

Mutillidae (Hymenoptera) fauna of West Bengal

Dipanwita Das^{1*} and Devjyoti Mondal²

¹Zoological Survey of India, Kolkata

² Ramakrishna Mission Vivekananda Centenary College, Rahara

*For Correspondence: dipanwitazsi@gmail.com

Abstract

Mutillidae is distributed in all biogeographical regions, their greatest diversity occurs in the tropical and subtropical regions of the world. They are especially common in desert and sandy areas. Present communication reports 65 species belonging to 15 genera, 3 tribes and 3 subfamilies of the family Mutillidae from West Bengal.

1. Introduction

Mutillidae are solitary aculeate wasps commonly known as Velvet ants, characterized by extreme sexual dimorphism, the males are almost fully winged, rarely brachypterous or apterous while the females are entirely apterous (Brothers, 1995, 2006).

The knowledge of mutillid biology is very scanty, the host for only 2-3% of velvet ants are known so far (Luz, *et al.*, 2016a; Brothers, 1989) and the complete life history of few species has been studied (Brothers, 1972, 1978). Most of the members are solitary ectoparasitoids of larvae or pupae of Hymenoptera, Diptera, Coleoptera, Lepidoptera and some Blattodea (Brothers *et al.*, 2000; Amini *et al.*, 2014). The females are known for their extremely painful sting using the modified female organ called ovipositor. Mature mutillids generally feed on nectar (Luz *et al.*, 2016b). Some velvet ants species are nocturnal, but many of them are active during the day (Lelej, 2008). Velvet ants live in open places, mainly in sandy and stony grounds, rarely on densely overgrown habitats. The apterous females are roaming on

the ground and the winged males are capable of flight (Muskovits & György, 2011). The life history of velvet ants is not fully known, complete life history only a few species have been recorded (Brothers, 1989).

The family Mutillidae currently includes 220 genera and about 4605 described species worldwide (Pagliano *et al.*, 2020, Lelej *et al.*, 2023). A total of 224 species under 44 genera are known from India (Pagliano *et al.*, 2020, Lelej *et al.*, 2023) which belongs to seven subfamilies viz. Myrmosinae, Pseudophotopsidinae, Ticoplinae, Myrmillinae, Mutillinae, Rhopalomutillinae, and Dasylabrinae.

The present paper is based on the mutillid specimens that are housed at the National Zoological Collection (NZC) of Zoological Survey of India, Kolkata and other available literatures (Lelej, 2005; Pagliano *et al.*, 2020, Terine *et al.*, 2020). Asterisks (*) indicate new distributional records.

Studies on the India mutillidae was carried extensively by Bingham (1897), Smith (1855, 1879), André (1894-1904), Cameron (1892-1904), Hammer (1962) and Lelej (2005). Lelej (2005) contributed a lot to the knowledge of the family Mutillidae, proposed 779 nominal names for 637 species and 42 subspecies of oriental Mutillidae. The catalogue of the oriental region (Lelej, 2005) is still the most used literature to identify mutillid wasps. In this catalogue Mutillidae is classified into ten subfamilies, eight tribes and sixty-four genera along with keys to the Oriental subfamilies, tribes and genera are provided.

A checklist of the Family Mutillidae is presented, 65 species belonging to 15 genera, 3 tribes and 3 subfamilies are reported from West Bengal.

Subfamily Myrmillinae Bischoff, 1920

Genus *Bischoffitilla* Lelej, 2002

1. *Bischoffitilla lethargia* (Cameron, 1900)
2. *Bischoffitilla perversa* (Cameron, 1897)
3. *Bischoffitilla taylori* (André, 1894)

Genus *Spilomutilla* Ashmead, 1903

4. *Spilomutilla cotesii* (Cameron, 1897)

5. *Spilomutilla humilis* (Cameron, 1897)

6. *Spilomutilla oedipus* (Cameron, 1897)

7. *Spilomutilla rothneyi* (Cameron, 1897)

Subfamily Mutillinae Latreille, 1802

Tribe Mutillini Latreille, 1802

Subtribe Ephutina Ashmead, 1903

Genus *Mutilla* Linnaeus, 1758

8. *Mutilla binghami* Lelej, 2005

Tribe Ctenotillini Brothers & Lelej, 2017

Genus *Ephucilla* Lelej, 1995

9. *Ephucilla ludovica* (Cameron, 1900)

10. *Ephucilla poonaensis* (Cameron, 1892)

Genus *Karunaratnea* Lelej, 2005

11. *Karunaratnea dilecta* (Cameron, 1897)

12. *Karunaratnea poesia* (Cameron, 1900)

Genus *Physetopoda* Schuster, 1949

13. *Physetopoda discreta* (Cameron, 1897)

Genus *Promecilla* André, 1903

14. *Promecilla graveleyi* Hammer, 1962

15. *Promecilla pulchriventris** (Cameron, 1892)

***Sinotilla* Lelej, 1995**

16. *Sinotilla coeruleotincta* (Cameron, 1900)

Genus *Smicromyrme* Thomson, 1870

Subgenus *Smicromyrme* Thomson, 1870

17. *Smicromyrme darjilingi* Hammer, 1962

18. *Smicromyrme durgus* (Bingham, 1897)

19. *Smicromyrme granulata* Hammer, 1962

20. *Smicromyrme hilaris* Hammer, 1962

21. *Smicromyrme nigrigena* (André, 1894)

22. *Smicromyrme parthenia* (Cameron, 1900)

23. *Smicromyrme peregrinus* (Cameron, 1897)

24. *Smicromyrme substitutus* (André, 1896)

Tribe Trogaspidiini Bischoff, 1920

Genus *Karlissaidia* Lelej, 2005

25. *Karlissaidia sexmaculata* (Swederus, 1787)

Genus *Krombeinidia* Lelej, 1996

26. *Krombeinidia himalayana* (Hammer, 1962)
27. *Krombeinidia illa* (Cameron, 1900)
28. *Krombeinidia rutilipes* (Hammer, 1962)
29. *Krombeinidia versicolor* (Hammer, 1962)
30. *Krombeinidia vicinissima* (Gribodo, 1884)

Genus *Petersenidia* Lelej, 1992

31. *Petersenidia compactilis* (Cameron, 1900)
32. *Petersenidia gnoma* (Cameron, 1900)
33. *Petersenidia lathonia* (Cameron, 1900)
34. *Petersenidia marcia* (Cameron, 1900)
35. *Petersenidia martialis* (Cameron, 1900)
36. *Petersenidia pamphia* (Cameron, 1900)

Genus *Trogaspidia* Ashmead, 1899

Subgenus *Trogaspidia* Ashmead, 1899

37. *Trogaspidia agelia* (Cameron, 1900)
38. *Trogaspidia bengalensis* Lepeletier, 1845
39. *Trogaspidia bidens* (Cameron, 1899)
40. *Trogaspidia bilobata* Hammer, 1962
41. *Trogaspidia brothersi* Lelej, 2005
42. *Trogaspidia caliginosa* Hammer, 1962
43. *Trogaspidia cara* (Cameron, 1899)
44. *Trogaspidia cleonyma* (Cameron, 1900)
45. *Trogaspidia dryta* (Cameron, 1900)
46. *Trogaspidia emancipata* (Cameron, 1900)
47. *Trogaspidia erxia* (Cameron, 1900)
48. *Trogaspidia fianna* (Cameron, 1899)
49. *Trogaspidia fortinata* (Cameron, 1899)
50. *Trogaspidia funebrana* (Cameron, 1900)

51. *Trogaspidia idyia* (Cameron, 1900)
52. *Trogaspidia labiena* (Cameron, 1900)
53. *Trogaspidia lena* (Cameron, 1899)
54. *Trogaspidia maculicornis* (Cameron, 1900)
55. *Trogaspidia mithila* (Cameron, 1900)
56. *Trogaspidia phaenna* (Cameron, 1900)
57. *Trogaspidia redacta* (Cameron, 1900)
58. *Trogaspidia regina* Hammer, 1962
59. *Trogaspidia ruficrus* (Magretti, 1892)
60. *Trogaspidia sabellica* (Cameron, 1900)
61. *Trogaspidia villosa* (Fabricius, 1775)

Genus *Wallacidia* Lelej & Brothers, 2008

62. *Wallacidia aeruginosus* (Hammer, 1962)
63. *Wallacidia cona* (Cameron, 1899)
64. *Wallacidia quadricarinatus* (Cameron, 1900)

Subfamily DASYLABRINAE Invrea, 1964

Tribe Dasylabrini Invrea, 1964

Genus *Orientilla* Lelej, 1979

65. *Orientilla schmideggeri** Lelej, 2005

2. Acknowledgments

The authors are greatly indebted to Dr. Dhriti Banerjee, Director, Zoological Survey of India (ZSI), Kolkata for providing necessary research facilities and encouragements. Dr. S. Sheela, Scientist E & Officer-in-Charge, CEL Section and Dr. S.I. Kazmi, Scientist E & Officer-in-Charge, Hymenoptera Section, ZSI, Kolkata is also thanked for support. Second author is greatly acknowledged Swami Kamalasthananda, Principal and Swami Vedanuragananda, Vice Principal, Ramakrishna Mission Vivekananda Centenary College Rahara.

3. References

- Amini, A., Lelej, A.S., Sadeghi, H. & Karimi, L. 2014. First record of the velvet ants (Hymenoptera: Mutillidae) reared from puparia of the ber fruit fly *Carpomya vesuviana* Costa (Diptera: Tephritidae) in Iran. *Zootaxa*, 3861(6): 585-590.
- Bingham, C. T. 1897. *The fauna of British India including Ceylon and Burma: Hymenoptera, I. Wasps and Bees*. Taylor and Francis, London: XXIX+579 p. [Mutillidae-p. 1-51].
- Brothers, D.J. 1972. Biology and immature stages of *Pseudomethoca f. frigida*, with notes on other species (Hymenoptera: Mutillidae). *Univ. Kans. Sci. Bull.* 50: 1–38.
- Brothers, D.J. 1978. Biology and immature stages of *Myrmosula parvula* (Hymenoptera: Mutillidae). *J. Kans. Entomol. Soc.* 51: 698–710.
- Brothers, D.J. 1989. Alternative life-history styles of mutillid wasps (Insecta, Hymenoptera). In: Bruton, M.N. (Ed.), *Alternative Life-History Styles of Animals*. Kluwer Academic Publishers, Dordrecht, Netherlands, pp. 279–291.
- Brothers, D.J. 1995. In: P.E. Hanson & I.D. Gauld (eds.). *The Hymenoptera of Costa Rica*. Oxford University Press, 893 p. Mutillidae, pp. 541-548.
- Brothers, D.J. 2006. Capitulo 14.4. Familia Mutillidae. In: Hanson PE, Gauld ID, editors. *Hymenoptera de la Región Neotropical*. Gainesville (FL): *The American Entomological Institute*, 586-593.
- Brothers, D.J., Tschuch, G. & Burger, F. 2000. Associations of mutillid wasps (Hymenoptera: Mutillidae) with eusocial insects. *Insects Sociaux*, 47: 201-211.
- Hammer, K. 1962. Mutilliden (Insecta: Hymenoptera) aus dem Indischen Museum in Calcutta. *Records of the Indian Museum*, 58(1): 1-51.
- Lelej, A. S. 2005. Catalogue of the Mutillidae (Hymenoptera) of the Oriental Region. Vladivostok: Dalnauka, 252 p.
- Lelej, A.S., Gharali, B. & Lotfalizadeh, H. 2008. New records of velvet ants (Hymenoptera: Mutillidae) from the west of Iran. *Far Eastern Entomologist*, 191: 1-7.
- Lelej, A.S., Williams, K.A., Terine, J.B., Okayasu, J., Parikh, G.R. & Kumar, G.P. 2023. Review of the tribe Mutillini (Hymenoptera: mutillidae) from the Oriental Region. *Zootaxa*, 5228(4): 455-476.

Luz, D.R., Rosa, B.B., Williams, K.A. & Melo, G.A.R. 2016b. An uncommon feeding habit: mutillid wasps (Hymenoptera, Mutillidae) visiting extrafloral nectaries in Malpighiaceae. *Braz. J. Biol.*, 76: 551-553.

Luz, D.R., Waldren, G.C. & Melo, G.A.R. 2016a. Bees as hosts of mutillid wasps in the Neotropical region (Hymenoptera, Apidae, Mutillidae). *Revista Brasileira de Entomologia*, 60: 302-307.

Muskovits, J. & György, Z. 2011. Velvet ants of Hungary/Magyarország hangyadarazsai. Budapest: Kaposvár, 198 pp. (Natura Somogyiensis, 18).

Pagliano, G., Brothers, D.J., Cambra, R., Lelej, A.S., Lo Cascio, P., Palmerini, M.M., Scaramozzino, P.L., Williams, K.A. & Romano, M. 2020. Checklist of names in Mutillidae (Hymenoptera), with illustrations of selected species. *Bollettino del Museoregionale di Scienze Naturali*, 36(1-2): 5-425.

Terine, J.B., Das, D. & Girish Kumar, P. 2020. A checklist of family Mutillidae Latreille, 1802 (Insecta: Hymenoptera) from India. Version 1.0. updated till August 2020. Available at <http://zsi.gov.in> (online only).