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New Cynipoidea Records (Hymenoptera) from Türkiye

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ABSTRACT

Cynipoidea is a well-known and widely distributed superfamily of Hymenoptera. Members of Figitidae are parasitoids, and members of Cynipidae are phytophagous. Specimens belonging to this superfamily, collected from the Samsun province of Türkiye, have been studied. Two new Cynipoidea records are established from this country: *Alloxysta castanea* (Hartig, 1841) and *Xestophanes potentillae* (Retzius, 1783). New locality information is also given for the species *Alloxysta victrix* (Westwood, 1833), *Synergus pallipes* Hartig, 1840, *Synergus physocerus* Hartig, 1843, and *Diplolepis spinosissimae* (Giraud, 1859).

Keywords: Cynipidae, Figitidae, fauna, parasitic wasps, Samsun province.

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INTRODUCTION

Cynipoidea are a moderate-sized hymenopteran superfamily that presently includes seven extant families (Austrocynipidae, Ibaliidae, Lioperidae, Cynipidae, Figitidae, Diplolepididae, Paraulacidae) and three extinct families (Protimaspidae, Stolamissidae, Gerocynipidae). Though majority of included species are parasitoids or hyperparasitoids, the most known members of the group are phytophagous, especially as gall-inducers (Ronquist, 1995; Liu, Engel & Grimaldi, 2007; Ronquist et al, 2015; Hearn et al, 2024).

Figitidae species are widely distributed around the world (Buffington, Nylander & Heraty, 2007; Paretas-Martínez, Restrepo-Ortiz, Buffington & Pujade-Villar, 2011; Forshage, Nordlander & Buffington, 2013). 12 subfamilies are recognized within Figitidae: Anacharitinae, Aspicerinae, Charipinae, Emargininae, Euceroptrinae, Eucoilinae, Figitinae, Mikeiinae, Parnipinae, Plectocynipinae, Pycnostigminae, Thrasorinae (Paretas-Martínez et al., 2011). The species are of interest for biological control because they parasitize Agromyzidae, Chloropidae, Anthomyiidae, and Drosophilidae families of insect pests. Charipinae are characterized as being hyperparasitoids of aphids, mainly via Aphidiinae (Hymenoptera: Ichneumonoidea: Braconidae) (Menke & Evenhuis, 1991).

Hearn et al. (2024) reorganized the tribes of the Cynipidae family and considered two tribes as independent families: Diplolepididae and Paraulacidae. Diplolepididae are exclusively gall inducers on *Rosa* spp. (Rosaceae). Paraulacidae are inquilines or parasitoids in chalcidoid galls (Pteromalidae) on *Nothofagus* spp. (Nothofagaceae). Cynipidae galls have been found on herbaceous plants, mostly in Fagaceae (*Neltuma* spp. (formerly in *Prosopis*) and *Vachellia* spp. (formerly in *Acacia*)) but also on Sapindaceae (*Acer* spp.), Rosaceae (*Rubus* spp. and *Potentilla* spp.) and Smilacaceae (*Smilax* spp.). This family includes gall-inducers and inquilines. The inquilines have lost the ability to induce their own galls ‘de novo’; nevertheless, they are able to induce the development of larval chambers lined with nutritive tissue inside cynipid galls. In the Western Palaearctic four inquiline genera are present in Cynipidae galls: *Periclistus* (Diastrophini tribe) on *Diplolepis* galls (Diplolepidae) and *Synergus*, *Saphonecrus* (Synergini tribe) and *Ceroptres* (Ceroptresini tribe) in cynipid oak galls.

Although the Cynipidae family, with 167 species, is well represented in Türkiye (Azmaz & Katılmış, 2017, 2020a, 2020b, 2021a, 2021b; Azmaz, 2021; Demirel et al, 2022, 2023; Tataroğlu & Katılmış, 2022, 2024a, 2024b; Tataroğlu, 2024), information about the Figitidae family is quite limited (Tataroğlu & Katılmış, 2023).

Here two new Cynipoidea records are established from Black Sea Region (Samsun province) of Türkiye: *Alloxysta castanea* (Hartig, 1841) and *Xestophanes potentillae* (Retzius, 1783). We also mention four previously known species from this country: *Alloxysta victrix* (Westwood, 1833), *Synergus pallipes* Hartig, 1840, *Synergus physocerus* Hartig, 1843, *Diplolepis spinosissimae* (Giraud, 1859).

MATERIAL AND METHODS

The specimens examined in this study were collected using Malaise traps from Yeşilırmak lowlands in the Samsun province (Central Black Sea region) during 2022 and 2023. Two specimens collected from Eskişehir province are also included. The collected specimens were kept in 75% ethanol and then they were properly pinned and labeled for the subsequent examination.

Specimens were studied using a stereo microscope (OPTIKA ZSM-2) at the University of Valencia and Olympus SZ30 at the University of Barcelona. Charipinae specimens were identified following the Charipinae worldwide key (Ferrer-Suay et al., 2019), Cynipidae specimens following Melika (2006). They are mainly deposited in the University of Barcelona (UB) and some specimens also in Tokat Gaziosmanpaşa University, Entomological Research Laboratory (Tokat, Türkiye).

RESULTS AND DISCUSSION

Family Cynipidae Latreille, 1802

Subfamily Cynipinae Latreille, 1802

Tribe Diastrophini Nieves-Aldrey, Nylander & Ronquist, 2015

According to Ronquist et al. (2015), this tribe includes the genera *Diastrophus* Hartig, 1840, *Xestophanes* Förster, 1869, *Synophromorpha* Ashmead, 1903, and *Periclistus* Förster, 1869. In Türkiye *Periclistus brandtii* (Ratzeburg, 1831) is reported (Azmaz & Katılmış, 2017).

Genus *Xestophanes* Förster, 1869

Xestophanes potentillae (Retzius, 1783)

Material examined: Samsun, Çarşamba, Hacıbeyli village, 41°12'42"N 36°44'08"E, 28.05 - 19.06.2023, Malaise trap: 2♀.

Distribution: Western Palaearctic (Melika, 2006).

Remark: New record from Türkiye.

Biology: The galls occur in several *Potentilla* species (Rosaceae) on the root collar or close to the ground surface.

Tribe Synergini Ashmead, 1896

According to Ronquist et al. (2015), this tribe includes the genera *Saphonecrus* Dalla Torre & Kieffer, 1910, *Synergus* Hartig, 1840 and *Synophrus* Hartig, 1843 in the Western Palaeactic region. In Türkiye, 21 *Synergus* species have been reported (Azmaz & Katılmış, 2017; Fatih & Gençer, 2022; Tataroğlu & Katılmış, 2024b).

Genus *Synergus* Hartig, 1840

Synergus pallipes Hartig, 1840

Material examined: Eskişehir, 2021 by Hand picking: 2 ♀.

Distribution: Western Palaearctic (Melika, 2006).

Distribution in Türkiye: Afyonkarahisar, Artvin, Bayburt, Giresun, Gümüşhane, İstanbul, Kütahya, Ordu, Rize and Sivas (Azmaz & Katılmış, 2017; Fatih & Gençer, 2022; Tataroğlu & Katılmış, 2024b).

Remark: It was mentioned without locality information by Askew et al. (2013) and here is the first record from Eskişehir province.

Biology: In Türkiye, this inquiline emerged from several oak gall wasps: *Andricus assarehi, A. caputmedusae, A. curvator*, *A. conglomeratus*, *A. glutinosus*, *A. lignicolus, A. quercusramuli, A. quercustozae*, *A. solitarius*, *Aphelonyx persica*, *Cynips agama, C. cornifex, C. fatihi, C. quercusfolii*, *Neuroterus anthracinus*, *N. quercusbaccarum* and *Trigonaspis synaspis* (Azmaz & Katılmış, 2017; Tataroğlu & Katılmış, 2024b).

Synergus physocerus Hartig, 1843

Material examined: Samsun, Çarşamba, Hacıbeyli village, 41°12’42”N 36°44’08”E, 03.09 - 16.09.2022, Malaise trap: 1♂.

Distribution: Western Palaearctic (Melika, 2006).

Distribution in Türkiye: İstanbul and Malatya (Azmaz & Katılmış, 2017).

Remark: Here is the first record from Samsun province and the Black Sea region.

Biology: This species emerged from the oak gall wasps *Trigonaspis synaspis,* according to Azmaz & Katılmış (2017).

Family Figitidae Thomson, 1862

Subfamily Charipinae Dalla Torre & Kieffer, 1910

Only five species have been previously reported from Türkiye: *Alloxysta consobrina* (Zetterstedt, 1838) by Ferrer-Suay et al. (2018a), *Alloxysta pusilla* (Kieffer, 1902) by Ferrer-Suay et al. (2018a), *Alloxysta victrix* (Westwood, 1833) by Ferrer-Suay et al. (2018b), *Alloxysta turcica* Tataroğlu & Katılmış, 2023 by Tataroğlu & Katılmış (2023), and *Phaenoglyphis villosa* (Hartig, 1841) by Ferrer-Suay et al. (2018a). *Alloxysta turcica* has been recently synonymized with *Alloxysta minuscula* Andrews, 1978 by Ferrer-Suay et al. (2024).

Genus *Alloxysta* Förster, 1869

Alloxysta castanea (Hartig, 1841)

Material examined: Samsun, Çarşamba, Hacıbeyli village, 41°12’42”N 36°44’08”E, 30.04 - 28.05.2023, Malaise trap: 1♀

Distribution: Palaearctic, Oriental, Neotropical, and Nearctic regions (Ferrer-Suay et al. 2023).

Remark: New record from Türkiye.

Alloxysta victrix (Westwood, 1833)

Material examined: Samsun, Çarşamba, Hacıbeyli village, 41°12'42»N 36°44'08»E, 30.04 - 28.05.2023, Malaise trap: 1♀; 28.05 - 19.06.2022, Malaise trap: 2♀.

Distribution: Palearctic, Neotropical, Oriental, Australiana, Afrotropical, and Nearctic regions (Ferrer-Suay et al. 2023).

Distribution in Türkiye: Uşak (Ferrer-Suay et al. 2018b).

Remark: Here is the first record from Samsun province and the Black Sea region.

Family Diplolepididae Latreille, 1802

According to Ronquist et al. (2015), the tribe Diplolepidini include two genera, *Diplolepis* Geoffroy, 1762 and *Liebelia* Kieffer, 1903; recently, this tribe has been removed from the family Cynipidae and considered an independent family (Hearn et al., 2024). According to Azmaz & Katılmış (2017), all Western Palaearctic species are reported in Türkiye.

Genus *Diplolepis* Geoffroy, 1762

Diplolepis spinosissimae (Giraud, 1859)

Material examined: Samsun, Terme, Geçmiş village, 41°15'57»N 36°50'39»E, 08.04 - 30.04.2023, Malaise trap: 1♀

Distribution: Western Palaearctic and Far East of Russia (Melika, 2006).

Distribution in Türkiye: Adana, Afyonkarahisar, Ankara, Artvin, Bayburt, Burdur, Denizli, Erzincan, Eskişehir, Gümüşhane, Hatay, İstanbul, Kahramanmaraş, Kütahya, Mersin, Niğde, Ordu, Osmaniye, Trabzon and Uşak (Azmaz & Katılmış, 2017; Demirel et al. 2023; Tataroğlu & Katılmış, 2024b).

Remark: Here is the first record from Samsun province.

CONCLUSION

In this study, genus *Xestophanes* and its representative species *X. potentillae* from the Cynipidae and *Alloxysta castanea* from the Figitidae were detected for the first time from Türkiye. Additionally, new locality information was provided for four previously known species from Türkiye. With these new records, the number of Cynipidae species in Türkiye has reached 168 and the number of Figitidae species has reached 6.

It is important to continue collecting material in different parts of the world to enhance our understanding of the distribution limits of the different species. Although this superfamily has been very studied, there is still new information to be recorded.

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