



NEW RECORDS OF FRUIT FLIES (DIPTERA: TEPHRITIDAE) FROM RENUKA WETLAND AND WILDLIFE SANCTUARY, HIMACHAL PRADESH

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INTRODUCTION

The fruit flies (Diptera : Tephritidae) represent one of the largest families of Diptera with about 4,500 species, including some of the world's most destructive agricultural pests. Besides causing direct losses to a wide variety of fruit, vegetable and flower crops (e.g., citrus, apple, mango, sunflower), they limit the development of agriculture in many countries because of the strict trade quarantines imposed to prevent their spread. Fruit flies are also among the most attractive and biologically interesting Diptera having patterned wings and often brightly colored and/or patterned bodies, which may be used in mimicry of jumping spiders or wasps (L.E. Carroll, 1999). Among the species reported worldwide, 325 species of fruit flies are known to occur in the Indian subcontinent, of which 243 in 79 genera are from India alone under four subfamilies, namely Dacinae, Phytalmiinae, Tephritinae and Trypetinae (Bezzi, 1913, 1916; Agarwal and Sueyoshi, 2005; Evenhuis *et. Al.*, 2008; Pape & Thomson, 2012). 40 species under 26 genera under three subfamilies namely Dacinae, Tephritinae and Trypetinae has been reported from Himachal Pradesh, (Brunetti, 1917), (Parui and Mukherjee, 2000), (Mitra *et. al.*, 2004), (Parui *et. al.*, 2006), (Bhattacharya *et. al.*, 2012).

The Renuka wetland which covers an area of about 30 hectares (longitude 77°27'E, latitude 30°36'N), is located at an altitude of 645 m and is in

Sirmour district of Himachal Pradesh. Mythologically the lake symbolizes the body of Goddess Renuka, mother of Lord Parashuram, (due to its oblong shape) and hence is of immense religious importance in those locales. Due to the biological richness of the wetland and its fringing areas, it is included in the **list of Ramsar Sites (related to wetland) on 8th of November, 2011**, and the area comprising 402 ha. in and around this wetland, has been declared as an Wild Life Sanctuary.

Though 14 species of Diptera under 14 genera under 9 families have been reported from the Renuka Lake (Parui and Mukherjee, 2000), before it was declared as an wetland and wildlife sanctuary, no record exists on the fruit-flies of the Renuka wetlands and the present paper is the first report on the Tephritidae from the Renuka wetland and wildlife sanctuary.

Family TEPHRITIDAE
Subfamily DACINAE
Tribe DACINI

Genus *Bactrocera* Macquart

1835. *Bactrocera* Macquart, *Hist. nat. Ins. Dipt.*, 2: 452, 453.

Type-species, *Bactrocera longicornis* Macquart.

Subgenus : *Bactrocera* Macquart

Bactrocera (Bactrocera) dorsalis (Hendel)

1794. *Musca ferruginea* Fabricius, *Ent. Syst.*, 4: 342.
Preoccupied by *Musca ferruginea* Scopoli, 1763.

Entomol. Carn., 340. Type-locality : "India Orientali".

Material examined: 1, Sirmour dist., Renuka Wetland, Latitude 30°37'N, Longitude 77°25'E, 8.iv.11, coll. D. Banerjee.

Diagnosis: Face with a pair of large black spots; 2 broad yellow postsutural vittae on mesonotum and dorsum of thorax marked with black; a narrow costal band, not extending below vein R₂₊₃ except around wing margin; abdomen rufous, terga 2 and 3 with black basal bands and with a narrow longitudinal black vittae extending down median portion of 3 to 5; the apex of piercer narrowed to a slender point and extended ovipositor measures 4.5-4.7 mm.

Distribution: India: Himachal Pradesh, Andaman & Nicobar Island, Assam, Bihar, Delhi, Jammu & Kashmir, Kerala, Karnataka, Maharashtra, Manipur, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal.

Elsewhere: Bhutan, Cambodia, Nepal, Sri Lanka, China, Myanmar, Thailand, Laos, Vietnam, Taiwan, Mauritius, Hawaii, Nauru, Guam, Ryukyu Islands, N. Marianas.

Remarks: These flies are active throughout the year, except winter season. Its host includes a number of fruits, e.g. mango, apple, litchi, guava, peach, citrus, pear, cashew etc. and is known to attack young and ripe fruits. (Fig.1: Habitus)

Subfamily TEPHRITINAE
Tribe PLIOMELAENINI

Genus *Pliomelaena* Bezzi

1918. *Pliomelaena* Bezzi, *Bull. ent. Res.*, 8:220. Type species, *Pliomelaena brevifrons* Bezzi.

Pliomelaena zonogastra (Bezzi)

1913. *Tephritis zonogastra* Bezzi, *Mem. Indian Mus.*, 3:164. Type-locality: India (Orissa: Puri).

Material examined: 2, Sirmour dist., Renuka Wetland, Latitude 30°36'N, Longitude 77°27'E, 8.iv.11, coll. T.K. Mondal.

Diagnosis: Head and thoracic bristles yellow, anterior dorsocentral bristles situated in line with

supraalars, gena setose; thorax black, grey pollinose; scutellum dark brown but yellow around margin; legs yellow to rufous; wing normal in shape, mostly brown with hyaline wedges on both margins, vein R₄₊₅ setose to ½ distance to r-m crossvein; abdomen brown, tinged rufous of first two terga and yellow at apex of 5th tergum. (Fig.2: Wing)

Distribution: India: Himachal Pradesh, Andaman & Nicobar Island, Assam, Bihar, Gujarat, Karnataka, Orissa, Punjab, Uttarakhand, Uttar Pradesh.

Elsewhere: China.

Tribe TEPHRELLINI
Subtribe TEPHRELLINA

Genus *Sphaeniscus* Becker

1908. *Sphaeniscus* Becker, *Mitt. Zool. Mus. Berl.*, 4:138. Type-species, *Sphaeniscus brevicauda* Becker.

Sphaeniscus quadrincisus (Wiedemann)

1824. *Trypeta quadrincisus* Wiedemann, *Analecta Ent.*: 55. Type-Loc: "Ost Indien."

Material examined: 1, Sirmour dist., Renuka Wetland, Latitude 30°32'N, Longitude 77°25'E, 8.iv.11, coll. R.S. Mridha.

Diagnosis: Body shining black, lightly grey pollinose on mesonotum; wings predominantly dark brown, base hyaline with a hyaline wedge in middle of anterior margin, 3 hyaline wedges extending across the wing from the hind margin; arista short pubescent; vein R₄₊₅ bare except for a few setae at the basal portion, r-m crossvein situated near apex of cell 1st M₂; piercer thickened at base, sharply tapered at apex, ovipositor extended, spermathecae are weakly sclerotized. (Fig.3: Wing).

Distribution: India: Himachal Pradesh, Andaman & Nicobar Island, Karnataka, Meghalaya, Orissa, West Bengal.

Elsewhere: China, Sri Lanka, Taiwan, Thailand.

Remarks: Flies of this genus infests the flower heads of both Compositae and Labiatae.

Tribe : **TEPHRITINI**

Genus : *Spathulina* Rondani

1856. *Spathulina* Rondani, *Dipterol. Ital. Prodr.*, 1:113.

Type-species, *Spathulina sicula* Rondani.

Spathulina acroleuca (Schiner)

1868. *Tephritis acroleuca* Schiner, *Reise der osterreichischen Fregatten Novara, Zool.*, 2:268. Type-loc: Australia: Sydney.

Material examined : 1 , Sirmour dist., Renuka Wetland , Latitude 30°36'N, Longitude 77°27'E, 8.iv.11, coll. R.S. Mridha.

Diagnosis: Dark coloured species with brown-black wings, hyaline spots along margin, apical portion of wing completely hyaline with a tiny brown spot at extreme apex of cell R3 and with 2 or 3 isolated hyaline spots in wing field, vein R4+5

bare except for a few inconspicuous setae at base; ovipositor short.(Fig.4: Wing)

Distribution : India: Himachal Pradesh, Bihar, Gujarat, Karnataka, Madhya Pradesh, Orissa, Punjab, Rajasthan, West Bengal.

Elsewhere : Widespread Oriental; Afrotropical; Southern Palaearctic; Australasian Region.

Remarks : Flies of this species breeds in flower heads of various Compositae.

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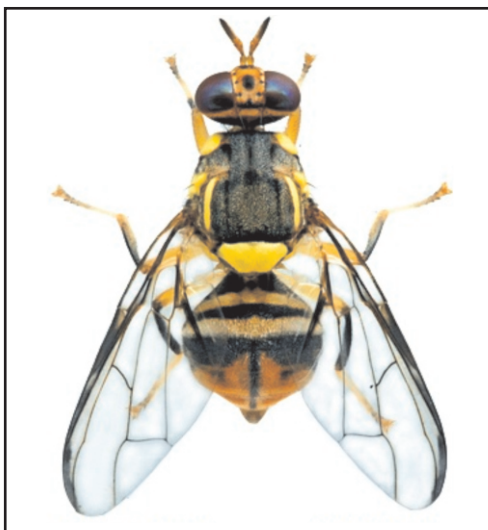


Fig. 1 : *Bactrocera (Bactrocera) dorsalis* (Hendel, 1794)

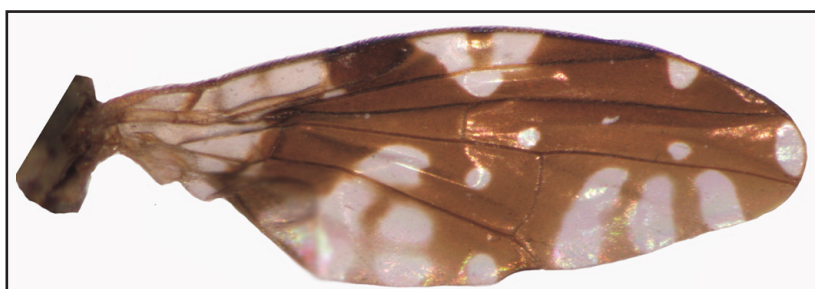


Fig. 2 : *Pliomelaena zonogastra* (Bezzi, 1913)

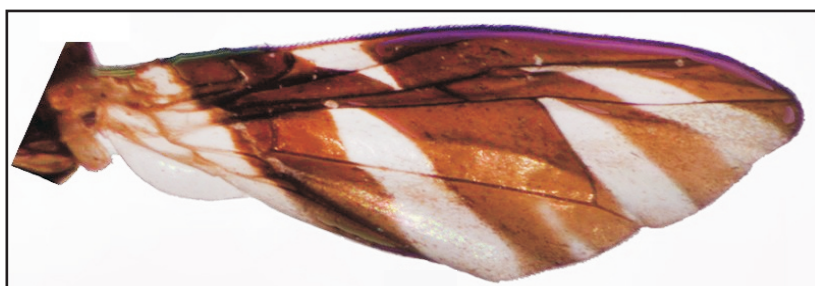


Fig. 3 : *Spheniscus quadrincisus* (Wiedemann, 1824)

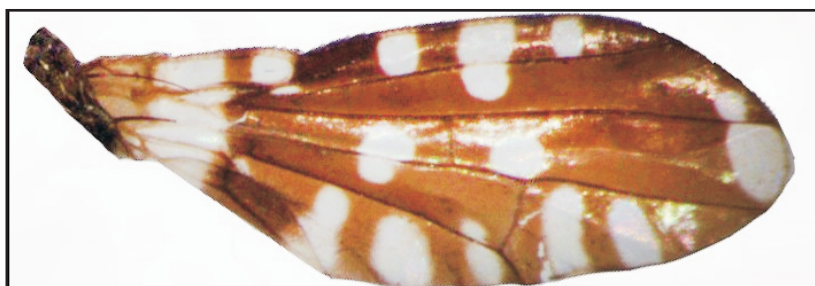


Fig. 4 : *Spathulina acroleuca* (Schiner, 1868)