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Cover: Green Sea Turtle *Chelonia mydas* watercolour by Elakshi Mahika Molur.



INTRODUCTION

The family Sphingidae, commonly known as hawkmoths, consists of more than 1,700 species of small to huge moths (wingspans ranging 25–200 mm) that are found worldwide except for Antarctica (Kitching et al. 2018). Zolotuhin & Ryabov (2012) reported 174 hawkmoth species from Vietnam, of which 91 were recorded from the Central Highlands. The Central Highlands includes five provinces, Kon Tum, Gia Lai, Dak Lak, Dak Nong, and Lam Dong (Figure 1), and is topographically dominated by the Annamese Mountains (Truong Son Ranges). The World Wide Fund for Nature has highlighted the rainforests on the northern and southern Truong Son Ranges as global ecoregions that have unique species, communities, and geographical conditions, with globally outstanding biodiversity (Olson et al. 2001).

The moths of the Central Highlands region have not been extensively studied, with very few publications mentioning Sphingidae. Hoang et al. (2011) reported 259 species of Lepidoptera belonging to 27 families, including 22 species and subspecies of Sphingidae, from a survey along the Ho Chi Minh trail through four provinces in the Central Highlands (Kon Tum, Gia Lai, Dak Lak, and Dak Nong). In this paper, the available data on the geographic distributions and taxonomy of the Sphingidae from the Central Highlands of Vietnam was reviewed. Field surveys were undertaken to add to these data and combine the review data with the field data to provide an updated checklist.

MATERIALS AND METHODS

The study area

The Central Highlands extend from the northern borders of Quang Nam province to the southern borders of Gia Lai province. The climate is monsoon tropical with a warm winter, a rainy summer, and a very high annual level of precipitation (3,500–4,500 mm). Two main vegetation types are found: evergreen forest at low and medium altitudes and evergreen mountain forest (1,000–2,500 m) on silicate soils. Surveys were undertaken in the National Parks (NP), Nature Reserves (NR), and forests in four provinces of the Central Highlands region (Kon Tum, Gia Lai, Dak Nong, and Lam Dong provinces) during the years 2016–2022. The region covered by this study comprises Tu Mo Rong district in 2018, Kon Plong district in 2016 and 2019, Dak Glei district in 2019 (Kon Tum province), Kon Ka Kinh NP in 2019, and Kon Chu

Rang NR in 2016 and 2019 (Gia Lai province), Nam Nung NR in 2017 and 2020 (Dak Nong province), Bidoup-Nui Ba NP in 2020 and 2022, and the Di Linh Plateau in 2020 (Lam Dong province).

Methods

Specimens were collected using light traps consisting of two 250-watt mercury-vapour lamps powered by a small generator. The light sources were placed in front of a 200 x 300 cm white linen sheet and, if required, protected from the rain by an umbrella. Beck & Linsenmair (2005) showed that the abundance of specimens at light influenced by moonlight and moonless nights produced the highest specimen counts, so to avoid the negative effect of the moon, our collecting was carried out from a week before the new moon until a week after. The traps were run from about half an hour after the sunset to half an hour before the sunrise, totaling an average sampling time of about ten hours per night. In addition, some species are active during the daytime, so were collected using a butterfly net. Specimens were also collected along trails in the study areas where their host plants were flowering for one hour after sunrise and one hour before sunset. Specimens were killed by ammonia or ethyl acetate and then dried and preserved in the Vietnam National Museum of Nature, Vietnam Academy of Science and Technology.

Taxonomic study

Identifications were undertaken using the taxonomic literature: Rothschild & Jordan (1903), Bell & Scott (1937), Kitching & Spitzer (1995), Inoue et al. (1997), Kitching & Cadiou (2000), Zolotuhin & Ryabov (2012), and the Sphingidae Taxonomic Inventory website (Kitching 2023). Higher classification and nomenclature follow Kitching et al. (2018). For species whose external morphology is indistinct, genitalia dissection was undertaken, following Clarke (1941) and Robinson (1976).

The recorded global distributions of Sphingidae were referred from literatures (Walker 1856; Holloway 1987; Haruta 1993, 1994; Lodi 1993; Smetacek 1994, 2008; Kitching & Spitzer 1995; Inoue et al. 1997; Kishida 1998; Mandal & Ghosh 1999; Kitching & Cadiou 2000; Pittaway & Kitching 2000; Kendrick 2002; Chandra & Rajan 2004; Brechlin 2009; Chandra et al. 2014, 2019; Kendrick & Young 2014; Pathania et al. 2014; Rafi et al. 2014; Ivshin & Krutov 2018; Kitching et al. 2018; Sanyal et al. 2018; Irungbam & Irungbam 2019; Iyer & Kitching 2019; Melichar et al. 2018; Kishida & Yano 2020; Irungbam & Fric 2021; Singh et al. 2021; Gielis et al. 2022; Norbu et al. 2022; Kitching 2023).

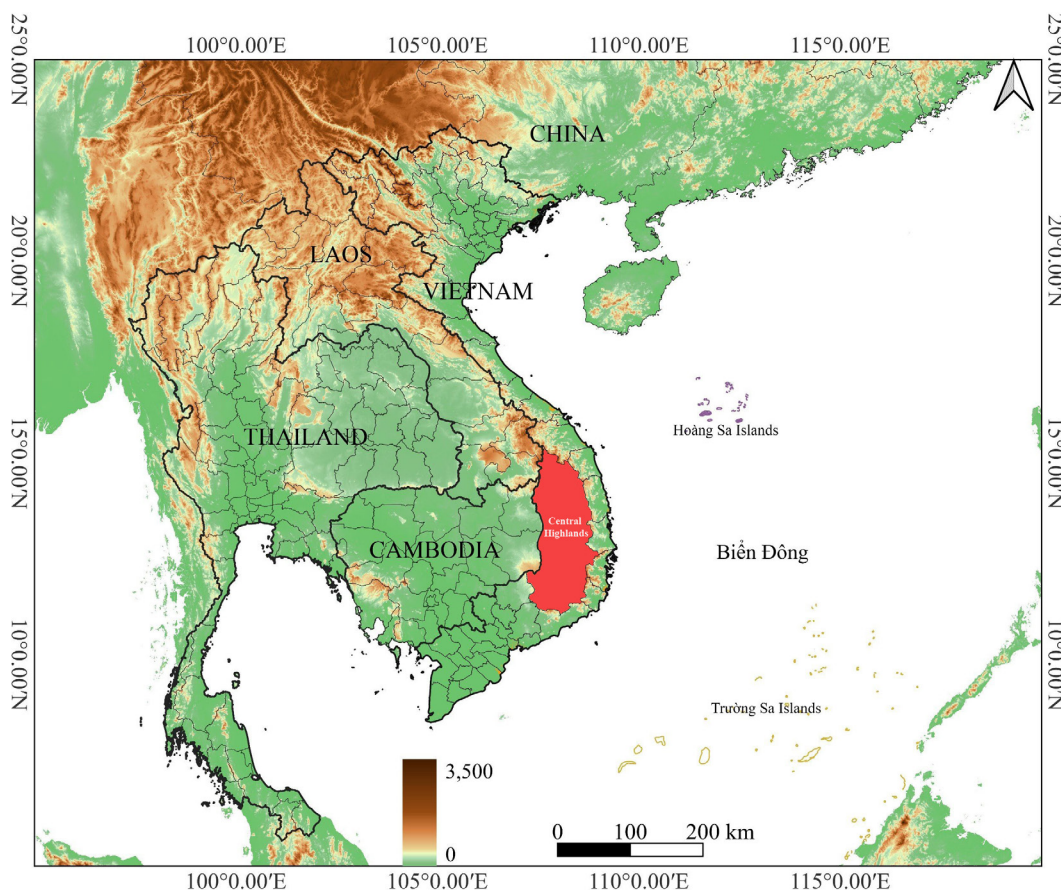


Figure 1. Map of Vietnam showing the location of Central Highlands (red area).

RESULTS

Around 113 species belonging to three subfamilies, comprising 11 Sphinginae, 36 Smerinthinae, and 66 Macroglossinae. We added 14 species to those reported by previous studies, including a very rare species, *Eurypteryx geoffreyi* Cadiou & Kitching, 1990, and two endemic species, *Griseosphinx marchandi* Cadiou, 1996 and *Callambulyx schintlmeisteri* Brechlin, 1997. They are indicated in the following list by an asterisk.

Subfamily Sphinginae Latreille, 1802

Genus *Acherontia* [Laspeyres], 1809

1. *Acherontia lachesis* (Fabricius, 1798) (Image 1.1)

Sphinx lachesis Fabricius, 1798, *Supplementum Entomologiae Systematicae*: 434. Type locality: "India orientali".

Materials: 1 male, 1 female, xii.2020, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 400 m, coll. Q.T. Le.

Distribution: Eastern Pakistan, Sri Lanka, India, Nepal, Bhutan, Myanmar, China, Hong Kong, southern

Japan, Thailand, Laos, Vietnam, Malaysia, Philippines, and Indonesia to Papua New Guinea.

Local distribution: Lao Cai, Cao Bang, Lang Son, Vinh Phuc, Quang Ninh, Ninh Binh, Nghe An, Thua Thien Hue, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong).

2. *Acherontia styx* (Westwood, 1847) (Image 1.2)

Sphinx styx Westwood, 1847, *The Cabinet of Oriental Entomology*: 88, pl. 42, fig. 3. Type locality: "East Indies".

Materials: 1 male, xii.2020, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 400 m, coll. Q.T. Le.

Distribution: Iraq, Saudi Arabia to Iran, Pakistan, India, Nepal, Bhutan, Bangladesh, Myanmar, China, Thailand, Vietnam, and Philippines.

Local distribution: Lao Cai, Vinh Phuc, Thua Thien Hue, and the Central Highlands (Lam Dong).

Genus *Agrilus* Hübner, [1819]

3. *Agrilus convolvuli* (Linnaeus, 1758) (Image 1.3)

Sphinx convolvuli Linnaeus, 1758, *Systema Naturae*

(Ed. 10), 1: 490. Type locality: not stated [Europe].

Materials: 1 male, xii.2020, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 400 m, coll. Q.T. Le.

Distribution: Africa, southern Europe Sri Lanka, Pakistan, India, Bhutan, Myanmar, China, Hong Kong, Vietnam, Malaysia, Indonesia, Australia, and the Pacific.

Local distribution: Lai Chau, Lao Cai, Vinh Phuc, Lang Son, Quang Ninh, Hoa Binh, Ninh Binh, Nghe An, Thua Thien Hue, Quang Tri, and the Central Highlands (Lam Dong, Dak Nong).

Genus *Megacorma* Rothschild & Jordan, 1903

4. *Megacorma obliqua* (Walker, 1856) (Image 1.4)

Macrosila obliqua Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 208. Type locality: Ceylon [Sri Lanka].

Materials: 2 males, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Sri Lanka, India, Myanmar, Thailand, Vietnam, Malaysia, Philippines, Indonesia, New Guinea, and Solomon Islands.

Local distribution: Lao Cai, Lang Son, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong).

Genus *Hyloicus* Hübner, [1819]

5. *Hyloicus centrovietnama* (Brechlin, 2015)

Sphinx centrovietnama Brechlin, 2015, *Entomological Society of America*, 8(1): 16–19. Type locality: Kon Tum, Plato Tay Nguyen, Mt. Ngoc Linh [Vietnam].

Materials examined: None

Remarks: This species was previously as recorded as *Sphinx caligineus* (Butler, 1877) by Hoang et al. (2011).

Distribution: China, Thailand, Vietnam, and Laos.

Local distribution: the Central Highlands.

Genus *Meganoton* Boisduval, [1875]

6. *Meganoton nyctiphanes* (Walker, 1856) (Image 1.6)

Macrosila nyctiphanes Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 209. Type locality: Silhet [Bangladesh].

Materials: 2 male, 1 female, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Sri Lanka, India, Myanmar, Thailand, Vietnam, Andamans, Malaysia, Philippines, and Sumatra.

Local distribution: Lao Cai, Thua Thien Hue, Quang Nam, Quang Binh, the Central Highlands (Lam Dong, Dak

Nong), and Dong Nai.

Genus *Cerberonoton* Zolotuhin & Ryabov, 2012

7. *Cerberonoton rubescens* (Butler, 1876) (Image 1.7)

Diludia rubescens Butler, 1876, *Proceedings of the Zoological Society of London*, 1875: 623. Type locality: [North India].

Materials: 1 male, v.2019, Kon Tum province, Dak Glei District, 15.067°N, 107.733°E, 1,053 m, coll. V.L Vu.

Distribution: India, Thailand, and Vietnam

Local distribution: Lao Cai, Yen Bai, Lang Son, Quang Ninh, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Thua Thien Hue, Quang Nam, the Central Highlands (Kon Tum, Gia Lai), and Dong Nai.

Genus *Notonagemia* Zolotuhin & Ryabov, 2012

8. *Notonagemia analis* (Felder, C. & Felder, R., 1874) (Image 1.8)

Sphinx analis Felder, C. & Felder, R., 1874, *Lepidoptera. Heft IV. Atlas der Heterocera Sphingidae-Noctuidae*, pl.78, fig. 4. Type locality: Shanghai [China].

Materials: 1 male, v.2019, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: China, Taiwan, Thailand, Vietnam, Malaysia, Singapore, and Indonesia.

Local distribution: Lao Cai, Vinh Phuc, Nghe An, Quang Tri, Thua Thien Hue, Khanh Hoa, the Central Highlands (Kon Tum, Gia Lai, Dak Nong), and Dong Nai.

Genus *Psilogramma* Rothschild & Jordan, 1903

9. *Psilogramma increta* (Walker, 1865) (Image 1.9)

Anceryx increta Walker, 1865, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 31: 36. Type locality: Shanghai [China].

Materials: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 400 m, coll. Q.T. Le.

Distribution: Northern Pakistan, throughout India, Nepal, Bhutan, Myanmar, eastern China to Korea, Hong Kong, Taiwan, Japan, Thailand, Laos, and Vietnam.

Local distribution: Cao Bang, Lang Son, Vinh Phuc, Thai Nguyen, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands (Lam Dong), and Dong Nai.

10. *Psilogramma discistriga* (Walker, 1856) (Image 1.10)

Macrosila discistriga Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 209 Type locality: Silhet [Bangladesh].

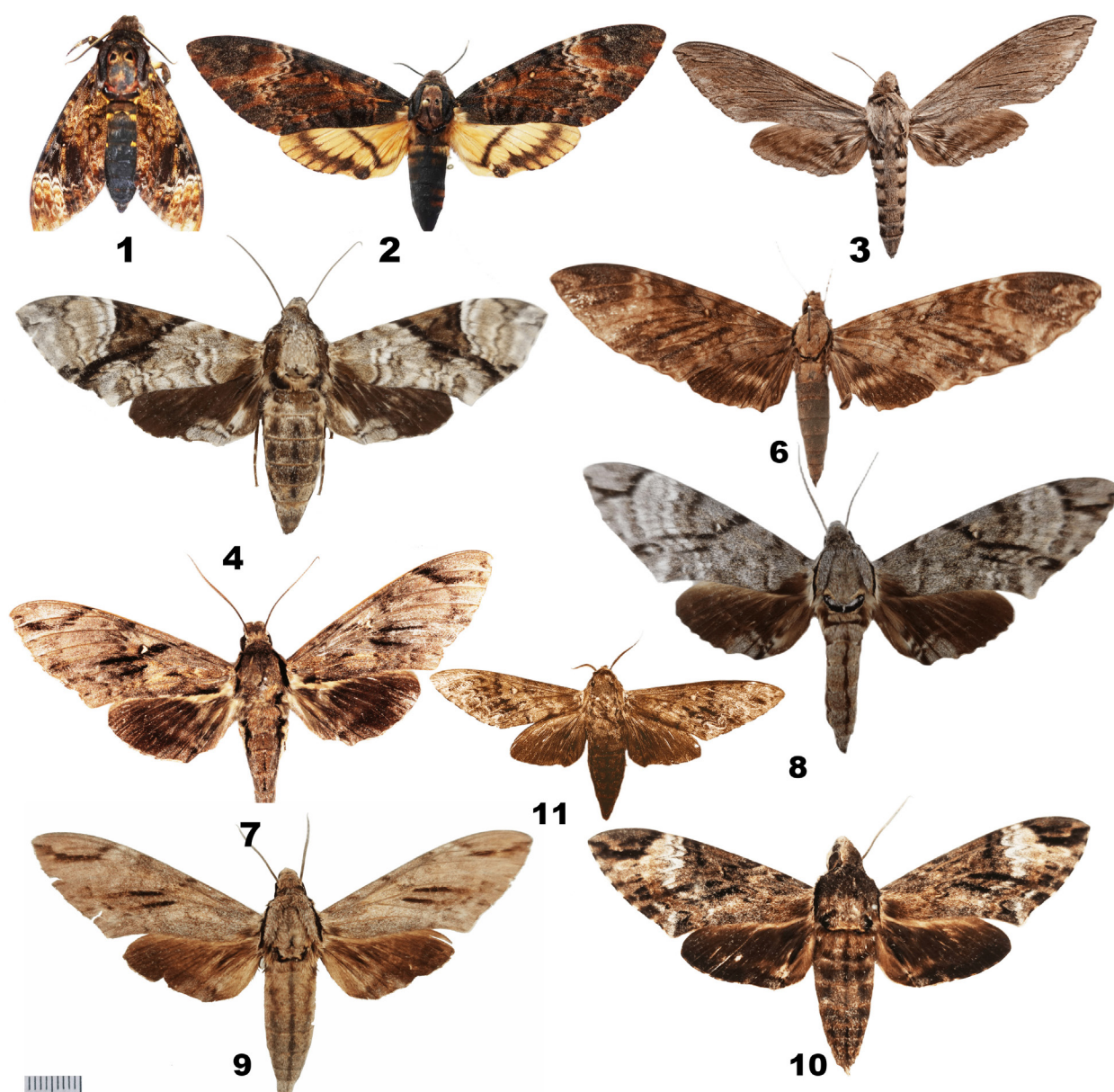


Image 1. Species pictures of the subfamily Sphinginae Latreille, 1802.

1—*Acherontia lachesis* (Fabricius, 1798) | 2—*Acherontia styx* (Westwood, 1847) | 3—*Agrius convolvuli* (Linnaeus, 1758) | 4—*Megacorma obliqua* (Walker, 1856) | 6- *Meganoton nyctiphanes* (Walker, 1856) | 7—*Cerberonoton rubescens* (Butler, 1876) | 8—*Notonagemia analis* (Felder C. & Felder R., 1874) | 9—*Psilogramma increta* (Walker, 1865) | 10—*Psilogramma discistriga* (Butler, 1875) | 11—*Dolbina inexacta* (Walker, 1856). © T.Q. Le.

Materials: 1 male, x.2017, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: throughout India, Sri Lanka, China, Thailand, Vietnam, Sundaland, Philippines, and Australia.

Local distribution: Cao Bang, Lao Cai, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Thua Thien Hue, Quang Nam, the Central Highlands (Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

Genus *Dolbina* Staudinger, 1887

11. *Dolbina inexacta* (Walker, 1856) (Image 1.11)

Macrosila inexacta Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 208. Type locality: [N. India].

Materials: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 400 m, coll. Q.T. Le.

Distribution: Pakistan, throughout India, Nepal, Bhutan, Myanmar, southern China, Taiwan, Thailand,

and Vietnam.

Local distribution: Cao Bang, Lao Cai, Ninh Binh, Bac Giang, Nghe An, Quang Tri, Thua Thien Hue, Da Nang, and the Central Highlands (Lam Dong).

Subfamily Smerinthinae Grote & Robinson, 1865

Genus *Ambulyx* Westwood, 1847

12. *Ambulyx canescens* (Walker, 1865)* (Image 2.12)

Basiana canescens Walker, 1865, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 31: 38. Type locality: Cambodia.

Materials: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: China, Thailand, Vietnam, Cambodia, Malaysia, Philippines, and Singapore.

Local distribution: Quang Nam, and the Central Highlands (Dak Nong).

13. *Ambulyx liturata* Butler, 1875 (Image 2.13)

Ambulyx liturata Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 251. Type locality: Locality not stated.

Materials: 1 male, x.2020, Lam Dong province, Di Linh, 11.516°N, 108.083°E, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bhutan, Myanmar, southern China, Hong Kong, Thailand, Vietnam, Laos, and Cambodia.

Local distribution: Lao Cai, Vinh Phuc, Lang Son, Quang Ninh, Thua Thien Hue, Quang Nam, Khanh Hoa, and the Central Highlands (Kon Tum, Lam Dong, Dak Nong).

14. *Ambulyx moorei* Moore, 1858 (Image 2.14)

Ambulyx moorei Moore, 1858, in Horsfield & Moore, *A catalogue of the Lepidopterous Insects in the Museum of the Hon. East-India Company*, 1: 266. Type locality: [Indonesia,] Java [Jawa].

Materials: 1 male, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901m, coll. Q.T. Le.

Distribution: India, China, Thailand, Vietnam, Malaysia, Philippines, and Singapore.

Local distribution: Lao Cai, Vinh Phuc, Hoa Binh, Son La, Ninh Binh, Quang Ninh, Thanh Hoa, Nghe An, Thua Thien Hue, Quang Nam, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

15. *Ambulyx ochracea* Butler, 1885 (Image 2.15)

Ambulyx ochracea Butler, 1885, *Cistula Entomologica*, 3: 113. Type locality: Nikko [Japan].

Materials: 1 male, v.2019, Gia Lai province, Kon Ka

Kinh NP, 14.215°N, 108.283°E, 901m, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bhutan, China, Taiwan, Hong Kong, Japan, Korea, Thailand, Vietnam, Laos, and Cambodia.

Local distribution: Lao Cai, Son La, Lang Son, Vinh Phuc, Thua Thien Hue, Quang Nam, the Central Highlands (Kon Tum, Gia Lai, Lam Dong), and Dong Nai.

16. *Ambulyx pryeri* Distant, 1887 (Image 2.16)

Ambulyx pryeri Distant, 1887, *Annals and Magazine of Natural History*, 20: 271. Type locality: North Borneo [Malaysia].

Materials: 1 female, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Malaysia, Philippines, Indonesia, Singapore, Thailand, and Vietnam.

Local distribution: Vinh Phuc, Thua Thien Hue, Quang Nam, and the Central Highlands (Dak Nong).

17. *Ambulyx schauffelbergeri* Bremer & Grey, 1853* (Image 2.17)

Ambulix [sic] schauffelbergeri Bremer & Grey, 1853, in Motschulsky (ed.), *Études Entomologiques*, 1: 62. Type locality: Pekin [China, Beijing].

Materials: 1 male, v.2019, Kon Tum province, Dak Glei District, 15.067°N, 107.733°E, 1,053m, coll. V.L Vu.

Distribution: China, Japan, Korea, and Vietnam.

Local distribution: Nghe An and the Central Highlands (Kon Tum, Dak Nong).

18. *Ambulyx sericeipennis* Butler, 1875 (Image 2.18)

Ambulyx sericeipennis Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 252. Type locality: Northwestern Himalaya [India, Uttarakhand,] Masuri [Mussoorie].

Materials: 1 male, v.2016, Gia Lai province, K'Bang District, Kon Chu Rang NR, 14.471°N, 108.574°E, 1,097 m, coll. Q.T. Le.

Distribution: Northern Pakistan, Nepal, Bhutan, northern India, Myanmar, China, Taiwan, Thailand, Vietnam, Laos, Cambodia, Indonesia (Java), and Philippines.

Local distribution: Lao Cai, Lang Son, Vinh Phuc, Quang Ninh, Nghe An, Quang Tri, Thua Thien Hue, Khanh Hoa, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong).

19. *Ambulyx substrigilis* Westwood, 1847 (Image 2.19)

Sphinx substrigilis Westwood, 1847, *The Cabinet of Oriental Entomology*: [61], pl. 30, fig. 2. Type locality:

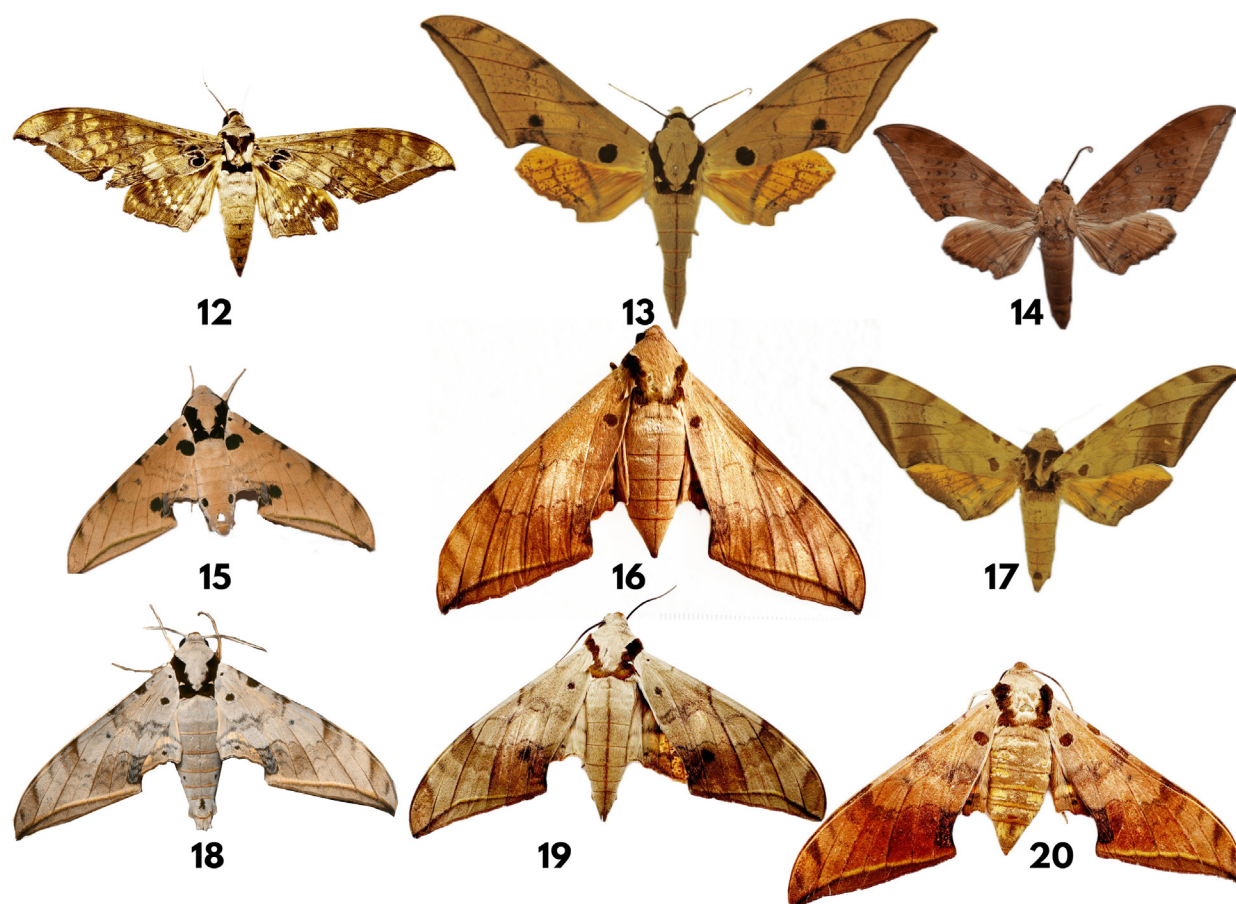


Image 2. Species pictures of the genus *Ambulyx* of the subfamily Smerinthinae Grote & Robinson, 1865.

12—*Ambulyx canescens* (Walker, 1865)* | 13—*Ambulyx liturata* Butler, 1875 | 14—*Ambulyx moorei* Moore, 1858 | 15—*Ambulyx ochracea* Butler, 1885 | 16—*Ambulyx pryri* Distant, 1887 | 17—*Ambulyx schauffelbergeri* Bremer & Grey, 1853* | 18—*Ambulyx sericeipennis* Butler, 1875 | 19—*Ambulyx subtrigilis* Westwood, 1847 | 20—*Ambulyx tobii* (Inoue, 1976)*. © T.Q. Le.

Sylhet [Bangladesh].

Materials: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Sri Lanka, northern and southern India, Nepal, Bhutan, Bangladesh, Thailand, Vietnam, Malaysia, Philippines, and Indonesia.

Local distribution: Lai Chau, Lao Cai, Lang Son, Vinh Phuc, Ninh Binh, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, and the Central Highlands (Dak Nong), and Dong Nai.

20. *Ambulyx tobii* (Inoue, 1976) * (Image 2.20)

Oxyambulyx sericeipennis tobii Inoue, 1976, *Bulletin. Faculty of Domestic Sciences of Otsuma Women's University*, 12: 173. Type locality: Japan, "Nakatsugawa, Sumoto City, Awajishima" <<Shimane, Ichibata>>.

Type locality: [♂] Japan: Nakatsugawa, Awajishima,

Sumoto City.

Materials: 1 male, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901 m, coll. Q.T. Le.

Distribution: China, Taiwan, Japan, Korea, and Vietnam.

Local distribution: Vinh Phuc, Thua Thien Hue, and the Central Highlands (Gia Lai, Dak Nong).

Genus *Amphypterus* Hübner, [1819]

21. *Amphypterus masoni* (Clark, 1924) (Image 3.21)

Compsogene masoni Clark, 1924, *Proceedings of the New England Zoological Club*, 9: 17. Type locality: Sikkim [Northeastern India].

Materials: 2 females, v.2016, Gia Lai province, K'Bang District, Kon Chu Rang NR, 14.471°N, 108.574°E, 1097 m, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bhutan, Thailand, Vietnam, Malaysia, and Singapore.

Local distribution: Lao Cai, Thua Thien Hue, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong).

22. *Amplypterus panopus* (Cramer, 1779) (Image 3.22)

Sphinx panopus Cramer, 1779, *Uitlandsche Kapellen*, 3: 50, pl. 224, figs A, B. Type locality: Java [Indonesia].

Materials: 2 females, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Northern, western, & northeastern India, Nepal, Bhutan, Myanmar, China, Thailand, Vietnam, Cambodia, Laos, Sundaland, and Philippines.

Local distribution: Lao Cai, Lang Son, Vinh Phuc, Hanoi, and the Central Highlands (Dak Nong).

Genus *Anambulyx* Rothschild & Jordan, 1903

23. *Anambulyx elwesi* (Druce, 1882)

Ambulyx elwesi Druce, 1882, *Entomologist's Monthly Magazine*, 19: 17. Type locality: Darjiling [India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: northern Pakistan, northern and northeastern India, Nepal, Bhutan, Myanmar, southwestern China, northern Thailand, and Vietnam.

Local distribution: Lao Cai, Lang Son, Vinh Phuc, Thua Thien Hue, and the Central Highlands (Gia Lai, Lam Dong).

Genus *Barbourion* Clark, 1934

24. *Barbourion lemaii* (Le Moul, 1933) (Image 3.24)

Callambulyx lemaii Le Moul, 1933, *Novitates Entomologicae*, 3: 19, pl.1, fig. 7. Type locality: Chapa [Tonkin] (Sa Pa: Vietnam).

Materials: 1 male, v.2016, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: Myanmar, China, Thailand, Vietnam, and Laos.

Local distribution: Lao Cai, Vinh Phuc, Thua Thien Hue, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong).

Genus *Callambulyx* Rothschild & Jordan, 1903

25. *Callambulyx diehli* Brechlin & Kitching, 2012 (Image 3.25)

Callambulyx diehli Brechlin & Kitching, 2012, *Entomological Society of America*, 5: 56. Type locality: Sumatra [Indonesia].

Materials: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 700 m, coll. Q.T. Le.

Distribution: Myanmar, China, Thailand, Vietnam, Laos, and Indonesia (Sumatra).

Local distribution: Lang Son, Vinh Phuc, Nghe An, and the Central Highlands (Lam Dong).

26. *Callambulyx rubricosa* (Walker, 1856) (Image 3.26)

Ambulyx rubricosa Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 122. Type locality: "Hindustan".

Materials: 2 males, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901 m, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bhutan, Myanmar, China, Thailand, Vietnam, Laos, and Cambodia.

Local distribution: Lang Son, Cao Bang, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, Khanh Hoa, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong), Dong Nai.

27. *Callambulyx schintlmeisteri* Brechlin, 1997 (Image 3.27)

Callambulyx schintlmeisteri Brechlin, 1997, *Nachrichten des Entomologischen Vereins Apollo (N.F.)*, 17(4): 368. Type locality: Thua Thien-Hue, Bach-Ma National Park [Vietnam]

Materials: 1 male, xii.2020, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 700 m, coll. Q.T. Le.

Distribution: Vietnam

Local distribution: Ninh Binh, Nghe An, Thua Thien Hue, and the Central Highlands (Lam Dong, Dak Nong).

Genus *Craspedortha* Mell, 1922

28. *Craspedortha porphyria* (Butler, 1876) (Image 3.28)

Daphnusa porphyria Butler, 1876, *Transactions of the Zoological Society of London*, 9: 640. Type locality: Darjeeling [India].

Materials: 1 male, x.2020, Lam Dong province, Di Linh, 11.516°N, 108.083°E, coll. Q.T. Le

Distribution: India, Nepal, China, Thailand, Vietnam, and Laos.

Local distribution: Lao Cai, Bac Giang, Ninh Binh, Nghe An, Quang Binh, Thua Thien Hue, Quang Nam, the Central Highlands (Lam Dong), and Dong Nai.

Genus *Opistoclanis* Jordan, 1929

29. *Opistoclanis hawkeri* (Joicey & Talbot, 1921)

Clanis hawkeri Joicey & Talbot, 1921, *Entomologist*, 54: 106. Type locality: French Indo-China (probably Laos).

Materials examined: None

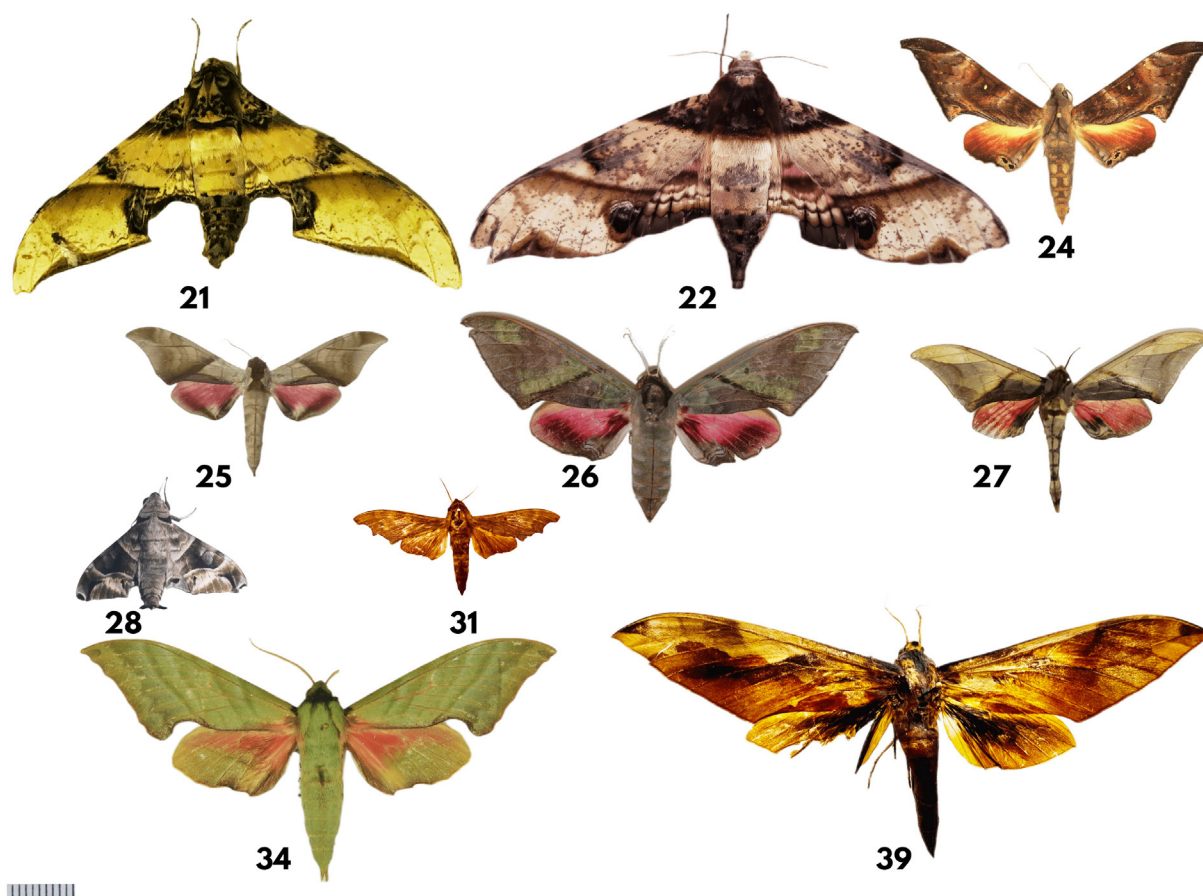


Image 3. Species pictures of the genera *Amplifyterus*, *Barbourion*, *Callambulyx*, *Craspedortha*, *Cypa*, *Rhodoprasina*, and *Clanis* of the subfamily Smerinthinae Grote & Robinson, 1865.

21—*Amplifyterus mansonii* (Clark, 1924) | 22—*Amplifyterus panopus* (Cramer, 1779) | 24—*Barbourion lemaiti* (Le Mout, 1933) | 25—*Callambulyx diehli* Brechlin & Kitching, 2012 | 26—*Callambulyx rubricosa* (Walker, 1856) | 27—*Callambulyx schintlmeisteri* Brechlin, 1997 | 28—*Craspedortha porphyria* (Butler, 1876) | 31—*Cypa decolor* (Walker, 1856)* | 34—*Rhodoprasina callantha centrovietnama* Brechlin, 2015 | 39—*Clanis schwartzii* Cadiou, 1993. © T.Q. Le.

Remarks: This species was recorded previously by Hoang et al. (2011).

Distribution: Thailand, Laos, China, and Vietnam.

Local distribution: Lang Son, Quang Ninh, Quang Binh, Quang Tri, and the Central Highlands.

Genus *Parum* Rothschild & Jordan, 1903

30. *Parum colligata* (Walker, 1856)

Daphnusa colligata Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 238. Type locality: [Northern China].

Materials examined: None

Remarks: This species was recorded previously by Hoang et al. (2011).

Distribution: India, Myanmar, China, Japan, Taiwan, Korea, Thailand, Vietnam, Laos, and Philippines.

Local distribution: Lao Cai, Yen Bai, Cao Bang,

Lang Son, Thai Nguyen, Vinh Phuc, Quang Ninh, Ninh Binh, Nghe An, Quang Binh, Quang Nam, the Central Highlands, and Dong Nai.

Genus *Cypa* Walker, 1865

31. *Cypa decolor* (Walker, 1856)* (Image 3.31)

Smerinthus decolor Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 255. Type locality: Hindostan [India].

Materials examined: 1 male, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901 m, coll. Q.T. Le.

Distribution: India, Myanmar, China, Thailand, Vietnam, Laos, Cambodia, Malaysia, Philippines, New Guinea, and Singapore.

Local distribution: Quang Binh, Thua Thien Hue, the Central Highlands (Gia Lai, Dak Nong), and Binh Phuoc.

32. *Cypa enodis* Jordan, 1931

Cypa enodis Jordan, 1931, *Novitates Zoologicae*, 36: 240. Type locality: Assam [India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Nepal, Myanmar, China, Thailand, Vietnam, and Laos.

Local distribution: Lai Chau, Lao Cai, Lang Son, Thua Thien Hue, and the Central Highlands (Gia Lai).

33. *Cypa latericia* Inoue, 1991

Cypa latericia Inoue, 1991, *Tinea*, 13: 132. Type locality: Phu-Hin Rongkla [Thailand].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Myanmar, Thailand, and Vietnam.

Local distribution: Thua Thien Hue and the Central Highlands.

Genus *Rhodoprasina* Rothschild & Jordan, 1903**34. *Rhodoprasina callantha centrovietnama* Brechlin, 2015 (Image 3.34)**

Rhodoprasina callantha centrovietnama Brechlin, 2015, *Entomo-Satsphingia*, 8: 27. Type locality: Quang Ngai [Vietnam].

Materials examined: 1 male, v.2016, Gia Lai province, K'Bang District, Kon Chu Rang NR, 14.471°N, 108.574°E, 1,097 m, coll. Q.T. Le.

Distribution: Thailand, Vietnam and Laos.

Local distribution: Lai Chau, Lao Cai, and the Central Highlands (Kon Tum, Gia Lai).

Genus *Smerinthulus* Huwe, 1895**35. *Smerinthulus perversa bachmaensis* Brechlin, 2016**

Smerinthulus perversa bachmaensis Brechlin, 2016, *Entomo-Satsphingia*, 9: 88. Type locality: Thua Thien-Hue, Bach Ma Mts. [Vietnam].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Vietnam

Local distribution: the Central Highlands

36. *Smerinthulus baokimae* Brechlin, 2015

Smerinthulus baokimae Brechlin, 2015, *Entomo-Satsphingia*, 8: 5. Type locality: Da Nang, Ba Na Hills. [Vietnam].

Materials examined: None

Remarks: This species was recorded previously by

Zolotuhin & Ryabov (2012).

Distribution: Vietnam and Laos

Local distribution: Lao Cai and the Central Highlands.

Genus *Smerinthus* Latreille, [1802]**37. *Smerinthus szechuanus* (Clark, 1938)**

Anambulyx szechuanus Clark, 1938, *Proceedings of the New England Zoological Club*, 17: 43. Type locality: Sichuan [China].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: China and Vietnam

Local distribution: Lai Chau, Lao Cai, Cao Bang, and the Central Highlands.

Genus *Clanis* Hübner, [1819]**38. *Clanis bilineata* (Walker, 1866)**

Basiana bilineata Walker, 1866, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 35: 1857. Type locality: Darjeeling [India].

Materials examined: None

Remarks: This species was recorded previously by Hoang et al. (2011).

Distribution: India, Nepal, China, Thailand, and Vietnam.

Local distribution: Lao Cai, Lang Son, Quang Ninh, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands, and Dong Nai.

39. *Clanis schwartzi* Cadiou, 1993 (Image 3.39)

Clanis schwartzi Cadiou, 1993, *Lambillionea*, 93: 445. Type locality: Ban Kheun [Laos].

Materials examined: 1 male, v.2016, Gia Lai province, K'Bang District, Kon Chu Rang NR, 14.471°N, 108.574°E, 1,097 m, coll. Q.T. Le.

Distribution: China, Thailand, Vietnam, and Laos.

Local distribution: Lao Cai, Vinh Phuc, Quang Ninh, Nghe An, Thua Thien Hue, Quang Nam, and the Central Highlands (Gia Lai).

40. *Clanis undulosa gigantea* Rothschild, 1894

Clanis gigantea Rothschild, 1894, *Novitates Zoologicae*, 1: 96. Type locality: Assam [N India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Northeastern India, Nepal, Bhutan, China, Thailand, Vietnam, and Malaysia.

Local distribution: Lai Chau, Lao Cai, Hoa Binh, Thua Thien Hue, and the Central Highlands.

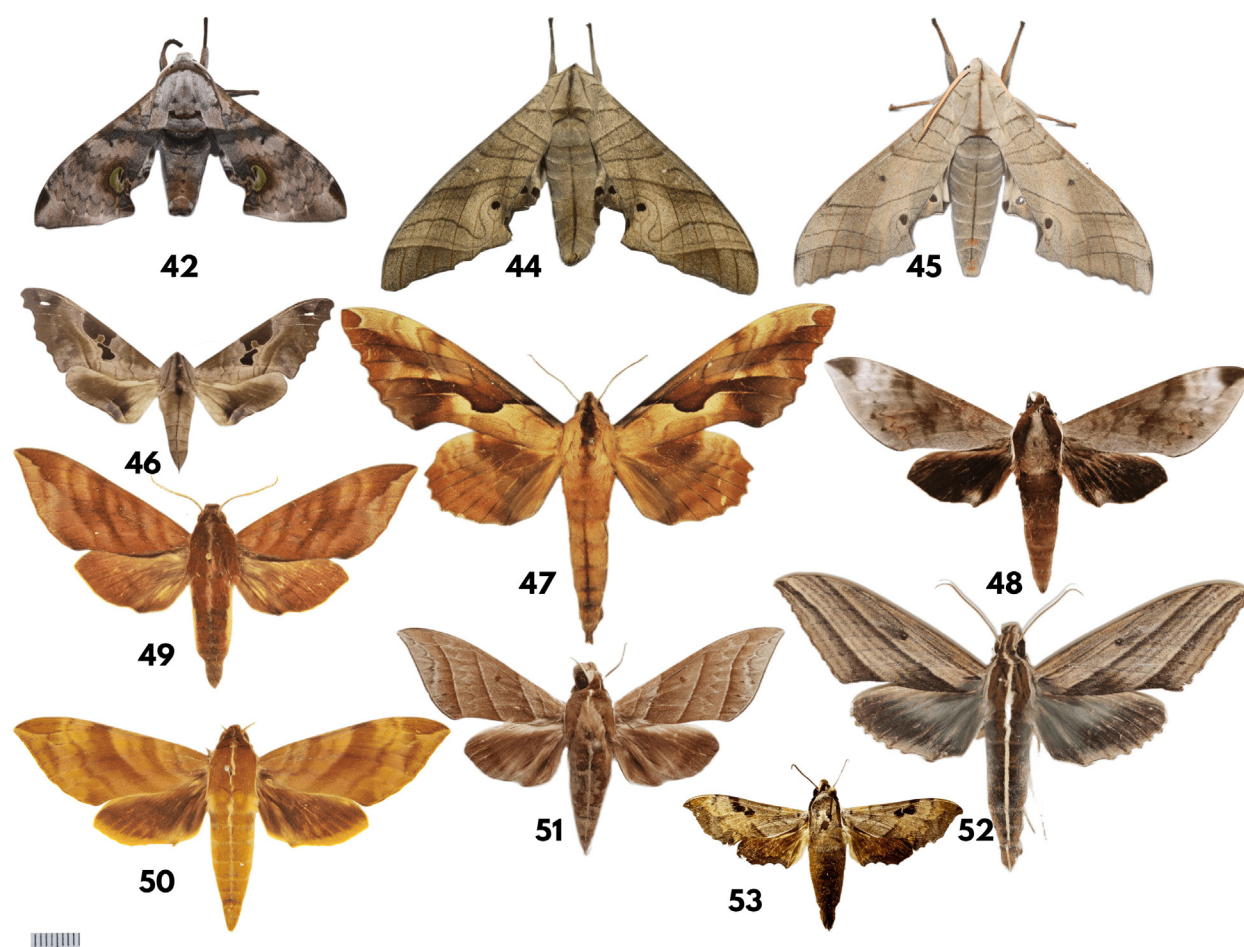


Image 4. Species pictures of the genera *Daphnusa*, *Marumba*, *Morwennius*, and *Phyllosphingia* of the subfamily Smerinthinae Grote & Robinson, 1865; genera *Acosmerycoides*, *Ampelophaga*, *Elibia*, and *Enpinanga* of the subfamily Macroglossinae Harris, 1839

42—*Daphnusa sinocontinentalis* Brechlin, 2009 | 44—*Marumba dyras* (Walker, 1856) | 45—*Marumba sperchius* (Ménétriés, 1857) | 46—*Morwennius decoratus* (Moore, 1872) | 47—*Phyllosphingia dissimilis berdiewi* Zolotuhin & Ryabov, 2012 | 48—*Acosmerycoides harterti* (Rothschild, 1895) | 49—*Ampelophaga khasiana* Rothschild, 1895 | 50—*Ampelophaga rubiginosa* Bremer & Grey, 1852* | 51—*Elibia dolichoides* (Felder, C. & Felder, R., 1874) | 52—*Elibia dolichus* (Westwood, 1847) | 53—*Enpinanga assamensis* (Walker, 1856)*. © T.Q. Le.

Genus *Leucophlebia* Westwood, 1847

41. *Leucophlebia lineata* Westwood, 1847

Leucophlebia lineata Westwood, 1847, *The Cabinet of Oriental Entomology*: [46], pl. 22, fig.2. Type locality: Assam [India].

Materials examined: None

Remarks: This species was recorded previously by both Hoang et al. (2011) and Zolotuhin & Ryabov (2012).

Distribution: Sri Lanka, India, Nepal, China, Taiwan, Thailand, Vietnam, Malaysia, Philippines, and Indonesia.

Local distribution: Lao Cai, Vinh Phuc, Hanoi, Quang Tri, the Central Highlands, and Dong Nai.

Genus *Daphnusa* Walker, 1856

42. *Daphnusa sinocontinentalis* Brechlin, 2009 (Image 4.42)

Daphnusa sinocontinentalis Brechlin, 2009, *Entomo-*

Satsphingia, 2: 12. Type locality: Chiang Mai, Doi Inthanon NP. [Thailand].

Materials examined: 1 male, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901 m, coll. Q.T. Le.

Distribution: India, Myanmar, China, Thailand, Vietnam, Laos, and Cambodia.

Local distribution: Vinh Phuc, Quang Ninh, Bac Giang, Ninh Binh, Thanh Hoa, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands (Gia Lai, Dak Nong), Dong Nai.

Genus *Marumba* Moore, 1882

43. *Marumba cristata* (Butler, 1875)

Triptogon cristata Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 253. Type locality: Darling [India].

Materials examined: 1 male, v.2020, Dak Nong

province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: India, Nepal, Bhutan, China, Thailand, Vietnam, Laos, Indonesia and Singapore.

Local distribution: Lai Chau, Lao Cai, Lang Son, Vinh Phuc, Nghe An, and the Central Highlands (Dak Nong).

44. *Marumba dyras* (Walker, 1856) (Image 4.44)

Smerinthus dyras Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 250. Type locality: Ceylon [Sri Lanka].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Sri Lanka, northwestern India, Nepal, Bhutan, Andaman & Nicobar Islands, Myanmar, China, Taiwan, Thailand, Vietnam, Cambodia, Laos, Malaysia, Indonesia, and Philippines.

Local distribution: Tuyen Quang, Lang Son, Quang Ninh, Ninh Binh, Nghe An, Quang Tri, Thua Thien Hue, the Central Highlands (Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

45. *Marumba sperchius* (Ménétriés, 1857) (Image 4.45)

Smerinthus sperchius Ménétriés, 1857, *Classis Insectorum Ordo Lepidopterorum*, 2: 137, pl. 13, fig. 5. Type locality: [Japan].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Northern Pakistan, northern India, Nepal, Bhutan, Russian Far East, China, Taiwan, Korea, Japan, Thailand, Vietnam, Laos, and Indonesia (Sumatra).

Local distribution: Hoa Binh, Lai Chau, Lao Cai, Vinh Phuc, Lang Son, Thua Thien Hue, and the Central Highlands (Gia Lai, Lam Dong, Dak Nong).

Genus *Morwennius* Cassidy, Allen & Harman, 2002

46. *Morwennius decoratus* (Moore, 1872) (Image 4.46)

Smerinthus decoratus Moore, 1872, *Proceedings of the Zoological Society of London*, 1872: 568. Type locality: Sikkim [India].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: India, China, Laos, Thailand, Vietnam, and Indonesia (Sumatra).

Local distribution: Ninh Binh, and the Central Highlands (Dak Nong).

Genus *Phyllosphingia* Swinhoe, 1897

47. *Phyllosphingia dissimilis berdievi* Zolotuhin & Ryabov, 2012 (Image 4.47)

Phyllosphingia dissimilis berdievi Zolotuhin & Ryabov, 2012, *The hawkmoths of Vietnam*, 2012: 201. Type locality: Kon Tum, Kon Plong [Vietnam].

Materials examined: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Myanmar, China, Thailand, Vietnam, and Laos.

Local distribution: Lai Chau, Lao Cai, Nghe An, Ha Tinh, Quang Binh, and the Central Highlands (Lam Dong)

Subfamily Macroglossinae Harris, 1839

Genus *Acosmerycoides* Mell, 1922

48. *Acosmerycoides harterti* (Rothschild, 1895) (Image 4.48)

Ampelophaga harterti Rothschild, 1895, *Deutsche Entomologische Zeitschrift, Iris*, 7: 299. Type locality: Assam [India].

Materials examined: 1 male, v.2016, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: India, Bhutan, Myanmar, China, Taiwan, Thailand, Vietnam, Laos and Malaysia.

Local distribution: Lang Son, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, Khanh Hoa, the Central Highlands (Kon Tum, Gia Lai, Dak Nong), and Dong Nai.

Genus *Ampelophaga* Bremer & Grey, 1853

49. *Ampelophaga khasiana* Rothschild, 1895 (Image 4.49)

Ampelophaga khasiana Rothschild, 1895, *Novitates Zoologicae*, 2: 482. Type locality: Assam [India].

Materials examined: 1 male, v.2019, Kon Tum province, Dak Glei District, 15.067°N, 107.733°E, 1,053 m, coll. V.L. Vu.

Distribution: India, Nepal, Bhutan, Myanmar, China and Vietnam.

Local distribution: Lai Chau, Lao Cai, Lang Son, Cao Bang, Quang Tri, Khanh Hoa, and the Central Highlands (Kon Tum).

50. *Ampelophaga rubiginosa* Bremer & Grey, 1852* (Image 4.50)

Ampelophaga rubiginosa Bremer & Grey, 1853, in Motschulsky (ed.), *Études Entomologiques*, 1: 61. Type locality: [North China].

Materials examined: 1 male, v.2022, Lam Dong

province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Afghanistan, Pakistan, India, Nepal, Bhutan, Myanmar, Peninsula, the Russian Far East, China, Hong Kong, Japan, Korea, Thailand, Laos, Malaysia, and Indonesia (northern Sumatra).

Local distribution: Lai Chau, Lao Cai, Vinh Phuc, Thua Thien Hue, and the Central Highlands (Lam Dong, Gia Lai).

Genus *Elibia* Walker, 1856

51. *Elibia dolichoides* (Felder, C. & Felder, R., 1874) (Image 4.51)

Philampelus dolichoides Felder, C. & Felder, R., 1874, *Lepidoptera. Heft IV. Atlas der Heterocera Sphingidae-Noctuidae*, pl. 76, fig. 8. Type locality: Sikkim [India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Northeastern India, Nepal, Bhutan, Thailand, Vietnam, Malaysia, and Laos.

Local distribution: Cao Bang, Vinh Phuc, Bac Giang, Ninh Binh, Nghe An, Thua Thien Hue, Quang Nam, and the Central Highlands.

52. *Elibia dolichus* (Westwood, 1847) (Image 4.52)

Sphinx dolichus Westwood, 1847, *The Cabinet of Oriental Entomology*: [61], pl. 30, fig. 1. Type locality: Silhet [Bangladesh].

Materials examined: 1 male, v.2016, Gia Lai province, K'Bang District, Kon Chu Rang NR, 14.471°N, 108.574°E, 1,097 m, coll. Q.T. Le.

Distribution: India, Nepal, Bangladesh, China, Thailand, Vietnam, Malaysia, Philippines and Indonesia (Sumatra, Borneo, Java).

Local distribution: Quang Ninh, Nghe An, Quang Binh, Quang Tri, the Central Highlands (Lam Dong, Gia Lai), and Dong Nai.

Genus *Enpinanga* Rothschild & Jordan, 1903

53. *Enpinanga assamensis* (Walker, 1856)* (Image 4.53)

Panacra assamensis Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 160. Type locality: Silhet [Bangladesh].

Materials examined: 1 male, v.2019, Gia Lai province, K'Bang District, Kon Chu Rang NR, 14.471°N, 108.574°E, 1,097 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Bangladesh, southern China, Hong Kong, Thailand, Vietnam, Laos, Cambodia, and Malaysia.

Local distribution: Vinh Phuc, Bac Giang, Quang Ninh, Nghe An, and the Central Highlands (Gia Lai, Lam Dong).

54. *Enpinanga borneensis* (Butler, 1879)

Angonyx borneensis Butler, 1879, *Transactions of the Zoological Society of London*, 12: 261. Type locality: [Borneo].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Thailand, Vietnam, Malaysia, and Indonesia (Sumatra, Borneo, Java).

Local distribution: the Central Highlands.

Genus *Acosmeryx* Boisduval, [1875]

55. *Acosmeryx anceus subdentata* Rothschild & Jordan, 1903 (Image 5.55)

Acosmeryx anceus subdentata Rothschild & Jordan, 1903, *Novitates Zoologicae*, 9: 528. Type locality: [India, Cherrapunji, Bhutan, Indonesia].

Materials examined: 2 males, vi.2019, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,133 m, coll. Q.T. Le.

Distribution: India, Nepal, Bhutan, China, Thailand, Vietnam, Malaysia, Philippines, and Indonesia.

Local distribution: Lai Chau, Lao Cai, Lang Son, Quang Ninh, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

56. *Acosmeryx castanea* Rothschild & Jordan, 1903

Acosmeryx castanea Rothschild & Jordan, 1903, *Novitates Zoologicae*, 9: 527. Type locality: Yokohama [Japan].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: China, Taiwan, Japan, Korea, and Vietnam.

Local distribution: Ninh Binh, Quang Nam, and the Central Highlands (Kon Tum).

57. *Acosmeryx naga* (Moore, [1858]) (Image 5.57)

Philampelus naga Moore, 1858 in Horsfield & Moore, *A Catalogue of the Lepidopterous Insects in the Museum of the Hon. East-India Company*, 1: 271. Type locality: Darjeeling [India, Darling].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: India, Nepal, Bhutan, Russian Far East,

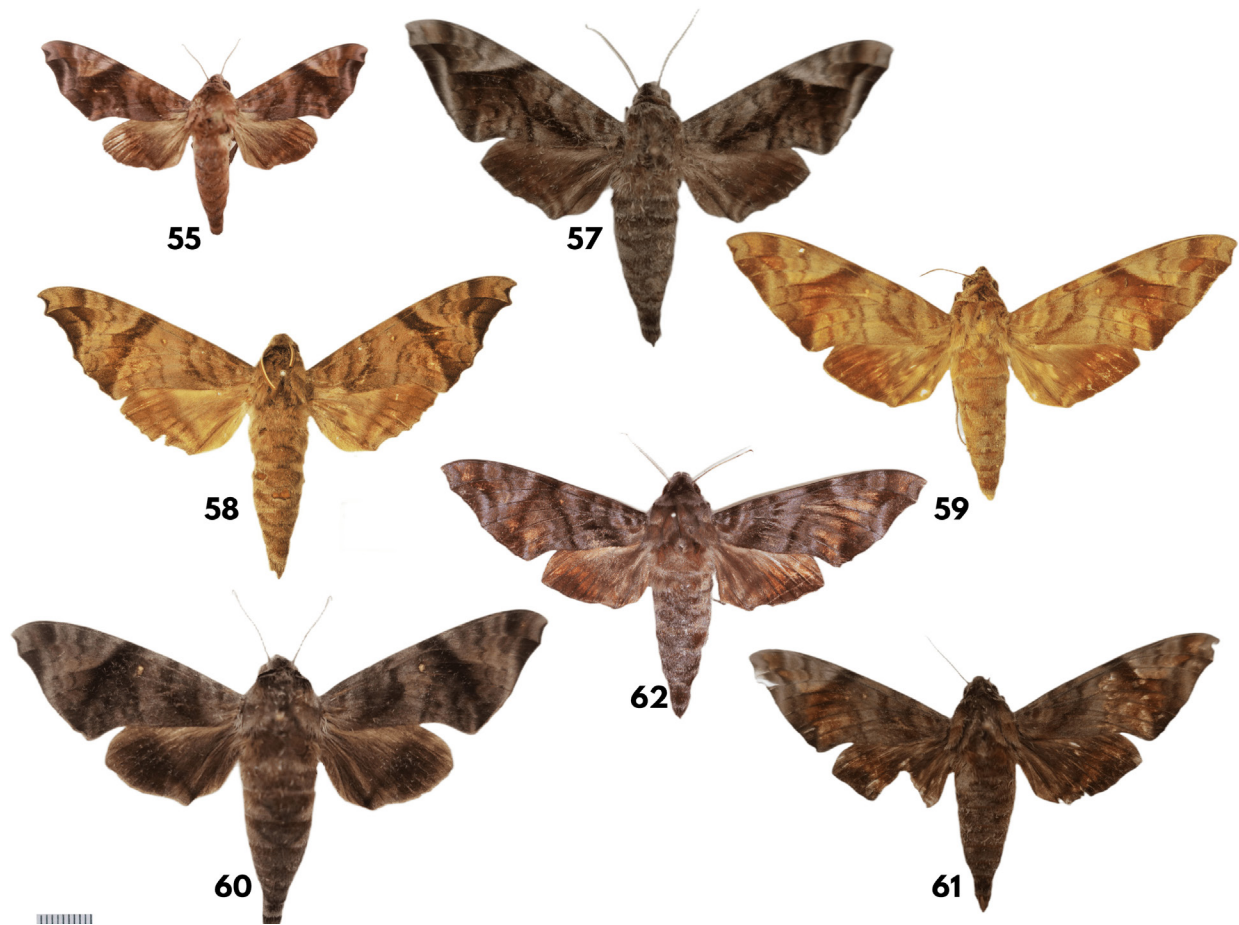


Image 5. Species pictures of the genus *Acosmeryx* of the subfamily Macroglossinae Harris, 1839.

55—*Acosmeryx anceus subdentata* Rothschild & Jordan, 1903 | 57—*Acosmeryx naga* (Moore, [1858]) | 58—*Acosmeryx omissa* Rothschild & Jordan, 1903* | 59—*Acosmeryx pseudomissa* Mell, 1922 | 60—*Acosmeryx pseudonaga* Butler, 1881 | 61—*Acosmeryx shervillii* Boisduval, 1875 | 62—*Acosmeryx sericeus* (Walker, 1856). © T.Q. Le.

China, Taiwan, Japan, Korea, Thailand, Vietnam, and Malaysia.

Local distribution: Lai Chau, Lao Cai, Cao Bang, Lang Son, Vinh Phuc, Nghe An, Thua Thien Hue, Khanh Hoa, and the Central Highlands (Kon Tum, Gia Lai, Dak Nong).

58. *Acosmeryx omissa* Rothschild & Jordan, 1903* (Image 5.58)

Acosmeryx omissa Rothschild & Jordan, 1903, *Novitates Zoologicae*, 9: 530. Type locality: [Bhutan].

Materials examined: 1 male, v.2019, Kon Tum province, Dak Glei District, 15.067°N, 107.733°E, 1,053 m, coll. V.L Vu.

Distribution: Northeastern India, Nepal, Bhutan, northern Thailand, and Vietnam.

Local distribution: Lao Cai, Ninh Binh, Nghe An, Quang Binh, and the Central Highlands (Kon Tum, Dak Nong).

59. *Acosmeryx pseudomissa* Mell, 1922 (Image 5.59)

Acosmeryx pseudomissa Mell, 1922, *Beiträge zur Fauna sinica. Biologie und Systematik der südchinesischen Sphingiden*, 1922: 230. Type locality: Kuangtung [China].

Materials examined: 1 male, v.2019, Kon Tum province, Dak Glei District, 15.067°N, 107.733°E, 1,053 m, coll. V.L Vu.

Distribution: China, Thailand, Vietnam, and Laos.

Local distribution: Vinh Phuc, Ninh Binh, Nghe An, Quang Nam, and the Central Highlands (Kon Tum, Gia Lai, Dak Nong).

60. *Acosmeryx pseudonaga* Butler, 1881 (Image 5.60)

Acosmeryx pseudonaga Butler, 1881, *Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum*, 5: 2. Type locality: [Bhutan].

Materials examined: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E,

1,700 m, coll. Q.T. Le.

Distribution: Western and northeastern India, Bhutan, China, Thailand, Vietnam, Laos, Malaysia, and Indonesia.

Local distribution: Lao Cai, Tuyen Quang, Vinh Phuc, Quang Ninh, Ninh Binh, Thanh Hoa, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

61. *Acosmeryx shervillii* Boisduval, 1875 (Image 5.61)

Acosmeryx shervillii Boisduval, 1875, *Histoire Naturelle des Insectes. Species général des Lépidoptères Hétérocères*, 1: 217. Type locality: [India].

Materials examined: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Northern India, Sri Lanka, Nepal, Bhutan, southern China, Hong Kong, Thailand, Vietnam, Malaysia, and Indonesia (Sumatra, Borneo, Java).

Local distribution: Hoa Binh, Tuyen Quang, Cao Bang, Lang Son, Quang Ninh, Vinh Phuc, Ninh Binh, Thanh Hoa, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands (Lam Dong, Gia Lai, Dak Nong), and Dong Nai.

62. *Acosmeryx sericeus* (Walker, 1856) (Image 5.62)

Philampelus sericeus Walker, 1856, *List of the specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 181. Type locality: Silhet [Bangladesh].

Materials examined: 1 male, x.2020, Lam Dong province, Di Linh, 11.516°N, 108.083°E, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bangladesh, southern China, Thailand, Vietnam, and Malaysia.

Local distribution: Lao Cai, Tuyen Quang, Lang Son, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, Khanh Hoa, the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

Genus *Dahira* Moore, 1888

63. *Dahira obliquifascia siamensis* Melichar & Haxaire, 2021 (Image 6.63)

Dahira obliquifascia siamensis Melichar & Haxaire, 2021, *The European Entomologists*, 13 (3+4): 124. Type locality: [Laos].

Materials examined: 1 male, v.2016, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: Myanmar, China, Thailand, Vietnam,

and Laos.

Local distribution: Khanh Hoa and the Central Highlands (Kon Tum, Gia Lai).

64. *Dahira orlovi* (Zolotuhin & Ryabov, 2012)

Dahira pinratanai orlovi Zolotuhin & Ryabov, 2012, *The hawkmoths of Vietnam*, 2012: 202. Type locality: Gia Lai Pr., K'Bang Dist., Kon Ka Kinh NP [Vietnam].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012) as *Dahira pinratanai orlovi*. The subspecies *orlovi* was raised to species *orlovi* (Haxaire et al., 2021).

Distribution: Vietnam.

Local distribution: the Central Highlands (Gia Lai)

Genus *Angonyx* Boisduval, [1875]

65. *Angonyx testacea* (Walker, 1856) (Image 6.65)

Perigonia testacea Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 102. Type locality: "Unknown".

Materials examined: 1 male, x.2020, Lam Dong province, Di Linh, 11.516°N, 108.083°E, coll. Q.T. Le.

Distribution: India, Nepal, Myanmar, China, Taiwan, Thailand, Vietnam, Malaysia, Philippines, and Indonesia (Sumatra, Borneo, Java).

Local distribution: Lai Chau, Lao Cai, Lang Son, Bac Giang, Quang Ninh, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, and the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong).

Genus *Daphnis* Hübner, [1819]

66. *Daphnis hypothous crameri* Eitschberger & Melichar, 2010 (Image 6.66)

Daphnis hypothous crameri Eitschberger & Melichar, 2010, *The European Entomologist*, 2: 67. Type locality: Chiang Rai, Wiang Pa Pao [Thailand].

Materials examined: 2 males, v.2019, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Nepal, Bhutan, Myanmar, southern China, Taiwan, Hong Kong, Thailand, Vietnam, Malaysia, Philippines, western Indonesia, and the Western Palearctic region.

Local distribution: Lai Chau, Lao Cai, Yen Bai, Cao Bang, Lang Son, Thai Nguyen, Vinh Phuc, Hanoi, Ninh Binh, Nghe An, Thua Thien Hue, Quang Nam, Khanh Hoa, the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

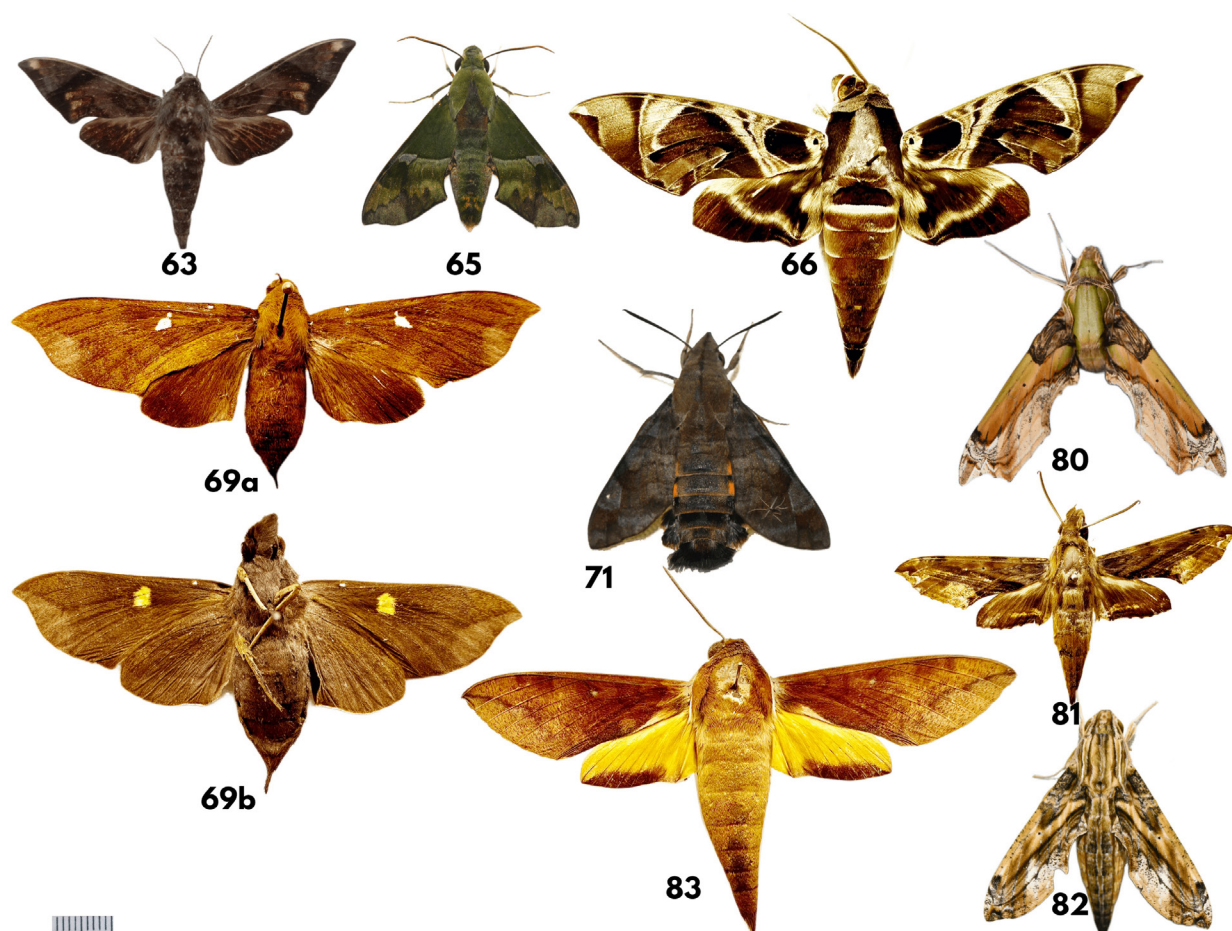


Image 6. Species pictures of the Genera *Daira*, *Angonyx*, *Daphnis*, *Eurypteryx*, *Macroglossum*, *Eupanacra*, and *Gnathothlibus* of the Subfamily Macroglossinae Harris, 1839.

63—*Daira obliquifascia siamensis* Melichar & Haxaire, 2021 | 65—*Angonyx testacea* (Walker, 1856) | 66—*Daphnis hypothous crameri* Eitschberger & Melichar, 2010 | 69—*Eurypteryx geoffreyi* Cadiou & Kitching, 1990* (a/dorsal side | b/ventral side) | 71—*Macroglossum belis* (Linnaeus, 1758) | 80—*Eupanacra busiris* (Walker, 1856) | 81—*Eupanacra sinuata* (Rothschild & Jordan, 1903) | 82—*Eupanacra variolosa* (Walker, 1856) | 83—*Gnathothlibus erotus* (Cramer, 1777). © T.Q. Le.

67. *Daphnis nerii* (Linnaeus, 1758)

Sphinx nerii Linnaeus, 1758, *Systema Naturae* (Edn 10), 1: 490. Type locality: "Unknown".

Materials examined: None

Remarks: This species was recorded previously by Hoang et al. (2011).

Distribution: Africa, Europe, Arabia, Afghanistan, Pakistan, India, Nepal, Myanmar, Japan, Thailand, Vietnam, Laos, and Indonesia (Sumatra).

Local distribution: Hanoi, Thua Thien Hue, the Central Highlands, and Ho Chi Minh City.

68. *Daphnis placida placida* (Walker, 1856)

Darapsa placida Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 186. Type locality: Samatra [Indonesia, Sumatra].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: India (Andaman & Nicobar Islands), southern China, Thailand, Vietnam, Philippines, Indonesia (Sumatra, Java, Bali, Flores, Timor), northern Australia, Vanuatu, New Caledonia, and Loyalty Islands and Malaysia.

Local distribution: the Central Highlands (Kon Tum)

Genus *Eurypteryx* Felder, C. & Felder, R., 1874

69. *Eurypteryx geoffreyi* Cadiou & Kitching, 1990* (Image 6.69)

Eurypteryx geoffreyi Cadiou & Kitching, 1990, *Lambillionea*, 90 (4): 15. Type locality: Nakhon Nayok, Khao Yai NP. [Thailand].

Materials examined: 1 female, v.2020, Lam Dong

province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Thailand and Vietnam

Local distribution: Lao Cai and the Central Highlands (Lam Dong).

Genus *Macroglossum* Scopoli, 1777

70. *Macroglossum affictitia* (Butler, 1875)

Macroglossum affictitia Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 240, pl. 36, fig. 7. Type locality: Canara [India, Karnataka].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: India, Myanmar, Thailand, and Vietnam.

Local distribution: the Central Highlands of Vietnam (Lam Dong)

71. *Macroglossum belis* (Linnaeus, 1758) (Image 6.71)

Sphinx belis Linnaeus, 1758, *Systema Naturae* (Edn 10), 1: 493. Type locality: "In calidis regionibus".

Materials examined: 1 female, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12,016°N, 107,716°E, 920 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Myanmar, Thailand, Vietnam, and Cambodia.

Local distribution: Lao Cai, Vinh Phuc, Ninh Binh, Da Nang, and the Central Highlands (Dak Nong).

72 *Macroglossum corythus* (Walker, 1856)

Macroglossum corythus Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collectio of the British Museum*, 8: 92. Type locality: Ceylon [Sri Lanka].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Western and northeastern India, Nepal, Bhutan, Bangladesh, Andaman Islands, eastern & southern China, Taiwan, Hong Kong, Japan, Thailand, Vietnam, Malaysia, Philippines, Indonesia, Wallacea, and Sundaland.

Local distribution: Lao Cai, Yen Bai, Lang Son, Bac Giang, Hai Phong, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, Da Nang, and the Central Highlands.

73. *Macroglossum divergens heliophila* Boisduval, ([1875])

Macroglossa heliophila Boisduval, 1875, *Histoire Naturelle des Insectes. Species général des Lépidoptères Hétérocères*, 1: 354. Type locality: [Indonesia].

Materials examined: None

Remarks: This species was recorded previously as *Macroglossum heliophila* Boisduval, ([1875]) by Zolotuhin & Ryabov (2012).

Distribution: Northeastern India, Sri Lanka, China, Taiwan, Japan, Thailand, Vietnam, Philippines, and New Guinea.

Local distribution: Ninh Binh, Nghe An, Thua Thien Hue, and the Central Highlands (Gia Lai).

74. *Macroglossum fritzei* Rothschild & Jordan, 1903

Macroglossum fritzei Rothschild & Jordan, 1903, *Novitates Zoologicae*, 9: 654. Type locality: Loo Choo Islands [Ryūkyū Islands: Japan].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: China, Japan, Thailand, Vietnam, and Borneo.

Local distribution: Quang Ninh, Vinh Phuc, Nghe An, Da Nang, and the Central Highlands (Gia Lai, Lam Dong).

75. *Macroglossum gyrans* Walker, 1856

Macroglossum gyrans Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 91. Type locality: [Northern India].

Materials examined: None

Remarks: This species was recorded previously by Hoang et al. (2011).

Distribution: India, Sri Lanka, Nepal, Myanmar, Thailand, Vietnam, Malaysia, and Indonesia (Sumatra, Borneo, Java) to Timor.

Local distribution: the Central Highlands (Gia Lai).

76. *Macroglossum mitchellii imperator* Butler, 1875

Macroglossum mitchellii imperator Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 243. Type locality: Ceylon [Sri Lanka].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: India, China, Taiwan, Thailand, Vietnam, Malaysia, and Sumatra.

Local distribution: Lai Chau, Lao Cai, Lang Son, Vinh Phuc, Ninh Binh, Nghe An, and the Central Highlands (Gia Lai, Lam Dong).

77. *Macroglossum neotroglodytus* Kitching & Cadiou, 2000

Macroglossum neotroglodytus Kitching & Cadiou, 2000, *Hawkmoths of the World*: 206. Type locality: Assam

[India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Southern & northeastern India, Sri Lanka, Nepal, Bhutan, southern China, Taiwan, Thailand, Vietnam, Malaysia, Philippines, and Indonesia.

Local distribution: Son La, Ha Giang, Vinh Phuc, Nghe An, and the Central Highlands (Kon Tum).

78. *Macroglossum pyrrhosticta* Butler, 1875

Macroglossum pyrrhosticta Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 242. Type locality: Shanghai [China].

Materials examined: None

Remarks: This species was recorded previously by Hoang et al. (2011).

Distribution: Eastern India, Sri Lanka, Nepal, Bhutan, the southern Russian Far East, China, Taiwan, Hong Kong, South Korea, North Korea, Japan, Thailand, Vietnam, Malaysia, Philippines, Indonesia, and Sundaland.

Local distribution: Lao Cai, Vinh Phuc, Ninh Binh, Nghe An, and the Central Highlands (Gia Lai).

Genus *Nephele* Hübner, [1819]

79. *Nephele hespera* (Fabricius, 1775)

Sphinx hespera Fabricius, 1775, *Systema Naturae*: 546. Type locality: "India orientali".

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Afghanistan, Pakistan, Sri Lanka, throughout India, Nepal, Bhutan, the Andaman Islands, Myanmar, southern China, Hong Kong, Thailand, Vietnam, Laos, Malaysia, Sumatra, and Java.

Local distribution: Yen Bai, Vinh Phuc, and the Central Highlands (Kon Tum).

Genus *Eupanacra* Cadiou & Holloway, 1989

80. *Eupanacra busiris* (Walker, 1856) (Image 6.80)

Panacra busiris Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 158. Type locality: Silhet [Bangladesh].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: North & northeastern India, Nepal, Myanmar, China, Thailand, Vietnam, Laos, Malaysia, and Indonesia.

Local distribution: Cao Bang, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, the Central Highlands (Lam

Dong, Dak Nong), and Dong Nai.

81. *Eupanacra sinuata* (Rothschild & Jordan, 1903) (Image 6.81)

Panacra sinuata Rothschild & Jordan, 1903, *Novitates Zoologicae*, 9: 537. Type locality: [N India].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: India (Arunachal Pradesh, Himachal Pradesh, Assam, Sikkim, Manipur, Meghalaya, Uttarakhand, West Bengal), Nepal, China, northern Thailand, Vietnam Laos, and Malaysia.

Local distribution: Lai Chau, Lao Cai, Hoa Binh, Vinh Phuc, Quang Binh, Thua Thien Hue, Khanh Hoa, and the Central Highlands (Kon Tum, Lam Dong, Dak Nong).

82. *Eupanacra variolosa* (Walker, 1856) (Image 6.82)

Panacra variolosa Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 156. Type locality: Silhet [Bangladesh].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Northeastern India, Bhutan; Bangladesh; southwestern China, Thailand, Vietnam; Laos, Malaysia (Peninsular, Sarawak), and Indonesia.

Local distribution: Bac Giang, Vinh Phuc, Nghe An, Quang Tri, Thua Thien Hue, Khanh Hoa, the Central Highlands (Lam Dong, Dak Nong), and Dong Nai.

Genus *Gnathothlibus* Wallengren, 1858

83. *Gnathothlibus erotus* (Cramer, 1777) (Image 6.83)

Sphinx erotus Cramer, 1777, *Uitlandsche Kapellen*, 2: 12, pl. 104, fig. B. Type locality: No locality given.

Materials examined: 1 male, v.2016, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: India (Punjab, Himachal Pradesh), the Andaman Islands), Indo-Australian tropics and eastwards into Polynesia as far as Pitcairn and Henderson Island.

Local distribution: Khanh Hoa, the Central Highlands (Kon Tum), and Dong Nai.

Genus *Cechenena* Rothschild & Jordan, 1903

84. *Cechenena aegrota* (Butler, 1875) (Image 7.84)

Pergesa aegrota Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 246. Type locality: Silhet [Bangladesh].

Materials examined: 2 males, 2 females, v.2016, Gia Lai province, K'Bang District, Kon Chu Rang NR, 14.471°N,

108.574°E, 1,097 m, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bhutan, Bangladesh, southern China, Hong Kong, Thailand, Vietnam, and Laos.

Local distribution: Lang Son, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, Quang Nam, and the Central Highlands (Gia Lai, Lam Dong).

85. *Cechenena helops* (Walker, 1856) (Image 7.85)

Philampelus helops Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 180. Type locality: "Port Natal".

Materials examined: 2 males, 2 females, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bhutan, southwestern China, Thailand, Vietnam, Malaysia, Philippines, and Indonesia.

Local distribution: Lao Cai, Lang Son, Thai Nguyen, Vinh Phuc, Ninh Binh, Thanh Hoa, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, Khanh Hoa, the Central Highlands (Kon Tum, Gia Lai, Lam Dong), and Dong Nai.

Genus *Cechetra* Zolotuhin & Ryabov, 2012

86. *Cechetra lineosa* (Walker, 1856) (Image 7.86)

Chaerocampa lineosa Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 144. Type locality: Silhet [Bangladesh].

Materials examined: 2 males, 1 female, v.2022, the Central Highlands of Vietnam, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Northern India, Nepal, Bhutan, Bangladesh, Myanmar, southern China, Taiwan, Thailand, Vietnam, Malaysia, and Indonesia.

Local distribution: Lai Chau, Lao Cai, Lang Son, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, and the Central Highlands.

87. *Cechetra minor* (Butler, 1875) (Image 7.87)

Chaerocampa minor Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 249. Type locality: Massuri [India].

Materials examined: 1 male, v.2016, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: India, Nepal, Bhutan, China, Taiwan, and Japan, Thailand, and Vietnam.

Local distribution: Lao Cai, Lang Son, Vinh Phuc, Ninh

Binh, Nghe An, Thua Thien Hue, Quang Nam, and the Central Highlands (Kon Tum, Gia Lai).

88. *Cechetra subangustata continentalis* Ivshin & Krutov, 2018 (Image 7.88)

Cechetra subangustata continentalis Ivshin & Krutov, 2018, *Zootaxa*, 4450(1): 13. Type locality: Nan, Doi Phu Kha NP. [Thailand].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: India (Arunachal Pradesh), Nepal, Bhutan, southwestern China, Taiwan, Thailand, Vietnam, Malaysia, and Indonesia.

Local distribution: Lai Chau, Lao Cai, Cao Bang, Lang Son, Nghe An, Quang Tri, Thua Thien Hue, and the Central Highlands (Gia Lai, Lam Dong, Dak Nong).

Genus *Griseosphinx* Cadiou & Kitching, 1990

89. *Griseosphinx marchandi* Cadiou, 1996* (Image 7.89)

Griseosphinx marchandi Cadiou, 1996, *Entomologia Africana*: 20. Type locality: Tonkin [Vietnam].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Vietnam

Local distribution: Cao Bang, Bac Kan, Thai Nguyen, Ninh Binh, Quang Binh, and the Central Highlands (Dak Nong).

Genus *Hippotion* Hübner, 1819 [1816]

90. *Hippotion boerhaviae* (Fabricius, 1775) (Image 7.90)

Sphinx boerhaviae Fabricius, 1775, *Systema Naturae*: 542. Type locality: Locality not stated.

Materials examined: 2 males, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Northeastern Pakistan, India, Sri Lanka, Nepal, Bhutan, southeastern China, Thailand, Vietnam, Philippines, Indonesia, New Guinea, eastern Australia, The Solomon Islands, and New Caledonia.

Local distribution: Lao Cai, Yen Bai, Lang Son, Vinh Phuc, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, the Central Highlands (Dak Nong, Lam Dong), and Dong Nai.

91. *Hippotion celerio* (Linnaeus, 1758)* (Image 7.91)

Sphinx celerio Linnaeus, 1758, *Systema Naturae* (Edn 10), 1: Type locality: Unknown.

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N,

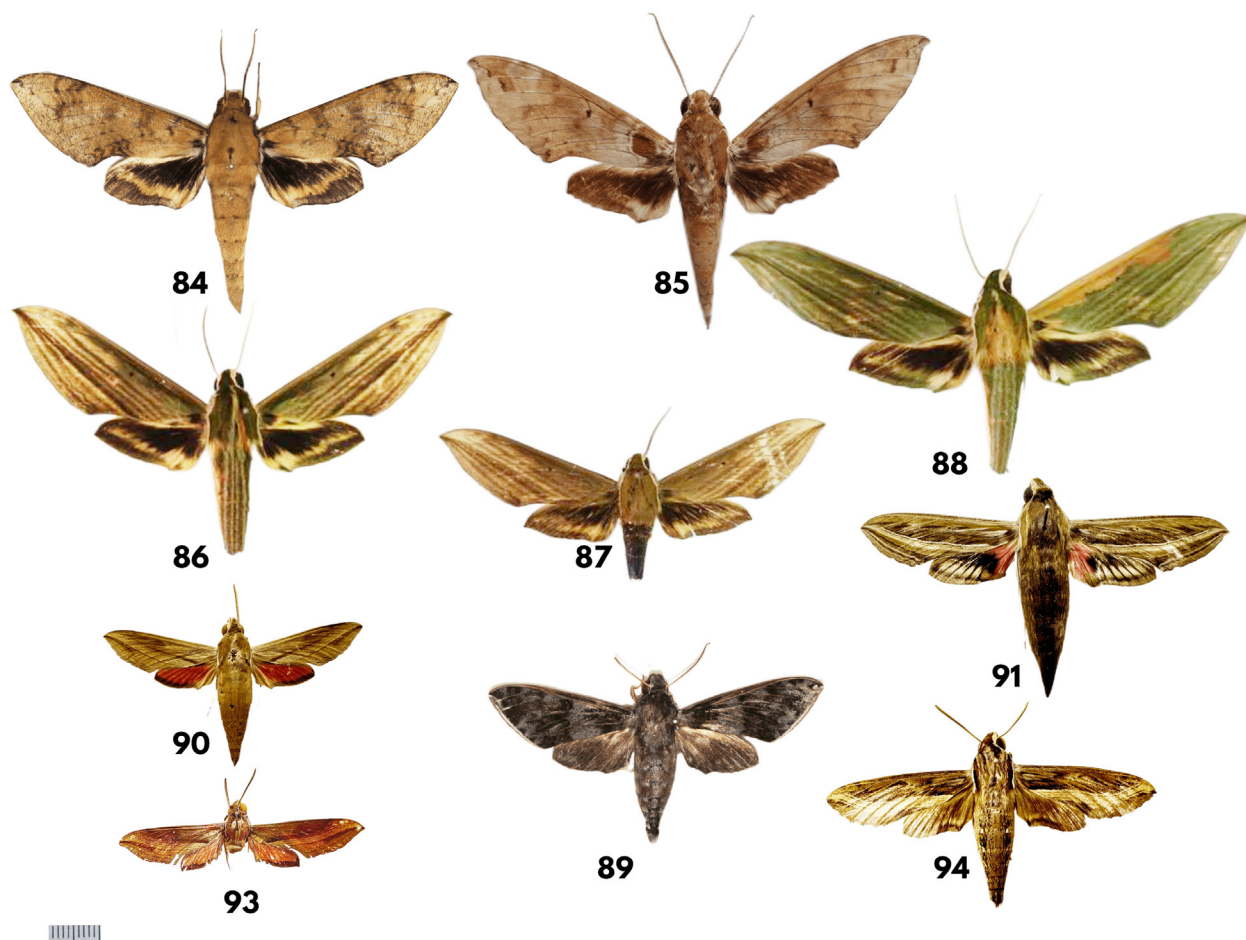


Image 7. Species pictures of the genera *Cechenena*, *Cechetra*, *Griseosphinx*, and *Hippotion* of the subfamily Macroglossinae Harris, 1839. 84—*Cechenena aegrota* (Butler, 1875) | 85—*Cechenena helops* (Walker, 1856) | 86—*Cechetra lineosa* (Walker, 1856) | 87—*Cechetra minor* (Butler, 1875) | 88—*Cechetra subangustata continentalis* Ivshin & Krutov, 2018 | 89—*Griseosphinx marchandi* Cadiou, 1996* | 90—*Hippotion boerhaviae* (Fabricius, 1775) | 91—*Hippotion celerio* (Linnaeus, 1758)* | 93—*Hippotion rosetta* (Swinhoe, 1892) | 94—*Hippotion velox* (Fabricius, 1793)*. © T.Q. Le.

107.716°E, 920 m, coll. Q.T. Le.

Distribution: Africa, southern Europe, Arabian Peninsula, Pakistan, India, Nepal, Bhutan, southern China, Hong Kong, and southern Japan, Vietnam, and Australia.

Local distribution: Lao Cai, Vinh Phuc, Hanoi, Thua Thien Hue, and the Central Highlands (Dak Nong).

92. *Hippotion rafflesii* (Moore, 1858)

Deilephila rafflesii Moore, 1858, in Horsfield & Moore, *A Catalogue of the Lepidopterous Insects in the Museum of the Hon. East-India Company*, 1: 276. Type locality: Java [Indonesia].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Southern and eastern India, Sri Lanka,

Nepal, Bhutan, Myanmar, southern China, Thailand, Vietnam, Malaysia, Philippines, and Indonesia.

Local distribution: Lao Cai, Hanoi, and the Central Highlands (Kon Tum).

93. *Hippotion rosetta* (Swinhoe, 1892) (Image 7.93)

Choerocampa rosetta Swinhoe, 1892, *Catalogue of Eastern Lepidoptera Heterocera in the Oxford University Museum*, 1: 16. Type locality: Ceram [Indonesia].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Southern Pakistan, India, Sri Lanka, Bhutan, China, Taiwan, Hong Kong, southern Japan, Thailand, Vietnam, Philippines, Maldives Islands, Andaman Islands, The Solomon Islands, and New Guinea.

Local distribution: Lao Cai, Lang Son, Vinh Phuc, Ninh

Binh, Nghe An, Quang Binh, Thua Thien Hue, the Central Highlands (Lam Dong, Kon Tum), and Dong Nai.

94. *Hippotion velox* (Fabricius, 1793)* (Image 7.94)

Sphinx velox Fabricius, 1793, *Systema Naturae*, 3(1): 378. Type locality: "India orientali".

Materials examined: 1 males, x.2020, Lam Dong province, Di Linh, 11.516°N, 108.083°E, coll. Q.T. Le.

Distribution: India, China, Taiwan, Thailand, Vietnam, Malaysia, Philippines, Indonesia, and Singapore.

Local distribution: Lao Cai, Quang Binh, and the Central Highlands (Lam Dong).

Genus *Pergesa* Walker, 1856

95. *Pergesa acteus* (Cramer, 1779) (Image 8.95)

Sphinx acteus Cramer, 1779, *Uitlandsche Kapellen*, 3: 93, pl.248, fig. A. Type locality: [Java].

Materials examined: 1 male, v.2016, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Nepal, Bhutan, Myanmar, China, Taiwan, Hong Kong, Japan, Thailand, Vietnam, Malaysia, Philippines, Indonesia, Sundaland, and Moluccas.

Local distribution: Lai Chau, Lao Cai, Cao Bang, Lang Son, Quang Ninh, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, the Central Highlands (Kon Tum, Gia Lai, Dak Nong), and Dong Nai.

Genus *Rhagastis* Rothschild & Jordan, 1903

96. *Rhagastis acuta* (Walker, 1856)* (Image 8.96)

Zonilia acuta Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 195. Type locality: Hindostan [India].

Materials examined: 1 male, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901 m, coll. Q.T. Le.

Distribution: India, Nepal, Bhutan, eastern Bangladesh, Myanmar, China (Guizhou, Yunnan, Hainan), Thailand, Vietnam, Laos, Cambodia, Malaysia, Philippines (Palawan) and Indonesia (Sumatra, Java).

Local distribution: Nghe An, Quang Binh, Quang Nam, and the Central Highlands (Gia Lai)

97. *Rhagastis albomarginatus* (Rothschild, 1894)

Metopsilus albomarginatus Rothschild, 1894, *Novitates Zoologicae*, 1: 78. Type locality: Assam [India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: India, Nepal, Bhutan, Myanmar, China, Hong Kong, Vietnam, Sumatra, Java, Borneo.

Local distribution: Lai Chau, Lao Cai, Lang Son, Bac Giang, Vinh Phuc, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, and the Central Highlands.

98. *Rhagastis castor aurifera* (Butler, 1875) (Image 8.98)

Pergesa castor aurifera Butler, 1875, *Proceedings of the Zoological Society of London*, 1875: 7. Type locality: "Sikhim".

Materials examined: 1 male, v.2016, Kon Tum province, Konplong District, Village Mang Canh, 14.667°N, 108.267°E, 1,226 m, coll. Q.T. Le.

Distribution: Northeastern India, Nepal, Bhutan, southern China, Thailand, and Vietnam.

Local distribution: Lao Cai, Cao Bang, Lang Son, Vinh Phuc, Quang Ninh, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, and the Central Highlands (Kon Tum, Gia Lai, Dak Nong).

99. *Rhagastis confusa* Rothschild & Jordan, 1903

Rhagastis confusa Rothschild & Jordan, 1903, *Novitates Zoologicae*, 9: 795. Type locality: [North India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Northern Pakistan, India, Nepal, Bhutan; southwestern China, Thailand, and northern Vietnam.

Local distribution: Lao Cai, Ninh Binh, and the Central Highlands (Gia Lai).

100. *Rhagastis olivacea* (Moore, 1872)

Pergesa olivacea Moore, 1872, *Proceedings of the Zoological Society of London*, 1872: 567. Type locality: "Simla".

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Northeastern Pakistan, northern India, Nepal, Bhutan, Myanmar, southern China, northern Thailand, Vietnam, and Laos.

Local distribution: Lai Chau, Lao Cai, Vinh Phuc, and the Central Highlands (Kon Tum).

101. *Rhagastis rubetra* Rothschild & Jordan, 1907

Rhagastis rubetra Rothschild & Jordan, 1907, *Novitates Zoologicae*, 14: 95. Type locality: "Nias".

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Thailand, Vietnam, Malaysia, Philippines, and Indonesia.

Local distribution: Lao Cai, Cao Bang, Lang Son, Quang Ninh, Nghe An, Quang Binh, Khanh Hoa, and the Central Highlands (Gia Lai, Lam Dong).

Genus *Theretra* Hübner, [1819]

102. *Theretra alecto* (Linnaeus, 1758)

Sphinx alecto Linnaeus, 1758, *Systema Naturae* (Edn 10), 1: 492. Type locality: [India].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: Greece, Bulgaria, Turkey, Iran, Turkmenistan, Uzbekistan, Kyrgyzstan, Afghanistan, Iraq, Lebanon, Israel, and Egypt, Pakistan, India, Sri Lanka, Nepal, Bhutan, China, Taiwan, Hong Kong, Japan, Vietnam, Philippines, Indonesia.

Local distribution: Lai Chau, Lao Cai, Lang Son, Vinh Phuc, Ninh Binh, and the Central Highlands (Lam Dong).

103. *Theretra boisduvalii* (Bugnion, 1839) (Image 8.103)

Sphinx boisduvalii Bugnion, 1839, *Annales de la Société Entomologique de France*, 1839: 13. Type locality: Île de Candie [Greece].

Materials examined: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Greece, India, Sri Lanka, Taiwan, Thailand, Vietnam, Laos and Indonesia.

Local distribution: Lao Cai, Vinh Phuc, Ninh Binh, Nghe An, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

104. *Theretra clotho* (Drury, 1773) (Image 8.104)

Sphinx clotho Drury, 1773, *Illustrations of Natural History. Wherein are exhibited upwards of two hundred and forty figures of exotic insects*, 2: Index [91], pl.28: 1. Type locality: Madras [India].

Materials examined: 1 male, 1 female, x.2017, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Northern Pakistan, India, Sri Lanka, Nepal, Bhutan, Myanmar, China, Hong Kong, Taiwan, South Korea, Japan, Vietnam, Laos, Indonesia, Philippines, and Sundaland.

Local distribution: Lao Cai, Vinh Phuc, Quang Ninh, Ninh Binh, Quang Tri, Thua Thien Hue, Quang Nam, Khanh Hoa, the Central Highlands (Kon Tum, Gia Lai, Dak Nong), and Dong Nai.

105. *Theretra lucasii* (Walker, 1856) (Image 8.105)

Chaerocampa lucasii Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 141. Type locality: Silhet [Bangladesh]

Materials examined: 1 male, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Nepal, Bangladesh, Myanmar, China, Hong Kong Taiwan, Thailand, Vietnam, Laos, Cambodia, Philippines, and Indonesia, Sumatra, Borneo, Java, the Lesser Sunda Islands.

Local distribution: Lang Son, Quang Ninh, Ninh Binh, Nghe An, Quang Binh, Quang Tri, Thua Thien Hue, Quang Nam, the Central Highlands (Gia Lai), and Dong Nai.

106. *Theretra lycetus* (Cramer, 1775) (Image 8.106)

Sphinx lycetus Cramer, 1775, *Uitlandsche Kapellen*, 1: 96. Type locality: Bengal [India], Coromandel, Ceylon [Sri Lanka].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Nepal, Myanmar, Thailand, Vietnam, Laos, Malaysia, and Indonesia.

Local distribution: Lao Cai, Yen Bai, Vinh Phuc, Quang Binh, and the Central Highlands (Dak Nong).

107. *Theretra nessus* (Drury, 1773) (Image 8.107)

Sphinx nessus Drury, 1773, *Illustrations of Natural History. Wherein are exhibited upwards of two hundred and forty figures of exotic insects*, 2: index [91], pl. 76, fig. 1. Type locality: Madras [India].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Nepal, Bhutan, Myanmar, southern China, Taiwan, South Korea, Japan, Thailand, Vietnam, Malaysia, Singapore, Indonesia, Sundaland, Philippines, and Australia.

Local distribution: Lai Chau, Lao Cai, Lang Son, Vinh Phuc, Ninh Binh, Hai Phong, Nghe An, Quang Tri, Thua Thien Hue, Quang Nam, Khanh Hoa, the Central Highlands (Kon Tum, Gia Lai, Lam Dong, Dak Nong), and Dong Nai.

108. *Theretra oldenlandiae* (Fabricius, 1775)* (Image 8.108)

Sphinx oldenlandiae Fabricius, 1775, *Systema Naturae*: 542. Type locality: "Indiae Oldenlandiis".

Materials examined: 1 male, xii.2020, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700

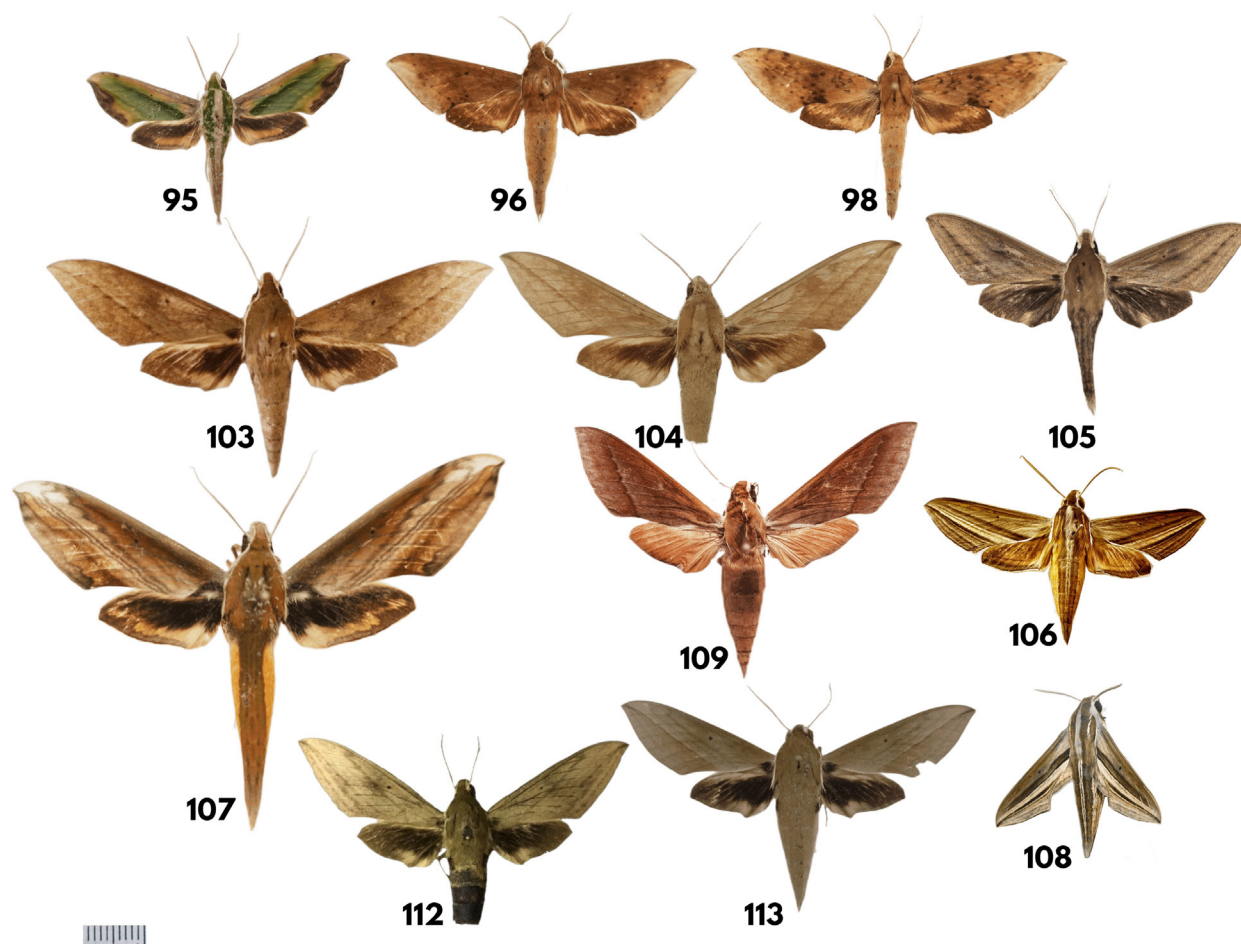


Image 8. Species pictures of the genera *Hippotion*, *Pergesa*, and *Rhagastis* of the subfamily Macroglossinae Harris, 1839.

95—*Pergesa acteus* (Cramer, 1779) | 96—*Rhagastis acuta* (Walker, 1856)* | 98—*Rhagastis castor aurifera* (Butler, 1875) | 103—*Theretra boisduvalii* (Bugnion, 1839) | 104—*Theretra clotho* (Drury, 1773) | 105—*Theretra lucasii* (Walker, 1856) | 106—*Theretra lycetus* (Cramer, 1775) | 107—*Theretra nessus* (Drury, 1773) | 108—*Theretra oldenlandiae* (Fabricius, 1775)* | 109—*Theretra pallicosta* (Walker, 1856) | 112—*Theretra sumatrensis* (Joicey & Kaye, 1917)* | 113—*Theretra tibetiana* Vaglia & Haxaire, 2010. © T.Q. Le.

m, coll. Q.T. Le.

Distribution: Northern Afghanistan, northern Pakistan, India, Sri Lanka, Nepal, Bhutan, Myanmar, China, Taiwan, Hong Kong, South Korea, Japan, Vietnam, Laos, Malaysia, The Solomon Islands, New Guinea, and Philippines.

Local distribution: Lai Chau, Lao Cai, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, and the Central Highlands (Gia Lai, Lam Dong).

109. *Theretra pallicosta* (Walker, 1856) (Image 8.109)

Chaerocampa pallicosta Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 145. Type locality: Silhet [Bangladesh], Hong Kong [China].

Materials examined: 1 male, v.2019, Gia Lai province, Kon Ka Kinh NP, 14.215°N, 108.283°E, 901 m, coll. Q.T. Le.

Distribution: India, Sri Lanka, Nepal, Bangladesh,

Myanmar, China, Hong Kong, Thailand, Vietnam, Malaysia, and Indonesia.

Local distribution: Lao Cai, Lang Son, Vinh Phuc, Quang Ninh, Ninh Binh, Nghe An, Thua Thien Hue, and the Central Highlands (Gia Lai, Lam Dong).

110. *Theretra silhetensis* (Walker, 1856)

Chaerocampa silhetensis Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 143. Type locality: Ceylon [Sri Lanka], [North India], Silhet [Bangladesh].

Materials examined: None

Remarks: This species was recorded previously by Hoang et al. (2011).

Distribution: India, Sri Lanka, Nepal, Bhutan, Bangladesh, Myanmar, the Andaman Islands, China, Taiwan, Japan, Thailand, Vietnam, Malaysia, and Indonesia.

Local distribution: Lao Cai, Cao Bang, Lang Son, Vinh Phuc, Bac Giang, Quang Binh, Thua Thien Hue, the Central Highlands (Kon Tum), and Dong Nai.

111. *Theretra suffusa* (Walker, 1856)

Chaerocampa suffusa Walker, 1856, *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, 8: 146. Type locality: [Hong Kong].

Materials examined: None

Remarks: This species was recorded previously by Zolotuhin & Ryabov (2012).

Distribution: India, Sri Lanka, Nepal, southern China, Taiwan, southern Japan (Ryukyu Archipelago), Thailand, Vietnam, Cambodia, Laos, Malaysia, Singapore, Indonesia (Sumatra, Java, Kalimantan, Sulawesi), and Palawan.

Local distribution: Lang Son, Vinh Phuc, Ninh Binh, Quang Binh, Quang Tri, and the Central Highlands (Kon Tum).

112. *Theretra sumatrensis* (Joicey & Kaye, 1917) * (Image 8.112)

Cechenena sumatrensis Joicey & Kaye, 1917, *Annals and Magazine of Natural History*, 20: 307. Type locality: Sumatra Langkat.

Materials examined: 1 male, v.2022, Lam Dong province, Bidoup-Nui Ba NP, 20.333°N, 105.583°E, 1,700 m, coll. Q.T. Le.

Distribution: Northeastern India, Bhutan, central Myanmar, southwestern China, northern Thailand, Vietnam, Laos, and Malaysia.

Local distribution: Lai Chau, Lao Cai, Lang Son, Vinh Phuc, Ninh Binh, Nghe An, Thua Thien Hue, Quang Nam, and the Central Highlands (Lam Dong).

113. *Theretra tibetiana* Vaglia & Haxaire, 2010 (Image 8.113)

Theretra tibetiana Vaglia & Haxaire, 2010, *The European Entomologist*, 3(1): 60. Type locality: Tibet [China].

Materials examined: 1 male, v.2020, Dak Nong province, Krong No District, Nam Nung NR, 12.016°N, 107.716°E, 920 m, coll. Q.T. Le.

Distribution: Northeastern India, Bhutan, China, Thailand, and Vietnam.

Local distribution: Lao Cai, Lang Son, Nghe An, Thua Thien Hue, Quang Nam, the Central Highlands (Kon Tum, Dak Nong), and Dong Nai.

DISCUSSION

Hoang et al. (2011) reported 23 species of hawkmoth in the Central Highlands of Vietnam, including one unidentified species, *Smerinthulus* sp.1. Therefore, this species is not listed in the Result.

The genus *Eurypteryx* Felder & Felder, 1874 (Sphingidae: Macroglossinae) is limited to the Oriental and Australian regions (Jiang & Wang 2020) and currently comprises two species in Vietnam, *Eurypteryx geoffreyi* Cadiou & Kitching, 1990 and *Eurypteryx bhaga* (Moore, 1866) (Zolotuhin & Ryabov 2012). Both species are rare in Vietnam. Zolotuhin & Ryabov (2012) reported that the only male of *Eurypteryx geoffreyi* was collected at an elevation of about 1,600 m in the disturbed humid primary forest on Fansipan mountain in northwestern Vietnam. In our surveys, we collected a female specimen of the species at an elevation of about 1,450 m in an evergreen broad-leaf forest while feeding on flowers of a low tree at Giang Ly ranger station in Bidoup-Nui Ba National Park, Lam Dong province. Its distribution is broader than previous records suggest, not limited to the north-west but also occurring in the Central Highlands and maybe has an even wider distribution.

Contrasted with prior studies, our updated list includes 16 species documented in both the 2011 and 2012 lists. The total of 78 species closely aligns with Zolotuhin & Ryabov's (2012) report, with 12 species matching Hoang et al.'s (2011) list. The key highlight is the addition of 14 new species to the Sphingidae checklist for the Central Highlands of Vietnam.

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