A Review on Indian Stilt-legged Flies (Insecta: Diptera: Micropezidae)

Authors: Bulganin Mitra, Arna Mazumder, Udipta Chakraborti, Imtiaz Imam, Souradip Roy

Abstract

Eight species of two genera belonging to the family Micropezidae of the order Diptera are reported from India. Highest numbers of species are found in the North-Eastern Region (62.50%) and lowest in Island biogeographic zones (12.50%). So far, nothing has been known from the Himalayan region and Arid, Semi-Arid and Hot deserts.

Keywords: Micropezidae, Bio-geographic zones, India

Abbreviation used: HR: The Himalayan Region; IGP: Indo Gangetic Plains; GPR: The Ghats & Peninsular Regions; ASHD: Arid, Semi-Arid & Hot desert region; NER: North Eastern region; NSL: No specific Locality; TL: Type Locality.

1. Introduction

The members of an acalyptrate dipteran family Micropezidae are commonly known as Stilt-legged flies for their characteristic long legs. Usually, the members are often black with infuscated wings \[1\]. A total of 583 species under 52 genera of five subfamilies have been reported globally \[2\], and only eight species of two genera were reported from India.

The greatest diversity of stilt-legged flies can be found in the Neotropics (Central and South America) in comparison to the Oriental region. The majority of stilt-legged flies are found as convincing mimics of Hymenoptera, like ants (Formicidae), ichneumon wasps (Icneumonoidea) and spider wasps (Pompilidae). \textit{Badisis ambulans} McAlpine, 1990, a species of Micropezidae, is present in nature without any wing and haltere \[3\].

The classification and list of species of the family is followed after Oriental Catalogue of Diptera \[4\], Systema Dipterorum \[5\] and other available literatures.

2. Taxonomic Research

Probably, Wiedemann was the first man who described a species of Micropezidae from India in the year 1830 \[6\]. Later the works on micropezid fly was carried out by Doleschall (1856), \[7\] Schiner (1868) \[8\], Macquart (1843) \[9\], and Cresson (1926) \[10\]. According to Steyskal (1977), seven species were reported from India \[4\]. After that, Datta \textit{et al.} (1997) \[11\], Datta and Parui (2000) \[12\] and Mitra and Parui (2007) \[13\], Mitra \textit{et al.} (2015) \[14\] enriched the micropezid fauna of India by adding another species of different distribution in India.
3. Distinguishing Characters:
The micropezid flies are usually black, slender bodied insect, small to large size (varies between 3-16 mm length), with thin long legs. Their forelegs are much smaller than the other pairs (mid and hind legs). Wings are narrow and patterned.

4. Habit and Habitats
Adults are predaceous on small insects and also attracted to the decaying matters. These insects are usually found on leaves, flowers, decaying fruits, excrement, herbage etc. Their habitat is usually Phytotelmata (freshwater habitats common in residential areas, especially in the humid tropics held by living or dead terrestrial plants) [15].

5. Biology and Economic Importance
Rhizome fly, Minegralla coeruleifrons Macquart, 1843, is reported as the pest of the turmeric [16], ginger [17] etc. and was known to cause heavy loss of turmeric in Maharashatra [18, 19], Andhra Pradesh [20], Tamil Nadu [21, 22], Kerala [23] and Karnataka [24].


Larva is an apodous, transparent maggots which was transparent at the beginning and becomes transluecent and whitish as they grew upper instar stages. The total life-cycle of this species occupied by near about 28-30 days [16]. The adults were preyed upon spiders and dragonflies [25].

6. Discussion
Recent works of Pape et al. (2011) offer a list of 583 valid and extant species of Micropezidae of 52 genera in the World [2]. Eight species of micropezids belonging to two genera are reported from India, which is almost 1.37% of the reported species of the World. One unplaced species were also there, vidua, described from Tranquebar, India (present name: Tharangambadi, Tamil Nadu, India) by Wiedemann in the year 1830 [4]. The micropezid are reported only from 11 States and UTs among the 36 States and UTs in India (table 1). Assam represents maximum number of Micropezidae about 37.5%, followed by Sikkim (25%), West Bengal (25%), Tamil Nadu (25%), Tripura (12.5%), Mizoram (12.5%), Andhra Pradesh (12.5%), Maharashtra (12.5%), Kerala (12.5%), Karnataka (12.5%) and Andaman & Nicobar Islands (12.5%). One species, among the eight, have no specific locality (12.5%) (Fig 1).

![State wise percentage of Reported species from India](image)

Among the six major bio-geographic zones of India, the maximum number of species are reported from the North-Eastern Region (05 species, 62.5% of reported species), followed by Indo-Gangetic Plains and the Ghats & Peninsular Region (both shares 02 species, 25% of the reported species). The Island bio-geographic zone shares only 12.5% of the total species (Fig 2). Nothing has been reported from Arid, Semi-arid & hot desert and the Himalayan region.
Fig 2: Distribution of Micropezidae in different Bio-geographic zones of India (percentage-wise)

Among these eight species of Micropezidae, two species were restricted within India, of which one is unplaced species. Four species are found within Oriental region and two species are extended to Palearctic and Australasian region (Table 1).

Table 1: Species list of Micropezidae (Insecta: Diptera) of India along with distribution and type-locality.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the species with Type-locality</th>
<th>Distribution (State-wise within India)</th>
<th>Distribution in different Bio-geographic zones of India (Alfred et al., 2001)</th>
<th>Distribution other than India</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><em>Cothornobata nigrigenu</em> (Enderlein, 1922)</td>
<td>Sikkim</td>
<td>NER</td>
<td>Sumatra, Myanmar, Laos</td>
</tr>
<tr>
<td></td>
<td>TL: Sikkim; Toungoo, Karenni, Burma, 3000 ft.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td><em>Mimegralla albitarsis splendens</em> (Wiedemann, 1830)</td>
<td>India (NSL)</td>
<td>NSL</td>
<td>Sri Lanka</td>
</tr>
<tr>
<td></td>
<td>TL: unknown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td><em>Mimegralla albitarsis stylophora</em> (Schiner, 1868)</td>
<td>Nicobar Islands</td>
<td>Islands</td>
<td>Restricted within India</td>
</tr>
<tr>
<td></td>
<td>TL: Nicobar Is.: Milu, Kombul &amp; Sembalong, Nicobar.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td><em>Mimegralla binghami</em> (Enderlein, 1922)</td>
<td>Assam, Sikkim</td>
<td>NER</td>
<td>Laos</td>
</tr>
<tr>
<td></td>
<td>TL: Sikkim, India</td>
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<td></td>
<td></td>
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<tr>
<td>5.</td>
<td><em>Mimegralla thaiensis</em> Cresson, 1926</td>
<td>Assam</td>
<td>NER</td>
<td>Malaya, Thailand</td>
</tr>
<tr>
<td></td>
<td>TL: Thailand. Trong. Khow Sai Doi (T A USNM)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6.</td>
<td><em>Mimegralla (Grammicomyia) coeruleifrons</em> Macquart, 1843</td>
<td>Assam, West Bengal, Andhra Pradesh, Maharashtra, Tamil</td>
<td>NER, IGP, GPR</td>
<td>Bali, Burma, China [Kwangtung], Flores, Hainan Islands, Java,</td>
</tr>
</tbody>
</table>
7. **Conclusion:**
The present study reveals that, India is the least diverse country in the world in relation to faunal composition of Stilt-legged Flies (1.37%) and mostly enriched with Oriental species. The majority of the species (62.5%) were reported from the North-Eastern biogeographic zone and the state of Assam in particular. This review work serves as gaps in knowledge of the micropezid fauna of India. Therefore, efforts should be given on survey to the unexplored or under explored areas in India and particular in Arid, Semi-arid & hot desert and the Himalayan biogeographic regions.

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9. **References**
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