

A REVIEW ON THE GALL MIDGES (DIPTERA: CECIDOMYIIDAE) OF ANDAMAN ISLANDS, INDIA

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Abstract: The aim of this study is to review the gall midge species of Andaman Islands, India based on the published information. Compilation of the literature on the gall midges of Andaman Islands yielded 25 species of 21 genera. Further exploration on this field will yield a rich diversity of gallmidges.

Keywords: Plant gall, *Actilasioptera tumidifolium*, *Parallelodiplosis andamanensis*, Cecidomyiids

Introduction

Plant galls are abnormal growth on different parts developing as a result of the nutritional dependence of various organisms such as virus, bacteria, fungi, nematodes, insects and mites. Of these, the range and amplitude in form and structural specialization are more distinct and marked among galls induced by insects than those by other cecidogenous organisms (Raman and Ananthakrishnan, 1983). Galls may arise on any part of a plant and differ widely in size, shape and structure which are generally host specific. Gall inducing insects belong to various group of insects such as thrips, psyllids, aphids, coccids, chalcids, cynipids, moths and cecidomyiids. Cecidomyiids are one of the largest groups of gall makers which are commonly known as gall midges.

These are small, fragile flies, go unnoticed except by the specialist, but the large number of species, the wide diversity of host plants they attack, and their role in various ecosystems, make them much more important than their appearance might suggest. The name gall midge is derived from the ability of the larvae to produce galls or abnormal plant growths, on various organs of plants. The Latin name of the family, Cecidomyiidae, comes from the

word 'gall', in Latin 'Cecidium' (Skuhrava et al., 1984). Presently, the family consists of six subfamilies viz. Catotrichinae (not reported from India), Lestremiinae, Micromyinae, Winnertziinae, Porricondylinae and Cecidomyiinae.

The body of adult gall midges generally varies from 0.5 – 3.0 mm in length but occasionally may be as long as 8.0 mm or less than 0.5 mm. They usually have long antennae. The wing veins are reduced in number with only three or four veins normally present. Tibial spurs are absent. The larvae vary somewhat in their habits but most species are either phytophagous, producing galls on various plants, mycophagous, feeding on fungi, or zoophagous, feeding on invertebrates, especially insects (Skuhrava et al., 1984).

Kieffer (1913); Felt (1925); Mani (1946); Rao (1955); Grover (1981); Grover and Bakshi (1978); Sharma (2009) and others have significantly contributed to our knowledge of Indian gall midges. They have provided identification keys for various known genera and species. Rao (1955) published a catalogue of oriental gall midges. Mani whose monumental and updated volume Plant Galls of India (2000) is the most valuable contribution to the knowledge of Indian plant galls. Sharma (2009) published a checklist of Indian gall midges with their host data. The number of species of all cecidomyiid in the world at large and India in particular is still unknown and inestimable. Of the 6590 species and 812 genera of living and fossil gall midges known from the world (Gagne' and Jaschhof, 2017), Indian fauna of gall midges is represented by 397 species (Sharma, 2009; Vasanthakumar and Sharma 2018; 2019a&b; Vasanthakumar et al., 2020).

Results & Discussion

The Andaman and Nicobar Islands is known for rich

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biodiversity resources. The archipelago comprises 572 islands and extending over 800 km (Sivaperuman et al., 2010). The insect fauna of the Andaman and Nicobar Islands is relatively less known in comparison with the explored and documented diverse fauna from the Indian mainland (Gupta and Joshi, 2013). The fauna of gall making insects of Andaman Islands is quite rich, and large number of plant species are subjected to gall formation as reported by Sharma 1989 which was the first detailed study on the gall makers from this archipelago. As part of the survey work carried out during 1981-83 by one of the authors as (RMS), a large number of galls caused by diverse group of insects and mites were reported from the different localities of Andaman Islands. As far as gall midges are concerned, 35 sorts of midge galls from 24 plant species have been reported (Sharma, 1989). Unfortunately, species level identification has been done for only four species. Hence, our recent studies on these collections yielded another ten species of gall

midges (Vasanthakumar and Sharma 2017; 2018). The identification of these collections further yielded two more species i.e., *Actilasioptera tumidifolium*Gagné, 1999 and *Parallelodiplosis and amanensis* Vasanthakumar and Sharma, 2019.

The Australian gall midge, *Actilasioptera tumidifolium*Gagné, 1999 (Gall midge causing galls on the leaves of mangroves) was reported first time from India and *Parallelodiplosis andamanensis* Vasanthakumar and Sharma, 2019 was reported as new to science. This species had been reported from the webs of spider which are utilized as a roosting ground by certain species belonging to the subfamily Cecidomyiinae and Porricondyliinae (Sharma and Bastawade 2001).

Gall midge species reported so far from Andaman Islands have been compiled from the available literature(Sharma 1984a&b; 1989; Vasanthakumar and Sharma 2017; 2018; 2019a&b) and given in the Table 1.

Gall midge species from Andaman Islands

Sl.No.	Gal midge species
1	<i>Conarete calcuttaensis</i> (Nayar, 1949)
2	<i>Conarete mihijamensis</i> Grover, 1964
3	<i>Micromyia orientalis</i> Grover, 1962
4	<i>Peromyia indica</i> Grover, 1970
5	<i>Allobremia pincerifera</i> Grover &Bakhshi, 1978
6	<i>Contarinia orientalis</i> (Rao & Sharma, 1977)
7	<i>Contarinia eragrostidis</i> Felt, 1927
8	<i>Lestodiplosis erecta</i> (Nayar, 1949)
9	<i>Lestodiplosis triangulata</i> Grover &Bakhshi, 1978
10	<i>Octodiplosis bispina</i> Sharma, 1987
11	<i>Odontodiplosis travancoricus</i> (Nayar, 1949)
12	<i>Parallelodiplosis andamanensis</i> Vasanthakumar and Sharma, 2019
13	<i>Actilasioptera tumidifolium</i> Gagné, 1999
14	<i>Asphondylia pongamiae</i> Felt, 1921
15	<i>Gephyraulius indica</i> Grover and Prasad, 1966
16	<i>Procontarinia matteiana</i> Kieffer and Cecconi, 1906

17	<i>Trisopsis</i> sp.
18	<i>Hyperdiplosis</i> sp.
19	<i>Hypodiplosis</i> sp.
20	<i>Clinodiplosis</i> sp.
21	<i>Asphondylia</i> sp.
22	<i>Wasmaniella</i> sp.
23	<i>Porricondylasp.</i>
24	<i>Anarete</i> sp.
25	<i>Asynapta</i> sp.

The compilation of the literature on the gall midges of Andaman Islands yielded 25 species of 21 genera. The actual number of gall midges inhabiting the archipelago is certainly much higher than the number of species reported so far and further explorations will

definitely yield a rich diversity of gallmidges.

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