



ADDITIONAL RECORDS OF FRUIT-FLIES (DIPTERA: TEPHRITIDAE) FROM INDIA

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INTRODUCTION

Members of family Tephritidae include several economically important pest species across the globe. Various species of fruit fly cause damage to fruit and other plant crops, some fruit flies are used as agents of , thereby reducing the populations of pest species. Most fruit flies lay their eggs in plant tissues, where the larvae find their first food upon emerging. The adults usually have a very short lifespan.

Fruit flies of the family Tephritidae comprise 4,500 species, 500 genera under six subfamilies namely Blepharoneurinae, Dacinae, Phytalmiinae, Tachiniscinae, Tephritinae and Trypetinae, Korneyev (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 (Agarwal and Sueyoshi, 2005; David and Ramani, 2011). Bezzi (1913, 1915, 1916), Brunetti (1917), Senior-White (1922, 1924), Munro (1935, 1938, 1939), Perkins (1938), Hering (1938, 1941, 1956), Hardy (1971), Kapoor (1971,1993), Kapoor *et al.*, (1980), White and Hancock (1997) and Hancock and Drew (2005) studied the tephritid fauna of the Indian subcontinent. Drew and Raghu (2002) reported 21 species of dacines from the Western Ghats. Taxonomic keys are of paramount importance in the identification of the species. The present paper is based on old collections present in Zoological Survey of India. 11 Species under 9 genera recorded here of

which *Philophylla indica* is endemic to India. This family can be distinguished from all other families of Diptera by the combination of well developed mesocline frontal setae and subcostal vein bent sharply anteriorly at right angle before the apex, weakened or evanescent beyond the bend. In addition, the costa has three breaks *viz.*, costal, humeral and subcostal (Hardy, 1973, 1974), vein R1 dorsally with setulae; wing usually with colour pattern; cell bcu usually with an acute extension (White and Elson-Harris, 1992).

Family TEPHRITIDAE

Subfamily PHYTALMIINAE

Tribe ACANTHONEVRINI

Genus *Rioxa* Walker

1856. *Rioxa* Walker, *J. Proc. Linn. Soc. Lond., Zool.*, (1857), 1:35. Type species: *Rioxa lanceolata* Walker.

Rioxa sexmaculata (Wulp)

1880. *Ptilona sexmaculata* Wulp, *Tijdschr. Entomol.*, 23: 185. Type-loc: Sumatra.

Material examined: 1 ♀, Cinchona, Anamalai Hills (3500 ft), 1.iv.1956, coll. P.S. Nathan.

Diagnosis: Predominantly yellow species; upper superior fronto orbital bristles yellow; face yellow, except for a prominent subshinning dark brown spot on each side; hind femur with two prominent preapical dorsal bristles; wings brown with a hyaline spot in cell R1 just beyond vein R1, a small spot in apical portion of cell R3 just beyond R2+3, apical portion of cell R5 hyaline, a small hyaline spot on apex of 2nd M2 and also at apex of cell M4, crossvein r-m situated near apical $\frac{3}{4}$ of

cell 1st M2; abdomen brown with a broad median band extending from base over 5th tergum down to middle, 6th tergum brown, tinged with yellow at base. (Fig. j, plate IV)

Distribution: India: Tamil Nadu, Arunachal Pradesh, Karnataka, West Bengal. *Elsewhere:* China, Indonesia, Malaysia, Myanmar, Philippines, Solomon Islands, Thailand.

Remarks: This species is being reported for the first time from Tamil Nadu.

Subfamily TRYPETINAE

Tribe TRYPETINI

Genus *Philophylla* Rondani

1870. *Philophylla* Rondani, *Bull. Soc. Entomol Ital.*, 2: 9. Type species, *Musca caesio* Harris.

Key to the species

1. Wing with apical portion hyaline; dark brown basal portion; body black and shining; wing with posterior apical band from R4+5 to M absent *Philophylla indica* Hancock & Drew. (Fig. c, plate I)
- Wing with isolated posterior apical band from R4+5 to M present. *Philophylla fossata* (Fabricius). (Fig. h, plate III)

Philophylla fossata (Fabricius)

1805. *Tephritis fossata* Fabricius, *Syst. Antliat.*, p. 320. Type-locality: India (Kerala: Tranquebar).

Material examined: 4 ♀, Cinchona, Anamalai Hills, 1.v.1957, coll. P.S. Nathan; 1 ♀, loc. Cinchona, Anamalai Hills, 1.iv.1956, coll. P.S. Nathan; 1 ♀, dist. Coimbatore, Coimbatore, 1.vii.1957, coll. P.S. Nathan.

Distribution: India: Tamil Nadu, Arunachal Pradesh, Assam, Karnataka, Kerala. *Elsewhere:* Indonesia, Laos, Malaysia, Myanmar, New Ireland, Pakistan, Philippines, Singapore, Solomon Islands, Taiwan, Thailand, Vietnam; Japan, Korea, Papua New Guinea; Australia.

Remarks: This species is being reported for the first time from Tamil Nadu.

Philophylla indica Hancock & Drew

1994. *Philophylla indica* Hancock & Drew, *Raffles Bull. Zool.*, 42(3): 581. Type-locality: India (Karnataka: Western Ghats: Kemmannugundi, near Tarikere).

Material examined: 1 ♀, dist. Jabalpur, Jabalpur (1600 ft.), 1.ix.1957, coll. P.S. Nathan.

Distribution: India: Madhya Pradesh, Karnataka. *Elsewhere:* Nil.

Remarks: This species is being reported for the first time from Madhya Pradesh.

Subfamily TEPHRITINAE

Tribe DITHRYCINI

Genus *Platensina* Enderlein

1911. *Platensina* Enderlein, *Zool. Jahrb. Abt. Syst. Geogr. Biol. Tiere*, 31: 453. Type species, *Platensina sumbana* Enderlein.

Platensina acrostacta (Wiedemann)

Material examined: 1 ♀, Dist. Balsar, Umbergaon, 12.xi.1973, coll. P.T. Cherian.

Diagnosis: Face and genae entirely yellow, with a faint tinge of brown on the latter; thorax covered with grey pollen, humeri, mesonotum and venter of scutellum yellow, pleura yellow, tinged with brown and densely grey pollinose; legs entirely yellow; wings lacks hyaline spot in apical portion of cell R1 and two hyaline spots in 1st M2; abdomen black, yellow on sides of 1st two terga, 2nd yellow with yellow color extending over the middle of terga 3 and 4, 5th tergum shining black. (Fig. i, plate III).

Distribution: India: Gujarat, Karnataka, Kerala, Meghalaya, Orissa, Rajasthan, Sikkim, Tamil Nadu, West Bengal. *Elsewhere:* Bangladesh, Cambodia, China, Pakistan, Sri Lanka, Thailand.

Remarks: This species is being reported for the first time from Gujarat.

Tribe PLIOMELAENINI

Genus *Pliomelaena* Bezzi

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

Pliomelaena zonogastra (Bezzi)

Material examined: 1 ♀, dist. Sanand, Kalot, 5.xii.1973, coll. P.T. Cherian; 1 ♀, dist. Ahamedabad, Khan, 12.ii.1974, coll. P.T. Cherian.

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. d, plate II).

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

Remarks: This species is being reported for the first time from Gujarat.

Genus *Sunderesta* Hering

1953. *Sunderesta* Hering, *Verh. Naturforsch. Ges. Basel*, **64**: 78. Type species, *Sunderesta hilaris* Hering.

Sunderesta malaisei (Hering)

Material examined: 1 ♀, Loc. Kewzing (Alt. 1800m), 19.v.1962, coll. G.Ramakrishna.

Diagnosis: Black in ground colour; Face concave, epistoma projected; head yellow, brown colour with grey pollen, arista short pubescent; thorax grey pubescent with a faint brown spot on each side at level with suture in line with dorsocentrals; legs yellow; third costal section of wing about 3/5 as long as 2nd section, two costal spines present at subcostal break, vein R4+5 setose through entire length, r-m crossvein near apical ¼ of cell 1st M2; abdomen grey pubescent with a pair of anterobasal submedian brown spots each on terga 2-5, apex of 5th tergum yellow. (Fig. f, plate II).

Distribution: India: Sikkim, Karnataka, Tamil Nadu. *Elsewhere*: China, Laos, Myanmar, Thailand.

Remarks: This species is being reported for the first time from Sikkim.

Tribe TEPHRELLINI

Genus *Sphaeniscus* Becker

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

Sphaeniscus atilius (Walker)

Material examined: 1 ♀, dist. Bhavnagar, Neelam bag, 3.iii.1975, coll. V.D.Shrivastava.

Diagnosis: Body shining black, grey pollinose on mesonotum; wings dark brown with hyaline base, one hyaline wedge on anterior margin in middle of wing and four hyaline wedges on posterior margin of wing, vein R4+5 bare, r-m crossvein is situated about its own length from m crossvein; sixth tergum of female shorter than fifth and basal segment of ovipositor almost equal in length to terga 5+6. (Fig. k, plate IV).

Distribution: India: Gujarat, Bihar, Himachal Pradesh, Jammu & Kashmir, Uttarakhand, West Bengal.

Elsewhere: Widespread Oriental, Russia, Japan; Australia, New Britain & Oceania, China, Korea, Malaysia, Moluccas, New Caledonia, Taiwan, Thailand.

Remarks: This species is being reported for the first time from Gujarat.

Tribe TEPHRITINI

Genus *Campiglossa* Rondani

1870. *Campiglossa* Rondani, *Bull. Soc. Entomol. Ital.*, **2**: 121. Type-species, *Tephritis irrorata* Fallen.

Key to the species

1. Wing entirely dark brown with numerous hyaline spots along periphery, cell r4+5 with a hyaline spot at apex..... *Campiglossa cribellata* Bezzi (Fig. a, plate I)
- Posterior region of wing brown with numerous hyaline spots, cell r 4+5 without an apical hyaline spot *Campiglossa deserta* (Hering) (Fig. g, plate III)

Campiglossa cribellata Bezzi

1913. *Campiglossa cribellata* Bezzi, *Mem. Indian Mus.*, **3**: 161. Type-loc: India (West Bengal: Kurseong).

Material examined: 2 ♀, Rongli (810 m), 2.v.1962, coll. S.Ali.

Distribution: India: Sikkim, Bihar, Haryana, Himachal Pradesh, West Bengal. *Elsewhere*: Nepal.

Remarks: This species is being reported for the first time from Sikkim.

Campiglossa deserta (Hering)

Material examined: 1 ♀, Dist. Dindigul, Kodaikanal, 30.iii.1962, coll. K.V.L. Narayana.

Distribution: India: Tamil Nadu, Karnataka.
Elsewhere: China, Japan, Korea, Thailand, Vietnam.

Remarks: This species is being reported for the first time from Tamil Nadu.

Genus *Dioxyna* Frey

1954. *Dioxyna* Frey, *Commentat. Biol. Soc. Sci. Fenn.* (1944), 8(10): 62. Type-species, *Trypeta sororcula* Wiedemann.

Dioxyna sororcula (Wiedemann)

1830. *Trypeta sororcula* Wiedemann, *Aussereurop. Zweifl. Insekt.*, 2: 509. Type-loc: Teneriffe, Canary Islands.

Material examined: 1 ♀, Dist. Senapati, Mao (5700 m), 8.iii.1975, coll. P.T. Cherian; 1 ♀, Dist. Ukhrul, Ukhrul (6200 m), 4.iii.1975, coll. P.T. Cherian; ♀ 3, Dist. Ukhrul, Ukhrul (6000 m), 5.iii.1975, coll. P.T. Cherian; ♀ 4, Dist. Churachandpur, Churachandpur, 17.ii.1975, coll. P.T. Cherian; ♀ 2, Khujma (5500 m), 7.iii.1975, coll. P.T. Cherian.

Diagnosis: Head longer than high, epistoma and sides of face protruded, proboscis slender, elongate, geniculate, two pairs of inferior and superior fronto-orbital bristles present, dorsocentral bristles situated distinctly in front of a line between the anterior supraalars; subcostal cell of wing dark brown; base of ovipositor shining black, subequal in length to terga 4-6. (Fig. b, plate I).

Distribution: India: Manipur, Nagaland, Andhra Pradesh, Assam, Bihar, Chandigarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal.
Elsewhere: Widespread over Tropics and

subtropics of the world, Japan, Australia, Europe, Korea. Throughout New world from southern Canada to Chile. Hawaii (introduced).

Remarks: This species is being reported for the first time from Manipur and Nagaland.

Genus *Spathulina* Rondani

1856. *Spathulina* Rondani, *Dipterol. Ital. Prodr.*, 1: 113. Type-species, *Spathulina sicula* Rondani.

Spathulina acroleuca (Schiner)

Material examined: 1 ♀, Dist. Sundergarh, Baisal Bari, 9.i.1972, coll. P.K. Maity; 1 ♀, Dist. Balsar, Umbergaon, 12.xi.1973, coll. P.T. Cherian.

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 is bare except for a few inconspicuous setae at base; ovipositor is short. (Fig. e, plate II).

Distribution: India: Gujarat, Orissa, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh, Madhya Pradesh, Punjab, Rajasthan, West Bengal. *Elsewhere:* Widespread Oriental; Afrotropical; Southern Palaearctic; Australasian Region.

Remarks: This species is being reported for the first time from Gujarat and Orissa.

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Plate - 1



a. *Campiglossa cribellata* Bezzi



a. wing



b. *Dioxya sororcula* (Wiedemann)



b. wing



c. *Philophylla indica* (Hancock & Drew)



c. wing

Plate - 2



d. *Pliomelaena zonogastra* (Bezzi)



d. wing



e. *Spathulina acroleuca* (Schiner)



e. wing



f. *Sundaresta malaisei* (Hering)



f. wing

Plate - 3



g. *Campiglossa deserta* (Hering)



g. wing



h. *Philophylla fossata* (Fabricius)



h. wing



i. *Platensina acrostacta* (Wiedemann)



i. wing

Plate - 4



j. *Rioxo sexmaculata* (Wulp)



j. wing



k. *Sphaeniscus atilius* (Walker)



k. wing