



FRUIT-FLIES (INSECTA: DIPTERA: TEPHRITIDAE) OF CHHATTISGARH

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INTRODUCTION

The flies belonging to the family Tephritidae are commonly known as 'fruit-flies'. These are small to medium sized (2.5–10 mm) flies, colourful, and usually with pictured wings, the sub costal vein curving forward at a right angle. Various species of this family cause damage to fruit (e.g. citrus, apple, mango, sunflower) and other plant crops. The larvae and maggots entered into the fruits, that leads to bacterial infection and finally fruits are destroyed. So, they play a great role in agricultural field (Smith and Brown, 2014).

The world fauna of Tephritidae comprises nearly 4716 species under 492 genera (Pape, 2011). Indian fauna shares only 243 species

under 79 genera and four subfamilies, namely Dacinae, Phytalmyiinae, Tephritinae and Trypetinae (Agarwal and Sueyoshi, 2005; Evenhuis *et al.*, 2008; David and Ramani, 2011).

The publications of Bezzi (1913), Brunetti (1917), Senior-White (1924), Munro (1935, 1938), Hardy (1973, 1974), Kapoor (1971, 1993), Kapoor *et al.* (1980), Mitra & Bhattacharya (2006 & 2008), Bhattacharya *et al.*, (2013) have provided significant information on these fruit-flies of different regions in India and throughout world.

Chhattisgarh State lies between 17°46'–24°8'N & 80°15'–84°24'E in central India with a total area of 1,35,194 km² (Fig. 1). Nearly 44% of the state area is covered by forests and a major

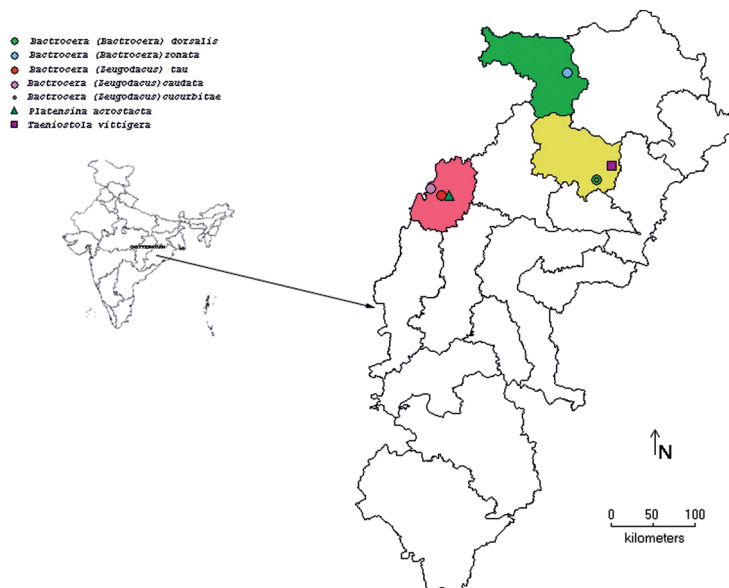


Fig. 1. Map showing records of different species of Fruit flies collected during the present study from districts and protected areas of Chhattisgarh.

part of this (35,736.239 km²) is outside protected areas. Bio-geographically, the state belongs to the Deccan Peninsula bio-geographic zone including provinces, 6D-Chota Nagpur Plateau, 6C - Eastern Highland and 6E - Central Highland (Rodgers *et al.*, 2002). The state bears mixed deciduous vegetation including both moist and dry deciduous tree species. Mitra *et al.* (2011) and Mitra & Parui (2014) documented 4 species under 2 genera of tephritid flies from this state.

The present paper deals with 7 fruit-flies collected during the faunistic survey of Chattishgarh, among which 3 species are reported for the first time from the state.

MATERIALS AND METHODS

Methods: Specimens were collected during faunistic surveys in Chhattisgarh conducted by the Zoological Survey of India. Usually, these flies are collected at day time by sweeping with insect net. During collection, GPS coordinates of the surveyed sites were recorded with the help of Garmin Oregon 550 device. The coordinates were used to produce a distribution map of the collected species by using the software DIVA-GIS. The pinned specimens were investigated under Leica EZ4 HD binocular microscope for identification. Morphological characters compared for identification confirmation with the description present in the published literature. After study the specimens were deposited in the designated repository of National Zoological Collection of Zoological Survey of India, Kolkata.

RESULTS

List of the flies of the family Tephritidae from the state Chhattisgarh

Family TEPHRITIDAE

Subfamily DACINAE

Tribe DACINI

1. *Bactrocera (Bactrocera) dorsalis* (Hendel)*
2. *Bactrocera (Bactrocera) zonata* (Saunders)*
3. *Bactrocera (Zeugodacus) caudatus* (Fabricius)
4. *Bactrocera (Zeugodacus) cucurbitae* (Coquillett)

5. *Bactrocera (Zeugodacus) tau* (Walker)

Tribe GASTROZONINI

6. *Taeniostola vittigera* Bezzi*

Subfamily TEPHRITINAE

Tribe DITHRYCINI

7. *Platensina acrostacta* (Wiedemann)

[*denotes the new records from the state.]

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

1835. *Bactrocera* Macquart, *Hist. nat. Ins. Dipt.*, 2: 452, 453. Type-species, *Bactrocera longicornis* Macquart.

Key to the species

1. Wings without complete cross band. Costal band not extending below vein R₂₊₃ except at wing of apex*dorsalis* (Hendel)
- Wings with 1 or more complete cross bands. Face with a black spot in each antennal furrow. Mesonotum rufous except for yellow vittae ..
.....*zonata* (Saunders)

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

1794. *Musca ferruginea* Fabricius, *Ent. Syst.*, 4: 342. Preoccupied by *Musca ferruginea* Scopoli, 1763. *Entomol. Carn.*, 340. Type-locality: "India Orientali".

Material examined: 6 ♀ Korba dist., Nursery Kartala, Lat 22°16' 14.1", Long 82°50' 42.9", 04.vi.2012, coll. K. Chandra & party.

Distribution: India: Andaman & Nicobar Island, Assam, Bihar, Chattisgarh (Korba), Delhi, Himachal Pradesh, Jammu & Kashmir, Kerala, Karnataka, Maharashtra, Manipur, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal. *Elsewhere:* Bhutan, Cambodia, China, Guam, Hawaii, Laos, Mauritius, Myanmar, Nauru, Nepal, N. Marianas, Ryukyu Islands, Sri Lanka, Thailand, Taiwan, Vietnam.

2. *Bactrocera (Bactrocera) zonata*
(Saunders, 1841)*

1841. *Dasyneura zonatus* Saunders, *Trans. ent. Soc. Lond.*, 3: 61. Type-locality: Bengal, India.

Material examined: 1 ♀, Korba dist., Subudunala, Lat 23°25' 31.7", Long 082°31' 18.1", 12.v.2012, coll. S.K. Gupta & party.

Distribution: India: Andhra Pradesh, Assam, Bihar, Chattisgarh (Korba), Delhi, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal. *Elsewhere:* Bangladesh, Laos, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam.

Subgenus *Zeugodacus* Hendel

1927. *Zeugodacus* Hendel, in Lindner, *Fliegenpalaearkt. Reg.*, **49**: 26. Type-species, *Bactrocera caudatus* Fabricius

Key to the species

1. Face yellow with narrow brownish black cross band in furrow. Three pairs of inferior fronto-orbitals *caudata* (Fabricius)
Scutum with radial post sutural vitta broadened basally and narrowed apically, wings with costal band extending upto cell R2 2
2. Wing with radial-medial band and sub apical band..... *cucurbitae* (Coquillett)
- Wing without radial-medial band and sub apical band..... *tau* (Walker)

3. *Bactrocera (Zeugodacus) caudatus* (Fabricius, 1805)

1805. *Dacus caudatus* Fabricius, *Syst. Antliat.*, p. 276. Type-locality: Indonesia.
2011. *Bactrocera (Zeugodacus) caudatus*: Mitra *et al.*, *Fauna of Madhya Pradesh (including Chhattisgarh)*, *State Fauna Series* **15**(3): 167-202

Material examined: 1 ♂. Kabirdham, Chilpi FRH, Lat. 22.17211° & Long. 81.05292°, 04.vi.2012, coll. K. Chandra & party.

Distribution: India: Assam, Bihar, Chattisgarh (Achanakmar WLS, Kabirdham), Madhya Pradesh, Meghalaya, Sikkim, Uttarakhand, West Bengal. *Elsewhere:* Bangladesh, Brunei, China, Indonesia, Malaysia, Myanmar, Nepal, Sri Lanka, Taiwan, Thailand, Vietnam.

4. *Bactrocera (Zeugodacus) cucurbitae* (Coquillett, 1899)

1899. *Dacus cucurbitae* Coquillett, *Ent. News*, **10**: 129. Type-locality: Honolulu, Hawaii.

2011. *Bactrocera (Zeugodacus) cucurbitae*: Mitra *et al.*, *Fauna of Madhya Pradesh (including Chhattisgarh)*, *State Faun. Series* **15**(3): 167-202.

Material examined: 1 ♀, Korba dist., Nursery Kartala, Lat 22°16' 14.1", Long 82°50' 42.9", 04.vi.2012, coll. K. Chandra & party.

Distribution: India: Widespread including Chattisgarh (Korba). *Elsewhere:* Afghanistan, Bangladesh, Brunei, China, Christmas Island, Combdodia, Egypt, Guam, Hawaii, Indonesia, Iran, Kenya, Kiribaiti Laos, Malaysia, Mauritius, Myanmar, Nauru, Nepal, New Guinea, Pakistan, Philippines, Ryukyu Island, Saudi Arabia, Singapore, Solomon Islands, Sri Lanka, Tanzania, Taiwan, Thailand, Vietnam,.

5. *Bactrocera (Zeugodacus) tau* (Walker, 1849)

1849. *Dasyneura tau* Walker, *List Dipt. colln Br. Mus.*, **4**: 1074. Type-Loc: Foochow, China.
2011. *Bactrocera (Zeugodacus) tau*: Mitra *et al.*, *Fauna of Madhya Pradesh (including Chhattisgarh)*, *State Fauna Series* **15**(3): 167-202.

Material examined: 1 ♀, Kabirdham, Sakri River, Lat 22.1°, Long 81.16333°, 06.vi.2012, coll. K. Chandra & party.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Bihar, Chattisgarh, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Punjab, Sikkim, Tamil Nadu, Tripura, Uttarakhand, West Bengal. *Elsewhere:* Bhutan, Brunei, Cambodia, China, Indonesia Laos, Malaysia, Myanmar, Singapore, Taiwan, Thailand, Vietnam.

Tribe GASTROZONINI

Genus *Taeniostola* Bezzi

1913. *Taeniostola* Bezzi, *Mem. Indian Mus.*, **3**: 119. Type-species, *Taeniostola vittigera* Bezzi.

6. *Taeniostola vittigera* Bezzi, 1913*

1913. *Taeniostola* Bezzi, *Mem. Indian Mus.*, **3**: 119. Type-localities: Sylhet (E. Pakistan), Lungleh (Assam) India.

Material examined: 1 ♀, Korba dist., Bijakhawaala, Lat 22°24' 50.1", Long 083°0' 33.5", 01.vi.2012, coll. K. Chandra & party.

Distribution: India: Assam, Chattishgarh (Korba), Mizoram. *Elsewhere:* Bangladesh, China, Indonesia, Laos, Malaysia, Myanmar, Taiwan, Thailand.

Subfamily TEPHRITINAE

Tribe DITHRYCINI

Genus *Platensina* Enderlein

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

7. *Platensina acrostacta* (Wiedemann, 1824)

1824. *Trypeta acrostacta* Wiedemann, *Analecta Entomol.*, p. 54. Type-locality: East India.

2011. *Platensina acrostacta*: Mitra *et al.*, *Fauna of Madhya Pradesh (including Chhattisgarh), State Fauna Series* **15**(3): 167-202

Material examined: 1♂, Kabirdham, Borhamdev WLS, Keherpani, 22° 5' 56.7384" N, 81° 15' 6.7788" E, 16.xi.2012, coll. Sunil Gupta.

Distribution: India: Chattishgarh, Gujarat, Karnataka, Kerala, Meghalaya, Odisha, Rajasthan,

Sikkim, Tamil Nadu, West Bengal. *Elsewhere:* Bangladesh, Cambodia, China, Pakistan, Sri Lanka, Thailand.

DISCUSSION

Present study reported only 7 species of fruit flies from the state Chhattisgarh, among which—4 species are recorded previously. But the collected species are very less in number regarding the Indian fauna of this family. So, further taxonomic studies of fruit flies involving extensive field surveys are suggested which may reveal many unknown flies of this family with their distributional data in Chhattisgarh

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