

Insecta, Lepidoptera, Noctuidae, Catocalinae: New records from the state of Tamil Nadu and whole of India

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ABSTRACT: Adult moths of the Noctuidae subfamily Catocalinae from Tamil Nadu, Western Ghats are reviewed. During this study, eleven species have been newly recorded from Tamil Nadu (Western Ghats) and one species has been recorded from India for the first time.

Members of subfamily Catocalinae (Boisduval, [1828]), are a predominantly tropical subfamily and are often traditionally taken to include the subfamily Ophiderinae. Sir George Hampson (1894-1895) united the Catocalinae and Ophiderinae into one group. Kitching (1984) united Catocalinae (presence of spines on the mid-tibia) and Ophiderinae (absence of spines on the mid-tibia) into one group, Catocalinae. However Speidel *et al.* (1996) suggested a division of the Catocalinae and Ophiderinae complex into two groups.

The two subfamilies, Catocalinae and the type genus *Catocala* Schrank, and Ophiderinae and the type genus *Othreis* Hübner are united into one Catocalinae by the possession of a chitinous projection from the inner margin of the tympanal frame (Holloway, 2005). Together these two subfamilies account for over half of the species of Noctuidae in the world. The subfamily Catocalinae is one of the largest subfamilies of Noctuidae. It is distributed widely in India. At present the subfamily Catocalinae includes 90 genera and 130 species in India. In Sir George Hampson's exhaustive treatise on the Indian series, moths' volumes (II & III 1894-1895), he recorded the noctuid moths under ten subfamilies. Lafontaine and Fibiger (2006) divided the Catocalinae into 18 tribes. Five of these, Ophiusini, Catocalini, Euclidiini, Catephenii and Tinolini occur in the study area.

The Catocalinae group contains numerous agricultural pests, which are of considerable economic importance. These include both defoliating larvae and fruit-piercing adults, with the occasional occurrence of both within the same genus or species. The defoliators affect both tree and field crops; some can have impacts on forest plantations. Many of the genera included in the Catocalinae, particularly those in which the moths have relatively robust bodies, have been noted to feed as adults on fruits. Several species have a modified tongue to facilitate piercing mammalian skin and to suck blood. Holloway *et al.* (2001) observed predominantly fruit feeding characters in the subfamily

Catocalinae.

With a view to clarify or expand the known geographic distribution of some Oriental Catocalinae species, especially those occurring in India, we carried out an extensive collection during 2009–2011. Noctuid moths were collected from five different sites situated in four different areas, namely: Coonoor, Ooty, Kothagiri, Doddabedda and Kodaikanal. Moth sampling was conducted at night hours (6.30 – 10.00 P.M.) and morning hours (5.00 – 6.00 A.M.) using mercury vapor lamps



FIGURE 1. Map showing collection sites of Nilgiri District.

(200/220w) for five consecutive days every month. Moths that were attracted to the traps were collected using a sweep net (25 cm diameter). The moths collected were killed by Ethyl acetate vapor, properly mounted, and stored in insect storage boxes. The Noctuid moths were identified to the species level based on the keys provided by Hampson (1894). The number of subfamilies, genera, species and total number of individuals collected during the study period were recorded. The voucher specimens were deposited at the Insect Museum, Entomology Research Institute, Loyola College, Chennai, Tamil Nadu, India. Based on our study we report here the following new records for the Western Ghats of Tamil Nadu: *Ophiusa olista* Swinhoe, 1893, *Ophiusa descriminans* Walker, 1858, *Trigonodes hyppasia*, (Cramer, 1779), *Dysgonia calefaciens* Walker, 1858, *Dysgonia illibata* (Fabricius, 1775), *Lygephila maxima* Bremer, 1861, *Lacera noctilio* Fabricius, 1787, *Ericcia eriophora* (Guenée, 1852), *Calyptra minuticornis*, (Guenée In Boisduval and Guenée, 1852), *Spirama helicina* (Hubner, [1831]), *Eudocima sikhimensis* Butler, 1895, *Phyllodes consobrina* Westwood, 1848, *Anisoneura aluco* (Fabricius, 1775) and *Lygniodes schoenbergi* Pagenstcher, 1890. There was one new record for India: *Hyperlopha crucifera* Walker, 1865.

Data on the geographical distribution were obtained from Hampson (1894), Holloway (2005) and Park *et al.* (2001).

Subfamily Catocalinae

Ophiusa olista Swinhoe, 1893

Geographical Distribution: The species was previously recorded from the oriental region including, Korea: North, South, Japan: Honshu, Shikoku, Kyushu, Tsushima Islands, China, Taiwan, Republic of The Philippines, Thailand, Vietnam and Nepal. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Nilgiri Biosphere-Coonoor Sim's Park [11°35'485" N, 76°80'03" E, Elevation: 6082 ft./1855 mtrs], 31.III.2010; Municipal building [11°34'33" N, 76°79'56" E, Elevation: 5605 ft./1708 mtrs], 31.III.2010; Kethi [11°38'211" N, 76°73'745" E, Elevation: 7014 ft. /2137 mtrs], 07.VI.2010; Kothagiri Pandain Park [11°42'155" N, 76°85'006" E, Elevation: 6218 ft./1897mtrs], 13.X.2010; Doddabetta [11°40'116" N, 76°73'5" E, Elevation: 8607ft./2624 mtrs], 5.III.2010, Ooty Botanical Garden [11°41'758" N, 76°71'048" E, Elevation: 7306 ft./2228 mtrs], 6.III.2010 and Bench mark Tea Museum [11°41'181" N, 76°72'07" E, Elevation: 7840ft./2389mtrs]; Kodaikanal Hills Station: Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030 mtrs], 15.IV.2010; Bear Shola [10°24" N 77°48'0283" E, Elevation: 6908 ft. /2106 mtrs], 16.IV.2010; Bryant Park [10°23'0983" N, 77°49'4483" E, Elevation: 6987 ft./2130 mtrs], 17.IV.2010; Senbaganur [10°23'1733" N, 77°503" E, Elevation: 5899 ft./1798 mtrs], 18.V.2010, [(19 specimens), Voucher specimens: ERI-LEP: 43]].

Ophiusa descriminans Walker, 1858

Geographical distribution: Previous distributional accounts are available from Indo- Australian tropics east

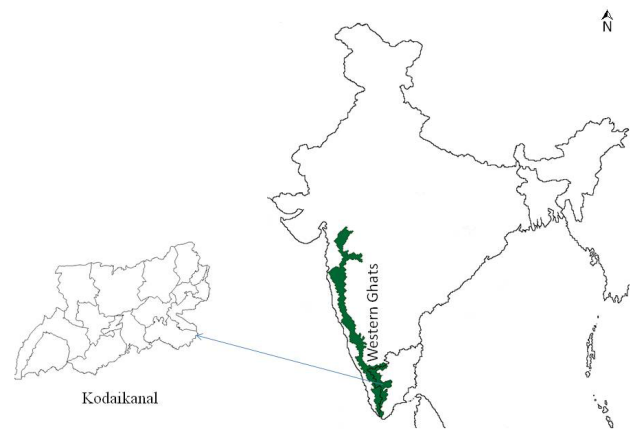


FIGURE 2. Map showing collection site of Kodaikanal, Dindugul District.

to Vanuatu and New Caledonia. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Nilgiri Biosphere - Ooty Botanical Garden [11°41'758" N, 76°71'048" E, Elevation: 7306 ft./2228 mtrs], 26.III.2011, Bench mark Tea Museum [11°41'181" N, 76°72'07" E, Elevation: 7840ft./2389mtrs], 27.V.2011. Coonoor Sim's Park [11°35'485" N, 76°80'03" E, Elevation: 6082 ft./1855 mtrs], 31.III.2010 and Coonoor Municipal building [11°34'33" N, 76°79'56" E, Elevation: 5605 ft./1708 mtrs], 1.IV.2010; Kodaikanal Hills Station: Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030 mtrs], 26.IV.2010 and Bear Shola [10°24" N 77°48'0283" E, Elevation: 6908 ft. /2106 mtrs], 27.V.2010 [(Seven specimens) (Voucher specimens: ERI-LEP: 46)].

Trigonodes hyppasia (Cramer, 1779)

Geographic Distribution: The species was previously recorded from Old World tropics and subtropics east to Fiji and Tonga. It is now reported from Nilgiri Biosphere (Western Ghats). This is a new record from Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030 mtrs], 07.X.2011, holotype 2 male [(Two specimens), Voucher specimens: ERI-LEP: 111]].

Dysgonia calefaciens Walker, 1858

Geographical Distribution: The species occurs in North East Himalaya, Thailand, Sundaland and Republic of the Philippines to Seram. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Nilgiri Biosphere - Ooty Botanical garden [11°41'758" N, 76°71'048" E, Elevation: 7306 ft./2228 mtrs], 13.X.2010, 1female; Bench Mark [11°41'181" N, 76°72'07" E, Elevation: 7840ft./2389mtrs], 14.10.2010, 2 male, 2 female; Coonoor Sim's Park [11°35'485" N, 76°80'03" E, Elevation: 6082 ft./1855 mtrs], 26.III.2011, 2 male, and Kothagiri Pandian Park [11°42'155" N, 76°85'006" E, Elevation: 6218 ft./1897mtrs], 27.III.2011, 1 female; Kodaikanal Hills Station: Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030 mtrs], 25.IV.2011, 1 male, 2 female and Bryant Park [10°13'859" N 077°29.669" E, Elevation: 6987 ft./2130 mtrs], 26.IV.2011,

4 female [(15 specimens), Voucher specimens: ERI-LEP: 54])

Dysgonia illibata (Fabricius, 1775)

Geographical Distribution: The species occurs in China, India, Sri Lanka and Burma. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Nilgiri Biosphere-Ooty Botanical Garden [11°41'758" N, 76°71.048" E, Elevation: 7306 ft./2228 mtrs], 13.X.2010; Bench Mark [11°41'181" N, 76°72'07" E, Elevation: 7840ft./2389mtrs], 14.X.2010; Coonoor Sim's park [11°35'485" N, 76°80'03" E, Elevation: 6082 ft./1855 mtrs], 15.X.2010; Coonoor Municipal building [11°34'33" N, 76°79'56" E, Elevation: 5605 ft./1708 mtrs], 16.X.2010; Kethi [11°38'211" N, 76°73'745" E, Elevation: 7014 ft. /2137 mtrs], 20.XI.2010; Doddabetta [11°40'116" N, 76°73'5" E, Elevation: 8607ft./2624 mtrs], 22.XI.2010 and Kothagiri Pandian Park [11°42'155" N, 76°85'006" E, Elevation: 6218 ft./1897mtrs], 03.IX.2010; Kodaikanal Hills Station: Moonjikkal [10°23'915"N, 77°49'7716"E, Elevation: 6700 ft. /2030 mtrs], 09.V.2010; Bear Shola [10°24" N 77°48'0283" E, Elevation: 6908 ft. /2106 mtrs], 26.IV.2011; Bryant Park [10°13'859" N, 077°29'669" E, Elevation: 6987 ft./2130 mtrs], 25.IV.2011; Senbaganur [10°23'1733" N, 77°503" E, Elevation: 5899 ft./1798 mtrs], 27.IV.2011, [(47 specimens), Voucher specimens: ERI-LEP:61]].

Lygephila maxima Bremer, 1861

Geographical Distribution: The species was previously recorded from Korea: North, South, Japan, China, Russia: RFE-Primorye, Khabarovsk, Amur, S Sakhalin and K Kuriles. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Kodaikanal bus terminus [10°23'5367" N, 77°49'2933" E, Elevation 6983 ft. /2130 mtrs], 15.V.2011, [(Three specimens), Voucher specimens: ERI-LEP: 73]].

Lacera noctilio Fabricius, 1787

Geographical Distribution: The species is distributed from the Indo-Australian tropics east to Samoa, New Caledonia and Tonga, also the Marianas and Western Carolines. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Nilgiri Biosphere-Ooty Botanical Garden [11°41'758" N, 76°71'048" E, Elevation: 7306 ft./2228 mtrs], 31.III.2010; Bench mark [11°41'181" N, 76°72'07" E, Elevation: 7840ft./2389mtrs], 1.IV.2010; Coonoor Sim's Park [11°35'485" N, 76°80'03" E, Elevation: 6082 ft./1855 mtrs], 13.X.2010; Coonoor Municipal building [11°34'33" N, 76°79'56" E, Elevation: 5605 ft./1708 mtrs], 14.X.2010; Kethi [11°38'211" N, 76°73'745" E, Elevation: 7014 ft. /2137 mtrs], 20.X.2010; Doddabetta [11°40'116" N, 76°73'5" E, Elevation: 8607ft./2624 mtrs], 26.III.2011; Porthy [11°34'343" N, 76°63'071" E, Elevation: 6689ft./2036mtrs], 7.VI.2010; Kodaikanal Hills Station-Kodaikanal Bus terminus [10°23'5367" N, 77°49'2933" E, Elevation 6983 ft./2130 mtrs], 27.IV.2011;

Lake [10°23'8383" N, 77°48'7683"E, Elevation 6894 ft./2101mtrs], 28.IV.2011; Bryant Park [10°23'0983" N 77°49'4483" E, Elevation 6987ft./2130 mtrs], 28.IV.2011; Bear Shola [10°24" N 77°48'0283" E, Elevation: 6908 ft. /2106 mtrs], 29.IV.2011; Cokker's Walk [10°23'0983" N 77°49'4483" E, Elevation 6987 ft./2130 mtrs], 29.XI.2011; Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030 mtrs], 30.XI.2011; Perumalmalai [10°27'045" N, 77°53'3633" E, Elevation 4934 ft. /1504 mtrs], 1.XII.2011; and Observatory [10°22'9166" N, 77°45'95"E, Elevation 7529 ft./2295mtrs], 28.XII.2011. [(321 specimens), Voucher specimens: ERI-LEP: 78]].

Ericia eriophora (Guenée, 1852)

Geographical Distribution: The species is distributed in the Oriental tropics to Republic of the Philippines and Sulawesi. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Kodaikanal Lake [10°23'8383" N, 77°48'7683" E, Elevation 6894 ft. /2101mtrs], 27.IV.2011, [(Five specimens), Voucher specimens: ERI-LEP: 83]].

Lygniodes schoenbergi Pagenstcher, 1890

Geographical Distribution: The species was described from Borneo Holloway 2005. This is a new record from India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Bryant Park [10°23'0983" N 77°49'4483" E, Elevation 6987ft. /2130 mtrs], 27.V.2011 [(Three specimens), Voucher specimens: ERI-LEP:104]].

Calyptra minuticornis (Guenée In Boisduval and Guenée, 1852)

Geographical distribution. This species is recorded for the first time in India. It also occurs in Sri Lanka, Taiwan, Thailand, Peninsular Malaysia, Java, Borneo; New Guinea, Bismarcks, Queensland; Sulawesi and Timor (intermediate).

Specimens examined: India, Tamil Nadu part of Western Ghats: Nilgiri Biosphere - Ooty-Botanical Garden [11°41'758" N, 76°71'048" E, Elevation: 7306 ft./2228 mtrs], 25.III.2011, Bench Mark [11°41'181" N, 76°72'07" E, Elevation: 7840ft./2389mtrs], 26.III.2011 and Coonoor Municipal building [11°34'33" N, 76°79'56" E, Elevation: 5605 ft./1708 mtrs], 17.IV.2010; Kodaikanal hills station-Bryant Park [10°23'0983" N 77°49'4483" E, Elevation 6987ft./2130 mtrs], 28.VI.2011, Moonjikkal [10°23'915"N, 77°49'7716"E, Elevation: 6700 ft. /2030 mtrs], 26.IV.2011 and Bear Shola [10°24" N 77°48'0283" E, Elevation: 6908 ft. /2106 mtrs], 26.IV.2011 [(29 specimens), Voucher specimens: ERI-LEP:121]].

Spirama helicina (Hubner, [1831])

Geographical Distribution: The species is distributed across Asia, Taiwan, Korea and Japan. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Nilgiri Biosphere-Ooty Bench mark [11°41'181" N, 76°72'07" E, Elevation: 7840ft./2389mtrs],

27.V.2011; Botanical garden [11°41'758" N, 76°71'048" E, Elevation: 7306 ft./2228 mtrs], 28.V.2011 Lake [11°40'45N, 76°69'0933" E, Elevation: 7286ft./2221mtrs], 28.V.2011; Doddabetta [11°40'116" N, 76°73'5" E, Elevation: 8607ft./2624 mtrs], 31.III.2011, Coonoor-Sim's Park [11°35'485" N, 76°80'03" E, Elevation: 6082 ft./1855 mtrs], 17.X.2010; Coonoor Municipal building campus [11°34'33" N, 76°79'56" E, Elevation: 5605 ft./1708 mtrs], 17.X.2010 and Kothagiri Pandian Park [11°42'155" N, 76°85'006" E, Elevation: 6218 ft./1897mtrs], 13.X.2010; Kodaikanal Hills Station: Moonjikkal [10°23'915" N, 77°49' 7716" E, Elevation: 6700 ft. /2030 mtrs], 15.IV.2010; Bryant Park [10°23'0983" N 77°49'4483" E, Elevation 6987ft./2130 mtrs], 16.IV.2010; Bear Shola [10°24"N 77°48'0283" E, Elevation: 6908 ft. /2106 mtrs], 16.IV.2010; Senbaganur [10°23'1733" N, 77°503"E, Elevation: 5899 ft. /1798 mtrs], 3.IX.2010; Vattakanal [10°21'5166" N 77°48'5266" E, Elevation 6825 ft. /2080 mtrs], 27. IX. 2010 and Vellagavi [10°19'7033" N, 77°49'9183" E, Elevation 4408 ft. /1343 mtrs], 27. IX. 2010, [(63 specimens), Voucher specimens: ERI-LEP: 115]].

Eudocima sikhimensis Butler, 1895

Geographical Distribution: The species is distributed across Thailand, Sundaland and North Eastern India. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Kodaikanal Bus terminus [10°23'5367" N, 77°49'2933"E, Elevation 6983 ft. /2130 mtrs], 07.X.2010, 2 male; Lake [10°23'8383" N, 77°48'7683"E, Elevation 6894 ft./2101mtrs], 08.V.2011, 2 female, 3 male; Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030 mtrs], 8.X.2011, 2 female [(Nine specimens), Voucher specimens: ERI-LEP:108]].

Phyllodes consobrina Westwood, 1848

Geographical Distribution: This species is recorded for the first time in Nilgiri biosphere of Western Ghats. Previously it was reported from North East India. It also occurs in Burma, Andaman, Sri Lanka, Thailand and Bangladesh.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Kodaikanal Bus terminus [10°23'5367" N, 77°49'2933" E, Elevation 6983 ft. /2130 mtrs] 28.VI. 2011. Holotype male [(Two male specimens), Voucher specimens: ERI-LEP: 122]]

Anisoneura aluco (Fabricius, 1775)

Geographical Distribution: The species is distributed from Himalaya, Taiwan, Burma, Thailand (VK), Peninsular Malaysia, Sumatra, Borneo and Buru. This is a new record from (Western Ghats) Tamil Nadu, India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030

mtrs] 3.IX. 2010. Holotype male [(Two specimens, Voucher specimens: ERI-LEP: 121)].

Hyperlopha crucifera Walker, 1865

Geographical distribution: The species was first described by Holloway (2005) from Borneo. This is a new record from India.

Specimens examined: India, Tamil Nadu part of Western Ghats: Kodaikanal Hills Station-Moonjikkal [10°23'915" N, 77°49'7716" E, Elevation: 6700 ft. /2030 mtrs] 28.VI. 2011, Holotype male [(One specimen, Voucher specimens: ERI-LEP: 123)].

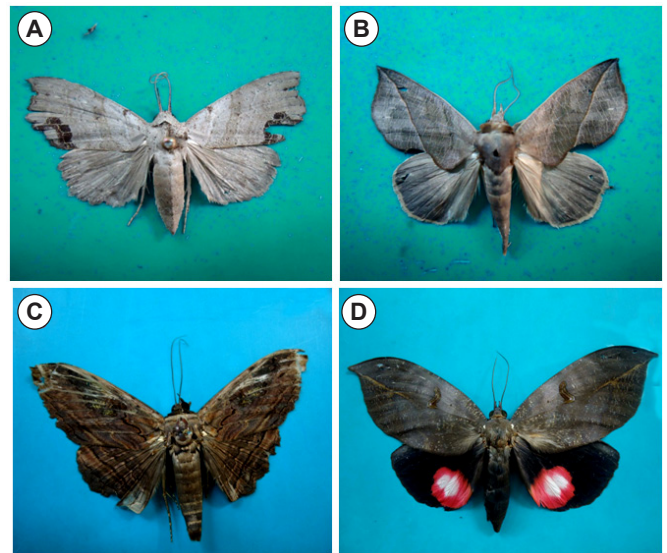


FIGURE 3. A) *Hyperlopha crucifera* Walker, 1865; B) *Calyptra minuticornis* (Guenée In Boisduval and Guenée, 1852); C) *Anisoneura aluco* (Fabricius, 1775); *Phyllodes consobrina* Westwood, 1848.

ACKNOWLEDGMENTS: The authors are grateful to Entomology Research Institute, Loyola College, Chennai-34, India for financial assistance. We thank Mr. Kasthuri Rangan, supervisor, Municipal Corporation of Kodaikanal for allowing us to collect Insects. We also thank to Mr. Thangaraj, trekking guide for rendering help in insect collections.

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RECEIVED: March 2012

ACCEPTED: May 2012

PUBLISHED ONLINE: August 2012

EDITORIAL RESPONSIBILITY: Matthew Smart