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A Preliminary Checklist on Hawkmoths of Digboi, Assam (Lepidoptera: Bombycoidea: Sphingidae)

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ABSTRACT

A preliminary study was undertaken to record the hawk moth fauna of Digboi during the months of December-May, 2014-2015. Moth trapping using sheet light traps equipped with 36 w Actinic lamp was used in four different locations of Digboi. 86 hawk-moth (individuals) were observed, although a record of 31 species was made pertaining to 21 genera. Among the different locations studied the highest number of individuals occurred in Digboi College Campus (28), followed by Balijan (16), Golai (18), Muliabari (16) and Digboi Central Town (8). Hawkmoths of three subfamilies Macroglossinae, Sphinginae, and Smerinthinae occurred in the study. The genus Theretra represented by 4 species, followed by genera Eupanacra, Acherontia, Marumba, Acosmeryx, Psilogramma representing 2 species, the rest of the genera represented single species.

KEYWORDS : Hawk moths; Digboi; Lepidoptera; Sphingidae; Assam

Digboi is situated in the eastern most part of Assam in North Eastern India. Located between the 27.38°N and 95.63°E with an elevation of 155 m – 165 m above mean sea level. Digboi is renowned as the "oil city of Assam". The oldest refinery of Asia "The Digboi refinery" established in 1901 is located here and is still under operation. The temperature ranges the maximum between 35^{0}C during the summer months and minimum between 15-25^{0}C in the winter months. The temperature starts increasing from May month reaching the peak in June and gradually falls with the rain downpours. The natural vegetation and habitat of this area falls under tropical semi evergreen and tropical wet evergreen forest.

According to previous estimation there are 1,65,000 moths over the world (Pitkin and Jenkins, 2004) and 12,000 species of moths are reported from India (Chandra 2007). There are over 1500 species of hawkmoths worldwide (Kitching, 2013). From India 204 species are reported (Hampson, 1892; Bell and Scott, 1937). Hawk-moths belongs to the order: Lepidoptera, Superfamily: Bombycoidea, family: Sphingidae. These are the moths with a characteristic hovering flight. Antennae are filiform and pectinate, proboscis very long; eyes large, forewings triangular and apically produced being much larger than the hind wing. The abdomen is conical in shape, patterned with circular bands and spots. Most adults specially the moths of the subfamilies Macroglossinae take nectar from tubular flowers with extra-long proboscis hovering before flowers, penetrating their long proboscis for sipping nectar and are renowned for causing pollination of plants with sphingophilous flowers (More et al., 2005). These moths are nocturnal as well as crepuscular. Caterpillars commonly called hornworm because of presence of a spectacular horn at the last segment above the claspers.

Materials and Methods

The study area was Digboi selecting the following sites, viz. Digboi Central Town, Digboi College Campus located in Itavata, Golai, Muliabari and Balijan area. For collecting and photographing the moths; a cloth sheet (white) is spread over two pillars or poles with a source of 36 w actinic bulb to attract moths. Moths were photographed and those moths difficult to identify were collected for further identification. Available literature was referred (Hampson, 1892; Bell & Scott, 1937; Holloway, 1987; Kitching I.J., Kendrick R. & Smetacek P., 2014; Chandra,↑ 2013; Gurule, 2013). The moths were classified according to classification based on (Van Neiukerken, 2011).

Results

A total of 86 moth individuals was recorded belonging to 31 species within 21 genera of 3 subfamilies. A checklist of hawk-moth species is tabulated according to the sighted location in Table 1.

Discussion

The sampling site Digboi College Campus (DC) resulted highest number of individual sightings, here 7 light trap setups were conducted resulting 28 sightings of hawkmoth individuals. *Cechenena lineosa*, *Clanis titan, Marumba dyras, Acosmerycoides harterti, Cephonodes hylas, Ambulyx ochracea, Polyptychus trilineatus* were of special mention as none other sampling locations resulted sightings of those, comparatively richer species composition in this sampling site may be possibly because of rich diversity of plant communities, lower anthropogenic activities and location far from industrial zones. *Psilogramma menephron, Theretra silhetensis* and *Eupanacra mydon* occurred in almost all the sampling sites.

Conclusion

The Hawkmoth fauna of the studied region is characterized by larger proportions of subfamily Macroglossinae represented by the genus *Cechenena* Rothschild & Jordan, *Daphnusa* Walker, *Daphnis* Hubner, *Elibia* Hubner, *Acosmeryx* Boisduval, *Angonyx* Boisduval, *Enpinanga* Rothschild & Jordan, *Cephonodes* Hubner, *Macroglossum* Scopoli, *Hippotion* Hubner, *Theretra* Hubner, *Rhagastis* Rothschild & Jordan, *Ampelophaga, Acosmerycoides, Eupanacra,* followed by Sphinginae represented by genera *Agrius* Hubner, *Acherontia* Laspeyres, *Psilogramma* Rothschild & Jordan and *Smerinthinae* represented by genera *Polyptychus* Hubner, *Clanis* Hubner, *Marumba* Moore, *Ambulyx* Westwood. This preliminary checklist of Sphingidae of Digboi may provide a base for conducting further study on Sphingidae.

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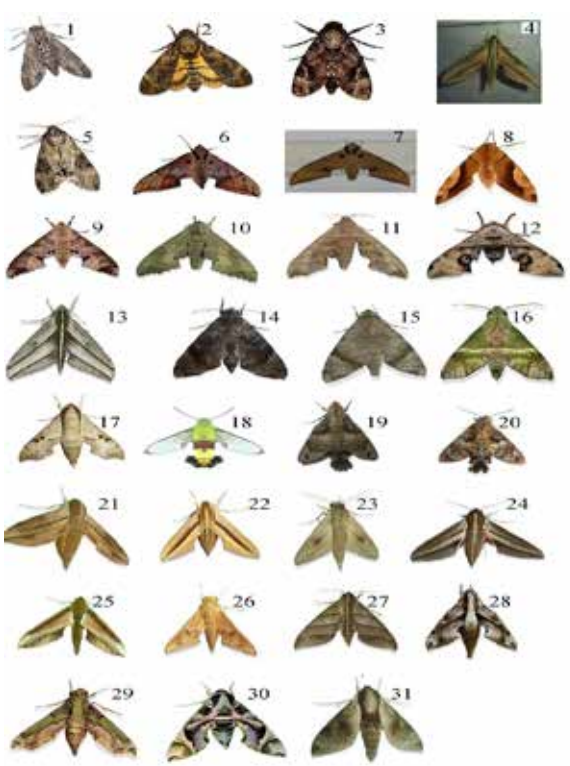
Table 1. Checklist on Hawkmoths of Digboi

Subfamily	Genera	Species	Location
Sphinginae	*Agrius* Hubner	*Agrius convolvuli* Linnaeus 1758	DC BJ GL
	Acherontia Laspeyres	*Acherontia styx* Westwood 1848	DC DT MB
		Acherontia lachesis Fabricius 1798	DC DT
	Psilogramma Rothschild & Jordan	*Psilogramma menephron* Cramer 1780	DC DT BJ GL MB
Smerinthinae	*Ambulyx* Westwood	*Ambulyx substrigilis* Westwood 1848	DC DT GL MB
		Ambulyx ochracea Butler 1885	DC
	Clanis Hubner	*Clanis titan* Rothschild & Jordan 1903	DC
	Marumba Moore	*Marumba spectabilis* Butler 1875	DT BJ GL
		Marumba dyras Walker 1856	DC
	Polyptychus Hubner	*Polyptychus trilineatus* Moore 1888	DC

Macroglossinae	*Daphnusa* Walker	*Daphnusa ocellaris*, Waker 1856	DC BJ
	Cechenena Rothschild & Jordan	*Cechenena lineosa* Walker, 1856	DC
	Daphnis Hubner	*Daphnis nerii* Linnaeus, 1758	DC BJ
	Elibia Hubner	*Elibia dochilus* Westwood, 1848	DC BJ GL MB
	Acosmeryx Boisduval	*Acosmeryx shervillii* Boisduval, 1875	DC BJ GL MB
		Acosmeryx anceus Stoll 1781	DC GL MB

Angonyx Boisduval	*Agonyx testacea* Walker 1856	DC BJ GL MB
Enpinanga Rothschild & Jordan	*Enpinanga assamensis* Walker, 1856	DC BJ GL MB
Cephonodes Hubner	*Cephonodes hylas* Linnaeus 1771	DC
Macroglossum Scopoli	Macroglossum sp 1	DC BJ GL MB
	Macroglossum sp 2	BJ GL MB
Hippotion Hubner	*Hippotion boerhavie* Fabricus, 1775	DC BJ GL MB
Theretra Hubner	*Theretra nessus*, Drury, 1773	DC BJ GL MB
	Theretra latreillii Macleay, 1826	DC DT GL MB
	Theretra suffusa Walker, 1856	DC DT
	Theretra silhetensis, Boisduval, 1879	DC DT BJ GL MB
Rhagastis Rothschild & Jordan	*Rhagastis castor*, Walker, 1856	DC DT BJ GL
Ampelophaga Bremer & Grey	*Ampelophaga dolichoides* Felder 1874	DC GL
Acosmerycoides	*Acosmerycoides harterti* Rothschild 1895	DC
Eupanacra	*Eupanacra mydon* Walker 1856	DC DT BJ GL MB
	Eupanacra busiris Walker 1856	BJ GL MB



Photographs of Hawkmoths from Digboi, Assam:

1. *Agrius convolvuli;*
2. *Acherontia styx;*
3. *Acherontia lachesis;*
4. *Cechenena lineosa.*;
5. *Psilogramma menephron*;
6. *Ambulyx substrigilis;*
7. *Ambulyx ochracea;*
8. *Clanis titan;*
9. *Marumba spectabilis;*
10. *Marumba dyras*;
11. *Polyptychus trilineatus;*
12. *Daphnusa ocellaris;*
13. *Elibia dochilus*;
14. *Acosmeryx anceus;*
15. *Acosmeryx shervillii*;
16. *Agonyx testaceae*;
17. *Enpinanga assamensis*;
18. *Cephonodes hylas;*
19. *Macroglossum sp 1*;
20. *Macroglossum sp 2*
21. *Hippotion sp.;*
22. *Theretra silhetensis;*
23. *Theretra latreillii;*
24. *Theretra suffusa;*
25. *Theretra nessus*;
26. *Rhagastis castor*;
27. *Ampelophaga dolichoides*
28. *Eupanacra mydon;*
29. *Eupanacra busiris;*
30. *Daphnis nerii*;
31. *Acosmerycoides harterti*

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