

Two New Records of Fruit Fly (Diptera: Tephritidae) for the Fauna of Türkiye

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ABSTRACT

Fruit flies (Diptera: Tephritidae) one of the most important Diptera families with number of high pest species. In this study, caper fly *Capparimyia savastani* (Martelli, 1911) and rose hip fly *Rhagoletis alternata* (Fallén, 1811) were determined for the first time from Türkiye. In the paper, also wing figures of each species were given.

Keywords: Caper fly, *Capparimyia savastani*, *Rhagoletis alternata*, rose hip fly.

INTRODUCTION

Fruit flies (Diptera: Tephritidae) are one of the most economically important Diptera families in agriculture. Some species of Tephritidae can damage vegetables, flower crops and fruits. They limit agricultural production in some countries because of the strict trade quarantines imposed to prevent their spread (Norrborn, 2004). Tephritidae includes more than 5000 valid species worldwide. In Türkiye, 175 species of fruit flies have been reported up to date by several authors (Kütük, Bayrak, & Hayat, 2011, 2012; Korneyev, et al, 2013; Kütük, Yaran, Hayat, Koyuncu, Görmez, & Aytekin, 2013; Yaran & Kütük, 2012, 2014, 2015, 2016; Yaran, Kütük, Görmez, & Koyuncu, 2018a, 2018b; Çalışkan Keçe, Çatal, & Ulusoy, 2019; Görmez & Kütük, 2020; Kütük & Yaran, 2020; Yaran & Görmez, 2020; Yaran, Görmez & Koyuncu, 2021; Görmez & Kütük, 2022; Kütük, Junaid, Akpınar, Görmez, & Can, 2022).

Genus *Capparimyia* Bezzi, 1920 revised by De Meyer & Freidberg (2005) and provided eight species mainly distributed in Africa. *Capparimyia savastani* (Martelli, 1911) (Caper fly) is distributed mainly in countries bordering the Mediterranean region. The caper fly larvae develop in both flower buds and fruits of *Capparis* spp. (Capparidaceae) (De Meyer & Freidberg, 2005). Genus *Rhagoletis* Loew, 1862 includes 73 valid species. *Rhagoletis* species feed on fruits, and some species of them are important economically and known as pest species for apples, blueberries, cherries, walnuts and tomatoes (Boller & Prokopy, 1976). Larvae of the *Rhagoletis alternata* (Fallén, 1814) (Diptera: Tephritidae) develops in hips of several rose species (Vaupel et al, 2007).

This paper provides new faunistic records for two fruit fly species in Türkiye. In the paper, wing figures and zoogeographic distribution of each species were given.

MATERIAL AND METHOD

Adult *Capparimyia savastani* sample was collected from cultivated fruits of *Capparis* spp.. The sample was identified according to key for genus which provided by De Meyer & Freidberg, 2005. The adult *Rhagoletis alternata* samples were collected from the rose hip by sweeping insect net. Samples were identified according to key for *Rhagoletis* which was provided by Korneyev, Mishustin, & Korneyev, 2017. All materials were deposited in the Gaziantep University, Biology Department, Entomology Laboratory, Gaziantep, Türkiye (GUGT).

RESULTS

Capparimyia savastani (Martelli, 1911) (Fig. 1a)

Distribution: Algeria, Cyprus, Egypt, France, Greece, Israel, Italy (Sicily), Lebanon, Libya, Malta, Morocco, Spain, Tunisia, Iran, Jordan, Oman, Pakistan, Yemen and United Arab Emirates (UAE) (Donati & Belcari, 2003; De Meyer & Freidberg, 2005; Merz, Van Aartsen, White, & Van Harten, 2006; Miranda, Terrassa, & Miquel, 2008;

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Papachristos, Milonas, & Papasotiriou, 2009; Ghahari, 2013; Moussa & Yammouni, 2014; El Harym & Belqat, 2017; Demetriou & Kryfos, 2020; Mohamadzade Namin & Roberts, 2020).

Material examined: Türkiye, Aydın, Germencik, Tekin Village, Magnesia Antic theatre, 37° 50' 58" N, 27° 31' 11" E, 53 m, 10.09.2010, 1 ♀; Det: Yaran M. (Leg. Tarla G.)

***Rhagoletis alternata* (Fallén, 1814) (Fig. 1b)**

Distribution: Andorra, Austria, Belgium, Britain, Bulgaria, Czech Republic, Danish mainland, Finland, French mainland, Germany, Hungary, Lithuania, Norwegian mainland, Poland, Romania, Russia (European and Asian parts), Slovakia, Sweden, Ukraine; Kazakhstan, Kyrgyzstan, Japan (Korneyev et al., 2017).

Materials examined: Türkiye, Bayburt, Kop Mountain, 40° 01' 56" N, 40° 30' 57" E, 2433 m, 08.07.2021, 1 ♀; Ardahan, Çamlıçatak, 41° 05' 35" N, 42° 49' 05" E, 2034 m, 08.07.2021, 1 ♂, 1 ♀. Det: Yaran M. (Leg. Yaran M. Görmez V. and Koyuncu M. Ö.)

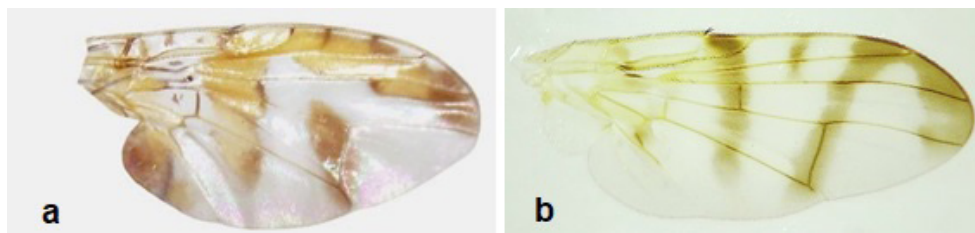


Figure 1. a) Wing of *Capparimyia savastani* (♀), b) Wing of *Rhagoletis alternata* (♀)

DISCUSSION

Capparis spp. are widespread plant species in Türkiye. But up to date, *Capparimyia savastani* didn't record from Türkiye. Recently, Demetriou, & Kryfos, (2020) recorded from Cyprus and Mohamadzade Namin & Roberts, (2020) recorded from UAE. Together with this study, the genus *Capparimyia* and *Capparimyia savastani* were recorded first time for the fauna of Türkiye. Genus *Rhagoletis* known with 5 species in Türkiye (Pakyürek, 2006; Kütük & Özaslan, 2006; Koçak & Kemal, 2013). Yıldırım, Civelek, Çıkman, Dursun, & Eskin, (2010) reported *Utetes magnus* Fischer, 1958 (Braconidae) as parasitoid of *Rhagoletis alternata* for the first time from Türkiye. However, authors didn't mention about collection of *R. alternata*. This species is new for fauna of Türkiye.

REFERENCES

- Boller, E. F. & Prokopy R. J. (1976). Bionomics and Management of *Rhagoletis*. *Annual Review of Entomology*, 21(1), 223-246.
- Çalışkan Keçe, A. F., Çatal, B. Ö., & Ulusoy, M. R. (2019). A new invasive species in Turkey: *Dacus ciliatus* Loew, 1862 (Diptera: Tephritidae). *Turkish Journal of Entomology*, 43(1), 25-30.

- De Meyer, M. & Freidberg, A. (2005). Revision of the fruit fly genus *Capparimyia* (Diptera, Tephritidae). *Zoologica Scripta*, 34(3), 279–303.
- Demetriou, J. & Kryfos, D. (2020). First record of the caper fly *Capparimyia savastani* (Martelli, 1911) (Diptera: Tephritidae) in Cyprus. *Israel Journal of Entomology*, 50(1), 15–17.
- Donati, M. & Belcari, A. (2003). A note on insect pests of the caper plant in Jordan, with special reference to *Capparimyia savastani* (Martelli) (Diptera, Tephritidae). *Studia Dipterologica*, 10(2), 395–400.
- El Harym, Y. & Belqat, B. (2017). First checklist of the fruit flies of Morocco, including new records (Diptera: Tephritidae). *ZooKeys*, 702: 137–171.
- Ghahari, H. (2013). A contribution to the knowledge of fruit flies (Diptera: Tephritidae) from Iran. *Entomofauna Zeitschrift fur Entomologie*, 34, 221–228.
- Görmez, V. & Kütük, M. (2020). Fruit fly (Diptera: Tephritidae) fauna of Çorum and Sinop provinces with two new records for Turkey. *Turkish Journal of Entomology*, 44(1), 23–38.
- Görmez, V. & Kütük, M. (2022). Fruit fly (Diptera: Tephritidae) fauna of Amasya and Samsun provinces with two new records for Turkey. *Journal of Agriculture and Nature*, 25 (4): 723–734.
- Koçak, A. Ö. & Kemal, M. (2013). Tephritidae in Turkey. An evaluation of its status from various standpoints (Diptera). *Cesa News*, 84, 1–50.
- Korneyev, V. A., Evstigneev, D. A., Karimpour, Y., Kütük, M., Mohamadzade Namin, S., Koyuncu, M. Ö., & Yaran, M. (2013). Revision of the *Terellia virens* group (Diptera, Tephritidae) with description of three new species. *Vestnik Zoologii*, 47(1), 3–25.
- Korneyev, V. A., Mishustin, R. I., & Korneyev, S. V. (2017). The Carpomyini Fruit Flies (Diptera: Tephritidae) of Europe, Caucasus, and Middle East: New Records of Pests, with Improved Keys. *Vestnik Zoologii*, 51, 453 - 470.
- Kütük, M. & Özaslan, M. (2006). Faunistical and systematical studies on the Trypetinae (Diptera: Tephritidae) in the Turkey along with a new record to Turkish fauna. *Munis Entomology & Zoology*, 1, 173–178.
- Kütük, M. & Yaran, M. (2020). A new species and a new record of *Tephritis* Latreille, 1804 (Diptera: Tephritidae) from Turkey. *Turkish Journal of Entomology*, 22(2), 215–222.
- Kütük, M., Bayrak, N., & Hayat, R. (2011). A new species of *Terellia* (Diptera: Tephritidae) from Turkey with a key to Turkish species of the subgenus *Cerajocera*. *Turkish Journal of Entomology*, 35(2), 207–213.
- Kütük, M., Bayrak, N., & Hayat, R. (2012). A new species of *Tephritis* Latreille (Diptera: Tephritidae) from Turkey. *Turkish Journal of Zoology*, 36(4), 475–480.
- Kütük, M., Mohammed Junaid, F., Akpinar, A., Görmez, V., & Can, C. (2022). Population Genetic Analysis of *Euaresta bullans* (Wiedemann, 1830) (Diptera: Tephritidae) on *Xanthium spinosum* L. *Entomological News*, 130(2), 137–150.
- Kütük, M., Yaran, M., Hayat, R., Koyuncu, M. Ö., Görmez, V., & Aytekin, H. U. (2013). The determination of fruit fly (Diptera: Tephritidae) fauna in Adıyaman, Kilis, and Şanlıurfa provinces with a new record for Turkish fauna. *Turkish Journal of Zoology*, 37, 38–49.
- Merz, B., Van Aartsen., B., White, I. M., & Van Harten, A. (2006). Fruit flies (Diptera: Tephritidae) of Yemen. *Fauna of Arabia*, 21, 365–382.
- Miranda, M.A., Terrassa, J. & Miquel, M. (2008). *Capparimyia savastani* (Martelli, 1911): a new record of Tephritidae of economic significance for Spain. *Phytoparasitica*, 36, 247–248.
- Mohamadzade Namin, S. & Roberts, H. (2020). Faunistic study of the fruit flies (Diptera, Tephritidae) in the United Arab Emirates, with a new record and an updated checklist. *Journal of Insect Biodiversity and Systematics*, 6 (4) :343–352.
- Moussa, Z. & Yammouni, D. (2014). First record of *Capparimyia savastani* (Martelli, 1911) in Lebanon (Diptera: Tephritidae). *Zoology in the Middle East*, 61(1), 93–94.
- Pakyürek, B. (2006). *Gazi Üniversitesi Zooloji Müzesindeki Tephritidae (Diptera) familyası örneklerinin değerlendirilmesi* (master's thesis). Gazi University Institute of Science and Technology, Ankara, Turkey.

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- Papachristos, D., Milonas, P., & Papasotiriou, M. (2009). First record of *Capparimyia savastani* in Greece. *Entomologia Hellenica*, 18, 74–77.
- Vaupel, A., Klinge, K., Brändle, M., Wissemann, V., Tschamtker, T., & Brandl, R. (2007). Genetic differentiation between populations of the European rose hip fly *Rhagoletis alternata*. *Biological Journal of the Linnean Society*, 90: 619–625.
- Yaran, M. & Görmez, V. (2020). A new species of *Tephritis* Latreille, 1804 (Diptera: Tephritidae) from Turkey. *Zootaxa*, 4838(2), 283-288.
- Yaran, M. & Kütük, M. (2012). The fruit flies (Diptera: Tephritidae) fauna of Gaziantep province, Turkey. *Munis Entomology and Zoology*, 7 (2), 957-969.
- Yaran, M. & Kütük, M. (2014). A new species of *Urophora* Robineau - Desvoidy, 1830 (Diptera: Tephritidae) from Turkey with a key to the *dzieduszyckii* group. *Turkish Journal of Entomology*, 38, 149-155.
- Yaran, M. & Kütük, M. (2015). Two new records of fruit flies (Diptera: Tephritidae) with fauna of Aksaray and Mersin provinces. *Turkish Journal of Zoology*, 39, 1056-1070.
- Yaran, M. & Kütük, M. (2016). Fruit flies (Diptera: Tephritidae) fauna in Nevşehir and Niğde provinces with a new record from Turkey. *Turkish Journal of Zoology*, 40(5), 785-800.
- Yaran, M., Görmez, V., & Koyuncu, M. Ö. (2021). A New Record of Fruit Fly (Diptera: Tephritidae) From Turkey and Contributions to Fauna of Gaziantep Province. *Turkish Journal of Agriculture - Food Science and Technology*, 9(12): 2233-2237.
- Yaran, M., Kütük, M., Görmez, V., & Koyuncu, M. Ö. (2018a). A new species and additional record of *Terellia* Robineau - Desvoidy (Diptera: Tephritidae) from Turkey with a key for the *Cerajocera* group. *Turkish Journal of Zoology*, 42, 661-665.
- Yaran, M., Kütük, M., Görmez, V., & Koyuncu, M. Ö. (2018b). Some additional notes on fruit fly (Diptera: Tephritidae) fauna and a new genera and species record from Turkey. *Biological Diversity and Conservation*, 11(3), 141-144.
- Yıldırım, E. M., Civelek, H. S., Çıkman, E., Dursun, O., & Eskin, A. (2010). Contributions to the Turkish Braconidae (Hymenoptera) fauna with seven new records. *Turkish Journal of Entomology*, 34(1), 29-35.