

List of Microlepidoptera (Moths) of Superfamilies Tineoidea, Gracillarioidea, Yponomeutoidea, Gelechioidea, Tortricioidea and Pterophoroidea from Himachal Pradesh

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Animalia kingdom is represented by a total of 1,659,420 species which include 133,692 fossil species under 40 phyla on global basis. Out of which, phylum Arthropoda is represented by 1,302,809 species, which share of about 78.5% of the total biodiversity (Zhang, 2013). Order Lepidoptera is one of the third largest insect order which includes moths, butterflies and skippers. A total of 1,58,570 species of Lepidoptera reported on global basis, of which 1,38,656 species are moths and rest are butterflies (Zhang, 2011, 2013). In India, 15000 species belonged to 84 families are represented, of it 13,359 species belonged to 79 families of moths (88%) and rest are butterflies (12%) (Chandra, 2011). Microlepidoptera contain small primitive moths of small size, poor flight capacity and are difficult to study. 45735 species belonging to 4626 genera under 73 families and 19 superfamilies of the Microlepidoptera on world basis (Van Nieukerken et al., 2011). Microlepidoptera has great economic importance and are widely distributed throughout different regions of the world. In view of the necessity, the present study was undertaken on the microlepidoptera fauna collected from Himachal Pradesh.

Survey-cum-collection tours were undertaken from various localities of 12 districts viz., Shimla, Kangra, Mandi, Chamba, Hamirpur, Bilaspur, Solan, Sirmour, Una, Kullu, Kinnaur and Lahaul & Spiti of Himachal Pradesh for collection of micromoths from 400m ASL, to 3500m ASL from 1999 onwards. The collected material were killed, pinned, stretched and preserved in well fumigated air tight insect collection boxes. The identification were done by the literature (Hampson, 1892; Meyrick 1912-1936) and visits to National Collections. The classification given by Van Nieukerken et al., (2011) has been followed. In all, 75 species belonging to 58 genera under 10 families, i.e., Tineidae (1), Eriocottidae (1), Gracillariidae (3), Yponomeutidae (2), Oecophoridae (15), Gelechiidae (13), Lecithoceridae (10), Scythridae (1), Tortricidae (12) and Pterophoridae (7) were identified. List of identified species is given below:

Order : Lepidoptera
Superfamily : Tineoidea

Family : Tineidae

- Genus: *Dasytes* Durrant
1. *Dasytes rugosella* (Stainton)
Genus: *Drimylastis* Meyrick
2. *Drimylastis telamonia* Meyrick
Genus: *Edosa* Walker
3. *Edosa opsigona* Meyrick
Genus: *Macraeola* Meyrick
4. *Macraeola inquisitrix* Meyrick
Genus: *Monopis* Hubner
5. *Monopis monachella* Hubner
Genus: *Opogona* Zeller
6. *Opogona isoclina* Meyrick
7. *Opogona lamprocrossa* Meyrick
8. *Opogona xanthocrita* Meyrick
Genus: *Thisizima* Walker
9. *Thisizima bubalopa* Meyrick
Genus: *Tinea* Walker
10. *Tinea pellionella* Linnaeus
11. *Tinea platyntis* Meyrick

Family: Eriocottidae

- Genus: *Compsoctena* Zeller
12. *Compsoctena dehradunensis* Rose & Pathania

Superfamily: Gracillarioidea

Family: Gracillariidae

- Genus: *Acrocercops* Wallengren
13. *Acrocercops resplendens* (Stainton)
Genus: *Gracillaria* Haworth
14. *Gracillaria teleodelta* Meyrick
Genus: *Parectopa* Clemens
15. *Parectopa bathracma* Meyrick

Superfamily: Yponomeutoidea

Family: Yponomeutidae

- Genus: *Plutella* Schrank
16. *Plutella xylostella* Linnaeus
Genus: *Yponomeuta* Latreille
17. *Yponomeuta bolidias* Meyrick

Superfamily Gelechioidea

Family : Oecophoridae

- Genus: *Acria* Stephens
 18. *Acria emarginella* Donovan
 Genus: *Aeolanthes* Meyrick
 19. *Aeolanthes sagulata* Meyrick
 Genus: *Endrosis* Hubner
 20. *Endrosis lacteella* (Denis & Schiffermuller)
 Genus: *Ethmia* Hubner
 21. *Ethmia acontias* Meyrick
 22. *Ethmia assamensis* (Butler)
 23. *Ethmia chamundai* Srivastava, Kumar & Sharma
 24. *Ethmia pagiopa* Meyrick
 25. *Ethmia praeclara* Meyrick
 Genus: *Odites* Walsingham
 26. *Odites annopa* Meyrick
 Genus: *Promalactis* Meyrick
 27. *Promalactis sementris* Meyrick
 Genus: *Psorosticha* Lower
 28. *Psorosticha ziziphi* (Stainton)
 Genus: *Stathmopoda* Herrich-Schaffer
 29. *Stathmopoda adulatrix* Meyrick
 30. *Stathmopoda orbiculata* Meyrick
 Genus: *Tonica* Walker
 31. *Tonica nigricostella* Snellen
 32. *Tonica niviferana* Walker
 Family: **Lecithoceridae**
 Genus: *Homaloxestis* Meyrick
 33. *Homaloxestis cholopis* Meyrick
 34. *Homaloxestis xylotrypta* Meyrick
 Genus: *Hygroplasta* Meyrick
 35. *Hygroplasta spoliatella* (Walker)
 Genus: *Lecithocera* Herrich-Schaffer
 36. *Lecithocera trigonopis* (Meyrick)
 Family: **Cosmopterigidae**
 Genus: *Cholotis* Meyrick
 37. *Cholotis thoracista* Meyrick
 Genus: *Cosmopterix* Hubner
 38. *Cosmopterix ancalodes* Meyrick
 39. *Cosmopterix mimetis* Meyrick
 Genus: *Labdia* Walker
 40. *Labdia echioglossa* Meyrick
 41. *Labdia molybdaula* Meyrick
 Genus: *Stagmatophora* Herrich-Schaffer
 42. *Stagmatophora dmsophanes* Meyrick
 Family: **Gelechiidae**
 Genus: *Anarsia* Zeller
 43. *Anarsia ephippias* Meyrick
 44. *Anarsia sagnatica* Meyrick
 Genus: *Dichomeris* Hubner
 45. *Dichomeris ianthes* Meyrick
 Genus: *Gnorimoschema* Busck
 46. *Gnorimoschema operculella* (Zeller)
 Genus: *Helcystogramma* Zeller
 47. *Helcystogramma arotreae* Meyrick
 Genus: *Onebala* Walker
 48. *Onebala hibisci* Stainton
 49. *Onebala hoplophora* Meyrick
 Genus: *Polyhymno* Chambers
 50. *Polyhymno alcimecha* Meyrick
 Genus: *Semnostoma* Meyrick
 51. *Semnostoma barathrota* Meyrick
 Genus: *Sitotroga* Heinemann
 52. *Sitotroga cerealella* (Olivier)
 Genus: *Stegasta* Meyrick
 53. *Stegasta variana* Meyrick
 Genus: *Symmoca* Hubner
 54. *Symmoca anaphracta* Meyrick
 55. *Symmoca dhauladharensis* Srivastava, Kumar & Sharma
 Family: **Scythrididae**
 Genus: *Eretmocera* Zeller
 56. *Eretmocera impactella* Walker
 Superfamily **Tortricoidea**
 Family: **Tortricidae**
 Genus: *Acroclita* Lederer
 57. *Acroclita notophthalma* Meyrick
 Genus: *Archips* Hubner
 58. *Archips machlopi* Meyrick
 Genus: *Argyroplote* Hubner
 59. *Argyroplote erotias* Meyrick
 Genus: *Bactra* Stephens
 60. *Bactra triculenta* Meyrick
 Genus: *Clepsis* Guenee
 61. *Clepsis melissa* Meyrick
 Genus: *Dicellit* Meyrick
 62. *Dicellit nigrinula* Meyrick
 Genus: *Eucosma* Hubner
 63. *Eucosma ceriodes* Meyrick
 Genus: *Homona* Walker
 64. *Homona coffearia* (Nietner)
 Genus: *Meridemis* Diakonoff
 65. *Meridemis bathymorpha* Diakonoff.
 66. *Meridemis invalidana* (Walker)
 Genus: *Polychrosis* Rogonot
 67. *Polychrosis ephippias* Meyrick
 68. *Polychrosis fallax* Meyrick
 Superfamily: **Pterophoroidea**
 Family: **Pterophoridae**
 Genus: *Amblyptilia* Hübner
 69. *Amblyptilia forcipeta* (Zeller)

Genus: *Exelastis* Meyrick

70. *Exelastis phlyctaenias* Meyrick

Genus: *Gypsochares* Meyrick

71. *Gypsochares catharotes* Meyrick

Genus: *Oxyptilus* Zeller

72. *Oxyptilus causodes* Meyrick

Genus: *Procapperia* Adamczewski

73. *Procapperia pelecynthes* (Meyrick)

Genus: *Sphenarches* Meyrick

74. *Sphenarches anisodactylus* Walker

Genus: *Stenodacma* Amsel

75. *Stenodacma pyrrhodes* (Meyrick)

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Green Zone along Sabarmati Waterfront

Not far from the densely packed industrial belt in Ahmedabad's Pirana-Piplaj areas where 1,500 factories and warehouses jostle for space, a 29-acre green zone, packed with 47,000 trees, now brings a whiff of fresh air to the Sabarmati, named the third most polluted river in the country by the Central Pollution Control Board some years ago.

The Gyaspur forestry experiment of the Ahmedabad Municipal Corporation (AMC), 2km from 50-metre high smouldering garbage mounds in Pirana landfill, is partially responsible for the transformation.

The experiment was undertaken to mask the stench from Pirana's four garbage mounds that have 78 lakh tonnes of waste accumulated over 30 years and smoulder throughout the year.

The green zone was also AMC's attempt to compensate for the trees cut to pave the way for development in the city and complement the state's efforts to develop the environs of the river in the city.

The thick plantation has started attracting birds, animals, and insects driven away by rapid industrialization and pollution. It's now home to 110 species of birds, including migratory varieties. Further, hundreds of species of insects, around 40 peacocks, 30 nilgais, 10 hedgehogs, jackals, a few mongoose and 15 species of snakes have been seen here.

AMC parks and gardens director said that in 2005, they had started it with around 100 trees to offset loss of trees cut in the city. "I had no idea that this place will turn into a rich

bio-park."

Naturalist Haseeb Sheikh, who rescues wild animals, prefers to release them here. "Gyaspur is an example of how trees and plants beside a polluted river become ecosystem engineers... You allow trees and plants to colonize a bare river sediment patch and they will do everything—from trapping of sediments to retention of seeds," he says.

In the past seven years, the locals have put up water pots at 13 places on this patch. "The river water is toxic with sewage and chemicals and we didn't want the animals and birds here to drink it."

As a result, Gyaspur has also become the go-to place for researchers. Riddhi Shah, a college lecturer and amateur entomologist, takes her BeeZone Club members to the Gyaspur site to study caterpillars. "We never miss going to the Gyaspur site during monsoon to study caterpillars."

However, some say more needs to be done. Irfan Thebawala, a bird watcher from Ahmedabad, said, I suggest more trees which usually grow on the banks of rivers in the wild. For instance, neem is literally dominated by raptors for nesting. The AMC should plant more fruit trees."

Ahmedabad's lifeline has got a fresh look. Its promenade is 23 km long and has two levels. Lower level is for pedestrians, cyclists and upper one is for hosting cultural, educational and leisure activities. Around 70 hectares of reclaimed land has parks, gardens and shaded plazas.

—Paul John