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The type series of the hawkmoth *Clanis hyperion* Cadiou & Kitching, 1990 comprised a holotype male and a paratype series of 17 males and six females captured at various locations in northwestern Thailand between 1988 and 1989 (Cadiou & Kitching 1990). Additional non-type materials comprised a further three males and one female from northwestern Thailand and a single male from the Khasi Hills, Assam [Meghalaya], India (Cadiou & Kitching 1990). *Clanis hyperion* closely resembles *Clanis titan* Rothschild & Jordan 1903, but the two species can be distinguished by the different extents of the pale apical area of the forewing upperside. In *C. titan*, this reaches only as far as vein M1, whereas in *C. hyperion*, the pale area extends beyond vein M2 (Image 1). Some specimens of *Clanis undulosa* Moore, 1879 can also be similar but this species is easily distinguished from both *C. hyperion* and *C. titan* by the presence of a conspicuous black streak on the underside of the forewing near the base; this streak is lacking in both *C. hyperion* and *C. titan*. In addition, the uppersides of the tibiae of the mid- and hind legs are pink in *C. hyperion* but white in *C. titan* and *C. undulosa*.

More recently, specimens of *C. hyperion* have been captured in Laos and southern Myanmar (Burma) (Eitschberger 2004). There is also a single male in the collection of the Natural History Museum, London, UK, from “Xuebanshan, Nanping side” (correctly “Xuebangshan, Lanping side”), Yunnan, China. Nothing is known of the early stages and the habitat of the species, beyond what is indicated on the data labels.

A FIRST RECORD OF *CLANIS HYPERION* CADIOU & KITCHING, 1990 (LEPIDOPTERA: SPHINGIDAE) IN BHUTAN, AND A PRELIMINARY CHECKLIST OF THE HAWKMOTHS OF MENDRELGANG, BHUTAN

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Methods: Mendrelgang is a division of Tsirang Dzongkhag (District) in the south-central region of Bhutan. It is located at approximately 27°02'N & 90°10'E, and covers an area of some 15km² at an altitude between 700–1750 m (Royal Government of Bhutan 2012). The region has a temperate climate with the temperature ranging between 20°C and 35°C. Winter extends from October to March, followed by summer from April to June and monsoon from June to September. The vegetation types found in this region are classified as temperate broadleaf forest at lower elevations and chir pine forest at higher altitudes (National Statistics Bureau 2010).

The collection of moths was undertaken opportunistically, employing no particular methodology. Moths were observed at 20W fluorescent lamps that had been left on overnight in the Mendrelgang Middle Secondary School between December 2011 and September 2012. Specimens were taken in an ethyl acetate collecting jar, pinned and labeled as soon as they were caught, then later sorted and identified to species

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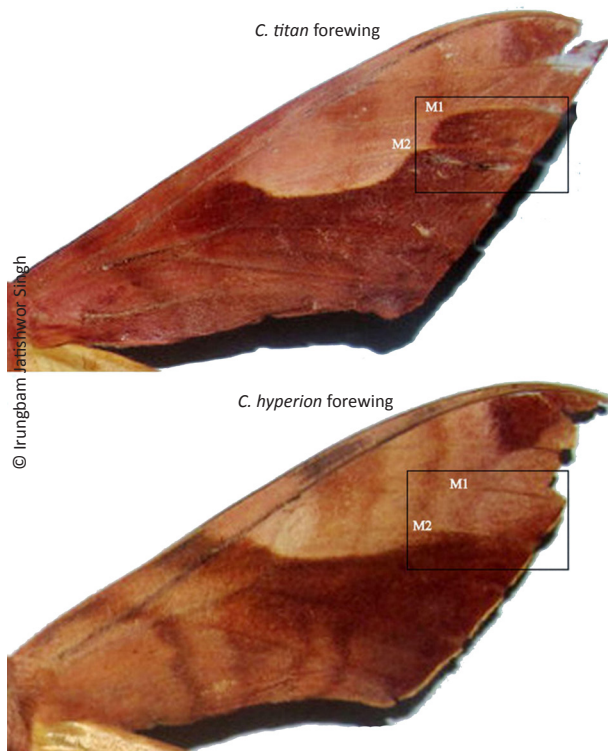


Image 1. Comparison of forewings between *C. titan* and *C. hyperion* showing the extension of pale apical region of *C. hyperion* beyond vein M2.

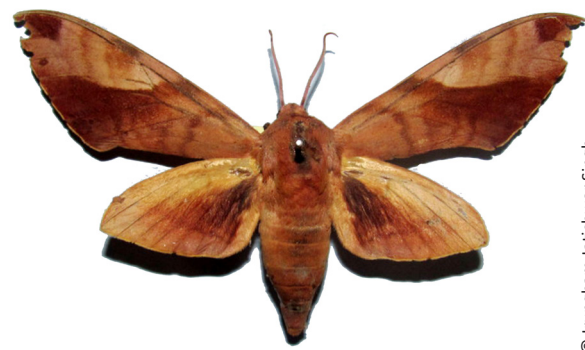


Image 2. *Clanis hyperion* Cadiou & Kitching, male, upperside

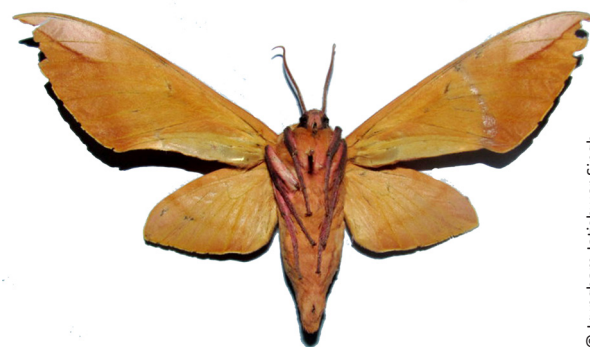


Image 3. *Clanis hyperion* Cadiou & Kitching, male, underside

level in the laboratory. These voucher specimens are deposited in the Department of Science Specimen Insect Museum, Mendrelgang Middle Secondary School, Tsirang. Initial identifications were carried out with the help of available literature and identification keys, and internet references. Species that were not identified or were potentially problematic taxonomically were sent to the second author at the Natural History Museum, London, UK, for confirmation.

Results and Discussion: Among the 27 species recorded (Appendix 1), the most notable was a specimen of *Clanis hyperion* which was attracted to a whitewashed wall at the residence of the first author on 13 May 2012 (Images 2 & 3). Prior to 2012, only a single paratype of this species was known from India, from an unspecified locality in the Khasi Hills of Meghalaya State. The present record extends the known distribution of *C. hyperion* to the eastern Himalaya and more significantly it is the first record from northwest of the Brahmaputra River. It thus represents a significant range extension for the species. Recent studies of Saturniidae (Emperor Silkmoths) in northeastern India and adjacent territories have shown that the Brahmaputra may be a significant barrier, with what was once considered to be a single species actually

consisting of two closely related species, one inhabiting either side of the river; e.g., *Archaeoattacus edwardsii* (White, 1859) and *A. malayanus* Kurosawa & Kishida, 1994 (Nässig et al. 2010) or *Saturnia (Rinaca) zuleika* Hope, 1834 and *S.(R.) lesoudieri* Le Mout, 1933 (Nässig & Naumann, 2010). A similar situation may be true in the case of *Clanis hyperion* and further studies should be undertaken to determine whether or not the Bhutanese populations are conspecific with those from further east and south.

References

- Cadiou, J.M. & I.J. Kitching (1990). New Sphingidae from Thailand (Lepidoptera). *Lambillionea* 90(4): 3–34.
- Eitschberger, U. (2004). Revision der Schwärmergattung *Clanis* Hübner, [1819] (Lepidoptera, Sphingidae). *Neue Entomologische Nachrichten* 58: 51–348, 354–399.
- Nässig, W.A. & S. Naumann (2010). Two species in *Saturnia (Rinaca) zuleika* Hope, 1843 (Lepidoptera: Saturniidae). *Nachrichten des Entomologischen Vereins Apollo* (N.F.) 31: 127–143.
- Nässig, W.A., S. Naumann & R. Rougerie (2010). Evidence for the existence of three species in the genus *Archaeoattacus* (Lepidoptera: Saturniidae). *Journal of Research on the Lepidoptera* 43: 37–47.
- National Statistics Bureau (2010). *Annual Dzongkhag Statistics, Dzongkhag Administration, Tsirang*. National Statistics Bureau, Thimphu. Issue 1, Catalogue No. 104, 1–33pp.

Appendix 1. Annotated checklist of hawkmoths in Mendrelgang, Bhutan

Family: Sphingidae

Subfamily: Sphinginae

1. *Acherontia lachesis* Fabricius 1798, Greater Deaths' Head Hawkmoth (18.ix.2012)
2. *Agrius convolvuli* Linnaeus 1758, Convolvulus Hawkmoth (13.v.2012)
3. *Apocalypsis velox* Butler 1876, Bald Hawkmoth (18.vi.2012)
4. *Psilogamma menephron* Cramer 1780, Brown Hawkmoth (21.v.2012, 16.vi.2012, 26.viii.2012)

Subfamily: Smerinthinae

1. *Ambulyx ochracea* Butler 1885, Ochreous Gliding Hawkmoth (20.iii.2012; commonly seen every month)
2. *Ambulyx substrigilis substrigilis* Westwood 1848, Dark-Based Gliding Hawkmoth (commonly seen every month)
3. *Amphypterus panopus panopus* Cramer 1779, Mango Hawkmoth (17.vi.2012)
4. *Callambulyx poecilus* Rothschild 1898, Lesser Pink-and-Green Hawkmoth (15.vi.2012)
5. *Callambulyx rubricosa rubricosa* Walker 1856, Large Pink-and-Green Hawkmoth (13.vi.2012, 15.vi.2012)
6. *Callambulyx sichangensis* Chu & Wang 1980, Beautiful Pink- and- Green Hawkmoth (12.v.2012, 23.viii.2012)
7. *Clanis hyperion* Cadiou & Kitching 1990, Pink-Legged Velvet Hawkmoth (13.v.2012)
8. *Clanis titan* Rothschild & Jordan 1903, Scarce Velvet Hawkmoth (20.vi.2012)
9. *Clanis undulosa gigantea* Rothschild 1894, Wavy Velvet Hawkmoth (29.ix.2012)
10. *Marumba cristata cristata* Butler 1875, Common Swirled Hawkmoth (19.ii.2012, 10.viii.2012)
11. *Marumba dyras dyras* Walker 1856, Dull Swirled Hawkmoth (10.ii.2012, 21.v.2012, 28.viii.2012)

Subfamily: Macroglossinae

1. *Acosmeryx anceus subdentata* Rothschild & Jordan 1903, Rosy Forest Hawkmoth (13.iv.2012, 21.v.2012)
2. *Acosmeryx naga naga* Moore 1857, Common Forest Hawkmoth (21.v.2012)
3. *Acosmeryx shervillii* Boisduval 1875, Dull Forest Hawkmoth (9.ix.2012)
4. *Ampelophaga rubiginosa rubiginosa* Bremer & Grey 1852, Common Vine Hawkmoth (19.ix.2012)
5. *Cechenena scotti* Rothschild 1920, Scott's Green Hawkmoth (15.v.2012)
6. *Cechenena lineosa* Walker 1856, Striped Green Hawkmoth (15.v.2012)
7. *Macroglossum bombylans* Boisduval 1875, Humble Bee Hawkmoth (30.vii.2012)
8. *Macroglossum* sp. (23.viii.2012)
9. *Theretra alecto* Linnaeus 1758, Levant Hunter Hawkmoth (7.vi.2012)
10. *Theretra clotho clotho* Drury 1773, Common Hunter Hawkmoth (12.ix.2012)
11. *Theretra nessus nessus* Drury 1773, Yam Hawkmoth (commonly seen every month)
12. *Rhagastis castor aurifera* Walker 1856, Common Mottled Hawkmoth (22.iii.2012)

Royal Government of Bhutan (2012). *Dzongkhag Administration, Tsirang* <http://www.tsirang.gov.bt/?page_id=64>. Downloaded on 17 October 2012.

