

New host records for *Zeuxia cinerea* Meigen, 1826 (Diptera: Tachinidae) from Turkey

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ABSTRACT: The paper presents new host records for *Zeuxia cinerea* Meigen, 1826 (Diptera: Tachinidae) from Turkey. New parasitoid host couples are *Temnorhinus hololeucus* (Pallas, 1781) and *Maximus strabus* (Gyllenhal, 1834) (Coleoptera: Curculionidae) for *Z. cinerea*. Some additional information about the reared species and hosts are also presented.

Key Words: *Zeuxia cinerea*, new host records, Turkey.

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INTRODUCTION

All of the known species of Tachinidae (Diptera) are parasitoids of insects or other arthropods (Stireman et al., 2006). Knowledge on their biology, including host insect species is not revealed yet, so every host-couple record is crucial.

The host-parasitoid couples of Turkish tachinids is not well known. New host-parasitoid couples are done every year. Both faunistic and host parasitoid studies related to tachinids need to be done in Turkey. Host catalogue of Turkish Tachinidae by Kara and Tschorsnig (2003) and Checklist of Turkish Tachinidae is published by (Kara et al., 2020).

The species of the *Zeuxia* only were reared from mostly Curculionidae and Cerambycidae and most rarely Cleridae (Coleoptera). *Zeuxia cinerea* has a narrow host range. Curculionidae (Coleoptera) is the usual host family of this tachinid (Tschorsnig, 2017). Previously, *Zeuxia cinerea* were reared from *Larinus sibiricus* Gyllenhal, 1835 (= *Larinus aeruginosus* Hochhuth, 1851), *Larinus iaceae* (Fabricius, 1775), *Larinus* sp., *Rhinocyllus conicus* (Frölich, 1792) (Col.: Curculionidae) in Turkey (Richter et al., 2002).

MATERIAL AND METHODS

Larvae of *Temnorhinus hololeucus* (Pallas, 1781) (six individuals) and *Maximus strabus* (Gyllenhal, 1834) (four individuals) were collected in Iğdır province in 2019. They were brought to the laboratory with their food-plants for rearing and transferred to separate containers (Figs 1A-B) and checked daily. *Zeuxia cinerea* was reared from these hosts. The key of Tschorsnig & Herting (1994) was used for tachinid identification. Nomenclature and arrangement of tachinids follows Herting & Dely-Draskovits (1993). The specimens were deposited at the Plant Protection Museum in Gaziosmanpaşa University, Agricultural Faculty, Plant Protection Department, Tokat, Turkey.



Figure 1. Rearing of parasitoids from *Temnorhinus hololeucus* (Pallas) and *Maximus strabus* Gyllenhal larvae. A-B, culture containers (A- *T. hololeucus*; B- *M. strabus*); C, larva capsule of *T. hololeucus* on root of *Atriplex*; D, adult of *T. hololeucus*

RESULTS AND DISCUSSION

The distribution, hosts and some additional information related to tachinid and coleopteran hosts are as follows.

Temnorhinus hololeucus (Pallas, 1781) (Col.: Curculionidae) (Figs 1A-C-D)

Distribution: Lithuania, Russia, Azerbaijan, Armenia, China (Gansu, Xinjiang), Iran, Israel, Jordan, Kazakhstan, Mongolia, Pakistan, Turkmenistan, Turkey, Uzbekistan (Alonso-Zarazaga et al., 2017; Meregalli, 2017).

Host plants: *Atriplex* sp. *Atriplex tatarica* L., *Salsola sclerantha* C. A. Meyer, *S. carinata* C. A. Meyer, *Salsola leptoclada* (Ter-Minassian 1988; Fremuth 1987; Gültekin 2012). This species larvae make trehala-like capsules on root of host plant *Atriplex* to complete life cycle (Gültekin, 2012).

Material collected: Turkey: Iğdır Prov., 4-5 km E of Ramazankent, 39°57'5.85" N, 44°27'24.80" E, 821 m, 02.07.2019, N. Gültekin and C. Gözüaçık leg., 6 larvae in capsules with root crown of *Atriplex* sp. (Fig 1C)

Maximus strabus (Gyllenhal, 1834) (Col.: Curculionidae) (Fig 1B)

Distribution: Russia, Moldavia, Romania, Ukraine, Azerbaijan, Afghanistan, Armenia, Iran, Kazakhstan, Mongolia, Syria, Tajikistan, Turkmenistan, Turkey, Uzbekistan, China (Xinjiang) (Alonso-Zarazaga et al. 2017), Australia, introduced (Meregalli, 2017).

Host plants: A Chenopodiaceae species.

Material collected: Turkey: Iğdır Prov., 6 km E of Tuzluca along Turabi road, 40°03'24.39" N, 43°44'34.82" E, 1017 m, 10.07.2019, N. Gültekin and C. Gözüaçık leg., 4 larvae in soil.

Zeuxia cinerea Meigen, 1826 (Diptera: Tachinidae)

Distribution: Palearctic: Europe (E. Europe (Czech Republic, Hungary, Moldova, Poland, Romania, Slovakia, Ukraine), S. Europe (Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Greece, Italy, Macedonia, Portugal, Serbia, Spain), W. Europe (Austria, France, Germany, Switzerland)), Kazakhstan, Middle East (Iran, Israel, "Palestine"), North Africa (Algeria), Russia (Western Russia), Transcaucasia (Armenia) (O'Hara et al., 2019). Turkey: Tokat (Kara, 1999, Lekin, Kara, & Atay, 2016), Erzurum (Richter et al., 2002), Karabük, Kastamonu, Zonguldak (Korkmaz, 2007), Eskişehir (Kara & Aksu, 2007), Muğla (Lutovinovas et al., 2018).

Hosts: *Conorhynchus mendicus* (Gyllenhal, 1834); *Larinus obtusus* Gyllenhal, 1835, *L. planus* (Fabricius, 1792), *Lixus juncii* Boheman, 1835 (Coleoptera: Curculionidae) (Tschorsnig, 2017), In Turkey: *Larinus sibiricus* Gyllenhal, 1835 (= *Larinus aeruginosus* Hochhuth, 1851), *Larinus iaceae* (Fabricius, 1775), *Larinus* sp., *Rhinocyllus conicus* (Frölich, 1792) (Coleoptera: Curculionidae) (Richter et al., 2002).

Temnorhinus hololeucus and *Maximus strabus* are new host species for this tachinid.

Biology: *Z. cinerea* is seen from the end of May to mid-September on flowering plants and probably has 2 generations per year (Tschorsnig and Herting, 1994).

Reared specimens (date of adult emergence): 10.07.2019, 1♂, reared from larva of *Temnorhinus hololeucus*, 19.07.2019, 1♀, reared from larva of *Maximus strabus*.

CONCLUSION

As a result, new host records for *Zeuxia cinerea* (Tachinidae: Diptera) were obtained from Turkey. These were *Temnorhinus hololeucus* and *Maximus strabus* (Coleoptera: Curculionidae).

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