

## FAUNISTICAL AND SYSTEMATICAL STUDIES ON THE TRYPETINAE (DIPTERA: TEPHRITIDAE) IN THE TURKEY ALONG WITH A NEW RECORD TO TURKISH FAUNA

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ABSTRACT: This study is based on material collected in Turkey in of 1999 - 2005. Four genera and five species of Trypetinae were found to occur in Turkey. *Rhagoletis berberidis* Jermy is a new record for fauna for Turkey. Key to genera and species of this subfamily occurring in Turkey are provided. The locality and host plants of specimens examined and figures of aculei and wings of species are given. Distribution of the species in Turkey and rest of world stated.

KEY WORDS: Tephritidae, New Record, Key, Systematics, Fauna, Turkey.

The subfamily Trypetinae is widespread in the world. Twenty nine genera and forty three species have been listed from Europe (Merz, 1994). Trypetinae differ from other Tephritidae by the following combination of characters [only the major characters are listed; more complete lists of characters can be found in Freidberg & Kugler (1989) and Merz (1994)]: Postoculer setae acuminate, usually black or brown rarely paler. Frontal stripe usually hairy; arista bare, hairy or plumose; proboscis almost always capitate, with broad labella; scapular setae usually distinct; dorsocentral setae usually situated at about level of anterior supra-alar setae; scutellum flat or convex; wing pattern often with transverse or oblique bands, rarely reticulate; abdomen without distinct pollinosity or with distinct pattern of pollinosity; sixth tergum of female usually much shorter than fifth.

Larvae infest fleshy plants that have fruits and some develop in flower buds, stems or leaves (Freidberg & Kugler, 1989).

### MATERIAL AND METHODS

The specimens were collected in Turkey in 1999 - 2005. Flies were killed in a killing jar with potassium cyanide. The material is deposited in the museum of İnönü University, Department of Biology, Malatya.

Species were identified using the keys by Freidberg & Kugler (1989) and Merz (1994). Terminology follows White et al. (2000). Extensive synonymy and bibliography is provided by Norrbom et al. (1999). Host

plants were determined by Prof. Şemsettin Civelek (University of Firat, Department of Biology, Elazığ, Turkey).

## RESULTS

Four genera (*Ceratitis* Mac Leay *Euleia* Walker, *Myopardalis* Bigot and *Rhagoletis* Loew) and their five species (*Ceratitis capitata* Wiedemann, *Euleia heraclei* Linnaeus, *Carpomya pardalina* Bigot, *Rhagoletis berberidis* Jermy and *Rhagoletis cerasi* Linnaeus) were collected from Turkey between the years 1999 - 2005. *Rhagoletis berberidis* is a new record for fauna of Turkey. Distribution of the species in Turkey and rest of world was stated.

### KEY TO GENERA OF TRYPETINAE

1. Wing pattern ceratitis type, with 3 bands as well as several small black spots at basal 0.4 (Fig. 2) ..... ***Ceratitis*** Mac Leay
  - Wing pattern different, lacking small black spots at basal (Figs. 1, 3, 4, 5) ..... **2**
2. Wing with 3-4 transverse bands (Figs. 3, 4, 5); antenna with distinct apicodorsal point; head not distinctly oval; fronto-facial angle about 90 ° and rather projecting..... **3**
  - Wing not with transverse bands, and different (Fig. 3); antenna rounded at apex; head oval; fronto-facial angle broader and rounded..... ***Euleia*** Walker
3. Hind femur with strong anteroventral subapical setae; vein R<sub>4+5</sub> usually without dorsal setulae ..... ***Rhagoletis*** Loew
  - Hind femur without strong anteroventral subapical setae; vein R<sub>4+5</sub> with dorsal setulae ..... ***Carpomya*** Costa

#### ***Carpomya pardalina*** Bigot, 1891

(Figs. 1, 6)

**Specimens examined:** 12 ♂♂, 15 ♀♀, Adana, Balcalı, 37.02 N, 35.22 E, 60 m, 17.X.2000; 2 ♂♂, 2 ♀♀, Hatay, Kırıkhan, Çiloğlan, 36.30 N, 36.26 E, 110 m, 08.V.2002 (M. Kütük).

**Host plants:** in Freidberg & Kugler, 1989.

**Distribution:** Egypt, Israel, Turkey, Kenya, and Caucasus to W. Indian (Giray, 1979; Freidberg & Kugler, 1989; Norrbom et al. 1999).

**Measurements** (length in mm): *Male* Body 5.0-6.4, wing 4.0-4.6. *Female* body: 6.3-7.3, wing 4.5-5.3.

#### ***Ceratitis capitata*** (Wiedemann, 1824)

(Figs. 2, 7)

**Specimens examined:** 27 ♂♂, 35 ♀♀, Adana, Balcalı, 37.02 N, 35.22 E, 60 m, 17.X.2000; 24 ♂♂, 20 ♀♀, Adana, Balcalı, 37.01 N, 35.21 E, 70 m, 16.X.2001; 4 ♂♂, 7 ♀♀, Antalya, Finike, 36.23 N, 30.24 E, 30 m,

20.VI.1999; 5 ♂♂, 3 ♀♀, Antalya, Finike, 36.27 N, 30.12 E, 55 m, 24.VI.2000; 2 ♂♂, 1 ♀, Antalya, Alanya, 36.33 N, 30.12 E, 100 m, 11.VII.2000; 5 ♂♂, 5 ♀♀, Hatay, Kırkhan, Çiloğlan, 36.30 N, 36.26 E, 110 m, 08.V.2002 (M. Kütük).

**Host plants:** in De Meyer et al. (2002)

**Distribiton:** Tropical and subtropical regions of Old and New Worlds. The species has been introduced to many countries. Its origin is apparently the Afrotropical region and Turkey (Giray, 1979; Norrbom et al. 1999; Özgür & Kütük, 2003).

**Measurements** (length in mm): *Male* Body 4.0-5.0, wing 3.8-4.5. *Female* body: 4.5-6.0, wing 3.5-4.7.

### ***Euleia heraclei*** (Linnaeus, 1758)

(Figs. 3, 8)

**Specimens examined:** 2 ♂♂, 1 ♀, Adana, Karataş, Beyköy, 36.48 N, 35.21 E, 20 m, 03.V.2001; 2 ♂♂, 2 ♀♀, Adana, Balcalı, 37.02 N, 35.21 E, 100 m, 25.V.2001; 2 ♂♂, 2 ♀♀, Burdur, Yeşilova, Eşeler mountain, 37.30 N, 29.33 E, 1340 m, 23.VI.2000; 1 ♂, 2 ♀♀, Isparta, Yenişarbademli, 37.41 N, 31.21 E, 1230 m, 13.VII.2000; 3 ♂♂, 4 ♀♀, Isparta, Yenişarbademli, 37.41 N, 31.21 E, 1230 m, 12.VI.2001 (M. Kütük).

**Host plants:** in Freidberg & Kugler, 1989; Merz, 1994.

**Distribution:** Afghanistan, Algeria, Armenia, Azerbaijan, England, Estonia, Georgia, Israel, Japan, Kazakhstan, Kyrgyzstan, Latvia, Letonia, Middle East, Moldova, Morocco, Russia, Switzerland, Tadjikistan, Turkey, Turkmenistan Ukraine, and Uzbekistan (Foote, 1984; White, 1988; Freidberg & Kugler, 1989; Merz, 1994; Norrbom et al. 1999).

**Measurements** (length in mm): *Male* Body 4.1-5.5, wing 3.8-5.2. *Female* body: 5.5-6.0, wing 4.5-5.7.

### **KEY TO SPECIES OF RHAGOLETIS**

1. Vein M reaches costa in the apical band of wing (Fig. 5); hyaline gap between third and fourth bands reaches about vein  $R_{4+5}$ ; oligofagus species, host plants are *Prunus* and *Lonicera* ..... ***cerasi*** (Linnaeus)
- Vein M reaches costa at the margin of apical band of wing (Fig. 4); hyaline gap between third and fourth bands reaches about vein  $R_{2+3}$ ; monofagus species, host plant only is *Berberis vulgaris* ..... ***berberidis*** Jermy

### ***Rhagoletis berberidis*** Jermy, 1961

(Figs. 4, 9)

**Specimens examined:** 2 ♂♂, 1 ♀, Isparta, Yenişarbademli, 37.41 N, 31.21 E, 1230 m, 13.VII.2000; 2 ♀♀, Isparta, Aksu, Yakaköy, 37.43 N, 31.14 E, 1820 m, 14.VII.2000; 3 ♂♂, 3 ♀♀, Isparta, Aksu, Çayır plateau, 37.47 N, 31.14 E, 1925 m, 14.VII.2000; 2 ♂♂, Burdur, Soğanlı, 37.34 N, 30.15 E, 1515 m, 15.VII.2000; 3 ♂♂, 2 ♀♀ Isparta, Yenişarbademli, 37.41

N, 31.21 E, 1230 m, 12.VI.2001; 3 ♂♂, 3 ♀♀, Sivas Kangal, Sipahikoyağı, 38.13 N, 36.12 E, 1450 m, 04.VII.2005; 4 ♂♂, 6 ♀♀, Kayseri, Yahyalı, 38.01 N, 35.25 E, 1570 m, 06.VII.2005 (M. Kütük).

**Host plants:** in Merz, 1994.

**Distribution:** Armenia, Austria, Azerbaijan, Georgia, Hungary, Moldova, Russia, Switzerland and Ukraine (Foote, 1984; Merz, 1994; Norrbom et al. 1999).

This species is new record for Turkis fauna.

**Measurements** (length in mm): *Male* Body 4.0-5.1, wing 3.2-4.0. *Female* body: 4.5-6.2, wing 3.5-4.5.

### ***Rhagoletis cerasi* Linnaeus, 1826**

(Figs. 5,10)

**Specimens examined:** 3 ♂♂, 5 ♀♀, Adana, Pozantı, Alpu, 37.28 N, 34.54 E, 1120 m, 23.V.2001; 8 ♂♂, 3 ♀♀, Adana, Pozantı, 37.38 N, 34.59 E, 1220 m, 17.V.2002; 1 ♂, 1 ♀, Isparta, Senirkent, Gençali, 38.13 N, 31.03 E, 925 m, 16.VI.1999; 3 ♂♂, Isparta, Senirkent, Aşağıkaşıkara, 38.15 N, 30.48 E, 940 m, 22.VI.2000; 5 ♂♂, Isparta, Yenişarbademli, 37.41 N, 31.21 E, 1230 m, 12.VI.2001 (M. Kütük).

**Host plants:** in Giray, 1979; White, 1988; Merz, 1994.

**Distribution:** Central and North Europe, Russia, Estonia, Latvia, Ukraine, Letonia, Azerbaijan, Georgia, Armenia, Kazakhstan, Uzbekistan, Tadjikistan, Kyrgyzstan, Turkmenistan, England, Switzerland, Turkey and West Siberia (Giray, 1979; Foote, 1984; White, 1988; Merz, 1994; Norrbom et al. 1999).

**Measurements** (length in mm): *Male* Body 4.3-5.5, wing 3.3-4.5. *Female* body: 5.3-6.2, wing 3.5-5.0.

## DISCUSSION

*Rhagoletis berberidis* is a new record for the fauna of Turkey. This study contributed to Turkish Tephritidae Fauna and identification of genera and their species of Trypetinae in Turkey. The species of Trypetinae is not widespread in Turkey.

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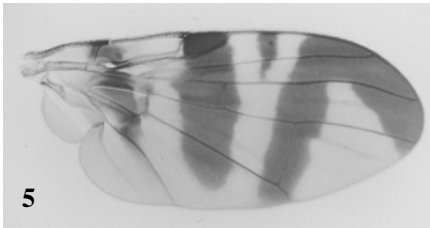
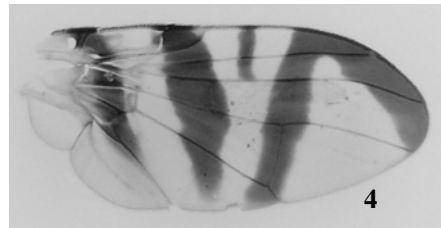
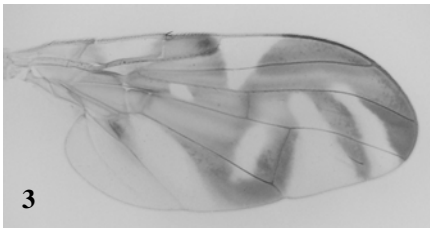
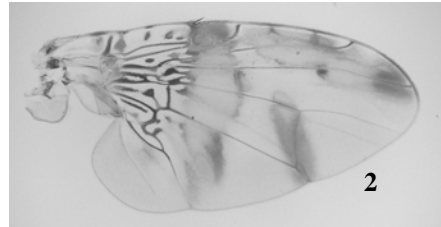
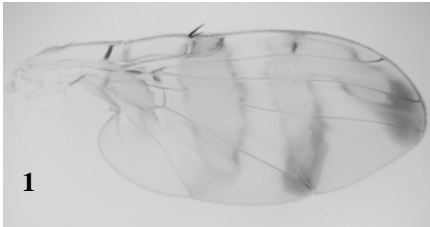
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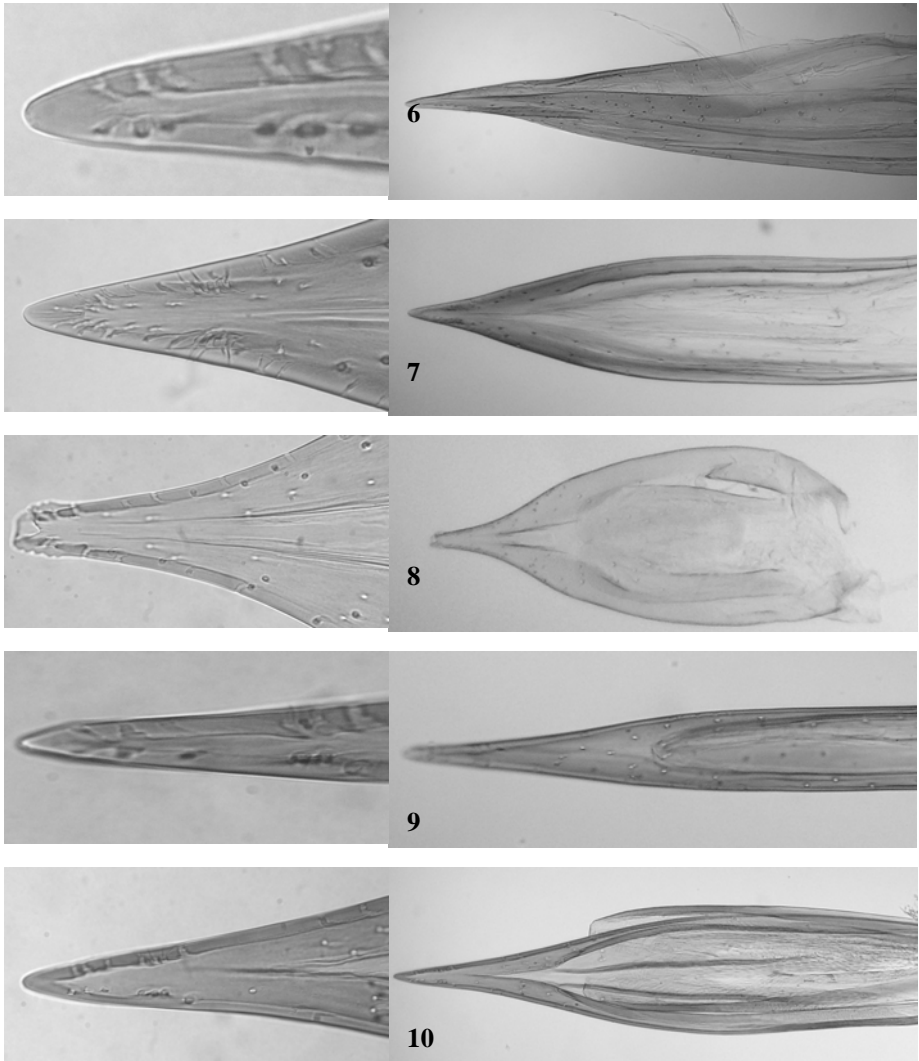
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Figures 1-5. The wings pattern of Trypetinae: 1- *Carpomya pardalina*, 1- *Ceratitis capitata*, 3- *Euleia heraclei*, 4- *Rhagoletis berberidis*, 5- *Rhagoletis cerasi*.



Figures 6-10. The aculeus of Trypetinae: 6- *Carpomya pardalina*, 7- *Ceratitis capitata*, 8- *Euleia heraclei*, 9- *Rhagoletis berberidis*, 10- *Rhagoletis cerasi*.