



An updated checklist of Sphingidae (Lepidoptera) from Great Nicobar Island with a new species record from India

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Abstract

In this paper, we report *Ambulyx tattina* (Jordan, 1919) from the Great Nicobar, a new addition to the Sphingid fauna of India. Additionally, we report four species of Sphingidae i.e., *Apocalypsis velox* Butler, 1876, *Cechenena helops helops* (Walker, 1856), *Pergesa acteus* (Cramer, [1779]), and *Theretra silhetensis* (Walker, 1856) for the first time from Nicobar. An updated checklist with 28 species under 18 genera of Sphingidae of the great Nicobar Island is given.

Keywords: *Ambulyx tattina*, *Apocalypsis velox*, *Cechenena helops helops*, *Pergesa acteus*, *Theretra silhetensis*

Introduction

Sphingidae are found worldwide, but it is most diverse in the tropics. They are four times as many Neotropical species as Nearctic ones, and a similar relationship between the Palearctic fauna and the Afrotropical (approximately three times) and Oriental (about four times) faunas (Holloway, 1987). Sphingidae comprises 1602 species described in 205 genera (Kitching *et al.*, 2018) with 198 species (Chandra *et al.*, 2014, Sondhi *et al.*, 2017) from India, and 23 from Great Nicobar Island (Chandra *et al.*, 2014, Chandra *et al.* in Chandra & Raghunathan, 2018, Singh, 2019).

In the present manuscript, we report *Ambulyx tattina* Jordan, 1919 from the Great Nicobar Island, an addition to the Indian Sphingidae. Additionally, we report four species of Sphingidae i.e., *Apocalypsis velox* Butler, 1876, *Cechenena helops helops* (Walker, 1856), *Pergesa acteus* (Cramer, [1779]), *Theretra silhetensis* (Walker, 1856) for the first time from Nicobar, which are, so far, reported either from the Andaman Islands or from the mainland India. An updated checklist with 28 species under 18 genera and three subfamilies of Sphingidae of the great Nicobar is provided.

Material and Methods

The collection was made with the help of vertical sheet light trap. The collected specimens were processed as per

the standard techniques in Lepidopterology. Dissections were done by separating the abdomen and keeping the same in KOH for overnight. Identification was done from the relevant literature. The studied material is deposited in the National Zoological Collections of ZSI (NZCZSI). In the manuscript, we included the material examined for those species which have been collected during our expedition to the Great Nicobar and studied for their voucher specimen and, for the rest of the species we have provided the distribution only, with relevant references. We considered all the species records with distribution published as Andaman & Nicobar Islands as the species of Nicobar fauna.

Results and Discussion

New Record

Family SPHINGIDAE

Subfamily SMERINTHINAE

Genus *Ambulyx* Westwood, 1847

1847. *Ambulyx* Westwood, *Cabinet Orient. Ent.*: [61].

Range: From India to Solomon Islands, but is most diverse from India to Sundaland (Oriental Region) (Holloway, 1987).

Ambulyx tattina (Jordan, 1919)

1919. *Oxyambulyx tattina* Jordan, *Novit. Zool.*, 26: 192.

(Figures 1, 2, 3, 11)

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Diagnostic characters: Adults brick red. Forewing with subbasal dark patch absent; posterior margin dark; medial and postmedial lines run parallel and almost comes closed on posterior margin on both forewings and hindwings. In male genitalia the uncus is like lancet, gnathos U shaped, valves are flap like, saccus is triangle. Aedeagus is bent near the base, a strong saw-like structure is present on apex, vesica is without orientation.

Material examined: A & N Island, Nicobar, East West road, 08.xi.2018 (01 ♂), leg. K.C. Gopi & party (NZCZSI).

Distribution. India: Nicobar Island. *Elsewhere:* Peninsular Malaysia, Sumatra, Borneo and Philippines (Holloway, 1987)

Remarks: Collection of *A. tattina* from Great Nicobar is its first record from India.

An updated checklist of Sphingidae from Great Nicobar Island

Subfamily SPHINGINAE

1. *Acherontia lachesis* (Fabricius, 1798)

1798. *Sphinx lachesis* Fabricius; *Ent. Syst.*, Suppl.: 434.

Distribution in India: Andaman and Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu, Uttarakhand, West Bengal (Singh, 2019).

2. *Agrius convolvuli convolvuli* (Linnaeus, 1758)

1758. *Sphinx convolvuli* Linnaeus; *Syst. Nat.* edn. 10(1): 490.

Distribution in India: Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, South India, Uttarakhand, Western and Eastern Himalayas, West Bengal (Chandra *et al.*, 2014, Singh, 2019), Delhi (Paul *et al.*, 2017), Uttar Pradesh (Smetacek, 2008), Himachal Pradesh, Punjab (Pathania *et al.*, 2014), Madhya Pradesh (Chandra *et al.*, 2013)

3. *Meganoton nyctiphanes* (Walker, 1856)

1856. *Macrosila nyctiphanes* Walker; *List Spec. Lepid. Insects Colln. Br. Mus.* 8: 209.

Distribution in India: Andaman & Nicobar Islands, Assam, Sikkim, Tamil Nadu, East Himalaya, Jharkhand, Southern Peninsula (Chandra *et al.*, 2014, Singh, 2019).

4. *Apocalypsis velox* Butler, 1876 (Figure 4)

1876. *Apocalypsis velox* Butler, *Trans. zool. Soc. Lond.* 9: 641

Material examined: Andaman & Nicobar Islands, Nicobar, East West road, 08.xi.2018 (01 ♂), leg. K.C. Gopi & party (NZCZSI).

Distribution in India: Meghalaya, Sikkim and West Bengal (Chandra *et al.*, 2014), Andaman Island (Chandra *et al.* in Chandra & Raghunathan, 2018), Nicobar Island (present study).

5. *Psilogramma discistriga* (Walker, 1865) (Figure 5)

1856. *Macrosila discistriga* Walker, *List Spec. Lep. Ins. Brit. Mus.* 8: 209-210.

Material examined: A & N Islands, Nicobar, East West road, 08.xi.2018 (01 exs.), leg. K.C. Gopi & party (NZCZSI).

Distribution in India: Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Gujarat, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Uttrakhand, West Bengal (Singh, 2019), Delhi (Paul *et al.*, 2017); Punjab (Pathania *et al.*, 2014), Himachal Pradesh, Karnataka, Tamil Nadu (Chandra *et al.*, 2014); Uttarakhand (Smetacek, 1994, 2008; Sanyal *et al.*, 2018); West Bengal (Shah *et al.*, 2018).

6. *Psilogramma increta* (Walker, [1865])

[1865]. *Anceryx increta* Walker, *List Spec. Lepid. Insects Colln Br. Mus.* 31: 36.

Distribution in India: Andaman & Nicobar Islands, Jammu and Kashmir, Uttarakhand (Chandra *et al.*, 2014).

7. *Psilogramma andamanica* (Brechlin, 2001)

2001. *Psilogramma andamanica* Brechlin, *Arthropoda* 9(2): 8-9, Abb. 5, 35, 53, 58.

Distribution in India: Andaman and Nicobar Islands (Brechlin, 2001)

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8. *Cephanodes picus* (Cramer, 1777)

1777. *Sphinx picus* Cramer, *Uitl. Kapell.*, 2: 38.

Distribution in India: Andaman & Nicobar Islands, Madhya Pradesh, Goa, Himachal Pradesh, Maharashtra, Tamil Nadu, Uttarakhand (Chandra *et al.*, 2014).

9. *Daphnis hypothous crameri* Eitschberger & Melichar, 2010 (Figure 6)

2010. *Daphnis hypothous crameri* Eitschberger & Melichar, *European Entomologist*, 2(3-4): 67.

Material examined: Andaman & Nicobar Islands, Nicobar, bird watching point, 14.xi.2018 (06 exs.), Galathea, 07.xi.2018 (01 exs.), leg. K.C. Gopi & party (NZCZSI).

Distribution in India: Arunachal Pradesh (Athreya, 2013); Andaman and Nicobar Islands, Assam, Andhra Pradesh, Gujarat, Madhya Pradesh (Chandra *et al.*, 2014); Jharkhand (Sambath, 2011); Karnataka (Melichar *et al.*, 2018); Manipur; Meghalaya (Mandal and Ghosh, 1999); Odisha (Mandal and Maulik 1991); Sikkim (Dudgeon, 1898); Tamil Nadu (Iyer and Kitching, 2019); Uttarakhand (Smetacek, 1994, 2008; Sanyal *et al.*, 2018); West Bengal (Shah *et al.*, 2018).

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

1856. *Darapsa placida* Walker, *List Spec. Lepid. Insects Colln Br. Mus.* 8: 186.

Distribution in India: Andaman & Nicobar Islands (Chandra *et al.*, 2014).

11. *Acosmeryx shervillii* (Boisduval, [1875])

[1875] *Acosmeryx shervillii* Boisduval, *Hist. nat. Ins., Spec. gén. Lépid. Hétérocères*, 1: 217.

Distribution in India: Andaman & Nicobar Islands, Sikkim (Chandra *et al.*, 2014), Northern India, Maharashtra and Southern India.

12. *Eupanacra busiris busiris* (Walker, 1856)

1856. *Panacra busiris* Walker, *List Spec. Lepid. Insects Colln Br. Mus.* 8: 158.

Distribution in India: Andaman & Nicobar Islands, Meghalaya, Sikkim and West Bengal (Chandra *et al.*, 2014), Assam (Arandhara, 2016).

13. *Cechenena helops helops* (Walker, 1856) (Figure 7)

1856. *Philampelus helops* Walker, *List Spec. Lepid. Insects Colln Br. Mus.* 8: 180.

Material examined: Andaman & Nicobar Islands, Nicobar, East West road, 08.xi.2018 (01 exs.), leg. K.C. Gopi & party (NZCZSI).

Distribution in India: Sikkim, Meghalaya (Chandra *et al.*, 2014), Nicobar Island (present study).

14. *Pergesa acteus* (Cramer, [1779]) (Figure 8)

[1779] *Sphinx acteus* Cramer, *Uitl. Kapellen* 3(17-21).

Material examined: Andaman & Nicobar Islands, Nicobar, bird watching point, 14.xi.2018 (02 exs.), East West road, 13.xi.2018 (01 exs.), leg. K.C. Gopi & party (NZCZSI).

Distribution in India: Andaman Islands, Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir,

Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, South India, Uttarakhand, West Bengal, Western & Eastern Himalayas (Singh, 2019), Nicobar Island (present study).

15. *Theretra clotho* (Drury, 1773) (Figure 9)

1773. *Sphinx clotho* Drury, *Illust. Nat. Hist. Exot. Insects* 2: 48.

Material examined: Andaman & Nicobar Islands, Nicobar, bird watching point, 14.xi.2018 (12 exs.), Galathea, 07.xi.2018 (03 exs.), 03.xi.2018 (01 exs.), watch tower, 06.xi.2018 (01 exs.), 4 km south of Vijay nagar, 12.xi.2018 (02 exs.), leg. K.C. Gopi & party (NZCZSI).

Distribution in India: Throughout the mainland (except North-West Himalaya) including Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu, Uttarakhand, West Bengal (Singh, 2019).

16. *Theretra lucasi* (Walker, 1856) (Figure 10)

1856. *Chaerocampa* [sic] *lucasii* Walker, *List Specimens lepid. Insects Colln Br. Mus.* 8: 141.

Distribution in India: Western Ghats (India), northeastern India (Pittaway, 2021), Andaman & Nicobar Islands (Chandra *et al.* in Chandra & Raghunathan, 2018), Jammu and Kashmir, Sikkim (Sanyal *et al.*, 2018), Karnataka (Melichar *et al.*, 2018); Kerala (Sondhi *et al.*, 2018); Manipur; Meghalaya (Mandal and Ghosh, 1999); Tamil Nadu (Iyer and Kitching, 2019); West Bengal (Shah *et al.*, 2018).

17. *Theretra oldenlandiae oldenlandiae* (Fabricius, 1775)

1775. *Sphinx oldenlandiae* Fabricius, *Syst. Ent.*: 542.

Distribution in India: Andaman Islands (Chandra, 1994); Arunachal Pradesh (Athreya, 2013); Assam (Arandhara *et al.*, 2017); Chattishgarh, Gujarat, Jammu and Kashmir, Maharashtra, Manipur, Nagaland, Tamil Nadu, Uttar Pradesh (Shubhalaxmi *et al.*, 2011); Delhi (Paul *et al.*, 2017); Himachal Pradesh, Punjab (Pathania *et al.*, 2014); Jharkhand (Sambath, 2011, Singh *et al.*, 2017a,b); Karnataka (Melichar *et al.*, 2018); Madhya Pradesh (Chandra *et al.*, 2013); Meghalaya (Mandal and Ghosh, 1999); Sikkim (Khan and Raina, 2017); Tripura (Mandal *et al.*, 2000); Uttarakhand (Smetacek, 1994, 2008); West Bengal (Shah *et al.*, 2018).

18. *Theretra silhetensis* (Walker, 1856)

1856. *Chaerocampa [sic] silhetensis* Walker, *List Spec. Lepid. Insects Colln Br. Mus.* 8: 143.

Distribution in India: Andaman Islands, Himanchal Pradesh, Madhya Pradesh and West Bengal (Chandra *et al.*, 2014), Nicobar Island (present study).

19. *Theretra nessus* (Drury, 1773)

1773. *Sphinx nessus* Drury, *Illust. Nat. Hist. Exot. Insects* 2: 46.

Distribution in India: Andaman & Nicobar Islands, Gujarat, Himanchal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Sikkim, Tamil Nadu, Tripura, Uttrakhand, Andhra Pradesh, Arunachal Pradesh, Assam, Eastern Himalaya, Goa, Jammu & Kashmir, Jharkhand, Karnataka, Mizoram, Nagaland, Southern India and West Bengal (Chandra *et al.*, 2014, Singh, 2019).

20. *Hippotion celerio* (Linnaeus, 1758)

1758. *Sphinx celerio* Linnaeus, *Syst. Nat.* (Edn 10) 1: 491.

Distribution in India: Andaman and Nicobar Islands (Chandra & Kumar, 1992); Arunachal Pradesh (Athreya, 2013, Kaleka *et al.*, 2018); Delhi (Paul *et al.*, 2017); Gujarat, Himachal Pradesh, Madhya Pradesh, Uttar Pradesh (Chandra *et al.*, 2014); Jammu and Kashmir, Sikkim, Uttarakhand (Sanyal *et al.*, 2018, Kaleka *et al.*, 2018); Karnataka (Melichar *et al.*, 2018, Kaleka *et al.*, 2018); Maharashtra (Shubhalaxmi *et al.*, 2011, Gurule and Nikam, 2013); Manipur; Meghalaya (Mandal and Ghosh, 1999); Punjab (Pathania *et al.*, 2014, Kaleka *et al.*, 2018); Rajasthan (Sharma, 2014); Tamil Nadu (Iyer and Kitching, 2019); West Bengal (Shah *et al.*, 2018).

21. *Hippotion rosetta* (Swinhoe, 1892)

1892. *Chaerocampa [sic] rosetta* Swinhoe, *Cat. Het. Mus. Oxford* (1): 16.

Distribution in India: Uttrakhand (Chandra *et al.*, 2014), Andaman & Nicobar (Chandra *et al.* in Chandra & Raghunathan, 2018); Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Gujarat, Haryana, Himachal Pradesh, Sikkim, Lakshadweep Island, Maharashtra, Uttar Pradesh, West Bengal (Shubhalaxmi *et al.*, 2011); Karnataka (Melichar *et al.*, 2018); Manipur; Meghalaya (Mandal and Ghosh, 1999); Odisha (Mandal and Maulik, 1991); Tamil Nadu (Iyer and Kitching, 2019); Uttarakhand (Smetacek, 1994, 2008; Sanyal *et al.*, 2018).

22. *Hippotion velox* (Fabricius, 1793)

1793. *Sphinx velox* Fabricius, *Ent. Syst.* 3(1): 378.

Distribution in India: Andaman & Nicobar Island, Maharashtra, Sikkim, Southern India & West Bengal (Chandra *et al.*, 2014).

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23. *Amplipterus panopus* (Cramer, [1779])

[1779]. *Sphinx panopus* Cramer, *Util. Kapellen* 3(17-21): 50.

Distribution in India: Andaman & Nicobar Islands, Assam, Sikkim, Tamil Nadu and West Bengal (Chandra *et al.*, 2014).

24. *Clanis phalaris* (Cramer, 1777)

[1777]. *Sphinx phalaris* Cramer, *Util. Kapellen* 2(9-16): 83.

Distribution in India: Andaman & Nicobar Islands, Andhra Pradesh, Karnataka, Madhya Pradesh, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal (Chandra *et al.*, 2014).

25. *Polyptychus trilineatus trilineatus* Moore, 1888

1888. *Polyptychus trilineatus* Moore, *Proc. zool. Soc. Lond.* 1888: 390.

Distribution in India: Andaman & Nicobar Islands, Himanchal Pradesh, Karnataka, Meghalaya, Nagaland, Sikkim and Uttrakhand (Chandra *et al.*, 2014).

26. *Marumba dyrus dyrus* (Walker, 1856)

1856. *Smerinthus dyras* Walker, *List Spec. Lepid. Insects Colln Br. Mus.* 8: 25.

Distribution in India: Andaman & Nicobar Islands, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Sikkim, Southern India, Uttrakhand, West Bengal (Chandra *et al.*, 2014).

27. *Ambulyx tattina* (Jordan, 1919) (Figure 11)

1919. *Oxyambulyx tattina* Jordan, *Novit. Zool.*, 26: 192.

Distribution in India: Nicobar (present study).

28. *Ambulyx substrigilis substrigilis* (Westwood, 1847)

1847. *Ambulyx* Westwood, *Cabinet Orient. Ent.*: [61].

Distribution in India: Andaman & Nicobar Islands, Jharkhand, Maharashtra, Southern India, Arunachal Pradesh, Karnataka, Meghalaya, Sikkim, Uttrakhand, West Bengal (Chandra *et al.*, 2014, Singh, 2019).



Figures 1-11. *Ambulyx tattina* (Jordan) (1-3) 1. Imago, 2. Male genitalia, 3. Aedeagus, 4. *Apocalypsis velox* Butler, 1876, 5. *Psilogramma discistriga* Walker, 1856, 6. *Daphnis hypothous crameri* Eitschberger & Melichar, 2010, 7. *Cechenena helops helops* (Walker, 1856), 8. *Pergesa acteus* (Cramer, [1779]), 9. *Theretra clotho* (Drury, 1773), 10. *Theretra lucasi* (Walker, 1856), 11. *Ambulyx tattina* (Jordan, 1919).

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