

## Contributions to the Gallwasp (Hymenoptera: Cynipidae) Fauna of Turkey with One New Record

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### Abstract

This study was carried out to contribute the oak gallwasp fauna (Hymenoptera: Cynipidae) of Turkey. Oak gallwasp specimens collected in the summer of 2010 from Gümüşhane, Turkey were examined for revealing the gallwasp species diversity. Among the collected species 16 are reported previously however with this study new distribution ranges are provided. Furthermore, *Cynips korsakovi* is reported for the first time here as new species for the Turkish fauna.

**Key words:** Anatolia, *Cynips korsakovi*, first report, galls

### INTRODUCTION

Oak galls are induced by a number of different groups of insects as the abnormal growths composed of plant tissues for providing protection and food to the gall inducing insect [1,2]. Oak gall wasps (Hymenoptera: Cynipidae: Cynipini) is the second largest radiated gall forming insect group mainly preferring a range of oak species as host [3]. Gallwasps show distribution predominantly in the temperate zone of the northern hemisphere with around 1000 species described in 25 genera. The greater species diversity is found in the Nearctic region with an estimated number 700 species [4]. The number of reported gallwasp species for the western Palearctic region is 139 species in 10 genera and 34 species for the eastern Palearctic [5,6].

Studies conducted on gallwasps in Turkey recorded 21 species in 5 genera [7], Acatay [8] recorded 24 species in 5 genera; Alkan [9] reported 32 species in 6 genera. The presence of new species was reported by Melika and Stone [10] and Melika et al. [11]. A checklist of Cynipidae of Turkey with a new genus record was published by Katılmış and Kıyak [12] stating the presence of 81 gall inducing cynipid species in 16 genera. Two new species to the Turkish cynipid fauna were further added by Katılmış and Kıyak [13], Kıyak and Katılmış [14]. A recent work around the Van Lake area of the cynipid galls on oaks by Kemal and Koçak [15] reported the presence of 87 species in Turkey with additional 2 new gallwasp species for the Turkish gallwasp fauna.

Palearctic region is represented by 25 species of *Cynips* genus [4]. Kıyak et al. [16] reported the presence of *Cynips agama* (Hartig, 1840), *C. quercus* (Fourcroy, 1785) and *C. quercusfolii* (Linnaeus, 1758) in Burdur, Denizli, Aydın and Isparta. Katılmış and Kıyak [12] provided 5 *Cynips* species in the checklist of Cynipidae of Turkey including *C. cornifex* (Hartig, 1843), *C. divisa* (Hartig, 1840).

This paper gives new distribution localities of some of the oak gallwasp species in Turkey. Moreover, it reports a new species of oak associated gallwasps, *Cynips korsakovi* (Belizin, 1961) from Kelkit Valley, Gümüşhane for the first time for the oak gallwasp fauna of Turkey.

### MATERIAL AND METHODS

Several collecting trips were conducted in the summer of 2010 to Gümüşhane, Turkey. All galls were collected from the field and the coordinates and altitudes were recorded using a Garmin model Geographic Positioning System (GPS). After collecting galls they were put in a plastic bag and brought into the laboratory. Adult gallwasps were reared from the galls and preserved in 75% ethanol. All specimens are deposited in the Abant İzzet Baysal University, Faculty of Science and Arts, Department of Biology, Molecular Zoology Laboratory, Turkey.

## RESULTS AND DISCUSSION

In this study, a total of 17 species in 4 genera (listed below) from the family Cynipini were recorded from Gümüşhane, Turkey. A *Cynips* species, *Cynips korsakovi* (Belizin, 1961) is a new record for the Turkish cynipid fauna. The following cynipid species given alphabetically were recorded in Gümüşhane.

Material examined: Gümüşhane, Kelkit, N 40° 04.942' E 39° 29.263', 1510 m, 25 August 2010.

Host: *Quercus macranthera* Fisch. & C. A. Mey. ex Hohen., *Q. infectoria* Olivier.

*Andricus askewi* (Melika & Stone, 2001), 5 ♀, *Andricus caputmedusae* (Hartig, 1843), 7♀, *Andricus chodjii* (Melika, 2008), 3 ♀, *Andricus coriarius* (Hartig, 1843) ♀, *Andricus curtisii* (Müller, 1870) ♀, *Andricus dentimitratus* (Rejto, 1887) ♀, *Andricus kollari* (Hartig, 1843) 4♀, *Andricus lucidus* (Hartig, 1843) 3♀, *Andricus mayri* (Wachtl, 1881) 5♀, *Andricus quercuscalicis* (Burgsdorf, 1783) 3♀, *Andricus quercustozae* (Bosc, 1792) 5♀, *Andricus theophrasteus* (Trotter, 1866) 6♀, *Biorhiza pallida* (Olivier, 1781), 4 old galls, *Cynips korsakovi* (Belizin, 1961) 3♀, *Cynips quercus* (Fourcroy, 1785) ♀, *Cynips quercusfolii* (Linnaeus, 1758) 4♀, *Neuroterus quercusbaccarum* (Linnaeus, 1758) 5♀.

### *Cynips korsakovi* Belizin, 1961

Material examined: Gümüşhane, Kelkit, N 40° 04.942' E 39° 29.263', 1510 m, 25 August 2010, 3 ♀

Host: *Quercus macranthera* Fisch. & C. A. Mey. ex Hohen.

*Cynips korsakovi* is a new record for Turkey. Its galls are whitish and fluffy, wooly and induced underside of the host leaves (Figure 1). The gall is formed on midvein of underside of *Quercus macranthera* leaves. It is multilocular with up to 25-30 separate individual cells are present in each *Cynips korsakovi* gall (Figure 2).

Due partly to its geologic history and topography, varied climates, the presence of diverse phytogeographical regions and its location between Europe and Asia, Turkey is thought to have high species diversity [17,18] and therefore it is accepted as one of the most important areas in the Mediterranean. Recent studies have showed that Turkey is not only rich in species diversity but also in genetic diversity present in some gallwasp species [19,20,21,22,23]. However, gallwasps are poorly studied in Turkey and the exact number of the gallwasp species currently present in Turkey is not known yet. Latest studies on this group of insects with the ability to induce galls in a variety of plant species including oaks are becoming more popular and deserve more attention. Considering the literature the new species are added contiguously it seems the fauna of Cynipidae of Turkey has not yet been completed and requires further and detailed studies. We therefore consider that this study represents preliminary results of the area for the Cynipid fauna and further studies are necessary. More Cynipid species are expected to be discovered in Turkey after more collecting and investigative trips.

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Figure 1. *Cynips korsakovi* galls underside of the leaves of the host, *Quercus macranthera*

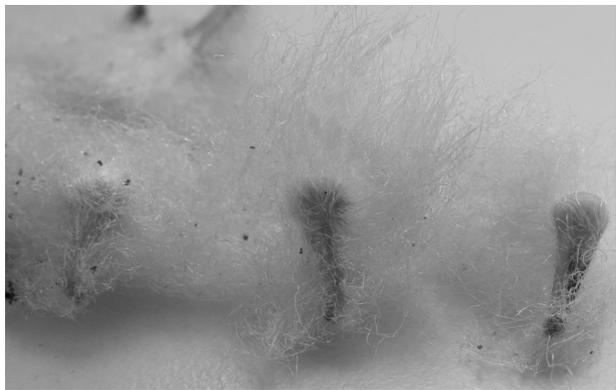


Figure 2. Larval chambers of *Cynips korsakovi* gall from Gümüşhane.

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