

**FIRST RECORD OF THE APRICOT FLOWER MIDGE,
CONTARINA PRUNIFLORUM COUTIN & RAMBIER (DIPTERA:
CECIDOMYIIDAE) IN MALATYA PROVINCE, TURKEY**

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ABSTRACT: The apricot flower midge, *Contarinia pruniflorum* Coutin & Rambier, (Diptera: Cecidomyiidae) was recorded for the first time from Turkey. Female specimens and the larvae were redescribed from the Turkish materials, and distribution in Turkey was given.

KEY WORDS: *Contarinia pruniflorum*, apricot, distribution, Turkey.

The apricot flower midge, *Contarinia pruniflorum* Coutin & Rambier (Diptera: Cecidomyiidae) has been recorded by several works as a serious pest of *Prunus* spp. (Rosaceae), especially on flower buds of apricot, *P. armeniaca* (L.) Dumort. in Mediterranean countries such as: in France Coutin & Rambier, 1955 and Pierre & Chauvin-Buthaud, 2001; in Italy Pollini & Bariselli, 1996 and Tommasini, 2006; in Greece Tsagarakis & Mitsopoulos, 2007 and Kyttariolou, & Tsagarakis, 2013; in Czechoslovakia Jedlicka et al. 2009.

Gagné & Jaschhof (2014) recorded *C. pruniflorum* only from France and Czechoslovakia on *Prunus spinosa*, *P. mahaleb* (Rosaceae), but Pierre & Chauvin-Buthaud (2001) recorded that some apricot orchards the Drôme and Hérault regions in the South of France. Tommasini (2006) stated that the first report of the presence of *C. pruniflorum* on apricot dates back to 1996 in Emilia Romagna, Italy, and in recent years, it has affected the entire area of production of apricots. Tsagarakis & Mitsopoulos (2007) recorded that the damaged flowers by *C. pruniflorum* on apricot reached 60-65% at the observation orchards in Greece. Alford (2007) gave some biological data for the species.

Up to now only two natural enemy, *Gastrancistrus pacillus* Walk. (Hym., Chalcidoidea: Pteromalidae) and *Synopeas* sp. (Hymenoptera: Platygasteridae), has been recorded as larval parasitoid of *C. pruniflorum* by Coutin & Rambier (1955). It was stated that the parasitism rate reached 8% in 1953 and 14% in 1954.

The aims of this work were identification of the apricot flower midge in Malatya province, Turkey. For that purpose the adults and the immature stages of the midge were studied.

MATERIAL AND METHOD

The study was conducted in 2009-2014 in Malatya province, Turkey. The adults on buds of *P. armeniaca* and buds with larvae of the pest were collected from the orchards mainly in the period from March to April. The buds with larvae brought to laboratory in plastic bags, and kept under laboratory conditions (24°C

temperature and 60-70 % relative humidity) for rearing purpose. They were placed into jars filled with soil and kept outside.

In order to obtain distribution of the pest in Malatya province the infested apricot trees (3-30 years old) in the villages were selected randomly. Samplings were made 5-6 times in from March to April, 2009-2014. The specimens of the midges were collected by mouth aspirator from buds and the larvae were obtained from the infested buds of apricot trees. The records of distribution of the pest were obtained from the larvae sent by the researcher in other localities, such as Mut, Mersin and Kemalpaşa, İzmir, of Turkey. The wings, antenna and genitalia of the female and larvae of the pest were slide-mounted in Canada balsam.

The specimens of the midges were identified by comparing the characters of the adults and larvae with the characters given by Gagné & Jaschhof (2009) for identification of the genus, and for the species with the characters given by Coutin & Rambier (1955) in the original description of *C. pruniflorum*.

The examined specimens were deposited in the collection of the Insect Museum of Research Station of Biological Control Yüreğir, Adana, Turkey (IMRSBC) and of Apricot Research Station, Tecde Road, 44100 Malatya, TURKEY.

Photographs of diagnostic characters of the species were taking by using a stereo-microscope (LEIKA GM 500, Germany) with a digital camera (LEIKA ICC50 HD) attached to it.

RESULTS AND DISCUSSION

During investigations conducted in 2009-2010 in Malatya Province, Turkey, adults of the pest which were collected and preserved in vials without fluid was destroyed, and the adults collected in 2014 and the larvae kept in vials with ethanol was stayed in good conditions. By works the pest was identified as the Apricot flower midge, *Contarinia pruniflorum* Coutin & Rambier. The species was redescribed from Turkish materials as follows:

Contarinia pruniflorum Coutin & Rambier, 1955

(Figs. 1-3)

Contarinia pruniflorum Coutin & Rambier, 1955: 106-109, Types: Holotype ♂, Cecid no 179, paratype ♂♂, no 226, and nrs. 180-188 and 227-228 (in coll. Faunistique agricole, Versailles); nrs. 9695 and 9705 in coll. Barnes, Rothamsted (Angleterre); ♀♀: 224 (allotype), no 225 and nrs. 189-192 and 229-231 (in coll. Faunistique agricole, Versailles); nrs. 9706 and 9714 in coll. Barnes, Rothamsted (Angleterre).

Material examined: Turkey: Malatya, Kale, 1-15. ii. 2014, 74 ♀♀; Kızılcak, 1.-15. ii. 2014, 65 ♀♀; all of the specimens were collected by T. Yigit . Many specimens of larvae, in vials with ethanol, from both locations, and from Mut, Mersin, collected from bud of *Prunus armeniaca* L., and Kemalpaşa, İzmir, collected from bud of *Prunus persica* (L) Stokes.

Description: The following description is mainly based on Coutin & Rambier (1955) by adding some figures:

The midges (Figs. 1a,c) are body orange-red, over-shadowed a brilliant blackish hair; head, thorax and legs black, tinged with red wings transparent blackish head with pale yellow appendages, body except the antennae about 2-2.5 mm in length. Head (Fig. 2b). Antenna: 1.2 mm. with 12 flagellomeres cylindrical; the first two sections of flagellum welded together, the first $\frac{2}{5}$ times longer than the second. all of the segments short and wide base, becoming increasingly long and narrow

towards tip of antenna, last article with a terminal extension as long as the neck of the previous article; each segments with two whorls of lights nets and uneven long bristle.

Palps (Fig. 2b): 4-segmented, first very short, quadrangular, second twice as long as broad, 3rd about 3 times, 4th segments 4 times as long as broad.

Wings (Fig. 2c): subcostal vein extending slightly beyond the tip of wing; Rs rudimentary, third vein curved, reaching just beyond tip of wing; fifth vein forked.

Legs (Figs. 2d,e): tarsal claws bowed at midlength, and simple on all legs, empodium well developed, about as long as claws.

Abdomen (Figs. 2a,f): female abdominal sternite 7 not longer than preceding sternite; ovipositor very elongated, when fully extended 2.1 mm, two terminal cerci with 8th large bristles at their greatest extremity.

Larva (Fig. 3): Colour whitish-yellow. 2.0-2.3 mm. Head (Fig. 3a) with antennae 0.3 times as long as capsule, posterolateral apodemes about as long as head capsule. Sternal spatula orange-brown with long stem and anterior part divided by bluntly pointed lobes; a lateral papilla each side of spatula. Terminal segment (Fig. 3b) with four pairs of papillae setose.

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LITERATURE CITED

Alford, D. V. 2007. Chapter 5. True flies, 3. Family Cecidomyiidae, *Contarinia pruniflorum* Coutin & Rambier, Plum fruit-bud midge, in Pest of fruit crops, A color handbook. Academic Press is an imprint Elsevier, Boston, San Diego. pp. 177-178.

Coutin, R. & Rambier, A. 1955. Description d'une nouvelle cécidomyie sur les fleurs des *Prunus*: *Contarinia pruniflorum* n. sp. et ses principaux caracteres biologiques (Dipt. Itonididae). Bulletin de la Société Entomologique de France, 60: 104-110.

Gagné, R. J. & Jaschhof, M. 2009. Cecidomyiidae (Gall Midges). 17. Pp. 293-314. In Brown, B. V., A. Borkent, J. M. Cumming, D. M. Wood, N. E. Woodley and M. A. Zumbado, eds. Manual of Central American Diptera. Volume 1. National Research Council of Canada, Ottawa.

Gagné, R. J. & Jaschhof, M. 2014. A Catalog of the Cecidomyiidae (Diptera) of the World. 3rd Edition. Digital version 2. p. 160.

Jedlicka, L., Kuedela, M. & Stloukalova, V. (eds). 2009. Checklist of Diptera of the Czech Republic and Slovakia. Electronic version 2. http://zoology.fns.uniba.sk/diptera_2009 + CD-ROM: ISBN 978-80-969629-4-5.

Kyttariolou, K. S. & Tsagarakis, A. E. 2013. Population density of *Contarinia pruniflorum* (Diptera: Cecidomyiidae) in different apricot varieties. Abstr. of. 15th National Entomological Congress of Greece, 22-25 October 2013, Kavala, Greece, 17 p. (in Greek, English abstract).

Pierre, E. & Chauvin-Buthaud, B. 2001. A new pest in the south of France. A midge which gives cause for concern on apricot blossom [*Contarinia pruniflorum*]. Phytoma 2001, No. 541, pp. 38-39.

Pollini, A. & Bariselli, M. 1996. *Contarinia pruniflorum*, a new pest of apricot. *Informatore Agrario*, 52: 71-73.

Tsagarakis, A. E. & Mitsopoulus, D. I. 2007. First record of the apricot flower midge *Contarinia pruniflorum* Coutin & Rambier (Diptera: Cecidomyiidae) in Greece. *Abstr. of. 12th National Entomological Congress of Greece, 13-16 November 2007, Larnaca, Cyprus, 230 p.* (in Greek, English abstract).

Tommasini, M. G. 2006. Cacidomia, La prima segnalazione della presenza del Dittero Cecidomide, *Contarinia pruniflorum*, su albicocco in Emilia. Romagna risale al 1996. Allerta per tre patogeni e due fitofagi in Emilia Romagna, Recenti problematiche fitosanitarie dell'albicocco CRPV Cesena. *Frutticoltura*, 9: 68.

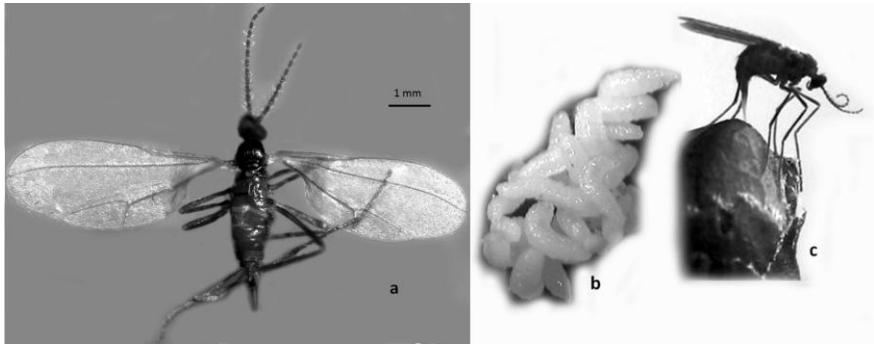


Figure 1. *Contarinia pruniflorum* Coutin & Rambier, female. a. body in dorsal view; b. mass of larvae; c. egg laying female onto bud of apricot, in lateral view.

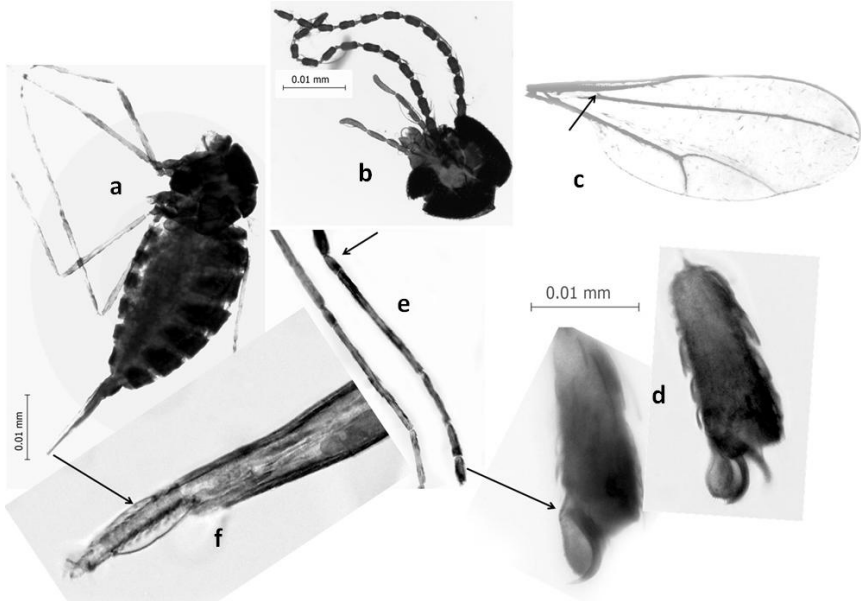


Figure 2. *Contarinia pruniflorum* Coutin & Rambier, female. a. thorax and abdomen with sternite 7 not longer than preceding sternite, in lateral view; b. head with antennae, in frontal view; c. forewing, arrow states undeveloped R_s ; d. pretarsi with simple tarsal claws bowed at midlength; e. fore tarsi, arrow states short metatarsus; f. tiny cerci.

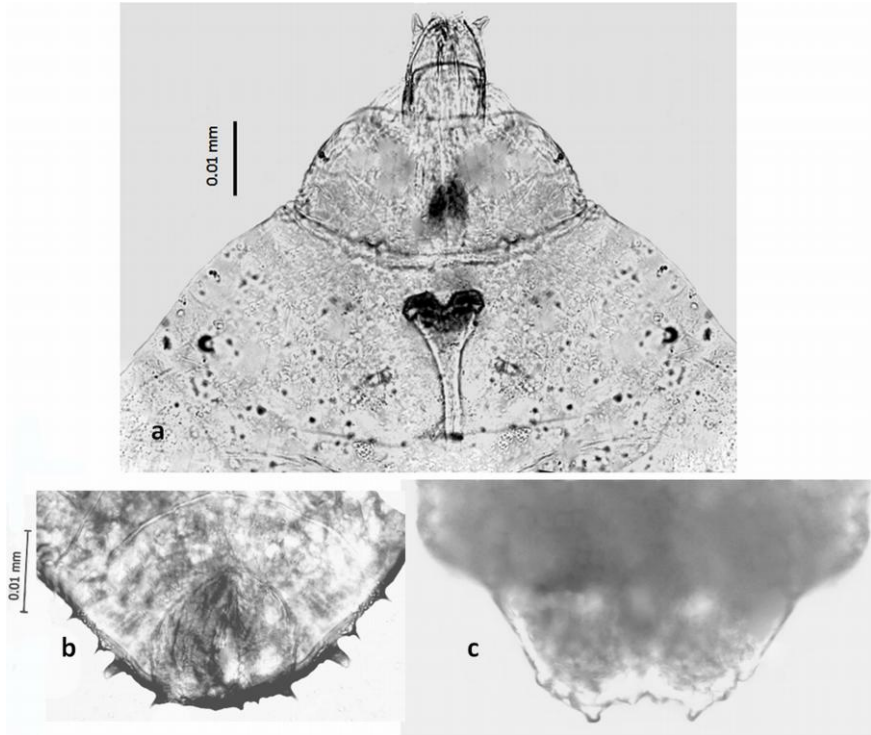


Figure 3. *Contarinia pruniflorum* Coutin & Rambier, 1955. Larva. a. head and sternal spatulae; b. terminal segments , in ventral view; c. terminal segments , in dorsal view.