷水麻。

**生物學：**本種是一年一世代物種。

**註記：**本種以往被鑑定為流星弄蝶 *C. oscula* Evans, 1949 (Shirôzu, 1960)。Hsu

(1990) 將其處理為亞種 *ssp. major*，隨後由 Devyatkin (2000) 修訂為種獨立種。

***Celaenorrhinus maculosus* (C. & R. Felder, [1867]) (大流星弄蝶/大型黃紋弄蝶/斑星弄蝶)**

*Pterygospidea maculosa* C. & R. Felder, [1867]: Reise der österreichischen Fregatte Novara, Zoologischer Theil, Lepidoptera, Rhopalocera, Bd 2: 528, pl. 73, f. 7. (Type locality: “China septentrional”)

*Celaenorrhinus maculosa* ab. *refulgens* Oberthür, 1896: Etudes d'Entomologie. 20: pl. 6. (Type locality: “du Thibet”)

**Ssp. *taiwanus* Matsumura, 1919**

**PLATE 5, Figs. 35-36; PLATE 23, Fig. 167; PLATE 41, Fig. 237**

*Celaenorrhinus maculosus* var. *taiwanus* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 686. (Type locality: “Horisha” [= Puli, Central Taiwan])(incorrect original spelling; emendation)

*Celaenorrhinus maculatus* var. *taiwanus* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: Plate L, [fig.] 22.

*Celaenorrhinus maculosus* var. *taiwanus* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: Distribution table 31: 388.

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/TAIPEI Co.]:** 2♂, 2♀, Sanxia, Beichatianshan, 1700/1727m, 13/20. V/VI. 1996, reared from *Pilea angulata*, emgd. 9. VI. 1996, HSU 96E5 (Y. F. Hsu); 6♂, Sanxia, Beichatianshan, 9. III. 1997, 1100m, reared from *P. angulata*, emgd. 26/9. IV/V. 1997, HSU 97C4 (Y. F. Hsu); 1♂, Wuali, Badaoershan, 5. VII. 2005 (L. H. Wang). **XINZHU [= HSINCHU] Co.:** 1♂, 3♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu). **YILAN Co.:** 2♂, 1♀, Mingchi, Rt.7, 72km, ca 1200m, 29. IV. 1997, reared from *P. angulata*, emgd. 29/13. V/VI. 1997, HSU 97D79 (Y. F. Hsu); 4♂, Mingchi, Rt.7, 74.6km, ca 1100m, 3. V. 1997, reared from *P. angulata*, emgd. 23/4. V/VI. 1997, HSU 97E3 (Y. F. Hsu & C. C. Lu); 5♂, 2♀, Qilan, Rt.7, 77.4km, ca 1100m, 3. V. 1997, reared from *P. angulata*, emgd. 23/13. V/VI. 1997, HSU 97E2 (C. C. Lu & S. Y. Liu); 1♀, Datong, Siji Forest Trail, 9. VIII. 2005 (L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♀, Lishan, 9. VIII. 1989 (Y. F. Hsu); 1♂, Shishanxi, 18. VII. 1997 (C. Y. Hung). **NANTOU Co.:** 1♀, Xinyi, Shenmu Village, 30. VI. 1987. **HUALIAN [= HUALIEN] Co.:** 2♀, Qilai, 1300m, 11. VII. 1997 (Y. F. Hsu & C. L. Li); 1♂, 4♀, Zhouxi, Zhongping Forest Trail, 1100/1200m, 16. VII. 2004 (L. H. Wang). **PINGDONG [= PINGTUNG] Co.:** 3♂, 7♀, Wutai, Wutoushan, 1200/1300m, 8. IX. 1998 (Y. F. Hsu); 1♂, Wutai, Wutoushan,

1200m, 28/29. IV. 2002 (C. C. Lu & C. L. Huang). **TAIDONG [= TAITUNG] Co.:** 1♂, 2♀, Beinan, Lijia Trail, 27. IX. 1998 (W. I. Chou); 3♂, Beinan, Lijia Trail, 1100/1300m, 9. IX. 1999 (Y. F. Hsu); 2♂, Beinan, Dananxi, 18. VI. 2004 (C. L. Huang); 2♂, 1♀, Yanping, Hongye, 480m (C. C. Lu & L. W. Wu); 1♂, Haiduan, Lidao, ca 1500m, 2/3. VII. 2014 (C. W. Huang); 1♂, Daren, Dazhuxi, 7. VII. 2002 (C. L. Huang); 1♂, Daren, Dazhuxi, Paotai/ Kaixiya, 800m, 22. VII. 2002 (C. L. Huang); 2♂, Donghe, Dulanshan, 30. VIII. 2002 (B. Y. Shi & W. J. Zheng).

**Description.** Adult – Forewing length 22–25 mm. Sexual dimorphism not prominent. Male (PLATE 5, Fig. 35): Head brown. Antennae with apiculus prominent, hooked, brown, but with a small patch of creamy white scalings subapically. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow ventrally; 3rd segment minute, very short, brown. Thorax brown dorsally, covered by creamy yellow and brown hairs ventrally. Abdomen brown with creamy white annules. Legs brown with creamy yellow scalings. Forewing nearly triangular, with termen slightly convex, costa and dorsum nearly straight. Hindwing fan-like. Wing uppersides ground color brown, with hindwing bearing orange hairs proximally. Forewing with hyaline markings; one at distal end of discoidal cell, one each in cell  $M_3$  and  $CuA_1$  proximally; two small ones in cell  $CuA_2$  distally. Hyaline dots in cell  $R_3$ - $R_5$  in a row; two small dots in  $M_1$  and  $M_2$ .  $M_1$  spot smaller than  $CuA_2$  spots in size. Additional white dot sometimes in cell  $CuA_2$  proximally. Fringe brown but outer cilia yellow in cell  $CuA_2$ . Hindwing with many orange spots; fringe brown checkered with yellow. Secondary sexual characteristics: metatibia bearing brown hair brushes; a pair of metathoracic silvery white patches of specialized scales, and an opening of linear scent pouches on 2nd abdominal segment ventrally. Undersides similar to uppersides in patterns, but spots on hindwing paler, with yellow stripes present proximally. Female (PLATE 5, Fig. 36): similar to male in wing shape and pattern; no secondary sexual characteristics.

Male genitalia (PLATE 23, Fig. 167) – Tegumen with uncus forming a pair of hook-like processes. Gnathos as elongate sclerotized band with numerous spines. Saccus short. Valva elongate, rectangle, forming two small teeth at upper corner of caudal margin. Phallus stout, with phallobase down-curved. Cornutus prominent, as a tongue-shaped sclerite. Juxta as a small piece connecting to large, heavily sclerotized manica. Manica forming 4 long arms pointing posteriad.

Female genitalia (PLATE 41, Fig. 237) – Corpus bursae wrinkled, ovate with long, tubular appendix bursae. Ductus bursae short, with anterior part bulbous, membranous; posterior part sclerotized, funnel-like. Signum elaborate, with lamella anteriores forming trumpet-like structure; lamella posteriors as a sclerotized dome. Anal papillae reniform, setose. Posterior apophyses slender.

**Global distribution.** South China and Taiwan (Hsu, 2013).

**Distribution in Taiwan.** Moderate elevations in montane areas of Taiwan (Hsu, 2013).

**Larval Host plant(s).** Urticaceae: *Pilea angulata*.

**Biology.** This species is known to be univoltine in occurrence (Hsu, 2013).

**Remarks.** Huang *et al.* (2014) recognized *taiwanus* Matsumura, 1919 as a species endemic to Taiwan. This viewpoint awaits for further evaluation.

This species is superficially similar to *C. major* sympatric in Taiwan, but the body size of this species is usually larger, and M<sub>1</sub> spot smaller than CuA<sub>2</sub> spots in size on forewing in contrast to M<sub>1</sub> spot larger or equal to CuA<sub>2</sub> spots in size in *C. major*.

When Matsumura (1919) described the population in Taiwan, two different spellings for the "variety" were shown in the work: "*Celaenorrhinus maculosus* var. *taiwainus*" in the text, "*Celaenorrhinus maculatus* var. *taiwanus*" in figure legend, and "*Celaenorrhinus maculosus* var. *taiwanus*" in the table for distribution. Under the article 32.5, we interpret "*taiwainus*" as incorrect original spelling and "*taiwanus*" as the correct original spelling (emendation).

**形態特徵：**成蝶前翅長 22-25 mm。雌雄二型性不顯著。雄蝶 (圖 35)：頭部褐色。觸角尖頂明顯、褐色，呈鉤狀，但亞尖頂位置有有小片白色鱗。口器褐色。下唇鬚前伸，第 1 及第 2 節被毛，腹面黃白色；第 3 節微小、褐色。胸部背面褐色，腹面覆黃白色及褐色毛。腹部褐色，有白色細環。足褐色，覆黃色鱗。前翅近三角形，

外緣略突出，後緣近直線。後翅呈扇形。翅背面底色褐色，後翅近翅基處覆有橙色毛。前翅有透明斑紋：中室末端、 $M_3$  及  $CuA_1$  室內側各有一斑紋； $CuA_2$  室外側有兩小斑點； $R_3$  至  $R_5$  室各有一小透明點排成一行； $M_1$  及  $M_2$  室各有一小斑點。於  $M_1$  室者較  $CuA_2$  室者小。 $CuA_2$  室內側有時有額外白點。緣毛褐色，但於  $CuA_2$  外緣毛呈黃色。後翅有許多橙色斑點；緣毛褐色嵌黃色。第二性徵：後足脛節有褐色毛束；後胸有成對銀白色特化鱗塊；第 2 腹節腹面具一對線形發香袋開口。翅腹面斑紋與翅背面相似，但後翅斑點較淡，且近翅基處有黃色條紋。雌蝶 (圖 36)：形態特徵與雄蝶相似，惟缺乏第二性徵。

雄交尾器 (圖 167)：鉤突形成一對鉤狀構造。顎形突細長、骨化、帶狀，具許多刺棘。囊突短。抱器長，矩形，於後緣背端形成兩小齒。陽莖粗壯，陽莖基下彎。角狀器明顯，呈舌狀骨片。陽基軛片小形，與陽莖鞘相連。陽莖鞘大形、骨化，形成四支朝後方伸出臂狀突。

雌交尾器 (圖 237)：交尾囊卵形，有皺褶，具長管狀附囊。交尾囊管短，前部泡狀、膜質；後部漏斗狀、骨化。交尾孔板複雜，前板喇叭狀；後板骨化、圓頂狀。肛突腎形，具毛。後內骨突纖細。

**世界分布：**華南及臺灣。

**臺灣分布：**本島中海拔山區。

**寄主植物：**蕁麻科之長柄冷水麻。

**生物學：**本種為一年一世代物種。

**註記：**Huang *et al.* (2014) 認為 *taiwanus* Matsumura, 1919 為臺灣特有種，此觀點有待進一步探討。

本種與同域分布之臺灣流星弄蝶極為相似，但本種體型通常較大，前翅  $M_1$  室斑點較  $CuA_2$  室者小，臺灣流星弄蝶則前翅  $M_1$  室斑點較  $CuA_2$  室者大或大小相等。

Matsumura (1919) 記述本種在臺灣的族群時學名拚法有二：“*taiwainus*”及“*taiwanus*”，依據國際動物命名法規 32.5 條之規定我等詮釋前者為不正確原始拚法，後者為正確原始拚法。

## Genus **PSEUDOCOLADENIA** Shirôzu & Saigusa, 1962

**Type species:** *Coladenia dan fabia* Evans, 1949

Diagnostic characters include the followings: 1) wings brown with hyaline white or yellow spots on forewing; 2) male with metatibial hair tuft.

Shirôzu & Saigusa (1962) separated the genus *Pseudocoladenia* from *Coladenia* Moore [1881] by removing *Coladenia dan*, which served as the monotypical type species for the genus. Number of species ranges from one (e. g. Evans, 1949) to several (e. g. Huang & Xue, 2004) according to different authors, distributed in the Oriental Region.

One species occurs in Taiwan, but represented by two subspecies.

### 黃襟弄蝶屬

本屬鑑別特徵如下：1) 翅褐色，前翅有透明黃色或白色斑紋；2) 雄蝶後足脛節具有毛叢。

Shirôzu & Saigusa (1962) 將黃襟弄蝶從窗弄蝶屬移出，並以之為模式種建立黃襟弄蝶屬。本屬種類數依不同學者有不同見解，包含一 (如 Evans, 1949) 至數種 (如 Huang & Xue, 2004)，分布於東洋區。

臺灣有 1 種，但分為 2 亞種。

#### ***Pseudocoladenia dan* (Fabricius, 1787) (黃襟弄蝶 / 八仙山弄蝶)**

*Papilio dan* Fabricius, 1787: Mantissa Insectorum 2: 88, no. 798. (Type locality: “Tranquebarie” [=Tharangambadiah, Tamil Nadu, S. India])

#### **Ssp. *sadakoe* Sonan & Mitono, 1936**

**PLATE 5, Figs. 37-38; PLATE 23, Fig. 168; PLATE 41, Fig. 238**

*Coladenia sadakoe* Sonan & Mitono, 1936: Zephyrus 6: 184. (Type locality: “佳保臺 (八仙山)” [kahodai(Hazensan)]= Taizhong, Heping, Baxianshan, Jiabaotai])

#### **Ssp. *fabia* Evans, 1949**

**PLATE 5, Fig. 39; PLATE 6, Fig. 40; PLATE 23, Fig. 169; PLATE 41, Fig. 239**

*Coladenia dan fabia* Evans, 1949: A catalogue of the HesperIIDae from Europe, Asia and Australia

in the British Museum (Natural History): 113. (Type locality: Assam, Margherita [India])

**Specimens examined:**

Ssp. *sadakoe*: **MIAOLI Co.:** 1♂, 1♀, Taian, Henglongshan, 1340/1430m, 24. I. 2003, reared from *Achyranthes bidentata* var. *japonica*, emgd. 21. III. 2003, HSU 03A40 (Y. F. Hsu, S. C. Chen, C. C. Lu & J. R. Chen); 5♂, 5♀, same locality, 1340/1430m, 26. I. 2003, reared from *A. bidentata* var. *japonica*, emgd. 21/31. III. 2003, HSU 03A47 (Y. F. Hsu, S. C. Chen, C. C. Lu & J. R. Chen); 1♂, Taian, Henglongshan, ca1200m, VI. 2003, reared from *A. bidentata*, emgd. 5. VIII. 2003, HSU 03F28.2 (C. C. Lu, J. R. Chen, S. C. Chen & Y. C. Yang); 1♂, 1♀, same locality, 22. X. 2005, reared from *A. bidentata* var. *japonica*, emgd. 2/6. XII/I. 2005, HSU 05K46 (C. C. Lu, S. C. Chen & C. C. Hsieh). **PINGDONG [=PINGTONG] Co.:** 1♂, Dahan Forest Trail, 19K, 5. VII. 2015 (C. W. Huang & T. Y. Liu).

Ssp. *fabia*: **LIANJIANG [= LIENCHIANG] Co.:** 2♂, 3♀, Nangan, Fuao, 14. VI. 2000, reared from *A. aspera*, emgd. 24/12, VI/VII, 2000, HSU 00F6 (Y. F. Hsu); 1♂, 1♀, same locality, reared from *A. aspera*, emgd. 16/2. VIII/IX. HSU 00F43 (Y. F. Hsu); 1♂, same locality, 26. VII. 2000, reared from *A. aspera*, HSU 00G42, emgd. 15. VIII. 2000 (Y. F. Hsu); 1♂, same locality, 27. VII. 2000, reared from *A. aspera*, HSU 00G43, emgd. 30. VIII. 2000 (Y. F. Hsu); 2♂, 1♀, Nangan, Bishan, 15. VI. 2000, reared from *A. aspera*, emgd. 6. VII. 2000, HSU 00F12 (Y. F. Hsu); 2♂, 1♀, Nangan, 9. VII. 2003, reared from *Achyranthes* sp., 5/7. VII. 2003, HSU 03F60 (Y. A. Lin); 1♂, same locality, reared from *Achyranthes* sp., emgd. 5. VIII. 2003, HSU 03G21 (L. W. Wu); 1♂, 1♀, same locality, 2. V. 2010, *A. aspera* var. *rubro-fusca*, emgd. 6. VII. 2010, HSU 10F5 (Y. F. Hsu); 1♂, same locality, 2. VI. 2010 (Y. F. Hsu); 1♂, Nangan, Beihai Tunnel, 28. VI. 2013, reared from *A. aspera*, emgd. 28. VI. 2013, HSU 13F56 (C. L. Huang & H. Y. Lee).

**Description.** Adult – Forewing length 21–23 mm. Sexual dimorphism not prominent. Male (PLATE 5, Figs. 37; 39): Head hairy, tawny. Antennae brown, with sparse creamy yellow scalings near distal end; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow; 3rd segment minute, brown. Thorax and abdomen tawny. Legs ochreous or creamy yellow. Forewing triangular, termen slightly convex. Hindwing fan-like. Ground color of wings brown with extensive ochreous or tawny scalings, mottled by faint, dark markings. Forewing

decorated with hyaline markings. Prominent spots in cell M<sub>3</sub>, CuA<sub>1</sub>, discoidal cell, with additional, small spot in front of discoidal cell; three small dots in cell R<sub>3</sub>-R<sub>5</sub>, with R<sub>4</sub> dot indented inwards; two minute dots sometimes in cell CuA<sub>2</sub>. Dark spots on hindwing forming double discal bands. Wing undersides with patterns similar to those on uppersides, but ochreous scalings pale. Fringe brown checkered with yellow or mixed with yellow. Metatibia with tawny hair tuft. Female (PLATE 5, Fig. 38; PLATE 6, Fig. 40): Body and wing patterns similar to those of male, but wings broader, metatibia without hair tuft.

Male genitalia (PLATE 23, Fig. 168-169) – Tegumen broad, with a pair of prominent, horn-like projections at caudal end; uncus conical, horn-like. Gnathos as a broad, sclerotized, transverse band. Saccus short. Valva simple, broad, up-curved, tapering to a beak-like distal tip. Phallus short, stout, with phallobase slightly longer than aedeagus; minute spines present at caudal end. Juxta as narrow, V-shaped sclerite.

Female genitalia (PLATE 41, Fig. 238-239) – Corpus bursae oval. Ductus bursae membranous, leading to narrow, sclerotized ring near ostium bursae. Sterigma elaborate, with lamella antevaginalis forming two sclerotized lobes by sides of ostium bursae; lamella postvaginalis as medial, bell-shaped, spiny sclerite. Anal papillae lobe-like, setose. Posterior apophyses elongate, narrow.

Ssp. *sadakoe* differs from ssp. *fabia* in having scalings on wings ochreous instead of tawny and slender valvae in male.

**Global distribution.** India, Sri Lanka, Himalayas, Indochina, Sundaland, Lesser Sunda Island, Sulawesi, Southwest China, South China, Taiwan (Evans, 1949).

**Distribution in Taiwan.** Ssp. *sadakoe* occurs in montane areas in main island of Taiwan, whereas ssp. *fabia* inhabits Matsu islands (Hsu, 2013).

**Larval Host plant(s).** Amaranthaceae: *Achyranthes bidentata* for ssp. *sadakoe*, *A. aspera* for ssp. *fabia* (Hsu *et al.*, 2007).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** Huang & Xue (2004) divided *P. dan* sensu Evans (1949) into four distinct species for Chinese material. Further systematic treatment is desirable to include materials from the whole range of *P. dan* sensu Evans (1949).

**形態特徵：**成蝶前翅長 21-23 mm。雌雄二型性不顯著。雄蝶 (圖 37、39)：頭被毛，黃褐色。觸角褐色，近末端處有稀疏乳黃色鱗；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，黃白色；第 3 節微小、褐色。胸部及腹部赭黃或黃褐色。足赭黃至黃白色。前翅呈三角形，外緣略突出。後翅扇形。翅底色褐色，密布赭黃色或黃褐色鱗，雜有黑色模糊斑紋。前翅綴透明斑紋： $M_3$ 、 $CuA_1$  及中室有鮮明斑點，中室前方另有兩只小斑點； $R_3$  至  $R_5$  室各具一小點，於  $R_4$  者內偏； $CuA_2$  室偶有兩微小斑點。後翅由黑色斑紋形成兩條中央帶紋。翅背面斑紋與翅腹面相似，但黃褐色鱗色調較淺。緣毛褐色雜黃色，或嵌黃色。後足脛節具黃褐色毛束。雌蝶 (圖 38、40)：形態特徵與雄蝶相似，但翅幅較寬，後足脛節無毛束。

雄交尾器 (圖 168-169)：背兜寬闊，後端具一對角狀突起；鉤突角狀。顎形突骨化寬闊、帶狀。囊突短。抱器寬闊、上彎，向後漸窄，末端喙狀。陽莖短、粗壯，陽莖基長度略長於陽莖器；末端具微棘。陽基軛片為狹窄 V 形骨片。

雌交尾器 (圖 238-239)：交尾囊橢圓形。交尾囊管膜質，近交尾孔處成一骨化環。交尾孔板複雜，前板於交尾孔兩側形成葉狀骨板；後板鐘形，具刺棘。肛突葉狀、具毛。後內骨突長、纖細。

亞種 *ssp. sadakoe* 與亞種 *ssp. fabia* 差異在於亞種 *ssp. sadakoe* 翅呈赭黃色而非黃褐色，且抱器較為纖細。

**世界分布：**印度、斯里蘭卡、喜馬拉雅地區、中南半島、巽他陸塊、小巽他群島、蘇拉威西、華西南、華南、臺灣。

**臺灣分布：**亞種 *ssp. sadakoe* 分布於本島山區；亞種 *ssp. fabia* 分布於馬祖列島。

**寄主植物：**莧科之日本牛膝 (亞種 *ssp. sadakoe*) 及土牛膝 (亞種 *ssp. fabia*)。

**生物學：**本種是一年多世代物種。

註記：Huang & Xue (2004) 依據中國樣本將黃襟弄蝶分為 4 種。進一步處理應包含黃襟弄蝶分布範圍全區域之樣本。

## Genus *COLADENIA* Moore, [1881]

Type species: *Plesioneura indrani* Moore, [1866]

Diagnostic characters include the followings: 1) wings brown with hyaline white or yellow spots on wings; 2) dark brown markings on hindwings; 3) male with metatibial hair tufts.

Approximately 22 species known, distributed in the Oriental Region (Xue *et al.*, 2017).

One species occurs in Taiwan.

## 窗弄蝶屬

鑑別特徵如下：1) 翅褐色，綴透明黃、白色斑點；2) 後翅有黑褐色斑紋；3) 雄蝶後足脛節具長毛束。

本種已知約 22 種 (Xue *et al.*, 2017)，分布於東洋區。

臺灣有 1 種。

*Coladenia pinsbukana* (Shimonoya & Murayama, 1976) (臺灣窗弄蝶 / 黃後翅弄蝶)

PLATE 6, Figs. 41-42; PLATE 24, Fig. 170

*Pseudocoladenia pinsbukana* Shimonoya & Murayama, 1976: Tyô to Ga 27(2): 43. (Type locality: “Amuh-chi, Central Formosa” [Taiwan: Nantou, Amuxi])

### Specimens examined:

TAOYUAN CITY [= TAOYUAN Co.]: 2♂, 1♀, Fuxing, Ronghua, ca 500 m, 7. IV. 2016 (male genitalia preparation JYL 296) (R. K. Dong, L. H. Wang & C. W. Huang); 1♂, Fuxing, Neikuihui, 17. IV. 2017 (H. C. Huang).

**Description.** Adult – Forewing length 19–21 mm. Sexual dimorphism not prominent. Male (PLATE 6, Fig. 41): Head hairy, tawny. Antennae brown, with creamy yellow scalings near distal end; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, tawny mixed with creamy yellow; 3rd segment minute, brown. Thorax and abdomen tawny. Legs tawny. Forewing triangular, termen slightly convex. Hindwing somewhat square, with termen slightly wavy. Ground color of wings tawny, decorated with hyaline markings. On forewing, prominent spots in cell M<sub>3</sub>, CuA<sub>1</sub>, discoidal cell, with two additional, small spot in front of discoidal cell; two small spots in cell CuA<sub>2</sub>; three small dots in cell R<sub>3</sub>-R<sub>5</sub> in line. On hindwing, one prominent spot at distal end of discoidal cell; additional hyaline dots or dark brown dots in each cell proximally. Wing undersides with patterns similar to those on uppersides, but ground color darker. Fringe brown, more or less checkered with yellow. Metatibia with tawny hair brush. Female (PLATE 6, Fig. 42): Body and wing patterns similar to those of male, but wings broader, metatibia without hair tuft, brown hair tuft present at distal end of abdomen.

Male genitalia (PLATE 24, Fig. 170) – Tegumen swollen dorsally, with a pair of small, digitate projections at caudal end; uncus conical, beak-like. Gnathos as sclerotized, spiny band, enlarged ventrad with posterior, median notch. Saccus short. Valva elongate, bifurcated distally; ampulla thin, bent, serrate distad; harpe thicker, longer than ampulla, with edges of posterior margins uneven. Phallus elongate, up-curved, bearing a small tooth near caudal end of aedeagus. Juxta as broad sclerite with V-shaped, dorsal opening.

Female genitalia (a specimen of *C. hoenei* is used for reference; PLATE 42, Fig. 240) – Corpus bursae oval. Ductus bursae with anterior half thicker, bulbous, membranous, wrinkled; posterior half forming a narrow membrane leading to highly sclerotized sterigma. Lamella antevaginalis forming a fan-shaped sclerite with posterior margin serrate; a prominent, medial, V-shape notch present caudad; lamella postvaginalia forming a broad, shovel-like sclerite bearing a stalk connecting with ductus bursae; a shallow medial notch present posteriad. Anal papillae lobe-like, setose. Posterior apophyses slender.

**Global distribution.** This taxon is considered endemic to Taiwan thus far, but see remarks below.

**Distribution in Taiwan.** Low elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Not yet recorded.

**Biology.** This species is known to be univoltine in occurrence, with adult on the wing in spring (Hsu, 1999).

**Remarks.** Hsu (2013) suggested that this species is closely related to *Coladenia hoenei* Evans, 1939 (Type locality: “Tien Mu Shan, Lintang, Chekiang” [= Tianmushan, Zhejiang, East China]).

**形態特徵：**成蝶前翅長 19-21 mm。雌雄二型性不顯著。雄蝶 (圖 41)：頭被毛，黃褐色。觸角褐色，近末端處有黃白色鱗；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，黃褐色雜黃白色；第 3 節微小、褐色。胸部及腹部黃褐色。足黃褐色。前翅呈三角形，外緣略突出。後翅略呈方形，外緣略呈波浪狀。翅底色黃褐色，綴有透明斑紋：前翅  $M_3$ 、 $CuA_1$  及中室有鮮明的透明斑點，中室前端有兩只小斑點； $CuA_2$  室有兩斑點。 $R_3$  至  $R_5$  室各有一小點排成直線。後翅中室末端有一鮮明斑點；各翅室內側時有額外透明或黑褐色點。翅背面斑紋與翅腹面相似，但底色較深。緣毛褐色，或多或少嵌黃色。後足脛節有毛叢。雌蝶 (圖 42)：形態特徵與雄蝶相似，但翅幅較寬，腹部末端覆有褐色鱗毛叢，後足脛節無毛叢。

雄交尾器 (圖 170)：背兜背側膨大，後端具一對小型指狀突起；鉤突喙狀。顎形突骨化、帶狀，具小刺，腹側膨大，後端中央凹陷。囊突短。抱器長，末端分叉；抱器內突薄片狀、彎曲末端有鋸齒；抱握鈹比抱器內突厚、長，後緣不平整。陽莖長，上彎、骨化，陽莖器近末端具一齒。陽基軛片寬闊、V 形，背側開口。

雌交尾器 (以花窗弄蝶 *C. hoenei* 標本作參考；圖 240)：交尾囊橢圓形。交尾囊管前半部粗、泡狀、膜質，具皺褶；後半部狹窄，高度骨化。交尾孔前板為扇形骨片，後緣鋸齒狀，中間具 V 形缺刻。交尾孔後板為寬大鐮狀突起骨板，有柄與交尾囊管相連，末端中間具淺凹。肛突葉狀，具毛。後內骨突纖細。

**世界分布：**目前被認為是臺灣特有種，請參照註記說明。

**臺灣分布：**分布於低海拔山區。

**寄主植物：**尚無記錄。

**生物學：**本種是一年一世代物種，成蝶於見春季。

**物學：**Hsu (2013) 認為本種可能與花窗弄蝶 *Coladenia hoenei* Evans, 1939 近緣。

## Genus **SATARUPA** Moore, [1866]

**Type species:** *Satarupa gopala* Moore, [1866]

Diagnostic characters include the followings: 1) wings brown with hyaline white spots on forewing; 2) forewing with a spot at distal end of discoidal cell; 3) a prominent white patch and small black spots on hindwings; 4) male with recumbent metatibial hair tufts.

Evans (1949) recognized 7 species, distributed in the Oriental Region.

Two species occur in Taiwan.

## 颯弄蝶屬

鑑別特徵如下：1) 翅褐色，前翅有白色透明斑點；2) 前翅中室末端有一斑點；3) 後翅有一鮮明白色斑塊及一些黑色小斑點；4) 雄蝶後足脛節具毛叢。

Evans (1949) 將本屬分為 7 種，分布於東洋區。

臺灣有 2 種。

***Satarupa majasra* Fruhstorfer, 1909** (小紋颯弄蝶 / 大白裙弄蝶)

**PLATE 6, Figs. 43-44; PLATE 24, Fig. 171; PLATE 42, Fig. 241**

*Satarupa gopala majasra* Fruhstorfer, 1909: Entomologische Zeitschrift 23 (31): 139. (Type locality: Formosa, Arisan [= Taiwan, Alishan])

**Specimens examined:**

**TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Fuxing, Daman/Xuanyuan, 14. VI. 1987 (Y. F. Hsu); 1♀, Fuxing, Sileng, 1100, 20. V. 2000 (Y. T. Lo); 1♂, Fuxing, Daman, 4. VII. 2005 (C. H. Lin, jr); 1♂, Fuxing, Xicun, 1100m, reared from *Zanthoxylum ailanthoides*, emgd. 15. V. 2009, HSU 09D2 (L. H. Wang & M. S. Sun). **XINZHU [= HSINCHU] Co.:** 1♂, Jianshi, Lidongshan, 1500/1900m, 29/30. V. 2004, reared from *Tetradium glabrifolium*, emgd. 5. VII. 2004 (Y. F. Hsu). **YILAN Co.:** 1♀, Datong, Tuleng, 1600m, 11. VIII. 2009 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 1♀, Xiulin, Xinbaiyan, 1600/1700m, 8. VII. 2008 (L. H. Wang); 1♂, same locality, 30. VI. 2010 (N. Y. Tsai).

**Description.** Adult – Forewing length 25–34 mm. Sexual dimorphism weakly present. Male (PLATE 6, Fig. 43): Head hairy, brown. Antennae brown, with apiculus prominent, hooked. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow; 3rd segment minute, rod-like, smooth and brown. Thorax brown dorsally, covered by white scalings ventrally. Abdomen covered by white scalings. Legs brown, covered by white scalings and hairs. Forewing triangular, with apex acute, termen straight. Hindwing oblong, with uppersides bearing white hairs proximally on hindwing. Ground color of wings brown, decorated with a series of discal, hyaline markings on forewing, spot in cell M<sub>3</sub> detached outwards, three small bars in cell R<sub>3</sub>-R<sub>5</sub> in a row, minute spot in M<sub>1</sub>, M<sub>2</sub> occasionally present. A prominent spot present at distal end of discoidal cell. A large white patch present on hindwing, with a series of dark brown, submarginal spots, arranged into a curve. Wing patterns of undersides similar to those of uppersides, but with paler ground color. Forewing fringe brown, hindwing fringe brown checkered with white. Female (PLATE 6, Fig. 44): Body and wing patterns similar to those of male, with wings broader.

Male genitalia (PLATE 24, Fig. 171) – Tegumen swollen dorsad, with uncus broad at base, bearing fin-shaped ridged. Gathos a transverse, sclerotized band with a heavily sclerotized, spiny, medial structure. Saccus long, dagger-like. Valva elongate; ampulla as elongate, curved, spiny process on dorsal margin of valva; harpe as a broad lobe with truncate distal end, bearing small spines at distal end. Phallus elongate, up-curved basally, with phallobase shorter than aedeagus. Cornutus as spiny band. Juxa as narrow, V-shaped sclerite.

Female genitalia (PLATE 42, Fig. 241) – Corpus bursae obolong, tapering toward ductus bursae. Ductus bursae membranous, but sclerotized around ostium bursae. Signum absent. Sterigma as broad, heavily sclerotized dome. Anal papillae lobe-like, setose. Posterior apophyses short, slender, straight.

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

**Distribution in Taiwan.** Moderate elevations in montane areas of Taiwan (Hsu, 2013).

**Larval Host plant(s).** Rutaceae: *Tetradium glabrifolium*, *T. ruticarpum*, *Zanthoxylum ailanthoides*, etc. (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence (Hsu, 1999).

**Remarks.** This species was long regarded as a race of *S. gopala* (Moore, 1866) (Type locality: Sikkim) (e. g. Shirôzu, 1960; Hamano, 1986). Tsukiyama (1995) pointed out that the “*S. gopala*” from eastern China to Far East Russia all refers to *S. nymphalis* (Type locality: Amur), and *S. majasra* is more closely related to *S. nymphalis* than to *S. gopala*.

**形態特徵：**成蝶前翅長 25-34 mm。雌雄二型性不明顯。雄蝶 (圖 43)：頭被毛，褐色。觸角褐色；尖頂明顯，呈鉤狀。口器褐色。下唇鬚前伸，第 1 及第 2 節被毛，黃白色；第 3 節微小、平滑、褐色，呈棒狀。胸部背面褐色，腹面覆白色鱗。腹部覆白色鱗。足褐色，覆蓋白色鱗、毛。前翅呈三角形，翅頂尖，外緣直線狀。後翅橢圓形，背面近翅基處覆有白毛。翅底色褐色，前翅中央有一列透明白斑，於  $M_3$  室者外偏、分離； $R_3$  至  $R_5$  室各具一短紋排成一列； $M_1$  及  $M_2$  室偶有微小斑點；中室末端有一鮮明斑點。後翅有鮮明白色區塊，亞外緣有一列黑褐色斑點，弧形排列。翅背面斑紋與翅腹面相似，但底色較淺。前翅緣毛褐色，後翅褐色嵌白色。雌蝶 (圖 44)：形態特徵與雄蝶相似，僅翅幅稍寬。

雄交尾器 (圖 171)：背兜背側隆起，鉤突基部寬闊，有鰭狀脊突。顎形突為高度骨化橫帶，中間有許多小刺。囊突長，匕狀。抱器長；抱器內突細長、彎曲，背緣具許多刺棘；抱握鈎寬闊、葉狀，後端截狀，末端具許多小刺棘。陽莖長，基部上彎，陽莖基長度比陽莖器短。角狀器帶狀，有小刺。陽基軛片為狹窄 V 形骨片。

雌交尾器 (圖 241)：交尾囊長卵形，向交尾囊管漸窄。交尾囊管膜質，交尾孔周圍骨化。交尾孔板寬闊，高度骨化、圓頂狀。肛突葉狀，具剛毛。後內骨突短、纖細、筆直。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島中海拔山區。

**寄主植物：**芸香科之賊仔樹、吳茱萸、食茱萸等。

**生物學：**本種為一年一世代物種。

**註記：**本種長期被認為是颯弄蝶 *S. gopala* 之亞種 (例如 Shirôzu, 1960; Hamano, 1986)。Tsukiyama (1995) 指出華東至俄羅斯遠東地區分布之颯弄蝶應屬於蛺蝶型颯弄蝶 *S. nymphalis*，因此小紋颯弄蝶其實與蛺蝶型颯弄蝶的親緣關係較近。

***Satarupa formosibia* Strand, 1927 (臺灣颯弄蝶 / 台灣大白裙弄蝶)**

**PLATE 6, Fig. 45; PLATE 7, Fig. 46; PLATE 24, Fig. 172; PLATE 42, Fig. 242**

*Satarupa formosana* Matsumura, 1910: Entomologische Zeitschrift 23 (41): 181. (Type locality: Formosa)

*Satarupa formosibia* Strand, 1927: Archiv für Naturgeschichte 91 A (12): 282. (replacement name)

*Satarupa formosicola* Matsumura, 1929: Illustration of Common Insects of Japan 1: 34. (replacement name)

**Specimens examined:**

**TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Xuanyuan, 7. V. 2009, reared from *Tetradium glabrifolium*, emgd. 28. V. 2009, HSU 09E31 (C. H. Lin); 1♂, 1♀, Northern Cross-Island Highway, 30. III. 2012 (J. H. Lin). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 2♀, Heping, Daxueshan, 900m, 25. V. 2010, reared from *T. glabrifolium*, emgd. 7/10. VI. 2010, HSU 10E13 (J. H. Lin). **NANTOU Co.:** 1♀, Renai, Tunyuan, 2000m, 6. VII. 2012 (Y. F. Hsu).

**Description.** Adult – Forewing length 30–32 mm. Sexual dimorphism weakly present. Male (PLATE 6, Fig. 45): Head hairy, brown. Antennae brown, with apiculus prominent, hooked. Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy

yellow; 3rd segment minute, rod-like, smooth and brown. Thorax brown dorsally, covered by white scalings ventrally. Abdomen covered by white scalings. Legs brown, covered by white scalings and hairs. Forewing triangular, with termen slightly convex. Hindwing rounded, with uppersides bearing white hairs proximally on hindwing. Ground color of wings brown, decorated with a series of discal hyaline markings on forewing, spot in cell M<sub>3</sub>, CuA<sub>1</sub>, CuA<sub>2</sub> arranged in a row, three small bars in cell R<sub>3</sub>-R<sub>5</sub> in a row, minute spot in M<sub>1</sub>, M<sub>2</sub> present. A prominent spot present at distal end of discoidal cell. A large white patch present on hindwing, with a series of dark brown, submarginal spots, arranged into a curve. Wing patterns of undersides similar to those of uppersides, but with paler ground color. Forewing fringe brown, hindwing fringe brown checkered with white. Female (PLATE 7, Fig. 46): Body and wing patterns similar to those of male, with wings broader.

Male genitalia (PLATE 24, Fig. 172) – Tegumen swollen dorsad, with uncus broad at base, bearing fin-shaped ridged. Gnathos a transverse, sclerotized band with a heavily sclerotized, spiny, medial structure. Saccus long, dagger-like. Valva elongate; ampulla as elongate, straight, spiny process on dorsal margin of valva; harpe as a narrow lobe with blunt distal end, bearing small spines at distal end. Phallus elongate, straight, with phallobase shorter than aedeagus. Cornutus as spiny band. Juxta as triangular sclerite.

Female genitalia (PLATE 42, Fig. 242) – Corpus bursae bulbous. Ductus bursae membranous. Signum absent. Sterigma as broad, heavily sclerotized dome. Anal papillae lobe-like, setose. Posterior apophyses short, slender, straight.

**Global distribution.** Endemic to Taiwan (Shirôzu, 1960).

**Distribution in Taiwan.** Moderate elevations in montane areas of Taiwan (Hsu, 2013).

**Larval Host plant(s).** Rutaceae: *Tetradium glabrifolium*, *T. ruticarpum*, *Zanthoxylum ailanthoides*, etc. (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence (Hsu, 1999).

**Remarks.** This species is similar to sympatric *S. majasra* in wing patterns, but may be diagnosed using the following characters: 1) Forewing termen of *formosibia* is convex, but straight in *majasra*. 2) Hyaline spot of discoidal cell and CuA<sub>1</sub> of forewing are close to each other in *formosibia*, but detached in *majasra*. 3) Spots in cell M<sub>1</sub> and M<sub>2</sub> of forewing are prominent in *formosibia*, but reduced or absent in *majasra*.

**形態特徵：**成蝶前翅長 30-32 mm。雌雄二型性不明顯。雄蝶 (圖 45)：頭被毛，褐色。觸角褐色；尖頂明顯，呈鉤狀。口器褐色。下唇鬚前伸，第 1 及第 2 節披毛，黃白色；第 3 節微小、平滑、褐色，呈棒狀。胸部背面褐色，腹面覆白色鱗。腹部覆白色鱗。足褐色，覆蓋白色鱗、毛。前翅呈三角形，外緣略突出。後翅頗圓，背面近翅基處覆有白色毛。翅底色褐色，前翅中央有一列透明白斑，M<sub>3</sub>、CuA<sub>1</sub> 及 CuA<sub>2</sub> 室斑點排成一列；R<sub>3</sub> 至 R<sub>5</sub> 室各有一短紋，排成一列；M<sub>1</sub> 及 M<sub>2</sub> 室具微小斑點；中室末端有一鮮明斑點。後翅有鮮明的白色區塊，亞外緣有一系列黑褐色斑點，弧形排列。翅背面斑紋與翅腹面相似，但底色較淺。前翅緣毛褐色，後翅褐色嵌白色。雌蝶 (圖 46)：形態特徵與雄蝶相似，僅翅幅略寬。

雄交尾器 (圖 172)：背兜背側隆起，鉤突基部寬闊，有鰭狀脊突。顎形突為高度骨化橫帶，中間有許多小刺。囊突長、匕狀。抱器長；抱器內突細長、直，背緣具許多刺棘；抱握鉗狹窄、葉狀，末端鈍且具許多小刺棘。陽莖長、筆直，陽莖基長度比陽莖器短。角狀器帶狀，有為小刺。陽基軛片為三角形骨片。

雌交尾器 (圖 242)：交尾囊泡狀。交尾囊管膜質。交尾孔板寬闊，高度骨化、圓頂狀。肛突葉狀，具毛。後內骨突短、纖細、筆直。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島中海拔山區。

**寄主植物：**芸香科之賊仔樹、吳茱萸、食茱萸等。

**生物學：**本種為一年一世代物種。

**註記：**本種翅紋與同域分布之小紋颯弄蝶相似，但可依下列特徵區分：1) 臺灣颯弄

蝶前翅外緣弧形，小紋颯弄蝶則為直線狀；2) 臺灣颯弄蝶中室及 CuA<sub>1</sub> 室之透明白斑接近，小紋颯弄蝶則兩者分離；3) 臺灣颯弄蝶前翅 M<sub>1</sub> 及 M<sub>2</sub> 室斑點鮮明，小紋颯弄蝶減退或消失。

## Genus *SESERIA* Matsumura, 1919

**Type species:** *Suastus nigroguttatus* Matsumura, 1910

Diagnostic characters include the followings: 1) wings brown with hyaline white spots on forewing; 2) forewing without spot in discoidal cell; 3) most species with a prominent white patch and small black spots on hindwings; 4) male without recumbent metatibial hair tufts; 5) female with anal hair tuft.

Evans (1949) recognized 6 species, distributed in the Oriental Region.

One species occurs in Taiwan.

## 瑟弄蝶屬

鑑別特徵如下：1) 翅褐色，前翅具白色透明斑點；2) 前翅中室無斑；3) 大部分種類後翅具一鮮明的白色斑塊及一些黑色小斑點；4) 雄蝶無長毛束；5) 雌蝶腹部末端具鱗毛叢。

Evans (1949) 將本屬分為 6 種，分布於東洋區。

臺灣有 1 種。

***Seseria formosana* (Fruhstorfer, 1909) (臺灣瑟弄蝶 / 大黑星弄蝶)**

**PLATE 7, Figs. 47-48; PLATE 24, Fig. 173; PLATE 42, Fig. 243**

*Satarupa formosana* Fruhstorfer, 1909: Internationale entomologische Zeitschrift 3 (27): 149. (Type locality: Formosa, Chip-Chip [= Taiwan, Jiji])

*Suastus nigroguttatus* Matsumura, 1910: Entomologische Zeitschrift 23 (41): 181. (Type locality: "Formosa (Horisha)" [= Taiwan, Puli])

**Specimens examined:**

**TAIPEI CITY:** 2♂, 1♀, Beitou, 15. II. 2009, reared from *Cinnamomum burmannii*, emgd. 5/12. III. 2009, HSU 09B15 (H. C. Huang); 2♀, Wenshan, Muzha, Taipei City Zoo, 10. IV. 2009 (Y. F. Hsu); 1♀, Songshan, Hushan, 9. IV. 2009 (C. K. Wang). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Xindian, Sikanshui, 25. IV. 2003, reared from *C. camphora*, emgd. 26. VI. 2003, HSU 03D39 (F. Z. Lin); 1♂, Xindian, Sikanshui, 200/400m, 6. VIII. 2007 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.:** 1♀, Baoshan, Shanhu, 27. XII. 2008, reared from *C. burmannii*, emgd. 18. III. 2009, HSU 08M31 (Y. F. Hsu & C. C. Lu, jr). **KAOHSIUNG CITY [KAOHSIUNG Co.]:** 1♀, Maolin, XII. 2008, reared from *C. burmannii*, emgd. 23. II. 2008, HSU 08M25 (Y. Feng).

**Description.** Adult – Forewing length 19–23 mm. Sexual dimorphism not prominent. Male (PLATE 7, Fig. 47): Head hairy, brown. Antennae brown, with apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, white; 3rd segment minute, rod-like, smooth and brown. Thorax brown dorsally, covered by white tinged with gray scalings ventrally. Abdomen covered by brown scalings. Legs creamy yellow. Forewing triangular, termen slightly convex. Hindwing fan-like, with uppersides bearing brown hairs proximally on hindwing. Ground color of wings brown, decorated with a series of discal, hyaline markings on forewing, arranged into a curve. A series of small, dark brown, discal spots present on hindwing, arranged into an arc. Wing patterns of undersides similar to those of uppersides, but with paler ground color. Forewing fringe brown, hindwing fringe brown checkered with white. Female (PLATE 7, Fig. 48): Body and wing patterns similar to those of male, but wings broader, venter of abdomen white tinged with gray, tip of abdomen bearing creamy yellow hair tuft.

Male genitalia (PLATE 24, Figs. 173) – Tegumen swollen dorsad, with uncus down-curved, as a broad base bearing a bifid lobe. Gnathos as a broad, sclerotized band. Saccus moderately long. Valva elongate; ampulla as elongate, spine-like process on dorsal margin of valva; harpe forming a prominent process strongly bent backwards, with small spines at distal end. Phallus elongate, up-curved, with phallobase shorter than aedeagus. Cornutus as elongate sclerotized band with spines. Juxa as V-shaped sclerite.

Female genitalia (PLATE 42, Figs. 243) – Corpus bursae oblong. Ductus bursae with anterior part membranous, posterior part heavily sclerotized, strongly curved. Signum

absent. Sterigma elaborated into broad sclerotized dome, with arrow-like opening around ostium bursae. Anal papillae large, square, setose. Posterior apophyses short, slender, straight.

**Global distribution.** Endemic to Taiwan (Shirôzu, 1960).

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

**Larval Host plant(s).** Lauraceae: *Cinnamomum camphora*, *C. zeylanicum*, *C. burmannii*, *Machilus japonica*, *M. japonica* var. *kusanoi*, *M. thunbergii*, *Litsea hypophaea*, *L. cubeba*, etc.

**Biology.** This species is known to be multivoltine in occurrence, overwintering as larva (Hsu, 1999, 2013).

**形態特徵：**成蝶前翅長 19-23 mm。雌雄二型性不顯著。雄蝶 (圖 47)：頭被毛，褐色。觸角褐色；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛、白色；第 3 節微小、平滑、褐色，呈棒狀。胸部背面褐色，腹面覆灰白色鱗。腹部覆褐色鱗。足黃褐色。前翅呈三角形，外緣略突出。後翅扇形，背面近翅基處覆有褐色毛。翅底色褐色，前翅中央有一列透明斑紋，彎曲排列。後翅中央有一列黑褐色斑點，排成弧形。翅背面斑紋與翅腹面相似，但底色較淺。前翅緣毛褐色，後翅緣毛褐色嵌白色。雌蝶 (圖 48)：形態特徵與雄蝶相似，但翅幅較寬，腹部腹面灰白色，末端覆有黃白色鱗毛叢。

雄交尾器 (圖 173)：背兜背方腫大；鉤突向下彎曲，基部寬闊，雙葉狀凸起。顎形突寬帶狀骨化。囊突中等長度。抱器長；抱器內突長，於抱器背緣成棘狀突起；抱握鉗形成一個明顯向內彎曲，末端具刺棘。陽莖長，向上彎曲，陽莖基長度比陽莖器短。角狀器為長帶狀骨化，具刺棘。陽基軛片 V 形骨化。

雌交尾器 (圖 243)：交尾囊長橢圓形。交尾囊管前部膜質，後部高度骨化，明顯彎曲。交尾孔板複雜、寬闊、骨化、圓頂狀，於交尾孔周圍形成矢狀開口。肛突大型、矩形，具毛。後內骨突短、纖細、筆直。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島低至中海拔地區。

**寄主植物：**樟科之樟樹、錫蘭肉桂、陰香、假長葉楠、大葉楠、豬腳楠、小梗木薑子、山胡椒等。

**生物學：**本種為一年多世代物種，幼蟲態越冬。

## Genus *TAGIADES* Hübner, 1903

**Type species:** *Papilio japetus* Stoll, [1781]

Diagnostic characters include the followings: 1) wings dark brown to gray, with small hyaline white spots on forewing; 2) a white patch present on hindwing; 3) male without recumbent metatibial hair tufts; 4) female with anal hair tuft.

12 species known, distributed in the Oriental and Afrotropical Region (Evans, 1949; Tsukiyama, 1980; Tsukiyama *et al.*, 1997).

Two species occur in Taiwan.

## 裙弄蝶屬

鑑別特徵如下：1) 翅黑褐色至灰色，前翅具白色透明小斑點；2) 後翅一白色塊；3) 雄蝶後足脛節無毛叢；4) 雌蝶腹部末端具鱗毛叢。

本屬已知 12 種，分布於東洋區及非洲區 (Evans, 1949; Tsukiyama, 1980; Tsukiyama *et al.*, 1997)。

臺灣具有 2 種。

***Tagiades cohaerens* Mabille, 1914 ( 白裙弄蝶 / 滾邊裙弄蝶 )****PLATE 7, Figs. 49-50; PLATE 25, Fig. 174; PLATE 43, Fig. 244**

*Tagiades menaka* var. *cohaerens* Mabille, 1914: Supplementa Entomologica 3: 42. (Type locality: “Karapin, Japan [Formosa]” [= Taiwan, Pingdong, Erluanbi])

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Sanxia, Manyueyuan, 5. VI. 1999 (Y. T. Lo); 1♀, Wulai, Fushan, 17. III. 2009 (C. K. Wang); 1♂, same locality, 21. III. 2009 (C. H. Yen); 1♂, Xindian, Sikanshui, 30. IV. 2006, reared from *Dioscorea* sp., emgd. 10. V. 2006, HSU 06D68 (L. H. Wang). **YILAN Co.:** 1♂, Nanao, Jinchashan, 1100m, 29. VI. 2001 (Y. F. Hsu & C. C. Lu). **XINZHU [= HSINCHU] Co.:** 1♂, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♂, Wutai, Wutoushan, 1200/1300m, 8. IX. 1998 (Y. F. Hsu).

**Description.** Adult – Forewing length 18–22 mm. Sexual dimorphism not prominent. Male (PLATE 7, Fig. 49): Head hairy, brown. Antennae brown, with creamy yellow scalings laterally near distal end; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, white; 3rd segment minute, rod-like, smooth and brown. Thorax brown dorsally, covered by white scalings ventrally. Abdomen brown banded by white annuli dorsally, white ventrally. Legs white; metaitia bearing brown hair pencil. Forewing triangular, termen slightly convex. Hindwing fan-like, with uppersides bearing white hairs proximally on hindwing. Ground color of wings pale brown with dark shade proximally. Forewing decorated with hyaline markings; one or two spots at distal end of discoidal cell, with another spot in front; three small dots in cell R<sub>3-5</sub>, with R<sub>5</sub> deviated outwards; two minute dots in cell M<sub>1</sub>, M<sub>2</sub>. Prominent white area present on hindwing, decorated by a series of prominent marginal spots and more variable submarginal spots. Wing undersides with patterns similar to those on uppersides, but white area on hindwing more extensive, submarginal spots on hindwing less extensive. Forewing fringe brown, hindwing fringe with anterior portion brown, posterior portion white. Female (PLATE 7, Fig. 50): Body and wing patterns similar to those of male, but wings broader, tip of abdomen bearing white tinged with gray hair tuft; no hair pencil on metatibia.

Male genitalia (PLATE 25, Fig. 174) – Tegumen narrow, slightly swollen dorsad, abruptly

narrowed to short, down-curved uncus. Gnathos as a broad, sclerotized band. Saccus moderately long. Valva attenuate toward caudal end; ampulla vestigial; harpe bearing small spines distally. Phallus elongate, with a membranous band on left side of aedeagus. Juxta as fork-like sclerite.

Female genitalia (PLATE 43, Fig. 244) – Corpus bursae oval. Ductus bursae membranous, leading to sclerotized ring near ostium bursae Sterigma elaborated; lamella antevaginalis broad with truncated posterior margin; lamella postvaginalis broad, bearing lateral wings, with posterior margin extending to lobe with medial notch. Anal papillae square, setose. Posterior apophyses slender, straight.

**Global distribution.** Himalayas, Southwest China, Malay Peninsula, northern Indochina, Taiwan (Shirozu, 1960; Devyatkin & Monastyrskii, 1999).

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

**Larval Host plant(s).** Dioscoreaceae: *Dioscorea cirrhosa*, *D. japonica*, *D. collettii*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2006, 2013).

**形態特徵：**成蝶前翅長 18-22 mm。無雌雄二型性。雄蝶 (圖 49)：頭具毛，褐色。觸角褐色，末端側面帶黃白色鱗；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，白色；第 3 節微小、平滑、褐色，呈棒狀。胸部背面褐色，腹面覆白色鱗。腹部背面褐色有白環，腹面白色。足白色；後足脛節有褐色毛束。前翅呈三角形，外緣略突出。後翅呈扇形，背面近翅基處覆白色毛。翅底色褐色，近翅基處顏色較深。前翅綴有透明斑紋：中室末端有一至二個小斑點，其前方另有一小斑點； $R_3$  至  $R_5$  室各有一小點，於  $R_5$  室外偏； $M_1$  及  $M_2$  室有微小斑點。後翅有鮮明白色區塊，外緣綴一系列枚黑褐色斑點、亞外緣綴有數量不等之黑褐色斑點。翅背面斑紋與翅腹面相似，但後翅白色區塊範圍較廣，亞外緣斑點較小。前翅緣毛褐色，後翅前端緣毛褐色，其餘白色。雌蝶 (圖 50)：形態特徵與雄蝶相似，但翅幅較寬，腹部末端覆有灰白色鱗毛叢，後足脛節無毛束。

雄交尾器 (圖 174)：背兜狹窄，背側略膨大，向後急窄，鉤突下彎。顎形突為寬闊骨化帶。囊突中庸長。抱器向尾端漸窄；抱器內突退化；抱握鉗末端具小刺。陽莖長，陽莖器左側有膜質帶。陽基軛片為叉狀骨片。

雌交尾器 (圖 244)：交尾囊長卵形。交尾囊管膜質，近交尾孔處形成骨化環。交尾孔板複雜；前板寬闊，後緣截狀；後板寬闊，兩側有翼狀突起，後緣延伸為葉狀，中央具凹陷。肛突方形，具毛。後內骨突細、筆直。

**世界分布：**喜馬拉雅地區、華西南、馬來半島、臺灣。

**臺灣分布：**分佈於低至中海拔地區。

**寄主植物：**薯蓣科之裏白葉薯榔、日本薯蓣、華南薯蓣等。

**生物學：**本種是一年多世代物種。

***Tagiades trebellius* (Hopffer, 1874) (熱帶白裙弄蝶 / 蘭嶼白裙弄蝶 / 南洋裙弄蝶)**

*Pterygospidea trebellius* Hopffer, 1874: Entomologische Zeitung 35 (1-3): 41. (Type locality: “Celebes” [= Sulawesi])

*Tagiades mitra avathana* Fruhstorfer, 1910: Deutsche entomologische Zeitschrift Iris 24 (5): 79. (Type locality: “Sula-Besi” [= Sanana Island])

*Tagiades martinus nicaja* Fruhstorfer, 1910: Deutsche entomologische Zeitschrift Iris 24 (5): 80. (Type locality: Bazilan)

***Ssp. martinus* Plötz, 1884**

**PLATE 7, Figs. 51-52; PLATE 25, Fig. 175; PLATE 43, Fig. 245**

*Hesperia martinus* Plötz, 1884: Jahrbücher des Nassauischen Vereins für Naturkunde 37: 47. (Type locality: “Philippinen” [Philippines])

**Specimens examined:**

**YILAN Co.:** 1♀, Toucheng, Guishan Is., 15. VI. 2007 (H. C. Huang). **PINGDONG [= PINGTUNG] Co.:** 1♂, Shizi, Lilongshan, 500m, 25. VIII. 2007 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 2♀, Lanyu, 25. IV. 2010, reared from *Dioscorea cumingii*, emgd. 23. VI. 2010, HSU 10D47 (J. H. Lin); 1♂, Lanyu, Sidaogou, 13/15. VI. 2003 (Y. F. Hsu); 1♀, same locality, 18. IV. 2006 (Y. F. Hsu); 1♂, same locality, 14/16. X. 2006 (Y. F. Hsu & H. C. Huang); 2♀, Lanyu, Qiwei, 26. IV. 2009, reared from *D. cirrhosa* [= *D. matsudae*], emgd. 16/17. V. 2009, HSU 09D57 (C. L. Lin, jr); 1♂, Lanyu, Tianchi, 25.

IV. 2006, reared from *D. collettii*, emgd. 16. V. 2006, HSU 06D63 (S. N. Hung).

**Description.** Adult – Forewing length 12–22 mm. Sexual dimorphism not prominent. Male (PLATE 7, Fig. 51): Head hairy, brown. Antennae brown, with creamy yellow scalings laterally near distal end; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, white; 3rd segment minute, rod-like, smooth and brown. Thorax brown dorsally, covered by white scalings ventrally. Abdomen brown dorsally, white ventrally. Legs white; metatibia bearing pale brown and white hair pencil. Forewing triangular, termen slightly convex. Hindwing fan-like, with uppersides bearing white hairs proximally on hindwing. Ground color of wings pale brown with dark shade proximally. Forewing decorated with hyaline markings; two spot at distal end of discoidal cell, with another spot in front; three small dots in cell  $R_{3-5}$ , with  $R_5$  deviated outwards; two minute dots in cell  $M_1$ ,  $M_2$ ; additional two spots in  $M_3$ ,  $CuA_1$ . Prominent white area present on hindwing, decorated by a series of prominent marginal spots, nearly conjoined into brown band. Wing undersides with patterns similar to those on uppersides, but white area on hindwing more extensive. Forewing fringe brown, hindwing fringe with anterior portion brown, posterior portion white. Female (PLATE 7, Fig. 52): Body and wing patterns similar to those of male, but wings broader, tip of abdomen bearing white tinged with gray hair tuft; no hair pencil on metatibia.

Male genitalia (PLATE 25, Fig. 175) – Tegumen broad, swollen dorsad, abruptly narrowed to short, down-curved uncus with truncated distal end. Gnathos as a broad, sclerotized band. Saccus stout, tongue-shaped. Valva deeply bifurcated distad; ampulla blade-like, with sharp, pointed, distal corner dorsally, spiny by minute spines ventrally, bearing serrate ridges at caudal end; harpe as a long, setose process with pointed caudal end. Phallus elongate, caudal end bearing a ventral keel, with small spines present near base of keel. Juxta as four-branched, with wide, U-shaped invagination dorsally.

Female genitalia (PLATE 43, Fig. 245) – Corpus bursae oval. Ductus bursae membranous, leading to weakly sclerotized ring near ostium bursae. Sterigma elaborated; lamella antevaginalis broad, fan-shaped; lamella postvaginalis broad, bell-shaped, with posterior margin extending to lobe with medial notch. Anal papillae square, setose. Posterior apophyses slender, curved.

**Global distribution.** India, Sri Lanka, Himalayas, Indo China, Southeast Asia, New Guinea, North Australia, New Georgia, Solomons, Yaeyamas (Japan), South China, Taiwan. (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Mainly lowlands of southern Taiwan, including Lanyu and Ludao, but also Guishan Island of Yilan Co. of northern Taiwan.

**Larval Host plant(s).** Dioscoreaceae: *Dioscorea cumingii*, *D. cirrhosa*, *D. collettii*, *D. alata*, etc.

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** In Taiwan, this species is mostly found in southern part of the island and associated islands. It may sometimes fly together with *Tagiades cohaerens*, and these two species are similar in size, wing pattern, and the way they fly. This species may be distinguished from *Tagiades cohaerens* by the following features: 1) Long axis of anterior hyaline spot in discoidal cell of forewing is parallel to costa in this species, but parallel to dorsum in *T. cohaerens*. 2) Dark brown submarginal spots are prominent in white area of hind wing of *T. cohaerens*, but vestigial in this species. 3) Marginal spot series of hindwing upperside reach tornal area in *T. cohaerens*, but not so in this species. 4) Abdomen dark brown banded with white dorsally and ventrally in *T. cohaerens*, uniformly dark brown in this species.

**形態特徵：**成蝶前翅長 12-22 mm。無雌雄二型性。雄蝶 (圖 51)：頭被毛，褐色。觸角褐色，末端側面帶黃白色鱗；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛、白色；第 3 節微小、平滑、褐色，呈棒狀。胸部背面褐色，腹面覆白色鱗。腹部背面褐色，腹面白色。足白色；後足脛節有淡褐色及白色毛束。前翅呈三角形，外緣略突出。後翅呈扇形，背面近翅基處覆白色毛。翅底色褐色，近翅基處顏色較深。前翅綴透明斑紋：中室末端具二個小斑點，其前方另有一小斑點；R<sub>3</sub> 至 R<sub>5</sub> 室各有一小點，於 R<sub>5</sub> 室者外偏；M<sub>1</sub> 及 M<sub>2</sub> 室有微小斑點；M<sub>3</sub> 及 CuA<sub>1</sub> 室各有一斑點。後翅有鮮明白色區塊，其外緣綴有數有黑褐色斑點，近乎相連成一褐色帶。翅背面斑紋與翅腹面相似，但後翅白色區塊範圍較廣。前翅緣毛褐色，後翅

前端緣毛褐色，後端白色。雌蝶 (圖 52)：形態特徵與雄蝶相似，但翅膀較寬，腹部末端覆有白色帶些許灰色之鱗毛叢，後足脛節無毛束。

雄交尾器 (圖 175)：背兜寬闊，背側膨大，向後急窄，鉤突下彎，末端截狀。顎形突寬帶狀、骨化。囊突粗壯、舌形。抱器末端叉狀深裂；抱器內突刃狀，背側末端具尖稜，腹側有細尖刺，後端具鋸齒狀脊；抱握鈎長，具毛，末端尖。陽莖長，腹側末端形成龍骨狀突起，龍骨狀突起基部具小刺。陽基軛片四分支，背側 U 形凹陷。

雌交尾器 (圖 245)：交尾囊橢圓形。交尾囊管膜質，近交尾孔處形成輕度骨化骨環。交尾孔板複雜；前板寬闊、扇形；後板寬闊、鐘形，後緣延伸為葉狀，中央具凹陷。肛突方形，具毛。後內骨突纖細、彎曲。

**世界分布：**印度、斯里蘭卡、喜馬拉雅地區、中南半島、華東南、新幾內亞、澳洲北部、新喬治亞、索羅門群島、八重山群島、華南、臺灣。

**臺灣分布：**主要分布於本島南部低海拔地區，包括蘭嶼及綠島，但也見於北部的龜山島。

**寄主植物：**薯蓣科之蘭嶼田薯、裏白葉薯榔、華南薯蓣、大薯等。

**生物學：**本種是一年多世代物種。

**註記：**本種多見於臺灣南部及離島地區，有時會與白裙弄蝶混棲，且兩者之大小、翅紋及飛行方式上頗為相似。本種可依下列特徵與白裙弄蝶區分：1) 本種中室前側透明斑點長軸與前翅前緣平行，白裙弄蝶則與後緣平行；2) 白裙弄蝶後翅亞外緣斑點鮮明，熱帶白裙弄蝶則缺乏亞外緣斑點；3) 白裙弄蝶後翅外緣斑點延伸至臀區，本種則否；4) 白裙弄蝶腹部背面及側面黑褐色綴白環，本種則呈均勻的黑褐色。

## Genus *DAIMIO* Hübner, 1903

**Type species:** *Pyrgus tethys* Ménétrières, 1857

Diagnostic characters include the followings: 1) wings brown with prominent hyaline white spots on forewing; 2) a white band or patch present on hindwing; 3) male with

recumbent metatibial hair tufts; 4) female with anal hair tuft.

Only one species is included in the genus, distributed in eastern Palearctic and northern Oriental Region (Shirôzu & Saigusa, 1962; Kawazoé & Wakabayashi, 1976; Tsukiyama *et al.* 1997).

The sole species occurs in Taiwan.

## 玉帶弄蝶屬

鑑別特徵如下：1) 翅褐色，前翅有鮮明白色透明斑紋；2) 後翅有白帶或斑塊；3) 雄蝶後足脛節具長毛束；4) 雌蝶腹部末端具鱗毛叢。

本屬僅1種，分布於古北區東部及東洋區北部 (Shirôzu & Saigusa, 1962; Kawazoé & Wakabayashi, 1976; Tsukiyama *et al.* 1997)

唯一代表種於臺灣亦有分布。

### ***Daimio tethys* (Ménétriès, 1857) ( 玉帶弄蝶 / 白帶弄蝶 / 黑弄蝶 )**

*Pyrgus tethys* Ménétriès, 1857: Catalogue de la collection entomologique de l'Académie impériale des sciences de St.-Petersbourg 2: 126, pl. 10, f. 8. (Type locality: Itsu Peninsula, Honshu, Japan)

### **Ssp. *moori* Mabille, 1876**

### **PLATE 7, Figs. 53-54; PLATE 25, Fig. 176; PLATE 43, Fig. 246**

*Pterygospidea moori* Mabille, 1876: Annales de la Société entomologique de France 5(6): clii. (Type locality: "Mou-Pin" [= Sichuan, Baoxing])

*Daimio niitakana* Matsumura, 1907: Insect World 11: 50. (Type locality: Tappansan, Formosa [= Taiwan, Jiayi, Dabang])

*Daimio sinica* var. *formosana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 688. (Type locality: "Formosa (Tappan)")

### **Specimens examined:**

**JILONG [= KEELUNG] CITY:** 1♂, 1♀, Longgang Trail, 13. X. 2009 (Y. F. Hsu). **TAIPEI CITY:** 1♀, Wenshan, Muzha, Hills S. of NCU campus, 20. III. 2009 (N. Y. Tasi); 1♂, Songshan, Hushan, 150m, 24. II. 2010 (C. K. Wang). **XINBEI CITY [=**

**NEW TAIPEI CITY/ TAIPEI Co.:** 1♂, Wulai, 25. IX. 2009, reared from *Dioscorea alata*, emgd. 2. X. 2009, HSU 09J3 (Y. F. Hsu); 1♂, Shiding, Ergeshan, ca500m, 12. III. 2009 (N. Y. Tasi). **TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Fuxing, Sule, 600m, 17. IX. 2008 (Y. F. Hsu & L. W. Wu). **NANTOU Co.:** 1♂, Xinyi, Dongpu, 1200m, 31. VII. 2009 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♂, 1♀, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu); 1♂, Shizi, Nunaishan, 26. III. 2006 (Y. F. Hsu); 1♂, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu); 1♀, Mudan, Gaoshifoshan, 450m, 4. II. 2010 (L. H. Wang). **LIANGJIANG Co.:** 1♂, Nangan, Nangan Nursery. 17. VI. 2014 (C. L. Huang).

**Description.** Adult – Forewing length 16–20 mm. Sexual dimorphism not prominent. Male (PLATE 7, Fig. 53): Head hairy, brown. Antennae brown, with creamy yellow scalings laterally near distal end; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, white; 3rd segment minute, rod-like, brown. Thorax brown dorsally, covered by white scalings ventrally. Abdomen brown banded by narrow, white annuli dorsally, white ventrally. Legs white; metatibia bearing brown hair pencil. Forewing triangular, termen slightly convex. Hindwing fan-like. Ground color of wings brown. Forewing decorated with hyaline and white markings; one white, medial marking in CuA<sub>2</sub>, other markings hyaline. Prominent spots in cell M<sub>3</sub>, CuA<sub>1</sub>, discoidal cell, with additional, minute spot in front; three small dots in cell R<sub>3-5</sub>, roughly in line; two minute dots in cell M<sub>1</sub>, M<sub>2</sub>. Prominent white discal band present on hindwing, decorated by a series of dark brown spots by its outer margin, arranged into a curve. Wing undersides with patterns similar to those on uppersides, but white area on hindwing more extensive, as a prominent, proximal patch. Forewing fringe brown checkered with white, hindwing fringe white, checkered with brown, posterior portion white. Female (PLATE 7, Fig. 54): Body and wing patterns similar to those of male, but wings broader, tip of abdomen bearing yellow hair tuft; no hair pencil on metatibia.

Male genitalia (PLATE 25, Fig. 176) – Tegumen broad, swollen dorsad, attenuate to rounded caudal end. Gathos as a broad, sclerotized band. Saccus moderately long, tongue-shaped. Valva broad, lobe-like, with distal margin bearing small spines. Phallus elongate, with phallobase nearly equal to aedeagus in length. Aedeagus with a dorsal, spiny flap. Juxta as broad, U-shaped sclerite.

Female genitalia (PLATE 43, Fig. 246) – Corpus bursae oval. Ductus bursae membranous, leading to sclerotized funnel near ostium bursae. Sterigma elaborated; lamella antevaginalis broad, dome-shaped; lamella postvaginalis broad, with posterior margin extending to lobe with medial notch. Anal papillae square, setose. Posterior apophyses slender, curved.

**Global distribution.** Far East Russia, Japan, Korean Peninsula, northern Indochina, continental China, Taiwan (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland to moderate elevations (Hsu, 2013), also found from Mazu islands (Hsu, 2014).

**Larval Host plant(s).** Dioscoreaceae: *Dioscorea japonica*, *D. cirrhosa*, *D. collettii*, *D. alata*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** The population in Taiwan is sometimes regarded as a subspecies endemic to Taiwan. The name *niitakana* Matsumura, 1907 may be used in that case (Hsu *et al.* 2006).

**形態特徵：**成蝶前翅長 16-20 mm。雌雄二型性不顯著。雄蝶 (圖 53)：頭被毛，褐色。觸角褐色，末端側面帶乳黃色鱗；尖頂明顯、裸露、鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節披毛，白色；第 3 節甚小、褐色、棒狀。胸部背面褐色，腹面覆白色鱗。腹部背面褐色，有白色細環；腹面白色。足白色；後足脛節有褐色毛束。前翅呈三角形，外緣略突出。後翅呈扇形。翅膀底色褐色。前翅具白色及透明斑紋；除 CuA<sub>2</sub> 室中央斑紋白色外，其餘透明；M<sub>3</sub>、CuA<sub>1</sub> 及中室有鮮明斑點，其前方尚有額外細小斑點。R<sub>3</sub> 至 R<sub>5</sub> 室各具一小斑點，約略排成一直線，M<sub>1</sub> 及 M<sub>2</sub> 室有微小斑點。後翅中央有鮮明白帶，白帶外緣綴有數枚黑褐色斑點，排成曲線。翅背面斑紋與翅腹面相似，但白色區塊範圍較廣，於近翅基處形成鮮明的白紋。前翅緣毛褐色鑲白色，後翅緣毛白色鑲褐色，後段白色。雌蝶 (圖 54)：形態特徵與雄蝶相似，但翅較寬，腹部末端覆有鱗毛叢，後足脛節無長毛束。

雄交尾器 (圖 176)：背兜寬闊，背側隆起，向後漸窄，末端圓鈍。顎形突形成寬闊

骨化帶。囊突中庸長、舌狀。抱器寬，葉狀，後端邊緣具細齒。陽莖長，陽莖基長度與陽莖器略等長。陽莖脊鋸齒狀。陽基軛片為寬闊 U 形骨。

雌交尾器 (圖 246)：交尾囊橢圓形。交尾囊管膜質，交尾孔周圍骨化、漏斗狀。交尾孔板複雜；交尾孔前板寬闊、拱形；交尾孔後板寬闊，後緣延伸成葉狀，中間凹入。肛突矩形，具毛。後內骨突細長、彎曲。

**世界分布：**俄羅斯遠東地區、日本、朝鮮半島、中南半島北部、華東北、華中、華西、華南、華東、臺灣。

**臺灣分布：**本島低中海拔地區，馬祖地區亦有發現。

**寄主植物：**薯蓣科之日本薯蓣、裏白葉薯榔、華南薯蓣、大薯等。

**生物學：**本種是一年多世代物種。

**註記：**臺灣的族群有時被視為特有亞種，並以 *niitakana* Matsumura, 1907 為亞種名。

## Genus **ABRAXIMORPHA** Elwes & Edwards, 1897

**Type species:** *Pterygospidea davidii* Mabille, 1876

Diagnostic characters include the followings: 1) wings white with dark brown spots on wings; 2) a white band or patch present on hindwing; 4) male with recumbent metatibial hair tufts; 5) female with anal hair tuft.

Only one species, *A. davidii*, remained in the genus after Huang *et al.* (2016) removed two species into a new genus called *Albiphasma* Huang, Chiba, Wang and Fang, 2016. Devyatkin & Monastyrskii (2002) suggested *C. davidii esta* Evans, 1949 should be regarded as a distinct species.

This genus is distributed in northern part of the Oriental Region.

The representative species *A. davidii* occurs in Taiwan.

## 白弄蝶屬

鑑別特徵如下：1) 翅面白色，綴黑褐色斑點；2) 後翅有一白色斑塊；3) 雄蝶後足脛節具長毛束；4) 雌蝶腹部末端具鱗毛叢。

本屬原先有 3 種，Huang *et al.* (2016) 將 2 種移至稱為 *Albiphasma* 之新屬後，本屬僅餘白弄蝶 1 種。Devyatkin & Monastrskii (2002) 認為亞種 *C. davidii esta* Evans, 1949 可被視為獨立種。

本屬分布於東洋區北部。

代表種白弄蝶臺灣有分布。

### *Abraximorpha davidii* (Mabille, 1876) (白弄蝶)

*Pterygospidea davidii* Mabille, 1876: Annales de la Société entomologique de France 5(6): LIV. (Type locality: Mou-pin [= Baoxing, Sichuan, China])

### *Ssp. ermasis* Fruhstorfer, 1914

#### PLATE 8, Figs. 55-56; PLATE 25, Fig. 177; PLATE 43, Fig. 247

*Celaenorrhinus davidii ermasis* Fruhstorfer, 1914: Entomologische Rundschau 31 (3): 18. (Type locality: Formosa, Alikang [Taiwan: Pingdong, Aligang/Ligang])

#### Specimens examined:

**TAIPEI CITY:** 1♀, Songshan, Hushan, 8. VI. 2010 (C. H. Lin); 1♂, same locality, 8. IX. 2010 (C. L. Huang). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Wulai, 16. IX. 1981 (Y. F. Hsu); 1♂, Wulai, Jiajiuliao, 150m, 9. VI. 2008 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, 1♀, Heping, Anmashan, 1400m, 17. IV. 1997, reared from *Rubus rolfei*, emgd. 19/20. V. 1997, HSU 97D52 (C. C. Lu & L. L. Yang); 1♂, 1♀, Heping, Anmashan, 17. IV. 1997, reared from *R. formosensis*, emgd. 10. V. 1997, HSU 97D52 (Y. F. Hsu); 2♂, same locality, 25. IV. 1997, reared from *R. rolfei*, emgd. 19. V. 1997, HSU 97D66 (Y. F. Hsu); 1♀, same locality, 25. IV. 1997, reared from *Rubus formosensis*, emgd. 28. V. 1997, HSU 97D66 (C. C. Lu & C. Y. Hung). **HUALIAN [= HUALIEN] Co.:** 1♂, Lungchien to Lunghsi, 10. VII. 1991 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.:** 1♂, Zhuqi/ Alishan, Shizhou/ Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♀, Wutai, Wutoushan,

1200/1300m, 8. IX. 1998, reared from *R. fraxinifolius*, emgd. 25. IX. 1998, HSU 98J16 (Y. F. Hsu).

**Description.** Adult – Forewing length 18–23 mm. Sexual dimorphism not prominent. Male (PLATE 8, Fig. 55): Head hairy, brown mixed with orange. Antennae brown, with apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, orange; 3rd segment minute, rod-like, smooth and brown. Thorax covered by creamy yellow and orange hairs. Abdomen covered by white scalings. Legs creamy yellow. Forewing triangular, somewhat elongate, termen convex. Hindwing fan-like, with uppersides bearing white hairs proximally on hindwing. Ground color of wings white, decorated with dark brown markings, including a marginal band, a discal band, and some proximal markings. Wing patterns of undersides similar to those of uppersides. Forewing fringe brown, hindwing fringe white checkered with brown. Female (PLATE 8, Fig. 56): Body and wing patterns similar to those of male, but tip of abdomen bearing white hair tuft.

Male genitalia (PLATE 25, Fig. 177) – Tegumen moderately broad, with base of uncus broad, leading to a narrow “neck” connecting to forked, shovel-like structure. Gathos as a broad band bearing minute spines. Saccus short. Valva asymmetrical, with left harpe broad with distal end truncated, right harpe tapering toward distal end; both slightly serrate distad. Ampulla blade-like, with distal tip pointed. Phallus with phallobase longer than aedeagus. Cornutus as slender sclerotized band with spines. Juxta as a transverse plate with a pair of associated dorsal sclerites.

Female genitalia (PLATE 43, Fig. 247) – Corpus bursae obolong. Ductus bursae membranous. Signum as a weakly sclerotized patch. Sterigma eelaborated, with lamella antevaginalis forming heavily sclerotized broad, crown-shaped structure, lamella postvaginalis a medial, tongue-like, setose lobe with a caudal notch, associated with lobe-like plate laterall. Anal papillae large, somewhat square in shape, setose. Posterior apophyses short, straight.

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

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

**Larval Host plant(s).** Rosaceae: *Rubus* spp. including *R. fraxinifolius*, *R. rolfei*, *R. formosensis*, *R. alnifoliolatus*, *R. corchorifolius*, *R. swinhoei*, etc.

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** Devyatkin & Monastrskii (2002) regarded ssp. *esta* Evans, 1949 (Type locality: Tonkin, Ngai Tio, 4,800 ft.) distributed in northern Indochina and Yunnan as a distinct species. The treatment requires further evaluation.

**形態特徵：**成蝶前翅長 18-23 mm。缺乏雌雄二型性。雄蝶 (圖 55)：頭被毛，褐色雜橙色。觸角褐色；尖頂明顯、鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，橙色；第 3 節甚小、平滑、褐色，呈棒狀。胸部覆乳黃色及橙色毛。腹部覆白色鱗。足乳黃色。前翅呈三角形，略為伸長，外緣突出。後翅呈扇形，背面近翅基處覆有白毛。翅底色白色，綴有黑褐色斑紋，包含一外緣帶、一中央帶及近翅基處之數只斑紋。翅膀腹面斑紋與背面相似。前翅緣毛褐色，後翅緣毛白色嵌褐色。雌蝶 (圖 56)：形態特徵與雄蝶相似，惟腹部末端覆有鱗毛叢。

雄交尾器 (圖 177)：背兜寬度中庸。鉤突基部寬，中段窄，末端呈分叉鏟狀。顎形突寬帶狀，具小棘。囊突短。抱器左右不對稱，左側抱握鈹寬闊，末端截狀，右側抱握鈹向後端漸尖；左右抱握鈹末端皆略呈鋸齒狀。抱器內突刃狀，末端尖。陽莖基長度長於陽莖器。角狀器為細長具刺的骨化帶。陽基軛片為一橫骨片，左右背側具延伸之骨片。

雌交尾器 (圖 247)：交尾囊長橢圓形。交尾囊管膜質。花壁為一輕度骨化區。交尾孔板複雜，前板形成高度骨化之冠狀結構，後板舌狀，後緣具凹陷，與兩側葉狀板相連。肛突大形，略呈方形，具毛。後內骨突短、筆直。

**世界分布：**華南、中南半島北部、臺灣。

**臺灣分布：**低至中海拔地區。

**寄主植物：**薔薇科之多種懸鉤子屬植物，包含蘭嶼檉葉懸鉤子、高山懸鉤子、臺灣懸鉤子、檉葉懸鉤子、變葉懸鉤子、斯氏懸鉤子等。

**生物學：**本種是一年多世代物種。

**註記：**Devyatkin & Monastrskii (2002) 認為分布於中南半島北部及雲南的亞種 *ssp. esta* Evans, 1949 為獨立種，此處理有待進一步檢驗。

## Subfamily HESPERIINAE Latreille, [1809]

According to Ackery *et al.*, (1999), this subfamily is supported by a single venational character: Vein M<sub>2</sub> of forewing basally curved to M<sub>3</sub>. However, Warren *et al.* (2009) stated this characters is not consistently found in all members of the subfamily.

Hesperiinae is by far the largest subfamily of skippers, including more than 2000 species. They are cosmopolitan in distribution, with at least half of them found in the Neotropical region. Adults exhibit a peculiar basking posture, with the hindwings spread horizontally, while the forewings are half-opened. The host plants of the subfamily are exclusively monocotyledons. The family Megathymidae or subfamily Megathyminae recognized by some early literature is now accepted to be a member within this subfamily.

In Taiwan, a total of 38 species in 22 genera are known.

## 弄蝶亞科

根據 Ackery *et al.*, (1999) 之研究，弄蝶亞科僅由單一翅脈特徵所支持：前翅 M<sub>2</sub> 脈基部向 M<sub>3</sub> 脈彎曲。然而，Warren *et al.* (2009) 指出並非本亞科所有成員均有此特徵。

弄蝶亞科是弄蝶裡最大的亞科，包含超過 2000 種。此亞科成員呈泛世界分布，而至少一半之成員分布於新熱帶區。成蝶具有後翅水平張開、前翅半張的獨特日光浴姿勢。過去文獻常見的巨弄蝶科或亞科現在一般認為屬於本亞科。本亞科成員專食單子葉植物。

在臺灣已知有 22 屬 38 種。

## Genus *AMPITTIA* Moore, [1882]

Type species: *Hesperia maro* Fabricius, 1798

Diagnostic characters include the followings: 1) CuA<sub>2</sub> of forewing arising from discoidal cell opposite or beyond R<sub>1</sub>; 2) wings dark brown with yellow spots and markings; 3) hindwing Rs distorted at base; 4) male of some species with sexual brands on forewing upperside (Evans, 1949; Bascombe *et al.*, 1999).

Seven species are known from Afrotropical and Oriental regions (Evans, 1949; Bascombe *et al.*, 1999; Larsen & Congdon, 2012; Huang *et al.* 2019).

Two species occur in Taiwan.

## 黃星弄蝶屬

形態特徵如下：1) 前翅 CuA<sub>2</sub> 脈中起點與 R<sub>1</sub> 脈中室起點位置相對應或較偏外側；2) 翅黑褐色，綴黃色斑點；3) 後翅 Rs 脈基部扭曲；4) 部分種類前翅背面具有性標 (Evans, 1949; Bascombe *et al.*, 1999)。

本屬有 7 種，分布於非洲區及東洋區 (Evans, 1949; Bascombe *et al.*, 1999; Larsen & Congdon, 2012; Huang *et al.*, 2019)。

臺灣有 2 種。

### *Ampittia dioscorides* (Fabricius, 1793) ( 小黃星弄蝶 / 小黃斑弄蝶 / 黃斑弄蝶 )

*Hesperia dioscorides* Fabricius, 1793: Entomologia Systematica 3 (1): 329, no. 250. (Type locality: “Tranquebariae” [=Tranquebar/Tharangambadi, S.India])

### Ssp. *etura* Mabille, 1891

### PLATE 8, Figs. 57-58; PLATE 26, Fig. 178; PLATE 44, Fig. 248

*Cycloides etura* Mabille, 1891: Annales de la Société Entomologique de Belgique-35 (16): LXXV. (Type locality: Hong Kong)

*Ampittia maro matsumurai* Sonan, 1936: Zephyrus 6 (3/4): 213. (Type locality: Tainan, Formosa)

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, 1♀, Sanxia, Sande Graveyard, 100m, 1. X. 2002 (Y. F. Hsu); 1♂, Xindian, Guangxing, 17. IV. 2003 (Y. F. Hsu); 1♂, Xindian, Zhitan, 26. IX. 1999, reared from *Leersia hexandra*, emgd. 1. X. 1999, 99J63 (Y. F. Hsu & L. H. Wang). **TAIPEI CITY:** 2♂, 1♀, Xinyi, Xiangshan, 2. VIII. 1987 (Y. F. Hsu); 3♂, same locality, 3. VIII. 1987 (Y. F. Hsu); 1♂, same locality, 4. VIII. 1987 (Y. F. Hsu); 1♂, same locality, 6. VII. 1991 (Y. F. Hsu); 1♂, 1♀, Nangang, Nangangshan, 2. X. 1999 (Y. F. Hsu). **TAOYUAN CITY [TAOYUAN Co.]:** 1♂, 1♀, Xinwu, Dongming, 125m, 15. IX. 1999 (Y. F. Hsu & L. H. Wang); 1♂, 2♀, Longtan, Shezi, 15. IX. 1999 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.:** 3♂, 2♀, Zhubei, Lianhuasi, 11. IX. 1999 (Y. F. Hsu). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 600m, 12. IV. 2000 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]:** 2♂, Xinhua, Dakeng, 80m, 10/11. II. 2006 (Y. F. Hsu); 2♀, same locality, 25. II. 2006 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]:** 1♀, Meinong, Shuangxi, 150m, 31. XII. 2006 (Y. F. Hsu); 3♂, same locality, 22. I. 2007 (Y. F. Hsu). **JINMEN [= KINMEN] Co.:** 2♂, Shuanglihu, 4. VI. 2000 (Y. F. Hsu).

**Description.** Adult – Forewing length 9–12 mm. Sexual dimorphism present. Male (PLATE 8, Fig. 57): Head hairy, brown mixed with orange. Antennae blunt apically, dorsally brown banded with orange, orange ventrally. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming upright tuft, creamy yellow; 3rd segment small, brown. Thorax brown dorsally, orange ventrally; legs orange. Abdomen brown dorsally, orange ventrally. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides ground color brown, with prominent orange markings. On forewing, a prominent patch covering discoidal cell; a discal band divided into three markings with posterior one smaller. On hindwing, a broad discal band present. Wing undersides with extensive orange scalings, forming a series of submarginal brown spots against orange yellow background. Fringe orange checkered with brown. Sexual brand present on forewing upperside, as a linear belt of dark brown hairs. Female (PLATE 8, Figs. 58): Body and wing patterns similar to those of male, orange markings on wing uppersides reduced; orange patch in discoidal cell on forewing reduced to small marking by distal end of discoidal cell; on hindwing, discal band reduced. No sexual brand.

Male genitalia (PLATE 26, Fig. 178) – Tegumen broad, with uncus extending to tongue-like structure with shallow, medial, V-shaped notch. Gnathos as a pair of flap-like pieces. Saccus short. Valva elongate; costa as a prominent lobe bearing a spine; ampulla as a flattened piece with round distal end; harpe produced into two distal, blade-like, spiny processes, with apical one smaller than subapical one. Phallus straight, with phallobase longer than aedeagus, robust but narrowed anteriorly; cornuti as two sclerotized sclerites; dorsal a spine, ventral a bar with hook. Juxta funnel-like.

Female genitalia (PLATE 44, Fig. 248) – Corpus bursae oval. Ductus bursae membranous, thick and short, sclerotized. Sterigma as broad sclerotized plate densely covered by long spines. Anal papillae broad, weakly setose. Posterior apophyses shorter than length of anal papillae.

**Global distribution.** India, Sri Lanka, Indo China, Malay Peninsula, Sumatra, Java, Borneo, South China, Taiwan. (Bascombe *et al.*, 1999).

**Distribution in Taiwan.** Lowland Taiwan, including Jinmen islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Leersia hexandra* (Hsu, 2002).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2002).

**形態特徵：**成蝶前翅長 9-12 mm。雌雄二型性明顯。雄蝶 (圖 57)：頭被毛，褐色混橙色。觸角尖頂鈍，背面褐色，有橙色環，腹面橙色。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，形成一隆起毛叢，呈黃白色；第 3 節細小，褐色。胸部背面褐色，腹面橙色。足橙色。腹部背面褐色，腹面橙色。前翅呈三角形，外緣略突出。後翅扇形。翅背面底色褐色，有鮮明橙色斑。前翅中室有橙色斑；中央由三只分離斑紋組成，後側斑較小。後翅中央有寬帶。翅腹面密布橙色鱗，有由褐色斑點形成之亞外緣紋列。緣毛橙色嵌褐色。前翅背面有黑褐色毛組成之線狀性標。雌蝶 (圖 58)：形態特徵與雄蝶相似，但翅背面橙色斑紋較少；前翅中室斑減退為中室末端小斑；後翅中央斑縮減；無性標。

雄交尾器 (圖 178)：背兜寬闊，鉤突延伸成舌狀，末端中央具淺 V 形凹陷。顎形突為成對瓣狀。囊突短。抱器甚長；抱器背葉狀，具一齒；抱器內突圓片狀；抱握鈹末端有兩只有棘刺之刃狀突起，末端突起較近末端突起小型。陽莖筆直粗壯，前端窄，陽莖基長度較陽莖器長；角狀器為兩骨片；背骨片棘狀；腹骨片塊狀，有鉤。陽基軛片漏斗狀。

雌交尾器 (圖 248)：交尾囊卵圓形。交尾囊管膜質、粗短，於交尾孔附近骨化。交尾孔板為寬闊骨板，密佈長刺。肛突寬闊，略具毛。後內骨突長度較肛突短。

**世界分布：**印度、斯里蘭卡、中南半島、馬來半島、蘇門答臘、爪哇、婆羅洲、華南及臺灣。

**臺灣分布：**本島低海拔地區，金門亦有分布。

**寄主植物：**禾本科之李氏禾。

**生物學：**本種是一年多世代物種。

***Ampittia virgata* (Leech, 1890) (黃星弄蝶 / 狹翅黃星弄蝶 / 鉤形黃斑弄蝶)**

*Pamphila virgata* Leech, 1890: Entomologist 23: 47. (Type locality: Chang Yang; Ichang)

**Ssp. *myakei* Matsumura, 1910**

**PLATE 8, Figs. 59-60; PLATE 26, Fig. 179; PLATE 44, Fig. 249**

*Ampittia myakei* Matsumura, 1910: Entomologische Zeitschrift 23 (41): 181. (Type locality: “Formosa, Horisha, Taihok and Arisan”)

*Ampittia formosana* Fruhstorfer, 1910: Deutsche entomologische Zeitschrift Iris 24 (5): 97. (Type locality: “Formosa, Chip-Chip”)

*Ampittia arisana* Matsumura, 1910: Entomologische Zeitschrift 23 (41): 181. (Type locality: “Arisan”)

*Ampittia miyakei* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 670. (invalid emendation)

#### **Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Wulai, 4. X. 1987 (Y. F. Hsu); 1♀, same locality, 30. V. 2008, reared from *Miscanthus sinensis*, emgd. 5. V. 2008, HSU 08E48 (Y. F. Hsu); 1♀, Wulai, ca 200m, 5. VI. 2005, reared from *Miscanthus*

sp., emgd. 10. VI. 2005, HSU 05F11 (Y. F. Hsu); 1♀, Sanxia, Manyueyuan Fall, 28. V. 1997, reared from *M. sinensis*, emgd. 13. VI. 1997, HSU 97E57 (C. C. Lu). **TAIPEI CITY**: 1♂, Shilin, Lujiaokeng, 4. VIII. 1987 (Y. F. Hsu); 1♂, Beitou, Qixingshan, 1100m, 3. VIII. 2009 (Y. F. Hsu & H. C. Huang). **TAOYUAN CITY [TAOYUAN Co.]**: 1♂, Ronghua, 23. X. 1986 (Y. F. Hsu); 1♂, same locality, 13. V. 1987 (Y. F. Hsu); 1♂, Daman/ Xuanyuan, 19. VI. 1987 (Y. F. Hsu); 1♀, Baling/Chiduan [Mingchi], 11. VII. 1985 (Y. F. Hsu); 1♂, Lalashan, 29. VI. 1983 (Y. F. Hsu); 1♂, Fuxing, Rt. 7, 17. IX. 2009, reared from *Miscanthus*, emgd. 10. X. 2009 (C. H. Lin jr). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]**: 3♂, Heping, Wuling, 31. VII. 1985 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.**: 1♀, Fanlu, Chukou, 1. V. 2006 (Y. F. Hsu); 1♂, Alishan, Shizhuo/Dabang, 900/1000m, 2. V. 2010 (R. K. Dong & Y. F. Hsu). **NANTOU Co.**: 2♂, Renai, Huisun Forest Field, 4. V. 1990 (C. L. Li); 1♂, Renai, Ruru Skpite (Renzhiguang), 15. IX. 1998 (C. Y. Hung); 1♀, Renai, Beidongyanshan, ca1800m, 6. XII. 2005, reared from *M. sinensis*, emgd. 1. II. 2006, HSU 06M16 (L. W. Wu & L. H. Wang); 1♂, Nanshanxi, 14. III. 1996 (Y. F. Hsu). **YILAN Co.**: 1♂, Chiduan [Mingchi], 28. VI. 1984 (Y. F. Hsu); 1♂, Nanao, Tongshan, 2000m, 10. VI. 1999 (Y. F. Hsu & L. H. Wang). **HUALIAN [= HUALIEN] Co.**: 1♂, Bilu, 2300m, 8. VIII. 1991 (Y. F. Hsu & C. L. Li); 1♂, Xiulin, Guanyuan, ca2300m, 29. VI. 2006 (L. H. Wang); 1♂, Xiulin, Wujaibengshan, 2000m, 29. V. 2007 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.**: 1♂, Wutai, Wutoushan, 1000/1200m, 7/8. V. 2006 (Y. F. Hsu); 2♂, 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).

**Description.** Adult – Forewing length 12–16 mm. Sexual dimorphism present. Male (PLATE 8, Fig. 59): Head hairy, brown mixed with orange. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments prominent, 3rd segment small, hairy, brown dorsally, creamy yellow ventrally. Thorax brown dorsally, creamy yellow ventrally; legs orange. Abdomen brown dorsally, scattered with some orange scalings, orange ventrally. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides ground color brown, with prominent orange markings. On forewing, a hook-shaped marking at distal end of discoidal cell, with a stripe along costa. Discal marking consisted of three small spots in R<sub>3-5</sub> in line, and two spots in M<sub>3</sub> and CuA<sub>1</sub>. On hindwing, a discal band present, sometimes partially reduced to faint orange scalings. Wing undersides

with extensive orange scalings, usually forming a series of yellow spots against a shade of brown. Fringe orange checkered with brown. Sexual brand present on forewing upperside, as a linear belt of dark brown hairs. Female (PLATE 8, Fig. 60): Body and wing patterns similar to those of male on wing undersides, orange markings on forewing upperside with marking at distal end of discoidal cell reduced to a small spot, marking along costa vestigial; discal band of hindwing uppersides greatly reduced or absent. No sexual brand.

Male genitalia (PLATE 26, Fig. 179) – Tegumen broad, with uncus extending to tongue-like structure with shallow, medial incurvation. Gnathos as a pair of flap-like structure, bearing prominent spines caudad. Saccus moderately long, rod-like. Valva elongate; costa as a prominent, spiny blade; ampulla as a flattened piece with round distal end; harpe produced into erected tooth with spiny surface. Phallus straight, with phallobase slightly longer than aedeagus; cornutus spoon-like, spiny. Juxta narrow, U-shaped.

Female genitalia (PLATE 44, Figs. 249) – Corpus bursae oval. Ductus bursae membranous, thick and short, sclerotized by ostium bursae. Sterigma with both lamella antevaginalis and lamella postvaginalis forming broad plate with lateral, highly sclerotized folds; former with medial notch on posterior margin. Anal papillae large, rectangle, bearing long setae. Posterior apophyses very short, with length shorter than width of anal papillae.

**Global distribution.** South China and Taiwan (Shirôzu, 1960).

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

**Larval Host plant(s).** Poaceae: *Miscanthus* spp. (Hsu, 1999).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** Hsu *et al.* (2006) pointed out that Matsumura (1910) intended to describe ssp.

*myakei* in Taiwan in honor of a Japanese entomologist Tsunekata Miyake, who was the collector of the type series.

**形態特徵：**成蝶前翅長 12-16 mm。雌雄二型性明顯。雄蝶 (圖 59)：頭被毛，褐色混橙色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節明顯；第 3 節細小、被毛，背面褐色，腹面黃白色。胸部背面褐色，腹面黃色。足橙色。腹部背面褐色散布橙色鱗，腹面橙色。前翅呈三角形，外緣略突出。後翅扇形。翅背面底色褐色，綴鮮明橙色斑。前翅中室末端有鉤狀斑紋，前緣有一條紋； $R_3$  至  $R_5$  室各有一小斑點排成一線， $M_3$  室及  $CuA_1$  室各有一斑點。後翅中央具帶紋，有時縮減為模糊的橙色紋。翅腹面密布橙色鱗，常由黃色斑點形成紋列與暗色背景成明顯對比。緣毛橙色嵌褐色。前翅背面有黑褐色毛組成之線狀性標。雌蝶 (圖 60)：前翅背面中室末端橙色斑紋縮減為小斑點，前緣條紋退化；後室背面中央斑帶明顯縮減或消失；無性標。

**雄交尾器 (圖 179)：**背兜寬闊，鉤突延伸呈舌狀，末端中央凹入。顎形突為成對瓣狀，末端具刺棘。囊突中庸長、棒狀。抱器頗長；抱器背刃狀，邊緣有鋸齒；抱器內突扁平，末端圓片狀；抱握鈹末端延伸成一直立、有刺之齒突。陽莖筆直，陽莖基長度略長於陽莖器；角狀器匕首狀。陽基軛片狹窄、U 形。

**雌交尾器 (圖 249)：**交尾囊卵圓形。交尾囊管膜質、粗短，於交尾孔周圍骨化。交尾孔板寬闊、高度骨化、具皺褶，中間後緣凹入。肛突大，矩形，具剛毛。後內骨突甚短，長度短於肛突寬。

**世界分布：**華南及臺灣。

**臺灣分布：**本島低至中海拔地區。

**寄主植物：**禾本科之芒屬植物。

**生物學：**本種是一年多世代物種。

**註記：**Hsu *et al.* (2006) 指出此亞種種小名 *myakei* 應是為表彰本亞種之模式標本採集者：日籍昆蟲研究者三宅恆方。

## Genus **AEROMACHUS** de Nicéville, 1890

**Type species:** *Thanaos stigmata* Moore, 1878

Diagnostic characters include the followings: 1) wings brown, with postdiscal spots arranged into an arc on forewing in some species; 2) small or very small in body size; 3) antennal apiculus short to very short, sometimes hooked; 4) sexual brands present on forewing upperside in some species (Evans, 1949; Bascombe *et al.*, 1999).

About a dozen species are known, distributed from eastern Palearctic and Oriental regions (Evans, 1949; Tsukiyama *et al.*, 1997). Some species previously in the genus *Ampittia* were later assigned to this genus (Wu & Hsu, 2017).

Three species occur in Taiwan.

### 弧弄蝶屬

形態特徵如下：1) 翅褐色，有些種類外中線有斑點排成弧形；2) 體型小；3) 觸角尖頂短或極短，有時呈鉤狀；4) 有些種類前翅背面具有性標。

目前本屬已知約 12 種，分布於古北區東部及東洋區 (Evans, 1949; Tsukiyama *et al.*, 1997)。本屬有些物種原先被置於黃星弄蝶屬，Wu & Hsu (2017) 將其歸入本屬中。

臺灣有 3 種。

***Aeromachus inachus* (Ménétriès, 1859)** ( 弧弄蝶 / 星褐弄蝶 / 河伯鏢弄蝶 )

*Pyrgus inachus* Ménétriès, 1859: Bulletin de la Classe physico-mathématique de l'Académie impériale des sciences de Saint-Petersbourg 17 (14): 217. (Type locality: “l'Amour, non loin de l'embouchure du Songari”) [Amur, near delta of Songari River]

**Ssp. *formosana* Matsumura, 1931**

**PLATE 8, Figs. 61-62; PLATE 26, Fig. 180; PLATE 44, Fig. 250**

*Aeromachus inachus* f. *formosanus* Matsumura, 1931: Insecta Matsumurana 6 (1-2): 44. (Type lo-

cality: Formosa, Naihompō, nr Mt Niitaka)

*Aeromachus inachus* f. *formosanus* Matsumura, 1929: Illustrated common insects of Japan 1: 35. (list)

### Specimens examined:

**TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Fuxing, Ronghua, 30. VIII. 1987 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 2♂, 1♀, Heping, Guguan, 12. VI. 1998 (Y. F. Hsu), 2♀, Heping, Deji, ca 1000m, 5. IX. 1996, (Y. F. Hsu), 2♂, Heping, Shangguguan, 900m, 25. IX. 2006 (Y. F. Hsu); 1♂, same locality, 30. X. 2006, (Y. F. Hsu), 2♂, Heping, Shangguguan, 900/1200m, 28. VII. 2007, (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Ruru skpite. 15. IX. 1998 (C. Y. Hung), 1♀, Renai, Huisun, 23. X. 1998, reared from *Spodiopogon hayatai* [= *S. tainanensis*], emgd. 18. XII. 1998, HSU 98K37 (C. Y. Hung), 1♀, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F. Hsu); 1♀, same locality, 24. IX. 2005 (Y. F. Hsu), 1♀, Renai, Huisun Forestry Station, 16. X. 2010, (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]:** 1♂, Taoyuan, Shidong, 600m, 11. VIII. 2011 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♂, Wutai, Wutoushan, 1200/1300m, 8. IX. 1998, (Y. F. Hsu), 1♂, Majia, ca 800m, 6. VIII. 2004 (L. H. Wang), 1♀, Wutai, Ailiaobeixi/Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang).

**Description.** Adult – Forewing length 11–13 mm. Sexual dimorphism weakly present. Male (PLATE 8, Fig. 61): Head Head hairy, brown mixed with white. Antennae brown dorsally, brown banded with creamy white ventrally; apiculus hooked. Proboscis dark brown. Labial palpus porrect, hairy, 1st and 2nd segments forming upright tuft, 3rd segment small, brown dorsally, white ventrally. Thorax and abdomen brown dorsally, white ventrally; legs white. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides ground color brown, with white markings on forewing. A series of white dots forming discal band, arranged into an arc. A white dot present at distal end of discoidal cell. Wing undersides with extensive creamy white scalings, with prominent discal and submarginal bands consisted of white dots. Several short white bars edged by brown present proximally. Fringe creamy white checkered with brown. Female (PLATE 8, Fig. 62): Body and wing patterns similar to those of male, but forewing termen rounded.

Male genitalia (PLATE 26, Fig. 180) – Tegumen tapering caudally, with uncus axe-shaped bearing minute lateral processes. Gnathos bearing minute spines. Saccus digitate. Valva lobe-like; costa and sacculus elongate; ampulla small, as a flatten piece with round distal

end; harpe produced into a broad piece, bearing spiny fin-like projection dorsally. Phallus slightly up-curved, with phallobase longer than aedeagus. Juxta as a narrow sclerite.

Female genitalia (PLATE 44, Fig. 250) – Corpus bursae oval with appendix bursae. Ductus bursae membranous, thick and short. Sterigma with deep, medial, posterior invagination; lamella antevaginalis forming a pair of lateral folds. Anal papillae large, rectangle, bearing long setae. Posterior apophyses elongate, slender, nearly straight.

**Global distribution.** Japan, Korean Peninsula, Northeast China, East China, and Taiwan (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Moderate elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Spodiopogon tainanensis* (Hsu, 2013). Uchida (1995) recoded *Digitaria henryi* of the same family as a host.

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**形態特徵：**成蝶前翅長 11-23 mm。雌雄二型性不顯著。雄蝶 (圖 61)：頭被毛，褐色雜白色。觸角背面褐色，腹面褐色，有白環；尖頂呈鉤狀。口器黑褐色。下唇鬚具毛，前伸，第 1 及第 2 節有隆起毛叢，第 3 節細小，背面褐色，腹面白色。胸部與腹部背面褐色，腹面白色。足白色。前翅呈三角形，外緣略突出。後翅扇形。翅背面底色褐色，前翅有白色斑點，形成一系列弧形中央斑列。中室末端有一白色小點。翅腹面密布乳白色鱗，由白斑點形成鮮明的中央及亞外緣斑列。近翅基處有帶褐色邊之白色短條。緣毛白色嵌褐色。雌蝶 (圖 62)：形態特徵與雄蝶相似，但前翅外緣較圓。

雄交尾器 (圖 180)：背兜向末端漸縮，與鉤突成斧形，兩側微凸。顎形突具小刺棘。囊突指狀。抱器葉狀；抱器背與抱器腹長；抱器內突小，扁片狀，末端圓形；抱握鈹寬片狀，背側鰭狀突起，具刺棘。陽莖略向上彎曲，陽莖基長度較陽莖器長。陽基軛片窄骨片狀。

雌交尾器 (圖 250)：交尾囊橢圓形，具附囊。交尾囊管短而厚。交尾孔後板中間具深凹陷；交尾孔前板兩側具褶。肛突大型、矩形，具長剛毛。後內骨突細長、頗直。

**世界分布：**日本、朝鮮半島、華東北、華東及臺灣。

**臺灣分布：**本島中海拔山區。

**寄主植物：**禾本科之台南大油芒。Uchida (1995) 另記錄亨利馬唐亦為寄主植物。

**生物學：**本種是一年多世代物種。

***Aeromachus matudai* (Murayama, 1943)** (霧社弧弄蝶 / 霧社星褐弄蝶 / 霧社鵝弄蝶)

**PLATE 8, Fig. 63**

*Ampittia matudai* Murayama, 1943; Zephyrus 9(3): 170. (Type locality: Formosa, Musha [=Wushe])  
*Aeromachus matsudai*; Shirôzu (not Murayama), 1960: Butterflies of Formosa in Colour: 459. (misspelling)

**Specimens examined:**

Holotype ♂, “[TAIWAN: NANTOU Co.]: Musha [Wushe], 22-VI-1941” (Murayama Collection in Lake Biwa Museum).

**Description.** Adult – Forewing length 13.5 mm. Male (PLATE 8, Fig. 63): Head hairy, brown mixed with yellow. Antennae brown dorsally, brown banded with creamy yellow ventrally; apiculus hooked. Proboscis dark brown. Labial palpus porrect, hairy, 1st and 2nd segments forming raised tuft, 3rd segment small, brown mixed with yellow dorsally, yellow ventrally. Thorax and abdomen brown mixed with scattered yellow scalings; legs brown mixed with yellow. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides ground color brown, with a discal band on forewing, consisted of faint, yellow dots. A small yellow dot at distal end of discoidal cell. Wing undersides ground color brown overlaid with scattered yellow scalings; markings similar to those on uppersides, with additional yellow spots on hindwing underside. Fringe brown. Female Unknown.

Male genitalia [based on Murayama & Shimonoya, 1968] –Tegumen tapering caudally, leading to spear-like uncus with two small lateral processes on each side. Gnathos bearing minute spines. Saccus digitate. Valva lobe-like; costa and sacculus elongate; ampulla as a flatten piece with angled distal end; harpe produced into a broad piece with rounded posterior margin, bearing spiny fin-like projection dorsally. Phallus with phallobase longer than aedeagus.

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

**Distribution in Taiwan.** Montane areas in central Taiwan (Hsu, 2013).

**Larval Host plant(s).** Not recorded.

**Biology.** This species is probably univoltine in occurrence.

**Remarks.** This species is superficially similar to *Aeromachus bandaishanus* Murayama & Shimonoya, 1968. Their male genitalia are also similar to each other (Murayama & Shimonoya, 1968), thus the relationship between the two requires further examination. The photograph identified as “*Aeromachus matsudai*” in Lin (1994) appears to be an individual of *A. inachus*.

**形態特徵：**成蝶前翅長 13.5 mm。雄蝶 (圖 63)：頭被毛，褐色雜黃色。觸角背面褐色，腹面褐色，有黃環；尖頂呈鉤狀。口器黑褐色。下唇鬚具毛，前伸，第 1 及第 2 節形成隆起毛叢，第 3 節細小，背面褐色雜黃色，腹面黃色。胸部與腹部褐色散布黃色鱗。足褐色雜黃色。前翅呈三角形，外緣略突出。後翅扇形。翅背面底色褐色，前翅有由黃色模糊小點組成之中央斑帶，中室末端具一黃色小點。翅腹面底色褐色覆蓋黃色鱗粉，斑紋與翅背面相似，後翅腹面有數只黃色斑點。緣毛褐色。雌蝶：未知。

雄交尾器 [依據 Murayama & Shimonoya (1968)]– 背兜向末端略窄，鉤突矛狀，兩側各具兩個小突起。顎形突具小刺。囊突指狀。抱器葉狀；抱器背及抱器腹頗長；抱器內突扁片，末端角狀；抱握鈹寬闊、片狀，後緣圓，背側具刺狀鰭狀突起。陽

莖之陽莖基長度較陽莖器長。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**分布於臺灣中部山區。

**寄主植物：**尚無正式報告。

**生物學：**可能為一年一世代物種。

**註記：**本種外觀及雄蟲交尾器與萬大弧弄蝶相似，因此兩者之關係尚待更進一步釐清。Lin (1994) 認為是霧社弧弄蝶之照片顯係一弧弄蝶個體。

***Aeromachus bandaishanus* Murayama & Shimonoya, 1968** ( 萬大弧弄蝶 / 萬大星褐弄蝶 / 萬大鏢弄蝶 )

**PLATE 8, Figs. 64-65; PLATE 26, Fig. 181; PLATE 44, Fig. 251**

*Aeromachus bandaishanus* Murayama & Shimonoya, 1968: New Entomologist 17(1): 10. (Type locality: Bandaisha)

**Specimens examined:**

**TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Heping, Siyuan Yakou, 1. VIII. 1990, 1900m (C. L. Li); 1♂, Shishanxi, 15. VII. 1997 (C. Y. Hung); 1♀, Heping, 710 Forest Trail, 2100m, 11. VII. 2007 (L. H. Wang). **YILAN Co.:** 1♂, Siyuan Forest Trail, 22. VI. 1999 (K. L. Chen); 1♂, Nanao, Tongshan, 28. VI. 2004 (L. H. Wang); 1♂, Xiulin, Bilu Divine Tree, 7. VIII. 1996 (J. L. Jean); 1♀, Datong, Taipingshan, 1600m, 15. VI. 2006 (L. H. Wang). **NANTOU Co.:** 1♂, Renai, Yunhai, 2300m, 5. VI. 2008 (L. H. Wang). **HUALIAN [= HUALIEN] Co.:** 1♂, 1♀, Xiulin, Bilu, 7. VI. 1986 (C. K. Yu); 3♂, 1♀, Xiulin, Bilu, 2000m, 3. VII. 1989 (Y. F. Hsu) 1♀, Xiulin, Bilu, 2300m, 8. VII. 1991 (Y. F. Hsu & C. L. Li); 1♂, Xiulin, Bilu, ca 2200m, 20. VII. 2007 (Y. F. Hsu); 1♂, Xiulin, Cien, ca 2000m, 28. VI. 2006 (L. H. Wang); 2♂, 1♀, Xiulin, Guangbeibabiao, 2200m, 5. VII. 2007 (L. H. Wang); 1♂, Xiulin, Kuailin, 2100m, 4. VII. 2007 (L. H. Wang). **TAIDONG [= TAITUNG] Co.:** 1♂, Yanping, Yanping Forest Trail, 30km, ca 1750m, 18. VI. 2000 (C. L. Li).

**Description.** Adult – Forewing length 10–13 mm. sexual dimorphism weakly present. Male (PLATE 8, Fig. 64): Head hairy, brown mixed with yellow. Antennae brown dorsally, brown banded with creamy yellow ventrally; apiculus hooked. Proboscis dark brown. Labial palpus porrect, hairy, 1st and 2nd segments forming raised tuft, 3rd segment small, brown mixed with yellow dorsally, yellow ventrally. Thorax and abdomen brown mixed with scattered yellow scalings; legs brown mixed with yellow. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides ground color brown, with a discal band on forewing, consisted of faint, yellow dots. Wing undersides ground color brown overlaid with scattered yellow scalings; markings similar to those on uppersides, usually more prominent. Fringe brown. Female (PLATE 8, Fig. 65): Body and wing patterns similar to those of male, but forewing termen rounded; markings on forewing upperside usually more prominent.

Male genitalia (PLATE 26, Fig. 181) – Tegumen slightly tapering caudally, leading to spear-like uncus with two small lateral processes on each side. Gnathos bearing minute spines. Saccus digitate. Valva lobe-like; costa and sacculus elongate; ampulla as a flatten piece with round distal end; harpe produced into a broad piece with rounded posterior margin, bearing spiny fin-like projection dorsally. Phallus with phallobase longer than aedeagus.

Female genitalia (PLATE 44, Fig. 251) – Corpus bursae oval with appendix bursae. Ductus bursae membranous, thick and short. Sterigma with deep, medial, posterior invagination; lamella antevaginalis forming a pair of lateral folds. Anal papillae large, rectangle, bearing long setae. Posterior apophyses elongate, slender, nearly straight.

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

**Distribution in Taiwan.** Montane areas in central and southern Taiwan (Hsu, 2013).

**Larval Host plant(s).** Not recorded.

**Biology.** This species is known to be univoltine in occurrence. Adults are on the wing in summer (Hsu, 2013).

**形態特徵：**成蝶前翅長 10-13 mm。雌雄二型性不顯著。雄蝶 (圖 64)：頭被毛，褐色雜黃色。觸角背面褐色，腹面褐色，有黃環；尖頂呈鉤狀。口器黑褐色。下唇鬚具毛，前伸，第 1 及第 2 節形成隆起毛叢，第 3 節細小，背面褐色雜黃色，腹面黃色。胸部與腹部褐色散布黃色鱗。足褐色雜黃色。前翅呈三角形，外緣略突出。後翅扇形。翅背面底色褐色，前翅有黃色模糊小斑點組成中央斑列。翅腹面底色褐色覆黃色鱗，斑紋與翅背面相似，但較鮮明。緣毛褐色。雌蝶 (圖 65)：形態特徵與雄蝶相似，但前翅外緣較圓、前翅背面斑紋較為鮮明。

雄交尾器 (圖 181)：背兜向後端略窄，鉤突矛狀，兩側各具兩個小突起。顎形突有小刺。囊突指狀。抱器葉狀；抱器背及抱器腹頗長；抱器內突扁片，末端圓鈍；抱握狹寬、片狀，後緣圓，背側具有刺鰭狀突起。陽莖基長度較陽莖器長。

雌交尾器 (圖 251)：交尾囊卵圓形，具附囊。交尾囊管膜質，厚而短。交尾孔後板中間具深凹陷；交尾孔前板兩側具褶。肛突大型、矩形。具長剛毛。後內骨突細長，頗直。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**臺灣中、南部山區。

**寄主植物：**無正式記錄。

**生物學：**本種為一年一世代之物種，成蝶於夏季出沒。

## Genus *ONRYZA* Watson, 1893

**Type species:** *Halpe meiktila* de Niceville, 1891

Diagnostic characters include the followings: 1) wings brown, with yellow spots; 2) a double, conjoined spot at distal end of discoidal cells, with posterior one elongate; 3) male with sexual brand present on forewing upperside and recumbent hair tuft on hindwing upperside in some species (Evans, 1949; Zhu *et al.*, 2017).

5 species are known, distributed in the northern part of the Oriental regions (Zhu *et al.*, 2017).

One species occur in Taiwan.

## 點弄蝶屬

形態特徵如下：1) 翅褐色，綴黃色斑點；2) 中室末端有兩融合斑點，後側斑較長；3) 部分種類雄蝶前翅背面具性標，後翅背面有平貼毛束 (Evans, 1949; Zhu *et al.*, 2017)。

本屬已知 5 種，分布於東洋區北部 (Zhu *et al.*, 2017)。

臺灣有 1 種。

***Onryza maga* (Leech, 1890)** (黃點弄蝶 / 竹內弄蝶 / 謳弄蝶)

*Pamphila maga* Leech, 1890: Entomologist 23: 48. (Type locality: Ichang; Ningpo)

***Ssp. takeuchii* Matsumura, 1929**

**PLATE 9, Figs. 66-67; PLATE 27, Fig. 182; PLATE 45, Fig. 252**

*Ampittia takeuchii* Matsumura, 1929: Insecta Matsumurana 3(2/3): 107. (Type locality: Formosa, Arisan)

### Specimens examined:

**XINZHU [= HSINCHU] Co.:** 1♂, Guanwu, 2/3. VII. 1996 (S. C. Chen). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 2♂, Heping, Dasyueshan Sacred Tree, 2500m, 1. VII. 1992 (C. L. Li). **NANTOU Co.:** 2♀, Ren' ai, Tianchi, 2700m, 3. VII. 2007 (L. H. Wang); 1♂, 1♀, Renai, Songchuangang, ca 2500m, 29. VI. 2006 (L. H. Wang); 1♀, Wuling, 30. VI. 1989 (Y. F. Hsu). **YILAN Co.:** 1♀, Nanao, Tongshan, 1800m, 10. VI. 1999 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 2♀, Guangbeibabiao, 2200m, 5. VII. 2007 (L. H. Wang); 1♀, Bilu, 3. VII. 1989 (Y. F. Hsu); 1♂, Cien, ca 2000m, 28. VI. 2006 (L. H. Wang).

**Description.** Adult – Forewing length 12–14 mm. Sexual dimorphism weakly present. Male (PLATE 9, Fig. 66): Head hairy, brown mixed with orange. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments prominent, 3rd segment small,

hairy, brown dorsally, yellow ventrally. Thorax brown dorsally, creamy yellow ventrally; legs orange. Abdomen brown dorsally, scattered with some orange scalings, orange ventrally. Forewing triangular, apex acute, termen slightly convex. Hindwing fan-like. Wing uppersides ground color brown, with prominent yellow markings. On forewing, a dash-like yellow spot at distal end of discoidal cell. Discal marking consisted of three small spots in cell  $R_{3-5}$  in line, and two spots in cell  $M_3$  and  $CuA_1$ . On hindwing, yellow spot present in cell  $M_3$  and  $CuA_1$ . Wing undersides brown with extensive orange scalings, except an area along dorsum of forewing. Fringe brown mixed with creamy yellow or white on forewing, creamy yellow or white on hindwing. Female (PLATE 9, Fig. 67): Body and wing patterns similar to those of male, yellow spot in discoidal cell short, apex of forewing not acute.

Male genitalia (PLATE 27, Fig. 182) – Tegumen broad, with uncus extending to a pair of horn-like projections. Gnathos as a pair of flap-like structure, bearing prominent spines caudad. Saccus very short. Valva elongate; costa elongate, heavily sclerotized, bearing a prominent tooth proximally; sacculus thick, heavily sclerotized; ampulla as a square, spiny lobe; harpe produced into erected, spiny fin. Phallus straight, with phallobase shorter than aedeagus. Juxta as transverse band with V-shaped opening.

Female genitalia (PLATE 45, Fig. 252) – Corpus bursae oval. Ductus bursae membranous, thick, sclerotized by ostium bursae. Sterigma as broad, weakly sclerotized dome, but heavily sclerotized into funnel-like structure around ostium bursae. Anal papillae large, ovate, bearing long setae. Posterior apophyses elongate, slender, slightly curved.

**Global distribution.** Central, South, East China, and Taiwan (Zhu *et al.*, 2017).

**Distribution in Taiwan.** Higher elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Not yet recorded.

**Biology.** This species is known to be univoltine in occurrence (Hsu, 2013).

**形態特徵：**成蝶前翅長 12-14 mm。雌雄二型性不顯著。雄蝶 (圖 66)：頭被毛，橙黃色混褐色。觸角背面褐色，腹面褐色，有橙黃色環；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節明顯；第 3 節細小，被毛，背面褐色，腹面黃色。胸部背面褐色，腹面黃白色。足橙黃。腹部背面褐色，其上散布橙黃鱗，腹面橙黃色。前翅呈三角形，翅頂尖，外緣略突出。後翅呈扇形。翅背面底色褐色，有鮮明黃色斑紋。前翅中室末端有一黃色斑點。 $R_3$  至  $R_5$  室各有一小點排成一直線， $M_3$  室及  $CuA_1$  室各有一斑點，共同組成中央斑列。後翅  $M_3$  及  $CuA_1$  室有黃色斑點。翅腹面褐色，除前翅後緣外密布橙黃色鱗。前翅緣毛褐色，雜橙黃或白色，後翅緣毛橙黃色或白色。雌蝶 (圖 67)：形態特徵與雄蝶相似，但中室斑紋較短，前翅翅頂較鈍。

**雄交尾器 (圖 182)：**背兜寬闊，鉤突延伸成一對角狀突起。顎形突為一對瓣狀構造，末端具棘。囊突甚短。抱器修長；抱器背長、高度骨化，近基部具一明顯齒突；抱器內突粗、高度骨化；抱器內突矩形，具刺棘；抱握鈹延伸成直立突起，鰭狀、有刺。陽莖直，陽莖基長度較陽莖器短。陽基軛片橫帶狀，有 V 形開口。

**雌交尾器 (圖 252)：**交尾囊卵圓形。交尾囊管膜質、粗大，於交尾孔處骨化。交尾孔板寬闊、輕度骨化、圓頂狀，於交尾孔周圍形成高度骨化漏斗狀構造。肛突大型、卵形，具毛。後內骨突細長，略彎曲。

**世界分布：**華中、華南及華東、臺灣 (Zhu *et al.*, 2016)。

**臺灣分布：**本島高海拔山區。

**寄主植物：**未有正式記錄。

**生物學：**本種是一年一世代物種。

## Genus *PRAETHORESSA* Huang, Chiba & Fan, 2019

**Type species:** *Pamphila varia* Murray, 1875

Diagnostic characters include the followings: 1) antennae slightly longer than 1/2 forewing length; 2) wing underside with submarginal series of yellow spots separated by black veins; 3) hindwing underside usually with three yellowish white or yellow spots in

spaces Rs, M<sub>3</sub> and CuA<sub>1</sub>; 4) uncus flat and inwardly hollow (Huang *et al.*, 2019).

Two species are known (Huang *et al.*, 2019). One species occurs in Taiwan.

The sole representative species in Taiwan has long been regarded as a member of *Thoressa* Swinhoe, 1913, but Huang *et al.* (2019) demonstrates that the genus *Thoressa* under previous usage forms a polyphyletic assemblage based on molecular evidence.

## 脈弄蝶屬

形態特徵如下：1) 觸角長度略長於前翅二分之一；2) 翅腹面亞外緣有黃色斑點為黑色脈截斷；3) 後翅腹面 Rs、M<sub>3</sub> 及 CuA<sub>1</sub> 室各有一黃白色或白色斑點；4) 鉤突扁平、內凹 (Huang *et al.*, 2019)。

本屬已知 2 種 (Huang *et al.*, 2019)，臺灣有 1 種。

臺灣部分之臺灣脈弄蝶長久以來被歸類於 *Thoressa* 屬 (可稱為陀弄蝶屬) 中，但 Huang *et al.* (2019) 依分子證據認為 *Thoressa* 屬在先前處理下為一複系群。

***Praethoressa horishana* (Matsumura, 1910) (臺灣脈弄蝶 / 黃條褐弄蝶 / 黃條陀弄蝶)**

**PLATE 9, Figs. 68-69; PLATE 27, Fig. 183; PLATE 45, Fig. 253**

*Halpe horishana* Matsumura, 1910: Entomologische Zeitschrift 23(41): 181. (Type locality: Formosa (Horisha))

*Halpe sumbacula ara* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (4): 47. (Type locality: Formosa, Polisha, Chip-Chip)

*Halpe sumbacula horishama* Evans, 1932: The Identification of Indian Butterflies, second edition revised: 391. (misspelling)

### Specimens examined:

**YILAN Co.:** 1♀, Nanao, Tongshan, 1800m, 10. VI. 1999 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.:** 1♂, Guanwu, 2/3. VII. 1996 (S. C. Chen). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 2♂, Heping, Dasyueshan Sacred Tree, 2500m, 1. VII. 1992 (C. L. Li). **NANTOU Co.:** 2♀, Renai, Tianchi, 2700m, 3. VII. 2007 (L. H. Wang); 1♂, 1♀, Renai, Songchuangang, ca 2500m, 29. VI. 2006 (L. H. Wang); 1♀, Wuling, 30. VI. 1989 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 2♀, Guangbeibabiao,

2200m, 5. VII. 2007 (L. H. Wang); 1♀, Bilu, 3. VII. 1989 (Y. F. Hsu); 1♂, Cien, ca 2000m, 28. VI. 2006 (L. H. Wang).

**Description.** Adult – Forewing length 16–19 mm. Sexual dimorphism weakly present. Male (PLATE 9, Fig. 68): Head hairy, brown mixed with creamy yellow scalings. Antennae brown, with a patch of creamy yellow present at subapical portion ventrally; apiculus hooked, naked, Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow; 3rd segment small, rod-like, brown. Thorax brown dorsally, creamy yellow ventrally. Legs brown with creamy yellow hairs. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline and creamy white markings. On forewing, two discal spots in cell  $M_3$  and  $CuA_1$ . Two spots at distal end of discoidal cell; 3 small dots present subapically in cell  $R_{3-5}$ , with  $R_5$  dot deviated distad,  $R_3$  dot minute. A prominent, metallic gray patch of sexual brand at midst of cell  $CuA_2$ , extending to dorsum. On hindwing, two discal creamy white spots present, in cell  $CuA_1$  and  $CuA_2$ . Wing undersides with ground color brown. Hyaline spots on forewing as on uppersides. Creamy yellow markings prominent, forming a narrow costal stripe, a series of apical spots on forewing; a series of discal and a series of submarginal spots, and a few basal stripes on hindwing. Fringe creamy yellow checkered with brown. Female (PLATE 9, Fig. 69): Body and wing patterns similar to those of male, but wings broader, sexual brand replaced by a creamy yellow spot in cell  $CuA_2$  of forewing upperside.

Male genitalia (PLATE 27, Fig. 183) – Tegumen narrowed caudad, with a pair of prominent arms with caudal end blade-like; uncus as prominent flattened sclerite; caudal end blunt with medial, narrow invagination. Gnathos broad, with sclerotized band connecting base of arms on tegumen. Saccus short. Valva elongate; sacculus large, thick; costa+ampulla narrow, with posterial end blunt, setose; harpe up-curved, produced into a proximal spine and a prominent, barbed processes. Phallus with phallobase small, shorter than robust aedeagus; aedeagus with caudal end with dorsal opening and ventral keel. Juxta as a sclerotized ribbon.

Female genitalia (PLATE 45, Fig. 253) – Corpus bursae as elongate pouch, with no distinction with membranous, slender ductus bursae. Sterigma elaborate; antevaginalis

as heavily sclerotized shield with a pair of barbed, digitate, cephalic processes, posterior end blunt; postvaginalis as a transverse, medial sclerite, serrate posteriorly. Anal papillae elongate, setose. Anterior apophyses minute, represented as small bumps. Posterior apophyses very long, straight.

**Global distribution.** Endemic to Taiwan (Shirozu, 1960; Hsu, 2013).

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

**Larval Host plant(s).** Poaceae: *Miscanthus sinensis* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** This species was long a member of the genus *Thoressa* (e. g. Evans, 1949; Shirôzu, 1960; Hsu, 2013). Huang *et al.* (2019) established a genus *Praethoressa* for *varia* Murray, 1875 (Type locality: Yokohama [Japan]) and *horishana*. Moreover, Tsukiyama *et al.* (1997) considered *horishana* as a race of *Thoressa varia* (Murray, 1875).

**形態特徵：**成蝶前翅長 16-19 mm。雌雄二型性不顯著。雄蝶 (圖 68)：頭被毛，褐色雜黃色鱗。觸角褐色，腹面近尖頂處有黃色鱗；尖頂裸露，呈鉤狀。口器褐色。下唇鬚前伸，第 1 及第 2 節披毛，乳黃色；第三節小，褐色呈鉤狀。胸部背面褐色，腹面黃色。足褐色，有黃毛。前翅呈三角形，外緣略突出。後翅扇形。翅背面底色褐色，綴有透明及乳白色斑紋，近翅基處覆有黃褐色毛。前翅  $M_3$  及  $CuA_1$  室各有一斑點，中室末端有兩斑點； $R_3$  至  $R_5$  室近翅頂處各具一小斑點，於  $R_3$  室者微小， $R_5$  室者外偏。 $CuA_2$  室中央有一向後緣延伸、帶金屬光澤之灰色性標。後翅  $CuA_1$  及  $CuA_2$  室各有一白色斑點。翅腹面底色褐色，前翅透明斑與翅背面相同；黃斑較鮮明：於前緣處形成一窄帶；前翅翅頂有一列斑點；後翅中央及亞外緣各有一列斑點，翅基具少數條紋。緣毛黃白色嵌褐色。雌蝶 (圖 69)：形態特徵與雄蝶相似，惟翅幅較寬，前翅背面性標由  $CuA_2$  室黃白斑點取代。

雄交尾器 (圖 183)：背兜後部窄，具一對末端刃狀臂形突起；鉤突為扁平骨片，末端鈍，中央有窄凹陷。顎形突寬闊，形成骨化帶與背兜之臂突基部相連。囊突短。

抱器甚長；抱器腹大型、厚；抱器背與抱器內突結合，頗窄，末端鈍，具毛，基部具帶刺之長指狀突；抱握缺上彎，基部有一刺而端部葉狀、有棘突。陽莖基小型，長度較陽莖器短，前端棒狀；陽莖器粗壯，末端開口於背側，腹側龍骨狀。陽基軛片骨化、帶狀。

雌交尾器 (圖 253)：交尾囊長袋狀、膜質。交尾囊管細長。交尾孔板複雜；前板高度骨化、盾狀，前側具一對帶刺指狀突起，末端鈍；後板中央寬闊、骨化，後緣鋸齒狀。肛突修長，具毛。前內骨突微小，疣狀。後內骨突甚長、筆直。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島低至中海拔地區。

**寄主植物：**禾本科之芒。

**生物學：**本種是一年多世代物種。

**註記：**本種以往被認為是 *Thoressa* 屬 (可稱為陀弄蝶屬) 的成員。Huang *et al.* (2019) 將分布於日本等地之日本脈弄蝶 *varia* Murray, 1875 及 *horishana* 從 *Thoressa* 屬分離，建立 *Praethoressa* 屬。此外，Tsukiyama *et al.* (1997) 曾認為臺灣脈弄蝶是日本脈弄蝶之亞種。

## Genus *HALPE* Moore, 1878

**Type species:** *Halpe moorei* Watson, 1883

Diagnostic characters include the followings: 1) Wings brown, with two white or creamy white spots in cell M<sub>3</sub> and CuA<sub>1</sub> of forewing; 2) male with sexual brand present on forewing upperside in most species; 3) uncus with broad scalloped distal end; 4) gnathos absent or reduced (Evans, 1949).

Evans (1949) listed 25 species, distributed in the Oriental region. Since then, the number of species has doubled due to description of new taxa and division of Evans's subspecies into good species (e. g. Devyatkin, 2002; Huang, 1999, 2002, 2003; de Jong

& Treadaway, 1993a; Tsukiyama & Chiba, 1991).

One species occurs in Taiwan.

## 列弄蝶屬

形態特徵如下：1) 翅褐色，前翅  $M_3$  及  $CuA_1$  室各有一只白色或乳黃色斑；2) 多數種類雄蝶翅背面具有性標；3) 鉤突末端有明顯凹陷；4) 顎形突退化或消失 (Evans, 1949)。

Evans (1949) 列出 25 種，分布於東洋區，其後由於新分類群單元的描述及亞種的升級，目前列弄蝶屬的種類已為當時的兩倍之多。

臺灣有 1 種。

***Halpe gamma* Evans, 1937** (昏列弄蝶 / 黃斑小褐弄蝶 / 黃斑酣弄蝶)

**PLATE 9, Figs. 70-71; PLATE 27, Fig. 184; PLATE 45, Fig. 254**

*Halpe gamma* Evans, 1937: The Entomologist 18: 17. (Type locality: Formosa)

*Halpe nephele formosana* Tanikawa, 1940: Taikou 16: 47. (Type locality: “near Musha, Taiwan” [near Wushe, Nantou Co., Central Taiwan])

### Specimens examined:

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Wulai, 12. V. 1987 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, 19. VII. 1983 (Y. F. Hsu); 2♂, Fuxing, Ronghua/ Gaoyi, 26. V. 1986 (Y. F. Hsu); 1♂, Fuxing, Ronghua/ Sule, 13. V. 1987 (Y. F. Hsu); 1♂, Fuxing, Daman/Xuanyuan, 14. VI. 1987 (Y. F. Hsu); 1♂, Fuxing, Xuanyuan, 6. VIII. 1987 (Y. F. Hsu); 4♂, Fuxing, Sanmin, 400m, 8. IX. 2008 (Y. F. Hsu); 1♂, same locality, 24. IX. 2009 (Y. F. Hsu); 2♂, 1♀, Fuxing, Sanmin, 500m, 20. IX. 2011 (Y. F. Hsu); 1♀, Fuxing, Sileng, ca 1000m, 18. II. 2002, reared from *Sinobambusa kunishii*, emgd. 15. V. 2002, HSU 02B17 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.:** 1♂, Jianshi, Lidongshan, ca 1500m, 3. IX. 2005 (Y. F. Hsu); 1♂, 2♀, Guanxi, Shanglin orchard, 22. VIII. 2007 (C. C. Lu). **HUALIAN [= HUALIEN] Co.:** 1♂, Tongmen, Nenggao Trail, 1800m, 24. III. 2007, reared from *Yushania niitakayamensis*, emgd. 23. V. 2007, HSU 07D36.1 (L. H. Wang).

**Description.** Adult – Forewing length 15–19 mm. Sexual dimorphism weakly present. Male (PLATE 9, Fig. 70): Head hairy, brown mixed with creamy yellow scalings. Antennae brown dorsally, brown banded with creamy yellow scalings ventrally, a patch of creamy yellow present at subapical portion; apiculus hooked, naked, Proboscis brown. Labial palpus porrect, 1st and 2nd segments hairy, creamy yellow; 3rd segment minute, brown. Thorax brown dorsally, creamy yellow ventrally. Legs pale brown. Forewing triangular, termen convex. Hindwing fan-like. Wing uppersides bearing tawny hairs proximally; ground color brown, ornamented with hyaline markings. On forewing, two discal spots in cell  $M_3$  and  $CuA_1$ . Two spots at distal end of discoidal cell; 3 small dots present subapically in cell  $R_{3-5}$ , with  $R_5$  dot deviated distad,  $R_3$  dot minute, sometimes vestigial. A prominent, metallic gray patch of sexual brand at midst of cell  $CuA_2$ . On hindwing, a faint patch of creamy yellow scalings present in center. Wing undersides with ground color brown, overlaid by creamy yellow scalings. Hyaline spots on forewing as on uppersides. Creamy yellow markings prominent, forming a submarginal band along termen on forewing, a large patch on hindwing containing discal series of brown spots, arranged mostly in line, deviated proximally in cell  $Sc+R_1$  and  $R_s$ . Fringe creamy white checkered with brown. Female (PLATE 9, Fig. 71): Body and wing patterns similar to those of male, but wings broader, sexual brand replaced by a creamy yellow spot in cell  $CuA_2$  of forewing upperside.

Male genitalia (PLATE 27, Fig. 184) – Tegumen narrowed caudad, with a pair of prominent arms with caudal end blade-like; uncus as prominent flattened sclerite; caudal end blunt with medial, narrow invagination. Gnathos broad, with sclerotized band connecting base of arms on tegumen. Saccus short. Valva elongate; sacculus large, thick; costa+ampulla narrow, with posterior end blunt, setose; harpe up-curved, produced into a proximal spine and a prominent, barbed processes. Phallus with phallobase small, shorter than robust aedeagus; aedeagus with caudal end with dorsal opening and ventral keel. Juxta sclerotized ribbon.

Female genitalia (PLATE 45, Fig. 254) – Corpus bursae oval. Ductus bursae membranous, with a ventral sclerotized patch at midst. Sterigma elaborate; antevaginalis a pair of prominent sclerite, possessing two processes posteriorly, with outer ones straight spines, inner ones bent inwards, opposite to each other. Anal papillae elongate,

setose. Posterior apophyses elongate, slender, straight.

**Global distribution.** West to East China, Taiwan (Evans, 1949).

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

**Larval Host plant(s).** Poaceae: various kinds of bamboos, including *Sinobambusa kunishii*, *Yushania niitakayamensis*, etc.

**Biology.** Hsu (2013) suggests there may be two generations a year for this species.

**形態特徵：**成蝶前翅長 15-19 mm。雌雄二型性不甚顯著。雄蝶 (圖 70)：頭被毛，褐色雜黃白色鱗。觸角背面褐色，腹面褐色雜黃白色鱗，近尖頂處呈乳黃色，尖頂裸露、呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛，乳黃白色；第 3 節微小，褐色。胸部背面褐色，腹面黃白色。足淡褐色。前翅三角形，外緣微略突出。後翅扇形。翅背面底色褐色綴有透明斑點，近翅基處覆有黃褐色毛。前翅  $M_3$  室及  $CuA_1$  室各有一斑點。中室末端有兩斑點； $R_3$  至  $R_5$  室近翅頂處各有一小斑點，其中於  $R_5$  室小斑點外偏， $R_3$  室斑點微小，有時消退。 $CuA_2$  室中央有一鮮明、帶金屬光澤之灰色性標。後翅中央有一模糊的乳黃白色斑。翅背面底色褐色，覆黃色鱗。前翅腹面之透明斑與背面相同。前翅亞外緣黃色紋鮮明，形成一帶紋。後翅中央有一列褐色斑點，於  $Sc+R_1$  及  $Rs$  室內偏。緣毛黃白色嵌褐色。雌蝶 (圖 71)：形態特徵與雄蝶相似，但翅幅較寬，前翅背面之性標由  $CuA_2$  室內的黃白斑取代。

雄交尾器 (圖 184)：背兜末端漸窄，具一對末端刃形臂狀突起；鉤突為扁平狀骨片，尾端圓鈍，中尖有窄凹陷。顎形突寬大，以骨化相連背兜臂狀突起基部。囊突短。抱器頗長；抱器腹大而厚；抱器背窄，末端鈍，具毛；抱器內突彎曲、匕首狀，邊緣鋸齒狀；抱握鈎上彎，基部背側具一齒突，末端蒺藜狀。陽莖基小型，陽莖基長度較陽莖器短；陽莖器粗壯，末端開口於背側，腹側龍骨狀。陽基軛片骨化、帶狀。

雌交尾器 (圖 254)：交尾囊橢圓形。交尾囊管膜質，腹側中間具一片骨化區。交尾孔板複雜；前板為成對稱骨板，後側生腕狀突起，外突起直、錐狀，內突起向內彎曲，左右相對。肛突長，具毛。後內骨突細長、筆直。

**世界分布：**華西至華東，臺灣。

**臺灣分布：**本島低至中海拔山區。

**寄主植物：**禾本科內的竹類植物，如臺灣矢竹、玉山箭竹等。

**生物學：**本種可能一年兩代。

## **Genus *ISOTEINON* C. & R. Felder, 1862**

**Type species:** *Isoteinon lamprospilus* C. & R. Felder, 1862

Diagnostic characters include the followings: 1) wings brown, with hyaline white spots on forewing; 2) hindwing underside yellowish brown with prominent white spots; 3) fringe checkered (Evans, 1949).

Only one species is included, distributed in Oriental and eastern Palearctic regions.

The sole representative species occurs in Taiwan.

## **白斑弄蝶屬**

形態特徵如下：1) 翅褐色，前翅有白色透明斑點；2) 後翅腹面黃褐色，綴鮮明白斑；3) 緣毛顏色黑白相間 (Evans, 1949)。

本屬僅 1 種，分布於東洋區及古北區東部，臺灣亦有分布。

***Isoteinon lamprospilus* C. & R. Felder, 1862 ( 白斑弄蝶 / 狹翅弄蝶 / 旖弄蝶 )**

*Isoteinon lamprospilus* C. & R. Felder, 1862: Wiener entomologische monatschrift 6 (1): 30. (Type locality: Ning-Po)

***Ssp. formosanus* Fruhstorfer, 1911**

**PLATE 9, Figs. 72-73; PLATE 27, Fig. 185; PLATE 45, Fig. 255**

*Isoteinon lamprospilus formosanus* Fruhstorfer, 1910: Deutsche entomologische Zeitschrift Iris 24 (5): 98. (Type locality: Formosa, Polisha, Chip-Chip, Koshun)

### Specimens examined:

**TAIPEI CITY:** 3♂, Wenshan, Muzha, Taipei City Zoo, 25. IV. 2010 (Y. F. Hsu).  
**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Xindian, Sikanshui, 24. III. 2008, reared from *Miscanthus* sp., emgd. 21. IV. 2008, HSU 08C20 (L. H. Wang); 1♂, Wulai, Jiajiuliao, 150m, 10. IX. 2008 (Y. F. Hsu); 1♂, Tamsui, Pingding, ca250m, 1. VIII. 2011 (H. C. Huang). **NANTOU Co.:** 1♂, Lugu, Fonghuanggu Bird and Ecology Park, 27. VIII. 1996, reared from *M. floridulus*, emgd. 13. IX. 1996, HSU 96H20 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Heping, Shaolaishan, 800m, 12. VIII. 2011 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.:** 1♂, Fanlu, Chukou, 250m, 29. VIII. 2008 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]:** 1♂, Baihe, Zhentoushan, 2. VII. 2003 (Y. F. Hsu); 1♂, same locality, 27. VIII. 2004 (Y. F. Hsu); 1♂, same locality, 24. IX. 2010 (Y. F. Hsu).

**Description.** Adult – Forewing length 14–21 mm. Sexual dimorphism not prominent. Male (PLATE 9, Fig. 72): Head hairy, brown. Antennae brown banded with orange; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming raised tuft, creamy white mixed by dark brown; 3rd segment small, brown. Thorax brown dorsally, creamy white ventrally; legs creamy yellow to creamy white. Abdomen brown banded with white dorsally, white ventrally. Forewing broad, roughly, termen slightly convex. Hindwing fan-like. Wing uppersides bearing creamy hairs proximally on hindwing, with ground color brown, ornamented with hyaline and white markings. On forewing, two prominent hyaline spots in cell M<sub>3</sub> and CuA<sub>1</sub>; one hyaline spots at distal end of discoidal cell, three small hyaline spots in line in cell R<sub>3-5</sub> subapically. A silvery white spot at midst of cell CuA<sub>1</sub>. On hindwing, uniformly brown with no markings. Wing undersides with patterns similar to those of upperside, but much area overlaid by yellow scalings; spots surrounded by dark brown margins. Fringe creamy white checkered with brown. Female (PLATE 9, Fig. 73): Body and wing patterns similar to those of male, but wings longer, markings more prominent.

Male genitalia (PLATE 27, Fig. 185) – Tegumen swollen dorsad, tapering caudally; posterior portion membranous, bearing a pair of heavily sclerotized, darken associated

structures near caudal end; uncus bifid with a pair of processes with distal end blunt. Gnathos divided, broad. Saccus short, spoon-like. Valva elongate; ampulla with distal end rounded; harpe produced at distal end into a heavily sclerotized short process with margin serrate. Phallus elongate, pointed at caudal end. Juxta as a small round disc with shallow, dorsal indentation.

Female genitalia (PLATE 45, Fig. 255) – Corpus bursae oval. Ductus bursae membranous, short, thick. Ostium bursae surrounded by sclerotized sterigma. Sterigma elaborated, forming a dome; antevaginalis forming lateral pouches; postvaginalis as a sheet with posterior portion further sclerotized into a round disc. Anal papillae large, bag-like, setose. Anterior apophyses vestigial. Posterior apophyses slender, short, needle-like.

**Global distribution.** Japan, Korea, North Vietnam, East to West China, Taiwan (Tsukiyama *et al.*, 1997).

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

**Larval Host plant(s).** Poaceae: *Miscanthus sinensis*, *M. floridulus*, *Saccharum officinarum* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** Populations from Vietnam have been considered belonging to ssp. *formosana* for sharing similar wing pattern (Tsukiyama *et al.*, 1997).

**形態特徵：**成蝶前翅長 14-21 mm。雌雄二型性不顯著。雄蟲 (圖 72)：頭被毛，褐色。觸角褐色而有橙色環；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第一及第二節被毛，形成一上舉毛叢，白色雜黑褐色；第三節微小、褐色。胸部背面褐色，腹面白色。足黃白至白色。腹部背面褐色，有白環，腹面白色。前翅寬，外緣略突出。後翅扇形。翅背面底色褐色，綴有透明及白色斑點。前翅  $M_3$  室、 $CuA_1$  室及中室末

端各有一鮮明透明白斑，亞翅頂處  $R_3$  至  $R_5$  室各有一透明小斑點排成一列。 $CuA_1$  室中央有一銀白色斑點。後翅無斑，呈均勻褐色。翅腹面斑紋與翅背面相似，但大部分覆黃色鱗；斑點周圍鑲黑邊。緣毛白色嵌褐色。雌蟲 (圖 73)：形態特徵與雄蝶相似，但是翅較長、斑點較鮮明。

雄交尾器 (圖 185)：背兜背側隆起，向後端漸細；後部膜質，末端有一對暗色而高度骨化之結構。鉤突二分，末端圓鈍。顎形突寬闊，末端分離。囊突短、勺狀。抱器修長；抱器內突末端圓弧形；抱握鉗末端突出、高度強骨化，邊緣鋸齒狀。陽莖長、末端尖。陽基軛片小盤狀，背側有淺凹陷。

雌交尾器 (圖 255)：交尾囊橢圓形。交尾囊管膜質、粗短。交尾孔板複雜；前板兩側袋狀；後板片狀，後側形成骨化小圓盤。交尾孔周圍近交尾孔板處骨化。肛突大型、袋狀，具毛。前內骨突退化。後內骨突細而短，針狀。

**世界分布：**日本、朝鮮半島、越南北部、華東至華西、臺灣。

**臺灣分布：**本島低至中海拔地區。

**寄主植物：**禾本科之芒、五節芒及紅甘蔗。

**生物學：**本種是一年多代物種。

**註記：**越南北部的族群因為與臺灣產本種翅紋相似，因而目前與臺灣族群同被歸屬於亞種 *ssp. formosana*。

## Genus *NOTOCRYPTA* de Nicéville, 1889

**Type species:** *Plesioneura curvifascia* C. & R. Felder, 1862

Diagnostic characters include the followings: 1) wings dark brown, with hyaline white band on forewing; 2) discoidal cell of hindwing approximately 1/2 of wing length; 3) antenna longer than 1/2 of forewing costa (Evans, 1949; Bascombe *et al.*, 1999).

13 species are known, distributed in Oriental, Australian, and eastern Palearctic regions

(Gallo & Bozano, 2017).

Two species occur in Taiwan.

## 袖弄蝶屬

形態特徵如下：1) 翅黑褐色，前翅具透明白帶；2) 後翅中室長度約翅長二分之一；3) 觸角長度超過前翅前緣二分之一 (Evans, 1949; Bascombe *et al.*, 1999)。

本屬已知 13 種，分布於東洋區、澳洲區及古北區東部 (Gallo & Bozano, 2017)。

臺灣有 2 種。

***Notocrypta curvifascia* (C. & R. Felder, 1862)** (袖弄蝶 / 黑弄蝶 / 曲紋袖弄蝶)

**PLATE 9, Figs. 74-75; PLATE 28, Fig. 186; PLATE 46, Fig. 256**

*Plesioneura curvifascia* C. & R. Felder, 1862: Wiener entomologische monatschrift 6 (1): 29. (Type locality: “Ning-po”)

*Notocrypta morishitai* Liu & Gu, 1994: in Chou, Monographia Rhopalocerum Sinensium 2: 773, 718, f. 85-86. (Type locality: Hainan)

*Notocrypta eitschbergeri* Huang, 2001: Neue Entomologische Nachrichten 51: 66, f. 1-2, pl. 1, f. 2. (Type locality: Longpo to Nidadan, Nujiang Valley, SE. Tibet)

### Specimens examined:

**TAIPEI CITY:** 1♀, Daan, Fuzhoushan, 30. IV. 2007, reared from *Alpinia* sp., emgd. 21. V. 2007, HSU 07D35 (Y. F. Hsu) 1♂, Wenshan, Gongguan Campsu, NTNU, 4. VII. 2005, reared from *Alpinia* sp., emgd. 24. VII. 2005 (J. R. Chen); 1♀, Zhongqiang, Park, 4. XII. 2000 (C. C. Lu). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, 2♀, Xindian, Sikanshui, 30. IV. 2006, reared from *A. zerumbet*, emgd. 10/12. VI. 2006, HSU 06D76 (L. H. Wang); 1♂, Wulai, 15. IV. 2005 (Y. F. Hsu); 1♂, same locality, 5. VI. 2005 (Y. F. Hsu); 1♂, same locality, 5. VI. 2005, reared from *A. japonica*, emgd. 10. VII. 2005, HSU 05F12 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 2♂, Fuxing, Daman/Xuanyuan, 23. IV. 1987 (Y. F. Hsu); 1♂, same locality, 23. VI. 1999 (Y. T. Lo). **MIAOLI Co.:** 1♂, Nanzhuang, Luchang, Fengmei Fall, 14. I. 2006, reared from *A. japonica*,

emgd. 16. II. 2006, HSU 06A14 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]**: 2♀, Dongshan, Kantoushan, 600/800m, 4. II. 2010 (Y. F. Hsu); 1♂, Wushantou, ca 80m, 24. X. 2005 (Y. F. Hsu). **KAHHSIUNG CITY [= KAHHSIUNG Co.]**: 1♂, Taoyuan, Xiaoguanshan Forest Trail, 13. XI. 2005, reared from *A. nr. japonica*, emgd. 10. II. 2006, HSU 05L27 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.**: 1♀, Donghe, Donghe Fram, 400m, 25. I. 2007, reared from *Alpinia* sp., emgd. 11. II. 2007, HSU 07A36 (Y. F. Hsu); 1♀, same locality, 25. I. 2007, reared from *A. uraiensis*, emgd. 5. II. 2007, HSU 07A15 (Y. F. Hsu).

**Description.** Adult – Forewing length 16–23 mm. Sexual dimorphism absent. Male (PLATE 9, Fig. 74): Head hairy, brown. Antennae brown with extensive gray scalings, prominent white scalings present subapically; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, brown dorsally, brown mixed with gray and white ventrally; 3rd segment minute, brown. Thorax and abdomen brown dorsally, grayish white ventrally; legs brown tinged with gray. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing brown hairs proximally on hindwing; ground color brown, ornamented with white markings on forewing; white spots present in cell CuA<sub>1</sub>, CuA<sub>2</sub>, and distal end of discoidal cell, conjoining into a tilt white band; small white dot present in cell M<sub>1</sub>, M<sub>2</sub> and M<sub>3</sub>, with M<sub>3</sub> dot deviated proximally; three small white spots in cell R<sub>3-5</sub> subapically, conjoined into a bar. Wing undersides with white markings similar to those of upperside; ground color variegated, forming pattern interwoven by brown, dark brown, purplish gray, and white scalings. Fringe dark brown. Female (PLATE 9, Fig. 75): Body and wing patterns similar to those of male, but forewing longer.

Male genitalia (PLATE 28, Fig. 186) – Tegumen broad; base of uncus broad, bearing a pair of bump-like warts with long setae; a pair of long arm present by warts, straight with distal end truncated. Gnathos divided, bearing minute spines. Saccus short, broad. Valva lobe-like; sacculus much thicker than costa; ampulla with distal end rounded; harpe broad, produced into two prominent erect, digitate teeth, with distal one larger, spiny and proximal one smaller, simple. Phallus with phallobase longer than aedeagus; distal end of aedeagus with dorsal opening. Juxta as broad, partially sclerotized piece, with V-shaped sclerite.

Female genitalia (PLATE 46, Fig. 256) – Corpus bursae as elongate pouch. Ductus bursae membranous, short. Sterigma forming a partially sclerotized dorm; area surrounding ostium bursae membranous; antevaginalis as transverse band associated with elongate, setose band; postvaginalis a setose, transverse sclerite with medial invagination posteriorly. Anal papillae rectangle, setose. Posterior apophyses moderately long, slender.

**Global distribution.** Nearly entire Oriental region, and Japan in the Palearctic Region (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland Taiwan to moderate elevations, including Guishan Island and Mazu Islands (Hsu, 2013).

**Larval Host plant(s).** Various kinds of plants in the family Zingiberaceae, including *Alpinia speciosa*, *A. formosana*, *A. japonica*, *Curcuma aromatica*, *C. domestica*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** This species may be confused with *N. feisthamelli* in Taiwan, but the discal white band on forewing underside extends beyond discoidal cell reaching costa in *N. feisthamelli*, not so in *N. curvifascia*.

**形態特徵：**成蝶前翅長 16-23 mm。無雌雄二型性。雄蝶 (圖 74)：頭被毛，褐色。觸角褐色，密布灰色鱗，近尖頂處有鮮明白色鱗；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，背面褐色，腹面褐色混灰色及白色；第 3 節極小，褐色。胸部及腹部背面褐色，腹面灰白色。足褐色帶灰色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。前翅背面底色褐色，綴白斑，近翅基處覆褐色毛；CuA<sub>1</sub>、CuA<sub>2</sub> 室及中室末端各有一白斑，連成一斜線。M<sub>1</sub>、M<sub>2</sub> 及 M<sub>3</sub> 室各有一白點，於 M<sub>3</sub> 室者內偏。R<sub>3</sub> 至 R<sub>5</sub> 室於翅頂附近各有一小白點，連成短紋。翅腹面斑紋與背面相似，底色斑駁，交雜褐色、深褐色、紫灰色及白色鱗。緣毛黑褐色。雌蝶 (圖 75)：形態特徵與雄蝶相似，但前翅翅形稍長。

雄交尾器 (圖 186)：背兜寬闊；鉤突基部寬，兩側有疣突；疣突旁生一臂狀直突起，

其末端截狀。顎形突左右分離，有細棘刺。囊突寬短。抱器葉狀；抱器腹較抱器背粗；抱器內突末端圓；抱握鈹寬闊，具兩只直立指狀齒突，尾端齒突大且具鋸齒，前端齒突小型。陽莖基長度較陽莖器長；陽莖器末端開口於背側。陽基軛片寬、部分骨化，有 V 形骨片。

雌交尾器 (圖 256)：交尾囊長袋狀。交尾囊管膜質、短。交尾孔板部分骨化，圓頂狀。交尾孔周圍膜質；交尾孔前板為一寬壁，附生長骨化帶；交尾孔後板為橫骨片，具毛，後端中央內凹。肛突矩形，具毛。後內骨突中庸長，纖細。

**世界分布：**分布於近乎整個東洋區，日本及古北區亦有分布。

**臺灣分布：**分佈於低至中海拔地區，亦見於龜山島與馬祖地區。

**寄主植物：**薑科之月桃、臺灣月桃、山薑、鬱金、郁金等。

**生物學：**本種是一年多世代物種。

**註記：**本種於臺灣地區易與連紋袖弄蝶混淆，但連紋袖弄蝶前翅腹面的中央白帶延伸至前緣，袖弄蝶則否。

***Notocrypta feisthamelii* (Boisduval, 1832) (連紋袖弄蝶 / 寬紋袖弄蝶)**

*Thymeles Feisthamelii* Boisduval, 1832: in d'Urville, Voyage de la découverte l'Astrolabe (Faune ent. Pacif.) 1: 159, pl. 2, f. 7. (Type locality: “Amboine et Bourou”)

*Celaenorrhinus unipuncta* Rothschild, 1915: Novitates Zoologicae 22 (1): 142. (Type locality: Kankakee, North Ceram, 600m)

*Notochryta feisthamelii* Hsu & Lee (not Fruhstorfer), 1989: Journal of Taiwan Museum 42(1): 9-13. (misspelling)

**Ssp. *arisana* Sonan, 1930**

**PLATE 10, Figs. 76-77; PLATE 28, Fig. 187; PLATE 46, Fig. 257**

*Notocrypta arisana* Sonan, 1930: Zephyrus 2: 175. (Type locality: Arisan)

**Ssp. *alinkara* Fruhstorfer, 1911**

**PLATE 10, Figs. 78-79; PLATE 28, Fig. 188; PLATE 46, Fig. 258**

*Notocrypta feisthameli alinkara* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (2): 22. (Type locality: “Mindanao, Philippinen”)

**Specimens examined:**

*Ssp. arisana*: **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]**: 1♂, Sanxia, Beichatianshan, 28/29. V. 1992 (Y. F. Hsu & M. Y. Lin); 1♂, same locality, 22. V. 1993 (Y. F. Hsu & M. Y. Lin); 1♂, same locality, 29. IV. 2000 (Y. F. Hsu), 1♂, 2♀, Sanxia, Beichatianshan, 1700/1727m, 13/5. V/ VI. 1996, reared from *Alpinia japonica*, emgd. 25. V. 1996, HSU 96E4 (Y. F. Hsu); 1♂, Shuangxi, Yingzidingshan, 900m, 8. VIII. 2001 (Y. F. Hsu). **TAOYUAN CITY [= TAUUYUAN Co.]**: 1♂, Fuxing, Lalashan, 4. VI. 1988 (Y. F. Hsu); 1♂, Fuxing, Daman/Xuanyuan, 16. VI. 1987 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]**: 1♂, Tengzhi, Shishan, 1550/1700m, 18. VI. 1989 (Y. F. Hsu).

*Ssp. alinkara*: **TAIDONG [= TAITUNG] Co.**: 2♂, Lanyu, 22/26. VII. 1988 (C. F. Lee); 1♂, same locality, 24. VIII. 1999 (C. Y. Hung); 7♂, 1♀, same locality, 18/20. III. 2006, reared from *Alpinia flabellata*, emgd. 31/15. III/IV. 2006, HSU 06C19 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 19. II. 2009, reared from *A. flabellata*, emgd. 5. III. 2009 (C. H. Lin jr); 1♂, Lanyu, Lanyu Waether Station, 22. I. 1999 (C. F. Lee); 2♂, Lanyu, Sidaogou, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 3/5. III. 2007 (Y. F. Hsu & H. C. Huang); 3♂, 1♀, same locality, 3/5. III. 2007, reared from *A. flabellata*, emgd. 2/15. IV. 2007, HSU 07C5 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 10. IV. 2007 (Y. F. Hsu); 1♂, Lanyu, Qiwei, 11. III. 2011 (Y. F. Hsu).

**Description.** Adult – Forewing length 17–21 mm. Sexual dimorphism absent. Male (PLATE 10, Figs. 76, 78): Head hairy, brown. Antennae brown with extensive gray scalings, prominent white scalings present subapically; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, brown dorsally, brown mixed with gray and white ventrally; 3rd segment minute, brown. Thorax and abdomen brown dorsally, grayish white ventrally; legs brown tinged with gray. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing brown hairs proximally on hindwing; ground color brown, ornamented with white markings on forewing; white spots present in cell CuA<sub>1</sub>, CuA<sub>2</sub>, and distal end of discoidal cell, conjoining into a tilt white band; small white dot occasionally present in cell M<sub>1</sub>, M<sub>2</sub> and M<sub>3</sub>, with M<sub>3</sub> dot deviated proximally; three small white spots occasionally in cell R<sub>3-5</sub> subapically, conjoined into a bar. Wing undersides with white markings similar to those of upperside, but discal white band of forewing extended anteriorly beyond discoidal cell; ground color brown, but partially covered by

purplish gray scalings. Fringe dark brown. Female (PLATE 10, Figs. 77, 79): Body and wing patterns similar to those of male, but forewing longer.

Ssp. *arisana* (PLATE 10, Figs. 76-77) from main island of Taiwan and ssp. *alinkara* (PLATE 10, Figs. 78-79) from Lanyu may be distinguished by the following features: 1) The band on forewing is white in ssp. *alinkara*, but ivory in ssp. *arisana*. 2) White marking in cell CuA<sub>2</sub> of forewing is less than half of CuA<sub>1</sub> marking in size in ssp. *arisana*, but significantly larger than half of CuA<sub>1</sub> marking in *alinkara*.

Male genitalia (PLATE 28, Figs. 187-188) – Tegumen broad; base of uncus broad, bearing a pair of bump-like warts with long setae; a pair of long arm present by warts, straight with distal end truncated. Gnathos divided, bearing minute spines. Saccus short, broad. Valva lobe-like; sacculus much thicker than costa; ampulla with distal end rounded; harpe broad, produced into two prominent erect processes, with distal one larger, spiny and proximal one smaller, simple. Phallus with phallobase longer than aedeagus; distal end of aedeagus with dorsal opening. Juxta as broad, partially sclerotized piece, with U-shaped sclerite.

Female genitalia (PLATE 46, Figs. 257-258) – Corpus bursae as elongate pouch. Ductus bursae membranous, short. Sterigma forming a partially sclerotized dorm; area surrounding ostium bursae membranous; antevaginalis as transverse band associated with prominent, setose, sleeve-like structure; postvaginalis a setose, transverse sclerite with prominent, medial invagination posteriorly. Anal papillae rectangle, setose. Posterior apophyses moderately long, slender.

**Variation.** Individuals of ssp. *arisana* usually have forewing markings other than discal band reduced to complete absence, but occasionally fully marked individuals may appear.

**Global distribution.** Himalayas, Indochina, Java, Borneo, Lesser Sunda Islands, Philippines, Sulawesi, Moluccas, West China, and Taiwan (Morishita, 1978; Hsu & Lee, 1989; Gallo & Bozano, 2017).

**Distribution in Taiwan.** Ssp. *arisana* is a montane race restricted to main island of Taiwan, whereas ssp. *alinkara* is a tropical race found only on Lanyu Island (Hsu, 2013).

**Larval Host plant(s).** The larval hostplant for ssp. *arisana* have been found to be *Alpinia japonica*, whereas that for ssp. *alinkara* is *A. flabellata* (both Zingiberaceae) (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999, 2013).

**Remarks.** Ssp. *arisana* was confused with *N. curvifascia*, regarded merely a form of the species by Shirôzu (1960). Miorishita (1978) pointed out that ssp. *arisana* ought to be treated as a subspecies of *Notocrypta feisthamelii* (Boisduval, 1832). Population inhabiting Lanyu was also considered as *N. curvifascia*, but Hsu & Lee (1989) pointed out it also belong to *N. feisthamelii*, and assigned it to ssp. *alinkara* Fruhstorfer, 1911.

**形態特徵：**成蝶前翅長 17-21 mm。無雌雄二型性。雄蝶 (圖 76、78)：頭被毛，褐色。觸角褐色密布灰色鱗，近尖頂處有鮮明白色鱗；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第一及第二節被毛，背面褐色，腹面褐色混灰色及白色；第三節微小，褐色。胸部及腹部背面褐色，腹面灰白色。足褐色帶灰色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。前翅背面底色褐色，綴白斑，近翅基處覆褐色毛；CuA<sub>1</sub>、CuA<sub>2</sub> 室及中室末端各有一白斑，連成一斜線。M<sub>1</sub>、M<sub>2</sub> 及 M<sub>3</sub> 室各有一白點，於 M<sub>3</sub> 室者內偏。R<sub>3</sub> 至 R<sub>5</sub> 室翅頂附近各有一小白斑點，連成短紋。翅腹面斑紋與背面相似，但是前翅中央白帶向前延伸，常及前緣；底色褐色，部分覆蓋紫灰色鱗。緣毛黑褐色。雌蝶 (圖 77、79)：形態特徵與雄蝶相似，但前翅翅形較長。

臺灣本島分布的亞種 ssp. *arisana* (圖 76、77) 及蘭嶼分布的亞種 ssp. *alinkara* (圖 78、79) 可從下列特徵區分：1) 亞種 ssp. *alinkara* 的前翅帶紋呈白色，亞種 ssp. *arisana* 則呈象牙色；2) 亞種 ssp. *arisana* 前翅 CuA<sub>2</sub> 室之白斑大小不及 CuA<sub>1</sub> 室斑一半，但在亞種 ssp. *alinkara*，該斑紋明顯超過 CuA<sub>1</sub> 室斑一半大小。

雄交尾器 (圖 187-188)：背兜寬闊；鉤突基部寬，兩側有疣突；疣突旁生一臂狀直突起，其末端截狀。顎形突左右分離，有細棘刺。囊突寬短。抱器葉狀；抱器腹較抱器背粗；抱器內突末端圓；抱握鈹寬闊，具兩只直立指狀齒突，尾端齒突大且具

鋸齒，前端齒突。陽莖基長度較陽莖器長；陽莖器末端開口於背側。陽基輓片寬、部分骨化，有 U 形骨片。

雌交尾器 (圖 257-258)：交尾囊長袋狀。交尾囊管膜質、短。交尾孔板部分骨化，圓頂狀。交尾孔前板為一寬壁，附生袖狀骨化帶，具毛；交尾孔後板為橫骨片，具毛，後端中央明顯內凹。肛突矩形，具毛。後內骨圖中庸長，纖細。

**變異：**通常亞種 *ssp. arisana* 前翅中央斑帶外之斑紋減退，甚至消失，但是部分個體斑紋仍發達。

**世界分布：**喜瑪拉雅地區、中南半島、爪哇、婆羅洲、小巽他群島、菲律賓、蘇拉維西、摩鹿加、華西及臺灣 (Morishita, 1978; Hsu & Lee, 1989; Gallo & Bozano, 2017)。

**臺灣分布：**亞種 *ssp. arisana* 分布於臺灣本島山區，而亞種 *ssp. alinkara* 為僅見於蘭嶼之熱帶族群。

**寄主植物：**亞種 *ssp. arisana* 利用薑科之山薑，亞種 *ssp. alinkara* 則利用同科之呂宋月桃。

**生物學：**本種是一年多世代物種。

**註記：**亞種 *ssp. arisana* 與袖弄蝶頗為相似，往昔被認為僅是袖弄蝶的其中一型 (Shirôzu, 1960)。Morishita (1978) 指出亞種 *ssp. arisana* 應被處理為連紋袖弄蝶之亞種。蘭嶼的族群從前也被認為屬於袖弄蝶，但 Hsu & Lee (1989) 指出其應為連紋袖弄蝶之亞種 *ssp. alinkara* Fruhstorfer, 1911。

## Genus *UDASPES* Moore, [1881]

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

Diagnostic characters include the followings: 1) wings dark brown, with prominent hyaline white spots on forewing and hindwing; 2) discoidal cell of hindwing shorter than 1/2 of wing length; 3) antenna shorter than 1/2 of forewing costa (Evans, 1949;

Bascombe *et al.*, 1999).

2 species are known, distributed in Oriental region (Evans, 1949; Tsukiyama *et al.*, 1997).

One species occurs in Taiwan.

## 薑弄蝶屬

形態特徵如下：1) 翅黑褐色，有鮮明透明白斑；2) 後翅中室短於翅長二分之一；3) 觸角長度短於前翅前緣二分之一 (Evans, 1949; Bascombe *et al.*, 1999)。

本屬已知 2 種，分布於東洋區 (Evans, 1949; Tsukiyama *et al.*, 1997)。

臺灣有 1 種。

### *Udaspes folus* (Cramer, [1775]) ( 薑弄蝶 / 大白紋弄蝶 )

#### PLATE 10, Figs. 80-81; PLATE 28, Fig. 189; PLATE 46, Fig. 259

*Papilio folus* Cramer, [1775]: De uitlandsche kapellen 1 (1-7): 118, pl. 74, f. F. (Type locality: "Suriname")

*Hesperia cicero* Fabricius, 1793: Entomologia Systematica 3 (1): 338, n. 287. (Type locality: "India Orientali")

#### Specimens examined:

**TAIPEI CITY:** 1♀, Wenshan, Gongguan Campus, NTNU, 10. XI. 2000. **YILAN Co.:** 1♀, Toucheng, Guishan Is., 10. IV. 2004 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]:** 1♂, Tianliao, 50m, 21. II. 2009 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♀, Neipu, 9. XI. 2003, reared from *Alpinia* sp., emgd. 8. III. 2004, HSU 03L19 (Y. F. Hsu & S. C. Chen); 1♂, Sandimen, ca 300m, 20. II. 2009 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 1♀, Ludao, 4. V. 2009, reared from *Alpinia* sp., emgd. 30. V. 2008, HSU 08E2 (C. K. Wang); 1♂, 1♀, same locality, 9. IX. 2009, reared from *A. speciosa* [= *A. zerumbet*], emgd. 3. X. 2009, HSU 09J15 (C. L. Huang & Y. C. Lin); 1♀, same locality, 9. IX. 2009, reared from *Alpinia* sp., emgd. 6. X. 2009, HSU 09J15 (Y. F. Hsu). **LIANJIANG [= LIENCHIANG] Co.:** 1♂, Mazu, V. 2003 (Y. A. Lin).

**Description.** Adult – Forewing length 21–26 mm. Sexual dimorphism not prominent. Male (PLATE 10, Fig. 80): Head hairy, brown. Antennae brown with extensive white scalings, notably subapical portion; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, dark brown dorsally, white ventrally; 3rd segment minute, brown. Thorax and abdomen brown dorsally, white ventrally; legs white. Forewing broad, termen convex. Hindwing fan-like. Wing uppersides bearing whitish hairs proximally on hindwing; ground color brown, ornamented with white markings. On forewing, white spots present in cell  $M_1$  to  $CuA_2$ , roughly in a tilt line; spot in  $CuA_1$  and  $CuA_2$  largest, conjoined; spot in  $M_1$  and  $M_2$  also conjoined; one prominent white spot at distal end of discoidal cell; three small white spots in cell  $R_{3-5}$  subapically, conjoined into a bar. On hindwing, a prominent white discal patch present between  $R_s$  and  $CuA_2$ . Wing undersides with white markings similar to those of upperside; ground color variegated, forming elaborated pattern interwoven by brown, reddish brown, dark brown, and white scalings. Fringe white checkered with dark brown. Female (PLATE 10, Fig. 81): Body and wing patterns similar to those of male, but forewing longer, markings more prominent.

Male genitalia (PLATE 28, Fig. 189) – Tegumen broad; base of uncus broad, bearing a pair of bump-like warts with long setae; a pair of long arm present by warts, straight with distal end truncated. Gnathos divided, bearing minute spines. Saccus short, broad. Valva lobe-like; sacculus much thicker than costa; ampulla with distal end rounded; harpe broad, produced into two prominent erect teeth, with distal one larger, spiny and proximal one smaller, simple. Phallus with phallobase longer than aedeagus; distal end of aedeagus with dorsal opening. Juxta as broad, partially sclerotized piece, with V-shaped sclerite.

Female genitalia (PLATE 46, Fig. 259) – Corpus bursae as elongate pouch. Ductus bursae membranous, short. Sterigma forming a partially sclerotized dorm; area surrounding ostium bursae membranous; lamella antevaginalis as transverse band associated with rectangular plates; lamella postvaginalis a setose, transverse sclerite with narrow, medial invagination posteriorly. Anal papillae rectangle, setose. Posterior apophyses moderately long, slender.

**Global distribution.** Nearly entire Oriental region, plus southern islands of Japan (Amami, Okinawa, Yaeyama), Lombok, and Sumbawa (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland Taiwan, including associated islands (Hsu, 2013).

**Larval Host plant(s).** Various kinds of plants in the family Zingiberaceae, including *Alpinia speciosa*, *A. formosana*, *A. japonica*, *Curcuma aromatica*, *C. domestica*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence, but overwintering as pupae in diapause (Hsu, 2002).

**形態特徵：**成蝶前翅長 21-26 mm。無雌雄二型性。雄蝶 (圖 80)：頭被毛，褐色。觸角褐色，被白色鱗，近尖頂處格外鮮明；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，背面黑褐色，腹面白色；第 3 節微小、褐色。胸部及腹部背面褐色，腹面白色。足白色。前翅寬，外緣突出。後翅扇形。翅背面底色褐色，綴白斑，近翅基處覆白毛。前翅  $M_1$  至  $CuA_2$  各室有白色斑紋，約略排成一斜線；於  $CuA_1$  及  $CuA_2$  室者最大型，彼此相連； $M_1$  及  $M_2$  室斑亦相連；中室末端有一鮮明白色斑點；翅頂附近  $R_{3-5}$  室各有一白色小斑點，連成短帶。後翅中央  $Rs$  及  $CuA_2$  間有鮮明白色斑紋。翅腹面白斑與背面相似，底色斑駁，由褐色、紅褐色、黑褐色及白色鱗交織呈複雜花紋。緣毛白色嵌黑褐色。雌蝶 (圖 81)：形態特徵與雄蝶相似，惟前翅稍長，斑紋略鮮明。

雄交尾器 (圖 189)：背兜寬闊；鉤突基部寬，具一對生長毛之疣狀突；疣狀突旁有長臂狀直突起，其末端截狀。顎形突分離，生細刺。囊突寬短。抱器葉狀；抱器腹遠較抱器背粗大；抱器內突末端圓形；抱握鉗寬，具兩直立齒突，末端齒突大且具刺棘，近端齒突小。陽莖基長度較陽莖器長；陽莖器開口於末端背側。陽基軛片寬、部分骨化，具 V 形骨片。

雌交尾器 (圖 259)：交尾囊長袋狀。交尾囊管膜質、短。交尾孔板部分骨化，圓頂狀；交尾孔周圍膜質；前板橫帶狀連接矩形板；後板為橫向窄骨板，中間內凹，具毛。肛突矩形，具毛。後內骨突中庸長、纖細。

**世界分布：**幾乎涵蓋東洋區全域，亦見於日本南部島嶼 (奄美大島、沖繩、八重山

群島)、龍目島及松巴哇。

**臺灣分布：**分布於本島低海拔地區，包括離島。

**寄主植物：**多種薑科之植物，包含月桃、臺灣月桃、山薑、鬱金、郁金等。

**生物學：**本種為一年多世代物種，以蛹態休眠越冬 (Hsu, 2002)。

## Genus *SUASTUS* Moore, [1881]

**Type species:** *Hesperia gremius* Fabricius, 1798

Diagnostic characters include the followings: 1) third segment of labial palpus long and vertical; 2) R<sub>4</sub> and R<sub>5</sub> of forewing widely apart distad; 3) Hindwing underside gray with dark spots (Evans, 1949).

4 species are known, distributed in the Oriental Region (Tsukiyama *et al.*, 1997).

One species occurs in Taiwan.

## 黑星弄蝶屬

形態特徵如下：1) 下唇鬚第3節長而直立；2) 前翅 R<sub>4</sub> 及 R<sub>5</sub> 脈末端相距甚遠；3) 後翅腹面灰色，綴黑色斑點 (Evans, 1949)。

本屬已知 4 種，分布於東洋區 (Tsukiyama *et al.*, 1997)。

臺灣有 1 種。

*Suastus gremius* (Fabricius, 1798) ( 黑星弄蝶 / 素弄蝶 )

**PLATE 10, Figs. 82-83; PLATE 29, Fig. 190; PLATE 47, Fig. 260**

*Hesperia gremius* Fabricius, 1798: Entomologia Systematica (Supplementum): 433, no. 282-3.  
(Type locality: “india orientali”)

**Specimens examined:**

**JILONG [= KEELUNG] CITY:** 1♀, Jilongyu, 25. IX. 2011 (H. C. Huang). **TAIPEI CITY:** 1♂, Wenshan, Jingmei, 25. I. 2008, reared from *Rhapis humilis*, emgd. 12. II. 2008, HSU 08A24 (Y. F. Hsu); 1♂, same locality, 9. IX. 2008, reared from *Rhapis excelsa*, emgd. 13. IX. 2008, HSU 08J27 (Y. F. Hsu); 1♂, 1♀, same locality, 26. XII. 2008, reared from *R. excelsa*, emgd. 10/16. I. 2009, HSU 08M40 (Y. F. Hsu); 1♂, Wenshan, Gongguan Campus, NTNU, 10. XI. 2005 (J. R. Chen); 1♀, same locality, 19. XI. 2005 (J. R. Chen); 2♂, 2♀, same locality, 26. X. 2008 (Y. F. Hsu); 1♂, 31. I. 2000 (C. Y. Hung). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Shiding, Ergeshan, 1. X. 2008 (C. H. Lin, jr); 1♂, Xindian, Sikanshui, 13. X. 2008 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]:** 1♀, Xinhua, 1. VII. 2010 (J. H. Lin). **JINMEN [= KINMEN] Co.:** 1♂, Jinsha, Forestry Institute, 29. V. 2011 (H. C. Huang); 2♂, 1♀, Jinhu, Shanwai, 4. XI. 2015 (L. Huang).

**Description.** Adult – Forewing length 15–19 mm. Sexual dimorphism weakly present. Male (PLATE 10, Fig. 82): Head hairy, brown. Antennae brown dorsally, brown banded with creamy white ventrally; apiculus prominent, hooked. Proboscis dark brown. Labial palpus erect, 1st and 2nd segments hairy, grayish white; 3rd segment small, brown, needle-like. Thorax brown dorsally, grayish white ventrally; legs grayish white. Abdomen brown dorsally, grayish white ventrally. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides bearing brown hairs proximally on hindwing, with ground color brown, ornamented with hyaline and creamy white markings. On forewing, two prominent hyaline spots in cell M<sub>3</sub> and CuA<sub>1</sub>; one hyaline spot at distal end of discoidal cell, three small hyaline spots in line in cell R<sub>3-5</sub> subapically, roughly in line. A creamy white spot at midst of cell CuA<sub>2</sub>. On hindwing, uniformly brown with no markings. Wing undersides with forewing markings similar to those of upperside, much area overlaid by gray scalings; a series of dark brown, discal dots arranged into a curve, with additional dark brown dot at distal end of discoidal cell of hindwing. Female (PLATE 10, Fig. 83): Body and wing patterns similar to those of male, but forewing longer, markings more prominent.

Male genitalia (PLATE 29, Fig. 190) – Tegumen tapering caudally, with caudal end membranous; uncus extended into short projection with shallow, medial invagination.

Gnathos divided. Saccus short, spoon-like. Valva broad; costa narrow, slender, sacculus thicker than costa, short; ampulla simple; harpe forming double, dorsal, serrate ridges near distal end. Phallus elongate; aedeagus slightly enlarged ventrad near caudal end. Juxta as a pincer-like sclerite.

Female genitalia (PLATE 47, Fig. 260) – Corpus bursae oval. Ductus bursae with anterior half thicker, membranous, posterior half narrower, highly sclerotized. Sterigma forming a sclerotized dome; antevaginalis bearing a pair of long projection with acute distal end; postvaginalis as a transverse band. Anal papillae rectangle, densely setose. Posterior apophyses weakly sclerotized, short.

**Global distribution.** India, Sri Lanka, Himalayas, Indochina, Malay Peninsula, Sumba, Flores, Japan (South Kyushu, Yaeyama and Okinawa), South China, and Taiwan (Shirôzu, 1960; Tsukiyama *et al.*, 1997), recently invaded Borneo and Palawan.

**Distribution in Taiwan.** Lowland to lower elevations of montane areas in Taiwan, including some associated islands (Hsu, 2015).

**Larval Host plant(s).** Various kinds of Arecaceae, including *Arenga engleri*, *Livistona chinensis* var. *subglobosa*, *L. rotundifolia*, *Phoenix hanceana* var. *formosana*, *P. canariensis*, *P. dactylifera*, *P. humilis* var. *loureiri*, *Daemonorops margaritae*, *Areca catechu*, *Chrysaliclocarpus lutescens*, *Hyophorbe amaricaulis*, *H. verschaffelti*, *Rhapis excels*, *Rha. humilis*, *Roystonea regia*, *Washingtonia filifer*, *W. robusta*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** This species is known as a pest on palm plants (Shirôzu, 1960), thus potentially liable to invade new areas via anthropogenic pathways.

**形態特徵：**成蝶前翅長 15-19 mm。雌雄二型性不顯著。雄蝶（圖 82）：頭被毛，褐色。觸角背面褐色，腹面褐色帶白色；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚直立，第 1 及第 2 節被毛，呈灰白色；第 3 節細小、被毛、褐色，呈針狀。胸部背面

褐色，腹面灰白色。足灰白色。腹部背面褐色，腹面灰白色。前翅呈三角形，外緣略突出。後翅呈扇形。翅背面底色褐色，綴有透明及白色斑點，近翅基處覆褐色毛。前翅  $M_3$ 、 $CuA_1$  及中室末端各有一鮮明透明斑點， $R_3$  至  $R_5$  室於翅頂附近各有一透明小斑點，約略排成一行。 $CuA_2$  室中央有白色斑點。後翅褐色無紋。前翅腹面斑紋與背面相似，大部分覆灰色鱗；後翅黑褐色中央斑列排成一曲線，中室末端有黑褐色斑。雌蝶 (圖 83)：形態特徵與雄蝶相似，但前翅翅形較長、斑紋較鮮明。

雄交尾器 (圖 190)：背兜向後端漸窄，末端膜質。鉤突延伸為短突起，中間有淺凹陷。顎形突左右分離。囊突短，勺狀。抱器寬闊；抱器背長；抱器腹較抱器背粗、短；抱器內突單純；抱握鉗近末端背側具兩鋸齒狀稜脊。陽莖修長；陽莖器近末端處略膨大。陽基軛片為鉗狀骨片。

雌交尾器 (圖 260)：交尾囊橢圓形。交尾囊管前半部較粗、膜質；後半部較窄、高度骨化。交尾孔板骨化、圓頂狀；前板具一對長突起，末端銳尖；後板為橫向帶狀。肛突矩形，密布剛毛。後內骨突短、輕度骨化。

**世界分布：**印度、斯里蘭卡、喜馬拉雅地區、中南半島、馬來半島、松巴島、弗洛勒斯島、日本九州南部、八重山群島及沖繩、華南及臺灣。近年已入侵婆羅洲及巴拉望。

**臺灣分布：**低海拔地區，包括離島。

**寄主植物：**棕櫚科之山棕、蒲葵、圓葉蒲葵、臺灣海棗、加拿列海棗、海棗、羅比親王海棗、黃藤、檳榔、黃椰子、酒瓶椰子、棒棍椰子、棕竹、叢櫚、大王椰子、華盛頓椰子、大絲葵等。

**生物學：**本種是一年多世代物種。

**註記：**本種為棕櫚科之害蟲 (Shirôzu, 1960)，易藉由人為活動入侵各地。

## Genus *ERIONOTA* Mabille, 1878

**Type species:** *Papilio thrax* Linnaeus, 1767

Diagnostic characters include the followings: 1) wings brown, with prominent hyaline

white or yellow spots on forewing; 2) hindwing upperside unmarked; 3) compound eyes red while alive (Evans, 1949; Bascome *et al.*, 1999; Parsons, 1999).

Eight species are known, distributed in the Oriental and western Australian Region (Tsukiyama *et al.*, 1997; Bascome *et al.*, 1999; Parsons, 1999).

No species was known from Taiwan until one notorious agricultural pest species invaded Taiwan in 1980s, now found in the main island and some associated islands.

### 蕉弄蝶屬

形態特徵如下：1) 翅褐色，前翅有鮮明的白色或黃色透明斑；2) 後翅背面無紋；3) 活體複眼紅色 (Evans, 1949; Bascome *et al.*, 1999; Parsons, 1999)。

本屬有 8 種，分布於東洋區及澳洲區西部 (Tsukiyama *et al.*, 1997; Bascome *et al.*, 1999; Parsons, 1999)。

臺灣原本並無本屬成員分布，1980 年代著名的本屬農業害蟲蕉弄蝶入侵，目前已遍布全島及部分離島。

***Erionota torus* Evans, 1941 (蕉弄蝶 / 香蕉弄蝶 / 黃斑蕉弄蝶)**

**PLATE 11, Figs. 84-85; PLATE 29, Fig. 191; PLATE 47, Fig. 261**

*Erionota torus* Evans, 1941: Entomologist 74 (7): 158. (Type locality: Sikkim)

#### Specimens examined:

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]**: 1♂, Xindian, Wufengshan, 28. IX. 1992 (L. X. Li). **TAINAN CITY [= TAINAN Co.]**: 1♂, Baihe, Guanziling, 23. IX. 2014, reared from *Musa* sp., emgd. 28. IX. 2014, HSU 14J59 (Y. F. Hsu); 1♂, Xinhua, 11. IX. 2013, reared from *Musa sapientum*, emgd. 30. IX. 2013, HSU 13H61 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.**: Pingdong, 1♀, reared from *M. sapientum*, emgd. 20. III. 1987, 1♂, emgd. 21. III. 1987, 1♂, 1♀, emgd. 4. III. 1987 (Y. F. Hsu), 1♀, emgd. 2. II. 1987 (Y. F. Hsu), 2♀, emgd. 11. III. 1987 (Y. F. Hsu), 1♀, emgd. 10. III. 1987 (Y. F. Hsu), 1♀, emgd. 17. II. 1987 (Y. F. Hsu), 1♂, 1♀, emgd. 25. III. 1987 (Y. F. Hsu), 1♀,

emgd. 2. III. 1987 (Y. F. Hsu), 1♂, emgd. 4. II. 1987 (Y. F. Hsu), 1♂, emgd. 24. II. 1987 (Y. F. Hsu). **JINMEN [= KINMEN] Co.:** 1♂, 3♀, Jincheng, Shuitou, 29/30. VIII. 2011 (Y. F. Hsu & H. C. Huang).

**Description.** Adult – Forewing length 30–37 mm. Sexual dimorphism absent. Male (PLATE 11, Fig. 84): Head hairy, brown. Antennae brown, with white scaling near apiculus; apiculus prominent, hooked. Proboscis dark brown. Labial palpus erect, 1st and 2nd segments stout, hairy, brown; 3rd segment small, rod-like. Thorax, abdomen, legs brown dorsally, with venter paler. Forewing broad, elongate, termen slightly convex. Hindwing fan-like, slightly produced at tornus. Wing uppersides bearing brown hairs proximally on hindwing; ground color brown, ornamented with hyaline, ivory yellow markings. On forewing, two prominent hyaline spots in cell  $M_3$  and  $CuA_1$ ; one hyaline spots at distal end of discoidal cell. Spot in cell  $CuA_1$  conjoined with spot in discoidal cell. Hindwing uniformly brown with no markings. Wing undersides with forewing markings similar to those of upperside, much area overlaid by scalings of paler color. Fringe brown. Female (PLATE 11, Fig. 85): Body and wing patterns similar to those of male.

Male genitalia (PLATE 29, Fig. 191) – Tegumen broad, with caudal end abruptly narrowed, membranous, bearing a pair of horn-like processes; uncus extended into pincer-like projection. Gnathos divided. Saccus short with rounded margin. Valva elongate, broad; costa narrow, ill-defined, sacculus bearing free lobe, with its posterior margin spiny; ampulla as elongate, up-curved piece with blunt caudal end; harpe thick, highly sclerotized, with distal end flattened, spiny. Phallus robust, slightly enlarged caudad; aedeagus with wide, dorsal opening at caudal end. Juxta as broad, weakly sclerotized piece.

Female genitalia (PLATE 47, Fig. 261) – Corpus bursae tubular, with appendix bursae as elongate pouch, surface prominently wrinkled. Signa as two lateral band with fine granules. Ductus bursae membranous. Sterigma forming a dome; antevaginalis spherical, with lateral walls and anterior wall sclerotized, bearing prominent spines; postvaginalis as a pair of spiny sclerites with posterior, digitate processes opposite to each other. Anal papillae pouch-like, setose. Posterior apophyses small, short.

**Global distribution.** India, Himalayas, Indo China, South China, recently into Okinawa, Philippines, Sri Lanka, Taiwan (Tsukiyama *et al.*, 1997), and Mauritius (Cock, 2015).

**Distribution in Taiwan.** Lowland to moderate elevations in Taiwan, including some associated islands (Hsu, 1999).

**Larval Host plant(s).** Musaceae: *Musa formosana*, *M. sapientum*, *M. paradisiaca*, etc.

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** This species is known as a pest to banana plantation (Kamala Jayanthi *et al.*, 2015). It has invaded to Taiwan recently (Chu, 1988; Hsu, 1999).

**形態特徵：**成蝶前翅長 30-37 mm。無雌雄二型性。雄蝶 (圖 84)：頭被毛，褐色。觸角褐色，尖頂處被白色鱗；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚直立，第 1 及第 2 節被毛、粗壯，呈褐色；第 3 節小、棒狀。胸部、腹部及足褐色，腹面色調較淺。前翅寬闊、修長，外緣略突出。後翅扇形，臀區略微突出。前翅背面底色褐色，綴有象牙黃色透明斑，後翅近翅基處覆有褐色毛。前翅  $M_3$  及  $CuA_1$  室各有一鮮明透明斑點，中室末端有一透明斑點， $CuA_1$  斑與中室末端斑點相連。後翅呈均勻褐色、無紋。前翅腹面斑紋與背面相似，大部分覆淡色鱗。緣毛褐色。雌蝶 (圖 85)：形態特徵與雄蝶相似。

雄交尾器 (圖 191)：背兜寬闊，尾端驟縮，膜質，具一對角狀突起；鉤突延伸成鉗狀突起。顎形突分離。囊突短、圓鈍。抱器修長，寬闊；抱器背窄細，不明顯；抱器腹有游離葉狀片，後緣具刺棘；抱器內突長，呈片狀上彎，末端鈍；抱握鈹厚，高度骨化，末端扁平，具刺棘。陽莖粗壯，尾部略膨大；陽莖器開口於末端背側。陽基軛片寬闊、片狀，輕度骨化。

雌交尾器 (圖 261)：交尾囊管狀，具長袋狀附囊，表面有皺褶。花壁為兩條有細顆粒之橫帶。交尾囊管膜質。交尾孔板圓頂狀；前板球形，側壁和前壁骨化，具刺棘；後板為一對彼此相對之骨化角狀突起，肛突袋狀、具毛。後內骨突短小。

**世界分布：**印度、喜馬拉雅地區、中南半島、華南，近年已入侵沖繩、菲律賓、斯里蘭卡、臺灣及模里西斯等地。

**臺灣分布：**本島低至中海拔地區，亦見於部分離島。

**寄主植物：**芭蕉科之臺灣芭蕉、香蕉、大蕉等。

**生物學：**本種是一年多世代物種。

**註記：**本種為著名的香蕉園害蟲 (Kamala Jayanthi *et al.*, 2015)，已於近年入侵臺灣並成功立足 (Chu, 1988; Hsu, 1999)。

## Genus *MATAPA* Moore, [1881]

**Type species:** *Ismene aria* Moore, [1866]

Diagnostic characters include the followings: 1) wings uniformly brown; 2) cells of both wings produced distad; 3) compound eyes red; 4) most species with sexual brand on forewing upperside in male; 5) fringe of hindwing orange to pale yellow around tornus (Evans, 1949; de Jong, 1983; Bascombe *et al.*, 1999).

9 species are known, distributed in the Oriental region (de Jong, 1983; Fan *et al.*, 2013).

One species occurs in Jinmen and Mazu Islands.

## 瑪弄蝶屬

形態特徵如下：1) 翅膀呈均勻褐色；2) 前後翅翅室向外端延長；3) 複眼紅色；4) 多數種類雄蝶前翅背面具性標；5) 後翅臀區緣毛呈橙色至淡黃色 (Evans, 1949; de Jong, 1983; Bascombe *et al.*, 1999)。

本屬已知 9 種，分布於東洋區 (de Jong, 1983; Fan *et al.*, 2013)。

金門及馬祖有 1 種。

***Matapa aria* (Moore, [1866]) ( 瑪弄蝶 / 紅眼弄蝶 )****PLATE 11, Figs. 86-87; PLATE 29, Fig. 192; PLATE 47, Fig. 262**

*Ismene aria* Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 784. (Type locality: Bengal, [India])

*Hesperia neglecta* Mabille, 1876: Annales de la Société entomologique de France 5(6): 268. (Type locality: “Manille” [Manila], [Philippines])

**Specimens examined:**

**JINMEN [= KINMEN] Co.:** 1♀, Zhongshan Forest, 22. VII. 2000, reared from *Bambusa*, emgd. 17. VIII. 2000, HSU 00G33 (Y. F. Hsu); 2♂, same locality, 17. VIII. 2000, reared from *Bambusa*, emgd. 29/31. VIII. 2000, HSU 00H3 (C. C. Lu); 2♂, 1♀, Jincheng, Shuitou, 29/30. VIII. 2011 (Y. F. Hsu & H. C. Huang); 2♂, 3♀, same locality, same collecting date, reared from *Bambusa* sp., emgd. 1/8. IX. 2011, HSU 11H45 (Y. F. Hsu & H. C. Huang); 1♂, Jinhu, Qionglin, 28. X. 2014 (Y. F. Hsu & H. C. Huang).

**Description.** Adult – Forewing length 16–21 mm. Sexual dimorphism weakly present. Male (PLATE 11, Fig. 86): Head hairy, brown. Antennae brown with faint creamy yellow scalings ventrally; apiculus prominent, hooked. Proboscis dark brown. Labial palpus erect, 1st and 2nd segments hairy, brown; 3rd segment minute, brown. Thorax and abdomen brown dorsally, grayish white ventrally; legs brown to creamy yellow. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing brown hairs proximally on hindwing; ground color uniformly brown, spotless. Wing undersides with ground color ochre. A narrow, dark gray sexual brand present in proximal position of cell CuA<sub>1</sub> and CuA<sub>2</sub> of forewing. Female (PLATE 11, Fig. 87): Body and wings similar to those of male, but forewing broader, no sexual brand, and a tuft of creamy yellow hairs present at caudal end of abdomen.

Male genitalia (PLATE 29, Fig. 192) – Tegumen broad, with dorsal, medial flap; uncus short, with shallow, medial indentation. Gnathos divided. Saccus short. Valva lobe-like; sacculus thick; costa+ampulla forming prominent, fin-like, spiny process; harpe axe-like. Caudal end with medial wart, bearing long seate. Phallus straight, with phallobase longer than aedeagus; distal end of aedeagus with dorsal opening; cornutus as a curve sclerite. Juxta as broad, partially sclerotized piece.

Female genitalia (PLATE 47, Fig. 262) – Corpus bursae as elongate, wrinkled pouch.

Ductus bursae moderately sclerotized, thick, short. Sterigma forming a partially sclerotized dorm; antevaginalis as transverse band; postvaginalis a setose, shield-like sclerite. Anal papillae ovate, setose. Posterior apophyses moderately long, slender.

**Global distribution.** Sri Lanka, W and NW India, Indochina, Sumatra, Borneo, Lesser Sunda Islands, Sumbawa, Philippines, South China (de Jong, 1983; Eliot, 1992; Bascombe *et al.*, 1999).

**Distribution in Taiwan.** Found on Jinmen and Matsu Islands (Hsu *et al.*, 2004; Chang, 2011; Hsu, 2014).

**Larval Host plant(s).** Poaceae: *Bambusa dolichoclada* and *B. pachinensis*, etc.

**Biology.** This species is multivoltine in occurrence.

**形態特徵：**成蝶前翅長 16-21 mm。雌雄二型性不顯著。雄蝶 (圖 86)：頭被毛，褐色。觸角腹面褐色，帶模糊橙黃色鱗；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚直立，第 1 及第 2 節被毛，褐色；第 3 節微小，褐色。胸部與腹部背面褐色，腹面灰白色。足褐至橙黃色。前翅呈三角形，外緣略突出。後翅呈扇形，臀區略呈葉狀突出。翅背面底色呈均勻褐色，無紋，近翅基處覆褐色毛。翅腹面底色赭黃色。前翅 CuA<sub>1</sub> 即 CuA<sub>2</sub> 室近翅基處具一狹窄深灰色性標。雌蝶 (圖 87)：形態特徵與雄蝶相似，但前翅較寬且無性標；腹部尾端具乳黃色毛叢。

雄交尾器 (圖 192)：背兜寬闊，背側中央有瓣蓋；鉤突短，中央有淺凹。顎形突左右分離。囊突短。抱器葉狀；抱器腹粗；抱器背與抱器內突癒合為有刺之鰭狀突起；抱握鉞末端斧狀，中央有具長剛毛之疣突。陽莖直，陽莖基長度較陽莖器長；陽莖器開口於背側末端；角狀器為弧形骨片。陽基軛片為部分骨化之寬骨片。

雌交尾器 (圖 262)：交尾囊修長、袋狀、有皺褶。交尾囊管中度骨化，粗短。交尾孔板部分骨化，圓頂狀；前板橫帶狀；後板盾狀，具毛。肛突卵形，具毛。後內骨突中庸長、纖細。

**世界分布：**斯里蘭卡、印度西部及西北部、中南半島、蘇門答臘、婆羅洲、小巽他

群島、松巴哇島、菲律賓、華南。

**臺灣分布：**分布於金門及馬祖地區。

**寄主植物：**禾本科之長枝竹及米篩竹等。

**生物學：**本種是一年多世代物種。

## Genus *OCHLODES* Scudder, 1872

**Type species:** *Hesperia nemorum* Boisduval, 1852

Diagnostic characters include the followings: 1) wings dark brown or tawny with white or tawny spots, hyaline in some species; 2) phallus stout, with elaborate aedeagus; 3) tibial spines present; 4) sexual brand on forewing upperside in male (Evans, 1949; Chiba & Tsukiyama, 1996).

About 25 species are known, mainly distributed in the Holarctic region, but extending to northern Oriental region. The type species is distributed in North America, and the revision of the whole genus is mandatory.

Two species occur in Taiwan.

## 赭弄蝶屬

形態特徵如下：1) 翅黑褐色或黃褐色，綴有白色或黃褐色斑點，部分種類斑點透明；2) 陽莖碩大，陽莖器複雜；3) 脛節具棘刺；4) 雄蝶前翅背面具性標 (Evans, 1949; Chiba & Tsukiyama, 1996)。

本屬已知約 25 種，主要分布於全北區，但東洋區北部亦有分布。本屬模式種分布於北美，從而本屬之修訂實屬必要。

臺灣有 2 種。

***Ochlodes niitakanus* (Sonan, 1936) ( 臺灣赭弄蝶 / 玉山黃斑弄蝶 )****PLATE 11, Figs. 88-89; PLATE 29, Fig. 193; PLATE 47, Fig. 263**

*Augiades bouddha niitakana* Sonan, 1936: Zephyrus 6: 213. (Type locality: Taihoku-syu, Soou-gun, Suigen [ 臺北州蘇澳郡水源 ])

**Specimens examined:**

**XINZHU CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Wulai, Kuaishan, 24. **YILAN Co.:** 1♂, Datong, Mingchi, 26. XI. 2002, reared from *Brachypodium kawakamii*, emgd. 18. III. 2003, HSU 02L24 (H. S. Que); 1♂, 1♀, Datong, Taipingshan, 1700m, 15. VI. 2007 (Y. F. Hsu); 1♀, Taipingshan, 17/19.5K, 14. VII. 2017 (C. W. Huang). **TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, 9. VII. 1982 (Y. F. Hsu); 1♂, Fuxing, Shangbaling/ Lalashan, 9. VII. 1985 (Y. F. Hsu); 1♂, Fuxing, Sileng, 27. VI. 1988 (Y. F. Hsu); 1♀, Fuxing, Lalashan/ Kuaishan, 24. VII. 1987 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.:** 3♀, Wufeng, Dalu Forest Trail, 15km, 1500/1600m, 13. VIII. 2002 (Y. F. Hsu). **NANTOU Co.:** 1♀, Renai, Songgang, 27. VII. 1986 (Y. F. Hsu); 1♂, Renai, Tunyuan, 1700m, VI. 2010 (N. Y. Tasi); 3♂, Zhushan, Shanlinxi, 20. VI. 1987 (C. L. Li).

**Description.** Adult – Forewing length 16–20 mm. Sexual dimorphism prominent. Male (PLATE 11, Fig. 88): Head hairy, brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming raised tuft, dark brown mixed with white; 3rd segment small, brown. Thorax brown, legs brown. Abdomen brown dorsally, grayish white ventrally. Forewing triangular, costa, dorsum straight, termen slightly convex. Hindwing fan-like. Wing uppersides bearing brown hairs proximally on hindwing, with ground color brown, ornamented with hyaline and yellow markings. On forewing, two prominent hyaline spots in cell  $M_3$  and  $CuA_1$ ; double hyaline spots at distal end of discoidal cell, three small hyaline spots in line subapically. A small creamy yellow spot at midst of cell  $CuA_1$ . On hindwing, a series of small, creamy yellow, discal spots arranged into a curve. Wing undersides with patterns similar to those of upperside, but much area overlaid by ochreous scalings. Fringe creamy white, but anterior portion of forewing brown. A dark brown, glossy, linear sexual brand present proximal to discal spots on forewing. Female (PLATE 11, Fig. 89): Body and wing patterns similar to those of male, but wings broader, markings on wing more prominent, no sexual brand.

Male genitalia (PLATE 29, Fig. 193) – Tegumen broad basally, tapering caudad, forming deep invagination posteriorly; uncus bent, forming two long arms with distal portion narrowed. Gnathos separated. Saccus short, blunt anteriorly. Valva broad, sacculus much thicker than costa; ampulla small, ridged; harpe produced into a broad, dorsal, triangular piece with uneven margin. Phallus stout, with venter of aedeagus extending into prominent, long, flattened projection with distal end bearing a serrate ridge. Juxta as a narrow belt.

Female genitalia (PLATE 47, Fig. 263) – Corpus bursae oval, wrinkled posteriorly. Ductus bursae membranous, short, thick. Ostium bursae large, surrounded by sclerotized wall. Sterigma elaborated; antevaginalis sclerotized, with small, linear folds; postvaginalis a large sheet with lateral and posterior margin forming setose bands. Anal papillae rectangle, setose. Anterior apophyses short, broad at base, tapering to acute distal end. Posterior apophyses elongate, slender.

**Global distribution.** Endemic to Taiwan (Chiba & Tsukiyama, 1996).

**Distribution in Taiwan.** Moderate to higher elevations in montane zones (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Brachypodium kawakamii*, *Microstegium geniculatum*, etc. (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence (Hsu, 2006, 2013).

**Remarks.** The name of the species was usually given as *formosana* Matsumura, 1919 (e. g. Shirôzu, 1960; Hamano, 1987). Hsu *et al.* (2006) examined the sole type deposited in SEHU and found it representing a female individual of *Ochlodes venata* (Bremer & Grey, 1853) with doubtful source, thus *niitakana* Sonan, 1936 became the valid name for this species.

This species was consider as a subspecies of *Ochlodes subhyalina* (Bremer & Grey, 1853) (Type locality: Beijing, China) (e. g. Shirôzu, 1960). Chiba *et al.* (1992)

considered it a subspecies of *O. crataeis* (Leech, 1894) (Type locality: Omei-shan and Chia-kou-ho). Chiba & Tsukiyama (1996) regarded it a distinct species.

**形態特徵：**成蝶前翅長 16-20 mm。雌雄二型性顯著。雄蝶 (圖 88)：雄蝶：頭被毛，褐色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，形成一隆起毛叢，黑褐色雜白色；第 3 節細小，呈褐色。胸部褐色。足褐色。腹部背面褐色，腹面灰白色。前翅呈三角形，前後緣直線狀，外緣略突出。後翅扇形。翅背面底色褐色，綴有透明及黃色斑紋，近翅基處覆有褐色毛。前翅  $M_3$  及  $CuA_1$  室各有一鮮明之透明斑點。中室末端有兩透明斑點，翅頂附近有三只小斑點排成一線。 $CuA_1$  室中央有一黃白色斑點。後翅中央有黃色小斑點成弧形排列。翅腹面斑紋與翅背面相似，但大部分覆土黃色鱗。前翅前端緣毛褐色，其餘黃白色，前翅中央斑列內側具一有光澤之黑褐色線狀性標。雌蝶 (圖 89)：形態特徵與雄蝶相似，但是翅幅較寬，斑紋較鮮明且無性標。

**雄交尾器 (圖 193)：**背兜基部寬闊，尾端漸窄，末端深凹入；鉤突長、臂狀、彎曲，末端漸細。顎形突分離。囊突短，先端鈍。抱器寬闊，抱器腹遠較抱器背厚；抱器內突細小，脊狀；抱握鈹寬闊，背側邊緣不平整，呈三角形突起。陽莖碩大，陽莖器腹側延伸出長且扁平之突起，末端鋸齒狀。陽基輓片窄帶狀。

**雌交尾器 (圖 263)：**交尾囊卵圓形，後側有皺褶。交尾囊管膜質、短粗。交尾孔大型，周圍具骨化壁。交尾孔板複雜；前板骨化，具線狀皺褶；後板大型，兩側及後緣成帶狀，有毛。肛突矩形，具毛。前內骨突短，基部寬，向末端漸尖。後內骨突長，纖細。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島中高海拔山區。

**寄主植物：**禾本科之川上短柄草、曲膝莖莠竹等。

**生物學：**本種是一年一世代物種。

**註記：**本種種小名從前常作 *formosana* Matsumura, 1919。Hsu *et al.* (2006) 檢視其存放於北海道大學之唯一模式標本後發現該標本實係來源有疑問之小赭弄蝶，從而本種之有效名應為 *niitakana* Sonan, 1936。

本種過去被認為是白斑赭弄蝶 *Ochlodes subhyalina* 之亞種。Chiba *et al.* (1992) 認為本種為黃赭弄蝶 *O. crataeis* (Leech, 1894) 之亞種。Chiba & Tsukiyama (1996) 將本種處理為獨立種。

***Ochlodes bouddha* Mabille, 1876 ( 菩提赭弄蝶 / 雪山黃斑弄蝶 )**

*Pamphila bouddha* Mabille, 1876: Annales de la Société entomologique de France 5(6): LVI. (Type locality: not stated)

***Ssp. yuchingkinus* Murayama & Shimonoya, 1963**

**PLATE 11, Figs. 90-91; PLATE 30, Fig. 194; PLATE 48, Fig. 264**

*Ochlodes siva yuchingkinus* Murayama & Shimonoya 1963: Tyô to Ga 13(3): 58. (Type locality: “Mt. Sylvia” [Xueshan, Taizhong, Central Taiwan])

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Sanxia, Beichatianshan, 25. VI. 1989 (Y. F. Hsu); 1♂, Sanxia, Beichatianshan, ca 1700m, 7. VI. 2006 (L. H. Wang). **YILAN Co.:** 1♂, Nanao, Tongshan, 1800m, 16. VI. 1999 (C. C Lu); Provincial Rd. No. 7A, 40 Km, 28. VII. 2017 (C. W. Huang). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Heping, Siyuan, 24. VI. 1988 (M. Z. Lin); 1♀, same locality, 27. VII. 2007 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 1♂, Xiulin, Bilu, 3. VII. 1989 (Y. F. Hsu).

**Description.** Adult – Forewing length 15–19 mm. Sexual dimorphism prominent. Male (PLATE 11, Fig. 90): Head hairy, brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming raised tuft, dark brown mixed with white; 3rd segment small, brown. Thorax brown, legs brown. Abdomen brown dorsally, grayish white ventrally. Forewing triangular, costa, dorsum straight, termen slightly convex. Hindwing fan-like. Wing uppersides bearing brown hairs proximally on hindwing, with ground color brown, ornamented with hyaline and yellow markings. On forewing, two prominent hyaline spots in cell M<sub>3</sub> and CuA<sub>1</sub>; one hyaline spot formed by fusion of two spots present at distal end of discoidal cell, three small hyaline spots in line subapically. A small creamy yellow spot at midst of cell CuA<sub>1</sub>. On hindwing, three hyaline spots present, in cell Rs, M<sub>3</sub>, CuA<sub>1</sub> Wing undersides with patterns similar to those of upperside, but much area overlaid by ochreous scalings. Fringe creamy white, but anterior portion

of forewing brown. A dark brown, glossy, linear sexual brand present proximal to discal spots on forewing. Female (PLATE 11, Fig. 91): Body and wing patterns similar to those of male, but wings broader, markings on wing more prominent, no sexual brand.

Male genitalia (PLATE 30, Fig. 194) – Tegumen broad basally, tapering caudad, forming deep invagination posteriorly; uncus bent, forming two long arms with distal portion narrowed. Gnathos separated. Saccus short, blunt anteriorly. Valva broad, sacculus much thicker than costa; ampulla small, ridged; harpe produced into a broad, dorsal, triangular piece with uneven margin. Phallus stout, with venter of aedeagus extending into prominent, long, flattened projection with distal end bearing a serrate ridge and a small saw-like ridge near opening of aedeagus. Juxta as a narrow belt.

Female genitalia (PLATE 48, Fig. 264) – Corpus bursae oval, wrinkled posteriorly. Ductus bursae membranous, short, thick, with transverse folds,. Ostium bursae large, surrounded by sclerotized wall. Sterigma elaborated; antevaginalis sclerotized, with small, linear folds; postvaginalis a large sheet with lateral margin forming setose bands, a medial lobe bearing long seate at posterior margin. Anal papillae rectangle, setose. Anterior apophyses short, broad at base, tapering to acute distal end. Posterior apophyses elongate, slender.

**Global distribution.** Myanmar, Thailand, West China, and Taiwan (Chiba & Tsukiyama, 1996).

**Distribution in Taiwan.** Moderate to higher elevations in montane zones (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Yushania niitakayamensis* (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence (Hsu, 2013).

**Remarks.** Ssp. *yuchingkinus* was describe as a subspecies of *Ochlodes siva* (Moor, 1878) (Type locality: Khasia hills) (Murayama & Shimonoya, 1963). Chiba & Hsu (1988) argued that it should belong to *O. bouddha*.

**形態特徵：**成蝶前翅長 15-19 mm。雌雄二型性顯著。雄蝶 (圖 90)：頭被毛，褐色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，形成一隆起毛叢，黑褐色雜白色；第 3 節細小，呈褐色。胸部褐色。足褐色。腹部背面褐色，腹面灰白色。前翅呈三角形，前後緣直線狀，外緣略突出。後翅扇形。翅背面底色褐色，綴有透明及黃色斑紋，近翅基處覆有褐色毛。前翅  $M_3$  及  $CuA_1$  室各有一鮮明之透明斑點。中室末端有兩融合為一之透明斑點，翅頂附近有三只小斑點排成一線。 $CuA_1$  室中央有一黃白色斑點。後翅中央  $Rs$ 、 $M_3$  及  $CuA_1$  室各具一透明斑點。翅腹面斑紋與翅背面相似，但大部分覆土黃色鱗。前翅前端緣毛褐色，其餘黃白色，前翅中央斑列內側具一有光澤之黑褐色線狀性標。雌蝶 (圖 91)：形態特徵與雄蝶相似，但是翅幅較寬，斑紋較鮮明且無性標。

**雄交尾器 (圖 194)：**背兜基部寬闊，尾端漸窄，末端深凹入；鉤突長臂狀、彎曲，末端漸窄。顎形突分離。囊突短，先端鈍。抱器寬闊，抱器腹遠較報器背厚；抱器內突細小，脊狀；抱握鈎寬闊，背側邊緣不平整，呈三角形突起。陽莖碩大，陽莖器腹側延伸出長、扁平之突起，其末端具鋸齒狀脊及小鋸脊。陽基軛片窄帶狀。

**雌交尾器 (圖 264)：**交尾囊卵圓形，後側有皺褶。交尾囊管膜質、粗短，有橫向皺褶。交尾孔大型，周圍具骨化壁。交尾孔板複雜；前板骨化，具線狀皺褶；後板大，兩側帶狀，有毛，後緣中間凸起，具長毛。肛突矩形，具毛。前內骨突短，基部寬，末端漸尖。後內骨突長，纖細。

**世界分布：**緬甸、泰國、華西、臺灣 (Chiba & Tsukiyama, 1996)。

**臺灣分布：**本島中高海拔山區。

**寄主植物：**禾本科之玉山箭竹。

**生物學：**本種是一年一世代物種。

**生物學：**Murayama & Shimonoya (1963) 記述 *ssp. yuchingkinus* 時視為溼婆赭弄蝶 *Ochlodes siva* (Moor, 1878) 之亞種。Chiba & Hsu (1988) 指出本種應屬於菩提赭弄蝶。

## Genus *POTANTHUS* Scudder, 1872

**Type species:** *Hesperia omaha* Edwards, 1863

Diagnostic characters include the followings: 1) antenna approximately 1/2 forewing costa in length; 2) wings dark brown with yellow or orange markings; 3) sexual brand along vein 1A+2A of forewing upperside of male in most species (Evans, 1949; Bascombe *et al.*, 1999).

About 30 species are known, mainly distributed in the Oriental Region, but extending to western Australian Region (Tsukiyama *et al.*, 1997).

Four or five species occur in Taiwan.

### 黃斑弄蝶屬

形態特徵如下：1) 觸角長度約前翅前緣長度二分之一；2) 翅黑褐色，綴有黃色或橙色斑；3) 多數種類雄蝶於前翅背面 1A+2A 脈具性標 (Evans, 1949; Bascombe *et al.*, 1999)。

本屬已知約 30 種，主要分布於東洋區，澳洲區西部亦有分布 (Tsukiyama *et al.*, 1997)。

臺灣有 4 或 5 種。

***Potanthus confucius* (C. & R. Felder, 1862) (黃斑弄蝶/臺灣黃斑弄蝶/孔子黃室弄蝶)**

*Pamphila confucius* C. & R. Felder, 1862: Wiener entomologische monatschrift 6 (1): 29. (Type locality: Ning-Po, [China])

***Ssp. angustatus* Matsumura, 1910**

**PLATE 12, Figs. 92-95; PLATE 30, Fig. 195; PLATE 48, Fig. 265**

*Augiades dara* var. *angustata* Matsumura, 1910: Entomologische Zeitschrift 23 (41): 181. (Type locality: not stated [Koshun, Formosa])

*Potanthus confucius angusta* Shirôzu, 1960: Butterflies of Formosa in Colour: 396. (Incorrect subsequent spelling)

*Potanthus wilemanni* Evans, 1934: The Entomologist 67 (8): 184. (Type locality: Formosa) (**syn. nov.**)

*Potanthus miyashitai* Fujioka & Tsukiyama, 1975: Butterflies of Japan: 280. (Type locality: Nakano, Iriomote-jima Island, Yaeyama Islands, Okinawa-ken, Japan) (**stat. rev.**)

**Ssp. *confucius* C. & R. Felder, 1862**

**PLATE 12, Figs. 96-97; PLATE 30, Fig. 196; PLATE 48, Fig. 266**

**Specimens examined:**

Ssp. *angustatus*: **JILONG [= KEELUNG] CITY**: 1♂, 1♀, Jilongyu, 25. IX. 2011 (H. C. Huang); 1♂, Longgang Trail, 26. IX. 2006 (Y. F. Hsu). **TAIPEI CITY**: 1♂, NTU Campus, 14. IX. 1986 (Y. F. Hsu); 1♂, same locality, 21. IX. 1986 (Y. F. Hsu); 1♂, same locality, 23. IX. 1987 (Y. F. Hsu); 1♀, same locality, 3. X. 1987 (Y. F. Hsu); 1♂, same locality, 1. IX. 1995 (Y. F. Hsu), 1♂, Wenshan, Gongguan Campus, NTNU, 22. IX. 2000 (Y. F. Hsu); 1♀, same locality, 10. I. 2002, reared from *Paspalum conjugatum*, emgd. 14. III. 2003, HSU 03A20 (H. S. Chuen); 1♀, same locality, 28. IX. 2011, reared from *Miscanthus* sp., emgd. 30. IX. 2011, HSU 11J44 (Y. F. Hsu). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]**: 1♀, Sanxia, Manyueyuan Fall, 28. V. 1997 (C. C. Lu); 1♀, Ruifang, Nanya, 3. VIII. 1993 (S. H. Yen); 1♀, same locality, 17. IV. 2002 (H. S. Chuen); 1♀, Wulai, 23. XI. 2006 (Y. F. Hsu). **TAOYUAN CITY [TAOYUAN Co.]**: 1♀, Fuxing, Ronghua/ Sule, 13. V. 1987 (Y. F. Hsu); 2♂, Longtan, 5. X. 1999 (Y. F. Hsu); 1♂, 1♀, same locality, 18. IX. 1999 (Y. F. Hsu); 1♂, same locality, 27. IX. 2002 (Y. F. Hsu); 1♀, Longtan, 245m, 14. IX. 1999 (Y. F. Hsu); 1♀, Xinwu, Dongming, 125m, 15. IX. 1999 (Y. F. Hsu & L. H. Wang). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]**: 1♂, Dongshi, Dongshi Forest Garden, 1. VII. 1996 (Y. F. Hsu); 2♂, Longjing, Longmujing Trail, 13. IX. 2009 (Y. F. Hsu). **ZHANGHUA [= CHANGHUA] Co.**: 1♀, Changhua, NCUE, 3. XI. 1996 (C. Y. Hung); 1♀, Tianzhong, 18. XI. 1995 (Y. F. Hsu); 1♂, same locality, 8. V. 1996 (Y. F. Hsu). **NANTOU Co.**: 1♀, Renai, Ruru Skpite, 23. XI. 1996 (Y. F. Hsu); 1♂, Renai, Huisun, 30. XI. 1996 (Y. F. Hsu); 1♂, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F. Hsu); 2♂, 2♀, Renai, Puli, 450m, 4. VI. 1997 (Y. F. Hsu); 1♀, Yuchi, Lianhuachi, 5. X. 1997 (C. C. Lu); 1♀, same locality, 17. IX. 2000 (Y. F. Hsu); 1♂, same locality, 21. XI. 2001 (Y. F. Hsu & H. Chiba); 1♂, Yuchi, Lianhuachi, 550m, 8. X. 2002 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.**: 1♂, Fengbin, Changhongqiao, 21. X. 1996 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.**: 1♂, Dapu, Zhutoushan, 300m, 29. X. 2003 (Y. F. Hsu); 1♀, Dapu, 21. IX. 2000 (Y. F. Hsu); 1♂, Xingang, 10. III. 2007 (Y. F. Hsu); 1♂, same locality, 10. V. 2008, reared from *Phragmites vallatoria* [= *P. karka*], emgd.

30. V. 2008, HSU 08E9 (Y. F. Hsu); 2♂, Xingang, Yuemei, 12. II. 2006 (Y. F. Hsu); 1♀, Xingang, Yuemei, ca 15m, 11. VI. 2007 (Y. F. Hsu); 1♂, Fanlu, Chukou, 11. X. 2004 (Y. F. Hsu); 2♂, Fanlu, Chukou, ca 350m, 10. X. 2005 (Y. F. Hsu); 1♂, same locality, 31. VII. 2005, J. K. Tung); 2♂, Fanlu, Chukou, ca 300m, 4/5. IX. 2004 (R. K. Dong); 1♂, Fanlu, Nipusa, 1. I. 2009 (Y. F. Hsu), 1♂, Alishan, Shanmei, 30. III. 2008 (Y. F. Hsu); 1♂, Zhuqi/Alishan, Shizhou/Dabang, 900/1000m, 2. V. 2010 (R. K. Dong & Y. F. Hsu); 1♂, Meishan, Ruili, ca 1100m, 30. XI. 2008 (Y. F. Hsu). **JIAYI [= CHIAYI] CITY:** 1♂, Lantan, 10. III. 2008 (R. K. Dong). **TAINAN CITY [= TAINAN Co.]:** 2♂, 1♀, Baihe, Zhentoshan, 500m, 4. IX. 2002 (Y. F. Hsu); 4♂, 1♀, same locality, 17. IX. 2002 (Y. F. Hsu); 1♂, same locality, 8. X. 2002 (Y. F. Hsu); 3♂, 2♀, same locality, 15. X. 2002 (Y. F. Hsu), 1♂, Baihe, Zhentoushan, 29. III. 2003, emgd. 23. V. 2003, HSU 03C51 (Y. F. Hsu); 1♀, same locality, 28. VIII. 2004, HSU 04H49 (Y. F. Hsu); 2♀, same locality, 28. VIII. 2004 (Y. F. Hsu); 1♂, 2♀, same locality, 10. IX. 2004 (Y. F. Hsu); 1♂, same locality, 10. IX. 2004, reared from *Miscanthus* sp., emgd. 25. IX. 2004, HSU 04J7 (Y. F. Hsu); 1♀, Baihe, Guanziling, 1. IX. 2007 (R. K. Dong); 6♂, Baihe, Guanziling, 300m, 24. IX. 2003 (Y. F. Hsu); 1♂, Xinhua, 24. II. 2006 (Y. F. Hsu); 1♂, same locality, 9. II. 2007 (Y. F. Hsu); 1♂, same locality, 27. IV. 2010 (Y. F. Hsu); 2♂, same locality, 27. V. 2010 (Y. F. Hsu); 2♂, 2♀, Yongkang, Sankandian, 23. I. 2010 (Y. F. Hsu); 1♂, Yongkang, 5. IX. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]:** 1♀, Shanping/Nanfengshan, 6. VII. 1989 (C. L. Li); 1♂, Maolin, Shanping, 18. II. 1992 (S. H. Yen); 1♀, Lake Jinshi, 29. III. 1997 (Y. F. Hsu); 1♀, same locality, 22. XI. 1997 (Y. F. Hsu); 1♂, 1♀, same locality, 19. III. 1999 (S. C. Chen); 1♀, Jiaxian, 250m, 29. VI. 2003 (Y. F. Hsu); 1♂, Xiaogang, Dalinpu, 27. XII. 2003 (Y. F. Hsu); 1♂, Meinong, Shuangxi, 150m, 8. II. 2006 (Y. F. Hsu); 1♂, same locality, 31. XII. 2006 (Y. F. Hsu); 1♂, same locality, 22. I. 2007 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♂, Hengchun, Kending, 16. VII. 1987 (Y. F. Hsu); 1♂, Hengchun, Fengchuisha, 2. XII. 1995 (Y. F. Hsu); 1♀, Hengchun, Sichongxi, 7. IX. 2000 (Y. F. Hsu); 1♀, Fangliao, Yuquan, 19. III. 2006 (Y. F. Hsu); 1♀, same locality, 21. I. 2007 (Y. F. Hsu); 1♂, Hengchun, Sheding, 22. I. 2007 (Y. F. Hsu); 1♀, Wutai, Wutoushan, 1200m, 28/29. IV. 2002 (C. C. Lu & J. L. Huang); 1♀, Mudan, Xuhai, 150m, 23. X. 2009 (Y. F. Hsu); 1♀, Mudan, Yongjing, 80m, 19. X. 2008 (Y. F. Hsu); 1♂, Sandimen, 250m, 10. II. 2007 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 2♂, Jinfeng, Bilu Spring, 17. X. 2000 (C. C. Lu); 1♂, 2♀, Yanping, Taoyuan, 15. V. 1988 (Y. F. Hsu & T. H. Li); 1♂, Yanping, Hongye, 4. I. 1988 (Y. F. Hsu & T. H. Li); 2♂, same locality, 6. II. 1988 (Y. F. Hsu & T. H. Li); 1♀, same locality, 7. II. 1988 (Y. F.

Hsu & T. H. Li); 2♂, same locality, 30. IX. 2000 (Y. F. Hsu); 1♂, Ludao, 30. VI. 1986 (Y. F. Hsu); 1♂, 3♀, same locality, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 25/27. IX. 2004, reared from *Miscanthus* sp., emgd. 4. X. 2004, HSU 04J44.1 (Y. F. Hsu & H. C. Huang); 1♂, Lanyu, Chinjentung, 20. I. 1990 (C. F. Lee); 3♀, Lanyu, 24. VII. 1993 (S. H. Yen); 1♂, same locality, 24. VIII. 1999, reared from *Miscanthus* sp., emgd. 14. IX. 1999 (C. Y. Hung); 1♀, same locality, 24. VIII. 1999 (C. Y. Hung); 1♂, 3♀, same locality, 21/23. IX. 2008 (H. C. Huang & C. H. Lin jr); 1♂, Lanyu, 10K, 12. VIII. 2000 (C. C. Lu); 1♀, Lanyu, Langdao, 13/15. VIII. 2002 (Y. F. Hsu); 1♂, 1♀, Lanyu, Sidaogou, 13/15. VI. 2003 (Y. F. Hsu); 2♀, same locality, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♂, 1♀, same locality, 28/29. IX. 2003 (Y. F. Hsu); 1♂, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 2♂, 1♀, same locality, 18. IV. 2006 (Y. F. Hsu); 2♂, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 2♀, Lanyu, Badai Bay, 3/4. VII. 1998 (C. C. Lu); 2♂, 1♀, Lanyu, Longtaoyan, 18/22. VIII. 1998 (C. C. Lu & C. Y. Hung); 1♂, 1♀, Lanyu, Qiwei, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 3♂, Taitung, Pipa Lake, 4. VI. 2006 (Y. F. Hsu).

*Ssp. confucius*: **LIANJIANG [= LIENCHIANG] Co.:** 1♀, Beigan, Tangqi, 27. VII. 2000, reared from *Panicum* sp., emgd. 5. IX. 2000, HSU 00G45 (Y. F. Hsu) (genitalia preparation JYL 365); 1♂, 1♀, Beigan, Daqiu, IV. 20. 2017 (Y. F. Hsu & H. C. Huang). **JINMEN Co.:** 1♂, Jincheng, Luojiang, X. 10. 2016 (L. Huang) (genitalia preparation JYL 366).

**Description.** Adult – Forewing length 10–13 mm. Sexual dimorphism moderately present. Male (PLATE 12, Figs. 92, 93, 96): Head hairy, orange mixed with brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming upright tuft, creamy yellow; 3rd segment small, brown. Thorax orange mixed with brown, legs orange. Abdomen brown dorsally, orange laterally, creamy white ventrally. Forewing triangular, apex acute, costa, dorsum straight, termen slightly convex. Hindwing fan-like. Wing uppersides bearing orange hairs proximally on hindwing, with ground color brown, ornamented with orange yellow markings. On forewing, prominent orange yellow markings forming a discal band, filling up discoidal cell, and along costa, with prominent dark margin along termen and a dark area proximally. On hindwing, an orange yellow discal band and a spot in discoidal cell present. No dark brown

scalings along veins in discal band. Additional spots present in cell Sc+R<sub>1</sub> and Rs. Wing undersides with patterns similar to those of upperside, but much area covered by orange scalings; spots edged by dark brown spots. Fringe orange yellow, but anterior portion of forewing brown. A dark brown, linear sexual brand present by at midst of 1A+2A. Female (PLATE 12, Figs. 94, 95, 97): Body and wing patterns similar to those of male, but wings broader, yellow marking in discoidal cell of forewing less extensive, veins in discal bar on wing upperside covered by dark brown scalings, and no sexual brand.

Male genitalia (PLATE 30, Figs. 195-196) – Tegumen broad, tapering caudally, with uncus forming shallow, medial indentation. Gnathos indistinguishable. Saccus elongate, tapering cephalically. Valva broad, with distal end forming two projections; ampulla weakly produced, harpe as a horn-like process. Phallus slightly up-curved caudally. Juxta as a V-shaped sclerite.

Female genitalia (PLATE 48, Figs. 265-266) – Corpus bursae oval. Ductus bursae membranous, leading to large ostium bursae sided by two lobes. Sterigma forming a dome, with a pair of sclerotized, invaginated pouches. Anal papillae rectangle, setose. Posterior apophyses much longer than anterior apophyses.

**Variations.** Individuals appear in the dry season or cold spell possess duller coloration on wing undersides, sometimes tinged with red. Discal band on forewing upperside is usually conjoined with subapical spots, but sometimes detached from them in dry season or cold spell.

**Global distribution.** India, Sri Lanka, Andamans, Nicobar, Himalayas, Indochina, Malay Peninsula, Sumatra, Java, Lesser Sunda Islands, Palawan, South China, Taiwan (Tsukiyama, 1983).

**Distribution in Taiwan.** Lowland to moderate elevation on main island of Taiwan, including associated islands. Populations in Jinmen and Mazu Islands have been regarded belong to the nominotypical subspecies (Hsu, 2013).

**Larval Host plant(s).** Various kinds of grasses in the family Poaceae, including *Digitaria*

*radicosa* var. *hirsuta*, *Imperata cylindrica*, *Ischaemum indicum*, *Miscanthus floridulus*, *M. sinensis*, *Paspalum conjugatum*, *Setaria palmifolia*, *Pennisetum purpureum*, *Phragmites vallatoria*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2006).

**Remarks.** The taxonomic identity of an obscure taxon named *Potanthus juno wilemanni* Evans, 1934 remains unclear until today, although Tsukiyama (1981) has demonstrated that *wilemanni* differs from *P. juno* (Evans, 1932) (Type locality: “Rangoon to S. Burma. Malaya”) in wing pattern and structure of uncus, and the two taxa are not conspecific. Although no specific site for type locality of *wilemanni* was given in the original description by Evans (1934), the unique type in NHM bears a label reading “Kanshirei, Formosa. 1,000 ft. 13. VII. [19]08” A. E. Wileman/Wileman Coll. B.M. 1929-261”. This taxon had not been collected until Fujioka (1979) considered the type specimen of *Potanthus miyashitai* Fujioka & Tsukiyama, 1975 (PLATE 12, Fig. 98) should be conspecific with it. Tsukiyama *et al.* (1997) argued that the type specimen of *Potanthus miyashitai* was probably collected from Taiwan rather than its presumable type locality Iriomote, involving mislabelling. The external morphology of both *P. wilemanni* and *P. miyashitai* resembles that of *P. confucius* in male genitalia, in spite of a narrower uncus demonstrated by Fujioka (1975, 1979). They differ from typical *P. confucius* by having subapical spots detached from discal band on forewing, but it is known that some individuals of ssp. *angustatus* of *P. confucius* in dry season also possess this trait. We came to the conclusion that both *P. wilemanni* and *P. miyashitai* represent dry season individuals and both synonyms of *P. confucius angustata* (**syn. nov.**).

The “*P. juno wilemanni*” in Hsu *et al.* (1989) actually represents a dry season individual of *P. pava* with deeper color tone of the yellow markings.

**形態特徵：**成蝶前翅長 10-13 mm。略顯雌雄二型性。雄蝶（圖 92、93、96）：頭被毛，橙黃色混褐色。觸角背面褐色，腹面褐色，有橙黃色環；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節背毛，形成隆起毛叢，呈黃色；第 3 節小，褐色。胸部橙色混褐色。足橙黃色。腹部背面褐色，側面橙黃色，腹面黃白色。前翅呈三角形，翅頂尖，前後緣直線狀，外緣略突出。後翅呈扇形。翅背面底色褐色，

綴有橙黃色斑紋，近翅基處覆有橙黃色毛。中央斑帶由數只鮮明橙黃色紋形成，橙黃紋填滿中室，並延伸至前緣。後翅有橙黃色中央斑帶，中室內有一斑點。中央斑帶之翅脈無黑褐色鱗覆蓋。 $Sc+R_1$  及  $R_s$  室有斑點。翅腹面斑紋與背面相似，但大部分覆橙黃色鱗，翅面橙黃色斑點鑲黑褐色斑點。緣毛於前翅前端褐色，其餘黃色。 $1A+2A$  脈中央有黑褐色線形性標。雌蝶 (圖 94、95、97)：形態特徵與雄蝶相似，但翅幅較寬，前翅中室黃色斑紋較小，翅背面中央斑帶之翅脈覆蓋黑褐色鱗；無性標。

雄交尾器 (圖 130)：背兜寬闊，向後端漸窄，鉤突末端中央有淺凹陷。顎形突退化。囊突長，末端漸細。抱器寬闊，末端具兩突起；抱器內突略張出，抱握鈹呈角狀突起。陽莖略上彎。陽基軛片為 V 形骨片。

雌交尾器 (圖 167)：交尾囊卵圓形。交尾囊管膜質，於交尾孔處擴大，交尾孔兩側有葉狀構造。交尾孔板圓頂狀，具一對內陷骨化袋。肛突矩形，具毛。後內骨突長度遠較前內骨突長。

**變異：**乾季或低溫期個體翅腹面色彩較淺，有時帶些許紅色。前翅背面中央斑帶常與翅頂附近之小斑分離。

**世界分布：**印度、斯里蘭卡、安達曼 - 尼科巴群島、喜瑪拉雅地區、中南半島、馬來半島、蘇門答臘、爪哇、小巽他群島、巴拉望、華南、臺灣 (Tsukiyama, 1983)。

**臺灣分布：**本島低至中海拔地區及離島。分布於金門及馬祖列島之族群屬於承名亞種。

**寄主植物：**禾本科之多種禾草，包含毛馬唐、白茅、印度鴨嘴草、五節芒、芒、兩耳草、棕葉狗尾草、象草、開卡蘆等。

**生物學：**本種是一年多世代物種。

**註記：**雖然 Tsukiyama (1981) 證明被命名為韋氏黃斑弄蝶 *Potanthus juno wilemanni* Evans, 1934 之分類群與分布於中南半島之 *P. juno* (Evans, 1932) 於翅紋及鉤突構造相異，因此兩者並非同種，但韋氏黃斑弄蝶之分類地位至今仍未釐清。韋氏黃斑弄蝶之原始描述並未記載詳細地點，但存放於英國自然史博物館的模式標本，標本籤上記錄採集資訊為 “Kanshirei (關子嶺), Formosa. 1,000 ft. 13. VII. [19]08” A. E. Wileman/Wileman Coll. B.M. 1929-261”。此分類群自命名後直到 Fujioka

(1979) 判斷模式產地為日本西表島的宮下黃斑弄蝶 *Potanthus miyashitai* Fujioka & Tsukiyama, 1975 之單一模式標本 (圖 98) 與韋氏黃斑弄蝶同種前，無其他採集記錄。Tsukiyama *et al.* (1997) 指出宮下黃斑弄蝶模式標本採集標籤可能誤植，其產地可能來自臺灣而非原記載之西表島。韋氏黃斑弄蝶及宮下黃斑弄蝶之雄蝶交尾器外形態與黃斑弄蝶相似，僅鉤突較窄 (Fujioka & Tsukiyama, 1975; Fujioka, 1979)。兩者翅紋差異在於韋氏黃斑弄蝶之中央斑帶與翅頂小斑分離，但黃斑弄蝶部分乾季形個體亦有此特徵。我等判斷韋氏黃斑弄蝶及宮下黃斑弄蝶均應為黃斑弄蝶之乾季型個體，而為黃斑弄蝶之同物異名。

Hsu *et al.* (1989) 論文中的韋氏黃斑弄蝶實係淡黃斑弄蝶黃色斑紋色彩較深之乾季型個體。

***Potanthus pava* (Fruhstorfer, 1911) (淡色黃斑弄蝶 / 寬紋黃室弄蝶)**

**PLATE 12, Figs. 99-100; PLATE 30, Fig. 197; PLATE 48, Fig. 267**

*Telicota yojana pava* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (3): 40. (Type locality: Formosa, Chip-Chip)

*Telicota yojana parva* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (3): 139. (emendation)

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Wulai, 9. VI. 1984 (Y. F. Hsu); 1♀, same locality, 16. X. 1986 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Longjing, Longmujing Trail, 13. IX. 2009 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 1♂, Shoufeng, Baipaoxi, 11. X. 2008 (C. C. Lu, jr). **TAINAN CITY [TAINAN Co.]:** 1♂, Xinhua, Dakeng, 80m, 25. II. 2006 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]:** 1♂, Tianliao, 100m, 9. IV. 2010 (Y. F. Hsu). **YILAN Co.:** 1♂, Toucheng, Guishan Is., 1. IV. 2005 (H. C. Huang); 1♂, same locality, 5/6. XI. 2005 (H. C. Huang); 2♂, same locality, 23. IX. 2006 (H. C. Huang). **TAIDONG [= TAITUNG] Co.:** 1♂, Lanyu, Qinrengu, 20. I. 1990 (C. F. Lee); 1♀, Lanyu, Badai Bay, 3/4. VII. 1998 (C. C. Lu); 1♀, Lanyu, 15. VII. 1999 (C. Y. Hung); 1♀, Lanyu, Sidaogou, 13/15. VI. 2003 (Y. F. Hsu); 1♂, 1♀, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♂, same locality, 17. VIII. 2003 (Y. H. Lee); 1♂, 1♀, same locality, 28/29. IX. 2003 (Y. F. Hsu); 2♂, same locality, 18/20. III. 2006 (Y. F. Hsu & H. C. Huang); 2♂, same locality, 18. IV. 2006 (Y. F. Hsu); 1♂, same locality, 3/5. III. 2007 (Y. F. Hsu & H. C. Huang); 2♂, 2♀, same locality, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂,

same locality, 18. VIII. 2008 (Y. F. Hsu); 1♂, 1♀, same locality, 16/18. III. 2012 (Y. F. Hsu & H. C. Huang); 1♂, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 1♀, same locality, 25/27. IX. 2004, reared from *Miscanthus* sp., emgd. 14. X. 2004, HSU 04J44.1 (Y. F. Hsu & H. C. Huang); 1♀, Lanyu, Qiwei, 6/8. VIII. 2003 (Y. F. Hsu, C. C. Hsieh & Y. J. Yang); 1♂, Lanyu, 20. VIII. 2008 (Y. F. Hsu); 1♂, Daren, Senyong, IV. 2000 (C. L. Tang); 1♀, Dawu, Dawu, 30. X. 1993 (S. H. Yen); 1♂, Yenping, Taoyuan, 15. V. 1988 (Y. F. Hsu & T. H. Li).

**Description.** Adult – Forewing length 14–16 mm. Sexual dimorphism moderately present. Male (PLATE 12, Fig. 99): Head hairy, orange mixed with brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming raised tuft, creamy yellow; 3rd segment small, brown. Thorax orange mixed with brown, legs orange. Abdomen brown dorsally, orange laterally, creamy white ventrally. Forewing triangular, apex acute, costa, dorsum straight, termen slightly convex. Hindwing fan-like. Wing uppersides bearing orange hairs proximally on hindwing, with ground color brown, ornamented with yellow markings. On forewing, prominent yellow markings forming a discal band, filling up discoidal cell, and along costa, usually also into proximal area of cell CuA<sub>1</sub>, with prominent dark margin along termen and a dark area proximally. On hindwing, an orange yellow discal band and a spot in discoidal cell present. No dark brown scalings along veins in discal band. Additional spots present in cell Sc+R<sub>1</sub> and Rs. Wing undersides with patterns similar to those of upperside, but much area covered by orange scalings; spots edged by narrow, dark brown striae. Fringe yellow, but anterior portion of forewing brown. A dark brown, linear sexual brand present at midst of 1A+2A. Female (PLATE 12, Fig. 100): Body and wing patterns similar to those of male, but wings broader, yellow marking in discoidal cell of forewing less extensive, veins in discal bar on wing upperside covered by dark brown scalings, and no sexual brand.

Male genitalia (PLATE 30, Fig. 197) – Tegumen broad, tapering caudally, with uncus forming two angled lateral processes and a small medial lobe with small, shallow indentation. Gnathos indistinguishable. Saccus elongate, tapering cephalically. Valva broad, with distal end forming two projections; ampulla produced, harpe as a horn-like process. Phallus slightly down-curved caudally. Juxta as a transverse sclerite.

Female genitalia (PLATE 48, Fig. 267) – Corpus bursae oval. Ductus bursae membranous, leading to large ostium bursae. Sterigma forming a dome, with a pair of sclerotized, invaginated, relatively long pouches. Anal papillae rectangle, setose. Posterior apophyses longer than anterior apophyses.

**Variations.** Individuals appear in the dry season or cold spell tend to have markings on wings deeper in tone.

**Global distribution.** South India, Sri Lanka, Himalayas, Indochina, Malay Peninsula, Sulawesi, Philippines, Taiwan (Tsukiyama, 1983).

**Distribution in Taiwan.** Lowland Taiwan, mainly in southern part of the island, also Guishan Island, Ludao, and Lanyu (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Imperata cylindrica*, *Miscanthus floridulus*, *M. sinensis*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** Fruhstorfer (1911) gave the name as *pava* in original description, but as *parva* in index, leading subsequent confusion on the name usage. Hsu *et al.* (1989) proposed justified emendation to use *pava* over *parva*.

**形態特徵：**成蝶前翅長 14-16 mm。略顯雌雄二型性。雄蝶（圖 99）：頭被毛，橙黃色混褐色。觸角背面褐色，腹面褐色，有橙黃色環；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節背毛，形成隆起毛叢，呈黃白色；第 3 節小，褐色。胸部橙黃色混褐色。足橙黃色。腹部背面褐色，側面橙黃色，腹面黃白色。前翅呈三角形，翅頂尖，前後緣直線狀，外緣略突出。後翅呈扇形。翅背面底色褐色，綴有橙黃色斑紋，近翅基處覆有橙黃色毛。中央斑帶由數只鮮明橙黃色紋形成，橙黃紋填滿中室，並延伸至前緣，亦常延伸至 CuA<sub>1</sub> 室內側，黑色部分僅餘沿外緣及翅面內側。後翅有橙黃色中央斑帶，中室內有一斑點。中央斑帶之翅脈無黑褐色

鱗覆蓋。 $Sc+R_1$  及  $R_s$  室有斑點。翅腹面斑紋與背面相似，但大部分覆橙黃色鱗，翅面橙黃色斑點鑲黑褐色細條。緣毛於前翅前端褐色，其餘黃色。 $1A+2A$  脈中央有黑褐色線形性標。雌蝶 (圖 100)：形態特徵與雄蝶相似，但翅幅較寬，前翅中室黃色斑紋較小，翅背面中央斑帶之翅脈覆蓋黑褐色鱗；無性標。

雄交尾器 (圖 197)：背兜寬闊，向後端漸窄，鉤突端兩側有小角，後端具小型葉狀突起，其中央淺凹。顎形突退化。囊突長，頂端漸細。抱器寬闊，末端具兩突起；抱器內突張出，抱握鉗有角狀突。陽莖略下彎。陽基軛片為一橫向骨片。

雌交尾器 (圖 267)：交尾囊卵圓形。交尾囊管膜質，於交尾孔處擴大。交尾孔板圓頂狀，具一對骨化內陷長袋。肛突矩形，具毛。後內骨突長度較前內骨突長。

**變異：**乾季及低溫型個體斑紋顏色較深。

**世界分布：**印度南部、斯里蘭卡、喜馬拉雅地區、中南半島、馬來半島、蘇拉威西、菲律賓、臺灣。

**臺灣分布：**主要分布於本島南部之低海拔地區，亦見於龜山島、綠島及蘭嶼。

**寄主植物：**禾本科之白茅、五節芒及芒。

**生物學：**本種是一年多世代物種。

**註記：**Fruhstorfer (1911) 於原始描述之本文及索引分別用了 *pava* 及 *parva* 兩種不同學名拼法，造成後來使用上之混淆。Hsu *et al.* (1989) 提出修正建議，認為有效用法應當是 *pava*。

***Potanthus motzui* Hsu, Li & Li, 1990 (墨子黃斑弄蝶 / 細帶黃斑弄蝶 / 墨子黃室弄蝶)**

**PLATE 12, Figs. 101-102; PLATE 31, Fig. 198; PLATE 49, Fig. 268**

*Potanthus motzui* Hsu, Li & Li, 1990: Journal of Taiwan Museum 43(1): 3. (Type locality: Taipei, Wulai)

**Specimens examined:**

**TAIPEI CITY:** 1♂, Shilin, Yangmingshan, 2. VIII. 2011 (H. C. Huang); 1♂, Wenshan,

Xianjiyan, 21. V. 2004 (P. Loh). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]**: 1♂, Xindian, Guangxing, 22. V. 2004, reared from ?*Paspalum*, 15. VI. 2004, HSU 04E70 (L. H. Wang); 2♂, Xindian, Sikanshui, 200m, 13. X. 2008 (Y. F. Hsu); 1♂, Wulai, 22. II. 2000, reared from *Setaria palmifolia* (L. H. Wang); 1♂, same locality, 19. V. 2004, reared from *Digitaria* sp., emgd. 10. VI. 2004, HSU 04E55 (L. H. Wang); 1♂, same locality, 12. V. 2006 (Y. F. Hsu); 1♂, Wulai, Fushan, Kalamoji, 14. VII. 2004 (Y. F. Hsu); 1♂, Wulai, Tonghou Forest Trail, 8. VI. 2004, reared from *S. palmifolia*, emgd. 30. IV. 2003, HSU 04F16 (L. H. Wang). **TAOYUAN CITY [= TAOYUAN Co.]**: 1♂, Fuxing, Sileng, 7. X. 2000 (Y. F. Hsu); 1♂, Longtan, 2. X. 1999 (S. H. Yen); 1♂, Longtan, 350m, 7. VI. 2002 (Y. F. Hsu); 1♂, Fuxing, Daman, 26. V. 2002 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]**: 1♀, Heping, Guguan, 1000m, 1. X. 1995 (Y. F. Hsu); 1♀, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu). **NANTOU Co.**: 1♀, Lugu, Fonghuanggu Bird and Ecology Park, 10. XII. 1995 (C. C. Lu); 1♂, same locality, 10. VII. 1996 (Y. F. Hsu); 1♀, same locality, 27. VII. 1996 (Y. F. Hsu); 1♀, same locality, 7. IX. 1996 (Y. F. Hsu); 2♂, 3♀, same locality, 23. XI. 1996 (Y. F. Hsu); 1♂, same locality, 26. V. 1997 (Y. F. Hsu); 1♂, Yuchi, Lianhuachi, 17. IX. 2000 (Y. F. Hsu); 1♂, Yuchi, Lianhuachi, 700m, 21. VIII. 2002 (Y. F. Hsu); 1♀, Renai, Songgang, 5. IX. 1993 (S. H. Yen); 1♂, Renai, Hewang, 16. X. 1993 (S. H. Yen); 1♂, Renai, Huisun, 30. XI. 1996 (Y. F. Hsu); 1♂, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F. Hsu); 2♂, 2♀, Renai, Nanshanxi, ca 900m, 1. IX. 2007 (Y. F. Hsu); 3♂, same locality, 23. I. 2008 (Y. F. Hsu); 1♂, 1♀, Renai, Huisun Forestry Station, 16. X. 2010 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.**: 1♂, Xiulin, Longxi/ Longjian, 10. VII. 1991 (Y. F. Hsu); 1♂, Xiulin, Taroko, 22. VII. 2005 (Y. F. Hsu); 3♂, 2♀, Xiulin, Huitouwan, ca 800m, 23. VII. 2005 (Y. F. Hsu); 1♂, Xiulin, Huoran Pavilion/Huejiachang, 9. VII. 1991 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.**: 1♂, 1♀, Dapu, Zhutoushan, 300m, 29. X. 2003 (Y. F. Hsu); 1♂, same locality, 10. XI. 2003 (Y. F. Hsu); 1♂, Fanlu, Chukou, 11. X. 2004 (Y. F. Hsu); 1♂, 2♀, Fanlu, Chukou, ca 300m, 4/5. IX. 2004 (R. K. Dong); 1♂, same locality, 18. IX. 2004 (R. K. Dong); 1♂, Fanlu, Chukou, ca 350m, 31. VII. 2005 (J. K. Tung); 1♂, 1♀, same locality, 10. X. 2005 (Y. F. Hsu); 3♂, 1♀, Alishan, Shanmei, 500m, 30. III. 2008 (Y. F. Hsu); 1♀, Alishan, Shanmei, ca 700m, 14. IV. 2009 (Y. F. Hsu); 2♂, 1♀, Zhuqi/ Alishan, Shizhou/Dabang, 900/1000m, 2. V. 2010 (R. K. Dong & Y. F. Hsu). **TAINAN CITY [TAINAN Co.]**: 1♂, Baihe, Zhentoushan, 500m, 4. IX. 2002 (Y. F. Hsu); 1♂, same locality, 8. X. 2002 (Y. F. Hsu); 1♂, Baihe, Zhentoushan, 28. VIII. 2004 (Y. F. Hsu); 1♀, same locality, 10. IX. 2004, parent of HSU 04J12 (Y. F. Hsu). **KAOSIUNG**

**CITY [KAOHSIUNG Co.]:** 1♂, Meinong, Shuangxi, 150m, 22. I. 2007 (Y. F. Hsu); 1♂, Taoyuan, Fenggangshan, 900m, 30. I. 2008 (Y. F. Hsu); 2♂, Taoyuan, Fenggangshan, 700m, 30. I. 2008 (Y. F. Hsu); 2♂, 1♀, Maolin, Shanping, 18. II. 1992 (S. H. Yen). **PINGDONG [= PINGTUNG] Co.:** 1♀, Wutai, Wutoushan, 9. IV. 1999 (Y. F. Hsu); 1♂, Shizi, Lilongshan, 500m, 17. II. 2008 (Y. F. Hsu); 1♂, Shizi, Shuangliu, 200/400m, 30. IV. 2006 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 2♂, 2♀, Chihpen [= Zhiben], 500m (Y. F. Hsu); 2♂, Ludao, 31. X. 1993 (S. H. Yen); 1♂, Jinfeng, Bilu Spring, 17. X. 2000 (C. C. Lu); 1♂, Yanping, Hongye, 5. X. 1997 (Y. F. Hsu); 1♂, Donghe, Donghe Fram, 350m, 16. X. 2007 (Y. F. Hsu).

**Description.** Adult – Forewing length 11–4 mm. Sexual dimorphism moderately present. Male (PLATE 12, Fig. 101): Head hairy, orange mixed with brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming upright tuft, creamy yellow; 3rd segment small, brown. Thorax orange mixed with brown, legs orange. Abdomen brown dorsally, orange laterally, creamy white ventrally. Forewing triangular, apex acute, costa, dorsum straight, termen slightly convex. Hindwing fan-like. Wing uppersides bearing orange hairs proximally on hindwing, with ground color brown, ornamented with orange yellow markings. On forewing, prominent orange markings forming a discal band, filling up discoidal cell, and along costa, with prominent dark margin along termen and a dark area proximally. Discal band on forewing upperside is usually detached from subapical spots. On hindwing, an orange discal band and a spot in discoidal cell present. Dark brown scalings present along veins in discal band. Additional spots usually present in cell Sc+R<sub>1</sub> and Rs. Wing undersides with patterns similar to those of upperside, but much area covered by orange scalings in darker tone; spots edged by dark brown spots. Fringe orange yellow, but anterior portion of forewing brown. A dark brown, linear sexual brand present by at midst of 1A+2A. Female (PLATE 12, Fig. 102): Body and wing patterns similar to those of male, but wings broader and no sexual brand.

Male genitalia (PLATE 31, Fig. 198) – Tegumen broad, tapering caudally, with uncus forming shallow, medial indentation. Gnathos indistinguishable. Saccus elongate, tapering cephalically. Valva broad, with distal end forming two projections; ampulla

weakly produced, harpe as a horn-like process. Phallus slightly up-curved caudally. Juxa as a V-shaped sclerite.

Female genitalia (PLATE 49, Fig. 268) – Corpus bursae oval. Ductus bursae membranous, leading to large ostium bursae sided by two small lobes. Sterigma forming a dome, with a pair of sclerotized, invaginated pouches. Anal papillae rectangle, setose. Posterior apophyses much longer than anterior apophyses.

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

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

**Larval Host plant(s).** Various kinds of grasses in the family Poaceae, including *Setaria palmifolis*, *Digitaria radicata* var. *hirsuta*, *Microstegium ciliatum*, *Miscanthus floridulus*, and *Pennisetum purpureum*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2006).

**Remarks.** This species was mis-identified as *Potanthus juno wilemanni* in the past (e. g. Shirôzu, 1960; Hamano, 1987). Tsukiyama (1981) first pointed out that it should be considered as a distinct species, Hsu *et al.* (1990) subsequently described it as *P. motzui*, named after an ancient Chinese philosopher Mo Tzu, the founder of Mohism in the Warring State period (475 – 221 BC).

**形態特徵：**成蝶前翅長 11-14 mm。略顯雌雄二型性。雄蝶 (圖 101)：頭被毛，橙色混褐色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節背毛，形成隆起毛叢，呈橙黃色；第 3 節細小，褐色。胸部橙色混褐色。足橙黃色。腹部背面褐色，側面橙黃色，腹面黃白色。前翅呈三角形，翅頂尖，前後緣直線狀，外緣略突出。後翅呈扇形。翅背面底色褐色，綴有橙黃色斑紋，近翅基處覆有橙黃色毛。中央斑帶由數只鮮明橙黃色紋形成，橙黃紋填滿中室，並延伸至前緣，黑色部分僅餘沿外緣及翅面內側。後翅有橙黃色中央斑帶，中室內有一斑點。中央斑帶之翅脈覆黑褐色鱗。Sc+R<sub>1</sub> 及 Rs 室有斑點。翅

腹面班紋與背面相似，但大部分覆橙黃色鱗，翅面橙黃色斑點鑲黑褐色斑點。緣毛於前翅前端褐色，其餘黃色。1A+2A 脈中央有黑褐色線形性標。雌蝶 (圖 102)：形態特徵與雄蝶相似，但翅幅較寬；無性標。

雄交尾器 (圖 198)：背兜寬闊，向後端漸窄，鉤突末端中央有淺凹陷。顎形突退化。囊突長，向前漸細，末端棒狀。抱器寬闊，末端具兩突起；抱器內突略張出，把握鈹呈角狀突起。陽莖略上彎。陽基軛片為 V 形骨片。

雌交尾器 (圖 268)：交尾囊卵圓形。交尾囊管膜質，於交尾孔處擴大為兩個小裂片。交尾孔板圓頂狀，具一對袋狀內陷，骨化。肛突矩形，具剛毛。後內骨突長度較前內骨突長甚多。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島低至中海拔地區。

**寄主植物：**禾本科之多種禾草，包含棕葉狗尾草、毛馬唐、剛莠竹、五節芒及象草等。

**生物學：**本種是一年多世代物種。

**註記：**本種以往被誤鑑定為韋氏黃斑弄蝶 (例如 Shirôzu, 1960; Hamano, 1987)。Tsukiyama (1981a) 首先指出本種應為不同物種，隨後 Hsu *et al.* (1990) 以墨家之創建者，戰國時期哲學家墨子命名之。

***Potanthus diffusus* Hsu, Tsukiyama & Chiba, 2005 (蓬萊黃斑弄蝶 / 蓬萊黃室弄蝶)**

**PLATE 13, Figs. 103-104; PLATE 31, Fig. 199; PLATE 49, Fig. 269**

*Potanthus diffusus* Hsu, Tsukiyama & Chiba, 2005: Insect Systematics & Evolution 36: 176, f. 1-10.  
(Type locality: Taiwan, Hualien Co., Xiulin Qilai, ca. 1400m)

**Specimens examined:**

**NEW TAIPEI CITY [= TAIPEI Co.]:** 1♂, Wulai, Fushan, 15. IV. 2005 (Y. F. Hsu).  
**TAOYUAN CITY [TAOYUAN Co.]:** 1♀, Fuxing, Xuanyuan, ca 1000m, 7. V. 1997 (paratype) (Y. F. Hsu). **XINZHU [=HSINCHU] Co.:** 1♀, Jianshi, Lidongshan, 1550m, 13. VI. 2004 (paratype) (H. C. Huang & L. Huang). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]:** 1♂, Heping, Guguan, 11. V. 1991 (paratype) (Y. F. Hsu);

1♂, Heping, Guguan, ca 1000m, 12. VI. 1998 (paratype) (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F. Hsu); 1♂, Renai, Beidongyanshan, ca 1800m, 6. XII. 2005, reared from *Miscanthus sinensis*, emgd. 7. II. 2006, HSU 05M17 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 1♂, Xiulin, Qilai, ca 1400m, 11. VII. 1991 (paratype) (Y. F. Hsu); 1♀, Xiulin, Tongmen, Qilai Forest Trail, 1500m, reared from *M. sinensis*, emgd. 21. III. 2007, HSU 07A11 (L. H. Wang); 1♀, Xiulin, Xinbaiyang, ca 1700m, 20. VII. 2007 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.:** 1♂, Meishan, Gongtian, 8. VIII. 2004 (paratype) (R. K. Dong); 2♂, 1♀, Fanlu, Chukou, ca 300m, 28. IX. 2004 (R. K. Dong); 1♂, same locality, 29. VIII. 2008 (Y. F. Hsu); 2♂, Fanlu, Chukou, ca 350m, 31. VII. 2005 (J. K. Tung); 1♂, 1♀, same locality, 25. IX. 2005 (Y. F. Hsu); 1♂, same locality, 10. X. 2005 (Y. F. Hsu); 1♀, same locality, 1. V. 2006 (Y. F. Hsu); 2♂, Alishan, Shanmei, 30. III. 2008 (Y. F. Hsu); 2♀, Meishan, Ruili, 900m, 30. XI. 2008 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♀, Wutai, Wutoushan, 1200m, 10/11. IV. 1998 (paratype) (Y. F. Hsu); 1♂, Wutai, Wutoushan, 9. IV. 1999 (paratype) (Y. F. Hsu); 2♂, Wutai, Wutoushan, 1000/1200m, 7/8. V. 2006 (Y. F. Hsu); 1♀, Wutai, Ailiaobeixi/Bayouxi, 500/900m, 14. III. 2008 (Y. F. Hsu & H. C. Huang). **TAIDONG [= TAITUNG] Co.:** 1♀, Yanping, Hongye, 500m, 15. V. 1988 (paratype) (Y. F. Hsu); 1♀, Yanping, Hongye, 8. IX. 2000 (paratype) (Y. F. Hsu).

**Description.** Adult – Forewing length 13–16 mm. Sexual dimorphism moderately present. Male (PLATE 13, Fig. 103): Head hairy, orange mixed with brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming upright tuft, creamy yellow; 3rd segment small, brown. Thorax orange mixed with brown, legs orange. Abdomen brown dorsally, orange laterally, creamy white ventrally. Forewing triangular, apex acute, costa, dorsum straight, termen slightly convex. Hindwing fan-like. Wing uppersides bearing orange hairs proximally on hindwing, with ground color brown, ornamented with orange yellow markings. On forewing, prominent orange markings forming a narrow discal band, filling up discoidal cell, and along costa, with prominent dark margin along termen and a dark area proximally. Discal band on forewing upperside is detached from subapical spots. On hindwing, an orange discal band and a spot in discoidal cell present. Dark brown scalings present along veins in discal band. Additional spots usually present in cell Sc+R<sub>1</sub> and sometimes in Rs. Wing undersides with patterns similar to those of upperside, but much area covered by dull orange scalings; spots edged

by faint dark brown spots. Fringe orange yellow, but anterior portion of forewing brown. A dark brown, linear sexual brand present by at midst of 1A+2A. Female (PLATE 13, Fig. 104): Body and wing patterns similar to those of male, but wings broader and no sexual brand.

Male genitalia (PLATE 31, Fig. 199) – Tegumen broad, tapering caudally, with uncus bifid with V-shaped indentation. Gnathos indistinguishable. Saccus elongate, tapering cephalically, with anterior end blunt. Valva elongate, with ampulla lobe-like and harpe long, hook-like. Phallus straight. Juxta as a weakly sclerotized semi-spherical sclerite.

Female genitalia (PLATE 49, Fig. 269) – Corpus bursae oval. Ductus bursae membranous. Sterigma forming a dome, with a pair of lateral, sclerotized, setose, invaginated pouches, and an area of sclerotized, setose wall posterior to ostium bursae. Anal papillae rectangle, setose. Posterior apophyses slender, much longer than anterior apophyses.

**Global distribution.** Endemic to Taiwan (Hsu *et al.*, 2005).

**Distribution in Taiwan.** Moderate elevations in montane zone (Hsu *et al.*, 2005).

**Larval Host plant(s).** Poacea: *Miscanthus sinensis* (Hsu, 2013).

**Biology.** This species is considered a multivoltine species in occurrence (Hsu *et al.*, 2005).

**Remarks.** Tsukiyama (1983) first noticed the existence of this species, and suspected it may belong to *Pothanthus pseudomaesa* (Type locality: Ceylon). Hsu *et al.* (2005) subsequently recognized it as a distinct species.

**形態特徵：**成蝶前翅長 13-16 mm。略顯雌雄二型性。雄蝶 (圖 103)：頭被毛，橙色混褐色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節背毛，形成隆起毛叢，呈橙黃色；第 3 節細小，

褐色。胸部橙色混褐色。足橙黃色。腹部背面褐色，側面橙黃色，腹面黃白色。前翅呈三角形，翅頂尖，前後緣直線狀，外緣略突出。後翅呈扇形。翅背面底色褐色，綴有橙黃色斑紋，近翅基處覆有橙黃色毛。中央斑帶由數只鮮明橙黃色窄紋形成，橙黃紋填滿中室，並延伸至前緣，黑色部分僅餘沿外緣及翅面內側。後翅有橙黃色中央斑帶，中室內有一斑點。中央斑帶之翅脈覆黑褐色鱗。**Sc+R<sub>1</sub>** 室有斑點，**Rs** 室時亦有之。翅腹面斑紋與背面相似，但大部分覆橙黃色鱗，翅面橙黃色斑點鑲黑褐色斑點。緣毛於前翅前端褐色，其餘黃色。**1A+2A** 脈中央有黑褐色線形性標。雌蝶 (圖 104)：形態特徵與雄蝶相似，但翅幅較寬；無性標。

雄交尾器 (圖 199)：背兜寬闊，向後端漸窄，鉤突末端二分而中央有 V 形裂口。顎形突退化。囊突修長，向頂端漸細，頂端鈍。抱器甚長，抱器內突葉狀，抱握缺長、鉤狀。陽莖直。陽基軛片為輕度骨化之半球形骨片。

雌交尾器 (圖 269)：交尾囊卵圓形。交尾囊管膜質。交尾孔板圓頂狀，具一對具毛之骨化內陷袋，於交尾孔後方有骨化區。肛突矩形，具毛。後內骨突長度遠較前內骨突長。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**本島中海拔山區。

**寄主植物：**禾本科之芒。

**生物學：**本種為一年多世代物種。

**註記：**Tsukiyama (1983) 首先注意到本種存在，並懷疑可能屬於分布印度、中南半島等地的 *Pothanthus pseudomaesa*。Hsu *et al.* (2005) 隨後判斷本種為獨立種。

## Genus *TELICOTA* Moore, [1881]

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

Diagnostic characters include the followings: 1) wings dark brown with yellow or orange markings; 2) uncus deeply divided; 3) discal sexual brand on forewing upperside of male (Evans, 1949; Tsukiyama *et al.*, 1997; Boscombe *et al.*, 1999).

About 30 species, distributed in the Oriental and Australian region (Tsukiyama *et al.*, 1997).

Three species occur in Taiwan.

## 橙斑弄蝶屬

形態特徵如下：1) 翅黑褐色，綴有黃色或橙色斑；2) 鉤突深裂；3) 雄蝶前翅背面中央具性標 (Evans, 1949; Tsukiyama *et al.*, 1997; Boscombe *et al.*, 1999)。

本屬約 30 種，分布於東洋區及澳洲區 (Tsukiyama *et al.*, 1997)。

臺灣有 3 種

***Telicota ohara* (Plötz, 1883)** (寬邊橙斑弄蝶 / 竹紅弄蝶 / 黃紋長標弄蝶)

*Hesperia ohara* Plötz, 1883: Entomologische Zeitung 44 (4-6): 226. (Type locality: “Cap York”)

***Ssp. formosana* Fruhstorfer, 1911**

**PLATE 13, Figs. 105-106; PLATE 31, Fig. 200; PLATE 49, Fig. 270**

*Telicota bambusae formosana* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (3): 29. (Type locality: “Formosa, Chip Chip”)

### Specimens examined:

**TAIPEI CITY:** 1♂, NTU campus, 12. IX. 1987 (Y. F. Hsu); 1♀, same locality, 23. IX. 1987 (Y. F. Hsu); 1♂, Beitou, Junjian Yan, 5. V. 2003, reared from *Setaria palmifolia*, emgd. 23. V. 2003 (H. S. Que); 1♂, Wenshan, Xianjiyan, 27. VIII. 2012, reared from *Pennisetum purpureum*, emgd. 11. IX. 2012, HSU 12H51 (Y. F. Hsu). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Wulai, 23. IX. 1987 (Y. F. Hsu); 1♂, 1♀, same locality, 8. XI. 1987 (Y. F. Hsu); 1♂, same locality, emgd. 28. XII. 1987 (Y. F. Hsu); 1♂, same locality, 7. XI. 2000, reared from *S. palmifolia*, emgd. 4. XII. 2000, HSU 00L2 (Y. F. Hsu); 1♂, Wulai, ca 200m, 19. X. 2009 (Y. F. Hsu); 3♀, Chenggong/ Wulai, 21. XI. 1987 (Y. F. Hsu); 1♂, 1♀, Chenggong, 25. XI. 1987 (Y. F. Hsu). **YILAN Co.:** 1♀, Toucheng, Guishan Is., 4/5. III. 2006 (H. C. Huang & C. L. Huang). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♀, Fuxing, Ronghua/Gaoyi, 1. IX. 1987 (Y. F. Hsu); 1♂,

Longtan, 18. IX. 1999, reared from *Pen. purpureum*, emgd. 20. XI. 1999, HSU 99J55 (Y. F. Hsu); 1♂, same locality, 7. IV. 2002 (Y. F. Hsu); 1♀, Fuxing, Xikoutai Bridge 2, 25. VIII. 2003, HSU 03H12 (L. W. Wu). **TAIZHONG CITY [= TAICHUNG CITY/TAICHUNG Co.]**: 1♀, Shishanxi, 5. IX. 1996 (C. Y. Hung). NANTOU Co.: 1♂, Lugu, Fonghuanggu Bird and Ecology Park, 23. XI. 1996, reared from *S. palmifolia*, emgd. 19. XII. 1996, HSU 96L26 (Y. F. Hsu); 1♂, same locality, 29. XII. 1996, reared from *S. palmifolia*, emgd. 2. II. 1997, HSU 96M30 (C. Y. Hung); 1♂, Lugu, Xitou, Yushuikeng, 3. VI. 1997, reared from *S. palmifolia*, emgd. 21. VI. 1997, HSU 97F12 (C. C. Lu); 1♀, Renai, Nanshanxi, 900m, 23. I. 2008 (Y. F. Hsu); 1♂, Renai, Huisun, 30. XI. 1996, reared from *S. palmifolia*, emgd. 6. I. 1997, HSU 96L48 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.**: 1♀, Fengbin, Changhongqiao, 7. XI. 1995, reared from *Panicum repens*, emgd. 23. XI. 1995, HSU 95L5 (Y. F. Hsu); 1♂, 1♀, same locality, 21. X. 1996 (Y. F. Hsu). **CHIAYI Co.**: 2♂, Fanlu, Chukou, 350m, 10. X. 2005 (Y. F. Hsu); 1♀, same locality, 30. VIII. 2008 (Y. F. Hsu); 1♂, Alishan, Shanmei, 30. III. 2008 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]**: 1♀, Guantian, Wushantou, 150m, 22. I. 2007, reared from *Pen. purpureum*, emgd. 16. III. 2007, 07A32 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]**: 1♀, Liugui, 300m, 22. I. 2008 (Y. F. Hsu); 1♂, Tianliao, 100m, 27. IV. 2010 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.**: 1♀, Hengchun, Kending, 17. VII. 1987 (Y. F. Hsu); 1♂, Jiudawu, 1000m, 14/16. II. 2000, emgd. 23. III. 2000 (Y. T. Lo). **TAIDONG [= TAITUNG] Co.**: 1♀, Taoyuan, 15. V. 1988 (Y. F. Hsu).

**Description.** Adult – Forewing length 14–19 mm. Sexual dimorphism prominent. Male (PLATE 13, Fig. 105): Head hairy, orange mixed with brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming raised tuft, creamy yellow; 3rd segment small, brown. Thorax orange mixed with brown, legs orange. Abdomen brown dorsally, creamy white ventrally. Forewing triangular, apex acute, costa, dorsum straight, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing underside bearing orange hairs proximally on hindwing, with ground color brown, ornamented with orange markings. On forewing, prominent orange markings forming a discal band, filling up discoidal cell and along costa, with prominent dark margin along termen and a dark brown discal band present within orange markings. On hindwing, an orange discal band and a spot in discoidal cell present. Wing undersides with patterns

similar to those of upperside, but much area covered by orange scalings, spots edged by faint, dark brown spots. Fringe orange, but anterior portion of forewing brown. A gray, linear sexual brand at midst of brown discal band from  $M_3$ -CuA<sub>2</sub> on forewing upperside. Female (PLATE 13, Fig. 106): Body and wing patterns similar to those of male, but wings broader and no sexual brand.

Male genitalia (PLATE 31, Fig. 200) – Tegumen broad, with uncus forming a pair of rod-like, straight projections. Gnathos indistinguishable. Saccus elongate, tapering cephalically. Valva broad, spiny distally, with distal end forming prominent dorsal rounded lobe and ventral angled projection. Phallus stout, tapering toward both ends. Juxta narrow, V-shaped.

Female genitalia (PLATE 49, Fig. 270) – Corpus bursae as elongate pouch. Ductus bursae membranous, short. Sterigma forming a partially sclerotized dome; area surrounding ostium bursae membranous; lamella antevaginalis as transverse band associated with rectangular plates; lamella postvaginalis a setose, transverse sclerite with narrow, medial invagination posteriorly. Anal papillae rectangle, setose. Posterior apophyses moderately long, slender.

**Global distribution.** Nearly entire Oriental Region excluding India, Sri Lanka, and western Himalayas, also New Guinea and Northeast Australia (Shirôzu, 1960).

**Distribution in Taiwan.** Lowland to moderate elevations in Taiwan, including Jinmen, Mazu, and Guishan Islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Setaria palmifolia*, *Pennisetum purpureum*, and *Panicum repens*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2002).

**Remarks.** *Ssp. formosana* was considered a race of *T. bambusae* by Fruhstorfer (1911), leading to early erroneous belief that it is a species associated with bamboos.

In Taiwan, this species resembles sympatric *T. bambusae*, but the ground color on wing underside of this species is darker than *T. bambusae*, and the orange discal band on forewing upperside of this species does not stretch along veins like *T. bambusae* does in male.

**形態特徵：**成蝶前翅長 14-19 mm。雌雄二型性顯著。雄蝶 (圖 105)：頭被毛，橙色混褐色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，形成隆起之毛隆，呈黃白色；第 3 節細小、褐色。胸部橙色混褐色。足橙色。腹部背面褐色，側面橙色，腹面黃白色。前翅呈三角形，翅頂尖，前、後緣直線狀，外緣略突出。後翅呈扇形，臀區略呈葉狀突出。翅背面底色褐色，綴有橙色斑紋，近翅基處覆有橙色毛。前翅由一片鮮明的橙色紋覆蓋大部分，亞外緣有黑邊，翅面中央有黑褐色帶。後翅中央有橙色斑帶，中室內有一橙色斑點。翅腹面斑紋與背面相似，但大部分覆橙色鱗，橙色斑鑲黑褐色短線紋。緣毛於前翅前端褐色，其餘橙色。前翅背面中央黑褐色帶  $M_3$  至  $CuA_2$  脈間有細線形灰色性標。雌蝶 (圖 106)：形態特徵與雄蝶相似，但翅幅較寬，橙色塊紋面積較小；無性標。

雄交尾器 (圖 200)：背兜寬闊，與鉤突形成一對棒狀、筆直之突起。顎形突退化。囊突長，先端尖。抱器寬闊，末端背側呈圓葉狀突起，腹側有角狀突起，末端邊緣具刺棘。陽莖粗壯，兩端漸細。陽基軛片細小，V 字形。

雌交尾器 (圖 270)：交尾囊長袋狀；花壁為一大片具微小顆粒之區域。交尾囊管短、膜質，交尾孔大型。交尾孔板骨化圓頂狀，於交尾孔兩側具一對褶。肛突大型、矩形，具長毛。前內骨突和後內骨突纖細、筆直，後內骨突長度遠較前內骨突長。

**世界分布：**分布於印度、斯里蘭卡及西喜馬拉雅地區之外的東洋區，新幾內亞、澳洲東北部 (Shirôzu, 1960)。

**臺灣分布：**本島低至中海拔地區，亦見於金門、馬祖地區及龜山島。

**寄主植物：**禾本科之棕葉狗尾草、象草及鋪地黍等。

**生物學：**本種為一年多世代物種，以蛹態休眠越冬 (Hsu, 2002)。

**註記：**Fruhstorfer (1911) 視亞種 *ssp. formosana* 為竹橙斑弄蝶之亞種，曾造成本種寄主植物為竹類之誤解。

在臺灣，本種與同域分布之竹橙斑弄蝶相似，但是本種翅腹面底色較深、雄蝶前翅背面橙色紋不沿翅脈延伸。

***Telicota bambusae* (Moore, 1878) ( 竹橙斑弄蝶 / 埔里紅弄蝶 / 紅翅長標弄蝶 )**

*Pamphila bambusae* Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 691, pl. 45, f. 11-12. (Type locality: "Calcutta")

***Ssp. horisha* Evans, 1934**

**PLATE 13, Figs. 107-108; PLATE 31, Fig. 201; PLATE 49, Fig. 271**

*Telicota krefftii horisha* Evans, 1934: Entomologist 67 (9): 208. (Type locality: Formosa)

**Specimens examined:**

**TAIPEI CITY:** 1♂, Wenshan, Xianjiyan, 22. II. 2002 (Y. F. Hsu); 1♂, Wenshan, Muzha, Hills S. of NCU Campus, 5. III. 2009 (N. Y. Tasi). **JILONG [= KEELUNG] CITY:** 1♂, Qiuhonghu, 20. X. 2009, reared from *Miscanthus* sp., emgd. 21. I. 2010, HSU 09K31 (J. H. Lin). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Wulai, 16. X. 1986 (Y. F. Hsu); 3♂, 1♀, Chenggong/Wulai, 21. XI. 1987 (Y. F. Hsu); 1♀, Wulai, Jiajiuliao, 10. XII. 2002, reared from Bamboo, emgd. 11. I. 2003, HSU 02M19 (H. S. Chuen); 1♀, Sanxia, Wuliao, 10. VII. 2005, reared from *Bambusa* sp., emgd. 25. VII. 2005, HSU 05G11 (L. H. Wang); 1♂, Xindian, Feicui Dam, 200/300m, 16. IX. 1999, reared from *Pennisetum purpureum*, emgd. 4. X. 1999, HSU 99J48 (L. W. Wu); 1♂, Xindian, Sikanshui, emgd. 14. IX. 2002 (H. S. Chuen). **TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Longtan, 5. X. 1999 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♀, Dongshi, Dongshi Forest Garden, 1. VII. 1996 (Y. F. Hsu). **NANTOU Co.:** 2♂, Lugu, Fonghuanggu Bird and Ecology Park, 10. VII. 1996 (Y. F. Hsu); 1♂, same locality, 27. VIII. 1996 (Y. F. Hsu); 1♂, Renai, Huisun, 1. VII. 1996 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 4♂, 5♀, Fengbin, Changhongqiao, 21. X. 1996 (Y. F. Hsu); 1♂, Xiulin, Huitouwan, ca 800m, 23. VII. 2005 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.:** 1♂, Dapu, 27. II. 2002 (Y. F. Hsu); 1♂, 1♀, Alishan, Shanmei, 30. III. 2008 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]:** 1♀, Baihe, Guanziling, 300m, 24. IX. 2003 (Y. F. Hsu). **KAOSIUNG CITY [KAOSIUNG Co.]:** 1♂, Tianliao, 100m, 27. IV. 2010 (Y. F. Hsu); 1♂, same locality, 22. IV. 2011 (Y. F. Hsu); 2♂, 1♀, Tianliao, Dagangshan,

13. III. 2002 (Y. F. Hsu); 1♀, Liugui, 300m, 22. I. 2008 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♂, Hengchun, Kending, Sheding, 30. VI. 1986 (Y. Y. Zhu); 1♀, Hengchun, Kending, 16. VII. 1987 (Y. F. Hsu); 1♂, Fangliao, Yuquan, 26. II. 2006 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 1♂, Taoyuan, 15. V. 1988 (Y. F. Hsu); 1♂, Lanyu, Sidaogou, 17/18. XI. 2007 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 29. III. 2010 (Y. F. Hsu).

**Description.** Adult – Forewing length 14–19 mm. Sexual dimorphism prominent. Male (PLATE 13, Fig. 107): Head hairy, orange mixed with brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming upright tuft, creamy yellow; 3rd segment small, brown. Thorax orange mixed with brown, legs orange. Abdomen brown dorsally, orange laterally, creamy white ventrally. Forewing triangular, apex acute, costa, dorsum straight, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing orange hairs proximally on hindwing, with ground color brown, ornamented with orange markings. On forewing, prominent orange patch covering much wing surface, leaving a dark margin along termen and a dark brown discal band present within orange area. Orange patch stretching out along veins by narrow lines. On hindwing, an orange discal band and a spot in discoidal cell present. Wing underside with patterns similar to those of upperside, but much area covered by orange scalings; spots edged by short, dark brown striae. Fringe orange, but anterior portion of forewing brown. A gray, linear sexual brand fully occupying brown discal band from M<sub>3</sub>-CuA<sub>2</sub> on forewing upperside. Female (PLATE 13, Fig. 108): Body and wing patterns similar to those of male, but wings broader, orange patch less extensive, not stretching out along veins, and no sexual brand.

Male genitalia (PLATE 31, Fig. 201) – Tegumen broad, with uncus forming a pair of horn-like projections. Outer margin of uncus slightly bent by 1/3 length from the distal end. Gnathos indistinguishable. Saccus elongate, tapering cephalically. Valva broad, spiny distally, with distal end forming extended dorsal lobe. Phallus stout, tapering toward both ends. Juxta dustpan-like.

Female genitalia (PLATE 49, Fig. 271) – Corpus bursae as long pouch. Ductus bursae

short, membranous, leading to large ostium bursae. Sterigma forming a sclerotized dome, with a pair of folds by sides of ostium bursae. Anal papillae large, rectangle, bearing long setae. Anterior apophyses and posterior apophyses slender, straight, with latter longer than former.

**Global distribution.** Oriental region in the sense of Eliot (1967).

**Distribution in Taiwan.** Lowland to moderate elevations in Taiwan, including some associated islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: mainly various kinds of bamboo, including *Bambusa oldhamii*, *B. ventricosa*, *B. multiplex*, *Dendrocalamus latiflorus*, *Phyllostachys edulis*, etc., occasionally on grasses like *Miscanthus sinensis*, *Panicum maximum*, and *Pennisetum purpureum* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** Ssp. *horisha* in Taiwan has been considered as a race of *Telicota ancilla* (Herrich-Schäffer, 1869) (Type locality: Rockhampton) (e. g. Shirôzu, 1960). Eliot (1967) argued that *bambusae* and *ancilla* represent different species, and tentatively assigned *horisha* to *bambusae*, but he also pointed out that male genitalia of *horisha* is indeed distinct from that of Indian *bambusae*.

**形態特徵：**成蝶前翅長 14-19 mm。雌雄二型性顯著。雄蝶 (圖 107)：頭被毛，橙色混褐色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，形成隆起之毛隆，呈黃白色；第 3 節細小、褐色。胸部橙色混褐色。足橙色。腹部背面褐色，側面橙色，腹面黃白色。前翅呈三角形，翅頂尖，前、後緣直線狀，外緣略突出。後翅呈扇形，臀區略呈葉狀突出。翅背面底色褐色，綴有橙色斑紋，近翅基處覆有橙色毛。前翅由一片鮮明的橙色紋覆蓋大部分，僅留亞外緣黑邊及翅面中央黑褐色帶，橙色紋沿翅脈成細線狀向外延伸。後翅中央有橙色斑帶，中室內有一橙色斑點。翅腹面斑紋與背面相似，但大部分覆橙色鱗，橙色斑鑲黑褐色短線紋。緣毛於前翅前端褐色，其餘橙色。前翅背面

中央黑褐色帶  $M_3$  至  $CuA_2$  脈間為灰色線形性標填滿。雌蝶 (圖 108)：形態特徵與雄蝶相似，但翅幅較寬，橙色塊紋面積較小、不沿翅脈延伸；無性標。

雄交尾器 (圖 201)：背兜寬闊，鉤突形成一對角狀突起，於距鉤突末端 1/3 處外緣略彎曲。顎形突退化。囊突長，先端尖。抱器寬闊，末端延伸成葉狀，背側具刺棘。陽莖粗壯，兩端漸細。陽基軛片畚箕狀。

雌交尾器 (圖 271)：交尾囊長袋狀。交尾囊管短、膜質，交尾孔大型。交尾孔板骨化圓頂狀，於交尾孔兩側具一對褶。肛突大型、矩形，具長毛。前內骨突和後內骨突細、筆直，後內骨突長度較前內骨突長。

**世界分布：**Eliot (1967) 所定義之本種分布於東洋區。

**臺灣分布：**本島低、中海拔地區，包括部分離島。

**寄主植物：**主要為禾本科之竹類植物，包含綠竹、佛竹、蓬萊竹、麻竹、孟宗竹等，偶爾也利用如芒、大黍及象草等禾草。

**生物學：**本種是一年多世代物種。

**註記：**臺灣亞種 *ssp. horisha* 過去常被認為是 *Telicota ancilla* 之亞種 (如 Shirôzu, 1960)。Eliot (1967) 認為 *bambusae* 及 *ancilla* 為不同物種，並暫時將 *horisha* 分類為 *bambusae* 之亞種，同時亦指出 *horisha* 與印度產 *bambusae* 於雄蝶交尾器仍有差異。

***Telicota colon* (Fabricius, 1775) (熱帶橙斑弄蝶 / 熱帶紅弄蝶 / 長標弄蝶)**

*Papilio colon* Fabricius, 1775: Systema Entomologiae: 531, no. 376. (Type locality: India)

***Ssp. hayashikeii* Tsukiyama, Chiba & Fujioka, 1997**

**PLATE 13, Figs. 109-110; PLATE 32, Fig. 202; PLATE 50, Fig. 272**

*Telicota colon hayashikeii* Tsukiyama, Chiba & Fujioka, 1997: Japanese Butterflies and Their Relatives in the World I: 292. (Type locality: Ishigakijima Is., Okinawa-ken, Japan)

***Ssp. stinga* Evans, 1949**

**PLATE 13, Figs. 111-112; PLATE 32, Fig. 203; PLATE 50, Fig. 273**

*Telicota colon stinga* Evans, 1949: A catalogue of the HesperIIDae from Europe, Asia and Australia in the British Museum: 392. (Type locality: Malacca)

### Specimens examined:

*Ssp. hayashikeii*: **YILAN Co.:** 4♂, 1♀, Toucheng, Guishan Is., 14. VII. 2007 (H. C. Huang). **JIAYI [= CHIAYI] Co.:** 1♂, 1♀, Xingang, Yuemei, 2. VIII. 2005 (J. K. Tung); 4♂, 1♀, same locality, 12. II. 200, (Y. F. Hsu); 1♂, 2♀, same locality, 27. II. 2006 (Y. F. Hsu); 1♂, Xingang, Yuemei, 15m, 6. V. 2007 (Y. F. Hsu); 1♂, same locality, 9. VI. 2007 (Y. F. Hsu); 1♀, Xingang, 10. XI. 2007 (Y. F. Hsu); 1♂, same locality, 16. II. 2008 (Y. F. Hsu); 1♂, same locality, 3. I. 2009 (Y. F. Hsu); 1♂, 1♀, Fanlu, Niupuzai, 1. I. 2009 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]:** 1♂, Anping, 5. VI. 2005, reared from *Phragmites australis*, emgd. 30. VII. 2005 (S. C. Chen); 1♂, Yongkang, Sankandian, 23. I. 2010 (Y. F. Hsu); 2♂, Xinhua, 27. V. 2010 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Tianliao, Dagangshan, 13. III. 2002 (Y. F. Hsu); 1♂, Tianliao, 100m, 27. IV. 2010 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 3♂, 4♀, Ludao, 25/27. IX. 2004, reared from *Miscanthus* sp., emgd. 12/26. X. 2004, HSU 04J44 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 25/27. IX. 2004, reared from *Arundo formosana*, emgd. 20. X. 2004, HSU 04J55 (Y. F. Hsu & H. C. Huang); 5♂, same locality, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 3. II. 2005 (Y. F. Hsu); 1♀, same locality, 2. II. 2005, reared from *A. formosana*, emgd. 11. III. 2005, HSU 05B3 (Y. F. Hsu).

*Ssp. stinga*: **JINMEN [=KINMEN] Co.:** 2♂, VIII. 2008 (W. T. Chen); 6♂, 3♀, Gugang Lake, 23. VII. 2000, reared from *Miscanthus*, emgd. 8/27. VIII. 2000, HSU 00G34 (Y. F. Hsu, Y. T. Lo & C. C. Lu).

**Description.** Adult – Forewing length 13–18 mm. Sexual dimorphism prominent. Male (PLATE 13, Figs. 109, 111): Head hairy, orange mixed with brown. Antennae brown dorsally, brown banded with orange ventrally; apiculus prominent, hooked, naked. Proboscis dark brown. Labial palpus porrect, 1st and 2nd segments hairy, forming upright tuft, creamy yellow; 3rd segment small, brown. Thorax orange mixed with brown, legs orange. Abdomen brown dorsally, creamy white ventrally. Forewing triangular, apex acute, costa, dorsum straight, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing orange hairs proximally on hindwing, with ground color brown, ornamented with orange markings. On forewing, prominent orange patch

covering much wing surface, leaving a dark margin along termen and a dark brown discal band present within orange area. Orange patch stretching out along veins by narrow lines. On hindwing, an orange discal band and a spot in discoidal cell present. Wing underside with patterns similar to those of upperside, but much area covered by orange scalings; spots edged by short, dark brown striae. Fringe orange, but anterior portion of forewing brown. A gray, linear sexual brand occupying merely inner portion of brown discal band from  $M_3$ - $CuA_2$  on forewing upperside. Female (PLATE 13, Figs. 110, 112): Body and wing patterns similar to those of male, but wings broader, orange patch less extensive, not stretching out along veins, and no sexual brand.

Male genitalia (PLATE 32, Figs. 202-203) – Tegumen broad, with uncus forming a pair of horn-like projections. Outer margin of uncus slightly bent subapically. Gnathos indistinguishable. Saccus elongate, tapering cephalically. Valva broad, spiny distally, with distal end forming weakly extended dorsal lobe. Phallus stout, tapering toward both ends. Juxta U-shaped.

Female genitalia (PLATE 50, Figs. 272-273) – Corpus bursae as long pouch; signum as large patch of minute granules. Ductus bursae short, membranous, leading to large ostium bursae. Sterigma forming a sclerotized dome, with a pair of folds by sides of ostium bursae. Anal papillae large, rectangle, bearing long setae. Anterior apophyses and posterior apophyses slender, straight, with latter much longer than former.

**Global distribution.** India, Sri Lanka, Himalayas, Indochina, Southeast Asia, New Guinea, North and East Australia, Japan (Yaeyama), South China, Taiwan (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Mainly lowland of southern Taiwan, including a few associated islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Miscanthus floridulus*, *Pennisetum purpureum*, *Phragmites australis*, *P. vallatoria*, *Arundo donax*, *Zizania latifolia*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2006).

**Remarks.** The population of *T. colon* in Taiwan was regarded as belonging to ssp. *stinga* Evans (e. g. Shirôzu, 1960; Hamano, 1987) until Tsukiyama, Chiba & Fujioka (1997) separated the populations in Yaeyama and Taiwan into a distinct subspecies based on observation of longer wing shape and indented distal end of valva in male genitalia.

In Taiwan, this species resembles sympatric *T. bambusae*, but can be diagnosed by the following characters: 1) Sexual brand of the male occupies only inner portion of the discal brown band on forewing upperside in *colon*, whereas it occupies entire space of the discal brown band in *bambusae*; 2) Orange discal band of forewing upperside is disjointed with subapical spots in *colon*, but is jointed in *bambusae*; 3) Uncus is bent subapically in *colon*, whereas it is bent by 1/3 length from the distal end in *bambusae*.

**形態特徵：**成蝶前翅長 13-18 mm。雌雄二型性顯著。雄蝶 (圖 109、111)：頭被毛，橙色混褐色。觸角背面褐色，腹面褐色，有橙色環；尖頂明顯、裸露，呈鉤狀。口器黑褐色。下唇鬚前伸，第 1 及第 2 節被毛，形成隆起之毛隆，呈黃白色；第 3 節細小、褐色。胸部橙色混褐色。足橙色。腹部背面褐色，側面橙色，腹面黃白色。前翅呈三角形，翅頂尖，前、後緣直線狀，外緣略突出。後翅呈扇形，臀區略呈葉狀突出。翅背面底色褐色，綴有橙色斑紋，近翅基處覆有橙色毛。前翅由一片鮮明的橙色紋覆蓋大部分，僅留亞外緣黑邊及翅面中央黑褐色帶，橙色紋沿翅脈成細線狀向外延伸。後翅中央有橙色斑帶，中室內有一橙色斑點。翅腹面斑紋與背面相似，但大部分覆橙色鱗，橙色斑鑲黑褐色短線紋。緣毛於前翅前端褐色，其餘橙色。前翅背面中央黑褐色帶僅內側部分為灰色線形性標填充。雌蝶 (圖 110、112)：形態特徵與雄蝶相似，但翅幅較寬，橙色塊紋面積較小、不沿翅脈延伸；無性標。

**雄交尾器 (圖 202-203)：**背兜寬闊，鉤突形成角狀突起。鉤突外緣末端略彎曲。顎形突退化。囊突長，先端尖。抱器寬闊，末端背側略延伸成葉狀，末端具刺棘。陽莖粗壯，兩端漸窄。陽基軛片 U 形。

**雌交尾器 (圖 272-273)：**花壁為一大片具微小顆粒之區域。交尾囊管短、膜質，交尾孔處大型。交尾孔板骨化圓頂狀，於交尾孔兩側具一對褶。肛突大型、矩形，具長毛。前內骨突和後內骨突細、筆直，後內骨突長度遠較前內骨突長。

**世界分布：**印度、斯里蘭卡、喜馬拉雅地區、中南半島、東南亞、新幾內亞、澳洲北部及東部、日本八重山群島、華南、臺灣。

**臺灣分布：**禾本科之五節芒、象草、蘆葦、開卡盧、蘆竹、筴白等。

**寄主植物：**多種薑科之植物，包含月桃、臺灣月桃、山薑、鬱金、郁金等。

**生物學：**本種是一年多世代物種。

**註記：**熱帶橙斑弄蝶臺灣族群以往被認為屬於亞種 *ssp. stinga* Evans (如 Shirôzu, 1960; Hamano, 1987), Tsukiyama, Chiba & Fujioka (1997) 依據翅形較長及雄蝶交尾器抱器末端內縮之特徵，將臺灣與八重山群島之族群分離為獨立亞種。

在臺灣，本種與同域分布之竹橙斑弄蝶相似，但可由以下特徵區分：1) 熱帶橙斑弄蝶前翅背面性標僅分布於中央黑褐色帶內側，竹橙斑弄蝶則布滿黑褐色帶；2) 熱帶橙斑弄蝶之前翅中央橙色帶與翅頂斑紋分離，竹橙斑弄蝶則兩者連接；3) 熱帶橙斑弄蝶鉤突於近端部位置彎曲，竹橙斑弄蝶則是於離末端三分之一處彎曲。

## Genus *PARNARA* Moore, 1881

**Type species:** *Eudamus guttata* Bremer & Grey, [1852]

Diagnostic characters include the followings: 1) antenna shorter than 1/2 forewing costa, distal end club-like; 2) mesotibia smooth; 3) no sexual brand on forewing upperside of male (Evans, 1949; Kawazoé & Wakabayashi, 1976; Bascombe *et al.*, 1999).

10 species, according to Chiba & Eliot (1991) and Tsukiyama *et al.* (1997), distributed in the Afrotropical, Oriental and Australian region.

2 species occur in Taiwan.

## 稻弄蝶屬

形態特徵如下：1) 觸角不及前翅前緣的二分之一長，末端錘狀；2) 中足脛節平滑；3) 雄蝶前翅背面無性標 (Evans, 1949; Kawazoé & Wakabayashi, 1976; Bascombe *et al.*, 1999)。

依據 Chiba & Eliot (1991) 及 Tsukiyama *et al.* (1997)，本屬已知 10 種，分布於非洲區、東洋區及澳洲區。

臺灣有 2 種。

***Parnara guttata* (Bremer & Grey, 1853) ( 稻弄蝶 / 一文字弄蝶 / 單帶弄蝶 )**

**PLATE 14, Figs. 113-114; PLATE 32, Fig. 204; PLATE 50, Fig. 274**

*Eudamus guttatus* Bremer & Grey, [1852]: in Motschulsky, Etudes Entomologiques 1: 60. (Type locality: Pekin [Beijing, China])

*Hesperia fortunei* Felder, 1862: Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien 12 (1/2): 489. (Type locality: Shanghai)

*Hesperia dalima* Plötz, 1883: Entomologische Zeitung 44 (1-3): 44. (Type locality: "Brasilien")

*Parnara kotoshona* Sonan, 1936: Zephyrus 6: 214. (Type locality: "Kotosho" [Lanyu], error, should be "Kashoto" [Ludao])

**Specimens examined:**

**JILONG [= KEELUNG] City:** 2♂, 2♀, Qiuhonghu, 20. X. 2009, reared from "grass", emgd. 8. XII. 2009, HSU 09K29 (J. H. Lin, C. K. Wang & C. H. Lin); 1♀, same locality, 26. X. 2009 (C. K. Wang); 1♂, Jilongyu, 25. IX. 2011 (H. C. Huang). **TAIPEI CITY:** 1♂, Xiangshan, 6. VII. 1991 (Y. F. Hsu). **XINBEI CITY [= NEW TAIPEI CITY/TAIPEI Co.]:** 1♂, 5♀, Wulai, 8. X. 1998, reared from *Isachne globosa*, emgd. 8/23. XI. 1998, HSU 98K12 (Y. T. Lo & C. C. Lu); 1♂, Ruifang, Nanya, 1. IX. 2002 (Y. F. Hsu); 3♀, same locality, 9. X. 2010 (Y. F. Hsu); 1♂, same locality, 12. X. 2010 (J. H. Lin); 1♀, Shiding, Ergeshan, 600m, 7. VI. 2010 (N. Y. Tsai). **YILAN Co.:** 1♀, Toucheng, Guishan Is., 23. IX. 2006 (H. C. Huang). **HUALIAN [= HUALIEN] Co.:** 2♂, Fengbin, Changhongqiao, 21. X. 1996 (Y. F. Hsu); 1♂, Xiulin, Tianxiang, 20. VII. 2007 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 2♂, Ludao, 25/27. IX. 2004 (Y. F. Hsu & H. C. Huang). **LIANJIANG [= LIENCHIANG] Co.:** 1♂, Nangan, Tiebao, 13. IV. 2014 (Y. F. Hsu, H. C. Huang & C. L. Haung); 2♂, 1♀, Mazu, 10. X. 2004 (D. C. Chen); 1♀, same locality (D. C. Chen).

**Description.** Adult – Forewing length 15–19 mm. Sexual dimorphism not prominent. Male (PLATE 14, Fig. 113): Head hairy, brown. Antennae less than 1/2 length of forewing costa, brown mixed with creamy white scalings ventrad, with apiculus small, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy, creamy

white; 3rd segment minute, rod-like, brown. Thorax and abdomen brown dorsally, grayish white ventrally. Legs creamy white. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing pale brown hairs proximally, ground color brown with hyaline spots. On forewing, a discal spot series arranged into a tilt line in cell  $M_2$ ,  $M_3$  and  $CuA_1$ . Two small spots at distal end of discoidal cell; 2-3 small dots present subapically. On hindwing, a discal spot series arranged into a tilt line in cell  $M_1$ ,  $M_2$ ,  $M_3$  and  $CuA_1$ . Wing undersides ground color paler, tawny; markings similar to those of uppersides, but discal spot series on hindwing silvery white; an additional, minute white dot sometimes at distal end of discoidal cell. Fringe creamy white. Female (PLATE 14, Fig. 114): Body and wing patterns similar to those of male, but wings broader.

Male genitalia (PLATE 32, Fig. 204) – Tegumen narrowed caudad, with dorsal flap extending to small, medial projection; uncus forming a tongue-like medial process, with subapical lateral processes bearing three small spines. Gnathos broad basad, divided. Saccus moderately long, with anterior end truncated. Valva lobe-like; sacculus thick, costa narrow; ampulla with distal margin rounded; harpe up-curved posteriorly, bearing minute spines at distal portion. Phallus straight, with phallobase longer than aedeagus; a fin-like inner ridge present near distal end of aedeagus. Juxta elongate, with deep dorsal invagination.

Female genitalia (PLATE 50, Fig. 274) – Corpus bursae as elongate, wrinkle pouch. Ductus bursae with anterior portion forming thick sclerotized tube, leading to membranous posterior part. Sterigma forming a dome; antevaginalis as elongate ribbon surrounding ostium bursae, extending posteriad to a sclerotized wall; postvaginalis as a broad, transverse band. Anal papillae rectangle, setose. Posterior apophyses elongate, slender, straight.

**Global distribution.** Central Asia, Pakistan, North India, Himalayas, Northern Indochina, Korea, Japan, West to Northeast and East China, Taiwan (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland Taiwan; also recorded from some associated islands (Hsu, 2002, 2013).

**Larval Host plant(s).** Poaceae: *Echinochloa crus-galli*, *Ischaemum indicum*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2002, 2013).

**Remarks.** This species is a well-known pest to rice fields, but in Taiwan it is a seldom seen species, with intermittent colonies showing up at some suitable habitats, sustaining for a spell of time, then ending up with disappearance (Hsu, 2002). In Japan, it is a well-known species capable of long distance dispersal (Fukuda *et al.*, 1984). The pattern of appearance in Taiwan seem indicating it also migrate extensively. With most specimens of this species collected in Taiwan are in autumn months from eastern side of the island, it may be plausible that at least some colonies found in Taiwan may be resulting from dispersal from Japan.

**形態特徵：**成蝶前翅長 15-19 mm。雌雄二型性不顯著。雄蝶(圖 113)：頭被毛，褐色。觸角長度不及前翅前緣長度二分之一，腹面褐色雜白色鱗，尖頂細小、裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛，呈白色；第 3 節細小、褐色，呈棒狀。胸部及腹部背面褐色，腹面灰白色。足白色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，綴透明斑，近翅基處覆淡褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線，中室末端有兩只小斑點。翅頂附近有二至三個小斑點。後翅中央斑列由位於  $M_1$ 、 $M_2$ 、 $M_3$  及  $CuA_1$  之白斑點構成，排成一斜線。翅腹面顏色較淡，呈黃褐色，斑紋與背面相似，但後翅中央斑列呈銀白色、中室末端常有額外小斑點。緣毛黃白色。雌蝶(圖 114)：形態特徵與雄蝶相似，但翅幅較寬。

雄交尾器(圖 204)：背兜後端漸窄，背蓋瓣，背蓋瓣向後延伸成一小突起；鉤突呈舌狀突起，近末端兩側各具三棘。顎形突寬帶狀，左右分離。囊突中庸長，先端截狀。抱器葉狀；抱器腹粗；抱器背細；抱器內突末端圓弧狀；抱握鉞上彎，末端具小棘刺。陽莖直，陽莖基長度較陽莖器長；陽莖器近末端具鰭狀內脊。陽基軛片長、背側凹陷。

雌交尾器(圖 274)：交尾囊長袋狀，具皺褶。交尾囊管前部粗大、骨化，連接後部之膜質部分。交尾孔板圓頂狀；前板於交尾孔周圍成長帶狀，向後延伸成骨化壁；後板寬闊、橫帶狀。肛突矩形，具毛。後內骨突細長、筆直。

**世界分布：**中亞、巴基斯坦、印度北部、喜馬拉雅地區、中南半島北部、朝鮮半島、

日本、華西至華東北及華東、臺灣 (Tsukiyama *et al.*, 1997)。

**臺灣分布：**本島低海拔地區，亦見於部分離島。

**寄主植物：**禾本科之稗、印度鴨嘴草等。

**生物學：**本種是一年多世代物種。

**註記：**本種為著名的稻作害蟲，於臺灣卻是少見物種，族群往往間歇性出現於某些棲地並維持一段時間，隨後消失 (Hsu, 2002)。在日本，本種為具長距離擴散能力之著名物種 (Fukuda *et al.*, 1984)。臺灣族群的分布情形或可推斷其亦涉及長距離之移動，多數記錄來自於秋季的臺灣東部，因此臺灣可能至少有一世代源自從日本飛來之族群。

***Parnara bada* (Moore, 1878) (小稻弄蝶 / 姬一文字弄蝶 / 姬單帶弄蝶 / 么紋稻弄蝶)**

**PLATE 14, Figs. 115-116; PLATE 32, Fig. 205; PLATE 50, Fig. 275**

*Hesperia bada* Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 688. (Type locality: Ceylon)

*Hesperia quinigera* Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 703. (Type locality: Hainan)

*Gegenes hainanus* Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 703. (Type locality: Hainan)

*Hesperia intermedia* Plötz, 1883: Stettiner entomologische Zeitung 44 (1-3): 44. (Type locality: Java)

*Hesperia daendali* Plötz, 1885: Berliner Entomologische Zeitschrift 29: 226. (Type locality: Batavia)

*Hesperia nondoa* Plötz, 1886: Entomologische Zeitung 47 (1-3): 97. (Type locality: Manila)

*Baoris distictus* Holland, 1887: Transactions of the American Entomological Society 14: 123. (Type locality: Hainan)

*Baoris (Parnara) philotas* de Nicéville, 1895: Journal of the Bombay Natural History Society 9 (4): 402, (3): pl. Q, f. 60. (Type locality: North Kanara and Trevandrum, S. India)

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Wulai, 23. X. 1986 (Y. F. Hsu); 1♂, 2♀, Wulai, Fushan Research Station, ca 700m, 4/5. VIII. 2006 (Y. F. Hsu & H. C. Huang); 1♀, Xindian, Shizitoushan, 1. VIII. 2010 (H. C. Huang); Sanzhi, Datunshan, 800m, 12. VII. 2007 (Y. F. Hsu). **TAOYUAN CITY [TAOYUAN Co.]:** 1♂, Fuxing, Lalashan, 24. VI. 1987 (Y. F. Hsu); 1♀, same locality, 31. X. 1987 (Y. F. Hsu).

**TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♀, Heping, Guguan, 12. VI. 1998 (Y. F. Hsu). **ZHANGHUA [= CHANGHUA] Co.:** 1♀, Changhua City, Baguashan, 22. VII. 2002, reared from *Leersia hexandra*, emgd. 1. VIII. 2002 (L. H. Wang & J. M. Wu). **JIAYI [= CHIAYI] Co.:** 1♂, 3♀, Xingang, Yuemei, 1. V. 2006 (Y. F. Hsu); 1♂, Xingang, Yuemei, 15m, 6. V. 2007 (Y. F. Hsu); 3♂, 2♀, same locality, 9. VI. 2007 (Y. F. Hsu); 8♂, 1♀, same locality, 11. VI. 2007 (Y. F. Hsu); 1♀, Fanlu, Chukou, ca 350m, 12. II. 2006 (Y. F. Hsu); 2♂, 1♀, same locality, 6. V. 2007 (Y. F. Hsu); 1♂, Alishan, Shizhou/Dabang, 900/1000m, 25. IX. 2010 (Y. F. Hsu). **KAOSIUNG CITY [= KAOHSIUNG Co.]:** 1♀, Xizi Bay, 8. IX. 2000 (Y. F. Hsu); 1♀, Zhuoying, 14. X. 2008 (N. Y. Tsai). **PINGDONG [= PINGTUNG] Co.:** 1♀, Wutai, Wutoushan, 1200m, 4/5. IV. 1998 (W. I. Chou); 1♂, 1♀, Hengchun, Kending, 10. IX. 1984 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 1♀, Lanyu, Badai Bay, 3/4. VII. 1998 (C. C. Lu). **LIANJIANG [= LIENCHIANG] Co.:** 1♀, Mazu (D. C. Chen).

**Description.** Adult – Forewing length 13–18 mm. Sexual dimorphism not prominent. Male (PLATE 14, Fig. 115): Head hairy, brown. Antennae less than 1/2 length of forewing costa, brown mixed with creamy white scalings ventrad, with apiculus small, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy, creamy white; 3rd segment minute, rod-like, brown. Thorax and abdomen brown dorsally, grayish white ventrally. Legs creamy white. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing pale brown hairs proximally, ground color brown with hyaline spots. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, but M<sub>2</sub> spot sometimes vestigial. Up to 3 small dots present subapically. On hindwing, number of spots variable, up to 4 spots in cell M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, but reduction common, even spotless. Wing undersides ground color paler, tawny; markings similar to those of uppersides, but discal spot series on hindwing usually more prominent, sometimes an additional spot off line with discal series in cell Rs; an additional, minute white dot sometimes at distal end of discoidal cell. Fringe creamy white. Female (PLATE 14, Fig. 116): Body and wing patterns similar to those of male, but wings broader.

Male genitalia (PLATE 32, Fig. 205) – Tegumen narrowed caudad, with dorsal flap extending to small, medial projection; uncus forming a tongue-like medial process, with

subapical, lateral processes bearing three small spines. Gnathos broad basad, divided. Saccus moderately long, with anterior end truncated. Valva lobe-like; sacculus thick, costa narrow; ampulla with distal margin rounded, dorsal margin expended, serrate; harpe up-curved posteriorly, bearing minute spines at distal portion. Phallus straight, with phallobase longer than aedeagus; a fin-like inner ridge present near distal end of aedeagus. Juxta elongate, with deep dorsal invagination.

Female genitalia (PLATE 50, Fig. 275) – Corpus bursae as elongate pouch. Ductus bursae with anterior portion forming thick sclerotized tube, leading to membranous posterior part. Sterigma forming a dome; antevaginalis as elongate ribbon surrounding ostium bursae, extending posteriad to a sclerotized wall; postvaginalis as a broad, transverse band. Anal papillae rectangle, setose. Posterior apophyses elongate, slender, straight.

**Global distribution.** Nearly entire Oriental Region; also southern islands of Japan, Sulawesi, and Northeast Australia (Chiba & Eliot, 1991; Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland to moderate elevations, including some associated islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Oryza sativa*, *Leersia hexandra*, *Echinochloa crus-galli*, *Pennisetum purpureum*, etc (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2006).

**形態特徵：**成蝶前翅長 13-18 mm。雌雄二型性不顯著。雄蝶（圖 115）：頭被毛，褐色。觸角長度不及前翅前緣長度二分之一，腹面褐色雜白色鱗，尖頂細小、裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛，呈白色；第 3 節細小、褐色，呈棒狀。胸部及腹部背面褐色，腹面灰白色。足白色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，綴透明斑，近翅基處覆淡褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線，於  $M_2$  者有時消失。翅頂附近有小斑點，最多三個。後翅斑點數量多變化，至多四個，分別位於  $M_1$ 、 $M_2$ 、 $M_3$  及  $CuA_1$ ，但常

消滅、甚至無斑。翅腹面顏色較淡，呈黃褐色，斑紋與背面相似，但後翅斑紋較鮮明，Rs 室有時有小斑點，不與中央斑列在對齊、中室末端時有額外小斑點。緣毛白色。雌蝶 (圖 116)：形態特徵與雄蝶相似，但翅幅較寬。

雄交尾器 (圖 205)：背兜向後端漸窄，背蓋瓣向後延伸成一小突起；鉤突呈舌狀突起，近末端兩側各具三棘。顎形突寬帶狀，左右分離。囊突中庸長，先端尖。抱器葉狀；抱器腹粗；抱器背細；抱器內突末端圓弧狀，背側緣略呈鋸齒狀；抱握鉗上彎，末端具小棘刺。陽莖直，陽莖基長度較陽莖器長；陽莖器近末端具鰭狀內脊。陽基軛片長，背側有凹陷。

雌交尾器 (圖 275)：交尾囊修長、袋狀。交尾囊管前部粗大、骨化，連接後部之膜質部分。交尾孔板圓頂狀；前板於交尾孔周圍成長帶狀，向後延伸成骨化壁；後板寬橫帶狀。肛突矩形、具毛。後內骨突細長、筆直。

**世界分布：**幾乎涵蓋東洋區全域；日本南部島嶼、蘇拉威西及澳洲東北部亦有分布 (Chiba & Eliot, 1991; Tsukiyama *et al.*, 1997)。

**臺灣分布：**本島低至中海拔地區，包括部分離島。

**寄主植物：**禾本科之稻、李氏禾、稗、象草等。

**生物學：**本種是一年多世代物種。

## Genus *BORBO* Evans, 1949

**Type species:** *Hesperia borbonica* Boisduval, 1833]

Diagnostic characters include the followings: 1) wings brown with hyaline spots; 2) antenna less than 1/2 forewing costa in length; 3) mesotibia without spines or spines poorly developed; 4) no sexual brand (Evans, 1949).

About 20 species, mainly distributed in the Afrotropical region, but also in the Oriental and Australian Region according to Evans (1949), but Fan *et al.* (2016) pointed out that the genus under current usage forms a polyphyletic assemblage requiring further

revisions, and some African species were removed from the genus.

1 species occurs in Taiwan.

## 禾弄蝶屬

形態特徵如下：1) 翅褐色，綴透明斑；2) 觸角長度小於前翅前緣長度二分之一；3) 中足脛節無棘刺或棘刺不發達；4) 無性標 (Evans, 1949)。

根據 Evans (1949) 的處理，本屬約有 20 種，主要分布於非洲區，但是東洋區及澳洲區亦有分布。Fan *et al.* (2016) 指出原先定義下的本屬會成一複系群，應進行進一步修訂，並已將部分非洲種類移出本屬。

臺灣有 1 種。

***Borbo cinnara* (Wallace, 1866) ( 禾弄蝶 / 幽靈弄蝶 / 台灣單帶弄蝶 / 杣弄蝶 )**

**PLATE 14, Figs. 117-118; PLATE 33, Fig. 206; PLATE 51, Fig. 276**

*Hesperia cinnara* Wallace, 1866: Proceedings of the Zoological Society of London 1866 (2): 361.

(Type locality: Takow, Formosa [Kaoshiung, Taiwan])

*Hesperia colaca* Moore, 1877: Proceedings of the Zoological Society of London 1877 (3): 594, pl. 58, f. 7. (Type locality: S. Andamans)

*Hesperia karsana* var. *saturata* Wood-Mason & de Nicéville, 1882: Journal of the Asiatic Society of Bengal 51: 19. (Type locality: “Kamorta, Nicobar Islands; and Kulu, N. W. Himalayas”)

*Parnara cingala* Moore, [1881]: The Lepidoptera of Ceylon 1 (4): 167, pl. 70, f. 3a-b.

(Type locality: Ceylon)

*Hesperia urejus* Plötz, 1885: Berliner Entomologische Zeitschrift 29: 226. (Type locality: “Aru Insel”)

*Hesperia saruna* Plötz, 1885: Berliner Entomologische Zeitschrift 29: 227. (Type locality: “Indien”)

*Parnara eltola* var. *taiwana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 676, pl. LI, fig. 19. (Type locality: Koshun, Formosa)

*Borbo toshieae* Maruyama, 1991: Butterflies of Borneo 2(2): 63. (Type locality: Sarawak, Borneo)

### Specimens examined:

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 2♂, 1♀, Wulai, 8. XI. 1987 (Y. F. Hsu); 1♀, same locality, emgd. 23. X. 1987 (Y. F. Hsu) 1♂, Xindian, Guangxing, 17. VII. 2002, reared from *Digitaria sanguinalis*, emgd. 29. VII. 2002, HSU 02G24 (H.

S. Chuen & F. Z. Lin). TAIPEI CITY: 1♂, Shilin, Shanzaihou, emgd. 20. X. 1983 (Y. F. Hsu), 1♂, 13. XI. 1986 (Y. F. Hsu); 1♂, 1♀, NTU Insect Museum, 2. XI. 1987 (Y. F. Hsu); 1♂, 1♀, NTU, 27. XI. 1986 (Y. F. Hsu). **TAOYUAN CITY [= TAUYUAN Co.]**: 1♀, Fuxing, Lalashan, 24. VI. 1987 (Y. F. Hsu); 1♀, Fuxing, Sule, 600m, 17. IX. 2008 (Y. F. Hsu & L. W. Huang). NANTOU Co.: 1♀, Renai, Huisun, 1. XII. 1997, reared from *D. radicata*, emgd. 7. I. 1998, HSU 97M4 (Y. F. Hsu); 1♀, Lugu, Fonghuanggu Bird and Ecology Park, 23. XI. 1996, reared from *Pennisetum purpureum*, emgd. 20. XII. 1996 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.**: 1♀, Xiulin, Huoranting, 900m, 11. X. 2008 (M. H. Sun & L. H. Wang). **JIAYI [= CHIAYI] Co.**: 1♀, Fanlu, Chukou, ca350m, 1. V. 2006 (Y. F. Hsu); 1♂, Xingang, Yuemei, 27. II. 2006 (Y. F. Hsu); 1♂, Xingang, 15m, 26. VII. 2008 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]**: 1♀, Guantian, Wushantou, 19. XII. 2005, reared from *P. purpureum*, emgd. 18. I. 2006, HSU 05M40 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]**: 2♂, 2♀, Qijin, Dongsha Is., 30/3. VIII/ IX. 2012 (Y. F. Hsu); 4♀, Qijin, Dongsha Is., 30/3. VIII/ IX. 2012, reared from *P. purpureum*, emgd. 14/19. IX. 2012, HSU 12J2 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.**: 1♀, Hengchun, Kending, emgd. 28. IX. 1986 (Y. F. Hsu); 1♂, 2♀, same locality, 19. VII. 1987 (Y. F. Hsu); 1♀, Nanrenshan, 17. V. 1986 (Y. F. Hsu); 1♂, Maobitou, 11. IX. 1984 (Y. F. Hsu); 1♂, Fangliao, Shuidiliao, 13. X. 2008 (N. Y. Tasi). **TAIDONG [= TAITUNG] Co.**: 1♂, Lanyu, 15. VII. 1999 (C. Y. Hung); 1♀, same locality, emgd. 18. VIII. 2000 (C. Y. Hung); 1♀, same locality, 15. VIII. 2002, reared from *Arundo formosana*, emgd. 31. VIII. 2002, HSU 02H48 (C. Y. Hung & L. H. Chen); 1♀, Lanyu, Sidougou, 17/18. XI. 2007 (Y. F. Hsu & C. C. Hsieh); 1♂, Donghe, Donghe Fram, 350m, 16. X. 2007 (Y. F. Hsu); 1♂, Taitung, Pipa Lake, 1. IX. 2007 (J. H. Jean); 1♀, Taitung, Kangle, 20m, 21. IX. 2008 (Y. F. Hsu). **LIANJIANG [= LIENCHIANG] Co.**: 1♀, Beigan, Biyuan, 5. IX. 2003 (L. W. Wu). **JINMEN [= KINMEN] Co.**: 2♀, Jianhua, 20. VI. 2010 (C. K. Wang); 1♀, Jincheng, Shuitou, 29/30. VIII. 2011, reared from *Arundo* sp., emgd. 5. IX. 2011, HSU 11H53 (Y. F. Hsu & H. C. Huang).

**Description.** Adult – Forewing length 14–18 mm. Sexual dimorphism not prominent. Male (PLATE 14, Fig. 117): Head hairy, brown. Antennae brown mixed with creamy white scalings ventrad, with apiculus small, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy, creamy white; 3rd segment minute, rod-like, brown. Thorax and abdomen brown dorsally, grayish white ventrally. Legs creamy white. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at

tornus. Wing uppersides bearing pale brown hairs proximally, ground color brown with hyaline and creamy white spots. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>. Two to three small dots present subapically, not in line. A creamy white spot sometimes present at midst of cell CuA<sub>2</sub>. On hindwing, spots absent or obscure. Wing undersides ground color paler, ochreous tinged with green; markings similar to those of uppersides on forewing; hindwing usual with a discal series of spots, up to 5 from cell Rs to CuA<sub>1</sub>, arranged roughly into a curve. Fringe creamy white. Female (PLATE 14, Fig. 118): Body and wing patterns similar to those of male, but wings longer and broader.

Male genitalia (PLATE 33, Fig. 206) – Tegumen narrowed caudad, with elongate, medial, dorsal conical process tapering to acute distal tip; uncus as a pair of long process attenuate caudad. Gnathos divided. Saccus longer than tegumen, with acute distal end. Valva short, lobe-like; sacculus short, broad; costa+ampulla broad, with distal margin rounded, dorsal margin slightly concave; harpe up-curved, with posterior margin rounded, bearing small digitate process dorsad, with a zone of inner margin heavily sclerotized, bearing minute spines. Phallus truncated at cephalic end; aedeagus with a pair of long, paddle-like sclerites near caudal end. Juxta as narrow ring.

Female genitalia (PLATE 51, Fig. 276) – Corpus bursae as elongate pouch. Ductus bursae long, membranous, but sclerotized around ostium bursae. Sterigma forming a dome, with a pair of prominent, lung-shaped sclerites, wrinkled and setose posteriorly. Anal papillae lobe-like, setose. Posterior apophyses moderately long, slender, straight.

**Global distribution.** Nearly entire Oriental region, extending to northern part of Australian Region (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland to moderate elevations, including associated islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: various kinds of grasses, including *Isachne globosa*, *Brachiaria mutica*, *Panicum repens*, *Pan. maximum*, *Paspalum conjugatum*, *Pennisetum purpureum*, *Pen. setosum*, *Cenchrus echinatus*, *Setaria palmifolia*, *Oryza sativa*,

*Digitaria radicata* var. *hirsuta*, *D. sanguinalis*, *Zizania latifolia*, *Arundo formosana*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**形態特徵：**成蝶前翅長 14-18 mm。雌雄二型性不顯著。雄蝶 (圖 117)：頭被毛，褐色。觸角褐色，腹面雜白色鱗，尖頂細小，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛，呈白色；第 3 節微小、褐色，呈棒狀。胸部及腹部背面褐色，腹面灰褐色。足白色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，有透明及白色斑，近翅基處覆有淡褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排列成斜線。翅頂附近有二到三只不排成直線之小斑點。 $CuA_2$  室中央有一黃白色斑點。後翅斑點模糊或消失。翅腹面顏色較淡，呈帶綠調之土黃色，前翅腹面斑紋與背面相似，後翅  $Rs$  至  $CuA_1$  室通常有最多五個斑點，約略排成一曲線。緣毛黃白色。雌蝶 (圖 118)：形態特徵與雄蝶相似，惟翅較長、翅幅較寬。

雄交尾器 (圖 206)：背兜向尾端漸窄，背側中央形成細長錐狀突起；鉤突為一對向後漸窄之長突起。顎形突左右分離。囊突長度較背兜長，末端尖。抱器短、葉狀；抱器腹短、寬闊；抱器背與抱器內突癒合，寬闊，末端邊緣圓弧形，背緣略凹；抱握鉗上彎，後緣圓，背側具小型指狀突起，內緣具一高度骨化區，上有細刺。陽莖頭端截狀；陽莖器近尾端處具一對槳狀骨片。陽基軛片細環狀。

雌交尾器 (圖 276)：交尾囊細長袋狀。交尾囊管長、膜質，於近交尾孔處骨化。交尾孔板圓頂狀，具一對肺狀骨板，後側具皺褶、有毛。肛突葉狀，具毛。後內骨突中庸長、纖細、筆直。

**世界分布：**幾乎涵蓋東洋區全域，澳洲區北部亦有分布。

**臺灣分布：**低至中海拔地區。

**寄主植物：**以多種禾本科之禾草為食，包含柳葉箬、巴拉草、鋪地黍、大黍、兩耳草、象草、牧地狼尾草、蒺藜草、棕葉狗尾草、稻、毛馬唐、馬唐、筴白筍、臺灣蘆竹等。

**生物學：**本種是一年多世代物種。

**Genus *PSEUDOBORBO* Lee, 1966**

**Type species:** *Hesperia bevani* Moore, 1878

Diagnostic characters include the followings: 1) wings brown with hyaline spots; 2) antenna 1/2 forewing costa in length; 3) 3rd segment of labial palpus slender; 4) mesotibia without spines; 5) no sexual brand (Lee, 1966; Yuan *et al.*, 2015a; Fan *et al.*, 2016).

This genus was separated from the genus *Borbo* by Lee (1966) based on distinctions in male genitalia. It was still included in the genus *Borbo* in some recent treatments (e. g. Bascombe *et al.*, 1999; Hsu, 2013). Fan *et al.* (2016) confirmed its generic status based on molecular and morphological evidence.

One species, distributed in the Oriental Region. The sole representative species occurs in Taiwan.

**假禾弄蝶屬**

形態特徵如下：1) 翅褐色，綴透明斑點；2) 觸角長度約為前翅前緣長度二分之一；3) 下唇鬚第3節纖細；4) 中足脛節無棘刺；5) 無性標 (Lee, 1966; Yuan *et al.*, 2015a; Fan *et al.*, 2016)。

本屬原置於禾弄蝶屬中，Lee (1966) 基於雄性交尾器差異將其分出。近年部份文獻仍將假禾弄蝶屬置於禾弄蝶屬中 (如 Bascombe *et al.*, 1999; Hsu, 2013)。Fan *et al.* (2016) 依據分子及形態證據判斷本屬為有效屬。

本屬僅1種，分布於東洋區，臺灣亦有分布。

***Pseudoborbo bevani* (Moore, 1878) (假禾弄蝶 / 小紋褐弄蝶 / 擬秣弄蝶)**

**PLATE 14, Figs. 119-120; PLATE 33, Fig. 207; PLATE 51, Fig. 277**

*Hesperia bevani* Moore, 1878: Proceedings of the Zoological Society of London 1878 (3): 688.

(Type locality: “Salween, Moulmain”, [Myanmar, Thanlwin, Mawlamyine])

*Isoteinon modesta* Moore, [1884]: Proceedings of the Zoological Society of London 1883 (4): 534.

(Type locality: Coonoor, Nilgiris)

*Hesperia vaika* Plötz, 1886: Entomologische Zeitung 47: 96. (Type locality: “Indien”)

*Pamphila sarus* Mabille, 1891: Annales de la Société entomologique de Belgique 35 (18): CLXXXI. (Type locality: “Chaata”)

*Parnara thyone* Leech, [1893]: Butterflies from China, Japan and Corea (2): 610. (Type locality: “Kiukiang, Ichang, Ta-chien-lu, Moupin”)

### Specimens examined:

**TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]**: 1♀, Qingshui, 6. VIII. 2004 (D. C. Chen); 5♂, 1♀, Heping, Shangguguan, 900/1200m, 28. VII. 2007 (Y. F. Hsu); 1♂, Heping, Shangguguan, 900m, 29. VII. 2007 (Y. F. Hsu). **NANTOU Co.**: 1♂, Songgang, 28. VII. 1986 (Y. F. Hsu); 2♂, Renai, Huisun, ca 770m, 1. XII. 1997 (Y. F. Hsu); 4♂, 2♀, Renai, Huisun, ca 700m, 14. XI. 2004 (Y. F. Hsu); 4♂, Renai, Huisun, ca 600m, 22. XI. 2004 (Y. F. Hsu); 1♀, Renai, Huisun Forestry Station, 16. X. 2010 (Y. F. Hsu); 1♂, Renai, Nanshanxi, 11. I. 2000 (C. Y. Hung); 1♂, Renai, Nanshanxi, ca 900m, 1. IX. 2007 (Y. F. Hsu).

**Description.** Adult – Forewing length 15–17 mm. Sexual dimorphism weakly present. Male (PLATE 14, Fig. 119): Head hairy, brown. Antennae brown dorsally, brown banded with creamy white scalings ventrad, with apiculus small, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy, creamy white; 3rd segment minute, rod-like, pale brown. Thorax and abdomen brown dorsally, grayish white ventrally. Legs creamy white. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing pale brown hairs proximally, ground color brown with hyaline and creamy white spots. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and Cu<sub>1</sub>, small in size. 2-3 small dots present subapically, roughly in line. A minute dot at distal end of discoidal cell. A small, creamy white spot sometimes at midst of cell CuA<sub>2</sub>. On hindwing, spots vestigial. Wing undersides ground color paler, ochreous tinged with green; markings similar to those of uppersides on forewing; hindwing usual with a discal spot series consisted of minute white dots in cell Rs, M<sub>1</sub>, M<sub>3</sub>, and CuA<sub>1</sub>, arranged roughly in line, with Rs dot deviated proximally. Fringe creamy white. Female (PLATE 14, Fig. 120): Body and wing patterns similar to those of male, but wings broader and spots more prominent.

Male genitalia (PLATE 33, Fig. 207) – Tegumen narrowed caudad, with a pair of setose,

bump-like warts by caudal end; uncus forming a medial process with blunt distal tip. Gnathos divided, slender, sclerotized. Saccus long, with blunt distal end. Valva short, lobe-like; sacculus short, broad; costa+ampulla broad, with distal margin rounded, dorsal margin concave; harpe up-curved, with posterior margin rounded, serrate along dorsal margin. Phallus enormous, long, with phallobase longer than aedeagus; cornutus represented as a long probe associated with a wrinkled thin sclerite near base; a prominent sclerotized spine present on vesica. Juxta narrow, U-shaped.

Female genitalia (PLATE 51, Fig. 277) – Corpus bursae elongate, highly sclerotized, with merely small anterior portion membranous, narrowed posteriorly; signum as a patch of minute spines on wall of membranous part. Ductus bursae heavily sclerotized, tubular, enlarged caudad. Anal papillae lobe-like, setose. Posterior apophyses slender, straight.

**Global distribution.** Nearly entire Oriental region, extending to northern part of Australian Region (Shirôzu, 1960).

**Distribution in Taiwan.** Moderate elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Themeda caudata* according to Lin & Su (2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**形態特徵：**成蝶前翅長 15-17 mm。雌雄二型性不顯著。雄蝶 (圖 119)：頭被毛，褐色。觸角褐色，腹面有白環，尖頂細小、裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛，呈白色；第 3 節微小、淡褐色，呈棒狀。胸部及腹部背面褐色，腹面灰白色。足白色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，有透明斑及白斑，近翅基處覆有淡褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一小斑點排成一斜線。近翅頂處有兩到三個小斑點約略排成直線。中室末端有一微小斑點， $CuA_2$  室中央時有一白色小斑點。後翅斑點模糊。翅腹面顏色較淺，呈帶綠色之土黃色，前翅腹面斑紋與背面相似，後翅  $Rs$ 、 $M_1$ 、 $M_3$  及  $CuA_1$  室常具微小斑點，於  $Rs$  室者內偏，約略成一直線。緣毛白色。雌蝶 (圖 120)：形態特徵與雄蝶相似，但是翅幅較寬且斑紋較鮮明。

雄交尾器 (圖 207)：背兜尾部窄縮，末端具一對具毛疣突，鉤突末端圓鈍。顎形突左右分離、細長、骨化。囊突長、末端鈍。抱器短、葉狀；抱器腹短、寬闊；抱器背與抱器內突癒合，寬闊，末端邊緣圓弧狀，背緣凹；抱握鈎上彎，末端邊緣圓，背緣鋸齒狀。陽莖碩大、修長，陽莖基長度較陽莖器長；角狀器探針狀，近基部有皺褶薄骨片；陽莖端膜具骨化刺。陽基軛片狹窄、U 形。

雌交尾器 (圖 277)：交尾囊修長而向後窄縮，高度骨化，僅前端小部分呈膜質；花壁於膜質部上呈具細小棘刺之小區。交尾囊管高度骨化、管狀，尾端擴大。肛突葉狀，具毛。後內骨突纖細、筆直。

**世界分布：**幾乎涵蓋東洋區全域，澳洲區北部亦有分布。

**臺灣分布：**本島中海拔山區。

**寄主植物：**Lin & Su (2013) 記錄在臺灣之寄主植物為禾本科之苞子草。

**生物學：**本種是一年多世代物種。

## Genus *PELOPIDAS* Moore, [1881]

**Type species:** *Pelopidas midea* Walker, 1870

Diagnostic characters include the followings: 1) wings brown with hyaline spots; 2) a white spot present at distal end of discoidal cell on hindwing underside; 3) mesotibia with spines; 4) discal linear sexual brand present on forewing upperside in male (Evans, 1949; Bascombe *et al.*, 1999).

About 10 species, mainly distributed in the Oriental, Afrotropical, Australian and southern Palearctic region.

4 species occur in Taiwan.

## 褐弄蝶屬

形態特徵如下：1) 翅褐色，綴透明斑點；2) 後翅腹面於中室末端有一白色斑點；

3) 中足脛節具棘刺；4) 前翅背面中央具線形性標 (Evans, 1949; Bascombe *et al.*, 1999)。

本屬大約有 10 種，主要分布於東洋區、非洲區、澳洲區及古北區南部。

臺灣有 4 種。

***Pelopidas mathias* (Fabricius, 1798) ( 褐弄蝶 / 隱紋穀弄蝶 )**

*Hesperia mathias* Fabricius, 1798: Entomologia Systematica (Supplementum): 433, no. 289-90.

(Type locality: India)

*Hesperia julianus* Latreille, [1824]: Encyclopédie Méthodique 9 (2): 763. (Type locality: Java)

*Hesperia chaya* Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 791.

(Type locality: Bengal)

*Pamphila umbrata* Butler, 1879: The Annals and magazine of natural history; zoology, botany, and geology (5) 3 (15): 191. (Type locality: Johanna Island)

*Hesperia consanguis* Plötz, 1883: Entomologische Zeitung 44(1-3): 46. (Type locality: Java)

*Hesperia ella* Plötz, 1883: Entomologische Zeitung 44(1-3): 46. (Type locality: Java)

*Isoteinon flexilis* Swinhoe, 1885: Proceedings of the Zoological Society of London 1885: 147. (Type locality: Poona)

***Ssp. oberthueri* Evans, 1937**

**PLATE 14, Figs. 121-122; PLATE 33, Fig. 208; PLATE 51, Fig. 278**

*Pelopidas mathias oberthueri* Evans, 1937: Entomologist 70: 65. (Type locality: Tientsin [= Tian-jin, China])

**Specimens examined:**

**JILONG [= KEELUNG] CITY:** 1♀, Pengjiayu, 9. IX. 2008 (N. Y. Tsai, C. H. Yen & L. W. Wu). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 2♂, Ruifang, Nanya, 12. X. 1999 (Y. F. Hsu); 1♂, Xindian, Sikanshui, 1. VII. 2011, reared from *Miscanthus* sp., emgd. 15. VII. 2011 (J. H. Lin). **TAIPEI CITY:** 1♀, Neihu, 15. VI. 2005, reared from grass, emgd. 17. VII. 2005 (C. L. Huang). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 2♀, Heping, Siyuan, 25. VII. 2007 (L. H. Wang); 1♂, Heping, Anmashan, 12. VI. 2001 (H. S. Que). **JIAYI [= CHIAYI] Co.:** 2♂, Xingang, Yuemei, 12. II. 2006 (Y. F. Hsu); 1♀, same locality, 1. V. 2006 (Y. F. Hsu). **KAOHSIUNG CITY [= KAOHSIUNG Co.]:** 1♂, Sanmin, Jinshi Lake, II. 1997, emgd. 20. III. 1997, HSU 97B1 (S. C. Chen); 1♀, same locality, 29. III. 1997, emgd. 22. V. 1997, HSU 97C60 (Y. F. Hsu, C. C. Lu & C. Y. Hung); 1♀, same locality, 27. V. 1997, reared from *Panicum maximum*, emgd. 9. VI. 1997, HSU 97E54 (Y. F. Hsu); 1♀, same locality, 22. XI. 1997,

reared from *P. maximum*, emgd. 7. I. 198, HSU 97L19 (C. C. Lu & Y. T. Lo); 1♀, same locality, 18. I. 1998, reared from *P. maximum*, emgd. 21. I. 1998, HSU 98A6 (Y. F. Hsu); 1♂, same locality, 13. IX. 1998 (S. C. Chen). **JINMEN [= KINMEN] Co.:** 1♀, Shangyi Airport, 30. VIII. 2011 (Y. F. Hsu & H. C. Huang). **LIANJIANG [= LIENCHIANG] Co.:** 1♂, Beigan, Qinbi, 22. IV. 2007 (Y. F. Hsu & H. C. Huang).

**Description.** Adult – Forewing length 16–19 mm. Sexual dimorphism moderately present. Male (PLATE 14, Fig. 121): Head hairy, brown tinged with greenish yellow. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, creamy yellow mixed with brown. Thorax and abdomen brown dorsally, grayish white ventrally. Legs pale creamy yellow. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline markings. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, sometimes partially vestigial. Two spots at distal end of discoidal cell, sometimes vestigial; 3 small dots present subapically in cell R<sub>3-5</sub>, with R<sub>5</sub> dot deviated distad. One gray, linear, tilt sexual brand at midst of cell CuA<sub>2</sub>. Hindwing usually spotless. Wing undersides mostly covered by olive-green scalings; forewing markings similar to those of uppersides, but sexual brand replaced by a patch of pale scalings; a series of minute white dots in cell R<sub>2</sub> to CuA<sub>1</sub> of hindwing; additional minute dot at distal end of discoidal cell. Fringe pale brown. Female (PLATE 14, Fig. 122): Body and wing patterns similar to those of male, but wings broader, markings more prominent, and sexual brand replaced by two creamy yellow spots in cell CuA<sub>2</sub> of forewing upperside; discal spot series sometimes present on hindwing.

Male genitalia (PLATE 33, Fig. 208) – Tegumen attenuate caudad, with a pair of prominent, setose warts by caudal end; uncus forming a pair of arms. Gnathos divided, horn-like, setose. Saccus elongate, tapering anteriorly. Valva broad; sacculus thick, costa +ampulla with dorsal margin nearly straight, distal margin rounded; harpe strongly up-curved posteriorly, with distal end tapering, bearing minute spines. Phallus straight, elongate, with phallobase longer than aedeagus; phallobase narrowed anteriorly; aedeagus with deep dorsal indentation at caudal end with distal walls spiny; cornuti as two saw-

like sclerites, and elongate sclerotized band associated with additional long, spiny band. Juxta broad, with deep dorsal invagination.

Female genitalia (PLATE 51, Figs. 278) – Corpus bursae ovate. Ductus bursae tubular, sclerotized, enlarged toward caudal end. Sterigma elaborate, forming a hood. Anal papillae rectangle, setose. Posterior apophyses elongate, slender.

**Global distribution.** Entire Oriental Region, northern part of Australian Region, and Afrotropical Region; also Japan in the Palearctic Region (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland Taiwan, including some associated islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Panicum repens*, *P. maximum*, *Ischaemum indicum*, *Echinochloa crus-galli*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** In Taiwan, this species is less common than *P. agna*, and frequently confused with it.

**形態特徵：**成蝶前翅長 16-19 mm。略具雌雄二型性。雄蝶 (圖 121)：頭被毛，呈帶黃綠色調之褐色。觸角背面褐色，腹面褐色混白色鱗，於尖頂附近格外鮮明，尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節黃白色雜褐色，呈棒狀。胸部及腹部背面褐色，腹面灰白色。足淡黃褐色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，綴透明斑紋，近翅基處覆黃褐色毛。前翅中央  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線，中室末端有兩斑點， $R_3$  至  $R_5$  室翅頂處附近各有一小斑點， $R_5$  室者外偏。 $CuA_2$  室中央有灰色斜線性標。後翅通常無紋。翅腹面大部分覆橄欖綠色鱗，前翅腹面斑紋與背面相似，但性標位置由一片淡色鱗取代。 $R_2$  至  $CuA_1$  室及中室末端具小點。緣毛淺褐色。雌蝶 (圖 122)：形態特徵與雄蝶相似，但翅幅較寬，斑紋較鮮明，前翅背面性標由  $CuA_2$  室之兩黃白色斑點取代，後翅中央有時有白色小點列。

雄交尾器 (圖 208)：背兜向後漸窄，有一對具毛疣突；鉤突臂狀。顎形突左右分離，角狀、具毛。囊突長，末端細。抱器寬闊；抱器腹粗；抱器背與抱器內突癒合，背緣頗直，末端邊緣圓弧形；抱握鈹明顯上彎，尾端漸尖，具微棘。陽莖直、修長，陽莖基長度較陽莖器長；陽莖基前端細；陽莖器尾端背側有深凹陷，末端壁上具刺棘；角狀器為兩只鋸狀骨片和一具刺棘之長帶狀骨片。陽基軛片寬闊，背側有深凹陷。

雌交尾器 (圖 278)：交尾囊卵圓形。交尾囊管骨化、管狀，向尾端擴大。交尾孔板複雜，兜帽狀。肛突矩形，具毛。後內骨突修長、纖細。

**世界分布：**東洋區、澳洲區北部、非洲區，古北區的日本亦有分布 (Tsukiyama *et al.*, 1997)。

**臺灣分布：**分佈於低海拔地區，亦見於部分離島。

**寄主植物：**禾本科之鋪地黍、大黍、印度鴨嘴草及稗等。

**生物學：**本種是一年多世代物種。

**註記：**在臺灣，本種數量較尖翅褐弄蝶少且常與之混淆。

***Pelopidas agna* (Moore, [1866]) (尖翅褐弄蝶 / 南亞穀弄蝶)**

**PLATE 15, Figs. 123-124; PLATE 33, Fig. 209; PLATE 51, Fig. 279**

*Hesperia agna* Moore, [1866]: Proceedings of the Zoological Society of London 1865 (3): 791. (Type locality: Bengal)

*Pamphila similis* Moore, [1881]: The Lepidoptera of Ceylon 1 (4): 169 (nomen nudum, Mabille MS)

*Chapra mathias niasica* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris-25(1911) (4): 50. (Type locality: Insel Nias)

*Parnara baibarana* Matsumura, 1929: Insecta Matsumurana 3(2/3): 107. (Type locality: Formosa, Baibara)

*Parnara baibarana mumon* Matsumura, 1929: Insecta Matsumurana 3(2/3): 107. (Type locality: Formosa, Baibara)

**Specimens examined:**

**JILONG [= KEELUNG] CITY:** 1♀, Zhongzheng, Longgang Trail, 26. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Wulai, Kuaishan/ Lalashan, 29. VII. 1987 (Y. F. Hsu); 2♂, Wulai, 3. VIII. 1987 (Y. F. Hsu); 1♀,

Xindian, Sikanshui, 200/400m, 6. VIII. 2007 (Y. F. Hsu). **TAIPEI CITY**: 1♀, Beitou, Wujianlianfeng, 21. X. 1984 (Y. F. Hsu); 1♂, Daan Dist., NTU, 12. I. 1987 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]**: 1♀, Fuxing, Shangbaling, 30. VI. 1983 (Y. F. Hsu); 1♂, same locality, 5. VII. 1987 (Y. F. Hsu); 1♀, same locality, 8. VII. 1987 (Y. F. Hsu); 1♂, same locality, 29. VII. 1987 (Y. F. Hsu); 1♂, Fuxing, Lalashan, 26. VI. 1984 (Y. F. Hsu); 1♂, same locality, 6. VII. 1987 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.**: 1♂, Guanxi, 29. VI. 2010 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.**: 1♂, 1♀, Xingang, Yuemei, ca 15m, 11. VI. 2007 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.**: 1♂, Manzou, Nanrenshan, 17. V. 1986 (Y. F. Hsu). **YILAN Co.**: 1♀, Nanao, Tongshan, 1800m, 16. VI. 1999 (C. C. Lu).

**Description.** Adult – Forewing length 16–22 mm. Sexual dimorphism moderately present. Male (PLATE 15, Fig. 123): Head hairy, brown tinged with greenish yellow. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, creamy yellow mixed with brown. Thorax and abdomen brown dorsally, grayish white ventrally. Legs pale creamy yellow. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline markings. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, sometimes partially vestigial. Two spots at distal end of discoidal cell, sometimes vestigial; 3 small dots present subapically in cell R<sub>3-5</sub>, with R<sub>5</sub> dot deviated distad. One gray, linear, tilt sexual brand at midst of cell CuA<sub>2</sub>. Hindwing usually spotless. Wing undersides mostly covered by olive-green scalings; forewing markings similar to those of uppersides, but sexual brand replaced by a patch of pale scalings; a series of minute white dots in cell R<sub>2</sub> to CuA<sub>1</sub>; additional minute dot at distal end of discoidal cell. Fringe pale brown. Female (PLATE 15, Fig. 124): Body and wing patterns similar to those of male, but wings broader, markings more prominent, and sexual brand replaced by two creamy yellow spots in cell CuA<sub>2</sub> of forewing upperside; discal spot series sometimes present on hindwing.

Male genitalia (PLATE 33, Fig. 209) – Tegumen attenuate caudad, with a pair of prominent, setose warts by caudal end; uncus forming a pair of arms. Gnathos divided,

horn-like, setose. Saccus elongate, tapering anteriorly. Valva broad; sacculus thick, costa +ampulla with dorsal margin nearly straight, distal margin rounded; harpe strongly up-curved posteriorly, with distal end tapering, bearing minute spines. Phallus straight, elongate, with phallobase longer than aedeagus; phallobase narrowed anteriorly; aedeagus with deep dorsal indentation at caudal end with distal walls spiny; cornuti as two saw-like sclerites, and elongate sclerotized band associated with additional long, spiny band. Juxta broad, with deep dorsal invagination.

Female genitalia (PLATE 51, Fig. 279) – Corpus bursae ovate. Ductus bursae tubular, sclerotized, enlarged toward caudal end. Sterigma elaborate, forming a hood. Anal papillae rectangle, setose. Posterior apophyses elongate, slender.

**Global distribution.** Entire Oriental Region and northern part of Australian Region; also Yaeyama islands of Japan (Tsukiyama *et al.*, 1997).

**Distribution in Taiwan.** Lowland to moderate elevations, including associated islands (Hsu, 2013).

**Larval Host plant(s).** Various kinds of grasses in the plant family Poaceae, including *Oryza sativa*, *Paspalum conjugatum*, *P. scrobiculatum*, *Ischaemum indicum*, *Panicum repens*, *P. maximum*, *Echinochloa crus-galli*, *Miscanthus floridulus*, *M. sinensis*, *Pennisetum purpureum*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** This species is frequently confused with sympatric *Pelopidas mathias*. The most reliable mean to separate them is a diagnosis provided by forewing markings: the hypothetical line connecting the two spots in discoidal cell intercepts with sexual brand of male in *P. mathias*, whereas it runs to a proximal position, not touching sexual brand in *P. agna*. In case of females, the two white spots in CuA<sub>2</sub> may be connected by another hypothetical line to serve as the substitution for sexual brand, and the same identification

rule may apply. Moreover, the forewing of this species tends to be longer than that of *P. mathias*, notably in males.

**形態特徵：**成蝶前翅長 16-22 mm。略具雌雄二型性。雄蝶 (圖 123)：頭被毛，呈帶黃綠色調之褐色。觸角背面褐色，腹面褐色混白色鱗，於尖頂附近格外鮮明，尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節黃白色雜褐色，呈棒狀。胸部及腹部背面褐色，腹面灰白色。足淡黃褐色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，綴透明斑紋，近翅基處覆黃褐色毛。前翅中央  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線，中室末端有兩斑點，有時減退， $R_3$  至  $R_5$  室翅頂處附近各有一小斑點， $R_5$  室者外偏。 $CuA_2$  室中央有灰色斜線性標。後翅通常無紋。翅腹面大部分覆橄欖綠色鱗，前翅腹面斑紋與背面相似，但性標位置由一片淡色鱗取代。 $R_2$  至  $CuA_1$  室及中室末端具小點。緣毛淺褐色。雌蝶 (圖 124)：形態特徵與雄蝶相似，但翅幅較寬，斑紋較鮮明，前翅背面性標由  $CuA_2$  室之兩黃白色斑點取代，後翅中央有時有白色小點列。

**雄交尾器 (圖 209)：**背兜向後漸窄，具一對疣突，具剛毛；鉤突臂狀。顎形突左右分離，角狀，具毛。囊突長，末端漸細。抱器寬闊；抱器腹粗；抱器背與抱器內突癒合，背緣頗直，末端邊緣圓弧形；抱握鈹明顯上彎，尾端漸尖，具微棘。陽莖直、修長，陽莖基長度較陽莖器長；陽莖基前端細；陽莖器尾端背側有深凹陷，末端壁上具刺棘；角狀器為兩只鋸狀小骨片和一具刺棘之長帶狀骨片。陽基軛片寬闊，背側有深凹陷。

**雌交尾器 (圖 279)：**交尾囊卵圓形。交尾囊管骨化、管狀，向尾端擴大。交尾孔板複雜，兜帽狀。肛突矩形，具毛。後內骨突修長、纖細。

**世界分布：**東洋區、澳洲區北部，日本八重山群島亦有分布 (Tsukiyama *et al.*, 1997)。

**臺灣分布：**低至中海拔地區，包括離島。

**寄主植物：**禾本科之多種禾草，包含稻、兩耳草、鴨姆草、印度鴨嘴草、鋪地黍、大黍、稗、五節芒、芒、象草等。

**生物學：**本種是一年多代物種。

**註記：**本種常與同域分布之褐弄蝶混淆。兩種最可靠之區分方式為雄蝶前翅斑紋之差異，即中室兩斑之假想連結線在褐弄蝶會穿越性標，於尖翅褐弄蝶則不通過性標；鑑定雌蝶時，可將 CuA<sub>2</sub> 室兩斑之假想連結線取代性標，判別方法如同雄蝶情形。此外，本種前翅翅形有較長之傾向，於雄蝶尤其明顯。

***Pelopidas sinensis* (Mabille, 1877) ( 中華褐弄蝶 / 台灣褐弄蝶 / 中華穀弄蝶 )**

**PLATE 15, Figs. 125-126; PLATE 34, Fig. 210; PLATE 52, Fig. 280**

*Gegenes sinensis* Mabille, 1877: Bulletin de la Société zoologique de France 2 (3): 232. (Type locality: “Chine septentrionale” [N. China])

*Chapra prominens* Moore, 1882: Proceedings of the Zoological Society of London 1882 (1): 261. (Type locality: “N. W. Himalaya: Tonse valley, 6000 feet; Gurwhal (Lang); Kussowlee; Kangra”)

*Pamphila similis* Leech, 1890: Entomologist 23: 48. (Type locality: Chang Yang)

**Specimens examined:**

**TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Xueshankengxi, 1. VIII. 1985 (Y. F. Hsu) (genitalia preparation JYL299). **NANTOU Co.:** 1♂, Lugu, Xitou, Yushuikeng, 3. VI. 1997, reared from *Pennisetum purpureum*, emgd. 2. VII. 1997, HSU 97F7 (Y. F. Hsu & C. C. Lu); 1♂, 1♀, Renai, Beidongyanshan, ca 1800m, 6. XII. 2005, reared from *Miscanthus sinensis*, emgd. 20. I. 2006-18. II. 2006, HSU 05M15 (Y. F. Hsu).

**Description.** Adult – Forewing length 19–22 mm. Sexual dimorphism moderately present. Male (PLATE 15, Fig. 125): Head hairy, brown tinged with greenish yellow. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, creamy yellow mixed with brown. Thorax and abdomen brown dorsally, grayish white ventrally. Legs pale brown. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline markings. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>. Two spots at distal end of discoidal cell; 3 small dots present subapically in cell R<sub>3-5</sub>, with R5 dot deviated distad. One creamy white, linear, tilt sexual brand at midst of cell CuA<sub>2</sub>. On hindwing, a discal spot series arranged into a tilt line in cell M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, arrangement zig-zag. Wing undersides mostly covered by tawny scalings; markings similar to those of uppersides, sexual brand replaced by a patch of pale scalings. Fringe

creamy white. Female (PLATE 12, Fig. 126): Body and wing patterns similar to those of male, but wings broader, markings more prominent, and sexual brand replaced by two creamy yellow spots in cell CuA<sub>2</sub> of forewing upperside.

Male genitalia (PLATE 34, Fig. 210) – Tegumen attenuate caudad, with a pair of prominent, setose warts by caudal end; uncus forming a pair of arms. Gnathos divided, with caudal end blade-like with dorsal ridge bearing minute spines. Saccus elongate, abruptly narrowed half way to distal end. Valva broad; sacculus thick, costa +ampulla with dorsal margin nearly straight, distal margin rounded; harpe strongly up-curved posteriorly, with distal end abruptly narrowed, bearing minute spines. Phallus straight, elongate, with phallobase longer than aedeagus; phallobase narrowed anteriorly; aedeagus with deep dorsal indentation at caudal end with distal walls spiny; cornuti as two flatten, saw-like sclerites, and a sclerotized band. Juxta broad, hexagon with deep dorsal invagination.

Female genitalia (PLATE 52, Figs. 280) – Corpus bursae bulbous, wrinkled. Ductus bursae tubular, sclerotized, enlarged toward caudal end. Sterigma elaborate, forming a hood with a pair of lateral pieces, resembling warrior helmet. Anal papillae trapezoid, setose. Posterior apophyses elongate, slender.

**Global distribution.** Himalayas, Korea, Indochina, West to Northeast China, Taiwan (Hsu, 2013).

**Distribution in Taiwan.** Moderate elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Miscanthus sinensis* and *Pennisetum purpureum* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2002).

**形態特徵：**成蝶前翅長 19-22 mm。略具雌雄二型性。雄蝶 (圖 125)：頭被毛，呈帶黃綠色調之褐色。觸角背面褐色，腹面褐色混白色鱗，於尖頂附近格外鮮明，尖

頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節黃白色雜褐色，呈棒狀。胸部及腹部背面褐色，腹面灰白色。足淡褐色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，綴透明斑紋，近翅基處覆黃褐色毛。前翅中央  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線，中室末端有兩斑點， $R_3$  至  $R_5$  室翅頂處附近各有一小點於  $R_5$  室外偏。 $CuA_2$  室中央有黃白色斜線狀性標。後翅中央  $M_1$ 、 $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，交錯排列。翅腹面大部分覆黃褐色鱗，前翅腹面斑紋與背面相似，但性標位置由一片淡色鱗取代。緣毛黃白色。雌蝶 (圖 126)：形態特徵與雄蝶相似，但翅幅較寬，斑紋較鮮明，前翅背面性標由  $CuA_2$  室之兩個黃白色斑點取代。

雄交尾器 (圖 210)：背兜向後漸窄，有一對明顯具毛疣突；鉤突指狀。顎形突左右分離，尾端刃狀，背脊具小刺。囊突長，後半部驟縮。抱器寬闊；抱器腹粗；抱器背與抱器內突癒合，背緣頗直，末端邊緣圓弧形；抱握鈹明顯上彎，末端細、具微棘。陽莖直、修長，陽莖基長度較陽莖器長；陽莖基前端細；陽莖器尾端背側有深凹陷，末端壁上具刺棘；角狀器為一帶狀骨片及一鋸形骨片。陽基軛片寬，六角形，背側有深凹陷。

雌交尾器 (圖 280)：交尾囊近圓形，有皺褶。交尾囊管骨化、管狀，向尾端擴大。交尾孔板複雜，具一對似武士頭盔之兜帽狀側片。肛突梯形，具毛。後內骨突修長、纖細。

**世界分布：**喜馬拉雅地區、朝鮮半島、中南半島、華西至華東北、臺灣。

**臺灣分布：**本島中海拔山區。

**寄主植物：**禾本科之芒及象草。

**生物學：**本種是一年多世代物種。

***Pelopidas conjuncta* (Herrich-Schäffer, 1869) (巨褐弄蝶/臺灣大褐弄蝶/古銅穀弄蝶)**

**PLATE 15, Figs. 127-128; PLATE 34, Fig. 211; PLATE 52, Fig. 281**

*Goniloba conjuncta* Herrich-Schäffer, 1869: Correspondenz-blatt des Zoologisch-mineralogischen Vereines in Regensburg 23 (12): 195, no. 45. (Type locality: not stated)

*Gegenes javana* Mabille, 1877: Bulletin de la Société zoologique de France 2 (3): 232. (Type locality: Java)

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Xindian, Sikanshui, 29. XI. 2002, reared from *Miscanthus* sp., emgd. 23. XII. 2002, HSU 02L33 (H. S. Chuen); 1♀, Wulai, 9. X. 2004, reared from *Miscanthus floridulus*, emgd. 24. XI. 2004, HSU 04K4 (L. H. Wang). **TAIPEI CITY:** 1♂, Shilin, Jingshan Road, 26. XI. 2008, reared from *Miscanthus* sp., emgd. 26. XI. 2008, HSU 08L37 (B. C. Lin). **NANTOU Co.:** 1♀, Yuchi, Lianhuachi, 24. I. 1999 (C. Y. Hung); 1♀, Lugu, Fonghuanggu Bird and Ecology Park, 25. X. 1996 (C. Y. Hung). **JIAYI [= CHIAYI] Co.:** 1♂, Fanlu, Chukou, 28. I. 2008 (D. C. Chen). **HUALIAN [= HUALIEN] Co.:** 4♀, Shoufeng, Liyu Lake, 18. V. 1997, reared from *M. sinensis*, emgd. 2/14. VI. 1997, HSU 97E31 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 1♀, Yanping, Yanping Forest Trail 20K, 30. VII. 1992 (C. L. Li).

**Description.** Adult – Forewing length 20–26 mm. Sexual dimorphism absent. Male (PLATE 15, Fig. 127): Head hairy, brown tinged with greenish yellow. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, creamy yellow mixed with brown. Thorax and abdomen brown tinged with greenish yellow dorsally, gray ventrally. Legs pale brown. Forewing triangular, termen convex. Hindwing fan-like, lobed at tornus. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline and creamy yellow markings. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, with size reducing anteriorly. Two spots at distal end of discoidal cell, somewhat elongate; 3 small dots present subapically in cell R<sub>3-5</sub>, with R<sub>5</sub> dot deviated distad. One creamy yellow spot at midst of cell CuA<sub>2</sub>. Spotless on hindwing. Wing undersides mostly covered by yellowish brown scalings; forewing markings similar to those of uppersides; a series of minute white dots in cell R<sub>s</sub>, M<sub>1</sub>, M<sub>2</sub>, and M<sub>3</sub> on hindwing; additional minute dot at distal end of discoidal cell. Fringe creamy white. Female (PLATE 15, Figs. 128): Body and wing patterns similar to those of male, wings broader.

Male genitalia (PLATE 34, Fig. 211) – Tegumen attenuate caudad, with a pair of prominent, setose warts by caudal end; uncus forming a pair of processes, ox horn-like. Gnathos divided, with caudal end club-like with bearing minute spines dorsally. Saccus elongate, abruptly narrowed half way to distal end. Valva broad; sacculus thick, costa

+ampulla with dorsal margin nearly straight, distal margin rounded; harpe strongly up-curved posteriorly, with distal end heavily sclerotized, flattened, bearing minute spines. Phallus straight, elongate, with phallobase longer than aedeagus; phallobase narrowed anteriorly; aedeagus with deep dorsal indentation at caudal end with distal walls spiny; cornuti as two small, saw-like sclerites, and a long, narrow sclerotized band. Juxta broad, square.

Female genitalia (PLATE 52, Fig. 281) – Corpus bursae bulbous, wrinkled. Ductus bursae tubular, sclerotized. Sterigma elaborate, forming a spiny hood with a pair of lateral piece resembling warrior helmet. Anal papillae rectangle, setose. Posterior apophyses elongate, slender.

**Global distribution.** Nearly entire Oriental region; also Lesser Sunda Islands (Shirôzu, 1960).

**Distribution in Taiwan.** Lowland Taiwan (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Miscanthus floridulus*, *M. sinensis*, *Pennisetum purpureum*, *Zizania latifolia*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**形態特徵：**成蝶前翅長 20-26 mm。無雌雄二型性。雄蝶 (圖 127)：頭被毛，呈帶黃綠色調之褐色。觸角背面褐色，腹面褐色混白色鱗，於尖頂附近格外鮮明，尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節黃白色雜褐色，呈棒狀。胸部及腹部背面帶黃綠色調之褐色，腹面灰白色。足淡褐色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈葉狀突出。翅背面底色褐色，綴透明及黃白色斑紋，近翅基處覆黃褐色毛。前翅中央  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線，前側者較小。中室末端有兩長斑， $R_3$  至  $R_5$  室翅頂處附近各有一小斑點， $R_5$  室者外偏。 $CuA_2$  室中央有一黃白色斑點。後翅無紋。翅腹面大部分覆黃褐色鱗，前翅腹面斑紋與背面相似， $R_s$ 、 $M_1$ 、 $M_2$ 、 $M_3$  室及中室末端具小點。緣毛黃白色。雌蝶 (圖 128)：形態特徵與雄蝶相似，但翅幅較寬。

雄交尾器 (圖 211)：背兜向後漸窄，有一對具毛疣突；鉤突牛角狀。顎形突左右分離，末端棒狀，背側具微刺。囊突長，後半部細。抱器寬闊；抱器腹粗；抱器背與抱器內突癒合，背緣頗直，末端邊緣圓弧形；抱握鉗明顯上彎，尾端扁平、高度骨化，具微棘。陽莖直、修長，陽莖基長度較陽莖器長；陽莖基前端細；陽莖器尾端背側有深凹陷，末端壁上具刺棘；角狀器為一個修長窄帶狀骨片和兩只鋸狀小骨。陽基軛片寬闊、矩形。

雌交尾器 (圖 281)：交尾囊近圓形，有皺褶。交尾囊管骨化、管狀。交尾孔板複雜，具一對似武士頭盔之兜帽狀側片。肛突矩形，具毛。後內骨突修長、纖細。

**世界分布：**幾乎涵蓋東洋區全域，小巽他群島亦有分布。

**臺灣分布：**分布於低海拔地區。

**寄主植物：**禾本科之五節芒、芒、象草及筴白等。

**生物學：**本種是一年多世代物種。

## Genus *POLYTREMIS* Mabille, 1904

**Type species:** *Goniloba lubricans* Herrich-Schäffer, 1869

Diagnostic characters include the followings: 1) hyaline spots yellow on forewing upperside; 2) hyaline spots inconspicuous on hindwing upperside; 3) lateral process of uncus clearly separated at base; 4) female genitalia with sclerotized finger-like process between anterior and posterior lamella (Fan *et al.*, 2016).

Monotypic. Widely distributed in the Oriental Region (Fan *et al.*, 2016). The other members formerly belonging to the genus are assigned to either the genus *Zinaida* or *Zenonoida* (Fan *et al.*, 2016; Tang *et al.*, 2017).

The sole representative species occurs in Taiwan.

## 孔弄蝶屬

形態特徵如下：1) 前翅背面有黃色透明斑點；2) 後翅背面透明斑點不明顯；3) 雄交尾器鉤突基部明顯著分離；4) 雌性交尾器前後交尾孔板間具骨化指狀突 (Fan *et al.*, 2016)。

本屬僅 1 種，廣泛分布於東洋區，臺灣亦有分布 (Fan *et al.*, 2016)。過去置於本屬的其他種類近年已由 Fan *et al.* (2016) 及 Tang *et al.* (2017) 根據分子證據移至其他屬。

### ***Polytremis lubricans* (Herrich-Schäffer, 1869) (黃紋孔弄蝶 / 黃紋褐弄蝶)**

*Goniloba lubricans* Herrich-Schäffer, 1869: Correspondenz-blatt des Zoologisch-mineralogischen Vereines in Regensburg 23 (12): 195, no. 34. (Type locality: not stated)

*Gegenes contigua* Mabille, 1877: Bulletin de la Société zoologique de France 2 (3): 232 n. (1). (Type locality: Java)

*Hesperia toona* Moore, 1878: Proceeding of the Zoological Society of London 1878 (3): 689. (Type locality: N. E. Bengal)

### **Ssp. *kuyaniana* Matsumura, 1919**

#### **PLATE 15, Figs. 129-130; PLATE 34, Fig. 212; PLATE 52, Fig. 282**

*Parnara kuyaniana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 677, pl. LI, fig. 21. (Type locality: Formosa, Kuyania)

#### **Specimens examined:**

**JILONG [= KEELUNG] CITY:** 1♀, Longgang Trail, 2. IX. 2006 (Y. F. Hsu). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Wulai, 22. VIII. 1985 (Y. F. Hsu); 1♂, same locality, 16. X. 1986 (Y. F. Hsu); 1♂, Xindian, Sikanshui, 23. V. 2004 (L. H. Wang); 3♂, 2♀, Ruifang, Nanya, 2. X. 2002, reared from *Miscanthus sinensis*, emgd. 14. XI. 2002, HSU 02K6 (L. H. Wang). **TAIPEI CITY:** 1♂, Wenshan, Xianjiyan, 22. V. 2005, reared from *Miscanthus* sp., emgd. 10. VI. 2005, 05E25 (Y. F. Hsu). **TAOYUAN CITY [= TAOYUAN Co.]:** 1♂, Fuxing, Sileng, ca 1000m, 5. III. 2009 (C. H. Lin, jr). **HUALIAN [= HUALIEN] Co.:** 1♂, Xiulin, Taroko, 60m, 11. XI. 2007 (M. H. Sun). **NANTOU Co.:** 1♂, Nanshanxi, 9. IX. 1999 (C. Y. Hung); 1♀, Renai, Tunyuan, 1550m, 4. VI. 2006 (C. C. Lu). **PINGDONG [= PINGTUNG] Co.:** 1♂, Wutai, Yichangshan, 1100-1400m, 15/16. III. 2009 (Y. F. Hsu & H. C. Huang).

**Description.** Adult – Forewing length 17–20 mm. Sexual dimorphism not prominent. Male (PLATE 15, Fig. 129): Head hairy, tawny. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably around subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment minute, rod-like, creamy yellow. Thorax and abdomen brown tinged with yellow dorsally, creamy yellow to pale brown ventrally. Legs creamy yellow. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides bearing tawny hairs proximally, ground color brown tinged with yellow, ornamented with hyaline and creamy yellow spots. On forewing, a discal spot series arranged into a tilt line in cell  $M_2$ ,  $M_3$  and  $CuA_1$ . Two small spots at distal end of discoidal cell; 3 small dots present subapically in cell  $R_{3-5}$ , with  $R_5$  dot deviated distad. One creamy white spot at midst of cell  $CuA_2$ . On hindwing, a discal spot series arranged into a tilt line in cell  $M_1$ ,  $M_2$ ,  $M_3$  and  $CuA_1$ , with  $M_2$  spot elongate. Wing undersides ground color paler, ochreous; markings similar to those of uppersides, but more prominent. Fringe pale brown. Female (PLATE 15, Fig. 130): Body and wing patterns similar to those of male, but wings broader.

Male genitalia (PLATE 34, Fig. 212) – Tegumen broad, posterior end membranous; uncus forming a pair of bifid, horn-like processes. Gnathos divided, with caudal end club-like, heavily sclerotized, dark brown, spiny. Saccus moderately long, tapering cephalad. Valva broad, elongate; sacculus thick, short, costa broad, elongate; ampulla with dorsal margin slightly concave, distal margin rounded; harpe up-curved posteriorly, bearing minute spines at distal portion. Phallus straight, with phallobase longer than aedeagus; attenuate cephalad, ending with a club; minute spines present at caudal end of aedeagus. Juxta broad, U-shaped.

Female genitalia (PLATE 52, Fig. 282) – Corpus bursae bulbous. Ductus bursae trumpet-like, tapering caudad, membranous but forming large, spiny, sclerotized ring around ostium bursae. Sterigma with antevaginaslis forming a pair of lateral, elongate, sclerotized plates bearing long posterior processes; postvaginalis as a transverse band with shallow concavity along posterior margin. Anal papillae trapezoid, setose. Posterior apophyses short, slender, curved.

**Global distribution.** Nearly entire Oriental region, also Lesser Sunda Islands (Shirôzu, 1960).

**Distribution in Taiwan.** Lowland Taiwan to moderate elevations, also recoded from Guishan and Penghu Islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Miscanthus sinensis* and *M. floridulus* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2013).

**Remarks.** The populations in Taiwan and South China was long assigned to ssp. *taiwana* Matsumura, 1919 (e. g. Evans, 1949; Shirôzu, 1960; Hamano, 1987), but Hsu *et al.* (2006) pointed out the type of *taiwana* Matsumura, 1919 is an individual of *Borbo cinnara*.

**形態特徵：**成蝶前翅長 17-20 mm。雌雄二型性不顯著。雄蝶 (圖 129)：頭被毛，黃褐色。觸角背面褐色，腹面褐色，有黃白色鱗，近尖頂處格外鮮明；尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節微小、桿狀，呈乳黃色。胸部及腹部褐色，背面泛黃，腹面黃白色至淡褐色。足黃白色。前翅呈三角形，外緣略突出。後翅扇形。翅背面底色褐色泛黃色，綴有透明黃斑，近翅基處覆有黃褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室有斑點，於中央排成一斜線。中室末端有兩小斑點，翅尖頂附近於  $R_3$  至  $R_5$  室各有一小斑點，於  $R_5$  室外偏。 $CuA_2$  室中央有一黃白色斑點。後翅  $M_1$ 、 $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，斜行排列，其中  $M_2$  室的斑點較長。翅腹面底色較淡，呈赭黃色；斑點與翅背面相似，但更為鮮明。緣毛淡褐色。雌蝶 (圖 130)：形態特徵與雄蝶相似，惟翅幅較寬。

雄交尾器 (圖 212)：背兜寬闊，後端膜質；鉤突為一對分叉角狀突起。顎形突二分，末端棒狀、高度骨化、深褐色，具刺。囊突中庸長，端漸細。抱器寬闊、修長；抱器腹厚而短；抱器背寬而長；抱器內突背緣略凹，末端邊緣圓弧狀；抱握鈎末端上彎，端部具小刺。陽莖直，陽莖基長度較陽莖器長；向前方漸細，末端棍棒狀，陽莖器末端具小刺。陽莖軛片寬闊、U 形。

雌交尾器 (圖 282)：交尾囊泡狀。交尾囊管喇叭狀，向後端漸窄，膜質，於交尾孔周圍形成大型具刺骨化環。交尾孔前板為一對側生細長骨板，末端有長突起；交尾

孔後板寬帶狀，後緣淺凹。肛突梯型，具毛。後內骨突短、纖細、彎曲。

**世界分布：**幾乎涵蓋東洋區全域，小巽他群島亦有分布。

**臺灣分布：**本島低至中海拔地區，龜山島及澎湖群島亦有發現。

**寄主植物：**禾本科之芒及五節芒。

**生物學：**本種是一年多世代物種。

**註記：**臺灣及華南的族群長久以來使用 *ssp. taiwana* 之亞種名，Hsu *et al.* (2006) 指出 *taiwana* 之模式標本實際上並非本種，而是屬於禾弄蝶 *Borbo cinnara*。

## Genus *ZENONOIDA* Fan & Chiba, 2016

**Type species:** *Hesperia eltola* Hewitson, 1869

Diagnostic characters include the followings: 1) third segment of palpi short, stout and barely protruding; 2) spots in discoidal cell of forewing conjoined or anterior spot absent; 3) sexual brand absent; 4) uncus with central-basal area membranous, gnathos elbow-shaped (Fan *et al.*, 2016).

Two species, distributed in the Oriental Region (Fan *et al.*, 2016).

One species occurs in Taiwan.

## 碎紋弄蝶屬

形態特徵如下：1) 下唇鬚第3節粗短、略突出；2) 前翅中室斑相連，或缺少前方斑點；3) 無性標；4) 鉤突基部至中央膜質，顎形突肘狀 (Fan *et al.*, 2016)。

本屬已知2種，分布於東洋區 (Fan *et al.*, 2016)。

臺灣有1種。

***Zenonoida eltola* (Hewitson, 1869)** (碎紋弄蝶/碎紋孔弄蝶/達邦褐弄蝶/臺灣孔弄蝶)

*Hesperia eltola* Hewitson, 1869: Illustrations of new species of exotic butterflies [5] (*Hesperia* IV): [104], pl. [52], f. 40. (Type locality: Darjeeling)

***Ssp. tappana* Matsumura, 1919****PLATE 16, Figs. 131-132; PLATE 34, Fig. 213; PLATE 52, Fig. 283**

*Parnara tappana* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 679. (Type locality: "Formosa (Tappan)" [Taiwan, Jiayi, Dabang]).

**Specimens examined:**

**JIAYI [= CHIAYI] Co.:** 1♀, Zhuqi, Shizhou, 1300 m, 29. X. 20069 (Y. F. Hsu).  
**KAHHSIUNG CITY [KAHHSIUNG Co.]:** 1♂, Taoyuan, Fenggangshan, 1300 m, 24. IX. 2007 (Y. F. Hsu & G. P. Su). **PINGDONG [= PINGTUNG] Co.:** 1♀, Wutai, Wutoushan, 1100/1200 m, 11. V. 2007 (L. H. Wang); 1♀, same locality, 6. VI. 2009 (Y. F. Hsu); 1♂, Wutai, Yichangshan, 1100/1400 m, 15/16. III. 2009 (Y. F. Hsu & H. C. Huang); 1♂, Wutai, 8. IX. 1998 (C. Y. Hung).

**Description.** Adult – Forewing length 17–19 mm. Sexual dimorphism absent. Male (PLATE 16, Fig. 131): Head hairy, brown tinged with creamy yellow. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment minute, rod-like, creamy yellow mixed with brown. Thorax and abdomen brown dorsally, pale brown ventrally. Legs pale brown. Forewing triangular, termen slightly convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing ochreous hairs proximally, ground color brown tinged with yellow, ornamented with hyaline and creamy white spots. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, reducing in size anteriorly. One prominent spots at distal end of discoidal cell, usually in close contact with Cu<sub>1</sub> spot; 3 small dots present subapically in cell R<sub>3-5</sub> in line. One creamy white spot at midst of cell CuA<sub>2</sub>. On hindwing, a discal spot series composed of three spots in cell M<sub>1</sub>, M<sub>2</sub>, and M<sub>3</sub>; M<sub>1</sub> spot large, prominent, M<sub>2</sub> spot minute, sometime vestigial, M<sub>3</sub> spot elongate, rod-like. Wing undersides mostly covered by ochreous scalings; markings similar to those of uppersides. Fringe creamy yellow. Female (PLATE 16, Fig. 132): Body and wing patterns similar to those of male, but wings broader.

Male genitalia (PLATE 34, Fig. 213) – Tegumen thick, tubular, with a pair of small,

bump-like warts by caudal end; uncus forming a pair of short horns. Gnathos divided, with caudal end digitate, heavily sclerotized, dark brown. Saccus moderately long, tapering into blunt distal end. Valva tapering caudad; sacculus thick, short, costa broad; ampulla with dorsal margin concave, distal margin blunt; harpe strongly up-curved posteriorly, hook-like. Phallus straight, short, with aedeagus enlarged caudad; phallobase longer than aedeagus; a prominent spine at caudal end of aedeagus; minute external spines present on ventral wall of aedeagus. Juxa broad, forming V-shaped sclerite.

Female genitalia (PLATE 52, Fig. 283) – Corpus bursae oval. Ductus bursae thick, short, membranous. Sterigma elaborate; antevaginalis forming large funnel-like structure surrounding ostium bursae, connecting to a widen chamber with spiny wall; postvaginalis as a cardioid sclerite. Anal papillae rectangle, setose. Posterior apophyses elongate, slender, straight.

**Global distribution.** Himalayas, Indochina, Malay Peninsula, South China, Taiwan (Shirôzu, 1960).

**Distribution in Taiwan.** Moderate elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Arundo donax*, *Oplismenus hirtellus* subsp. *undulatifolius*, *O. compositus*, etc. (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 2002).

**Remarks.** This taxon was place in the genus *Polytremis* until Fan *et al.* (2016) established a new genus *Zenonoida* to include it and its allied species.

**形態特徵：**成蝶前翅長 17-19 mm。無雌雄二型性。雄蝶 (圖 131)：頭被毛，褐色帶橙黃色。觸角背面褐色，腹面褐色，帶橙黃色鱗，近尖頂處尤其明顯；尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節微小，呈棒狀，橙黃色雜褐色。胸部與腹部背面褐色，腹面淺褐色。足淺褐色。前翅呈三角形，外緣略突出。後翅呈扇形，臀區略呈葉狀突出。翅背面底色黃褐色，綴有透明及白色斑紋，近翅基處有土黃色毛。前翅中央  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點排成一斜列，前側斑

點較小。中室末端有一鮮明斑點，常與 CuA<sub>1</sub> 室斑點相接；R<sub>3</sub> 至 R<sub>5</sub> 室各有一小斑點，於翅頂附近排成一行。CuA<sub>2</sub> 室中央有一白色斑點。後翅中央 M<sub>1</sub>、M<sub>2</sub> 及 M<sub>3</sub> 室各有一斑點；於 M<sub>1</sub> 者大且鮮明；於 M<sub>2</sub> 者微小，有時消失；於 M<sub>3</sub> 者長而呈棒狀。翅腹面大部分覆土黃色鱗；斑紋與翅背面相似。雌蝶 (圖 132)：形態特徵與雄蝶相似，但翅幅較寬。

雄交尾器 (圖 213)：背兜厚、管狀，末端具一對小疣突；鉤突呈一對短角。顎形突左右分離，末端指狀、高度骨化，深褐色。囊突中庸長，向前端漸細，頂端鈍。抱器向後端漸窄；抱器腹粗短；抱器背寬闊；抱器內突背緣凹入，末端邊緣圓鈍；抱握鈹明顯上彎、鉤狀。陽莖直而短；陽莖基長度較陽莖器長；陽莖器末端膨大，具棘突，腹側壁上具小刺。陽基軛片為寬闊 V 形骨片。

雌交尾器 (圖 283)：交尾囊卵圓形。交尾囊管粗短、膜質。交尾孔板複雜；前板於交尾孔周圍形成大型漏斗，連接至一個腔室，腔室壁生刺；後板為心形骨片。肛突矩形、具毛。後內骨突細長、筆直。

**世界分布：**喜馬拉雅地區、中南半島、馬來半島、華南及臺灣。

**臺灣分布：**本島中海拔山區。

**寄主植物：**禾本科之蘆竹、求米草及竹葉草等。

**生物學：**本種是一年多世代物種。

**註記：**本種原先被置於孔弄蝶屬中，而後 Fan *et al.* (2016) 建立碎紋弄蝶屬，其成員包含此種及其近緣種。

## Genus *ZINAIDA* Evans, 1937

**Type species:** *Parnara nascens* Leech, 1893

Diagnostic characters include the followings: 1) origin of R<sub>1</sub> of forewing midway between CuA<sub>1</sub> and CuA<sub>2</sub>; 2) origin of Rs of hindwing proximal to CuA<sub>2</sub>; 3) many species possess sexual brand on forewing upperside in male; 4) uncus V-shaped, gnathos straight

(Fan *et al.*, 2016; Tang *et al.*, 2017).

Tang *et al.* (2017) listed 14 species mainly distributed Oriental Region and Eastern Palearctics.

2 species occur in Taiwan.

## 禪弄蝶屬

形態特徵如下：1) 前翅  $R_1$  脈基端位於  $CuA_1$  及  $CuA_2$  脈中間；2) 後翅  $R_s$  脈基端位於  $CuA_2$  脈內側；3) 多數種類雄蝶前翅背面具性標；4) 鉤突 V 形，顎形突直 (Fan *et al.*, 2016; Tang *et al.*, 2017)。

Tang *et al.* (2017) 將本屬分為 14 種，主要分布於東洋區及古北區東部。

臺灣具 2 種。

### *Zinaida zina* (Evans, 1932) (長紋禪弄蝶 / 長紋孔弄蝶 / 刺紋孔弄蝶)

*Baoris zina* Evans, 1932: Indian Butterflies (edn. 2): 415. (Type locality: “W and C China [Omeishan]”)

#### **Ssp. *asahinai* Shirôzu, 1952**

#### **PLATE 16, Figs. 133-134; PLATE 35, Fig. 214; PLATE 53, Fig. 284**

*Polytremis asahinai* Shirôzu, 1952: Sieboldia 1(11): 11-37. (Type locality: Pianananbu-Heiganzan, Taichu Pref., North Formosa [Taiwan: Taizhong, Siyuan to Pingyanshan])

*Polytremis zina taiwana* Murayama, 1981: New Entomologist 30(2): 11. (Type locality: Tatunshan [Datunshan] near Taipei, Taiwan)

#### **Specimens examined:**

**TAIPEI CITY:** 1♂, Beitou, Qixingshan, ca 1000m, 14. VI. 2011, reared from *Miscanthus* sp., emgd. 16. VI. 2011, 11F7.1 (C. Y. Liao). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♀, Sanzhi, Zhuzishan, 1000m, V. 2007, reared from *Miscanthus* sp., emgd. 2. VI. 2007 (J. L. Jean); 1♂, Sanzhi, Datunshan, 800m, 18. VII. 2007 (Y. F. Hsu); 3♂, Datunshan, 23. VI. 1986 (Y. F. Hsu); 1♂, same locality, 20. VII.

1986 (Y. F. Hsu); 1♂, Tamsui, Erziping, ca 800m, 18. VI. 2005 (H. C. Huang). **YILAN Co.:** 3♂, Nanao, Jinchao Shan, 1100m, 29. VI. 2001 (Y. F. Hsu & C. C. Lu); 2♀, Nanao, Shenmihu, 30. VI. 2001 (H. S. Chuen); 1♂, Datong, Mingchi, 1200m, 22. IV. 2002, reared from *Brachypodium kawakamii*, emgd. 18. III. 2003, HSU 02L24 (H. S. Que & L. W. Wu); 1♂, same locality, 1. V. 2007, reared from *M. sinensis*, emgd. 4. VI. 2007, HSU 07E3 (Y. F. Hsu); 2♂, same locality, 11. V. 2007, reared from *M. sinensis*, emgd. 6/8. VI. 2007, HSU 07E19 (Y. F. Hsu); 1♂, Chiduan [Mingchi], 28. VI. 1984 (Y. F. Hsu); 1♂, same locality, 26. VII. 1986 (Y. F. Hsu); 1♀, Datong, Taipingshan, 22. V. 2005, reared from *M. sinensis*, emgd. 22. VI. 2005, HSU 05E23 (L. H. Wang); 1♀, Datong, Siyuan, 2000m, 31. VI. 2007 (L. H. Wang); 4♂, Yuanshan, Fushan Botanical Garden, reared from *Miscanthus* sp., emgd. 19/26. V. 2003, HSU 03D77 (L. W. Wu). **TAOYUAN CITY [TAOYUAN Co.]:** 2♂, Sileng, 26. VI. 1987 (Y. F. Hsu); 6♂, same locality, 27. VI. 1988 (Y. F. Hsu); 1♂, Lalashan, reared from *Yushania niitakayamensis*, emgd. 1. VI. 1988 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 1♂, Qilai, 1300m, 11. VII. 1991 (Y. F. Hsu & C. L. Li); 1♂, Lungchien to Lungshi, 10. VII. 1991 (Y. F. Hsu).

**Description.** Adult – Forewing length 18–21 mm. Sexual dimorphism weakly present. Male (PLATE 16, Fig. 133): Head hairy, brown tinged with greenish yellow. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment minute, rod-like, creamy yellow mixed with brown. Thorax and abdomen brown tinged with greenish yellow dorsally, creamy yellow to creamy white ventrally. Legs creamy yellow. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides bearing ochreous hairs proximally, ground color brown tinged with yellow, ornamented with hyaline and creamy white spots. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>. Two small spots at distal end of discoidal cell, posterior spot usually elongate; 3 small dots present subapically in cell R<sub>3-5</sub>, with R<sub>5</sub> dot strongly deviated distad. One creamy white spot at midst of cell CuA<sub>2</sub>. On hindwing, a discal spot series arranged into a tilt line in cell M<sub>1</sub>, M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, arrangement somewhat zig-zag, occasionally additional small spot in cell R<sub>s</sub>, deviated proximally. Wing undersides mostly covered by olive-green scalings; markings similar to those of uppersides. Fringe creamy yellow. Female (PLATE 16, Fig. 134): Body and wing patterns similar to those of male, but wings broader, and posterior spot in discoidal

cell of forewing not elongate or to less extent.

Male genitalia (PLATE 35, Fig. 214) – Tegumen broad, with a pair of prominent, setose, bump-like warts by caudal end; uncus forming a pair of short cones. Gnathos divided, with caudal end club-like, heavily sclerotized, dark brown. Saccus short, tapering into blunt distal end. Valva broad, elongate; sacculus thick, short, costa narrow, elongate; ampulla with dorsal margin slightly concave, distal margin rounded; harpe up-curved posteriorly, bearing minute spines at distal portion. Phallus straight, short, robust, with aedeagus enlarged caudad; phallobase longer than aedeagus; minute spines present at caudal end of aedeagus. Juxta broad, with deep V-shaped indentation dorsally; a pair of small processes present ventrally.

Female genitalia (PLATE 53, Figs. 284) – Corpus bursae oval. Ductus bursae trumpet-like, tapering caudad, moderately sclerotized, leading to large ostium bursae. Sterigma with antevaginaslis forming a pair of lateral, lobe-like, sclerotized plates bearing small processes with acute tip at meso-anterior corner; postvaginalis as a transverse band with extension at latero-posterior corner. Anal papillae rectangle, setose. Posterior apophyses elongate, slender, curved at base.

**Variation.** Posterior spot in discoidal cell of forewing is usually elongate in male, but occasionally not so.

**Global distribution.** Far East Russia, Korea, West to Northeast and East China, Taiwan (Evans, 1949; Kim, 2002).

**Distribution in Taiwan.** Moderate elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Poaceae: Mainly *Miscanthus* species, but larvae also found from *Yushania niitakayamensis* and *Brachypodium kawakamii*.

**Biology.** This species is known to be univoltine in occurrence (Hsu, 2013).

**Remarks.** Shirôzu (1952) described ssp. *asahinai* to represent a race of *Zinaida pellucida* Murray, 1875 (as *Polytremis pellucida*) (Type locality: Japan) in Taiwan, based on a female type. Murayama (1981) described ssp. *taiwana* to represent a race of *Zinaida zina* in Taiwan, based on a male type. Chiba & Hsu (1988) considered both names applied to *Zinaida theca* Evans, 1937 (as *Polytremis theca*) (Type locality: “Siao Lou”, [Sichuan]). Subsequent examination of materials; however, revealed that the conclusion was based on a mis-interpretation of specimen from Yunnan instead of Taiwan, and both names should apply to *Z. zina* instead of *Z. theca*. As far as materials available to date, neither *Z. pellucida* nor *Z. theca* occurs in Taiwan. The specimens illustrated in some literature (e. g. Lin & Su, 2013) appear to be individuals of this species with posterior spot in discoidal cell of forewing reduced and not elongate in shape.

**形態特徵：**成蝶前翅長 18-21 mm。雌雄二型性不明顯。雄蝶 (圖 133)：頭被毛，帶黃綠色調之褐色。觸角背面褐色，腹面褐色帶黃白色鱗，近尖頂處格外明顯；尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節微小、棒狀，黃白色雜褐色。胸部與腹部背面褐色帶黃綠色，腹面黃至黃白色。足黃白色。前翅呈三角形，外緣略突出。後翅呈扇形。翅背面底色泛黃色之褐色，綴有透明及黃白色斑紋，近翅基處覆有土黃色毛。前翅中央  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線。中室末端有二斑點，後側斑通常修長； $R_3$  至  $R_5$  室各具一小斑點， $R_5$  室者明顯外偏。 $CuA_2$  室中央有一黃白色斜斑點。後翅  $M_1$ 、 $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，近交錯排列， $R_s$  室時有內偏小斑點。翅腹面大部分覆橄欖綠色鱗；斑紋與翅背面相似；緣毛黃白色。雌蝶 (圖 134)：形態特徵與雄蝶相似，但翅幅較寬，前翅中室後側斑短。

雄交尾器 (圖 214)：背兜厚、管狀，尾端具一對錐狀小疣突，具剛毛；鉤突短錐狀。顎形突分哩，尾端高度骨化、棒狀、深褐色。囊突短，末端尖。抱器寬闊、修長；抱器腹粗短；抱器背細長；抱器內突背緣內凹，末端邊緣圓形；抱握鉞後部明顯上彎，末端具棘刺。陽莖直、粗短，陽莖器尾端膨大，具細刺；陽莖基長度較陽莖器長；角狀器成對、長桿狀，具棘刺。陽基軛片寬，背側深 V 裂，腹側有一對小突起。

雌交尾器 (圖 284)：交尾囊卵圓形。交尾囊管角狀，中度硬化，末端漸窄，於交尾孔大型。交尾孔前板為一對側生葉狀骨板，於前端中央有小突起，突起末端尖銳；交尾孔後板為一橫板，末端兩側突出。肛突長矩形，具毛。後內骨突修長、纖細，基部彎曲。

**變異：**雄蝶前翅中室後側斑點通常修長，但偶有個體斑點較短。

**世界分布：**俄羅斯遠東地區、朝鮮半島、華西、華東北及華東、臺灣。

**臺灣分布：**本島中海拔山區。

**寄主植物：**主要為禾本科之芒屬物種，但是玉山箭竹及川上短柄草亦有記錄。

**生物學：**本種為一年一世代物種。

**註記：**Shirôzu (1952) 根據雌蝶標本記述臺灣產透紋禪弄蝶 (即透紋孔弄蝶 / 大褐弄蝶) (模式產地：日本) 之亞種 *ssp. asahinai*。Murayama (1981) 則根據雄蝶標本記述臺灣產長紋禪弄蝶之亞種 *ssp. taiwana*。Chiba & Hsu (1988) 認為此兩者均屬於短紋禪弄蝶 Evans, 1937 (即短紋孔弄蝶) (模式產地：四川)，然而，後來卻發現當初被用於以較之材料實為產自雲南之標本而非臺灣，因而兩者均應為長紋禪弄蝶而非短紋禪弄蝶。可靠資料顯示，截至目前為止，臺灣並無透紋禪弄蝶或短紋禪弄蝶之可靠記錄。某些文獻 (如 Lin & Su, 2013) 所標示之短紋禪弄蝶標本實為長紋禪弄蝶中室後側斑不延長之個體。

***Zinaida kiraizana* (Sonan, 1938) (奇萊禪弄蝶 / 奇萊褐弄蝶 / 奇萊孔弄蝶)**

**PLATE 16, Figs. 135-136; PLATE 35, Fig. 215; PLATE 53, Fig. 285**

*Parnara kiraizana* Sonan, 1938: Zephyrus 7:255. (Type locality: Kiraizan (7500 ft) [Taiwan, Hualian, Qilaishan])

**Specimens examined:**

**XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, Wulai, Kuaishan, 12. VII. 1986 (Y. F. Hsu); 1♀, same locality, emgd. 14. VI. 1988 (Y. F. Hsu). **YILAN Co.:** 1♂, Datong, Taipingshan, 1200m, 14. VI. 2001 (Y. T. Lo & Y. A. Lin); 1♀, Datong, Taipingshan, 1700m, reared from *Miscanthus sinensis*, emgd. 30. VI. 2007, HSU 07F16 (Y. F. Hsu); 2♂, Chiduan [Mingchi], 11. VII. 1985 (Y. F. Hsu). **TAOYUAN CITY [TAOYUAN Co.]:** 2♂, Sileng, 27. VI. 1988 (Y. F. Hsu). **NANTOU Co.:** 1♂, Renai, Tunyuan, 28. VII. 2006 (Y. F. Hsu). **HUALIAN [= HUALIEN] Co.:** 1♂, Qilai, 1300m, 11. VII. 1991 (Y. F. Hsu & C. L. Li); 1♂, Lungchien to Lungshi, 10. VII. 1991 (Y. F. Hsu).

**Description.** Adult – Forewing length 20–24 mm. Sexual dimorphism prominent. Male (PLATE 16, Fig. 135): Head hairy, brown tinged with greenish yellow. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, creamy yellow mixed with brown. Thorax and abdomen brown. Legs pale brown. Forewing triangular, termen slightly convex. Hindwing fan-like. Wing uppersides bearing brown hairs proximally, ground color brown, ornamented with hyaline markings. On forewing, a discal spot series arranged into a tilt line in cell  $M_2$ ,  $M_3$  and  $CuA_1$ . Two spots at distal end of discoidal cell, usually somewhat elongate; 3 small dots present subapically in cell  $R_{3-5}$ , with  $R_5$  dot deviated distad. One creamy white, linear, tilt sexual brand at midst of cell  $CuA_2$ . On hindwing, a discal spot series in cell  $M_1$ ,  $M_2$ ,  $M_3$  and  $CuA_1$ , arranged into a tilt, zig-zag line. Wing undersides mostly covered by ochreous scalings; markings similar to those of uppersides, sexual brand replaced by a patch of pale scalings. Fringe creamy yellow. Female (PLATE 16, Fig. 136): Body and wing patterns similar to those of male, but wings broader, spot in  $CuA_2$  of forewing upperside large with tail-like lateral extension, and no sexual brand.

Male genitalia (PLATE 35, Fig. 215) – Tegumen thick, tubular, with a pair of small, cone-like, setose warts by caudal end; uncus forming a pair of short rod with distal end bearing small teeth. Gnathos divided, with caudal end clavate, heavily sclerotized, dark brown. Saccus moderately long, slender, with distal tip acute. Valva broad; sacculus thick, short, costa narrow; ampulla with dorsal margin concave, distal margin nearly truncated; harpe strongly up-curved posteriorly, forming two teeth at distal end. Phallus straight, short, with aedeagus enlarged caudad; phallobase longer than aedeagus; cornuti as double, elongate, spiny rod. Juxta broad, forming U-shaped sclerite.

Female genitalia (PLATE 53, Fig. 285) – Corpus bursae oval. Ductus bursae short, sclerotized, enlarged caudad. Sterigma with antevaginalis forming sclerotized wall around ostium bursae associated with a pair of lateral wings. Anal papillae rectangle, setose. Posterior apophyses elongate, slender, straight.

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

**Distribution in Taiwan.** Moderate elevations in montane areas (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Miscanthus sinensis* (Hsu, 2013).

**Biology.** This species is known to be univoltine in occurrence (Hsu, 2006, 2013).

**Remarks.** This taxon was placed in the genus *Polytremis* until Tang *et al.* (2017) assigned it to the genus *Zinaida*.

**形態特徵：**成蝶前翅長 20-24 mm。雌雄二型性明顯。雄蝶 (圖 135)：頭被毛，帶黃綠色調之褐色。觸角背面褐色，腹面褐色帶黃白色鱗，近尖頂處格外明顯；尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節棒狀，黃白色雜褐色。胸部與腹部褐色。足淡褐色。前翅呈三角形，外緣略突出。後翅呈扇形。翅背面底色褐色，綴有透明斑紋，近翅基處覆有褐色毛。前翅中央  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，排成一斜線。中室末端有二斑點，略修長； $R_3$  至  $R_5$  室各具一小斑點， $R_5$  室者外偏。 $CuA_2$  室中央有一乳白色斜線性標。後翅  $M_1$ 、 $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點，交錯排列。翅腹面大部分覆土黃色鱗；斑紋與翅背面相似；性標為一片淡色鱗取代；緣毛橙黃色。雌蝶 (圖 136)：形態特徵與雄蝶相似，但翅幅較寬，前翅背面  $CuA_2$  室斑大型，有側向延伸；無性標。

雄交尾器 (圖 215)：背兜厚、管狀，尾端具一對小型錐狀疣突；鉤突短桿狀，末端具小齒。顎形突分離，尾端高度骨化、棒狀、深褐色。囊突中庸長，細，末端尖。抱器寬闊；抱器腹粗短；抱器背細；抱器內突背緣內凹，末端邊緣截狀；抱握鈹後部明顯上彎，末端具兩齒。陽莖直、短，陽莖器尾端膨大；陽莖基長度較陽莖器長；角狀器成對、長桿狀，有棘刺。陽基軛片寬 U 形骨化。

雌交尾器 (圖 285)：交尾囊卵圓形。交尾囊管短、骨化，尾部膨大。交尾孔板後版於交尾孔周圍形成骨化壁，連接於兩側翼片。肛突長矩形，具毛。後內骨突修長、纖細、筆直。

**世界分布：**本種為臺灣特有種。

**臺灣分布：**分佈於中海拔山區。

**寄主植物：**禾本科之芒。

**生物學：**本種是一年一世代物種。

註記：本種原置於孔弄蝶屬 *Polytremis* 內，Tang *et al.* (2017) 將本種移置於禪弄蝶屬 *Zinaida*。

## Genus **CALTORIS** Swinhoe, 1893

**Type species:** *Hesperia kumara* Moore, 1878

Diagnostic characters include the followings: 1) length of antenna slightly over half of length of forewing costa; 2) mesotibia without spines; 3) discal linear sexual brand present on forewing upperside in some species; 4) hyaline spots usually present on forewing, on hindwing only in one species (Evans, 1949; Hsu & Wang, 2005; Zhang *et al.*, 2010).

About 20 species, distributed in the Oriental and Australian region.

3 species occur in Taiwan, including associated islands.

## 黯弄蝶屬

形態特徵如下：1) 觸角長度約略超過前翅前緣長度二分之一；2) 中足脛節無棘刺；3) 部分種類前翅背面中央具線形性標；4) 前翅通常具透明斑點，僅 1 種於後翅具斑點 (Evans, 1949; Hsu & Wang, 2005; Zhang *et al.*, 2010)。

本屬已知約 20 種，分布於東洋區及澳洲區。

臺灣本島及離島有 3 種。

***Caltoris ranrunna* (Sonan, 1936) (臺灣黯弄蝶 / 人倫弄蝶 / 黑紋弄蝶)**

**PLATE 16, Figs. 137-138; PLATE 35, Fig. 216; PLATE 53, Fig. 286**

*Parnara austeni*; Mausumura (not Moore, [1884]), 1919: Thousand Insects of Japan, Additamenta 3: 674, Pl. 51, Fig. 26.

*Parnara ranrunna* Sonan, 1936: Zephyrus 6: 215. (Type locality: “Ranrun (臺中州新高郡人倫)”)

**Specimens examined:**

**TAIPEI CITY:** 1♂, Xiangshan, 4. VIII. 1987 (Y. F. Hsu); 2♂, Wenshan, Gongguan Campus, NTNU, 15. VII. 2005, reared from *Bambusa* sp., emgd. 26. VII. 2005, 05G15 (L. H. Wang). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]:** 1♂, 1♀, Wulai, 22. VIII. 1985 (Y. F. Hsu); 1♂, same locality, 1. III. 1987 (Y. F. Hsu); 1♀, Miantianshan, 2. VII. 1987 (Y. F. Hsu); 1♂, Ruifang, Nanya, 26. IV. 2003, reared from *Arundo* sp., emgd. 28. V. 2003, HSU 03E35 (H. C. Huang). **YILAN Co.:** 1♀, Nanshan, 24. VI. 1988 (Y. F. Hsu). **TAOYUAN CITY [TAOYUAN Co.]:** 2♂, 1♀, Fuxing, Baling, 500m, 29. V. 2002 (Y. F. Hsu); 1♂, Xuanyuan, 6. VIII. 1987 (Y. F. Hsu); 1♀, same locality, 27. II. 1988 (Y. F. Hsu). **TAIZHONG CITY [= TAICHUNG CITY/ TAICHUNG Co.]:** 1♂, Qingshui, 6. VIII. 2004 (D. C. Chen). **YUNLIN Co.:** 2♀, Douliu, Linnei, Tudigongkengxi, 9. I. 2004, reared from *A. formosana*, emgd. 18. III. 2004, HSU 04A1 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.:** 1♀, Fanlu, Longmei, 11. XI. 2004 (Y. F. Hsu). **TAINAN CITY [TAINAN Co.]:** 1♀, Guantian, Wushantou, 40m, 24. X. 2009 (Y. F. Hsu); 1♂, Baihe, Guanziling, 400m, 17. IX. 2002 (Y. F. Hsu); 1♀, Xinhua, 20. I. 2007 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]:** 1♀, Tianliao, Yueshijie, 80m, 3. XII. 2011 (Y. F. Hsu). **PINGDONG [= PINGTUNG] Co.:** 1♂, 1♀, Chunri, Dahanshan, 1000m, 4. I. 2003, reared from *A. formosana*, emgd. 18/20. II. 2003, 03A8 (Y. F. Hsu). **TAIDONG [= TAITUNG] Co.:** 1♂, Luyexi, 3. I. 1988 (Y. F. Hsu).

**Description.** Adult – Forewing length 18–22 mm. Sexual dimorphism absent. Male (PLATE 16, Fig. 137): Head hairy, brown. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, brown mixed with creamy yellow. Thorax and abdomen dark brown. Legs pale brown. Forewing triangular, termen convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline and creamy yellow markings. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, with size reducing anteriorly. Two spots at distal end of discoidal cell, somewhat elongate, anterior one usually smaller, sometimes vestigial; 2 small spots present subapically in cell R<sub>4-5</sub>. Spotless on hindwing. Wing undersides mostly covered by brown scalings; forewing markings similar to those of uppersides; a small patch of creamy yellow scalings present at midst of cell CuA<sub>2</sub>. Fringe Creamy pale brown to

brown. Female (PLATE 16, Fig. 138): Body and wing patterns similar to those of male, wings broader.

Male genitalia (PLATE 35, Fig. 216) – Tegumen attenuate caudad, with a pair of prominent, setose bumps by caudal end; uncus forming a pair of short, darkened processes. Gnathos divided, with caudal end heavily sclerotized, darkened. Saccus short, tapering to blunt distal end. Valva broad; sacculus thick, costa+ampulla with dorsal margin slightly concave, distal margin extending beyond harpe; harpe with ventral margin slightly convex, caudal margin rounded, bearing a small dorsal process with distal end spiny. Phallus up-curved, with phallobase longer than aedeagus; phallobase narrow, with distal end rounded; aedeagus with deep dorsal indentation at caudal end; cornuti as two sclerotized patches bearing small spines. Juxta broad, with deep dorsal invagination.

Female genitalia (PLATE 53, Fig. 286) – Corpus bursae bulbous, wrinkled. Ductus bursae sclerotized, elongate, enlarged toward ostium bursae. Sterigma forming a dome, with lamella postvaginalis forming elongate sclerite associated with a pair of setose, digitate processes; medial portion with caudal end truncate. Anal papillae rectangle, setose. Posterior apophyses short, narrow.

**Global distribution.** Endemic to Taiwan (Hsu *et al.*, 2019).

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

**Larval Host plant(s).** Poaceae: mainly various kinds of bamboos, including *Yushania niitakayamensis*, *Bambusa ventricosa*, *Sinobambusa tootsik*, etc., also a large bunch grass *Arundo formosana* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** Hsu *et al.* (2019) suggests that what used to be identified as “*Caltoris cahira*” in Taiwan should be recognized as a distinct species endemic to the island based upon morphological and molecular data, with *C. ranrunna* (Sonan, 1936) as the valid name.

**形態特徵：**成蝶前翅長 18-22 mm。無雌雄二型性。雄蝶 (圖 137)：頭被毛，褐色。觸角背面褐色，腹面褐色混黃白色鱗，近尖頂處格外鮮明，尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節褐色混黃白色，呈棒狀。胸部及腹部黑褐色。足淡褐色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈具葉狀突出。翅背面底色褐色，有透明及白黃色斑紋。近翅基處覆黃褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點排成一斜線，大小向前方者遞減，中室末端有兩斑點，略長，前側斑通常較小，有時消失； $R_4$  至  $R_5$  室近翅頂處各具一個小斑點。後翅無紋。翅腹面大部分覆褐色鱗，前翅腹面斑紋與背面相似， $CuA_2$  室中央有一小片黃白色鱗。緣毛淺褐色至褐色。雌蝶 (圖 138)：形態特徵與雄蝶相似，惟翅幅較寬。

**雄交尾器 (圖 216)：**背兜向尾端漸窄，尾端具一對帶毛突起，鉤突為一對深色短突起。顎形突分離，尾端高度骨化、深色。囊突短、漸尖、末端鈍。抱器寬闊；抱器腹粗；抱器背與抱器內突結合，背緣略內凹，末端延伸超出抱握鈹；抱握鈹腹側緣略突出，末端圓形，背側近末端具一角突。陽莖上彎，陽莖基長度較陽莖器長；陽莖基狹窄，末端圓形；陽莖器背側末端深凹；角狀器為兩只具棘刺之小骨片。陽基軛片寬闊，背側深內凹。

**雌交尾器 (圖 286)：**交尾囊圓球狀，有皺褶。交尾囊管骨化、修長，向交尾孔膨大。交尾孔板圓頂狀，後板形成長骨板，延伸成一對指狀突，生有剛毛；中央部分尾端截狀。肛突矩形、具毛，後內骨突短、纖細。

**世界分布：**臺灣特有種。

**臺灣分布：**分布於本島低、中海拔地區。

**寄主植物：**主要為禾本科之竹類植物，包含玉山箭竹、佛竹、唐竹等，亦取食臺灣蘆竹。

**生物學：**本種是一年多世代物種。

**註記：**Hsu *et al.* (2019) 依據形態及分子數據判斷臺灣分布之「黯弄蝶」族群應為獨立種，有效名則為 *Caltoris ranrunna* (Sonan, 1936)。

***Caltoris cahira* (Moore, 1877) ( 黯弄蝶 / 黑紋弄蝶 / 放踵珂弄蝶 )**

*Hesperia cahira* Moore, 1877: Proceedings of the Zoological Society of London 1877 (3): 593, pl. 58, f. 8. (Type locality: S. Andamans)

***Ssp. austeni* Moore, [1884]****PLATE 17, Figs. 139-140; PLATE 35, Fig. 217; PLATE 53, Fig. 287**

*Baoris austeni* Moore, [1884]: Proceedings of the Zoological Society of London 1883 (4): 533. (Type locality: Khasia Hills; Cherra Pungi)

*Pamphila fallacina* Mabille, 1891: Annales de la Société entomologique de Belgique 35 (18): CLXXXI. (Type locality: Cherra-Pungi)

*Caltoris onchisa* Swinhoe, 1893: Transactions of the Entomological Society of London 1893 (3): 323. (Type locality: Shillong)

**Specimens examined:**

**LIANJIANG [= LIENCHIANG] Co.:** 1♂, 1♀, Beigan, Leishan, 19. XI. 2013, reared from *Bambusa*, emgd. 31. XII. 2013, HSU 13L67 (L. H. Wang & H. Y. Lee); 1♂, Nangan, Jieshou, 17. VII. 2003 (L. W. Wu & Y. A. Lin); 1♂, Nangan, Zholuo, 26. VII. 2000 (Y. F. Hsu). **JINMEN [= KINMEN] Co.:** 1♂, Jinsha, 13. XI. 2018 (C. L. Huang).

**Description.** Adult – Forewing length 16–20 mm. Sexual dimorphism absent. Male (PLATE 17, Fig. 139): Head hairy, brown. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, brown mixed with creamy yellow. Thorax and abdomen dark brown. Legs pale brown. Forewing triangular, termen convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline and creamy yellow markings. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, with size reducing anteriorly. Two spots at distal end of discoidal cell, somewhat elongate, anterior one usually smaller; 2 small spots present subapically in cell R<sub>4+5</sub>. Spotless on hindwing. Wing undersides mostly covered by brown scalings; forewing markings similar to those of uppersides; a small patch of creamy yellow scalings present at midst of cell CuA<sub>2</sub>. Fringe Creamy white to white slightly mixed with pale brown. Female (PLATE 17, Fig. 140): Body and wing patterns similar to those of male, wings broader.

Male genitalia (PLATE 35, Fig. 217) – Tegumen attenuate caudad, with a pair of

prominent, setose bumps near caudal end; uncus forming a pair of short, darkened processes. Gnathos divided, with caudal end heavily sclerotized, darkened. Saccus short, tapering to blunt distal end. Valva broad; sacculus thick, costa +ampulla with dorsal margin concave, distal margin extending beyond harpe; harpe with ventral margin slightly convex, caudal margin rounded, bearing a small dorsal process with distal end spiny. Phallus up-curved, with phallobase longer than aedeagus; phallobase narrow, with distal end rounded; aedeagus with deep dorsal indentation at caudal end; cornuti as two sclerotized patches with small spines. Juxta broad, with deep dorsal invagination.

Female genitalia (PLATE 53, Fig. 287) – Corpus bursae bulbous, wrinkled. Ductus bursae sclerotized, elongate, enlarged toward ostium bursae. Sterigma forming a dome, with lamella postvaginalis forming elongate sclerite associated with a pair of setose, digitate processes; medial portion with caudal end produced. Anal papillae rectangle, setose. Posterior apophyses short, narrow.

**Global distribution.** Northeast India, Andamans, Nicobars, West to South China (Evans, 1949; Shirôzu, 1960; Hsu, *et al.*, 2019).

**Distribution in Taiwan.** Jinmen and Mazu Islands (Hsu, *et al.*, 2019).

**Larval Host plant(s).** Poaceae: various kinds of bamboos.

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** Bamboo-associated *Caltoris* species in Taiwan has been considered belonging to this species for a long time. Hsu *et al.* (2019) suggests that it should be regarded as a species distinct from this species.

**形態特徵：**成蝶前翅長 16-20 mm。無雌雄二型性。雄蝶 (圖 139)：頭被毛，褐色。觸角背面褐色，腹面褐色混黃白色鱗，近尖頂處格外鮮明，尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節褐色混黃白色，呈棒狀。胸部及腹部黑褐色。足淡褐色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈具葉狀

突出。翅背面底色褐色，有透明及白黃色斑紋。近翅基處覆黃褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點排成一斜線，大小向前方者遞減，中室末端有兩斑點，略長，前側斑通常較小； $R_4$  至  $R_5$  室近翅頂處各具一個小斑點。後翅無紋。翅腹面大部分覆褐色鱗，前翅腹面斑紋與背面相似， $CuA_2$  室中央有一小片黃白色鱗。緣毛白色，有時略雜淡褐色。雌蝶 (圖 140)：形態特徵與雄蝶相似，惟翅幅較寬。

雄交尾器 (圖 217)：背兜向尾端漸窄，尾端具一對帶毛突起，鉤突為一對深色短突起。顎形突分離，尾端高度骨化、深色。囊突短、漸尖、末端鈍。抱器寬闊；抱器腹粗；抱器背與抱器內突結合，背緣內凹，末端延伸超出抱握鈹；抱握鈹腹側緣略突出，末端圓形，背側近末端具一角突。陽莖上彎，陽莖基長度較陽莖器長；陽莖基狹窄，末端圓形；陽莖器背側末端深凹；角狀器為兩只具棘刺之小骨片。陽基軛片寬闊，背側深內凹。

雌交尾器 (圖 287)：交尾囊圓球狀，有皺褶。交尾囊管骨化、修長，向交尾孔膨大。交尾孔板圓頂狀，後板形成長骨板，延伸成一對指狀突，生有剛毛；中央部分尾端突出。肛突矩形、具毛，後內骨突短、纖細。

**世界分布：**印度北部、安達曼 - 尼科巴群島、華西至華南。

**臺灣分布：**分金門及馬祖地區。

**寄主植物：**禾本科之竹類植物。

**生物學：**本種是一年多世代物種。

**註記：**臺灣分布之以竹為寄主植物的黯弄蝶過去被歸屬於本種，Hsu *et al.* (2019) 研判應視之為獨立種。

***Caltoris bromus* (Leech, 1894) (變紋黯弄蝶 / 無紋弄蝶 / 無斑珂弄蝶)**

*Parnara bromus* Leech, 1894: Butterflies from China, Japan, and Corea (2): 614, pl. 42, f. 10. (Type locality: Chia-kou-ho; Omei-shan)

***Ssp. yanuca* Fruhstorfer, 1911**

**PLATE 17, Figs. 141-144; PLATE 36, Fig. 218; PLATE 54, Fig. 288**

*Parnara yanuca* Fruhstorfer, 1911: Deutsche entomologische Zeitschrift Iris 25 (4): 55. (Type lo-

cality: Formosa)

*Parnara giranna* Matsumura, 1909: Zoological Magazine 253: 481. (nomen nudum)

*Parnara giranna* Matsumura, 1919: Thousand Insects of Japan, Additamenta 3: 673. (Type locality: "Giran, Kanshirei")

### **Ssp. *bromus* Leech, 1894**

**PLATE 17, Figs. 145-146; PLATE 36, Fig. 219; PLATE 54, Fig. 289**

#### **Specimens examined:**

Ssp. *yanuca*: **TAIPEI CITY**: 1♂, Shilin, Jingshan, ca 600m, 1. VII. 2011, reared from *Arundo donax* var. *coleotricha*, emgd. 15. VIII. 2011, HSU 11H3 (Y. F. Hsu); 1♂, Shilin, Jingshan Road, 10. VII. 2014, reared from *A. donax*, emgd. 26. VII. 2014, HSU 14G25 (Y. F. Hsu); 1♂, Wenshan, Jingmei, Xianjiyan, 31. V. 2005 (Y. X. Xie). **XINBEI CITY [= NEW TAIPEI CITY/ TAIPEI Co.]**: 1♀, Sanxia, Sande Graveyard, 100m, 1. X. 2002, reared from *Phragmites karka*, emgd. 5. X. 2002, HSU 02K3 (Y. F. Hsu). **XINZHU [= HSINCHU] Co.**: 1♀, Guanxi, 13. VI. 2002 (Y. F. Hsu); 1♂, Guanxi, Fengshanxi, 15. VII. 2002, reared from *P. karka*, emgd. 21. VII. 2002, HSU 02G20 (Y. F. Hsu); 1♀, same locality, 27. IX. 2002, reared from *P. karka*, emgd. 14. X. 2002, HSU 02J47 (Y. F. Hsu). **JIAYI [= CHIAYI] Co.**: 2♂, 1♀, Dapu, Zengwen Dam, 19. II. 2004, reared from *P. vallatoria*, emgd. 23/4. IV/V. 2004, HSU 04B8 (Y. F. Hsu). **TAINAN CITY [= TAINAN Co.]**: 1♀, Baihe, Zhentoushan, 500m, 17. IX. 2002, reared from *P. karka*, emgd. 30. IX. 2002, HSU 02J22 (Y. F. Hsu); 1♂, Baihe, Zhentoushan, 2. VII. 2003, reared from *P. karka*, emgd. 20. VII. 2003, HSU 03G4 (Y. F. Hsu). **KAOHSIUNG CITY [KAOHSIUNG Co.]**: 1♂, Tianliao, ca 100m, 9. IV. 2010 (Y. F. Hsu); 1♂, same locality, 27. IV. 2010 (Y. F. Hsu); 1♀, Tianliao, Yueshijie, 80m, 3. XII. 2011 (Y. F. Hsu); 1♂, Liugui, 30. X. 2005, reared from *P. vallatoria*, emgd. 20. XI. 2006, HSU 06K52 (Y. F. Hsu); 1♂, same locality, 6. VI. 2008, reared from *P. vallatoria*, emgd. 20. VI. 2008, HSU 08F1 (Y. F. Hsu); 1♀, Jiaxian, 250m, 25. VI. 2003, reared from *P. karka*, emgd. 25. VI. 2003, HSU 03F35 (Y. F. Hsu). **YILAN Co.**: 1♀, Yuanshan, Shuanglainpi, ca 450m, 4. VIII. 2006, reared from *P. vallatoria*, emgd. 5. VIII. 2006, HSU 06H9 (Y. F. Hsu, H. C. Huang, Y. C. Hsu & C. K. Wang). **NANTOU Co.**: 4♂, Yuchi, Helongkeng, 550m, 21. VIII. 2002, reared from *P. karka*, emgd. 1/21. IX. 2002, HSU 02H58 (Y. F. Hsu); 1♂, same locality, 8. X. 2002, reared from *P. vallatoria*, emgd. 8. XI. 2002, HSU 02K23 (Y. F. Hsu); 2♂, 3♀, same locality, 20. V. 2004, reared from *P. vallatoria*, emgd. 25/26. V/VI. 2004, HSU 04E63 (Y. F. Hsu).

Ssp. *bromus*: **LIANJIANG [= LIENCHIANG] Co.:** 1♂, Beigan, 10. XI. 2014 (C. W. Huang); 1♀, Mazu, V. 2003 (Y. A. Lin). **JINMEN [= KINMEN] Co.:** 1♂, 1♀, Jinsha, Houling Park, 28. V. 2011, reared from *Arundo* sp., emgd. 11/12. VI. 2011, HSU 11E27 (Y. F. Hsu & H. C. Huang); 3♂, 2♀, Jincheng, Shuitou, 29/30. VIII. 2011 (Y. F. Hsu & H. C. Huang); 1♂, same locality, 29. VIII. 2011, reared from *Arundo* sp., emgd. 3. X. 2011, HSU 11H53 (Y. F. Hsu & H. C. Huang).

**Description.** Adult – Forewing length 17–20 mm. Sexual dimorphism absent. Male (PLATE 17, Figs. 141, 142, 145): Head hairy, brown. Antennae brown dorsally, brown with creamy yellow scalings ventrally, notably subapical portion; apiculus, hooked, naked, Proboscis brown. Labial palpus erect, 1st and 2nd segments hairy; 3rd segment rod-like, brown mixed with creamy yellow. Thorax and abdomen dark brown. Legs pale brown. Forewing triangular, termen convex. Hindwing fan-like, slightly lobed at tornus. Wing uppersides bearing tawny hairs proximally, ground color brown, ornamented with hyaline and creamy yellow markings, but sometimes with reduction. On forewing, a discal spot series arranged into a tilt line in cell M<sub>2</sub>, M<sub>3</sub> and CuA<sub>1</sub>, with size reducing anteriorly. Two spots at distal end of discoidal cell, anterior one usually smaller; 3 small dots present subapically in cell R<sub>3-5</sub>, with R<sub>5</sub> dot deviated distad if all present. One creamy yellow spot sometimes at midst of cell CuA<sub>2</sub>. Spotless on hindwing. Wing undersides mostly covered by brown scalings; forewing markings similar to those of uppersides; series of discal, minute, white dots sometimes present on hindwing. Fringe creamy yellow. Female (PLATE 17, Figs. 143, 144, 146): Body and wing patterns similar to those of male, wings broader.

Male genitalia (PLATE 36, Figs. 218-219) – Tegumen attenuate caudad, with a pair of prominent, setose bumps near caudal end; uncus forming a pair of short, darkened processes. Gnathos divided, with caudal end heavily sclerotized, darkened. Saccus short, tapering to blunt distal end. Valva broad; sacculus thick, costa +ampulla with dorsal margin concave, distal margin extending beyond harpe; harpe with ventral margin convex, caudal margin rounded, bearing a small dorsal process with distal end spiny. Phallus up-curved, with phallobase longer than aedeagus; phallobase narrow, with distal end rounded; aedeagus with deep dorsal indentation at caudal end; cornuti as two sclerotized patches bearing small spines. Juxta broad, with deep dorsal invagination.

Female genitalia (PLATE 54, Figs. 288-289) – Corpus bursae bulbous, wrinkled. Ductus bursae sclerotized, short. Sterigma forming a dome, with postvaginalis forming elongate, flattened sclerite associated with a pair of saddle-like, flattened processes. Anal papillae rectangle, setose. Posterior apophyses short, narrow.

**Variation.** Wing markings are very variable in ssp. *yanuca* of Taiwan, with them ranging from full-marked to nearly spotless. Individuals of the nominotypical subspecies found from Jinmen and Mazu Islands have their wings always fully marked.

**Global distribution.** Northeast India, Indochina, Southeast Asia, South China, and Taiwan, etc. (Bascombe *et al.*, 1960; Hsu, 2013)

**Distribution in Taiwan.** Spp. *yanuca* inhabiting Lowland Taiwan; ssp. *bromus* found in Jinmen and Mazu Islands (Hsu, 2013).

**Larval Host plant(s).** Poaceae: *Phragmites vallatoria* and *Arundo donax* (Hsu, 2013).

**Biology.** This species is known to be multivoltine in occurrence (Hsu, 1999).

**Remarks.** This species was considered as rare species in Taiwan due to a belief that the population in Taiwan is characterized by having wings spotless (e. g. Shirôzu, 1960; Hamano, 1987). Hsu & Wang (2005) proved that ssp. *yanuca* in Taiwan is variable in wing pattern, ranging from well-marked to nearly completely spotless, with the individuals bearing markings probably mis-identified to other *Caltoris* species. By contrast, the nominotypical subspecies of the species always possess prominent markings.

**形態特徵：**成蝶前翅長 17-20 mm。無雌雄二型性。雄蝶（圖 141、142、145）：頭被毛，褐色。觸角背面褐色，腹面褐色混黃白色鱗，近尖頂處格外鮮明，尖頂裸露，呈鉤狀。口器褐色。下唇鬚直立，第 1 及第 2 節被毛；第 3 節褐色混黃白色，呈棒狀。胸部及腹部黑褐色。足淡褐色。前翅呈三角形，外緣略突出。後翅扇形，臀區略呈具葉狀突出。翅背面底色褐色，有透明及白黃色斑紋，常減退。近翅基處覆黃

褐色毛。前翅  $M_2$ 、 $M_3$  及  $CuA_1$  室各有一斑點排成一斜線，大小向前方者遞減，中室末端有兩斑點，前側斑較小； $R_3$  至  $R_5$  室近翅頂處各具一個小斑點，當三斑點皆存在時  $R_5$  室斑點外偏。後翅無紋。翅腹面大部分覆褐色鱗，前翅腹面斑紋與背面相似，後翅中央時有小斑點。緣毛黃白色。雌蝶 (圖 143、144、146)：形態特徵與雄蝶相似，惟翅幅較寬。

雄交尾器 (圖 218-219)：背兜向尾端漸窄，尾端具一對帶毛突起，鉤突為一對深色短突起。顎形突分哩，尾端高度骨化、深色。囊突短、漸尖、末端鈍。抱器寬闊；抱器腹粗；抱器背與抱器內突結合，背緣略內凹，末端延伸超出抱握鈎；抱握鈎腹側緣略突出，末端圓形，背側近末端具小棘刺。陽莖上彎，陽莖基長度較陽莖器長；陽莖基狹窄，末端圓形；陽莖器背側末端具深凹；角狀器為兩個具棘刺之小骨片。陽基軀片寬闊，背側深內凹。

雌交尾器 (圖 288-289)：交尾囊圓球狀，有皺褶。交尾囊管骨化。交尾孔板圓頂狀，後板形成長而扁平之馬鞍狀骨片。肛突矩形、具毛，後內骨突短、纖細。

**變異：**臺灣亞種翅紋變異明顯，多斑至無紋的情形均有之。金馬地區之承名亞種個體則翅面均有明顯斑紋。

**世界分布：**印度東北部、中南半島、東南亞、華南、臺灣。

**臺灣分布：**亞種 *ssp. yanuka* 分布於臺灣本島低海拔地區；承名亞種 *ssp. bromus* 見於金門及馬祖列島。

**寄主植物：**禾本科之開卡蘆及蘆竹。

**生物學：**本種是一年多世代物種。

**註記：**本種在過去因相信分布於臺灣的族群翅面無紋，因此被認為是稀有種 (如 Shirôzu, 1960; Hamano, 1987)。Hsu & Wang (2005) 證明臺灣之亞種 *ssp. yanuka* 翅膀斑紋多變異，從斑紋發達至無紋者皆有之，而有斑紋之個體可能被誤認為黯弄蝶屬其他種類。承名亞種斑紋則鮮明而無翅紋減退無紋之情形。

## Supplementary Notes

A few hesperiid species were recorded from Taiwan in literature, but probably involving mis-labelling, doubtful sources of specimens, or rare straying species. They are discussed as the followings:

### *Epargyreus clarus* (Cramer, [1775]) (銀紋弄蝶)

#### PLATE 18, Fig. 147

Matsumura (1940) described a species named *Bibacis argenteola* Matsumura, 1940. Shirôzu (1947) synonymized this taxon with *Epargyreus tityrus* (Fabricius), pointing out that this North American species is unlikely to occur in Taiwan. This species ought to be called *Epargyreus clarus* (Cramer, [1775]) as *tityrus* is an unavailable name due to homonymy (Miller & Brown, 1981). Hsu *et al.* (2006) examined the holotype of *argenteola* Matsumura, 1940 and concluded that it is a mis-labelled specimen.

### *Erynnis montanus* (Bremer, 1861) (珠弄蝶)

#### PLATE 18, Fig. 148

Murayama & Yoshisaka (1959) described a subspecies of the species as *Erynnis montanus neomontanus* Murayama & Yoshisaka, 1959 from “near Puli, Taiwan”, based on two specimens purchased from a dealer. Subsequent authors considered these specimens as mis-labelled specimens from Japan (Hamano, 1987; Tsukiyama *et al.*, 1997).

### *Astictopterus jama chinensis* (Leech, 1890) (腌翅弄蝶)

#### PLATE 18, Fig. 149

One female specimen of this species was observed and collected from Dadan Is. of Leiyu of Jinmen Islands (Chang, 2017), an island under military control and difficult to access at present. There may be possibility a viable population inhabiting this small island.

## 補充註記

在文獻中某些種弄蝶在臺灣曾有記錄，但可能涉及標纖錯誤、標本來源不明，或屬稀有的偶發性迷蝶，這些種類簡述如下：

### *Epargyreus clarus* (Cramer, [1775]) (銀紋弄蝶)

Matsumura (1940) 年描述了一種名為 *Bibacis argenteola* Matsumura, 1940 的弄蝶。Shirôzu (1947) 視該分類單元為銀紋弄蝶 *Epargyreus tityrus* (Fabricius) 之同物異名，並指出此種北美物種分布在臺灣的機率微乎其微。因 *tityrus* 為無效之異物同名，本種應被稱為 *Epargyreus clarus* (Cramer, [1775]) (Miller & Brown, 1981)。Hsu *et al.* (2006) 檢視 *argenteola* Matsumura, 1940 存放於北海道大學之模式標本後判斷該標本標籤有誤。

### *Erynnis montanus* (Bremer, 1861) (珠弄蝶)

Murayama & Yoshisaka (1959) 依據兩隻從標本零售商購入之 " 埔里附近 " 產標本記述珠弄蝶之臺灣亞種 *Erynnis montanus neomontanus* Murayama & Yoshisaka, 1959。後來的研究者均認為這兩隻標本其實都是標籤錯誤之日本產標本，因此臺灣並無珠弄蝶分布 (Hamano, 1987; Tsukiyama *et al.*, 1997)。

### *Astictopterus jama chinensis* (Leech, 1890) (腌翅弄蝶)

Chang (2017) 從金門烈嶼大膽島觀察、採集之雌蝶標本為目前唯一記錄，該島嶼目前因軍事管制而難以登島。腌翅弄蝶在該島也許有常駐族群棲息。

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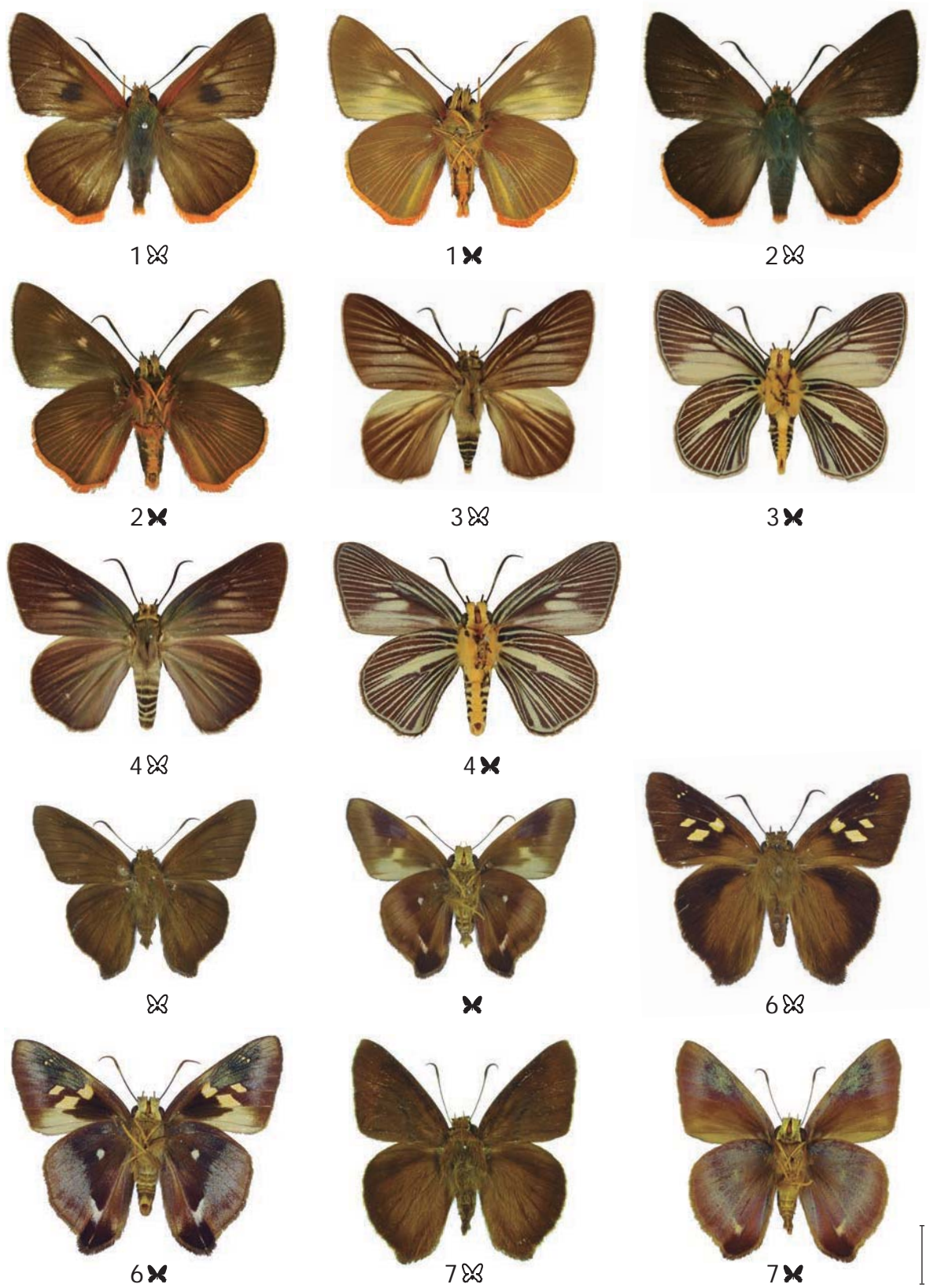
## COLOUR PLATES

Note. Scale bars represent 1 cm.

✂ : Uppersides

✂ : Undersides

1. *Burara jaina formosana* (Fruhstorfer, 1911) 橙翅傘弄蝶  
♂. XINBEI CITY [=NEW TAIPEI CITY/TAIPEI Co.], Wugu, Chanshan, III. 3. 2016 (L. Huang).
2. *Burara jaina formosana* (Fruhstorfer, 1911) 橙翅傘弄蝶  
♀. KAOHSIUNG CITY [=KAOHSIUNG Co.], Taoyuan, Meishan, VII. 29. 2016 (L. Huang).
3. *Burara gomata* (Moore, 1866) 白傘弄蝶  
♂. HONG KONG, Fanlinh, Hok Tau, emgd. XI. 1. 1991 (J. Young).
4. *Burara gomata* (Moore, 1866) 白傘弄蝶  
♀. HONG KONG, Fanlinh, Hok Tau, emgd. X. 28. 1991 (J. Young).
5. *Hasora badra* (Moore, [1858]) 鐵色絨弄蝶  
♂. TAIPEI CITY, Wenshan Dist., NTNU Campus, XI. 10. 2015, reared from *Paraderris ?pictoria*, emgd. XI. 26.2015, HSU No.15L39 (L. Huang & L. H. Wang).
6. *Hasora badra* (Moore, [1858]) 鐵色絨弄蝶  
♀. TAIDONG Co., Beinan, Zhiben Logging Trail, X. 31. 2015 (L. Huang).
7. *Hasora mixta limata* Hsu & Huang, 2008 南風絨弄蝶  
♂. Paratype. TAIDONG Co., Lanyu, Sidougou, III. 3/5. 2007, reared from *Paraderris ?piscatoria*, emgd. IV. 8. 2007, HSU No.07C3 (Y. F. Hsu & H. C. Huang).



8. *Hasora mixta limata* Hsu & Huang, 2008 南風絨弄蝶  
♀. Paratype. TAIDONG Co., Lanyu, Sidougou, IV. 10/11. 2007, reared from *Paraderris ?piscatoria*, emgd. V. 18. 2007, HSU No.07D9 (Y. F. Hsu).
9. *Hasora anura taiwana* Hsu, Tsukiyama & Chiba, 2005 無尾絨弄蝶  
♂. Paratype. NANTOU Co., Yuchi, Lianhuachi, ca 700 m, V. 13. 2004, reared from *Ormosia formosana*, emgd. VI. 6. 2004, HSU No.04E25 (Y. F. Hsu).
10. *Hasora anura taiwana* Hsu, Tsukiyama & Chiba, 2005 無尾絨弄蝶  
♀. Paratype. NANTOU Co., Yuchi, Lianhuachi, ca 700 m, V. 13. 2004, reared from *Ormosia formosana*, emgd. VI. 9. 2004, HSU No.04E25 (Y. F. Hsu).
11. *Hasora chromus* (Cramer, [1780]) 尖翅絨弄蝶  
♂. TAIPEI CITY, Wenshan Dist., Taipei Zoo, X. 18. 2015 (Y. M. Hsu & C. J. Chang).
12. *Hasora chromus* (Cramer, [1780]) 尖翅絨弄蝶  
♀. TAIZHONG CITY [= TAICHUNG Co.], Fengyuan Dist., Zhongshan Park, V. 7. 2016, reared from *Pongamia pinnata*, emgd. V. 26. 2016, HSU No.16E39 (L. Huang).
13. *Hasora taminatus vairacana* Fruhstorfer, 1911 圓翅絨弄蝶  
♀. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Xuanyuan, VII. 2. 2015 (L. Huang).
14. *Hasora taminatus vairacana* Fruhstorfer, 1911 圓翅絨弄蝶  
♀. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Xuanyuan, V. 28. 2016 (L. Huang).



8♂



8♂



9♂



9♂



10♂



10♂



11♂



11♂



12♂



12♂



13♂



13♂

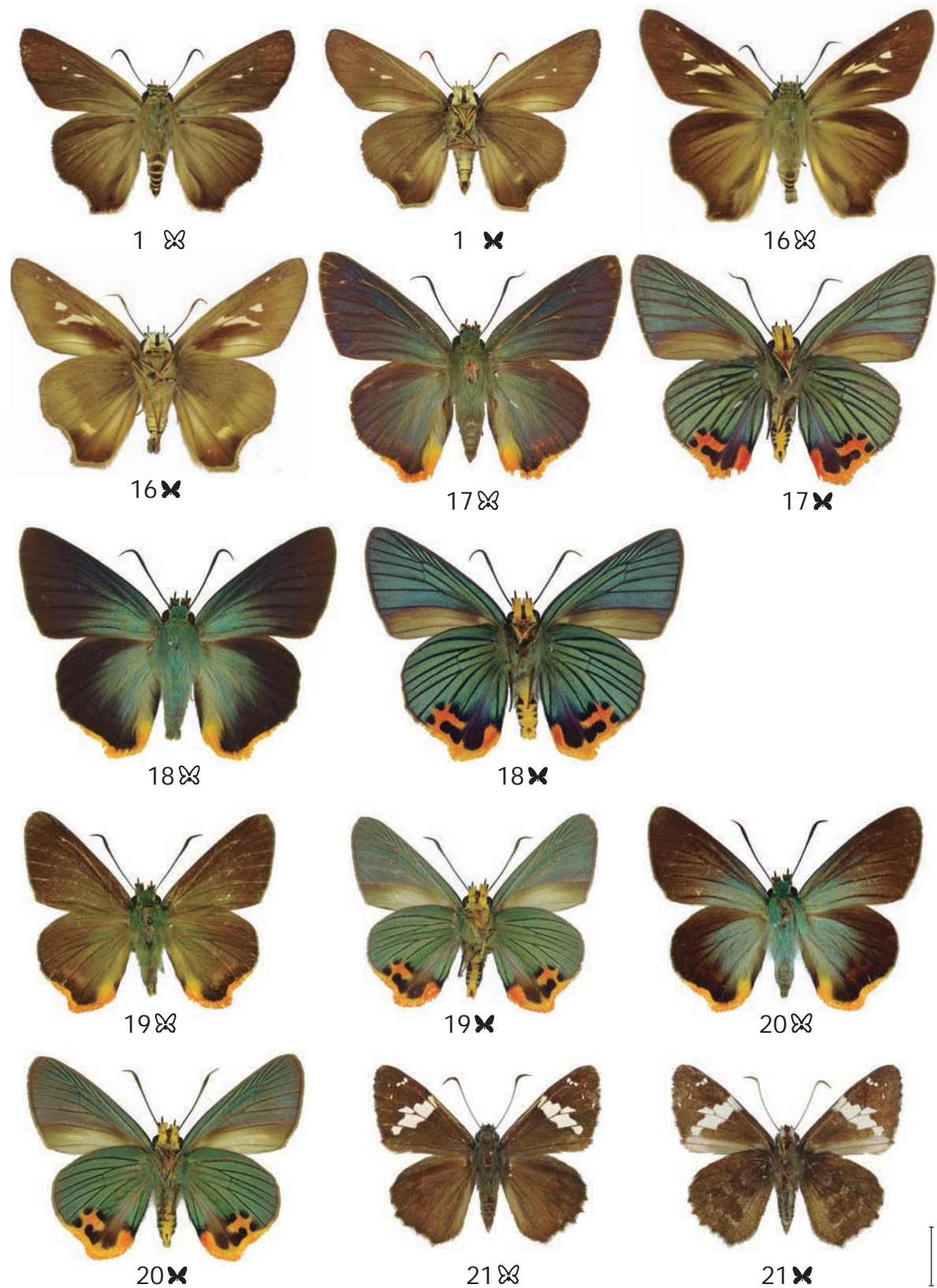


14♂



14♂

15. *Badamia exclamationis* (Fabricius, 1775) 長翅弄蝶  
♂. TAIDONG Co., Lanyu, Sidougou, III. 16/18. 2012 (Y. F. Hsu & H. C. Huang).
16. *Badamia exclamationis* (Fabricius, 1775) 長翅弄蝶  
♀. PINGDONG Co., Shizi, Shuangliu, 500 m, VI. 10. 2007, reared from *Hiptage bengalensis*, emgd. V. 21. 2007, HSU No.07F7 (Y. F. Hsu).
17. *Choaspes benjaminii formosanus* (Fruhstorfer, 1911) 綠弄蝶  
♂. XINBEI CITY [=NEW TAIPEI CITY/TAIPEI Co.], Shiding, Ergeshan, VIII. 5. 2008 (N. Y. Tsai).
18. *Choaspes benjaminii formosanus* (Fruhstorfer, 1911) 綠弄蝶  
♀. TAIPEI CITY, Shilin, Chinese Culture University, VII. 1. 2016 (C. J. Chang & W. J. Lin).
19. *Choaspes xanthopogon chrysopterus* Hsu, 1988 褐翅綠弄蝶  
♂. XINBEI CITY [=NEW TAIPEI CITY/TAIPEI Co.], Wulai, Badaoershan, IV. 26. 2007, reared from *Sabia swinhoei*, emgd. V. 29. 2007, HSU No.07D25 (L. H. Wang).
20. *Choaspes xanthopogon chrysopterus* Hsu, 1988 褐翅綠弄蝶  
♀. XINBEI CITY [=NEW TAIPEI CITY/TAIPEI Co.], Wulai, Badaoershan, IV. 26. 2007, reared from *Sabia swinhoei*, emgd. V. 25. 2007, HSU No.07D25 (L. H. Wang).
21. *Lobocla bifasciata kodairai* Sonan, 1936 雙帶弄蝶  
♂. NANTOU Co., Renai, Tunyuan, 2000m, VII. 6. 2012 (Y. F. Hsu).



22. *Lobocla bifasciata kodairai* Sonan, 1936 雙帶弄蝶  
♀. XINZHU Co., Taian, Henglongshan, ca 1400m, VI.19. 2004, reared from *Dumosia miaoliensis*, emgd. IV. 27. 2005, HSU 04F41 (S. C. Chen, C. C. Lu & L. L. Yang).
23. *Pyrgus maculatus bocki* (Oberthür, 1912) 花弄蝶  
♂. KINMEN Co., Jinhu, Shenshi Bridge, VIII. 13/15. 2015, reared from *Rubus parvifolius*, emgd. IX. 7. 2015, HSU 15H23 (L. Huang & H. C. Huang).
24. *Pyrgus maculatus bocki* (Oberthür, 1912) 花弄蝶  
♀. KINMEN Co., Jinhu, Shenshi Bridge, VIII. 13/15. 2015, reared from *Rubus parvifolius*, emgd. IX. 20. 2015, HSU 15H23 (L. Huang & H. C. Huang).
25. *Celaenorrhinus pulomaya formosanus* Fruhstorfer, 1909 尖翅星弄蝶  
♂. TAICHUNG CITY, Heping Dist., Anmashan, 220 Forest Rd., III. 20. 1997, reared from *Strobilanthes formosanus*, emgd. V. 24. 1997, HSU 97C32 (Y. F. Hsu).
26. *Celaenorrhinus pulomaya formosanus* Fruhstorfer, 1909 尖翅星弄蝶  
♀. JIAYI Co., Alishan, Zhushan, 2400m, VIII. 1. 2006 (R. K. Dong).
27. *Celaenorrhinus kurosawai* Shirôzu, 1960 黑澤星弄蝶  
♂. YILAN Co., Provincial Rd. No. 7A, 40K, VII. 28. 2017 (C. W. Huang).
28. *Celaenorrhinus kurosawai* Shirôzu, 1960 黑澤星弄蝶  
♀. YILAN Co., Tuling, VIII. 8. 2017 (C. W. Huang).
29. *Celaenorrhinus ratna* Fruhstorfer, 1908 小星弄蝶  
♂. YILAN Co., Provincial Rd. No. 7A, 40K, VII. 28. 2017 (C. W. Huang).
30. *Celaenorrhinus ratna* Fruhstorfer, 1908 小星弄蝶  
♀. XINBEI CITY [= TAIPEI Co.], Wulai, Kuaishan, VII. 15. 2000 (Y. F. Hsu).



22♂



22♀



23♂



23♀



24♂



24♀



2♂



2♀



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31. *Celaenorrhinus horishanus* Shirôzu, 1960 埔里星弄蝶  
♂. HUALIAN Co., Xiulin, Qilai, 1500m, VII. 7. 2008 (L. H. Wang).
32. *Celaenorrhinus horishanus* Shirôzu, 1960 埔里星弄蝶  
♀. PINGDONG Co., Chunri, Dahan Forest Trail 18+K, V. 14/15. 2016 (C. W. Huang & T. Y. Liu).
33. *Celaenorrhinus major* Hsu, 1990 臺灣流星弄蝶  
♂. HUALIAN Co., Xiulin Qilai, ca 500m, VII. 4. 2007 (L. H. Wang).
34. *Celaenorrhinus major* Hsu, 1990 臺灣流星弄蝶  
♀. HUALIAN Co., Xiulin Qilai, ca 500m, VII. 4. 2007 (L. H. Wang).
35. *Celaenorrhinus maculosus taiwanus* Matsumura, 1919 大流星弄蝶  
♂. YILAN Co., Nanao, Dabaishan, V. 4. 2016, reared from *Pilea angulata*, emgd. V. 18. 2016, HSU 16E02 (L. Huang, L. H. Wang, Y. M. Hsu & C. W. Huang).
36. *Celaenorrhinus maculosus taiwanus* Matsumura, 1919 大流星弄蝶  
♀. TAOYUAN CITY, Fuxing, Xuanyuan, VII. 14. 2015 (L. H. Wang).
37. *Pseudocoladenia dan sadakoe* (Sonan & Mitono, 1936) 黃襟弄蝶  
♂. MIAOLI Co., Taian, Henglongshan, 1340/1430m, I. 26. 2003, reared from *Achyranthes bidentata* var. *japonica*, emgd. III. 29. 2003, HSU 03A47 (Y. F. Hsu, S. C. Chen, C. C. Lu & J. R. Chen).
38. *Pseudocoladenia dan sadakoe* (Sonan & Mitono, 1936) 黃襟弄蝶  
♀. MIAOLI Co., Taian, Henglongshan, 1340/1430m, I. 26. 2003, reared from *Achyranthes bidentata* var. *japonica*, emgd. III. 29. 2003, HSU 03A47 (Y. F. Hsu, S. C. Chen, C. C. Lu & J. R. Chen).
39. *Pseudocoladenia dan fabia* Evans, 1949 黃襟弄蝶  
♂. LIANJIANG Co., Nangang, V. 2. 2010, reared from *Achyranthes aspera* var. *rubrofusca*, emgd. VII. 6. 2010, HSU 10F05 (Y. F. Hsu).



31 ♂



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32 ♂



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38 ♂



38 ♀



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40. *Pseudocoladenia dan fabia* Evans, 1949 黃襟弄蝶  
♀. LIANJIANG Co., Nangang, VII. 9. 2003, reared from *Achyranthes* sp., emgd. VII. 6. 2003, HSU 03F60 (Y. A. Lin).
41. *Coladenia pinsbukana* (Shimonoya & Murayama, 1976) 臺灣窗弄蝶  
♂. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Neikueihuei, IV. 17. 2017 (H. C. Huang).
42. *Coladenia pinsbukana* (Shimonoya & Murayama, 1976) 臺灣窗弄蝶  
♀. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Ronghua, ca 500m, 7. IV. 2017 (L. H. Wang).
43. *Satarupa majasra* Fruhstorfer, 1909 小紋颯弄蝶  
♂. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Xicun, 1100m, IV. 1. 2009, reared from *Zanthoxylum ailanthoides*, emgd. V. 15. 2009, HSU 09D02 (L. H. Wang & M. S. Sun).
44. *Satarupa majasra* Fruhstorfer, 1909 小紋颯弄蝶  
♀. KAOHSIUNG CITY, Taoyuan, Southern Cross-Highway, 130K, VI. 30. 2015 (C. W. Huang & A. L. Hui).
45. *Satarupa formosibia* Strand, 1927 臺灣颯弄蝶  
♂. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Xuanyuan, V. 7. 2009, reared from *Tetradium glabrifolium*, emgd. V. 28. 2009, HSU 09E31 (C. H. Lin).



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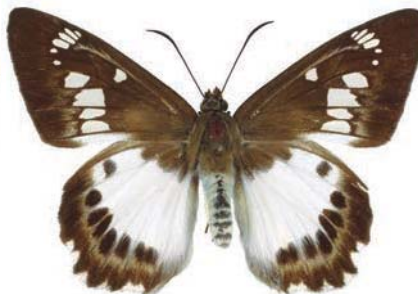
42 ♀



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4 ♂



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46. *Satarupa formosibia* Strand, 1927 臺灣颯弄蝶  
♀. TAIZHONG Co., Heping, Daxueshan, 900m, V. 25. 2010, reared from *Tetradium glabrifolium*, emgd. VI. 7. 2010, HSU 10E13 (J. H. Lin).
47. *Seseria formosana* (Fruhstorfer, 1909) 臺灣瑟弄蝶  
♂. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Xuanyuan, II. 15. 2009, reared from *Cinnamomum burmannii*, emgd. III. 5. 2009, HSU 09B15 (H. C. Huang).
48. *Seseria formosana* (Fruhstorfer, 1909) 臺灣瑟弄蝶  
♀. TAIPEI CITY, Songshan Dist., Hushan, IV. 9. 2009 (C. K. Wang).
49. *Tagiades cohaerens* Mabille, 1914 白裙弄蝶  
♂. XINBEI CITY [= TAIPEI Co.], Xindian, Sikanshui, IV. 30. 2006, reared from *Dioscorea* sp., emgd. V. 10. 2006, HSU 06D68 (L. H. Wang).
50. *Tagiades cohaerens* Mabille, 1914 白裙弄蝶  
♀. NANTOU Co., Xinyi, Hoshe, IX. 21. 2016 (W. J. Lin, C. J. Chang & Y. M. Hsu).
51. *Tagiades trebellius martinus* (Plötz, 1884) 熱帶白裙弄蝶  
♂. TAIDONG Co., Lanyu, Zhongai Bridge, VIII. 30. 2015 (L. Huang).
52. *Tagiades trebellius martinus* (Plötz, 1884) 熱帶白裙弄蝶  
♀. TAIDONG Co., Lanyu, Qiwei, IV. 26. 2009, reared from *Dioscorea cirrhosa*, emgd. V. 16. 2009, HSU 09D57 (C. L. Lin).
53. *Daimio tethys moori* (Mabille, 1876) 玉帶弄蝶  
♂. TAIPEI CITY, Mt. Daluntou, III. 7. 2016 (H. C. Huang).
54. *Daimio tethys moori* (Mabille, 1876) 玉帶弄蝶  
♀. JILONG CITY, Longgang Trail, X. 13. 2009 (Y. F. Hsu).



46♂



46♀



47♂



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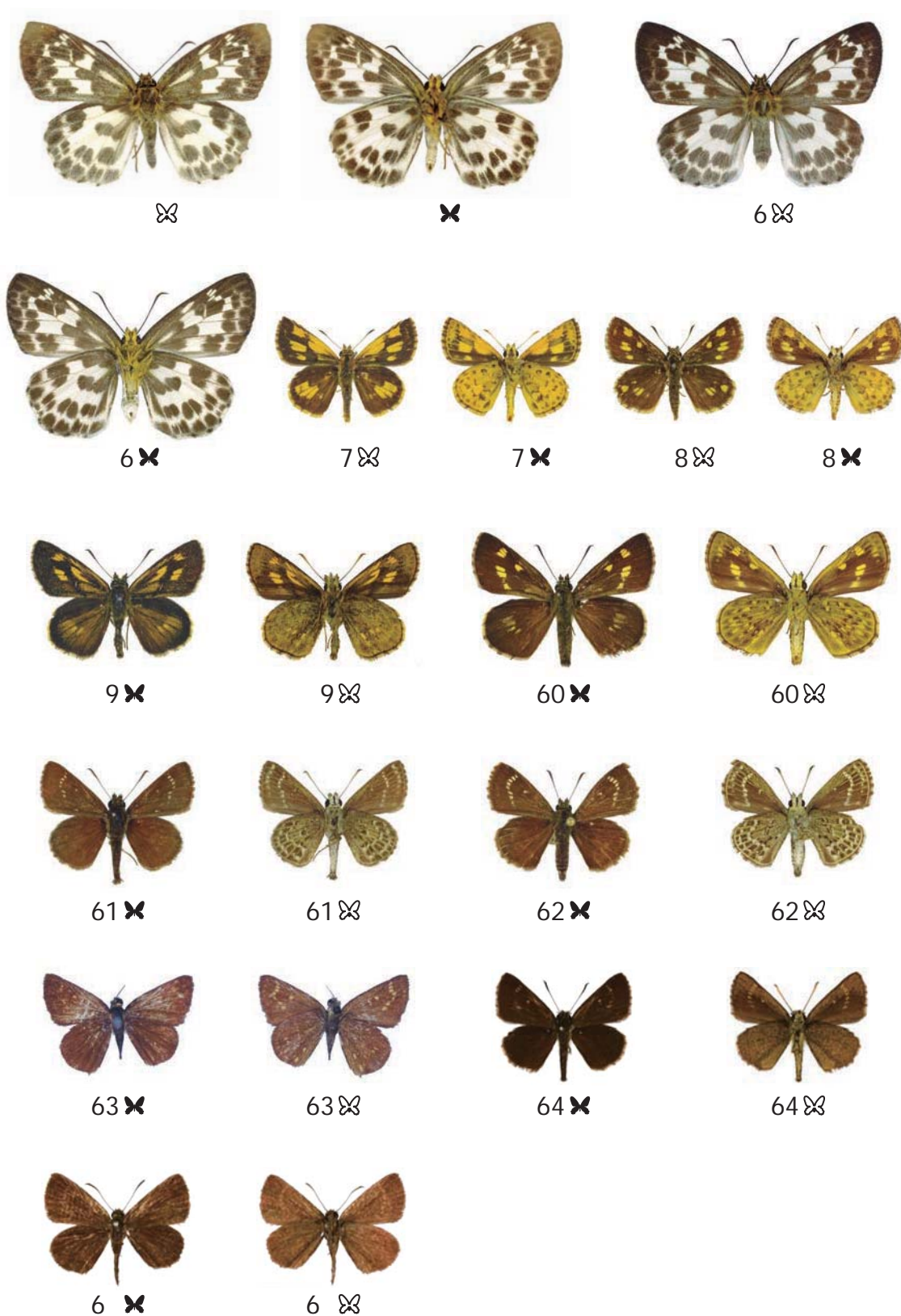


4♂



4♀

55. *Abraximorpha davidii ermasis* (Fruhstorfer, 1914) 白弄蝶  
♂. TAOYUAN CITY [TAOYUAN Co.], Sule, VI. 29. 2016 (L. Huang).
56. *Abraximorpha davidii ermasis* (Fruhstorfer, 1914) 白弄蝶  
♀. XINBEI CITY [= TAIPEI Co.], Wulai, Sikanshui, X. 20. 2014, reared from *Rubus* sp., emgd. II. 8. 2015 (Y. H. Lin).
57. *Ampittia dioscorides etura* (Mabille, 1891) 小黃星弄蝶  
♂. JINMEN Co., Jinhu, Botanical Garden, VIII. 14. 2015 (L. Huang & L. H. Huang).
58. *Ampittia dioscorides etura* (Mabille, 1891) 小黃星弄蝶  
♀. XINZHU Co., Zhubei, Lianhuashi, IX. 11. 1999 (Y. F. Hsu).
59. *Ampittia virgata myakei* Matsumura, 1910 黃星弄蝶  
♂. TAIDONG Co., Haiduan, Xiangyang, VII. 3. 2016, (J. Y. Liang).
60. *Ampittia virgata myakei* Matsumura, 1910 黃星弄蝶  
♀. XINBEI CITY [= TAIPEI Co.], Wulai, V. 30. 2008, reared from *Miscanthus sinensis*, emgd. V. 5. 2008, HSU 08E48 (Y. F. Hsu).
61. *Aeromachus inachus formosana* Matsumura, 1931 弧弄蝶  
♂. TAIZHONG CITY, Heping, Shangguguan, 900m, 30. X. 2006 (Y. F. Hsu).
62. *Aeromachus inachus formosana* Matsumura, 1931 弧弄蝶  
♀. NANTOU Co., Jenai, Huisun, 23. X. 1998, reared from *Spodiopogon tainenensis* f. *hayatai*, emgd. XII. 18. 1998, HSU 98K37 (C. Y. Hung).
63. *Aeromachus matudai* (Murayama, 1943) 霧社弧弄蝶  
♂. Holotype. "TAIWAN, Wushe, 22-VI-1941, SMURAYAMA" (Lake Biwa Museum).
64. *Aeromachus bandaishanus* Murayama & Shimonoya, 1968 萬大弧弄蝶  
♂. NANTOU Co., Renai, Yunhai, VI. 5. 2008 (L. H. Wang).
65. *Aeromachus bandaishanus* Murayama & Shimonoya, 1968 萬大弧弄蝶  
♀. HUALIEN Co., Xiulin, Bilu, VI. 7. 1986 (C. K. Yu).



66. *Onryza maga takeuchii* (Matsumura, 1929) 黃點弄蝶  
♂. NANTOU Co., Renai, Songchuangang, ca 2500 m, VI. 29. 2006 (L. H. Wang).
67. *Onryza maga takeuchii* (Matsumura, 1929) 黃點弄蝶  
♀. NANTOU Co., Renai, Tianchi, 2700m, VII. 3. 2007 (L. H. Wang).
68. *Praethoressa horishana* (Matsumura, 1910) 臺灣脈弄蝶  
♂. XINBEI CITY [= TAIPEI Co.], Wulai, V. 15. 2007, reared from *Miscanthus sinensis*, emgd. VI. 13. 2007, HSU 07E25 (L. H. Wang).
69. *Praethoressa horishana* (Matsumura, 1910) 臺灣脈弄蝶  
♀. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Baleng, 600m, V. 31. 2011, reared from *Miscanthus sinensis*, emgd. VI. 19. 2011, HSU 11E34 (J. H. Lin).
70. *Halpe gamma* Evans, 1937 昏列弄蝶  
♂. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Sanmin, IX. 8. 2008 (Y. F. Hsu).
71. *Halpe gamma* Evans, 1937 昏列弄蝶  
♀. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Sanmin, ca 400 m, IX. 20. 2011 (Y. F. Hsu).
72. *Isoteinon lamprospilus formosanus* Fruhstorfer, 1911 白斑弄蝶  
♂. XINBEI CITY, Wulai, Fushan, VIII. 4. 2017 (C. W. Huang).
73. *Isoteinon lamprospilus formosanus* Fruhstorfer, 1911 白斑弄蝶  
♀. TAOYUAN CITY [TAOYUAN Co.], Fuxing, Xuanyuan, 5. IV. 2017, emgd. IV. 24. 2017 (L. Huang).
74. *Notocrypta curvifascia* (C. & R. Felder, 1862) 袖弄蝶  
♂. TAIPEI CITY, Xingyi, Yongchungang, VII. 5. 2015 (C. J. Chang & W. J. Lin).
75. *Notocrypta curvifascia* (C. & R. Felder, 1862) 袖弄蝶  
♀. TAINAN CITY, Dongshan, Mt. Lingtong, X. 30. 2016, HSU 16K28 (Y. M. Hsu).



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76. *Notocrypta feisthamelii arisana* Sonan, 1930 連紋袖弄蝶 (臺灣亞種)  
♂. XINZHU [= HSINCHU] Co., Jianshi, Lidongshan, VIII. 19. 2015 (C. L. Huang).
77. *Notocrypta feisthamelii arisana* Sonan, 1930 連紋袖弄蝶 (臺灣亞種)  
♀. XINBEI CITY [= TAIPEI Co.], Wulai, Kuaishan, VII. 12. 1986, reared from *Alpinia japonica*, emgd. VIII. 28. 1986 (Y. F. Hsu).
78. *Notocrypta feisthamelii alinkara* Fruhstorfer, 1911 連紋袖弄蝶 (菲律賓亞種)  
♂. TAIDONG Co., Lanyu, Sidaogou, III. 18/20. 2006, reared from *Alpinia flabellata*, emgd. IV. 9. 2006, HSU 06C19 (Y. F. Hsu & H. C. Huang).
79. *Notocrypta feisthamelii alinkara* Fruhstorfer, 1911 連紋袖弄蝶 (菲律賓亞種)  
♀. TAIDONG Co., Lanyu, II. 19. 2009, reared from *Alpinia flabellata*, emgd. III. 5. 2009 (C. H. Lin, Jr.).
80. *Udaspes folus* (Cramer, [1775]) 薑弄蝶  
♂. NANTOU Co., Xinyi, Batongguan Historical Trail, VIII. 22. 2016 (C. J. Chang, W. J. Lin & Y. M. Hsu).
81. *Udaspes folus* (Cramer, [1775]) 薑弄蝶  
♀. TAIPEI CITY, Wenshan, Wannian Park, VIII. 10. 2016 (C. J. Chang).
82. *Suastus gremius* (Fabricius, 1798) 黑星弄蝶  
♂. TAIPEI CITY, Shilin, Pingdingguzun Trail, IX. 2016 (L. Huang).
83. *Suastus gremius* (Fabricius, 1798) 黑星弄蝶  
♀. TAIPEI CITY, Wenshan, Jingmei, I. 25. 2008, reared from *Rhapis humilis*, emgd. II. 12. 2008, HSU 08A24 (Y. F. Hsu).



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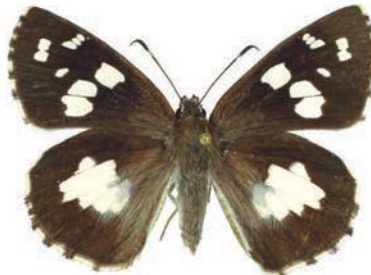
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84. *Erionota torus* Evans, 1941 蕉弄蝶  
♂. JINMEN Co., Zhongshan Forest, 2. IX. 2016 (C. L. Huang, Y. M. Hsu & H. C. Huang).
85. *Erionota torus* Evans, 1941 蕉弄蝶  
♀. YILAN Co., Jiaoxi, Wufengxi, 29. X. 2014 (C. J. Chang).
86. *Matapa aria* (Moore, [1866]) 瑪弄蝶  
♂. JINMEN [= KINMEN] Co., Jinhu, Botanical Garden, VIII. 14. 2015, reared from *Bambusa* sp., emgd. VIII. 23. 2015, HSU 15H30 (L. Huang).
87. *Matapa aria* (Moore, [1866]) 瑪弄蝶  
♀. JINMEN [= KINMEN] Co., Kinhu, Qionglin, VIII. 13. 2015, reared from *Bambusa* sp., emgd. VIII. 23. 2015, HSU 15H24 (H. C. Huang & L. Huang).
88. *Ochlodes niitakanus* (Sonan, 1936) 臺灣赭弄蝶  
♂. NANTOU Co., Renai, Tunyuan, 1700 m, VI. 2010 (N. Y. Tsai).
89. *Ochlodes niitakanus* (Sonan, 1936) 臺灣赭弄蝶  
♀. YILAN Co., Taipingshan, 17/19.5K, VII. 14. 2017 (C. W. Huang).
90. *Ochlodes bouddha yuckingkinus* Murayama & Shimonoya, 1963 菩提赭弄蝶  
♂. XINBEI CITY [= TAIPEI Co.], Sanxia, Beichatianshan, ca 1700 m, VI. 7. 2006 (L. H. Wang).
91. *Ochlodes bouddha yuckingkinus* Murayama & Shimonoya, 1963 菩提赭弄蝶  
♀. YILAN Co., Provincial Rd. No. 7A, 40K, VII. 28. 2017 (C. W. Huang).



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92. *Potanthus confucius angustatus* (Matsumura, 1910) (WSF) 黃斑弄蝶 (高濕 / 雨季型)  
♂. PINGDONG Co., Manzhou, Yongjing, 80 m, X. 19. 2018 (Y. F. Hsu).
93. *Potanthus confucius angustatus* (Matsumura, 1910) (WSF) 黃斑弄蝶 (低濕 / 乾季型)  
♂. TAINAN CITY[TAINAN Co.], Yongkang, Sankandian, I. 23. 2010 (Y. F. Hsu).
94. *Potanthus confucius angustatus* (Matsumura, 1910) (DSF) 黃斑弄蝶 (高濕 / 雨季型)  
♀. TAIDONG Co., Changbin, Ningpu, V. 2. 2018 (J.Y. Liang).
95. *Potanthus confucius angustatus* (Matsumura, 1910) (DSF) 黃斑弄蝶 (低濕 / 乾季型)  
♀. PINGDONG Co., Fangliao, Yuchuan, I. 21. 2007 (Y. F. Hsu).
96. *Potanthus confucius confucius* (Felder & Felder, 1862) 黃斑弄蝶  
♂. LIANJIANG Co., Mazu, Beigan, Daqiu, IV. 20. 2007 (Y. F. Hsu & H. C. Huang).
97. *Potanthus confucius confucius* (Felder & Felder, 1862) 黃斑弄蝶  
♀. LIANJIANG Co., Mazu, Beigan, Daqiu, IV. 20. 2007 (Y. F. Hsu & H. C. Huang).
98. *Potanthus miyashitai* Fujioka & Tsukiyama, 1975 「宮下黃斑弄蝶」全模標本 (藤岡收藏)  
♂. Holotype. "Nakano, Iriomote-jima, Ryukyus, III. 11. 1968 (T. Miyashita)" (Fujioka Collection).
99. *Potanthus pava* (Fruhstorfer, 1911) 淡色黃斑弄蝶  
♂. TAIDONG Co., Lanyu, Sidougou, XI. 17/18. 2007 (Y. F. Hsu & C. C. Hsieh).
100. *Potanthus pava* (Fruhstorfer, 1911) 淡色黃斑弄蝶  
♀. TAIDONG Co., Lanyu, Sidougou, III. 16/18. 2012 (Y. F. Hsu & H. C. Huang).
101. *Potanthus motzui* Hsu, Li & Li, 1990 墨子黃斑弄蝶  
♂. NANTOU Co., Renai, Nanshanxi, 900m, I. 23. 2008 (Y. F. Hsu).
102. *Potanthus motzui* Hsu, Li & Li, 1990 墨子黃斑弄蝶  
♀. TAIZHONG CITY [AIZHONG Co.], Heping, Guguan, 1000m, X. 1. 1995 (Y. F. Hsu).



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103. *Potanthus diffusus* Hsu, Chiba & Tsukiyama, 2005 蓬萊黃斑弄蝶  
♂. NANTOU Co., Renai, Beidongyanshan, ca 1800m, XII. 6. 2005, reared from *Miscanthesis sinensis*, emgd. II. 7. 2006, HSU 05M17 (Y. F. Hsu).
104. *Potanthus diffusus* Hsu, Chiba & Tsukiyama, 2005 蓬萊黃斑弄蝶  
♀. HUALIAN Co., Xiulin, Xinbaiyang, ca 1700 m, 20. VII. 2007 (Y. F. Hsu).
105. *Telicota ohara formosana* Fruhstorfer, 1911 寬邊橙斑弄蝶  
♂. TAINAN CITY, Wenshan Dist., Xianjiyan, VIII. 27. 2012 (Y. F. Hsu).
106. *Telicota ohara formosana* Fruhstorfer, 1911 寬邊橙斑弄蝶  
♀. TAINAN CITY, Nangang Dist., Academia Rd., Sec. 4, VIII. 3. 2015 (Z. Y. Shen, Y. M. Hsu & C. J. Chang).
107. *Telicota bambusae horisha* Evans, 1934 竹橙斑弄蝶  
♂. KAOHSIUNG CITY, Tianliao, 100m, IV. 22. 2011 (Y. F. Hsu).
108. *Telicota bambusae horisha* Evans, 1934 竹橙斑弄蝶  
♀. TAINAN CITY, Baihe, Guanziling, 300m, IX. 24. 2003 (Y. F. Hsu).
109. *Telicota colon hayashikeii* Tsukiyama, Chiba & Fujioka, 1997 熱帶橙斑弄蝶  
♂. TAIDONG Co., Ludao, IX. 25/27. 2004, reared from *Miscanthus* sp., emgd. X. 14. 2004, HSU 04J44 (Y. F. Hsu & H. C. Huang).
110. *Telicota colon hayashikeii* Tsukiyama, Chiba & Fujioka, 1997 熱帶橙斑弄蝶  
♀. TAIDONG Co., Ludao, IX. 25/27. 2004, reared from *Miscanthus* sp., emgd. X. 12. 2004, HSU 04J44 (Y. F. Hsu & H. C. Huang).
111. *Telicota colon stinga* Evans, 1949 熱帶橙斑弄蝶  
♂. JINMEN Co., VIII. 2008 (W. T. Chen).
112. *Telicota colon stinga* Evans, 1949 熱帶橙斑弄蝶  
♀. JINMEN Co., Gugang Lake, VIII. 23. 2000 (Y. F. Hsu).



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113. *Parnara guttata* (Bremer & Grey, 1853) 稻弄蝶  
♂. JILONG CITY, Qiu honghu, X. 20. 2009, reared from "grass", emgd. XII. 8. 2006, HUS 09K29 (J. H. Lin, C. K. Wang & C. H. Lin).
114. *Parnara guttata* (Bremer & Grey, 1853) 稻弄蝶  
♀. JINMEN Co., Jinhu, X. 29. 2014, emgd. XI. 29. 2014 (H. C. Huang).
115. *Parnara bada* (Moore, 1878) 小稻弄蝶  
♂. JIAYI Co., Alishan, Shizhou/Dabang, ca 900/1000m, IX. 25. 2010 (Y. F. Hsu).
116. *Parnara bada* (Moore, 1878) 小稻弄蝶  
♀. JIAYI Co., Xingang, Yuemei, ca 15 m, VI. 9. 2007 (Y. F. Hsu).
117. *Borbo cinnara* (Wallace, 1866) 禾弄蝶  
♂. HUALIEN Co., Zhouxi, Nanan, IX. 13. 2017 (J. Y. Liang).
118. *Borbo cinnara* (Wallace, 1866) 禾弄蝶  
♀. TAOYUAN CITY, Baiji Elementary School, V. 25. 2013 (L. Huang).
119. *Pseudoborbo bevani* (Moore, 1878) 假禾弄蝶  
♂. TAIZHONG CITY [= TAICHUNG Co.], Heping, Shangguguan, 900m, VII. 29. 2007 (Y. F. Hsu).
120. *Pseudoborbo bevani* (Moore, 1878) 假禾弄蝶  
♂. NANTOU Co., Renai, Huisun Forestry Station, X. 16. 2010 (Y. F. Hsu).
121. *Pelopidas mathias oberthueri* Evans, 1937 褐弄蝶  
♂. JINMEN Co., Guganghu, XI. 5. 2013 (C. L. Huang & H. C. Huang).
122. *Pelopidas mathias oberthueri* Evans, 1937 褐弄蝶  
♀. KAOSHIUNG CITY, Jinshi Lake, I. 18. 1998, reared from *Panicum maximum*, emgd. I. 21. 1998, HSU 98A06 (Y. F. Hsu).



113 ✕



113 ☒



114 ✕



114 ☒



11 ✕



11 ☒



116 ✕



116 ☒



117 ✕



117 ☒



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123. *Pelopidas agna* (Moore, [1866]) 尖翅褐弄蝶  
♂. TAIPEI CITY, Wenshan, National Taiwan Universty, X. 25. 2014, emgd. XI. 10. 2014 (L. Huang).
124. *Pelopidas agna* (Moore, [1866]) 尖翅褐弄蝶  
♀. KAOSHIUNG CITY, Jinshi Lake, III. 29. 1997, emgd. V. 22. 1997, HSU 97C60 (Y. F. Hsu, C. C. Lu & C. Y. Huang).
125. *Pelopidas sinensis* (Mabille, 1877) 中華褐弄蝶  
♂. NANTOU Co., Luku, Xitou, Youshuikeng, VI. 3. 1997, reared from *Pennisetum purpureum*, emgd. VII. 2. 1997, HSU 97F07 (Y. F. Hsu & C. C. Lu).
126. *Pelopidas sinensis* (Mabille, 1877) 中華褐弄蝶  
♀. NANTOU Co., Renai, Beidongyanshan, ca 1800m, XII. 6. 2005, reared from *Miscanthus sinensis*, emgd. I. 20. 2005, HSU 04M15 (Y. F. Hsu & L. W. Wu).
127. *Pelopidas conjuncta* (Herrich-Schäffer, 1869) 巨褐弄蝶  
♂. TAIPEI CITY., Shilin, Jiannan Road, XI. 26. 2008, reared from *Miscanthus* sp., HSU 08L37 (B. C. Lin).
128. *Pelopidas conjuncta* (Herrich-Schäffer, 1869) 巨褐弄蝶  
♀. TAIPEI CITY [= TAIPEI Co.], Xindian, Sikanshui, XI. 29. 2002, reared from *Miscanthus*, emgd. XII. 23. 2002, HSU 02L33 (H. S. Chuen).
129. *Polytremis lubricans kuyaniana* (Matsumura, 1919) 黃紋孔弄蝶  
♂. XINBEI CITY [= TAIPEI Co.], Reifang, Nanya, X. 2. 2002, reared from *Miscanthus* sp., emgd. XI. 11. 2002, HSU 02K06 (Y. F. Hsu).
130. *Polytremis lubricans kuyaniana* (Matsumura, 1919) 黃紋孔弄蝶  
♀. JILONG CITY, Longgang Trail, IX. 2. 2006 (Y. F. Hsu).



123 ♂



123 ♀



124 ♂



124 ♀



12 ♂



12 ♀



126 ♂



126 ♀



127 ♂



127 ♀



128 ♂



128 ♀



129 ♂



129 ♀



130 ♂



130 ♀

131. *Zenonoida eltola tappana* (Matsumura, 1919) 碎紋弄蝶  
♂. KAOSHIUNG CITY [= KAOSIUNG Co.], Taoyuan, Fenggangshan, 1300m, IX. 24. 2007 (Y. F. Hsu & G. P. Su).
132. *Zenonoida eltola tappana* (Matsumura, 1919) 碎紋弄蝶  
♀. PINGDONG Co., Wutai, Wutoushan, 1200m, VI. 6. 2009 (Y. F. Hsu).
133. *Zinaida zina asahinai* (Shirôzu, 1952) 長紋禪弄蝶  
♂. YILAN Co., Nanao, Dabaishan, IV. 21. 2016, reared from *Yushania niitakayamensis*, HSU 16D89 (L. H. Wang & Y. M. Hsu).
134. *Zinaida zina asahinai* (Shirôzu, 1952) 長紋禪弄蝶  
♀. YILAN Co., Nanao, Taipingshan, Jioujhihze, VII. 14. 2017 (C. W. Huang).
135. *Zinaida kiraizana* (Sonan, 1938) 奇萊禪弄蝶  
♂. HUALIEN Co., Xiulin, Cien, VII. 6. 2015 (L. Huang).
136. *Zinaida kiraizana* (Sonan, 1938) 奇萊禪弄蝶  
♀. TAIDONG Co., Yanping, Yanping forest trail, VII. 30. 1992 (C. L. Lee).
137. *Caltoris ranrunna* (Sonan, 1936) 臺灣黯弄蝶  
♂. TAIPEI CITY, Wenshan Dist., NTNU campus, VII. 15. 2005, reared from *Bambusa* sp., emgd. VII. 26. 2005, HSU 05G15 (L. H. Wang).
138. *Caltoris ranrunna* (Sonan, 1936) 臺灣黯弄蝶  
♀. YUNLIN Co., Douliu, Linne, Tudigongkengxi, I. 9. 2004, reared from *Arundo formosana*, emgd. II. 12. 2004, HSU 04A01 (Y. F. Hsu).



131 ♂



131 ♀



132 ♂



132 ♀



133 ♂



133 ♀



134 ♂



134 ♀



135 ♂



135 ♀



136 ♂



136 ♀



137 ♂



137 ♀



138 ♂



138 ♀

139. *Caltoris cahira austeni* (Moore, [1884]) 黯弄蝶  
♂. LIANJIANG Co., Lianjiang Co., Beigan, XI. 19. 2013, reared from *Bambusa*, emgd. XII. 31. 2013, HSU 13L67 (L. H. Wang & H. Y. Lee).
140. *Caltoris cahira austeni* (Moore, [1884]) 黯弄蝶  
♀. LIANJIANG Co., Lianjiang Co., Beigan, XI. 19. 2013, reared from *Bambusa*, emgd. XII. 31. 2013, HSU 13L67 (L. H. Wang & H. Y. Lee).
141. *Caltoris bromus yanuca* (Fruhstorfer, 1911) (markings reduced) 變紋黯弄蝶 (斑紋減退型)  
♂. NANTOU Co., Yuchi, Helongkeng, ca 550 m, V. 20. 2004, reared from *Phramites vallatoria*, emgd. V. 27. 2004, HSU 04E63 (Y. F. Hsu).
142. *Caltoris bromus yanuca* (Fruhstorfer, 1911) (markings prominent) 變紋黯弄蝶 (斑紋明顯型)  
♂. KAOHSIUNG CITY [KAOHSIUNG Co.], Liugui, VI. 6. 2008, reared from *Phragmites vallatoria*, emgd. IV. 20. 2008, HSU 08F1 (Y. F. Hsu).
143. *Caltoris bromus yanuca* (Fruhstorfer, 1911) (markings reduced) 變紋黯弄蝶 (斑紋減退型)  
♀. NANTOU Co., Yuchi, Helongkeng, ca 550 m, V. 20. 2004, reared from *Phramites vallatoria*, emgd. V. 30. 2004, HSU 04E63 (Y. F. Hsu).
144. *Caltoris bromus yanuca* (Fruhstorfer, 1911) (markings prominent) 變紋黯弄蝶 (斑紋明顯型)  
♀. YILAN Co., Yuanshan, Shuanglianpi, ca 450 m, VIII. 4. 2006 (Y. F. Hsu, H. C. Huang, Y. C. Hsu & C. K. Wang).
145. *Caltoris bromus bromus* (Leech, 1893) 變紋黯弄蝶  
♂. JINMEN Co., Jincheng, Shuitou, VIII. 29/30. 2011 (Y. F. Hsu & H. C. Huang).
146. *Caltoris bromus bromus* (Leech, 1893) 變紋黯弄蝶  
♀. JINMEN Co., Jincheng, Shuitou, VIII. 29. 2011, reared from *Arundo* sp., emgd. X. 3. 2011, HSU 11H53 (Y. F. Hsu & H. C. Huang).



139 ♂

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140 ♂

140 ♀



141 ♂

141 ♀

142 ♂

142 ♀



143 ♂

143 ♀

144 ♂

144 ♀



145 ♂

145 ♀

146 ♂

146 ♀

147. *Epargyreus clarus* (Cramer, [1775]) 銀紋弄蝶

♂. Holotype of "*Bibacis argenteola* Matsumura, 1940", "*Bibacis argenteola* Mats. Type [red label] | Hori Matsumura | June 1940" (SEHU).

148. *Erynnis montanus* (Bremer, 1861) 珠弄蝶

♂. Holotype of "*Erynnis montanus neomontanus* Murayama & Yoshisaka, 1959", "TAIWAN, Puli, 1955 (S MURAYAMA)" (Lake Biwa Museum).

149. *Astictopterus jama chinensis* (Leech, 1890) 腌翅弄蝶

♀. JINMEN Co., Lieyu, Dadan Island, VIII. 13. 2015 (Y. J. Chang).



147X



147Y



148X



148Y



149X



149Y

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## MALE GENITALIA

Note. Scale bars represent 1 mm.

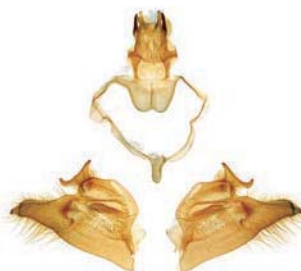
150. *Burara jaina formosana* (Fruhstorfer, 1911) 橙翅傘弄蝶  
♂. HUALIEN Co., Xiulin, Shikongzai, 60m, IV. 25. 2008, reared from *Hiptage benghalensis*, emgd. V. 27. 2008, HSU 08D18 (L. H. Wang) (genitalia preparation YMH 013).
151. *Burara gomata* (Moore, 1866) 白傘弄蝶  
♂. GUIZHOU PROV., Lipo Xian, Maolan, Bake, Sanchahe, 600m, reared from *Schefflera octophylla*, emgd IX. 25. 2011, HSU 11H44 (Y. F. Hsu) (genitalia preparation JYL 391).
152. *Hasora badra* (Moore, [1858]) 鐵色絨弄蝶  
♂. TAIPEI CITY, Wenshan, Gongguan campus, NTNU, XI. 10. 2015, reared from *Paraderris ?pictoria*, emgd. X. 26/29. 2015, HSU 15L39 (L. Huang & L. H. Wang) (genitalia preparation YMH 023).
153. *Hasora mixta limata* Hsu & Huang, 2008 南風絨弄蝶  
♂. TAIDONG Co., Lanyu, III. 28. 2010, reared from *Paraderris ?piscatoria*, emgd. IV. 1. 2010, HSU 10C47 (Y. F. Hsu & J. H. Lin) (genitalia preparation JYL 374).



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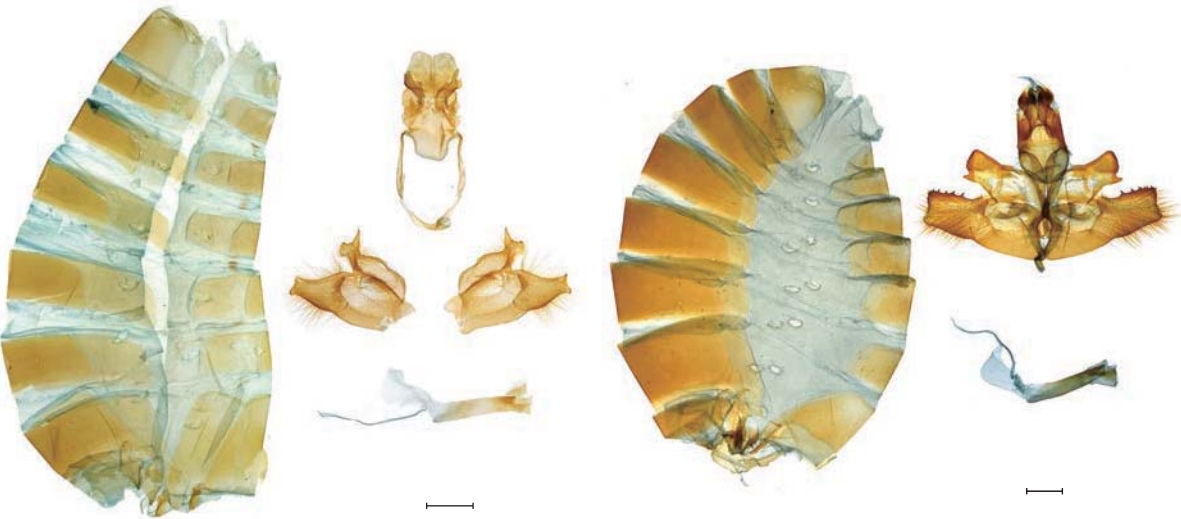


1 2



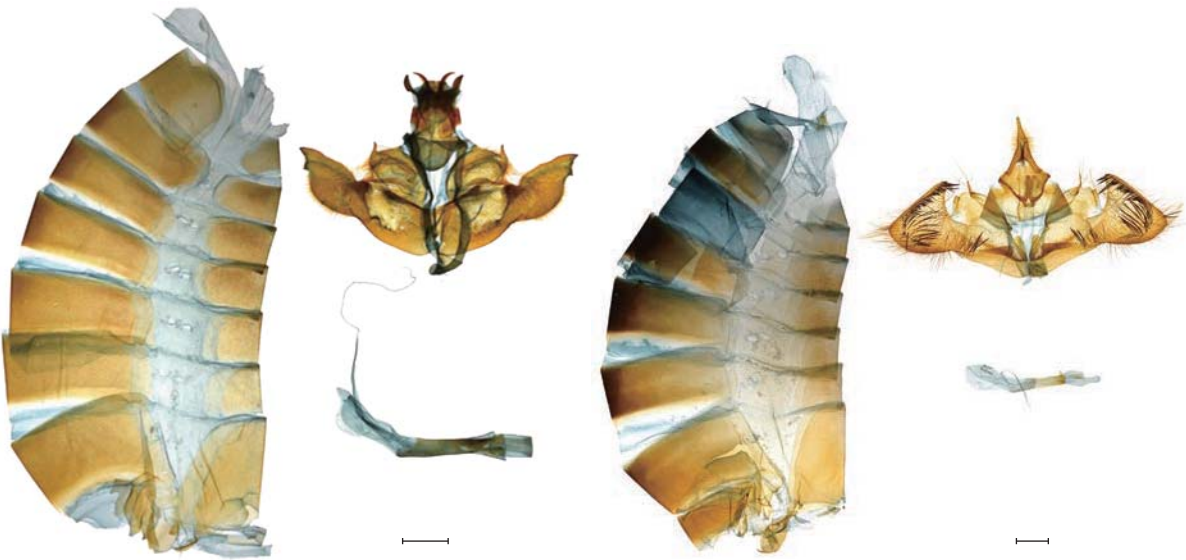
1 3

154. *Hasora anura taiwana* Hsu, Tsukiyama & Chiba, 2005 無尾絨弄蝶  
♂. NANTOU Co., Yuchi, Lianhuachi, 700 m, 13. VI. 2004 (L.H. Wang) (genitalia preparation YMH 024).
155. *Hasora chromus* (Cramer, [1780]) 尖翅絨弄蝶  
♂. NANTOU CO., Xinyi, Heshe, II. 19. 2016 (Y. M. Hsu) (genitalia preparation YMH 003).
156. *Hasora taminatus vairacana* Fruhstorfer, 1911 圓翅絨弄蝶  
♂. TAIPEI CITY, Shilin, Tianxiyuan, VIII. 3. 2010 (genitalia preparation JYL 378).
157. *Badamia exclamationis* (Fabricius, 1775) 長翅弄蝶  
♂. HUALIAN Co., Yuli, Yuancheng, II. 9. 2016 (J. Y. Liang) (genitalia preparation JYL 379).



1 4

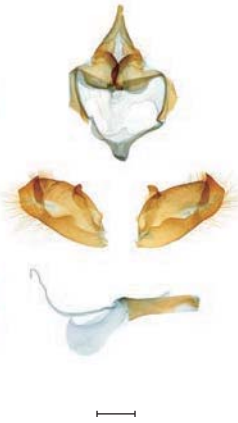
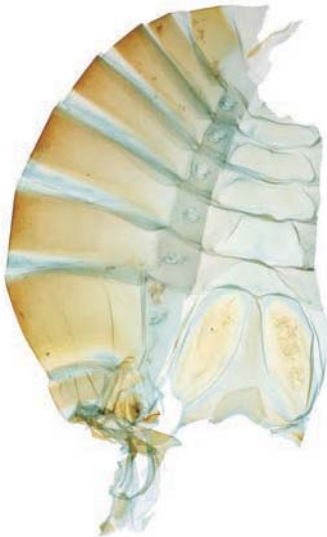
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1 7

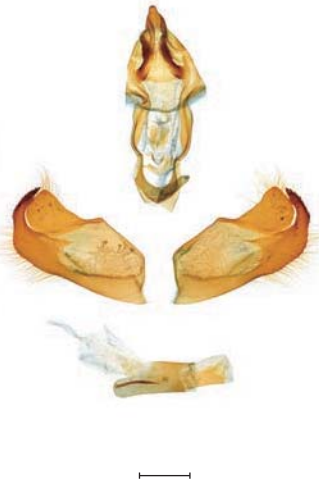
158. *Choaspes benjaminii formosanus* (Fruhstorfer, 1911) 綠弄蝶  
♂. TAIPEI CITY, Wulai, Fushan, VI. 16. 2016 (C. W. Huang) (genitalia preparation JYL 237).
159. *Choaspes xanthopogon chrysopterus* Hsu, 1988 褐翅綠弄蝶  
♂. XINBEI CITY, Sanxia, Beichatianshan, 1500/1700 m, VI. 7/10. 2001 (Y. T. Lo) (genitalia preparation YMH 017)..
160. *Lobocla bifasciata kodairai* Sonan, 1936 雙帶弄蝶  
♂. TAOYUAN CITY, Fuxing, Baleng, IV. 29. 1997 (Y. F. Hsu) (genitalia preparation JYL 297).
161. *Pyrgus maculatus bocki* (Oberthür, 1912) 花弄蝶  
♂. JINMEN Co., Jinhu, Shenshiqiao, VIII. 13. 2015 (H. C. Huang & L. Huang) (genitalia preparation CJC 076).



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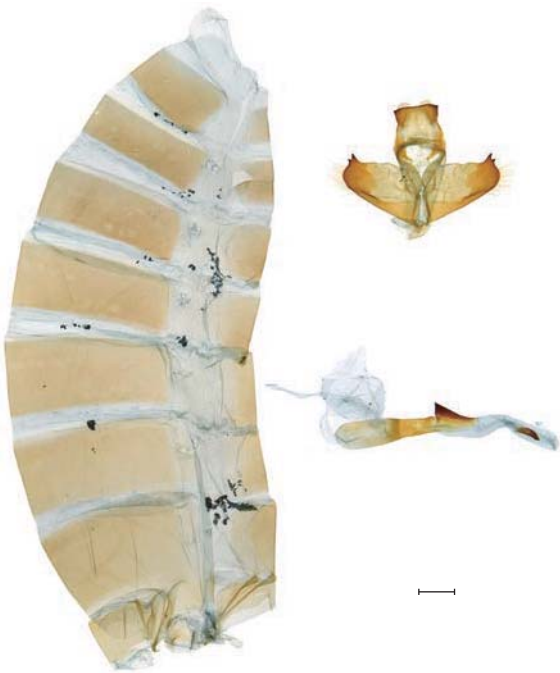


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161

162. *Celaenorrhinus pulomaya formosanus* Fruhstorfer, 1909 尖翅星弄蝶  
♂. NANTOU Co., Xinyi, Heshhe, 660 m, VIII. 5. 1997 (S. W. Loh) (genitalia preparation JYL 349).
163. *Celaenorrhinus kurosawai* Shirôzu, 1960 黑澤星弄蝶  
♂. XINBEI CITY, Wulai, Kuishan, VIII. 29. 1987 (genitalia preparation JYL 346).
164. *Celaenorrhinus ratna* Fruhstorfer, 1908 小星弄蝶  
♂. XINBEI CITY, Wulai, Kuishan, VII. 25. 1997 (C. Y. Hung) (genitalia preparation JYL 351).
165. *Celaenorrhinus horishanus* Shirôzu, 1960 埔里星弄蝶  
♂. PINGDONG Co., Wutai, Wutoushan, 1201 m, V. 7/8. 2006 (Y. F. Hsu) (genitalia preparation JYL 342).



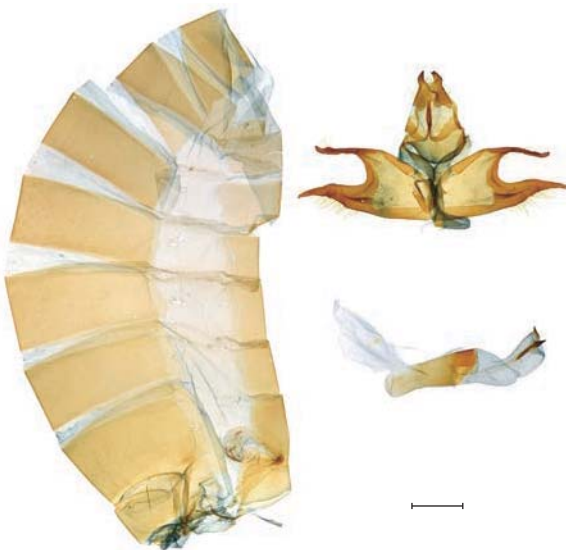
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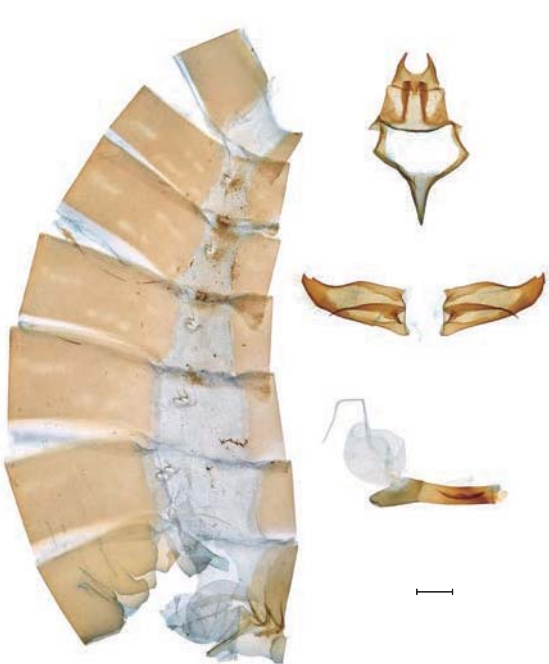


164

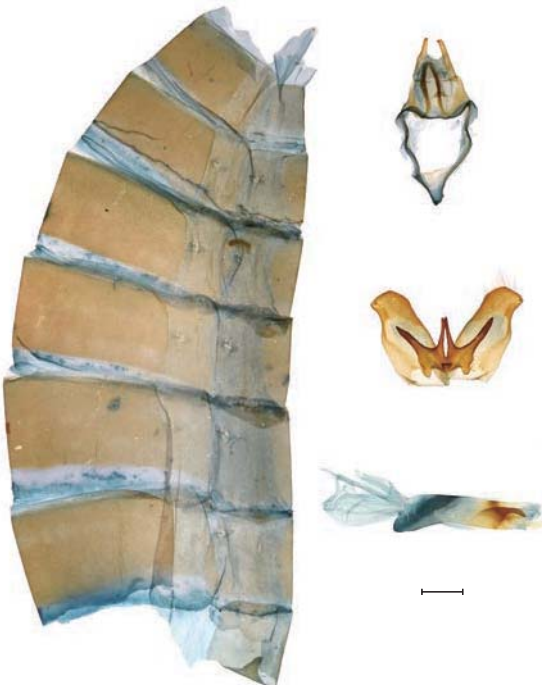


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166. *Celaenorrhinus major* Hsu, 1990 臺灣流星弄蝶  
♂. TAOYUAN CITY, Fuxing, Xuanyuan, VI. 29. 2015 (L. Huang) (genitalia preparation CJC 031).
167. *Celaenorrhinus maculosus taiwanus* Matsumura, 1919 大流星弄蝶  
♂. YILAN Co., Datong, Taipingshan, 1500 m, VII. 14. 2017 (C.W. Huang & L.H. Wang) (genitalia preparation CJC 150).
168. *Pseudocoladenia dan sadakoe* (Sonan & Mitono, 1936) 黃襟弄蝶  
♂. MIAOLI Co., Taian, Henglongshan, 1340/1430m, I. 26. 2003 (genitalia preparation JYL 358).
169. *Pseudocoladenia dan fabia* Evans, 1949 黃襟弄蝶  
♂. LIANJIANG Co., Nangan, Shengli Reservior, VI. 26. 2013 (genitalia preparation JYL 388).



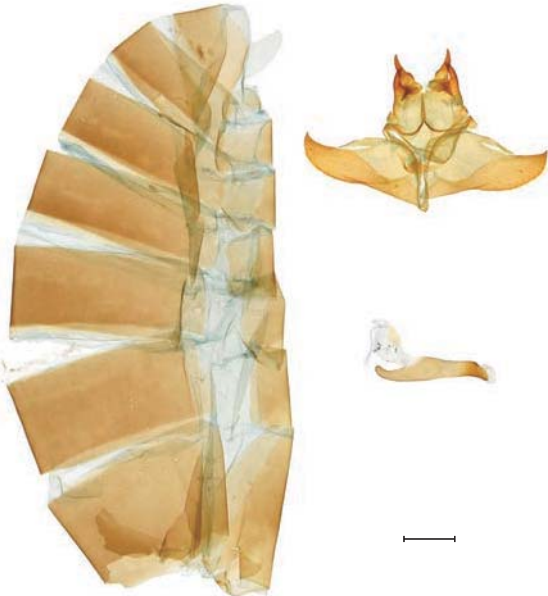
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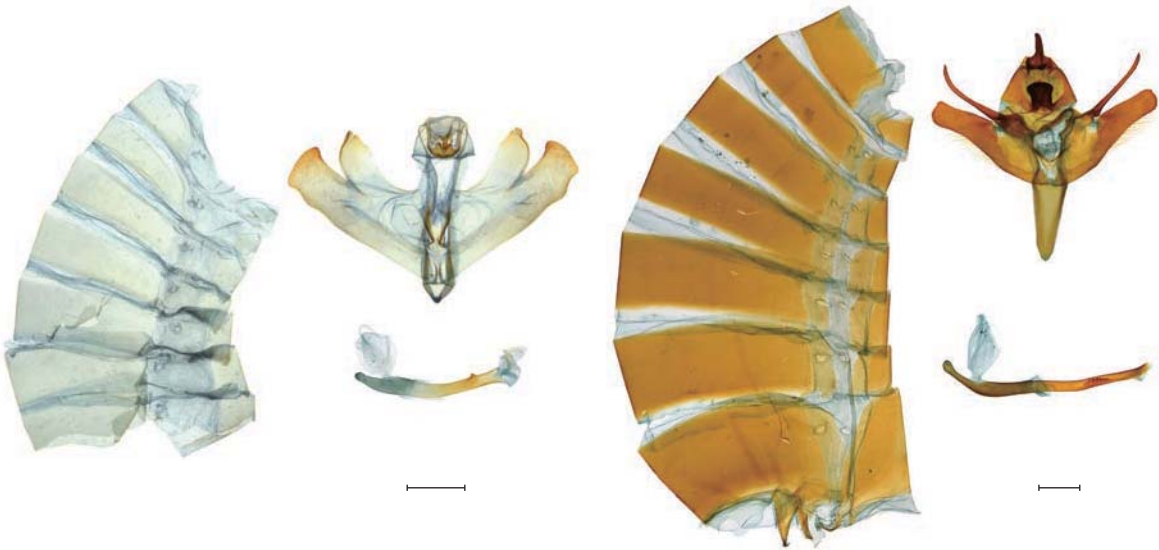


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170. *Coladenia pinsbukana* (Shimonoya & Murayama, 1976) 臺灣窗弄蝶  
♂. TAOYUAN CITY, Fuxing, Ronghua, IV. 7. 2016 (genitalia preparation JYL 296).
171. *Satarupa majasra* Fruhstorfer, 1909 小紋颯弄蝶  
♂. HUALIEN Co., Xiulin, Lungchien to Lunghai, VII. 10. 1991 (Y. F. Hsu) (genitalia preparation JYL 356).
172. *Satarupa formosibia* Strand, 1927 臺灣颯弄蝶  
♂. TAOYUAN CITY, Fuxing, Beiheng, III. 30. 2012 (C. H. Lin) (genitalia preparation JYL 354).
173. *Seseria formosana* (Fruhstorfer, 1909) 臺灣瑟弄蝶  
♂. YILAN Co., Jiaoxi, Wufengqi, VII. 15. 2015 (L. Huang) (genitalia preparation CJC 151).



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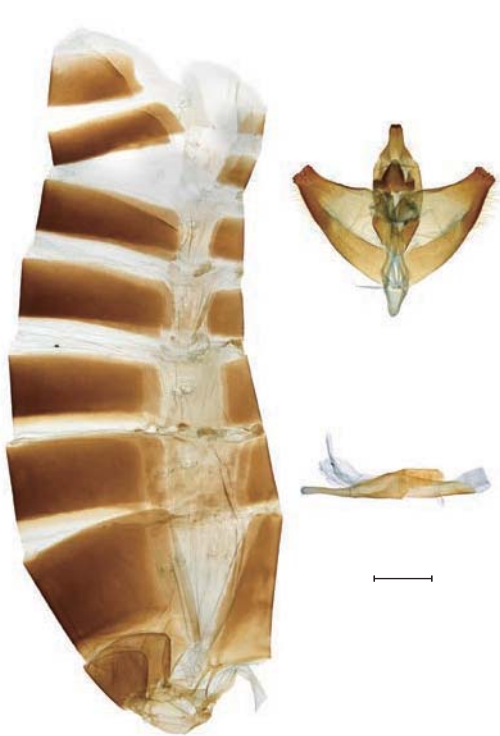
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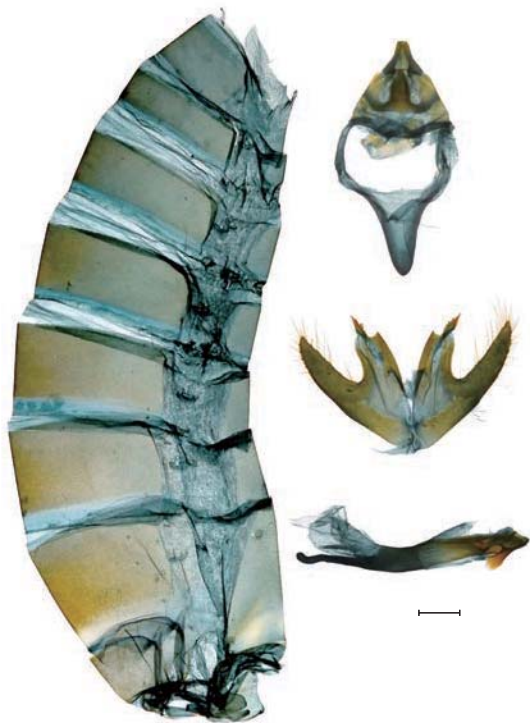
172

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174. *Tagiades cohaerens* Mabille, 1914 白裙弄蝶  
♂. TAIPEI CITY, Shilin, Erziping, VII. 6. 2011 (C. Y. Liao, C. H. Lee, Y. F. Hsu & H. C. Huang) (genitalia preparation JYL 372).
175. *Tagiades trebellius martinus* (Plötz, 1884) 熱帶白裙弄蝶  
♂. TAIDONG Co., Lanyu, VIII. 30. 2015 (L. Huang) (genitalia preparation CJC 107).
176. *Daimio tethys moori* (Mabille, 1876) 玉帶弄蝶  
♂. PINGDONG Co., Chunri, Dahanshan, V. 27. 2014 (J. Y. Liang) (genitalia preparation JYL 387).
177. *Abraximorpha davidii ermasis* (Fruhstorfer, 1914) 白弄蝶  
♂. XINBEI CITY [= TAIPEI Co.], Xindian, Baodao Lane, II. 11. 2015 (H. C. Huang & L. Huang) (genitalia preparation CJC 034).



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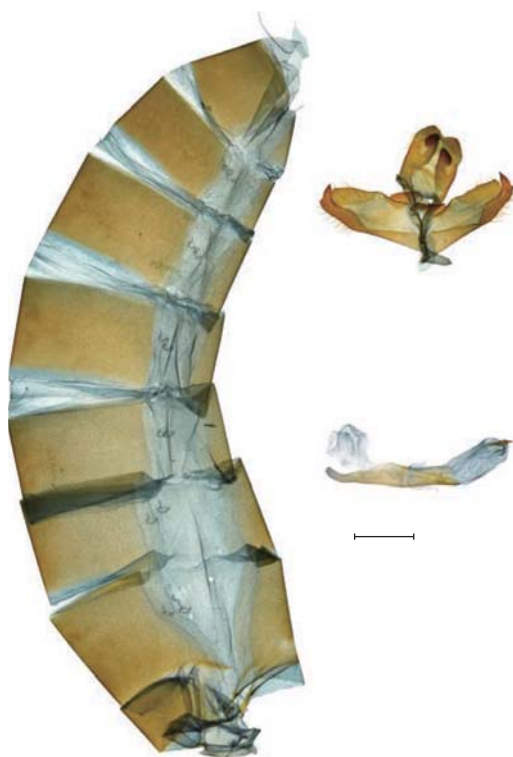


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178. *Ampittia dioscorides etura* (Mabille, 1891) 小黃星弄蝶  
♂. JINMEN Co., Jincheng, Kinmen Botanical Garden, VIII. 14. 2015 (H. C. Huang)  
(genitalia preparation CJC 167).
179. *Ampittia virgata myakei* Matsumura, 1910 黃星弄蝶  
♂. TAIPEI CITY, Shilin, Menghuanhu, VIII. 8. 2011 (Y. C. Lin & H. C. Chuang)  
(genitalia preparation JYL 370).
180. *Aeromachus inachus formosana* Matsumura, 1931 弧弄蝶  
♂. KAOHSIUNG CITY, Taoyuan, Shidong, 600m, VIII. 11. 2011 (Y. F. Hsu) (genitalia  
preparation JYL 385).
181. *Aeromachus bandaishanus* Murayama & Shimonoya, 1968 萬大弧弄蝶  
♂. HUALIAN Co., Xiulin, Bilu, VII. 5. 2015 (L. Huang) (genitalia preparation CJC  
164).



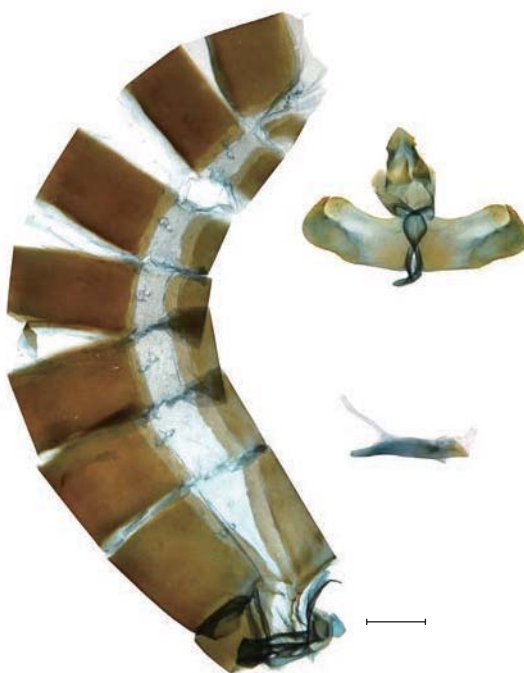
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182. *Onryza maga takeuchii* (Matsumura, 1929) 黃點弄蝶  
♂. HUALIAN Co., Xiulin, Guangbeibabiao, VII. 16. 2008 (L. H. Wang) (genitalia preparation JYL 362).
183. *Praethoressa horishana* (Matsumura, 1910) 臺灣脈弄蝶  
♂. TAIPEI CITY, Xiadian, Guishan Bridge, V. 6. 2007 (L. H. Wang) (genitalia preparation JYL 382).
184. *Halpe gamma* Evans, 1937 昏列弄蝶  
♂. TAOYUAN CITY, Fuxing, Sule, VII. 2. 2015 (L. Huang) (genitalia preparation CJC 035).
185. *Isoteinon lamprospilus formosanus* Fruhstorfer, 1911 白斑弄蝶  
♂. TAIDONG Co., Beinan, Lijia Logging Trail, VIII. 23. 2009 (J. H. Lin) (genitalia preparation JYL 380).



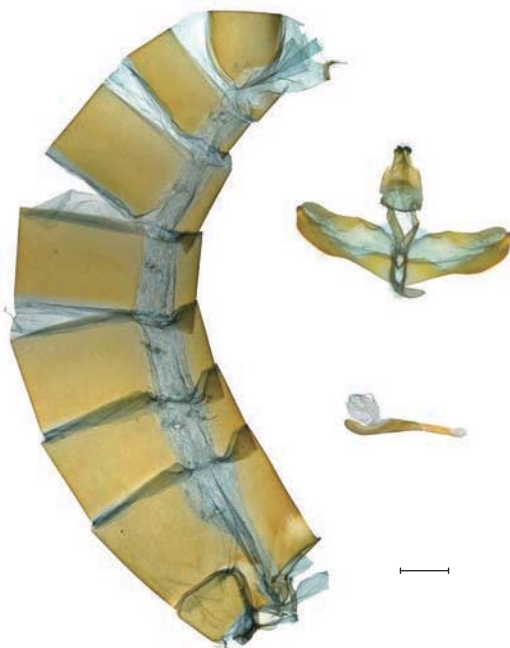
182



183

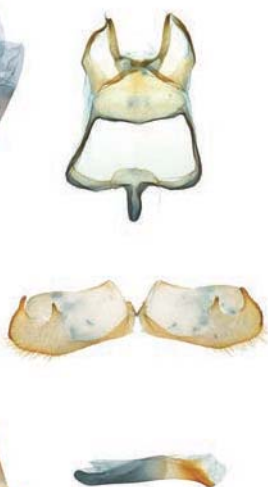


184

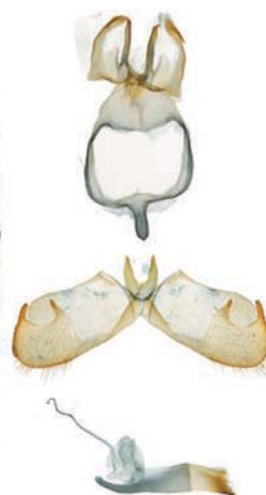


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186. *Notocrypta curvifascia* (C. & R. Felder, 1862) 袖弄蝶  
♂. XINBEI CITY [= TAIPEI Co.], Wulai, Hapen Ancient Trail 3K, VI. 7. 2015 (C. W. Huang) (genitalia preparation CJC 153).
187. *Notocrypta feisthamelii arisana* Sonan, 1930 連紋袖弄蝶 (臺灣亞種)  
♂. XINBEI CITY [= TAIPEI Co.], Shanxia, Manyueyuan, VI. 5. 1999 (genitalia preparation CJC 105).
188. *Notocrypta feisthamelii alinkara* Fruhstorfer, 1911 連紋袖弄蝶 (菲律賓亞種)  
♂. TAIDONG Co., Lanyu, VIII. 29. 2015 (L. Huang) (genitalia preparation CJC 168).
189. *Udaspes folus* (Cramer, [1775]) 薑弄蝶  
♂. TAIPEI CITY, Wenshan, Chanchushan, XI. 26. 2014 (L. Huang) (genitalia preparation CJC 169).



186



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188



189

190. *Suastus gremius* (Fabricius, 1798) 黑星弄蝶

♂. TAIDONG Co., Changbin, Ningpu, IX. 2. 2017 (J. Y. Liang) (genitalia preparation CJC 174).

191. *Erionota torus* Evans, 1941 蕉弄蝶

♂. MIAOLI Co., Guandaoshan, VII. 4. 2015 (L. Huang) (genitalia preparation CJC 088).

192. *Matapa aria* (Moore, [1866]) 瑪弄蝶

♂. JIMNEN CO., Jincheng, Shuitou, VIII. 29/30 2011(Y. F. Hsu & H. C. Huang) (genitalia preparation JYL 363).

193. *Ochlodes niitakanus* (Sonan, 1936) 臺灣赭弄蝶

♂. HUALIAN Co., Xiulin, Bilu, VII. 5. 2015 (L. Huang) (genitalia preparation CJC 014).



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194. *Ochlodes bouddha yuckingkinus* Murayama & Shimonoya, 1963 菩提赭弄蝶  
♂. HUALIAN Co., Xiulin, Bilu, VII. 5. 2015 (L. Huang) (genitalia preparation CJC 047).
195. *Potanthus confucius angustatus* (Matsumura, 1910) 黃斑弄蝶  
♂. MIAOLI Co., Sanyi, VI. 7. 2015 (L. Huang) (genitalia preparation CJC 165).
196. *Potanthus confucius confucius* (Felder & Felder, 1862) 黃斑弄蝶  
♂. JINMEN Co., Jincheng, Luojiang, X. 10. 2016 (L. Huang) (genitalia preparation JYL 366).
197. *Potanthus pava* (Fruhstorfer, 1911) 淡色黃斑弄蝶  
♂. TAIDONG Co., Lanyu, II. 21. 2009 (genitalia preparation CJC 108).



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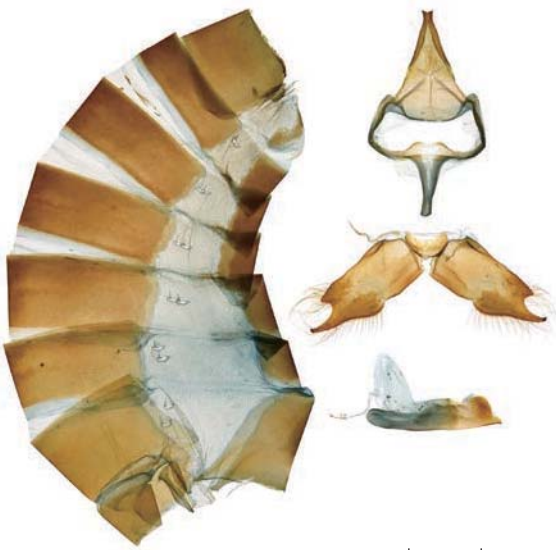


197

198. *Potanthus motzui* Hsu, Li & Li, 1990 墨子黃斑弄蝶  
♂. HUALIAN Co., Yuli, Yuancheng, II. 9. 2016 (J. Y. Liang) (genitalia preparation CJC 056).
199. *Potanthus diffusus* Hsu, Chiba & Tsukiyama, 2005 蓬萊黃斑弄蝶  
♂. TAIDONG Co., Haiduan, Lidao, V. 22. 2017 (L. Huang) (genitalia preparation CJC 082).
200. *Telicota ohara formosana* Fruhstorfer, 1911 寬邊橙斑弄蝶  
♂. TAIPEI CITY, Nangang, 202 Arsenal, IV. 15. 2015 (L. Huang) (genitalia preparation CJC 054).
201. *Telicota bambusae horisha* Evans, 1934 竹橙斑弄蝶  
♂. HUALIAN Co., Yuli, Yuancheng, II. 9. 2016 (J. Y. Liang) (genitalia preparation CJC 025).



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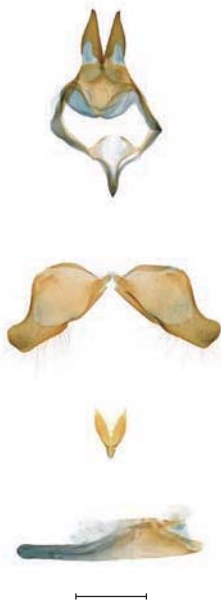


201

202. *Telicota colon hayashikeii* Tsukiyama, Chiba & Fujioka, 1997 熱帶橙斑弄蝶  
♂. TAIDONG Co., Ludao, IV. 9/11. 2015 (H. C. Huang) (genitalia preparation CJC 057).
203. *Telicota colon stinga* Evans, 1949 熱帶橙斑弄蝶  
♂. JINMEN Co., Kincheng, Gugang, XI. 5. 2013 (L. Huang) (genitalia preparation CJC 154).
204. *Parnara guttata* (Bremer & Grey, 1853) 稻弄蝶  
♂. LIANJIANG Co., Nangan, Siwei, IX. 5. 2014 (C. L. Huang & H. Y. Lee) (genitaliapreparation CJC 013).
205. *Parnara bada* (Moore, 1878) 小稻弄蝶  
♂. TAIPEI CITY, Nangang, 202 Arsenal, IV. 15. 2015 (L. Huang) (genitalia preparation CJC 069).



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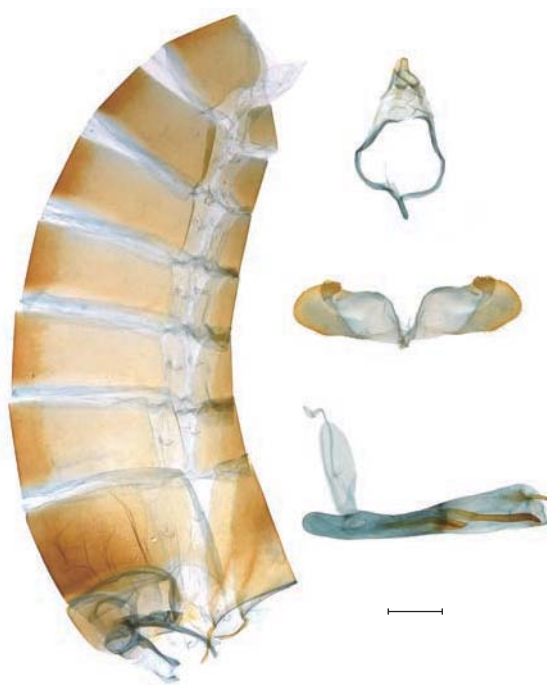
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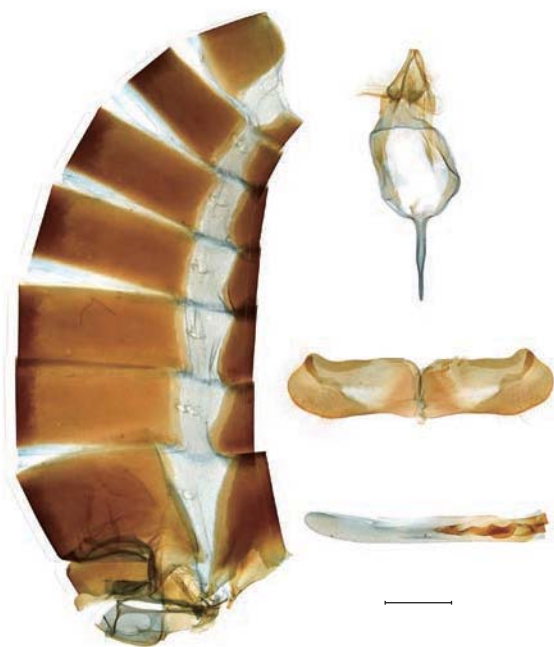
206. *Borbo cinnara* (Wallace, 1866) 禾弄蝶  
♂. TAIDONG Co., Changbin, Ningpu, IX. 2. 2017 (J. Y. Liang) (genitalia preparation CJC 171).
207. *Pseudoborbo bevani* (Moore, 1878) 假禾弄蝶  
♂. NANTOU Co., Renai, Huisun, IX. 10. 2010 (C. L. Huang) (genitalia preparation CJC 062).
208. *Pelopidas mathias oberthueri* Evans, 1937 褐弄蝶  
♂. JINMEN Co., Guganghu, XI. 5. 2013 (H. C. Huang & L. Huang) (genitalia preparation CJC 078).
209. *Pelopidas agna* (Moore, [1866]) 尖翅褐弄蝶  
♂. TAINAN CITY, Xinhua, Zhiyi, XII. 30. 2016 (H. C. Huang & L. Huang) (genitalia preparation CJC 092).



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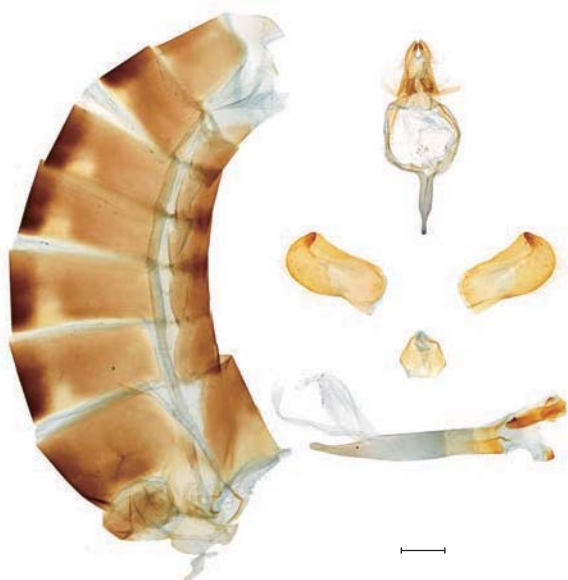


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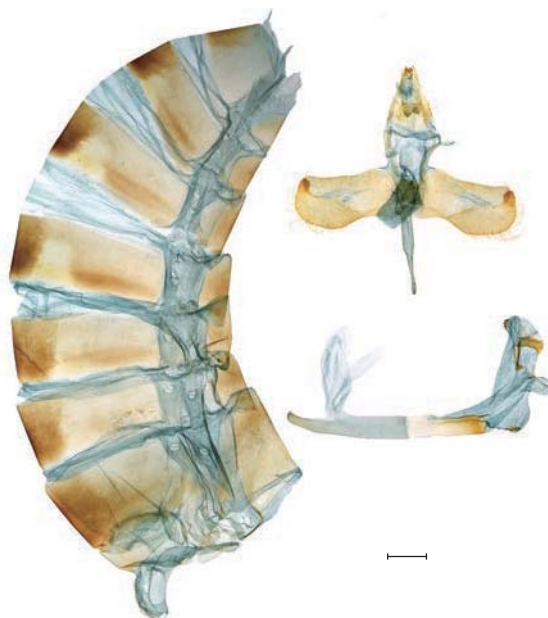


209

210. *Pelopidas sinensis* (Mabille, 1877) 中華褐弄蝶  
♂. NANTOU Co., Luh, Xitou, Youshuikeng, VI. 3. 1997, reared from *Pennisetum purpureum*, emgd. VII. 2. 1997, HSU 97F07 (Y. F. Hsu & C. C. Lu) (genitalia preparation JYL 299).
211. *Pelopidas conjuncta* (Herrich-Schäffer, 1869) 巨褐弄蝶  
♂. TAIPEI CITY, Shilin, Jiannan Road, IX. 26. 2008 (genitalia preparation JYL 393).
212. *Polytremis lubricans kuyaniana* (Matsumura, 1919) 黃紋孔弄蝶  
♂. KAOHSIUNG CITY, Taoyuan, Meishan, III. 30. 2017 (H. C. Huang & L. Huang) (genitalia preparation CJC 094).
213. *Zinonoida eltola tappana* (Matsumura, 1919) 碎紋弄蝶  
♂. PINGDONG Co., Chunri, Dahanshan, V. 14. 2016 (C. W. Huang) (genitalia preparation CJC 156).



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214. *Polytremis zina asahinai* (Shirôzu, 1952) 長紋禪弄蝶  
♂. TAIPEI CITY, Beitou, Menghuanhu, VI. 15. 2015 (L. Huang) (genitalia preparation CJC 157).
215. *Zinaida kiraizana* (Sonan, 1938) 奇萊禪弄蝶  
♂. YILAN Co., Datong, Cuifenghu, VIII. 27. 2014 (genitalia preparation CJC 060).
216. *Caltoris ranrunna* (Sonan, 1936) 臺灣黯弄蝶  
♂. TAIDONG Co., Beinan, Zhiben Logging Trail, XI. 31. 2015 (L. Huang) (genitalia preparation CJC 060).
217. *Caltoris cahira austeni* (Moore, [1884]) 黯弄蝶  
♂. LIANJIANG Co., Nangan, Jieshou, VII. 17. 2003 (L. W. Wu & Y. A. Lin) (genitalia preparation JYL 395).



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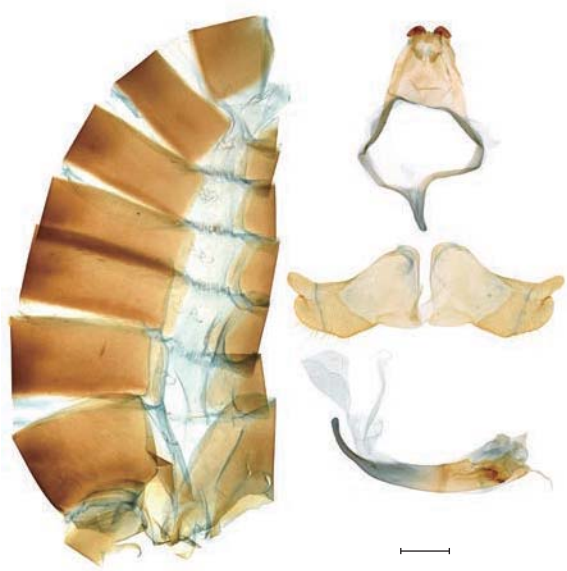
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218. *Caltoris bromus yanuca* (Fruhstorfer, 1911) 變紋黯弄蝶

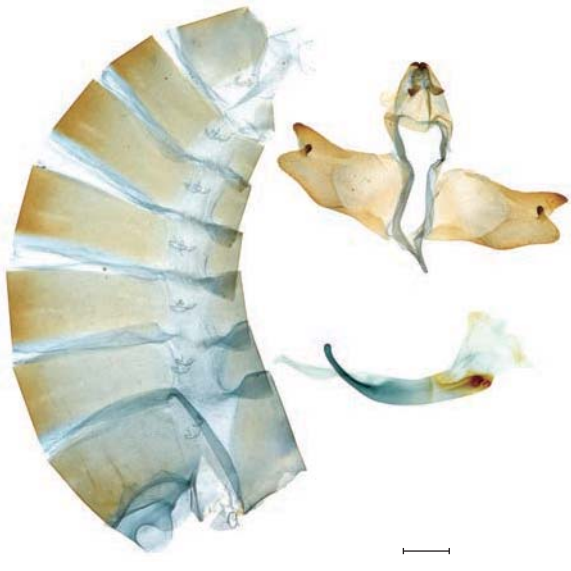
♂. TAIPEI CITY, Wenshan, NTNU Gongguan Campus, IV. 3. 2014 (L. Huang)  
(genitalia preparation CJC 096).

219. *Caltoris bromus bromus* (Leech, 1893) 變紋黯弄蝶

♂. LIANJIANG Co., Beigan, Nigushan, I. 11. 2018 (C. L. Huang *et al.*) (genitalia  
preparation CJC 059).



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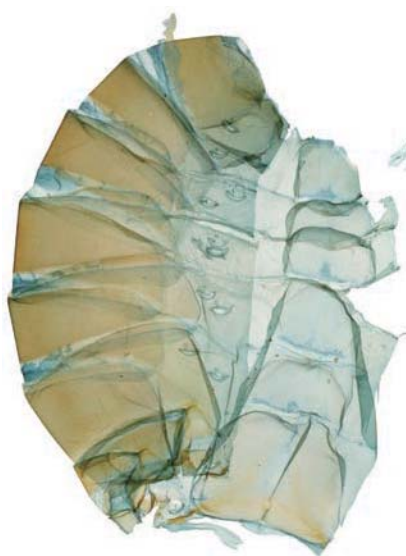


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## FEMALE GENITALIA

Note. Scale bars represent 1 mm.

220. *Burara jaina formosana* (Fruhstorfer, 1911) 橙翅傘弄蝶  
♀. HUALIEN Co., Xiulin, Shikongzai, 60m, IV. 25. 2008, reared from *Hiptage benghalensis*, emgd. V. 27. 2008, HSU 08D18 (L. H. Wang) (genitalia preparation YMH 016).
221. *Burara gomata* (Moore, 1866) 白傘弄蝶  
♀. HONG KONG, Fanlinh, Hok Tai, emgd. X. 15. 1991 (J. Young) (genitalia preparation JYL 390).
222. *Hasora badra* (Moore, [1858]) 鐵色絨弄蝶  
♀. TAIPEI CITY, Wenshan, Gongguan campus, NTNU, XI. 10. 2015, reared from *Paraderris pictoria*, emgd. X. 26/29. 2015, HSU 15L39 (L. Huang & L. H. Wang) (genitalia preparation YMH 022).
223. *Hasora mixta limata* Hsu & Huang, 2008 南風絨弄蝶  
♀. TAIDONG Co., Lanyu, Zhongai Bridge, VIII. 30. 2015, (L. Huang) (genitalia preparation YMH 002).



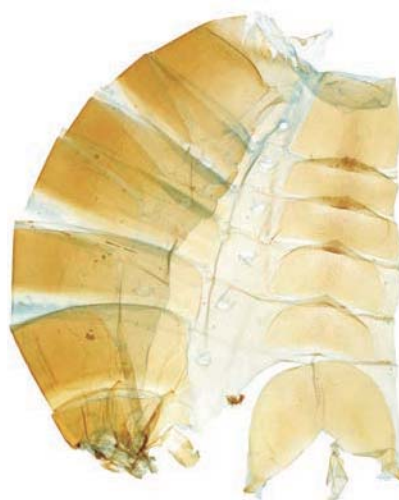
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221



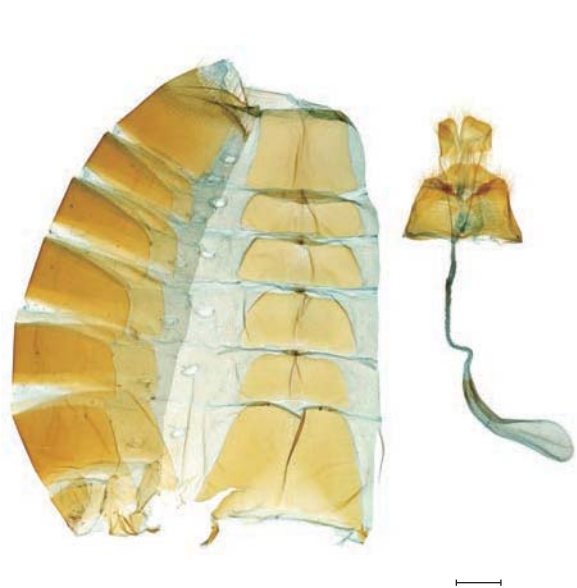
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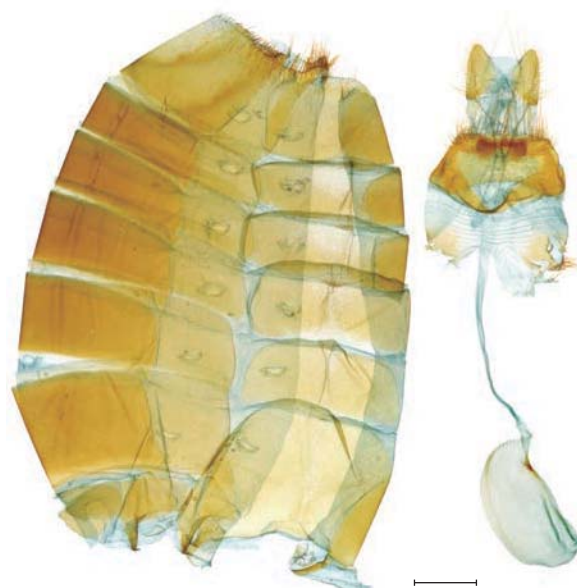
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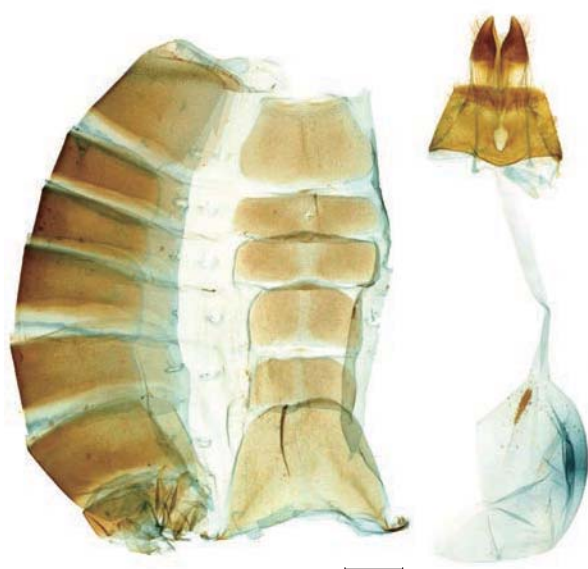
224. *Hasora anura taiwana* Hsu, Tsukiyama & Chiba, 2005 無尾絨弄蝶  
♀. NANTOU Co., Yuchi, Lianhuachi, 700m, 13. VI. 2004 (L. H. Wang) (genitalia preparation YMH 027).
225. *Hasora chromus* (Cramer, [1780]) 尖翅絨弄蝶  
♀. NANTOU CO., Xinyi, Heshe, II. 19. 2016 (Y. M. Hsu) (genitalia preparation YMH 019).
226. *Hasora taminatus vairacana* Fruhstorfer, 1911 圓翅絨弄蝶  
♀. TAOYUAN CITY, Fuxing, Xuanyuan, VI. 9. 2016 (L. Huang) (genitalia preparation YMH 007).
227. *Badamia exclamationis* (Fabricius, 1775) 長翅弄蝶  
♀. TAIDONG Co., Ludao, Guoshan Ancient Trail, IX. 25. 2014 (B. G. Huang) (genitalia preparation YMH 010).



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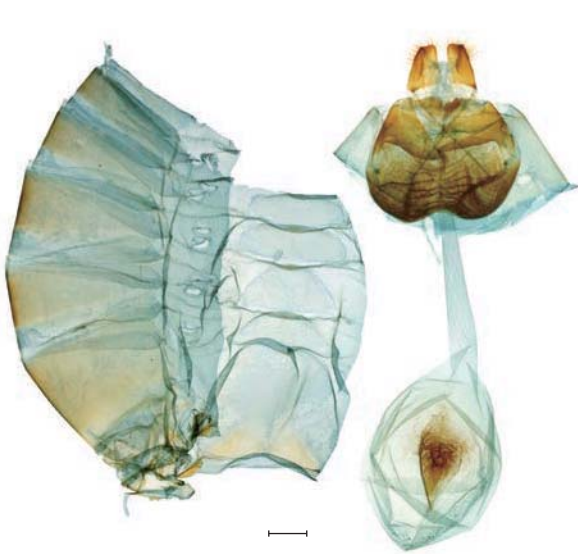


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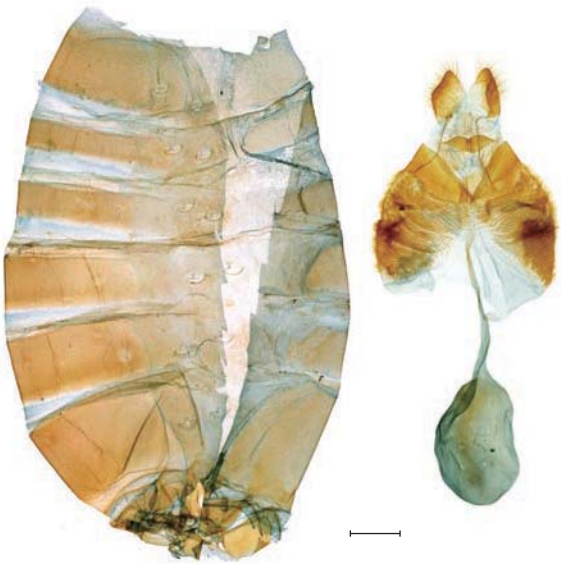


227

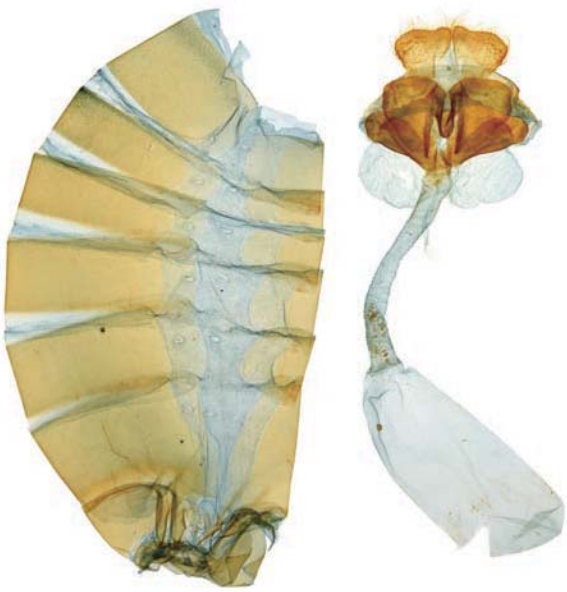
228. *Choaspes benjaminii formosanus* (Fruhstorfer, 1911) 綠弄蝶  
♀. TAIPEI CITY, Sanzhi, Sanbanqiao, VI. 17. 2016 (J. Y. Liang) (genitalia preparation JYL235).
229. *Choaspes xanthopogon chrysopterus* Hsu, 1988 褐翅綠弄蝶  
♀. XINBEI CITY, Wulai, Datongshan, IV. 13. 2007, reared from *Sabia swinhoei*, emgd. V. 19/26. 2007, HSU 07D15 (L. H. Wang) (genitalia preparation YMH018).
230. *Lobocla bifasciata kodairai* Sonan, 1936 雙帶弄蝶  
♀. NANTOU Co., Renai, Songgang, VII. 22. 2000 (H. W. Chang) (genitalia preparation JYL298).
231. *Pyrgus maculatus bocki* (Oberthür, 1912) 花弄蝶  
♀. JINMEN Co., Jinhu, Shenshiqiao, VIII. 13. 2015 (H. C. Huang & L. Huang) (genitalia preparation CJC 077).



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232. *Celaenorrhinus pulomaya formosanus* Fruhstorfer, 1909 尖翅星弄蝶

♀. NANTOU Co., Xinyi, Batongguan, VIII. 18. 1989 (W. B. Huang) (genitalia preperation JYL 348).

233. *Celaenorrhinus kurosawai* Shirôzu, 1960 黑澤星弄蝶

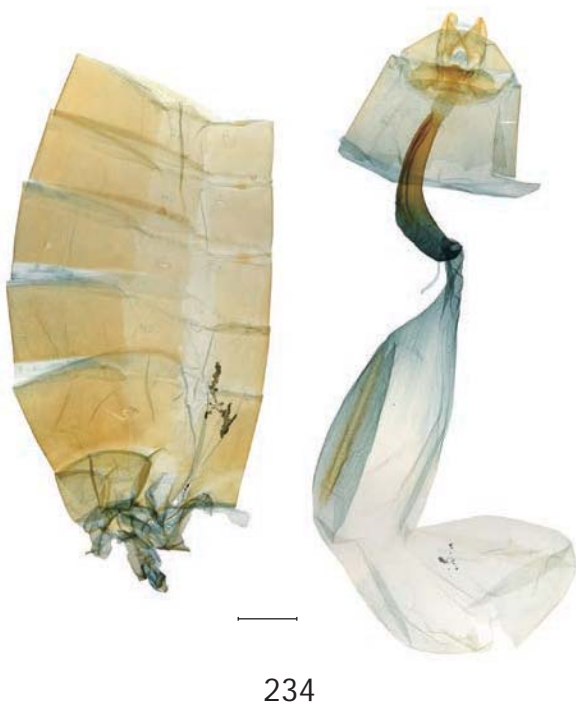
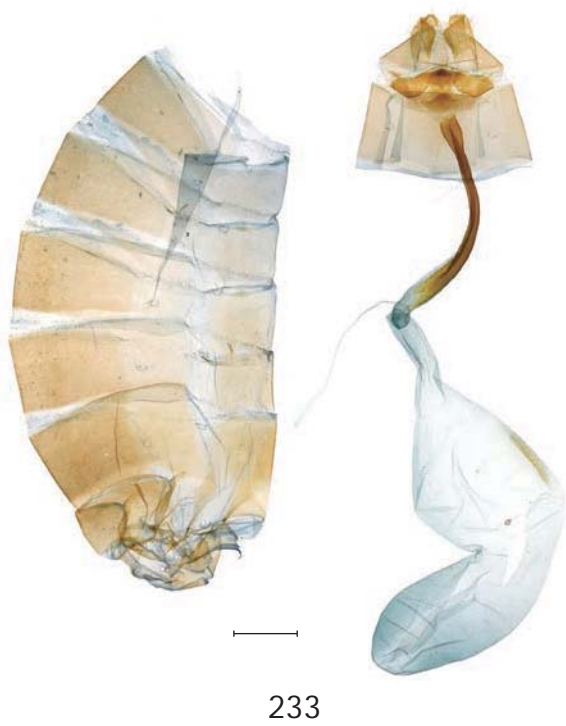
♀. HUALIAN Co., Xiulin, Kuailin, 2100 m, IX. 10. 2008 (L. H. Wang) (genitalia preperation JYL 347).

234. *Celaenorrhinus ratna* Fruhstorfer, 1908 小星弄蝶

♀. YILAN Co., Nanao, Shenmi Lake, 1100 m, VII. 24. 1999 (Y. F. Hsu) (genitalia preperation JYL 343).

235. *Celaenorrhinus horishanus* Shirôzu, 1960 埔里星弄蝶

♀. PINGDONG Co., Wutai, Wutoushan, 1200 m, VI. 26. 2003 (C. L. Huang & L. W. Wu) (genitalia preperation JYL 341).



236. *Celaenorrhinus major* Hsu, 1990 臺灣流星弄蝶  
♀. TAOYUAN CITY, Fuxing, Baleng, VII. 1993 (S. H. Yen) (genitalia preperation JYL 340).
237. *Celaenorrhinus maculosus taiwanus* Matsumura, 1919 大流星弄蝶  
♀. YILAN Co., Datong, Taipingshan, 1500 m, VII. 14. 2017 (C. W. Huang & L. H. Wang) (genitalia preperation CJC 046).
238. *Pseudocoladenia dan sadakoe* (Sonan & Mitono, 1936) 黃襟弄蝶  
♀. MIAOLI Co., Taian, Henglongshan, 1340/1430 m, I. 26. 2003 (Y. F. Hsu, S. C. Chen, C. C. Lu & J. R. Chen) (genitalia preperation JYL 357).
239. *Pseudocoladenia dan fabia* Evans, 1949 黃襟弄蝶  
♀. LIANJIANG Co., Nangan, Shengli Reservior, VI. 26. 2013 (genitalia preperation CJC 081).



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240. *Coladenia hoenei* Evans, 1939 花窗弄蝶  
♀. JIANGXI PROV., Yichun, Jingan, Sanzhualun, VI. 20/23. 2001 (Y. F. Hsu) (genitalia preperation JYL 376).
241. *Satarupa majasra* Fruhstorfer, 1909 小紋峯弄蝶  
♀. YILAN Co., Datong, 1600m, VIII. 11. 2009 (Y. F. Hsu) (genitalia preperation JYL 355).
242. *Satarupa formosibia* Strand, 1927 臺灣峯弄蝶  
♀. NANTOU Co., Renai, Tunyuan, 2000m, VII. 6. 2012 (Y. F. Hsu) (genitalia preperation JYL 353).
243. *Seseria formosana* (Fruhstorfer, 1909) 臺灣瑟弄蝶  
♀. TAIPEI CITY, Nangang, Academia Sinica, IX. 20 2012, reared from *Cinnamomun camphora*, HSU 12J19 (L. W. Wu) (genitalia preperation CJC 085).



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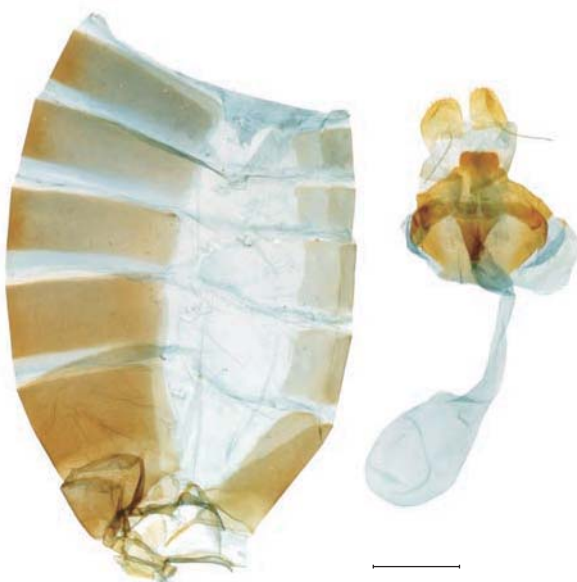
244. *Tagiades cohaerens* Mabille, 1914 白裙弄蝶  
♀. XINBEI CITY, Shiding, Ergershan, V. 26. 202 (H. C. Chuang) (genitalia preperation JYL 371).
245. *Tagiades trebellius martinus* (Plötz, 1884) 熱帶白裙弄蝶  
♀. TAIDONG Co., Lanyu, Zhongai Bridge, VI. 29. 2012 (genitalia preperation CJC 049).
246. *Daimio tethys moori* (Mabille, 1876) 玉帶弄蝶  
♀. TAIPEI CITY, Shilin, Pingding Historical Canal Trail, VI. 15. 2015 (L. Huang) (genitalia preperation CJC 018).
247. *Abraximorpha davidii ermasis* (Fruhstorfer, 1914) 白弄蝶  
♀. NANTOU Co., Renai, Beidongyanshan, IX. 17. 2018 (Y. F. Hsu) (genitalia preperation JYL 367).



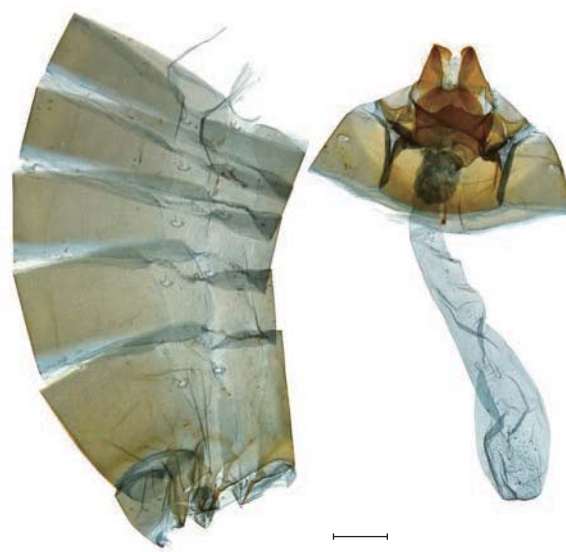
244



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248. *Ampittia dioscorides etura* (Mabille, 1891) 小黃星弄蝶  
♀. CHIAYI CITY, Lantan campus of NCYU, I. 26/27. 2015 (L. Huang) (genitalia preperation CJC 050).
249. *Ampittia virgata myakei* Matsumura, 1910 黃星弄蝶  
♀. TAIPEI CITY, Beitou, Xinyi Rd., IX. 8. 2018 (genitalia preperation JYL 383).
250. *Aeromachus inachus formosana* Matsumura, 1931 弧弄蝶  
♀. PINGDONG Co., Wutai, Ailiaobeixi-Bayouxi, 500/900 m, III. 14. 2008 (Y. F. Hsu & H.C. Huang) (genitalia preperation JYL 384).
251. *Aeromachus bandaishanus* Murayama & Shimonoya, 1968 萬大弧弄蝶  
♀. TAIDONG Co., Haiduan, Xiangyang, 2350 m, V. 22. 2017 (J. Y. Liang) (genitalia preperation JYL 294).



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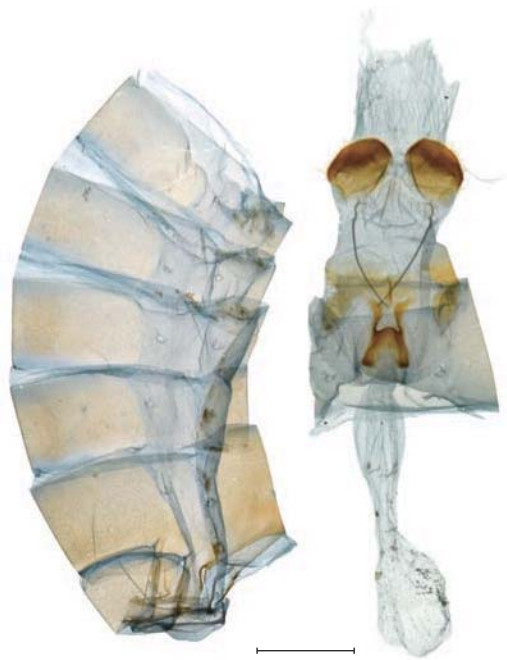


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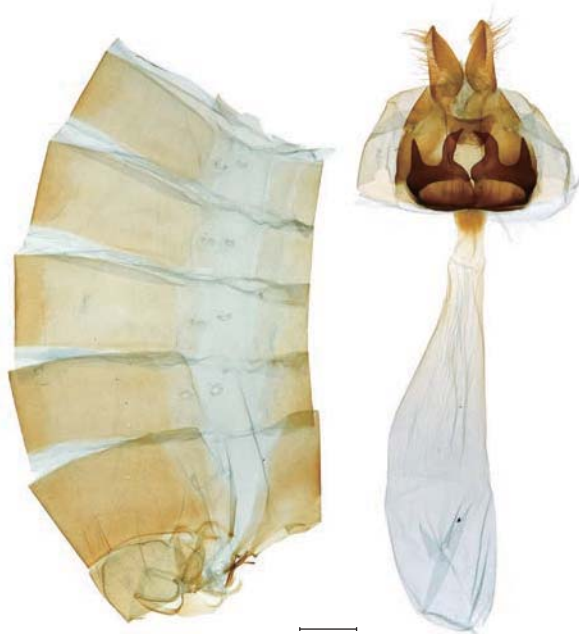
252. *Onryza maga takeuchii* (Matsumura, 1929) 黃點弄蝶  
♀. NANTOU Co., Xiaofengkou, VII. 08. 2018 (Y. F. Hsu) (genitalia preparation JYL 352).
253. *Praethoressa horishana* (Matsumura, 1910) 臺灣脈弄蝶  
♀. HUALIAN Co., Xiulin, Lushui, X. 16. 2018 (genitalia preparation JYL 369).
254. *Halpe gamma* Evans, 1937 昏列弄蝶  
♀. XINZHU Co., Guanxi, Shanglin orchard, VIII. 22. 2007 (C. C. Lu) (genitalia preparation JYL 381).
255. *Isoteinon lamprospilus formosanus* Fruhstorfer, 1911 白斑弄蝶  
♀. HUALIAN Co., Wangrong, Wanronglindao, IX. 15. 2010 (Z. H. Yen) (genitalia preparation CJC 161).



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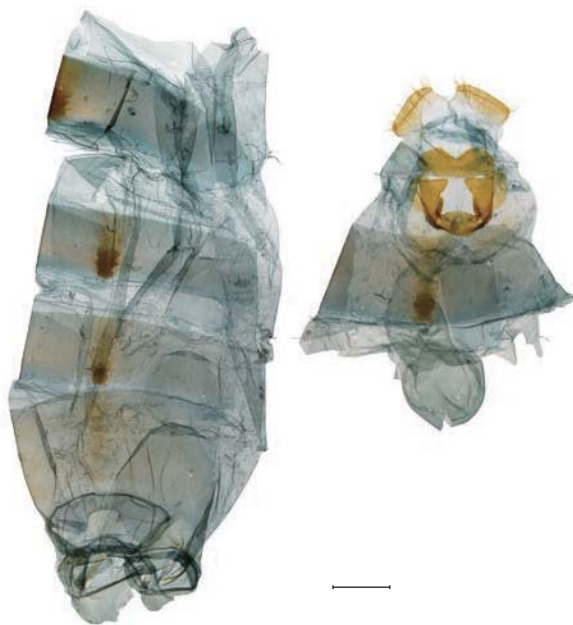
256. *Notocrypta curvifascia* (C. & R. Felder, 1862) 袖弄蝶  
♀. XINBEI CITY, Wulai, Badaoershan, V. 14. 2015 (L. Huang) (genitalia preparation KYH 010).
257. *Notocrypta feisthamelii arisana* Sonan, 1930 連紋袖弄蝶 (臺灣亞種)  
♀. TAOYUAN Co., Fuxing, Beichatianshan, V. 06. 2000 (genitalia preparation CJC 106).
258. *Notocrypta feisthamelii alinkara* Fruhstorfer, 1911 連紋袖弄蝶 (菲律賓亞種)  
♀. TAIDONG Co., Lanyu, Zhongaiqiao, VIII. 27. 2015 (L. Huang) (genitalia preparation CJC 104).
259. *Udaspes folus* (Cramer, [1775]) 薑弄蝶  
♀. XINBEI CITY, Wulai, Minigu, V. 16. 2015 (L. Huang) (genitalia preparation CJC 086).



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260. *Suastus gremius* (Fabricius, 1798) 黑星弄蝶

♀. HUALIAN Co., Zhuoxi, Batongguan, VIII. 23. 2014 (genitalia preparation CJC 022).

261. *Erionota torus* Evans, 1941 蕉弄蝶

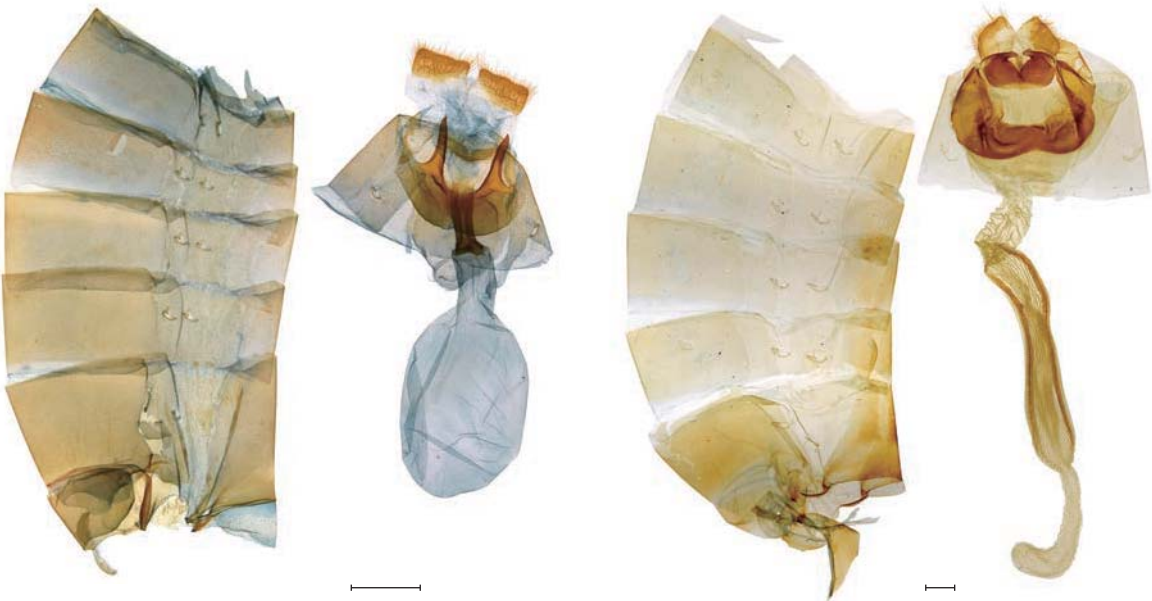
♀. MIAOLI Co., Guandaoshan, VII. 04. 2015, emgd. VII. 14. 2015 (L. Huang) (genitalia preparation CJC 073).

262. *Matapa aria* (Moore, [1866]) 瑪弄蝶

♀. JINMEN Co., Jinhu, Qionglin, VIII. 13. 2015 (L. Huang) (genitalia preparation CJC 175).

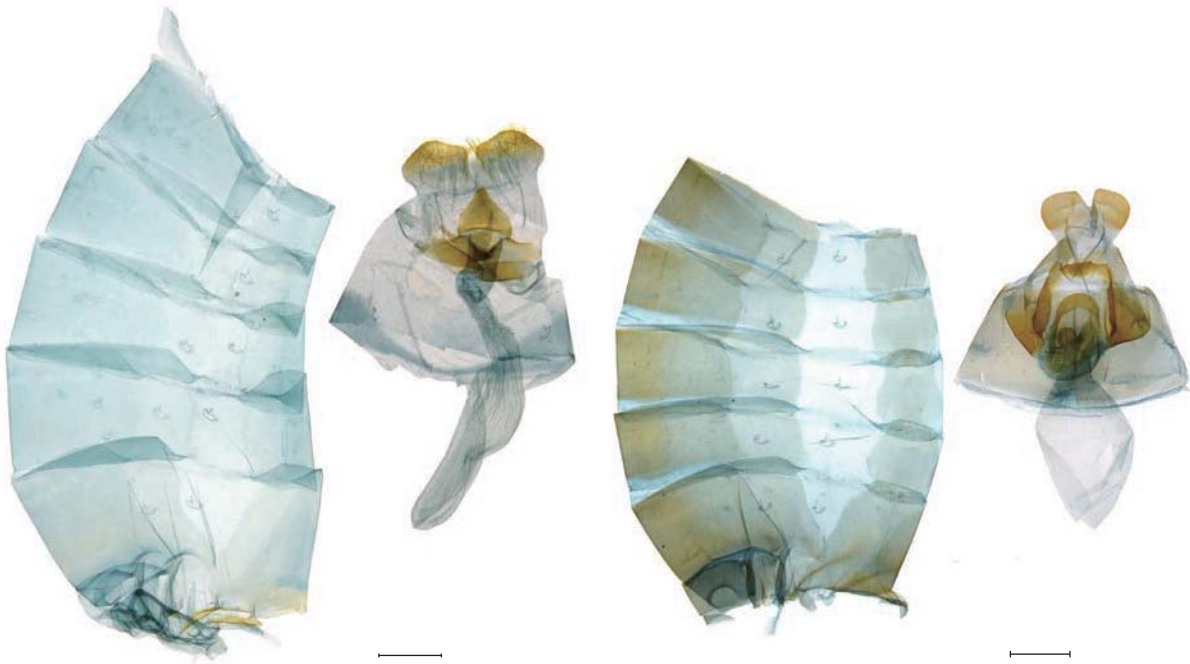
263. *Ochlodes niitakanus* (Sonan, 1936) 臺灣赭弄蝶

♀. HUALIAN Co., Bilu, VI. 25. 2016 (L. H. Wang) (genitalia preparation CJC 163).



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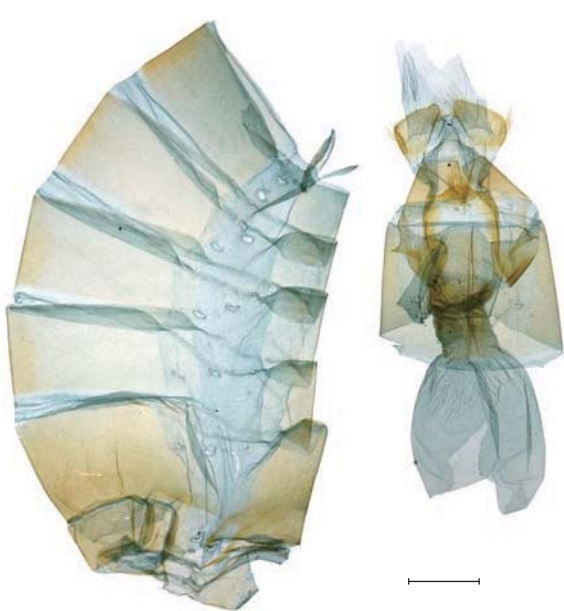
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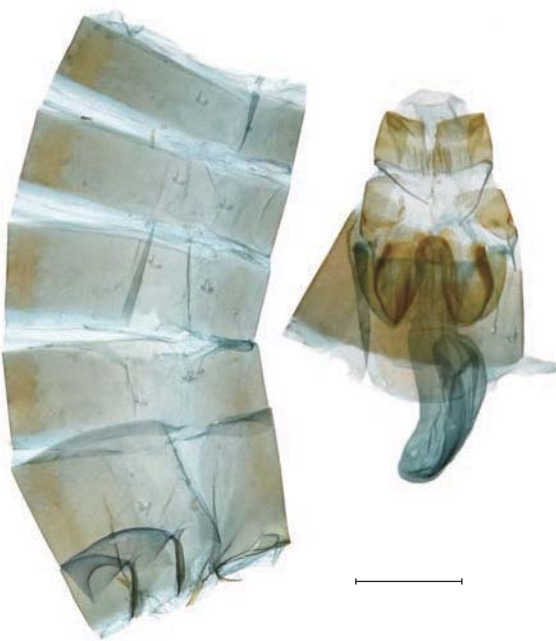
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264. *Ochlodes bouddha yuckinginus* Murayama & Shimonoya, 1963 菩提赭弄蝶  
♀. TAOYUAN Co., Fuxing, Baleng, Shenmu, VII. 10. 1982 (genitalia preparation JYL 364).
265. *Potanthus confucius angustatus* (Matsumura, 1910) 黃斑弄蝶  
♀. TAIZHONG CITY, Wufeng, XII. 28. 2012, reared from *Phragmites vallatoria*, emgd I. 25. 2013, HSU 12M23 (Y. F. Hsu) (genitalia preparation CJC 053).
266. *Potanthus confucius confucius* (Felder & Felder, 1862) 黃斑弄蝶  
♀. LIANJIANG Co., Beigan, Tangqi, VIII. 27. 2000, reared from *Panicum* sp., emgd. IX. 5. 2000, HSU 00G45 (Y. F. Hsu) (genitalia preparation JYL 365).
267. *Potanthus pava* (Fruhstorfer, 1911) 淡色黃斑弄蝶  
♀. TAIDONG Co., Lanyu, X. 26. 2008 (genitalia preparation CJC 109).



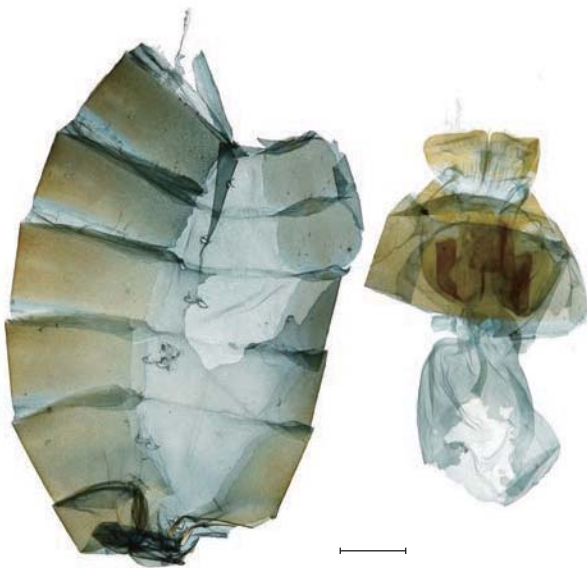
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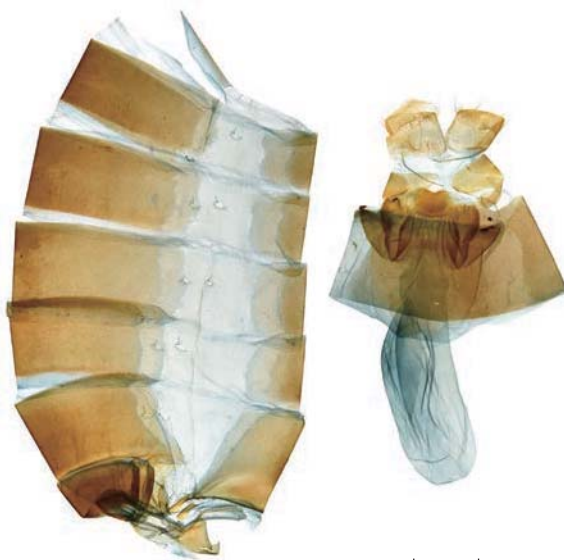


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♀. NANTOU Co., Renai, Huisun, X. 02. 2016 (L. Huang) (genitalia preparation CJC 083).
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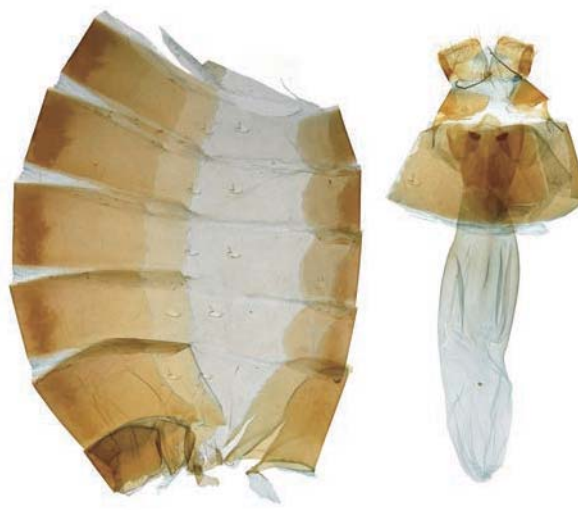
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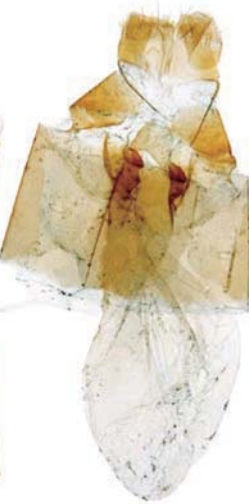
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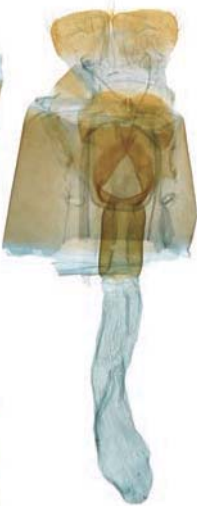
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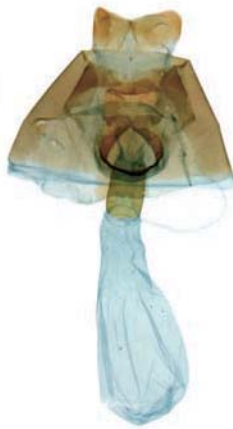
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♀. JINMEN Co., Jincheng, Gugang, VIII. 15. 2015 (L. Huang) (genitalia preparation CJC 074).

277. *Pseudoborbo bevani* (Moore, 1878) 假禾弄蝶

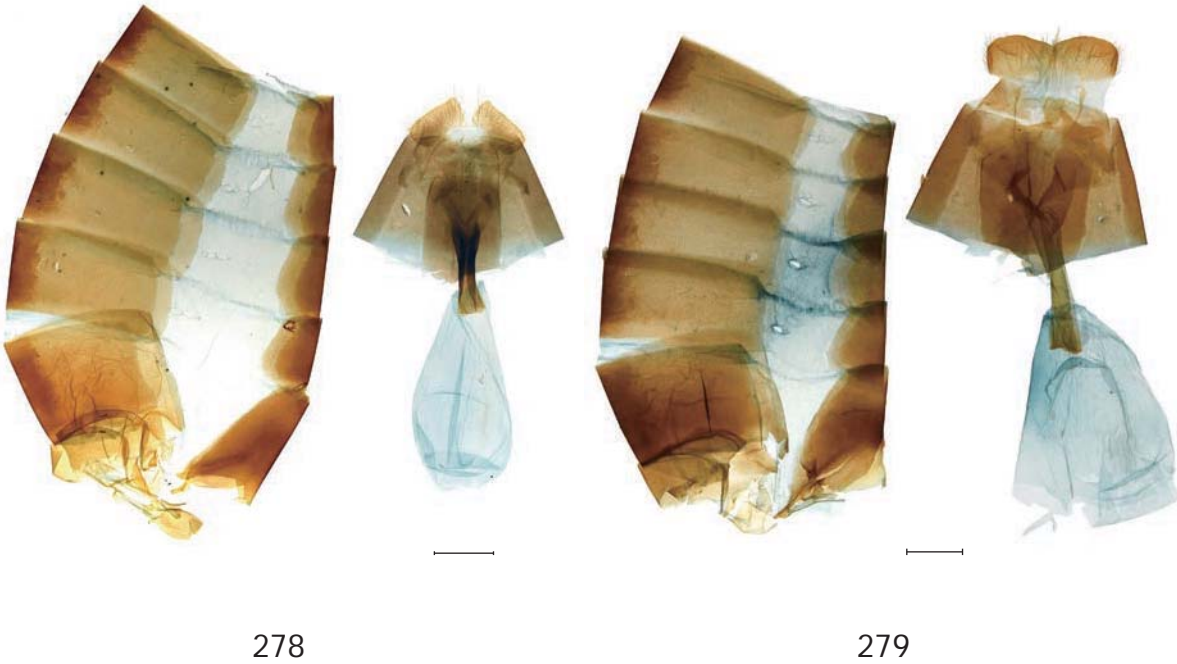
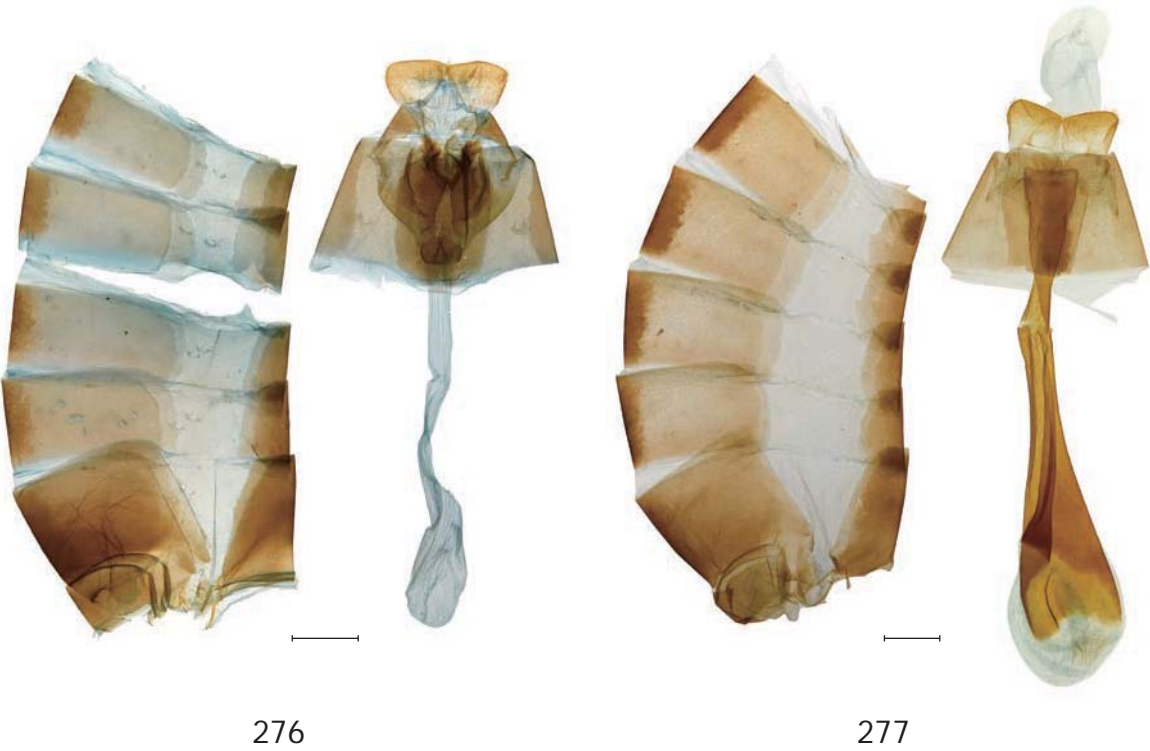
♀. NANTOU Co., Renai, Huisun, ca 700m, XI. 14. 2004 (Y. F. Hsu) (genitalia preparation JYL 375).

278. *Pelopidas mathias oberthueri* Evans, 1937 褐弄蝶

♀. JINMEN Co., Guganghu, XI. 05. 2013 (H. C. Huang & C. L. Huang) (genitalia preparation CJC 079).

279. *Pelopidas agna* (Moore, [1866]) 尖翅褐弄蝶

♀. TAIPEI CITY, Beitou, Guandu, VI. 29. 2017 (L. Huang) (genitalia preparation CJC 093).



280. *Pelopidas sinensis* (Mabille, 1877) 中華褐弄蝶

♀. NANTOU Co., Dongpu, XII. 07. 2011 (J. P. Su) (genitalia preparation JYL 386).

281. *Pelopidas conjuncta* (Herrich-Schäffer, 1869) 巨褐弄蝶

♀. NANTOU Co., Yuchi, Lianhuachi, I. 24. 1999 (C. Y. Hung) (genitalia preparation JYL 360).

282. *Polytremis lubricans kuyaniana* (Matsumura, 1919) 黃紋孔弄蝶

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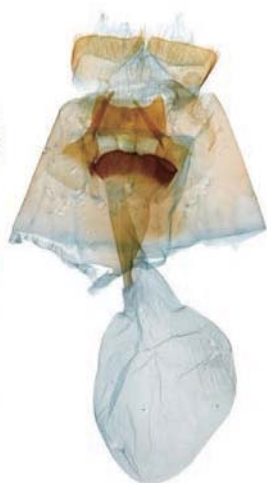
♀. NANTOU Co., Renai, Aowanda National Forest Recreation Area, 1200 m, VII. 27. 2016 (L. Huang) (genitalia preparation CJC 084).



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