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Amit Katewa & Prakash Chand Pathania

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MOTHS OF THE SUPERFAMILY TINEOIDEA (INSECTA: LEPIDOPTERA) FROM THE WESTERN GHATS, INDIA

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Abstract: Ten species of the superfamily Tineoidea were collected from different localities of the Western Ghats in the states of Goa, Gujarat, Maharashtra, Karnataka, Tamil Nadu and Kerala; of the genera *Edosa* Walker, *Cimitra* Walker, *Monopis* Hübner, *Compsoctena* Zeller, and *Clania* Walker are present. All the ten species are recorded for the first time from the Western Ghats.

Keywords: Light trap, Microlepidoptera, new records.

The topography and climatic conditions of the Western Ghats are quite diverse and unique. The Western Ghats cover an area of about 160,000km² and stretches for 1,600km from the mouth of river Tapti in the north to Cape Camorin in the south and are one of the hot biodiversity spots of India with great diversity in flora and fauna. The average mountain ranges are with an average height of about 1,200m running parallel to the western coast of southern India in the states of Gujarat, Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala. Except for a single major gap of about 24km called Palghat Gap and some small passes like Goa Gap, Bhor Ghat, and Thal Ghat, these ranges of the Western Ghats are almost continuous. The Western Ghats are known by various names in different areas, i.e., as the Sahyadri mountains in Maharashtra and Karnataka,

Nilagirimalai in Tamil Nadu and Sahyaparthvatham in Kerala. The Anaimudi Peak (2,695m) is the highest peak of the Western Ghats which lies in the ranges of the state of Kerala. The Anaimudi Peak also acts as a nodal point from where three ranges radiate to different directions, i.e., the Anaimalai Hills in the north, the Palni Hills in the north-east, and the Cardamom Hills in the south. According to Scoble (1995) the order Lepidoptera is divided into primitive Lepidoptera, early Heteroneura, lower Ditrysia, and higher Ditrysia. Further, the lower Ditrysia, the larvae of which are often concealed rather than external feeders, includes the superfamilies Tineoidea, Gracillarioidea, Yponomeutoidea, Gelechioidea, Cossioidea, Tortricioidea, Castnioidea, Sesioidea, Zygaenoidea, Immoidea, Copromorphoidea, Schreckensteinoidea, Urodoidea, Epermenioidea, Alucitoidea, Pterophoroidea, Hyblaeioidea, Thyridoidea, and Pyraloidea. Moths from three families—Tineidae, Eriocotidae, and Psychidae—were collected.

MATERIAL AND METHODS

Survey-cum-collection tours were conducted from different localities of states Goa, Maharashtra, Karnataka, Tamil Nadu, and Kerala falling in the jurisdiction of

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Western Ghats during March 2003 to October 2006 (Fig. 1). The details are provided in Table 1. Due to nocturnal behaviour, adult moth diversity referable to different families, i.e., Tineidae, Eriocottidae, and Psychidae, the adults were collected with the help of a portable light trap (Image 1). The portable trap comprises a funnel (diameter top 30cm, bottom 6cm, height 30cm) fitted with baffle plates so that the moths once visiting the light get trapped around the lamp. The source of light to attract the moths was a 125w mercury vapour lamp fixed in the funnel. The funnel is fixed on the top of a collecting chamber (30cm x 30cm x 12cm) fitted with a sliding collecting tray (29cm x 29cm). For fumigation of chamber with 1,1,2,2- tetrachloroethane as a killing agent for the adult moth, a petri dish containing cotton soaked with the aforesaid chemical was placed in a corner of the tray. Some of the moths were captured individually in glass killing tubes of various sizes (2cm x 7cm to 5cm x 15cm) charged with ethyl acetate poured over the a layer of plaster of Paris at the bottom of the tube from various locations. Besides the portable light trap, some collection was also made by hanging the source of light (125w mercury vapour lamp) on a white sheet or a white-washed wall. As per techniques being used in lepidopterology (Lindquist 1956; Hodges 1958; Tagestad 1974; Robinson, 1976a; Zimmerman 1978; Nielson 1980; Sokoloff 1980; Mikkola 1986; Landry & Landry 1994), the entire collected specimens were processed for further biosystematics studies.

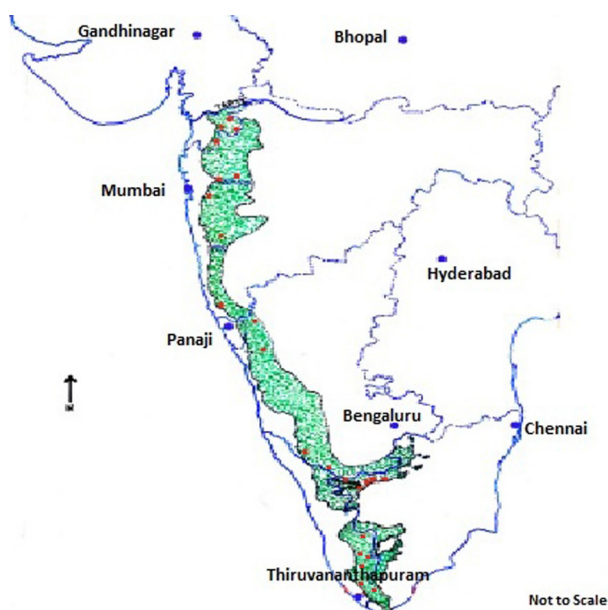


Figure 1. Area surveyed.

Observation

In the present research work, 43 specimens belonging five genera of 10 species of moths of the superfamily Tineoidea was collected and identified from available literature (Hampson 1892; Robinson 1976; Robinson & Tuck 1993; Robinson et al. 1994; Rose & Pathania 2003; Pathania & Rose 2004; Pathania et al. 2006), and with the reference collections housed in the National Pusa Collection, Division of Entomology, IARI, New Delhi and from the Museum of Department of Zoology & Environmental Sciences, Punjabi University, Patiala. All the collections are deposited in the Museum of Department of Zoology & Environmental Sciences, Punjabi University, Patiala (No TIN.1-43). The details are provided below:

Phylum: Arthropoda

Subphylum: Hexapoda

Class: Insecta

Order: Lepidoptera

Superfamily: Tineoidea



Image 1. Portable light trap.

I. Family: Tineidae

Tineidae Latreille, 1810, Considerations generals Animaux Crustaces Arachnides Insectes: 347, 363 (as Tineites).

Type-genus: *Tinea* Linnaeus, 1758, Syst. Nat. (Edn. 10) 1: 534.

Subfamily: Perissomasticinae

Perissomasticinae Gozmany, 1965, Fauna Hungariae 16(2): 117.

Type-genus: *Perissomasix* Warren & Rothschild, 1905, Novit. Zool. 12: 33, included in Fletcher 1929 and in G.N.M.W. 6 within the Tineidae.

Genus: Edosa Walker

Edosa Walker, 1866, List Specimens lepid. Insects Colln. Br. Mus. 35: 1818.

Chrysoryctis Meyrick, 1886, Ann. Mag. Nat. Hist. (5)17: 530. Type species: *Oecophora irruptella* Walker, 1864, List Specimens Lepid. Insects Colln. Br. Mus. 29: 686.

Episcardia Ragonot, 1895, Bull. Soc. ent. Fr.: 105. Type species: *Psecadia lardatella* Lederer, 1858, Wien. ent. Monatschr. 2: 151.

Sphallesthis Gozmany, 1959, Acta. Zool. Hung., 5: 347. Type species: *Sphallesthis similis* Gozmany, 1975, ibidem 5: 348.

Bilobatana Zagulajev, 1975, Fauna SSSR 108: 250. Type species: *Tinea caerulipennis* Ershoff, 1874, in Fedchenko, Reise Turkestan 2(5) 3: 97.

Type-species: *Edosa hemichrysella* Walker, 1866, List Specimens Lepid. Insects. Colln. Br. Mus. 35: 1819, by monotypy.

1. Edosa glossoptera Rose & Pathania

Edosa glossoptera Rose & Pathania, 2003, Uttar Pradesh, J. Zool. 23(3): 201–211.

Material examined: Reg.no TIN/1, 28.ii.2004, 1 male, Goa, Ponda District, Ponda, 15.399°N, 74.0124°E, 85m, coll. A. Katewa.

Distribution: Himachal Pradesh (Rose & Pathania 2003).

Remarks: The species is a new record from the Western Ghats in India.

2. Edosa opsigona (Meyrick)

Tinea opsigona Meyrick, 1911. J. Bombay nat. Hist. Soc. 21: 123.

Epicarda nepalensis Petersen, 1982, Reichenbachia 20: 73.

Material examined: Kerala: Palakkad District,

Agli, 11.101°N, 76.647°E, 520m, 07.x.2003, 01 male; Karnataka: Uttar Kannada District, Ganeshgudi, 14.793°N, 74.686°E, 480m, 21.vii.2004, 01 male; Gujarat: District The Dangs, Waghai, 20.773°N, 73.497°E, 180m, 28.ix.2005, 01 male; Maharashtra: Mumbai District, Malshej Ghat, 19.340°N, 73.774°E, 690m, 02.x.2005, 01 males, (Reg. no TIN/2–6), coll. A. Katewa.

Distribution: Nilgiri Hills, northern Coorg, Sri Lanka (Meyrick 1911), Uttarakhand, Himachal Pradesh, and Punjab (Rose & Pathania 2003).

Remarks: *Edosa opsigona* (Meyrick) has earlier been reported from Tamil Nadu and Karnataka and it is collected from states Kerala, Gujarat and Maharashtra for the first time in the Western Ghats.

3. Edosa neoopsigona Rose & Pathania

Edosa neoopsigona Rose & Pathania, 2003, Uttar Pradesh, J. Zool. 23(3): 201–211.

Material examined: Goa: Sanguem District, Molem, 15.386°N, 74.229°E, 110m, 23.ii.2004, 1 male; Ponda District, Ponda, 15.399°N, 74.012°E, 85m, 28.ii.2004, 1 male, (Reg. no TIN/7–8), coll. A. Katewa.

Distribution: Punjab, Himachal Pradesh and Jammu and Kashmir (Rose & Pathania 2003).

Remarks: *Edosa neoopsigona* Rose & Pathania is reported for the first time from the hot biodiversity spot of Western Ghats.

4. Edosa paraglossoptera Rose & Pathania

Edosa paraglossoptera Rose & Pathania, 2003, Uttar Pradesh, J. Zool. 23(3): 201–211.

Material examined: Kerala: Palakkad District, Agli, 11.101°N, 76.647°E, 520m, 07.x.2003, 01 male; Karnataka: Uttar Kannada District, Ganeshgudi, 15.284°N, 74.530°E, 480m, 21.vii.2004, 01 male; Gujarat: The Dangs District, Waghai, 20.773°N, 73.497°E, 180m, 28.ix.2005, 01 male, (Reg. no TIN/9–11), coll. A. Katewa.

Distribution: Himachal Pradesh (Rose & Pathania 2003).

Remarks: *Edosa paraglossoptera* Rose & Pathania is being reported for the first time from the areas.

5. Edosa sattleri Rose & Pathania

Edosa satleri Rose & Pathania, 2003, Uttar Pradesh, J. Zool. 23(3): 201–211.

Material examined: Tamil Nadu: Nilgiris District, Doddabetta, 11.400°N, 76.735°E, 2640m, 01.x.2003, 01 male; Gujarat: The Dangs District, Ahwa, 20.758°N, 73.686°E, 520m, 29.ix.2005, 02 males, (Reg. no TIN/12–14), coll. A. Katewa.

Distirbution: Uttranchal (Rose & Pathania 2003).

Remarks: *Edosa sattleri* Rose & Pathania is a new record from the Western Ghats.

Subfamily: Hapsiferinae

Hapsiferinae Gozmany, 1968, June 29, Acta Zool. Acad. Sci. Hung 14: 326.

Type-genus: *Hapsifera* Zeller, 1847, Isis Oken, Leipzig 1847: 32.

Genus: *Cimitra* Walker

Cimitra Walker, 1864, List Specimens lepid. Insects Colln Br. Mus. 29: 779.

Type-species: *Cimitra seclusella* Walker, 1864, ibidem 29: 780, by monotypy.

6. *Cimitra seclusella* Walker

Cimitra seclusella Walker, 1864, List specimens lepid. Insects Colln Br. Mus. pt. 28, P 479.

Material examined: Kerala: Palakkad District, FRH, Parambikulam, 76.355°E, 10.202°N 580m, 16.ix.2004, 02 males, Idukki District, Vallakadavu, 77.206°N, 9.601°E, 780m, 09.ix.2004, 04 males, 10.ix.2004, 01 male, 12.ix.2004, 01 male; District Pathanamthitta, Wadaserikera, 9.264°N, 76.787°E, 30m, 07.ix.2004, 02 males; Karnataka: Uttar Kannada District, Ganeshgudi, 15.284°N, 74.530°E, 480m, 14.x.2005, 01 male, 16.x.2005, 01 male, (Reg. no TIN/15–26), coll. Katewa A.

Distribution: India, Nepal, Sri Lanka, Taiwan, Myanmar, Vietnam, western Malaysia, Jawa (Robinson et al. 1994), Himachal Pradesh, Uttarakhand, Punjab (Pathania et al. 2006).

Remarks: The genus *Cimitra* Walker with seven species is reported only in tropical Africa and *Cimitra seclusella* Walker is the only species to be available in Southeast Asia (Robinson et al. 1994). Pathania et al. (2006) have reported it for the first time from the Shivaliks in northern India. It is a new record from the Western Ghats.

Subfamily: Tineinae

Tineinae Latreille, 1810, Considerations generales Animaux Crustaces Archnides Insectes 347, 363 (as Tineidae).

Type-genus: *Tinea* Linnaeus, 1758, Syst. Nat. (Edn. 10) 1: 534.

Genus: *Monopis* Hübner

Monopis Hübner, (1852) 1816, Verz. bekannter Schmett. : 401.

Type-species: *Tinea rusticella* Hübner, 1776, Samml. eur. Schmett. 8: 61, pl. 3 fig. 17, pl. 49 fig. 339, by monotypy.

7. *Monopis monachella* (Hübner)

Tinea monachella Hübner, 1796 (Tineae), in Sammlung Europaischer Schmetterlinge, pt. 8, p. 65, pl. 21, fig. 143.

Blabophanes monachella Meyrick, 1883, Ent. Mon. Mag., 20, p. 36; 1894, Trans. R. ent. Soc. Lond. p. 27.

Monopis monachella Meyrick, 1895, Handbook British Lepidoptera, p. 785; Semper, 1902, Schmetterlinge Philippinischen Inseln, 2, p. 705; Meyrick, 1914, Ent. Mitteil, Suppl., 3, p. 59; 1928, Rev. Handbook British Lepidoptera, p. 823; 1930, in de Joannis, Ann. Soc. ent. France, 99, p. 742; Walsingham 1897, Trans. R. ent. Soc. Lond. p. 63; 1907, in Sharp, Fauna Hawaliensis, 1, pt. 5, p. 727; Rebel, 1901, in Staudinger and Rebel, Cat. Lepidopteren palaearktischen Faunengebietes, pt. 2, p. 236; no. 4536; Pierce and Metcalfe, 1935, Gen. *Tineina* British Is., p. 97; pl. 59; Diakonoff, 1948, Treubia, 19, p. 219; Walsingham, 1897, Trans. R. ent. Soc. Lond., p. 63.

Bladophanes longella Butler, 1881, Ann. Mag. nat. Hist. Scr., 7, p. 396, no. 29; Walsingham, 1887, in Moore, Lepid. Ceylon, 3, p. 503, pl. 209, fig. 1.

Material examined: Kerala: Palakkad District, Makkali, 11.058°N, 76.540°E, 560m, 22.ix.2004, 01 male; Karnataka: Uttar Kannada District, Ganeshgudi, 15.284°N, 74.530°E, 480m, 16.x.2005, 01 male, (Reg. no TIN/27–28) coll. A. Katewa.

Distribution: India, Myanmar and Sri Lanka (Fletcher 1921), and Punjab (Pathania & Rose 2004).

Remarks: In the absence of any precise information about the locality, the collection of *Monopis monachella* (Hübner) from the Western Ghats plugs this void to some extent as far as its distribution is concerned in India.

8. *Monopis longella* (Walker)

Tinea longella Walker, 1863, List Specimens lepid. Insects Colln Br. Mus., pt. 28, p. 479.

Material examined: Karnataka: Kodagu District, Nisargadhama, 12.440°N, 75.936°E, 1080m, 17.xi.2002, 01 male; Uttar Kannada District, Kulgi, 15.166°N, 74.637°E, 360m, 17.vii.2004, 01 male; Maharashtra: Mumbai District, Malshej Ghat, 19.340°N, 73.774°E, 690m, 02.x.2005, 01 male, (Reg. no TIN/29–31), coll. A. Katewa.

Distribution: Northeastern India, Sikkim, Nepal, western Malaysia, Thailand (Robinson et al. 1994) and Himachal Pradesh (Pathania & Rose 2004).

Remarks: In view of above, *Monopis longella* (Walker) is being reported for the first time from the Western Ghats.

Family: Eriocottidae

Eriocottidae Spuler, 1898, Sber. Phys. med. Soc. Erlangen 30: 36 (as Eriocottinae).

Type-genus: *Eriocottis* Zeller, 1847, Isis Oken, Leipzig: 812, included in Fletcher 1929 within Incurvariidae.

Genus: *Compsoctena* Zeller

Compsoctena Zeller, 1852, Lepid. Microptera, quae J.A. Wahlberg in Caffrorun terra collegit: 86.

Type-species: *Compsoctena primella* Zeeler, 1852, ibidem, 87, by monotypy.

9. *Compsoctena robinsoni* Pathania & Rose

Compsoctena robinsoni Pathania & Rose, 2004, Zoos' Print Journal 19(6): 1501–1504.

Material examined: Kerala: Thiruvananthapuram District, FRH, Vithura, 8.675°N, 77.085°E, 120m, 04.ix.2004, 02 males; 05.ix.2004, 01 male; Karnataka: Uttar Kannada District, Ganeshgudi, 15.284°N, 74.530°E, 480m, 21.vii.2004, 02 males; Kodagu District, Sampaje, 12.497°N, 75.556°E, 100m, 13.xi.2002, 01 male; Tamil Nadu: Nilgiris District, Doddabetta, 11.400°N, 76.735°E, 2,640m, 01.x.2003, 02 males, (Reg. no TIN/32–39), coll. A. Katewa.

Distribution: Himachal Pradesh (Pathania & Rose 2004).

Remarks: Eight specimens collected from the Western Ghats were compared with the type material and have been identified as *Compsoctena robinsoni* Pathania & Rose. The species is being reported for the first time from the area under reference.

Family: Psychidae

Psyche Schrank, Fauna Boica, ii, 2 Abth. P. 87 (1802).

Type genus: *Psyche* Schrank, Fauna Boica, ii, 2 Abth. P. 87 (1802).

Subfamily: Oeceticinae

Oiketicus, Lands. Guild. Trans. Linn. Soc. Xv, p. 375

(1827).

Type-genus: *Oiketicus*, Lands. Guild. Trans. Linn. Soc. Xv, p. 375 (1827).

Genus: *Clania* Walker

Clania Walker, 1865, Cat. Lep. Het. Brit. Mus. 4: 963,

Type-species: *Oiketicus lewinii* Westwood.

Eumeta Walker, 1855, Cat. iv, p. 964.

Cryptothelea Walker, 1855, Cat. iv, p. 970.

Lansdownis Heylaerts, 1888, Ann. Soc. Ent. Belg. xxv, p. 66.

Type species: *lewinii* Westwood.

10. *Clania crameri* Westwood

Clania crameri Westwood, P.Z.S. 1854, p. 236; Moore, Lep. Ceyl. ii, pl. 118, figs. 1, 1a (larva-case); C. & S. no. 490.

Material examined: Kerala: Thiruvananthapuram District, Vithura, 8.675°N, 77.085°E, 1120m, 04.ix.2004 01 male; Idukki District, Vallakadavu, 77.206°E, 9.601°E, 780m, 11.ix.2004, 01 male; Goa: Sanguem District, Mollem, 15.386°N, 74.229°E, 110m, 24.ii.2004, 01 male; Ponda District, Ponda, 15.399°N, 74.012°E, 85m, 29.ix.2004, 01 male, (Reg. no TIN/40–43) coll. A. Katewa.

Distribution: Shanghai, India (Canara, Nilgiris), Sri Lanka, Borneo, Celebes (Hampson 1892).

Remarks: Hampson (1892) has listed the species from Canara and Nilgiris, yet the same is reported for the first time from two other states, i.e., Kerala and Goa of the said ecozone.

DISCUSSION

During our survey-cum-collection tours, 10 species of the superfamily Tineoidea have been collected from six states of Goa, Gujarat, Maharashtra, Karnataka, Tamil Nadu and Kerala falling in the jurisdiction of Western Ghats. Tineoidea is one of the ditrysiian superfamily of micro moths are generally known as cloth moths, bagmoths etc. The main characters are antenna

Table 1. Collection localities.

	State	Cited localities
1	Goa	Keri, Mollem, Ponda.
2	Gujarat	Dharmpur, Vaghai, Ahava, Saputara.
3	Maharashtra	Allefata, Malshej Ghat, Sanjay Gandhi National Park, Satara, Mahableshwar, Amboli.
4	Karnataka	Londa, Ganeshgudi, Khanapur, Ramnagar, Nagargalli, Karwar, Kasarkod, Shimoga, Shettihalli, Honnawar, Jog Falls, Bhagwati, Chickmagalur, Kemmanagundi, Kallatgiri Falls, Madikeri, Kulgi, Dandeli, Gundya, Baghamandala.
5	Tamil Nadu	Ooty, Coonoor, Doddabetta, Kanyakumari, Coimbatore.
6	Kerala	Mukkali, Agli, Neyyar Wildlife Sanctuary (WS), Shendurini WS, Vithura, Rani, Vadasarikera, Kumili, Periyar WS, Vallakadavu, Deviculam, Maryur and Parambikulam WS.

filiform, maxillary palpus usually five segmented and forewing with vein R5 terminating on costa or apex of family Tineidae and antenna often bipectinate, maxillary palpus usually four segmented and forewing with vein R5 terminating on termen in family Eriocottidae. These species are recorded for the first time from the Western Ghats. The Western Ghats is one of the largest forest area in the southern part of India. The tropical evergreen forests, moist deciduous forests, scrub jungles, sholas, savannas are the dominant vegetation in the mentioned areas.

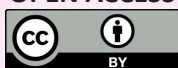
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