Inventory of owlet moths from Western Ghats of India
(Noctuidae: Lepidoptera)

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Abstract
An inventory of owlets moths has been prepared from Western Ghats of India. As many as 1300 representatives of 41 species referable to 24 genera belonging to family Noctuidae have been collected, studied and 27 species have been reported for the first time from this area.

Keywords: Inventory, Moths, Noctuidae, Western Ghats, India.

1. Introduction
During the recent intensive collection-cum-survey tours conducted in the far flung localities of Western Ghats of India between September 2008-2012 by the second author resulted in the collection of 41 species referable to 24 genera of subfamilies viz., Hadeninae, Heliothinae, Noctuinae, Plusiinae, Stictopterinae and Amphipyrinae. The authentic identification of various taxa has been based on the works of (Hampson, 1894, 1905) and by comparison of collections lying in the museums of Forest Research Institute, Dehradun and Indian Agriculture Research Institute, PUSA, New Delhi. Comparison has also been made with the types of the Natural History Museum, London. The primary objective of the present communication is to prepare an inventory with, authentic identification, first reference, type species, material examined, distribution and remarks, if any, of all included species.

2. Materials and Methods
Intensive and extensive survey cum collection tours were conducted in the far flung localities of Western Ghats between September 2008 to 2012, which yielded a collection of 1300 adult representatives of subfamilies viz., Hadeninae, Heliothinae, Noctuinae, Plusiinae, Stictopterinae and Amphipyrinae of family Noctuidae. The entire materials were collected from light traps using a 40W ultraviolet light suspended on one side of a vertical white sheet (approximately 2.0 m x 2.5 m). Sometimes a portable light trap or petromax lamp (during failure of electricity) was also used. Various sampling sites in different localities of Gujarat, Maharashtra, Karnataka, Goa, Kerala, and Tamil Nadu were surveyed exclusively during this period. The adult representatives of different species were collected and killed with ethyl acetate vapours in insect killing jars of different sizes, depending upon the size of the specimen. In order to keep the scales intact on the body of the moths, they were removed from the bottles as soon as they were killed. Each of the killed specimens was pinned properly. This was preceded by spreading of both the wings on the insect stretching board, followed by their drying. Each specimen was labelled. The specimens were preserved in airtight boxes, having naphthalene balls as fumigants. Various morphological characters, such as head appendages, wing maculation, wing venation and genitalia, were examined to identify different species.

3. Observation
The moths belonging to family Noctuidae can be easily recognised from their sitting posture, but doubtful cases can be readily confirmed from neuration of hindwings i.e., after tropical treatment with toluene. A complete list of identified species along with their material examined and old distribution is given below:
Subfamily Hadeninae
Genus *Mythmina* Ochsenheimer

**Type species:** *Phalaena turca* Linnaeus.

**Distribution:** Universally distributed except the Australian region.

*Mythmina reversa* Moore

**Old Distribution:** Shimla, Sikkim; Ganjam; Nilgiris, Sri Lanka, E.Pegu.

**Material Examined:**
- Karnataka: Medikeri: 30.vii.07, 2♂♂.
- Kerala: Devikulam: 2.xi.07, 1♀.

**Remarks:** This species has been reported for the first time from Western Ghats of India.

*Mythimna unipuncta* (Haworth)

**Material Examined:**
- Karnataka: Ganeshgudi: 14.x.05, 2♂♂.
- Kerala: Mukkali: 12.viii.07, 1♂, 1♀.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

Genus *Sasunaga* Moore

**Type species:** *Hadena tenebrosa* Moore.

**Distribution:** S. America; India and Sri Lanka.

*Sasunaga tenebrosa* Moore

**Old Distribution:** Shimla; Sikkim; Poona; Nilgiris; Sri Lanka.

**Material Examined:**
- Karnataka: Dandali: 1.viii.07, 1♀.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

Genus *Leucania* Ochsenheimer

**Type species:** *Leucania comma* Linnaeus.

**Distribution:** Universally distributed except the Australian region.

*Leucania venalba* Moore
Moore, 1867, *Cat.* 4: 81.

**Old Distribution:** Dharmsala, Khasis, Sri Lanka.

**Material Examined:**
- Tamil Nadu: Gudalur: 13.xii.06, 1♂, 1♀.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Tamil Nadu from India.

*Leucania albicosta* Swinhoe

**Old Distribution:** Dharmsala; Sikkim; Khasis; Nagas; Nilgiris; Bernadmyo.

**Material Examined:**
- Tamil Nadu: Gudalur: 13.xii.06, 1♂, 1♀.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

Genus *Egira* Duponchel

**Type species:** *Phalaena conspicillaris* Linnaeus.

**Distribution:** Universally distributed.

*Egira v-album* Hampson

**Old Distribution:** Nilgiris.

**Material Examined:**
- Tamil Nadu: Cornoor: 20.xi.05, 1♂.
Genus *Callopistria* Hübner

**Type species:** *Phalaena juventina* Stoll.

**Distribution:** Universally distributed

*Callopistria rivularis* Walker
Walker, 1816, *Cat.*, 12: 867

**Old Distribution:** N.W Himalayas; Nilgiris; Sri Lanka, Fiji.

**Material Examined**
Karnataka: BR Hills: 9.xii.07, 1 ♂.
Tamil Nadu: Kotagiri: 14.viii.05, 2 ♂♂.
Kerala: Periyar: 22.xi.09, 1 ♂.

*Callopistria placoides* (Guenée)
Guenée, 1816, *Cat.*, 12: 296

**Old Distribution:** Nilgiris, Borneo, Java.

**Material Examined**
Karnataka: Vadaseri: 20. xi. 06, 1 ♀, Medikeri: 27.ix.06, 2 ♂♂.
Tamil Nadu: Kuttu: 9.x.06, 4 ♂♂.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

*Callopistria aethiops* Butler

**Old Distribution:** Japan, Nilgiris.

**Material Examined**
Tamil Nadu: Kuttu: 10.x.06, 2 ♂♂.
Karnataka: Medikeri: 29.ix.08, 2 ♂♂.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

*Callopistria repleta* Walker
Walker, 1816, *Cat.*, 13: 865

**Old Distribution:** Japan; N.W. Himalayas.

**Material Examined**
Karnataka: Medikeri: 30.vii.07, 1 ♂.

**Remarks:** This species has been reported for the first time from Western Ghats of India.

*Callopistria indica* (Butler)

**Old Distribution:** N.W. Himalayas; Canara; Borneo.

**Material Examined**
Kerala: Mukkali: 11.vii.07, 1 ♀.

**Remarks:** This species has been reported for the first time from Western Ghats of India.

Subfamily Heliothinae

**GENUS ADISURA MOORE**

**Type species:** *Adisura atkinsoni* Moore.

**Distribution:** Sikkim, Assam Hills and throughout Peninsular India and Sri Lanka.

*Adisura dulcis* (Moore)

**Old Distribution:** N W Himalayas; Sikkim; Bombay Presidency; Kolkata, Ganjam.

**Material Examined**
Karnataka: Dandali: 10.viii.10, 1 ♀, 1 ♂.

*Adisura atkinsoni* Moore

**Old Distribution:** Sikkim; Nagas; Karachi and throughout the Bombay and Madras Presidencies, Sri Lanka.

**Material Examined**
Kerala: Periyar: 23.xi.08, 2 ♂♂.
Maharashtra: Malshejghat: 3.ix.06, 1 ♀.
Karnataka: BR Hills: 27.ix.07, 1 ♀.

**Subfamily: Noctuinae**

**Genus Agrotis**

**Type species:** *Noctua segetum* Schiffmuller.

**Distribution:** Universally distributed.

*Agrotis renalis* (Moore)

**Old Distribution:** N.W. Himalayas; Punjab; Sind.

**Material Examined**
Karnataka: Dubare: 4.x.10, 1 ♀.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

*Agrotis sicca* Guenée

**Old Distribution:** N. America; Europe; S. Africa; Japan; Sikkim; Sri Lanka.

**Material Examined**
Karnataka: Mornala: 12.vi.08, 1 ♂, 1 ♀.

**Subfamily Noctuinae**

**Genus Adisura**

**Type species:** *Adisura atkinsoni* Moore.

**Distribution:** Sikkim, Assam Hills and throughout Peninsular India and Sri Lanka.

*Adisura dulcis* (Moore)

**Old Distribution:** N W Himalayas; Sikkim; Bombay Presidency; Kolkata, Ganjam.

**Material Examined**
Karnataka: Dandali: 10.viii.10, 1 ♀, 1 ♂.

*Adisura atkinsoni* Moore

**Old Distribution:** Sikkim; Nagas; Karachi and throughout the Bombay and Madras Presidencies, Sri Lanka.

**Material Examined**
Kerala: Periyar: 23.xi.08, 2 ♂♂.
Maharashtra: Malshejghat: 3.ix.06, 1 ♀.
Karnataka: BR Hills: 27.ix.07, 1 ♀.

**Subfamily: Noctuinae**

**Genus Agrotis**

**Type species:** *Noctua segetum* Schiffmuller.

**Distribution:** Universally distributed.

*Agrotis renalis* (Moore)

**Old Distribution:** N.W. Himalayas; Punjab; Sind.

**Material Examined**
Karnataka: Dubare: 4.x.10, 1 ♀.

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

*Agrotis sicca* Guenée

**Old Distribution:** Punjab.

**Material Examined**

**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

*Agrotis plecta* Linnaeus

**Old Distribution:** N. America; Europe; S. Africa; Japan; Sikkim; Sri Lanka.

**Material Examined**
Karnataka: Mornala: 12.vi.08, 1 ♂, 1 ♀.
**Remarks:** This species has been reported for the first time from Western Ghats state i.e., Karnataka from India.

_Agrotis putris_ Linnaeus
Linnaeus, 1758, _Syst. Nat._, 1: 850.

**Old Distribution:** Europe, Japan, Dharamshala.

**Material Examined**
Karnataka: Dubare: 4.xi.10, 1 ♂.  
Tamil Nadu: Kuttu: 5.xi.10, 2 ♂.

**Remarks:** This species has been reported for the first time from Western Ghats of India.

**Genus Hermonassa Walker**

**Type species:** _Hemonassa consignata_ Walker.

**Distribution:** Japan, Himalayas.

_Hermonassa consignata_ Walker
Walker, 1865, _Cat._, 32: 632.

**Old Distribution:** Kashmir, Dharamshala, Sikkim.

**Material Examined**
Tamil Nadu: Gurdalur: 3.viii.06, 3 ♂♂.

**Remarks:** This species has been reported for the first time from Western Ghats of India.

**Genus Xestia Hübner**

**Type species:** _Noctua ochreago_ Hübner.

**Distribution:** Palaearctic and Oriental region.

_Xestia triangulum_ (Hufnagel)

**Old Distribution:** Japan; N.W. Himalayas; Sikkim; Satara; Nilgiris.

**Material Examined**
Karnataka: Agumbe,18.09.07, 4 ♀ ♀; Jogfalls, 09.08.06, 2 ♀ ♀.

_Xestia semiherbida_ (Walker)

**Old Distribution:** Japan; Dharamsala; Sikkim.

**Material Examined**
Karnataka: Gharkhal: 03.v.06. 2 ♂♂, 4 ♀ ♀.

**Remarks:** This species has been reported for the first time from Karnataka from India.

**Subfamily Plusiinae**

**Genus Plusia Ochsenheimer**
Ochsenheimer, 1816, _Schmett. Eur._, 4: 89.

**Type species:** _Phalaena festucae_ Linnaeus.

**Distribution:** Universally Distributed.

_Plusia argyrosigna_ (Moore)

**Old Distribution:** Europe; Japan; China; Dharamsala; Nilgiris.

**Material Examined**
Karnataka: Medikeli: 5.x.2006, 1 ♀.

**Remarks:** This species has been reported for the first time from Western Ghats states i.e., Karnataka from India.

**Genus Scriptoplusia Ronkay**

**Type species:** _Phalaena nigriluna_ Walker.

**Distribution:** Universally distributed.

_Scriptoplusia nigriluna_ (Walker)

**Old Distribution:** Sikkim; Sri Lanka.

**Material Examined**
Tamil Nadu: Gudular: 20.x.6, 2 ♂♂.

**Remarks:** This species has been reported for the first time from Western Ghats states i.e., Tamil Nadu from India.

**Genus Trichoplusia McDunnough**

**Type species:** _Plusia brassicae_ Riley.

**Distribution:** Universally distributed.

_Trichoplusia ciliaris_ (Walker)

**Old Distribution:** Europe; Sengal; Congo; Himalayas as far as east Sikkim.

**Material Examined**
Kerala: Devi Kulum: 2.xi.07, 1 ♂, 3.xi.07, 2 ♂ ♂, 1.xi.11, 1 ♀; Ramhajee: 5.x.06, 1 ♂.

**Remarks:** This species has been reported for the first time from Western Ghats states i.e., Kerala from India.

_Trichoplusia lectula_ (Walker)

**Old Distribution:** Bengal; Canara; Sri Lanka.

**Material Examined**
Kerala: Devi Kulum: 1.xi.07, 1 ♀.

**Remarks:** This species has been reported for the first time from Western Ghats states i.e., Kerala from India.

_Trichoplusia orichalcea_ (Fabricius)
Fabricius, _Sp. Ins._, 2: 227.

**Old Distribution:** Azores, Madeira; Canaries; St. Helena; Ascension; South Africa; Mauritius; Arabia; Japan; China; Formosa; throughout India and Sri Lanka.
Material Examined
Kerala: Agali: 27.x.07, 1 ♀.
Karnataka: Medikeri: 13.xi.5, 1 ♀.

Genus Autographa Hübner

Type species: Phalaena gamma Linnaeus.

Distribution: Universally distributed.

Autographa nigrisigna (Walker)

Old Distribution: N. W. Province; the Himalayas from Shimla to Sikkim.

Material Examined
Karnataka: Ganeshgudi: 7.viii.09, 2 ♀, 1 ♂.

Remarks: This species has been reported for the first time from Western Ghats states i.e., Karnataka from India.

Genus Cornutiplusia Kostrowicki

Type species: Phalaena circumflexa Linnaeus.

Distribution: Universally distributed.

Cornutiplusia circumflexa (Linnaeus)

Old Distribution: Europe; Teneriffe; S. Africa; Nilgiris.

Material Examined
Karnataka: Ganeshgudi: 13.x.5, 1 ♂, Medikeri: 27.vii.06, 3 ♂.

Remarks: This species has been reported for the first time from Western Ghats states i.e., Karnataka from India.

Genus Erythroplusia Ichinose
Ichinose, 1962, Kontyu, 30: 249.

Type species: Plusia rutilifrons Walker.

Distribution: Universally distributed.

Erythroplusia pyropia (Butler)

Old Distribution: Japan; Dharamsala; Sikkim; Nagas.

Material Examined
Karnataka: Jogfalls: 7.x.06, 1 ♀.

Remarks: This species has been reported for the first time from Western Ghats states i.e., Karnataka from India.

Genus Zonoplusia Chou & Lu
Chou & Lu, 1979, Entomotaxonomia, 1 (1): 15

Type species: Plusia ochreata Walker.

Distribution: Universally distributed.

Zonoplusia ochreata (Walker)

Old Distribution: Hongkong; Formosa; Shimla; Nagas; Nilgiris.

Material Examined
Karnataka: Medikeri: 30.vii.07, 1 ♂.

Remarks: This species has been reported for the first time from Western Ghats states i.e., Karnataka, Maharashtra from India.

Subfamily Stictopterinae
Genus Lophoptera Guenée
Guenée 1852, Hist. Nat. Insects Lepid., 3: 54

Type species: Lophoptera squamnigera Guenée.

Distribution: Australia; India; Sri Lanka.

Lophoptera illucida (Walker)
Walker, 1865, List. Specimens lepid. Insects Colln Br. Mus., 33: 918

Old Distribution: Formosa, Punjab, Ganjam, Moulmein.

Material Examined
Karnataka: Hulikal: 5.viii.06, 2 ♀, Agumbe: 1.viii.06, 5 ♂.
Genus *Odontodes* Guenée
Guenée, 1852, *Noct.*, 3: 50

**Type species:** *Odontodes aleuca* Guenée.

**Distribution:** W. Africa; throughout India, Sri Lanka, and Mynamar; Java.

*Odontodes aleuca* Guenée

**Old Distribution:** W. Africa, Throughout India and Burma.

**Material Examined**
Kerala: Devi Kulum: 24.vii.08, 1♂.

Subfamily Amphipyrinae

Genus *Euplexia* Stephens

**Type species:** *Euplexia lucipara* Linnaeus.

**Distribution:** Nearctic and Palaearctic regions; throughout India, Sri Lanka and Mayanmar; Fiji.

*Euplexia conducta* Walker

**Old Distribution:** Throughout India, Sri Lanka & Burma; Andamans; Fiji.

**Material Examined**
Karnataka: Medikeri: 11.ix.07, 2♀♀.

*Euplexia semifascia* (Walker)

**Old Distribution:** Moulmein; Rangoon.

**Material Examined**
Karnataka: Medikeri: 11.ix.07, 4♀♀.

Genus *Caradrina* Ochsenheimer

**Type species:** *Phalaena morpheus* Hufnagel.

**Distribution:** Universally distributed.

*Caradrina plagiata* Walker
Walker, 1877, *Cat.*, 15: 1758.

**Old Distribution:** Moulmein; Rangoon.

**Material Examined**
Karnataka: Medikeri: 27.ix.06, 1♂, Augmbe: 1.viii.06, 2♀♀.

**Remarks:** This species has been reported for the first time from Western Ghats of India.

Genus *Ercheia* Walker

**Type species:** *Ercheia diversipennis* Walker.

**Distribution:** Australia; India; Sri Lanka.

*Ercheia cyllaria* (Cramer)

**Old Distribution:** Throughout India, Sri Lanka and Burma; Borneo.

**Material Examined**

Genus *Sesamia* Guenée

**Type species:** *Cursus nonagrioides* Lefebvre.

**Distribution:** Palearctic region and throughout India, Sri Lanka and Burma.

*Sesamia inferens* (Walker)

**Old Distribution:** Sind; Bombay; Mhow; Sri Lanka; Burma.

**Material Examined**
Gujrat: Waghai: 1.x.07, 2♀♀.
Tamil Nadu: Gudalur: 17.ix.05, 2♀♀.

**Remarks:** This species has been reported for the first time from Western Ghats of India.

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5. References
7. Lafontaine JD, Fibiger M. Revised higher classification of the Noctuoidea (Lepidoptera). The Canadian Entomologist, 2006; 138:610-635.