LECITHOCERID FAUNA (MICROLEPIDOPTERA) FROM SIWALIKS OF NORTHWESTERN INDIA

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ABSTRACT
In a survey on Lecithocerid moths from northwestern Siwaliks during November 1997 to November 2001, twenty-two species were collected and identified. Diagnosis, nomenclature aspects and distribution are presented in this paper.

KEYWORDS
Inventory, Lecithoceridae, Lepidoptera, Siwaliks

ABBREVIATIONS
1A - first anal vein; 2A - second anal vein; 3A - third anal vein; CuA 1 - first cubital vein; CuA 2 - second cubital vein; Cup - cubital posterior vein; M 1 - first median vein; M 2 - second median vein; M 3 - third median vein; R 1 - first anal vein; R 2 - second anal vein; R 3 - third anal vein; Rs 1 - fourth anal vein; Rs 2 - fifth anal vein; Rs 3 - radial sector

The Siwaliks ranges mountain having elevation reaching upto 1500m above m.s.l. extends from/bordered by river Kali in Uttaranchal to river Indus in Jammu and Kashmir (Chitkara, 1998) (Fig. 1). The authors have undertaken insect survey-collection tour to various localities in the region such as Kangra, Palampur, Darthamshala, Tanyar, Sarkaghat, Bajnath, Andhretta, Solan, Dharampaur, Nauni, Sabathu, Renuka lake, Nahar, Paonta Sahib (Himachal Pradesh), Jammu, Katra, Mansar Lake (Jammu & Kashmir), Dehradun, Hardiwar, Vikasagar (Uttarakhand), Kalka, Pinjore (Haryana), Pathankot, Hoshiarpur, Dasiu, Dhari, Roopnagar, Dunera, Mirzapur, Nawanshahar and Anandpur (Punjab) during different seasons between November, 1997 to November, 2001.

METHODOLOGY
The adults were collected during the night time with the help of portable light traps. Besides this, some specimens were also collected by hanging the source of light (125-Watt mercury vapour lamp) on a white sheet or white washed wall. The collected Lecitocerid moths were killed by using 1,1,2,2, tetrachloro ethane or ethyl acetate. The methodology discussed by workers such as Lindquist (1956), Tagestad (1974), Zimmermann (1978), Miklošia (1986) as well as Landry and Landry (1994) were followed for the pinning, stretching and preservation of specimens. The standard techniques given by Zimmermann (1978) and Robinson (1976) have been followed for wings and genitalia respectively. To write the taxonomic descriptions on various morphological characters (Robinson, 1976; Hodges, 1998; Park, 1995), wing venation (Zimmerman, 1978; Common, 1970) and external genitalia (Klots, 1970) were followed. Using a Camera Lucida attached to a stereoscopic light microscope drawn all illustrations. The coloured photographs of all the specimens were taken before dissection.

OBSERVATIONS
Earlier, Meyrick (1894,1905, 1907, 1908, 1908a, 1909, 1910, 1911, 1912-1916, 1913, 1914, 1916-1923, 1923-1930, 1930-1936); Fletcher, (1929); Gaede (1937); Marchand (1947); Diakonoff (1952, 1954), Janse (1954), Clarke (1955,1965), Gormány (1971, 1972, 1973, 1978), Nye & Fletcher (1991); Park & Omelko (1994); Robinson et al. (1994); Park & Hodges (1995); Ueda (1995); Lovovsky (1996); Wu & Park (1998, 1999, 1999a, 1999b, 1999c); Park (1999, 2000) and Park & Heppner (2000) have made detailed studies on this group of insects. In this study, 22 species of Lecithoceridae have been recorded. Holotypes of the new species described under this study have been deposited in the Lepidoptera Laboratory, Department of Zoology, Punjabi University, Patiala.

Superfamily: Gelechioidea
Diagnosis
Vertex and frons decorated with smooth scales; labial palpus three segmented, upturned, third segment long, acute; forewing with veins R 1+R 2 stalked; hind tibia with dorsal surface furnished with long slender scales.

Family: Lecithoceridae
Diagnosis: Vertex and frons studded with smooth scaled; antenna longer than 3/4th length of forewing; labial palpus long, upturned, second segment long, acute; forewing with Cup (expand this under Abbreviations) absent; hindwing with outer margin slightly excavated posterad of apex; male genitalia with uncus thorn-shaped, tapering to slender, acute apex or narrowed base and broad, bilobed apex; female genitalia with corpus bursae ovate or subovate in shape.

Subfamily: Lecithocerinae
Timyridae Clarke, 1953, Cat. Type Specimens Microlepid. BMNH described by E. Meyrick, 1: 21.
Diagnosis: Uncus with narrow base and broad, bilobed apex and slender sclerite extending from base of tegumen to mesial surface of valva, a strongly sclerotized bridge-like structure connecting tegumen and costa of valvae.

I. Genus: Lecithocera Herrich-Schäffer
Lecithocerid fauna from Siwaliks of north-western Himalaya

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Diagnosis: Vertex and frons covered with smooth scales; labial palpus long, upturned, second segment scaled, third segment long and acute; antenna long, filiform, longer than the length of forewing; metastharcic leg with hair like scales on hind tibia; forewing with veins R1+R2+R3 arising from a common stalk, R1 from base or near base of the stalk, R2 to costa, R3 to termen, CuA1 and CuA2 stalked or conate, however, the forewing venation with the stalk of M1 and M2 can not be a good separable character, because the venation is so variable with in genus (Park, 2000); hindwing with Rs+M, stalked, Rs to costa, M1 to termen, M1+CuA1 stalked. Male genitalia: uncus charac-teristically bilobed, setose; gnathos broader at base, apically pointed; vinculum U or V shaped; saccus absent; juxta bilobed apically; valve elongated, cuculius broader or narrow, bearing setae or hair on the inner surface, ventrally with spiniform row of setae or without, a bridge-like sclerotized structure connecting costa and tegumen; aedegusus broad or small; vesica with multisnapped cornutus present or absent. Female genitalia: papillae analis sparsely setose; anterior apophyses rod-like, basally broad, posterior apophyses thin; antrum present; corpus bursae long or small, broad or narrowed, ovate or subovate shaped; signum present or lacking.

1. Lecithocera affusa Meyrick
Larval host plant: Unknown

2. Lecithocera gozmanyi Pathania and Rose
Larval host plant: Unknown

3. Lecithocera aulias Meyrick
Larval host plant: Unknown

4. Lecithocera semirupta Meyrick
Larval host plant: Unknown

5. Lecithocera ianthodes Meyrick
Larval host plant: Unknown

6. Lecithocera immobilius Meyrick
Larval host plant: Unknown

7. Lecithocera syntropha Meyrick
Larval host plant: Unknown

8. Lecithocera metacausta Meyrick
Larval host plant: Unknown


II. Genus: Hygroplasta Meyrick
Uncus bilobed, a bridge-like structure connecting tegumen and valvae in male genitalia present .................. 2
1. Forewing with veins R3+R4+R5 stalked .......................................................... 1
\[\text{GENUS: Hygroplasta Schönberg} \]

1A. Forewing with veins R3 free, R4+R5 stalked ................................................ 6
2. Forewing with veins CuA1 and CuA2 stalked .................................................. 3
2A. Forewing with veins CuA1 and CuA2 not stalked (connate or free) .............. 4
3. Forewing with veins CuA1 and CuA2 on a longer stalk; male genitalia with saccular margin of each valva irregular, aedeagus curved, vesica without cornutus; female genitalia with anterior apophyses shorter and thicker .......................................................................................................................... 11
3A. Forewing with veins CuA1 and CuA2 on a shorter stalk, male genitalia with saccular margin of each valva relatively equal, produced into a spatulate structure, aedeagus straight, vesica armed with a arrow head and Y-shaped cornuti; female genitalia with anterior apophyses relatively longer and thin .......................................................... 1

... gozmanyi Pathania and Rose
4. Hindwing with stalk of veins M3 and CuA1 long, almost 2/3rd length of vein; forewing with vein CuA1 and CuA2 connate; female genitalia with anterior and posterior apophyses almost equal in length; corpus bursae large and broad vesica with Y-shaped cornuti on the aedeagus ................................................. aulis Meyrick
4A. Hindwing with stalk of veins M3 and CuA1 short, less than 1/5th of the vein; forewing veins CuA1 and CuA2 wide apart, basally; female genitalia with anterior apophyses always shorter than posterior apophyses, corpus bursae relatively large or small ........................................................................................................................................................................... 5
5. Hindwing with discocellulars poorly developed, stalk of veins Rs+M1 long; male genitalia with valva almost irregular or leaf-like, saccular margin straight, uncus slightly notched; female genitalia corpus bursae broad, signum rounded ............................................................................................................. seminupta Meyrick
5A. Hindwing with discocellulars relatively better developed, stalk of veins Rs+M1 short; male genitalia with valva elongated, saccular margin convex, uncus deeply notched; female genitalia corpus bursae small, signum spinde-shaped ................................................................................................................................. ianthodes Meyrick
6. Forewing with vein R3 from before anterior angle of discal cell, alar expanse 16-17mm; juxta almost excurved anteriorly; each valva more or less rectangular, aedeagus with one of the walls fringed with conspicuous hair ............................................................................................................................................................................. 7
7. Hindwing with veins M3+CuA1 on a longer stalk; forewing with veins CuA1 and CuA2 widely spaced after stalk; aedeagus long, longer than each valva, slightly bent at 2/5th from base, gradually curved, vesica beset with two long plate and two sigmoid shaped cornuti ................................................................. syntropha Meyrick
7A. Hindwing with veins M3+CuA1 a shorter; forewing with veins CuA1 and CuA2 narrowly spaced after stalk; aedeagus relatively shorter slender, less arched, not bend as above, vesica beset with slit-like or tear drop like cornuti ........................................................................................................................................................................................................... 8
8. Alar expanse 21-24mm; forewing light fuscous in colour; hindwing with vein CuP represented near anal margin; male genitalia with costa convex at base, then slightly concave, vesica with tear shaped or one Y-shaped cornuti present in aedeagus .............................................................................................................................. choritis Meyrick
8A. Alar expanse 14-15mm; forewing half longitudinally yellowish from base to apex, white towards costa; hindwing with vein CuP strongly present; male genitalia costa slightly convex, vesica with slit-like cornuti present in aedeagus .................................................................................................................................................................................. metacausta Meyrick

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**Key to the species of the genus Lecithocera Herrich-Schäffer**

1. Uncus simple, lacking the bridge-like structure connecting tegumen and valvae lacking in male genitalia .............................................................................................................. Torodorinae
   (GENERA: Hygroplasta Meyrick, Philoptila Meyrick, Torodora Meyrick)

2. Uncus bilobed, a bridge-like structure connecting tegumen and valvae in male genitalia present .................. 2
2A. Forewing with veins R3 free, R4+R5 stalked .................................................. 6
3. Forewing with veins CuA1 and CuA2 stalked .................................................. 3
3A. Forewing with veins CuA1 and CuA2 on a longer stalk; male genitalia with saccular margin of each valva irregular, aedeagus curved, vesica without cornutus; female genitalia with anterior apophyses shorter and thicker .......................................................................................................................... 11
4. Hindwing with stalk of veins M3 and CuA1 long, almost 2/3rd length of vein; forewing with vein CuA1 and CuA2 connate; female genitalia with anterior and posterior apophyses almost equal in length; corpus bursae large and broad vesica with Y-shaped cornuti on the aedeagus ................................................. aulis Meyrick
4A. Hindwing with stalk of veins M3 and CuA1 short, less than 1/5th of the vein; forewing veins CuA1 and CuA2 wide apart, basally; female genitalia with anterior apophyses always shorter than posterior apophyses, corpus bursae relatively large or small ........................................................................................................................................................................... 5
5. Hindwing with discocellulars poorly developed, stalk of veins Rs+M1 long; male genitalia with valva almost irregular or leaf-like, saccular margin straight, uncus slightly notched; female genitalia corpus bursae broad, signum rounded ............................................................................................................. seminupta Meyrick
5A. Hindwing with discocellulars relatively better developed, stalk of veins Rs+M1 short; male genitalia with valva elongated, saccular margin convex, uncus deeply notched; female genitalia corpus bursae small, signum spinde-shaped ................................................................................................................................. ianthodes Meyrick
6. Forewing with vein R3 from before anterior angle of discal cell, alar expanse 16-17mm; juxta almost excurved anteriorly; each valva more or less rectangular, aedeagus with one of the walls fringed with conspicuous hair ............................................................................................................................................................................. 7
7. Hindwing with veins M3+CuA1 on a longer stalk; forewing with veins CuA1 and CuA2 widely spaced after stalk; aedeagus long, longer than each valva, slightly bent at 2/5th from base, gradually curved, vesica beset with two long plate and two sigmoid shaped cornuti ................................................................. syntropha Meyrick
7A. Hindwing with veins M3+CuA1 a shorter; forewing with veins CuA1 and CuA2 narrowly spaced after stalk; aedeagus relatively shorter slender, less arched, not bend as above, vesica beset with slit-like or tear drop like cornuti ........................................................................................................................................................................................................... 8
8. Alar expanse 21-24mm; forewing light fuscous in colour; hindwing with vein CuP represented near anal margin; male genitalia with costa convex at base, then slightly concave, vesica with tear shaped or one Y-shaped cornuti present in aedeagus .............................................................................................................................. choritis Meyrick
8A. Alar expanse 14-15mm; forewing half longitudinally yellowish from base to apex, white towards costa; hindwing with vein CuP strongly present; male genitalia costa slightly convex, vesica with slit-like cornuti present in aedeagus .................................................................................................................................................................................. metacausta Meyrick

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**Diagnosis:** Vertex and frons decorated with smooth scales; labial palpus long, upturned, second segment beset with scales, third segment long and acute; antenna long, filiform, almost equal to the length of forewing; metathoracic leg with small hair like scales on hind tibia; forewing with two black spots on discocellular or discal cell, distinguishable or indistinguishable, veins Rs+R, stalked, R, absent, CuA, and CuA, stalked; hindwing with vein Rs+M, stalked, Rs to costa, M, to termen, M, and CuA, connate. Male genitalia: uncus characteristically long, pointed at apex; socii absent; gynaeal hook-like, tegumen hood-like; valvae simple, dorso-distally pointed; saccus present, long or small, vesica with cornutus present or lacking. Female genitalia: papillae anales small in size; anterior apophyses broader at base; ductus bursae long or small, sclerotized; ductus seminalis enter in corpus bursae; corpus bursae ovate or subovate shaped; signum present.

**10. Hygroplasta spoliatella (Walker)**


*Distribution:* Sri Lanka (Wu and Park, 1998); Tanyhar (Himachal Pradesh) (present work)

*Larval host plant:* Unknown

**11. Hygroplasta chunshengi** Pathania and Rose


*Paratypes:* 1 males, 5.ix.1999, Renuka Lake, Dist. Sirmour, Himachal Pradesh,
12. Hygroplasta lygaea (Meyrick)


Distribution: Dalhousie, Kashmir (Meyrick, 1910); Nauni, Dharampur, Palampur (Himalach Pradesh); Dehradun (Uttarakhand); Jammu (Jammu & Kashmir).

Larval host plant: Unknown

13. Philoptila Meyrick

Philoptila Meyrick, 1918, Exot. Microlep., 2: 111.
Type-species: Philoptila lygaea Meyrick, 1918, ibidem., 2: 111.

Diagnosis: Vertex and frons decorated with smooth scales; labial palps long, upturned, second segment with smooth scales, third segment long and acute; antenna long, filiform, longer than 3/4th length of forewing; metathoracic leg with hair-like scales on hind tibia; forewing relatively broad, apex rounded, termen slightly sinuate; vein M arising from stalk of R1+R2+R3, M, and M parallel; M and CuA free, CuA1 and CuA2 stalked, cell closed; hindwing much broader than forewing, Rs+M1 stalked, Rs to costa or apex, M1+CuA2 connate or stalked; however, the venation of both wings do not quite agree in all species of the genus Torodora, especially in the condition of M and M on the forewings and M+CuA on hindwings; (1) M and M free on the forewing, M1+CuA2 also free on the hindwing, in the type-species, Charactera Meyrick; (2) M and M stalked near base on forewing and M1+CuA2 stalked near 1/3rd on hindwing; (3) M and M stalked near middle on forewing, M1+CuA2 stalked before middle in hindwing; (4) M and M stalked near middle on the forewing, M1+CuA2 stalked near or beyond middle on the hindwing. Male genitalia: uncus simple, thorn-like or broad, broader basally, socii absent; gnathos beak-like, broader at base, sclerotized, apex pointed; saccus absent; valvae broad, cucullus with tuft of long hair or without, inner surface setose, ventrally with spiniform setae or without; aedeagus broad; vesica with or without cornutus. Female genitalia: anterior apophyses rod-like, broader at base; ostium bursae centrally placed; antrum present; ductus seminalis open at midle of ductus bursae; corpus bursae ovate or subovate shaped; signum present.

14. Torodora parasoloscapa Rose and Pathania

Torodora parasoloscapa Rose and Pathania, 2003, Bioved, 14 (1, 2): 143-144

Material examined:

Distribution: Dehradun (Uttarakhand); Jammu and Kashmir.

Larval host plant: Unknown

15. Torodora pubeoscapa Rose and Pathania

Torodora pubeoscapa Rose and Pathania, 2003, Bioved, 14 (1, 2): 144-146

Material examined:

Key to the species of the genus Hygroplasta Meyrick

1. Alar expanse 23mm; dorsal surface of forewing with discocellular spot rounded and more clear, another indistinguishable spot present in discal cell; male genitalia with valvae broad, saccus moderately long, aedeagus long, straight, bent near apex, apex acute .................................................. spoliatella Walker

2A. Male genitalia with saccus relatively smaller, broader distally, saccus margin concave medially, costa concave medially, aedeagus short, vesica with cornutus; female genitalia with ductus bursae open near middle of corpus bursae, signum spinde-shaped ................................................. lygaea Meyrick
Distribution: Renuka Lake (Himachal Pradesh) (present work)
Larval host plant: Unknown

16. Torodoro ponomarenkoae Rose and Pathania
Material examined:
Distribution: Nauni (Himachal Pradesh) (present work)
Larval host plant: Unknown

17. Torodora nycticipher (Meyrick)
Distribution: Sikkim, Gangtok (Clarke, 1965); Tanyhar (Himachal Pradesh) (present work)
Larval host plant: Unknown

18. Torodora fuscoptera Rose and Pathania
Material examined:
Distribution: Nauni, Dharampur (Himachal Pradesh) (present work)
Larval host plant: Unknown

19. Torodora parasema (Meyrick)
Distribution: Renuka Lake, Nauni, Palampur (Himachal Pradesh) (present work)
Larval host plant: Unknown

20. Torodora fortis (Meyrick)
Lecithocera fortis Meyrick, 1918, Exot. Microlepid., 2: 111.
Distribution: Nilgiri Hills (India) (Clarke, 1965); Dharampur (Himachal Pradesh) (present work)
Larval host plant: Unknown

21. Torodora deltospilia (Meyrick)
Distribution: Khali Hills (Assam) (Clarke, 1965); Renuka Lake, Tanyhar (Himachal Pradesh); Dehruadn (Uttarakhand); Jammu (Jammu & Kashmir) (present work)
Larval host plant: Unknown

22. Torodara neodeltospilia Rose and Pathania
Material examined:
Distribution: Renuka Lake, Nauni, Palampur (Himachal Pradesh) (present work)
Larval host plant: Unknown

Discussion
According to Park (1999), “the taxonomic status of the family Lecithoceridae has not been well defined, due to various differing opinions as to its rank”. Marchand (1947) proposed the subfamily Lecithocerinae with Lecithocera Herrich-Schäffer as the type-genus, which was placed under the family Gelechiidae by Diakonoff (1954) and Janse (1954). In a recent publication, Park (1999) has stated, “there is no doubt that it should be considered as a family rank by such autapomorphic characters, as antenna being longer than forewing length (except Oditinae established by Lovovský, 1996) and gnathos always bent downwardly.” Gozmány (1978) established three new subfamilies under Lecithoceridae i.e., Lecithocerinae Le Marchand (based on the genus Lecithocera Herrich-Schäffer), Ceuthomadarinae Gozmány (based on the Ceuthomadarus Gozmány), and Torodorinae Gozmány (based on the genus Torodora Meyrick). The subfamily Lecithocerinae has the distinction of having a bridge-like structure connecting the tegumen and costa of the valvae in the male genitalia, whereas, in the Torodorinae these structures are wanting. Lecithocera is widely distributed genus having sixty-two species listed under it from India (Gaede, 1937). Though, the venation is somewhat variable in this genus yet, various species can be adequately put under it in view of totality of characters, particularly the genitalic characters.

In subfamily Torodorinae, three genera i.e., Hygroplasta Meyrick, Philoptila Meyrick and Torodora Meyrick were studied. Meyrick (1923) proposed the genus Hygroplasta with Gelechia spoliata Walker as its type-species kept the same in the family Gelechiidae. However, Clarke (1965) transferred the genus from the latter family to the family Lecithoceridae, under which it is being dealtwith presently. It has been observed that different individuals of this genus complex may have one or two black spots on the wings, which may be conspicuous, faint or even obscure. The genus Philoptila was proposed with P. effrenata Meyrick as its type-species by Meyrick (1918). Its diagnosis was based on a single male specimen collected from Kanara (southern India). Clarke (1965) has furnished a photograph of its male genitalia and a line drawing of the wing venation. While doing so, the author has also stated that, “the type was destroyed after photography and palpus for illustration”. The gender, under reference, is conspicuous in having the veins R₅, R₆, R₇, R₈ and M₅, CuA₁, CuA₂ stalked in the forewing, whereas, the vein M₁ is wanting in the hindwing. The genus has been listed under the family Gelechiidae (spelled as Gelechiidae) and
Lecithoceridae by Fletcher (1929) and Clarke (1965) respectively.

Meyrick (1894) proposed the genus *Torodora* with *T. characteris* Meyrick as its type-species and included it in the family Gelechiidae (Fletcher, 1929). However, Clarke (1955) considered it under the family Lecithoceridae (Nye and Fletcher, 1991). On the contrary, with *Torodora* Meyrick as its type-genus, Gozmány (1978) proposed a new subfamily Torodorinae under the family Lecithoceridae. Recently, Wu and Park (1999) have mentioned that the latter family contains about eight hundred species spread over in about one hundred genera worldwide. However, according to Park and Heppner (2000), the genus *Torodora* Meyrick possesses about 55 species, out of which 82 belong to the Oriental, two to the Palaeartic and one to the Ethiopian regions. While revising the diagnosis of the genus under reference, though the aforesaid workers have given due emphasis to the structure of the wing venation, it has been stated that the venation of both wings do not quite agree in all species of the genus *Torodora* especially in the condition of M₁ and M₂, on the forewings and M₁ and CuA₁ on the hindwings. Due to the inconsistency in the wing venation, Wu and Park (1999) have framed separate keys for interspecific discrimination of the males and females of the same species on the basis of their respective genitalia. Similarly, Park and Heppner (2000) proposed two keys to sort out the species of the genus *Torodora* from Taiwan did not use venation for specific discrimination due to this inconsistency. One of the keys formulated by then was on the basis of the wing maculation, hind tibia and wing shape and the other on the basis of the male genitalia only. Somehow or the other, the female genitalia has not been discussed at all. In addition to this, these authors have also segregated/placed all the seven species from Taiwan into four groups. They have also recorded distributional range of the genus from India to Southeast Asia, including Burma. Prior to this, Gozmány (1972) has also dealt with some Lecithoceridae genera *i.e.*, *Aproaria*, *Parrhasiaspis*, *Rhybaromatrix* besides eleven new species combinations under the genus *Torodora* after shifting them from the genus *Lecithocera* Herrich-Schaffer. Being true *Torodora*, a thorough examination of the male genitalia reveals that the costal bridge-like structure connecting the tegumen and the valvae in the male genitalia is wanting and the uncus is always present and well developed (more or less thorin-like in lateral view) in all the taxonomic treated nine species of this genus.

**References**


In: *Lepidoptera. Munksgaard, Copenhagen.*


Key to the genera of the subfamily Torodorinae

1. Forewing upper surface with two black spots, vein R3 absent; male genitalia with vinculum produced anteriorly into a well developed saccus ................................................................. Hygroplasta Meyrick

1A. Forewing not as above, vein R3 present; male genitalia with vinculum without saccus ................................. 2

2. Forewing with veins M3+CuA1+CuA2 arising from common stalk at angle of cell; male genitalia with gnatthos small, broad basally, apically pointed ........................................................................... Philloplata Meyrick

2A. Forewing with veins CuA1+CuA2 stalked; male genitalia with gnatthos long, beak like ................ Torodora Meyrick

Key to the species of the genus Torodora Meyrick

1. Forewing without black streaks or black dots; male genitalia with gnatthos well developed ......................... 2

1A. Forewing with black streaks or black dots; male genitalia with gnatthos relatively less developed .......... 6

2. Forewing with veins CuA1 and CuA2 on a relatively shorter stalk .............................................................. 3

2A. Forewing with veins CuA1 and CuA2 comparatively on a longer stalk ..................................................... 4

3. Male genitalia with each valva elongated, broader at base, tapering in distal half, beset with small setae, vesica with cornuti present .................................................... parafuscopera Rose and Pathania

3A. Male genitalia with each valva relatively smaller, distal half leaf like, not tapering, inner surface beset with a long hair directed anteriorly, vesica without cornutus................................. pubensovolvalata Rose and Pathania

4. Forewing with veins M2 and M3 connate; male genitalia with each valva sickle-shaped, vesica without definite cornuti in aedeagus .............................................................. ponomarenkoiae Rose and Pathania

4A. Forewing with veins M2 and M3 not connate, widely spaced; male genitalia with each valva not sickle-shaped, vesica with definite cornuti in aedeagus ................................................................. 5

5. Hindwing with vein Rs reaching precisely on apex; male genitalia with valva with costa convex at base, then straight, culcuss small, furnished with very long hair-like setae, vesica with a row of needle-like cornuti present ........................................................................................................... nyctiphron Meyrick

5A. Hindwing with vein Rs ending at costa near apex; male genitalia with valva with costa concave, culcuss broad, furnished with smaller setae, vesica with a triangularly shape cornutus present........................................................................................................ 6

6. Forewing with veins M2 and M3 connate, veins CuA1 and CuA2 short stalked; male genitalia with each valva somewhat elongated, parallel sided .............................................................................. 7

6A. Forewing with veins M2 and M3 not connate, widely spaced, veins CuA1 and CuA2 long stalked; male genitalia with valvae not as above ................................................................. 8

7. Alar expanse 14mm; forewing costal margin with two, broad, black unequal sized lines vertically present; male genitalia with each valva with costa straight, aedeagus long and broad, almost equal to the length of each valva, bent at 1/3rd basally ................................................................. parasema Meyrick

7A. Alar expanse 18mm; forewing costal margin with two, thin, black equal sized lines vertically present; male genitalia with each valva with costa curved, aedeagus small and narrowed, bent at middle ........................................................................... foritis Meyrick

8. Hindwing with vein Rs to costa; male genitalia with each valva sickle-shaped, pointed apically, culcuss narrow, aedeagus with rounded apex .................................................................................. deltoespila Meyrick

8A. Hindwing with vein Rs to apex; male genitalia with each valva sequesed in the basal half, expanded distally, culcuss broad, apically rounded, aedeagus with pointed apex .......................................................... neodeltospila Rose and Pathania


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References


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