

A preliminary study of moths (Insecta: Lepidoptera) of Goa University Campus, Goa

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Abstract

The diversity of moths in the Goa University campus has been reported based on a brief survey undertaken by the corresponding author during 28 September 2018 to 18 October 2018. A total of 200 species belonging to 23 families and 13 super families is presented along with colour photographs. A range extension of the uraniid moth *Pseudhyria rubra* Hampson hitherto known only from S. India is reported for the first time from Goa in the western part of the country. Also, the thyridid moth *Collinsa decoratalis* Warren is reported as a new record from the Western Ghats. Most importantly, the present study is the first attempt to document the moth fauna of Goa.

Keywords: Biodiversity, Goa, Lepidoptera, Moth, Range Extension

Introduction

The moth fauna of India was well documented during the British period (1858–1947) but there are no records from Goa in the fauna of British India. This is due to the fact that Goa was under the rule of the Portuguese Empire which lasted until 1961- long after India gained independence from the British in 1947. Goa was later established as a state of India in 1987 but since then no attempt has been made to document its moth fauna. The present study is thus a preliminary effort towards documenting the moth fauna of Goa.

Goa is small state located in the Konkan region on the southwestern coast of India. It is bounded on the west by the Arabian Sea, to the north by Maharashtra and to the east and south by Karnataka. Within Goa, the Goa University is located on the Taleigoa plateau and has a total campus area of about 173 hectares. The study area lies at 15°27'07"N and 73°50'21"E at an elevation of 49m. It is surrounded with moist deciduous forest mixed with evergreen species, scrub jungle and lateritic vegetation (Bowalkar *et al.*, 2017). The study area (Figure 1) comprises the University guest house and UGC-HRDC building premises located on the southern part of the



Figure 1. Study area: Guest house and UGC-HRDC Goa University (Source: Google maps).

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Figure 2. Vegetation at backyard of A) Guest house (left), B) UGC-HRDC building (right).

campus near Cakra village. The surrounding area has dense herbaceous vegetation (Figure 2) dominating over trees, shrubs and climbers (Joshi and Janarthanam, 2004).

Material and Methods

A survey was carried out by the first author for a period of 21 days during September 28 to October 18, 2018 at University guest house and UGC-HRDC premises of Goa University. A field observation of moths attracted to the light sources was undertaken between 20:00–02:30 hours every night. Photographic records were documented by a random sampling method. No special attempt was made to attract the moths by using special equipment such as a light trap. As permission was not obtained, voucher specimens could not be collected.

The species recorded during the survey were identified with reference to the relevant literature (Hampson, 1891-1896; Holloway, 1985-2008; Gurule *et al.*, 2010-2013; Gurule, 2013, 2014). The order of the superfamilies and families in Table 1 and Plates 1-8 are based on Nieuwerkerken *et al.* (2011). The higher taxonomy of the Noctuoidea follows Zahiri *et al.* (2010–2013). The subfamilies, genera and species are listed alphabetically within their respective families.

Results

A total of 200 species belonging to 175 genera, 50 subfamilies and 13 super families were recorded over a period of 21 days from September 28 to October 18, 2018 at Goa University campus. Of the 200 species listed in Table 1, 179 species have been identified to the specific

level and 21 species have been partially identified to the generic or subfamily level. Of all the families Erebiidae was found to be the dominating family with 72 species (36%) followed by family Crambidae with 44 species (22%).

Discussion

A review of the literature reveals that the moth fauna of Goa has never been documented and thus the present report is significant preliminary step towards its documentation. The result of this brief survey indicates that Goa has a diversity of moths very similar to that of Maharashtra but further state-wide surveys especially in the eastern part of the state which forms part of the Western Ghats are necessary to arrive at estimates of diversity.

Taking into account that Goa is a relatively small state (3,702 km²) as compared to its neighboring states of Maharashtra (307,713 km²) and Karnataka (191,791 km²) it is expected that its moth fauna is very similar to that of these neighboring states especially in adjoining areas. Indeed, at least 190 of the 200 species (i.e. 95%) recorded here have also been recorded by the authors from various locations in Maharashtra (Gurule, 2014). However, this does not rule out the possibility of finding new species and/or new range extensions of known species. For instance, one remarkable species found during this survey is that of the rare uraniid moth *Pseudhyria rubra* Hampson (Figure 3) hitherto known only from south India (Type-locality: Nilgiris). Two specimens were recorded on October 1, and October 8, 2018 in Goa which represents the first record of the species in the western part of the country. This suggests that *P. rubra* may also be distributed in Karnataka as well, though it has not been reported from

Table 1. Systematic list of moth species recorded from Goa University campus

Sr. No.	Taxon
A)	Superfamily TINEOIDEA
I	Family TINEIDAE
	Subfamily HAPSIFERINAE
1	<i>Cimitra seclusella</i> Walker, 1864
B)	Superfamily GELECHIOIDEA
II	Family ELACHISTIDAE
	Subfamily DEPRESSARIINAE
2	<i>Tonica niviferana</i> Walker, 1864
III	Family GELECHIIDAE
	Subfamily APATETRINAE
3	<i>Pectinophora gossypiella</i> (Saunders, 1844)
C)	Superfamily PTEROPHOROIDEA
IV	Family PTEROPHORIDAE
	Subfamily PTEROPHORINAE
4	<i>Lantanophaga pusillidactylus</i> (Walker, 1864)
D)	Superfamily IMMOIDEA
V	Family IMMIDAE
5	<i>Imma mylias</i> Meyrick, 1914
E)	Superfamily TORTRICOIDEA
VI	Family TORTRICIDAE
	Subfamily TORTRICINAE
6	<i>Adoxophyes privatana</i> Walker, 1863
F)	Superfamily COSSOIDEA
VII	Family COSSIDAE
	Subfamily ZEUZERINAE
7	<i>Dervishiya cadambae</i> (Moore, 1865)
8	<i>Xyleutes persona</i> (le Guillou, 1841)
G)	Superfamily ZYGAENOIDEA
VIII	Family LIMACODIDAE
	Subfamily LIMACODINAE
9	<i>Aergina hilaris</i> (Westwood, 1848)
10	<i>Thosea</i> sp.
H)	Superfamily THYRIDOIDEA
IX	Family THYRIDIDAE
	Subfamily SICULODINAE
11	<i>Banisia myrtaea</i> (Drury, 1773)
12	<i>Collinsa decoratalis</i> (Warren, 1896)
	Subfamily STRIGLININAE
13	<i>Hypolamprus striatalis</i> (Swinhoe, 1885)

Sr. No.	Taxon
14	<i>Striglina scitaria</i> (Walker, 1862)
I)	Superfamily HYBLAEOIDEA
X	Family HYBLAEIDAE
15	<i>Hyblaea puera</i> (Cramer, 1777)
J)	Superfamily PYRALOIDEA
XI	Family PYRALIDAE
	Subfamily PYRALINAE
16	<i>Hypsopygia</i> sp.
XII	Family CRAMBIDAE
	Subfamily ACENTROPINAE
17	<i>Paraponyx fluctuosalis</i> (Zeller, 1852)
	Subfamily CRAMBINAE
18	<i>Chilo</i> sp.
	Subfamily LATHROTELINAE
19	<i>Sufetula sunidesalis</i> Walker, 1859
	Subfamily PYRAUSTINAE
20	<i>Diaphania indica</i> (Saunders, 1851)
21	<i>Euclasta defamatalis</i> (Walker, 1859)
22	<i>Pyrausta panopealis</i> (Walker, 1859)
	Subfamily PHYCITINAE
23	Phycitinae sp.
	Subfamily SCHOENOBIINAE
24	<i>Scirpophaga excerptalis</i> (Walker, 1863)
25	<i>Scirpophaga incertulas</i> (Walker, 1863)
	Subfamily SPILOMELINAE
26	<i>Aetholix flavibasalis</i> (Guenée, 1854)
27	<i>Agrioglypta itysalis</i> (Walker, 1859)
28	<i>Agrotera basinotata</i> Hampson, 1891
29	<i>Agrotera scissalis</i> (Walker, 1866)
30	<i>Antigastra catalaunalis</i> (Duponchel, 1833)
31	<i>Cirrhochrista brizoalis</i> (Walker, 1859)
32	<i>Cnaphalocrocis medinalis</i> (Guenée, 1854)
33	<i>Cnaphalocrocis poeyalis</i> (Boisduval, 1833)
34	<i>Conogethes punctiferalis</i> (Guenée, 1854)
35	<i>Cryptographis glauculalis</i> (Guenée, 1854)
36	<i>Endocrossis flavibasalis</i> (Moore, 1867)
37	<i>Eurrhyarodes bracteolalis</i> (Zeller, 1852)
38	<i>Glyphodes bicolor</i> (Swainson, 1821)
39	<i>Glyphodes bivitalis</i> Guenée, 1854
40	<i>Glyphodes caesalis</i> Walker, 1859
41	<i>Haritalodes derogata</i> (Fabricius, 1775)

Sr. No.	Taxon
42	<i>Herpetogramma licarsisalis</i> (Walker, 1859)
43	<i>Hydriris ornatalis</i> (Duponchel, 1832)
44	<i>Hymenoptychis sordida</i> (Zeller, 1852)
45	<i>Lamprosema scitalis</i> (Swinhoe, 1885)
46	<i>Nausinoe perspectata</i> (Fabricius, 1775)
47	<i>Omiodes diemenalis</i> (Guenée, 1854)
48	<i>Omiodes indicata</i> (Fabricius, 1775)
49	<i>Pagyda salvalis</i> Walker, 1859
50	<i>Paliga damastesalis</i> (Walker, 1859)
51	<i>Parotis</i> sp.
52	<i>Patania balteata</i> (Fabricius, 1798)
53	<i>Pramadea lunalis</i> (Guenée, 1854)
54	<i>Pycnarmon alboflavalis</i> (Moore, 1888)
55	<i>Pygospila tyres</i> (Cramer, [1780])
56	<i>Rehimena phrynealis</i> (Walker, 1859)
57	<i>Sameodes cancellalis</i> (Zeller, 1852)
58	<i>Spoladea recurvalis</i> (Fabricius, 1794)
59	<i>Synclera traducalis</i> (Zeller, 1852)
60	<i>Tatobotys janapalis</i> (Walker, 1859)
K)	Superfamily BOMBYCOIDEA
XIII	Family EUPTEROTIDAE
	Subfamily EUPTEROTINAE
61	<i>Ganisa postica</i> Walker, 1855
XIV	Family BOMBYCIDAE
	Subfamily BOMBYCINAE
62	<i>Trilocha varians</i> (Moore, 1855)
XV	Family SATURNIDAE
	Subfamily SATURNIINAE
63	<i>Actias selene</i> (Hübner, 1807)
64	<i>Antheraea mylitta</i> (Drury, 1773)
XVI	Family SPHINGIDAE
	Subfamily MACROGLOSSINAE
65	<i>Daphnis nerii</i> (Linnaeus, 1758)
66	<i>Hippotion</i> sp.
67	<i>Nephele hespera</i> (Fabricius, 1775)
68	<i>Pergesa acteus</i> (Cramer, [1779])
69	<i>Theretra boisduvalii</i> (Bugnion, 1839)
70	<i>Theretra latreillii lucasii</i> (Walker, 1856)
71	<i>Theretra nessus</i> (Drury, 1773)
	Subfamily SPHINGINAE
72	<i>Agrius convolvuli</i> (Linnaeus, 1758)

Sr. No.	Taxon
73	<i>Psilogramma renerii</i> (Eitschberger, 2001)
L)	Superfamily GEOMETROIDEA
XVII	Uraniidae
	Subfamily AUZEINAE
74	<i>Pseudhyria rubra</i> (Hampson, 1891)
	Subfamily MICRONIINAE
75	<i>Micronia aculeata</i> (Guenée, 1857)
XVIII	Family GEOMETRIDAE
	Subfamily ENNOMINAE
76	<i>Aplochloa vivilaca</i> (Walker, 1861)
77	<i>Astygisa vexillaria</i> (Guenée, [1858])
78	<i>Chiasmia eleonora</i> (Cramer, [1780])
79	<i>Chiasmia fidoniata</i> (Guenée, [1858])
80	<i>Cleora</i> sp.
81	<i>Corymica deducta</i> (Walker, 1866)
82	<i>Gonodontis clelia</i> (Cramer, [1780])
83	<i>Heterostegane tritocampsis</i> (Prout, 1934)
84	<i>Hyposidra talaca</i> (Walker, 1860)
85	<i>Petelia medardaria</i> Herrich-Schäffer, [1856]
86	<i>Ruttellerona cessaria</i> (Walker, 1860)
	Subfamily GEOMETRINAE
87	<i>Agathia laetata</i> (Fabricius, 1794)
88	<i>Comibaena leucospilata</i> (Walker, 1863)
89	<i>Hemithea</i> sp.
90	<i>Maxates dissimulata</i> (Walker, 1861)
91	<i>Pingasa dispensata</i> (Walker, 1860)
92	<i>Thalassodes dissita</i> (Walker, 1861)
	Subfamily LARENTIINAE
93	<i>Gymnoscelis deleta</i> Hampson, 1891
94	<i>Sauris</i> sp.
	Subfamily STERRHINAE
95	<i>Chrysocraspeda</i> sp.
96	<i>Idaea violacea</i> (Hampson, 1891)
97	<i>Idaea</i> sp.
98	<i>Scopula</i> sp.
99	<i>Traminda mundissima</i> (Walker, 1861)
M)	Superfamily NOCTUOIDEA
XIX	Family NOTODONTIDAE
100	<i>Netria viridescens</i> Walker, 1855
101	<i>Phalera grotei</i> Moore, 1859
102	<i>Spatalia plusiata</i> (Walker, 1865)

Sr. No.	Taxon
103	<i>Stauropus alternus</i> Walker, 1855
XX	Family EREBIDAE
	Subfamily AGANAINAE
104	<i>Asota caricae</i> (Fabricius, 1775)
105	<i>Asota producta</i> (Butler, 1875)
106	<i>Digama marchalii</i> (Guérin-Méneville, 1843)
	Subfamily ANOBINAE
107	<i>Crithote horridipes</i> Walker, 1864
108	<i>Plecoptera recta</i> (Pagenstecher, 1886)
109	<i>Tephriopsis divulsa</i> (Walker, 1865)
	Subfamily ARCTIINAE
	Tribe Lithosiini
110	<i>Brunia antica</i> (Walker, 1854)
111	<i>Cyana puella</i> (Drury, 1773)
112	<i>Cyclomilta melanolepia</i> Hampson, 1900
113	<i>Diduga flavicostata</i> (Snellen, 1879)
114	<i>Miltochrista rubricosa</i> (Moore, 1878)
115	<i>Miltochrista semifascia</i> (Walker, 1854)
116	<i>Stictane rectilinea</i> (Snellen, 1879)
	Tribe Spilosomini
117	<i>Olepa</i> cf. <i>clavatus</i> (Swinhoe, 1885)
	Tribe Syntomini
118	<i>Syntomoides imaon</i> (Cramer, [1779])
	Subfamily BOLETOBIINAE
	Tribe Aventiini
119	<i>Lophoruza</i> sp.
120	<i>Oruza divisa</i> (Walker, 1862)
121	<i>Zurobata vacillans</i> (Walker, 1864)
	Tribe Boletobiini
122	<i>Hyposada hydrocampata</i> (Guenée, 1857)
	Tribe Eublemmini
123	<i>Eublemma anachoresis</i> (Wallengren, 1863)
	Subfamily CALPINAE
124	<i>Dierna patibulum</i> (Fabricius, 1794)
125	<i>Gesonía obeditalis</i> Walker, [1859]
126	<i>Hamodes propitia</i> (Boisduval, 1832)
127	<i>Bamra mundata</i> (Walker, 1858)
	Tribe Calpini
128	<i>Calyptra minuticornis</i> (Guenée, 1852)
129	<i>Oraesia emarginata</i> (Fabricius, 1794)
130	<i>Plusiodonta coelonota</i> (Kollar, 1844)

Sr. No.	Taxon
	Tribe Ophiderini
131	<i>Eudocima homaena</i> (Hübner, [1823])
132	<i>Eudocima hypermnestra</i> (Stoll, [1780])
133	<i>Eudocima materna</i> (Linnaeus, 1767)
134	<i>Eudocima phalonia</i> (Linnaeus, 1763)
	Tribe Phyllodini
135	<i>Phyllodes consobrina</i> Westwood, 1848
	Subfamily EREBINAE
136	<i>Delgamma pangonia</i> (Guenée, 1852)
	Tribe Catocalini
137	<i>Arsacia rectalis</i> (Walker, 1863)
	Tribe Cocytini
138	<i>Avatha bubo</i> (Geyer, 1832)
	Tribe Ercheiini
139	<i>Ercheia cyllaria</i> Cramer, [1779]
140	<i>Ercheia diversipennis</i> Walker, [1858]
	Tribe Erebini
141	<i>Erebus ephesperis</i> Hübner, 1827
142	<i>Erebus hieroglyphica</i> (Drury, 1773)
143	<i>Erygia spissa</i> (Guenée, 1852)
	Tribe Euclidiini
144	<i>Pantylidia metaspila</i> (Walker, 1858)
145	<i>Mocis frugalis</i> (Fabricius, 1775)
146	<i>Mocis undata</i> (Fabricius, 1775)
147	<i>Trigonodes hyppasia</i> (Cramer, [1779])
	Tribe Hulodini
148	<i>Ericeia inangulata</i> (Guenée, 1852)
149	<i>Hulodes caranea</i> (Cramer, [1780])
150	<i>Speiredonia obscura</i> (Cramer, [1780])
	<i>Incertae sedis</i>
151	<i>Ischyja manlia</i> (Cramer, [1776])
	Tribe Hypopyrini
152	<i>Spirama retorta</i> (Clerck, 1764)
	Tribe Ophiusiini
153	<i>Artena dotata</i> (Fabricius, 1794)
154	<i>Ophiusa mejanesi</i> (Guenée, 1852)
	Tribe Pandesmini
155	<i>Pandesma quenavadi</i> Guenée, 1852
	Tribe Pericymini
156	<i>Pericyma umbrina</i> (Guenée, 1852)
	Tribe Poaphilini

Sr. No.	Taxon
157	<i>Achaea serva</i> (Fabricius, 1775)
158	<i>Bastilla arcuata</i> (Moore, 1877)
159	<i>Bastilla joviana</i> (Stoll, [1782])
160	<i>Bastilla simillima</i> (Guenée, 1852)
161	<i>Buzara onelia</i> (Guenée, 1852)
162	<i>Chalciope mygdon</i> (Cramer, [1777])
163	<i>Parallelia stuposa</i> (Fabricius, 1794)
	Subfamily HERMINIINAE
164	<i>Hipoepa fractalis</i> (Guenée, 1854)
165	<i>Nodaria externalis</i> Guenée, 1854
166	<i>Progonia kurosawai</i> Owada, 1987
167	<i>Simplicia xanthoma</i> Prout, 1928
	Subfamily HYPENINAE
168	<i>Hypena laceratalis</i> Walker, [1859]
169	<i>Hypena mandatalis</i> Walker, [1859]
	Subfamily LYMANTRIINAE
	Tribe Nygmiiini
170	<i>Arna bipunctapex</i> (Hampson, 1891)
171	<i>Nygmia icilia</i> (Stoll, [1790])
172	<i>Orvasca subnotata</i> Walker, [1856]
	Tribe Orgyiini
173	<i>Orgyia postica</i> (Walker, 1855)
	Subfamily RIVULINAE
174	<i>Rivula</i> sp.
	Subfamily SCOLIOPTERYGINAE
175	<i>Anomis flava</i> (Fabricius, 1775)
XXI	Family EUTELLIDAE
	Subfamily EUTELINAE
176	<i>Eutelia</i> sp.
XXII	Family NOLIDAE
	Subfamily BEANINAE
177	<i>Beana terminigera</i> (Walker, 1858)
	Subfamily COLLOMENINAE
178	<i>Gadirtha pulchra</i> Butler, 1886

Sr. No.	Taxon
	Subfamily ELIGMINAE
179	<i>Selepa discigera</i> (Walker, [1863])
180	<i>Selepa</i> sp.
	Subfamily NOLINAE
181	<i>Casminola pulchella</i> (Leech, 1889)
182	<i>Nola taeniata</i> Snellen, 1875
183	<i>Nola</i> sp.
XXIII	Family NOCTUIDAE
	Subfamily ACONTIINAE
184	<i>Acontia nitidula</i> (Fabricius, 1787)
185	<i>Aedia leucomelas</i> (Linnaeus, 1758)
	Subfamily BAGISARINAE
186	<i>Amyna</i> sp.
187	<i>Chasmina fasciculosa</i> (Walker, 1858)
188	<i>Dyrzela plagiata</i> Walker, 1858
189	<i>Xanthodes transversa</i> Guenée, 1852
	Subfamily ERIOPINAE
190	<i>Callopietria apicalis</i> (Walker, 1855)
191	<i>Callopietria duplicans</i> Walker, [1858]
	Subfamily EUSTROTIINAE
192	<i>Deltote marginata</i> (Walker, 1866)
	Subfamily HADENINAE
193	<i>Leucania</i> sp.
	Subfamily HELIOTHINAE
194	<i>Helicoverpa armigera</i> (Hübner, [1805])
195	<i>Helicoverpa assulta</i> (Guenée, 1852)
	Subfamily PLUSIINAE
196	<i>Chrysodeixis acuta</i> (Walker, [1858])
197	Plusiinae sp.
	Subfamily XYLENINAE
198	<i>Spodoptera litura</i> Walker, 1857
199	<i>Spodoptera mauritia</i> Boisduval, 1833
200	<i>Sasunaga</i> sp.



Figure 3. *Pseudhyria rubra* Hampson.



Figure 4. *Collinsa decoratalis* Warren.

that state so far. The larva of *P. rubra* is known to feed on *Cansjera* in the family Opiliaceae (Holloway, 1998).

Another distinctive result of the present survey is the spotting of the thyridid moth *Collinsa decoratalis* Warren (Figure 4) on October 2, 2018. This species was originally described from the Khasi Hills in Meghalaya and is also distributed in Myanmar, Thailand and W. Malaysia (Pyralids of Borneo, 2020). According to the second author this species has also been encountered in the Western Ghats earlier, but there is no published record of it, so far. It is therefore reported here as a new record for the Western Ghats.

Some other notable species, which have not yet been encountered in Maharashtra, recorded during this survey include *Delgamma pangonia* Guenée, *Hyposada hydrocampata* Guenée and *Cyclomilta melanolepia* Hampson, all of which belong to the family Erebiidae.

It is also worth noting that the proportion of Crambidae is fairly large, accounting for 22% of all the

species recorded here. This indicates vegetation dominated by grasses and shrubs (Figure 2) which conforms to that reported by Joshi and Janarthanam (2004) and Bowalkar *et al.*, (2017).

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Plate 1



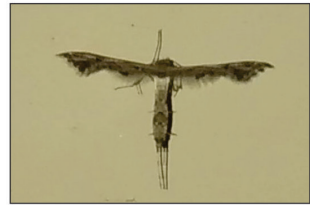
1. *Cimitra seclusella*



2. *Tonica niviferana*



3. *Pectinophora gossypiella*



4. *Lantanophaga pusillidactylus*



5. *Imma mylias*



6. *Adoxophyes privatana*



7. *Dervishiya cadambae*



8. *Xyleutes persona*



9. *Aergina hilaris*



10. *Thosea* sp.



11. *Banisia myrtaea*



12. *Collinsa decoratalis*



13. *Hypolamprus striatalis*



14. *Striglina scitaria*



15. *Hyblaea puera*



16. *Hypsopygia* sp.



17. *Parapoynx fluctuosalis*



18. *Chilo* sp.



19. *Sufetula sunidesalis*



20. *Diaphania indica*



21. *Euclasta defamatalis*



22. *Pyrausta panopealis*



23. *Phycitinae* sp.



24. *Scirpophaga excerptalis*



25. *Scirpophaga incertulas*



26. *Aetholix flavibasalis*



27. *Agrioglypta itysalis*



28. *Agrotera basinotata*

Plate 2



29. *Agrotera scissalis*



30. *Antigastra catalaunalis*



31. *Cirrhochrsta brizoalis*



32. *Cnaphalocrocis medinalis*



33. *Cnaphalocrocis poeyalis*



34. *Conogethes punctiferalis*



35. *Cryptographis glauculalis*



36. *Endocrossis flavibasalis*



37. *Eurrhyarodes bracteolalis*



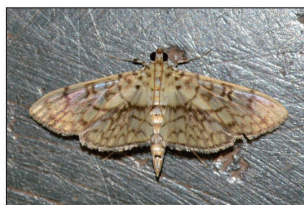
38. *Glyphodes bicolor*



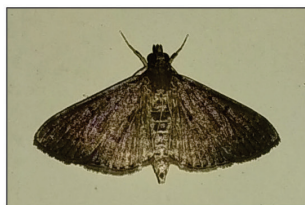
39. *Glyphodes bivitalis*



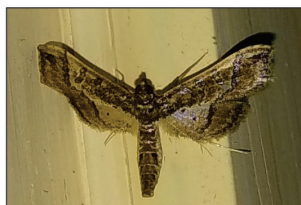
40. *Glyphodes caesalis*



41. *Haritalodes derogata*



42. *Herpetogramma licarsisalis*



43. *Hydriris ornatalis*



44. *Hymenoptychis sordida*



45. *Lamprosema scitalis*



46. *Nausinoe perspectata*



47. *Omiodes diemenalis*



48. *Omiodes indicata*



49. *Pagyda salvalis*



50. *Paliga damastesalis*



51. *Parotis* sp.



52. *Patania balteata*



53. *Pramadea lunalis*



54. *Pycnarmon alboflavalis*



55. *Pygospila tyres*



56. *Rehimena phrynealis*

Plate 3



57. *Sameodes cancellalis*



58. *Spoladea recurvalis*



59. *Synclera traducalis*



60. *Tatobotys janapalis*



61. *Ganisa postica*



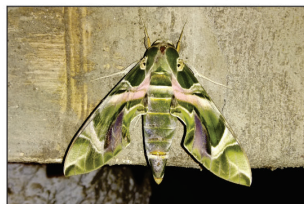
62. *Trilocha varians*



63. *Actias selene*



64. *Antheraea mylitta*



65. *Daphnis nerii*



66. *Hippotion* sp.



67. *Nephela hespera*



68. *Pergesa acteus*



69. *Theretra boisduvalii*



70. *Theretra latreillii lucasii*



71. *Theretra nessus*



72. *Agrius convolvuli*



73. *Psilogamma renerii*



74. *Pseudhyria rubra*



75. *Micronia aculeata*



76. *Aplochloa vivilaca*



77. *Astygisa vexillaria*



78. *Chiasmia eleonora*



79. *Chiasmia fidoniata*



80. *Cleora* sp.



81. *Corymica deducta*



82. *Gonodontis clelia*



83. *Heterostegane tritocampsis*



84. *Hyposidra talaca*

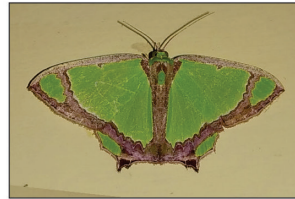
Plate 4



85. *Petelia medardaria*



86. *Ruttellerona cessaria*



87. *Agathia laetata*



88. *Comibaena leucospilata*



89. *Hemithea* sp.



90. *Maxates dissimulata*



91a. *Pingasa dispensata*



91b. *Pingasa dispensata*



92. *Thalassodes dissita*



93. *Gymnoscelis deleta*



94. *Sauris* sp.



95. *Chrysocraspeda* sp.



96. *Idaea violacea*



97. *Idaea* sp.



98. *Scopula* sp.



99. *Traminda mundissima*



100. *Netria viridescens*



101. *Phalera grotei*



102. *Spatalia plusiata*



103. *Stauropus alternus*



104. *Asota caricae*



105. *Asota producta*



106. *Digama marchalii*



107. *Crithote horridipes*



108. *Plecoptera recta*



109. *Tephriopsis divulsa*



110. *Brunia antica*

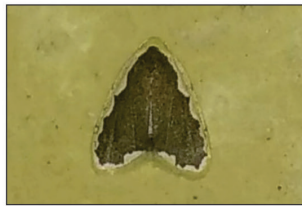


111. *Cyana puella*

Plate 5



112. *Cyclomilta melanolepia*



113. *Diduga flavicostata*



114. *Miltochrista rubricosa*



115. *Miltochrista semifascia*



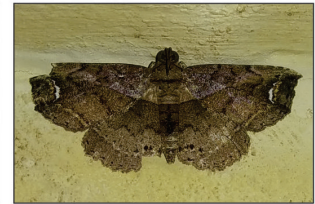
116. *Stictane rectilinea*



117. *Olepa* cf. *clavatus*



118. *Syntomoides imaon*



119. *Lophoruza* sp.



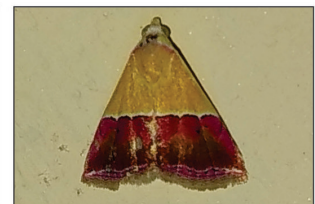
120. *Oruza divisa*



121. *Zurobata vacillans*



122. *Hyposada hydrocampata*



123. *Eublemma anachoresis*



124. *Dierna patibulum*



125. *Gesonia obeditalis*



126. *Hamodes propitia*



127. *Bamra mundata*



128. *Calyptra minuticornis*



129. *Oraesia emarginata*



130. *Plusiodonta coelonota*



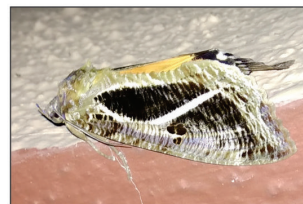
131a. *Eudocima homaena* ♀



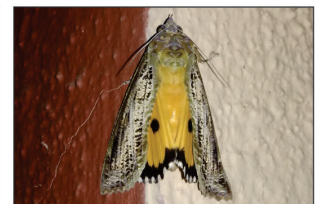
131b. *Eudocima homaena* ♂



132. *Eudocima hypermnestra*



133a. *Eudocima materna* ♀



133b. *Eudocima materna* ♂



134a. *Eudocima phalonia* ♀



134b. *Eudocima phalonia* ♂



135. *Phyllodes consobrina*



136. *Delgamma pangonia*

Plate 6



137. *Arsacia rectalis*



138. *Avatha bubo*



139a. *Ercheia cyllaria*



139b. *Ercheia cyllaria*



139c. *Ercheia cyllaria*



140. *Ercheia diversipennis*



141. *Erebus ephesperis*



142. *Erebus hieroglyphica*



143. *Erygia spissa*



144a. *Pantylia metaspila*



144b. *Pantylia metaspila*



145. *Mocis frugalis*



146a. *Mocis undata* ♀



146b. *Mocis undata* ♂



147. *Trigonodes hyppasia*



148. *Ericeia inangulata*



149a. *Hulodes caranea* ♀



149b. *Hulodes caranea* ♂



150. *Speiredonia obscura*



151. *Ischyja manlia*



152. *Spirama retorta*



153. *Artena dotata*



154a. *Ophiusa mejanesi*



154b. *Ophiusa mejanesi*



155. *Pandesma quenavadi*



156a. *Pericyma umbrina*



156b. *Pericyma umbrina*



157. *Achaea serva*

Plate 7



158. *Bastilla arcuata*



159. *Bastilla joviana*



160. *Bastilla simillima*



161. *Buzara onelia*



162. *Chalciopa mygdon*



163. *Parallelia stuposa*



164. *Hipoepa fractalis*



165. *Nodaria externalis*



166. *Progonia kurosawai*



167. *Simplicia xanthoma*



168. *Hypena laceratalis*



169. *Hypena mandatalis*



170. *Arna bipunctapex*



171. *Nygmia icilia*



172. *Orvasca subnotata*



173. *Orgyia postica*



174. *Rivula* sp.



175. *Anomis flava*



176. *Eutelia* sp.



177. *Beana terminigera*



178. *Gadirtha pulchra*



179. *Selepa discigera*



180. *Selepa* sp.



181. *Casminola pulchella*



182. *Nola taeniata*



183. *Nola* sp.



184. *Acontia nitidula*



185. *Aedia leucomelas*

Plate 8



186. *Amyna* sp.



187. *Chasmina fasciculosa*



188. *Dyrzela plagiata*



189. *Xanthodes transversa*



190. *Callopistria apicalis*



191. *Callopistria duplicans*



192. *Deltote marginata*



193. *Leucania* sp.



194. *Helicoverpa armigera*



195. *Helicoverpa assulta*



196. *Chrysodeixis acuta*



197. *Plusiinae* sp.



198. *Spodoptera litura*



199. *Spodoptera mauritia*



200. *Sasunaga* sp.