

GALL FORMING CYNIPINI (HYMENOPTERA: CYNIPIDAE) SPECIES IN ISPARTA OAK FORESTS

Selva Bayrak* and Mustafa Avcı*

* Isparta University of Applied Sciences, Faculty of Forestry, Department of Forest Engineering, 32260 Çünür, Isparta, TURKEY. E-mail: mustafaavci@sdu.edu.tr

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ABSTRACT: This study was performed from 2017 to 2018 in Isparta province to determinate gall forming Cynipini species on oak. Gall samples were collected from different parts (trunk, young shoots, leaves, acorns and flowers) of several oak species (*Quercus cerris*, *Q. ithaburensis*, *Q. vulcanica*, *Q. robur*, *Q. petraea*, *Q. trojana*, *Q. infectoria* and *Q. coccifera*). We identified a total of 51 gall wasp species, 27 species were new records for Isparta province and two species (*Andricus miriami* and *Cynips israeli*) were new records for Turkish fauna. Number of gall wasp species was largest on *Q. infectoria* (24 species) and lowest on *Q. coccifera* (1 species).

KEY WORDS: Cynipini, oak gall wasp, fauna, oak, Isparta, Turkey

Cynipidae is the largest family of Cynipoidea (Hymenoptera). With roughly 1,400 species, they are the second most species rich group of gall inducers after the gall midges (Cecidomyiidae) (Csóka et al., 2005; Ronquist et al., 2015). The most species-rich tribe within the family is the Cynipini (oak gall wasps), with more than 1000 described species in approximately 40 genera worldwide. The Cynipini are restricted to plants of the family Fagaceae, predominantly oaks (*Quercus* spp.), on which they induce galls of diverse structures in leaves, buds, stems, flowers, fruits and roots (Stone et al., 2002; Melika, 2006).

Azmaç & Katılmış (2017a) listed 148 gall wasp species belonging to 9 tribe and 25 genera for Turkey. 110 of these species belong to Cynipini tribe. *Andricus*, with its 77 species, is the most species-rich genus of the tribe. Studies on Cynipidae fauna of Turkey have accelerated during the last decade (Kiyak et al., 2008; Katılmış & Kiyak, 2008, 2009a,b, 2011; Katılmış, 2010; Mutun & Dinç, 2011; Mete & Demirsoy, 2012; Azmaç et al., 2012, Katılmış & Azmaç, 2015; Eş et al., 2017 and Azmaç & Katılmış, 2017a).

The study area which located in Lakes Region of Turkey is floristically an interesting region of the country. It is included both in the Mediterranean and Irano-Turanian phytogeographical regions. In a previously focusing on gall wasp species in the region, 30 species were determined in forests of Isparta (Azmaç & Katılmış, 2017a).

MATERIAL AND METHODS

Field trips were conducted on April and November of 2017 and 2018, and cynipid gall specimens which develop on host plants (*Quercus* spp.) were collected. The coordinates (WGS84) and altitudes were recorded using a Garmin GPS device. We also recorded locality names and sampling time, together with identification information for the host species. Gall specimens were placed into glass jars and they were kept under laboratory conditions to provide the emergence of adult gall wasps. The emerging adult gall wasps were preserved in 70% ethanol. For the identification of specimens, both gall and adult gall wasp morphologies were used. All studied wasps and gall materials were deposited at

the Isparta University of Applied Sciences, Faculty of Forestry, Department of Forest Engineering, Entomology Museum, Isparta, Turkey.

RESULTS

The list of oak gall wasps of Isparta;

Andricus amenti Giraud, 1859

Material examined: Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m.

Distribution in Turkey: Artvin, İstanbul, Van, Malatya (Acatay, 1943; Baş, 1973; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017b).

Host: *Quercus vulcanica*.

Andricus aries (Giraud, 1859)

Material examined: Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m.

Distribution in Turkey: Antalya, Bitlis, Çanakkale, Isparta, Malatya, Van (Baş, 1973; Kılıç, 2003; Kiyak et. al., 2008; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017b).

Host: *Quercus vulcanica*.

Andricus burgundus Giraud, 1859

Material examined: Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m.

Distribution in Turkey: Afyon, Kütahya, Uşak (Katılmış, 2010).

Host: *Quercus cerris*.

Andricus caputmedusae (Hartig, 1843)

Material examined: Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Aşağıgökdere village, Cumali district, 03.02.2017, 37°33'07"N, 30°45'44"E, 345 m; Yalvaç, Sücüllü village, 18.03.2017; 21.10.2017, 38°21'43"N, 31°08'44"E, 1161 m; Sütçüler, Yeşilyurt village, 17.03.2017, 37°32'08"N, 30°51'52"E, 666 m; Sütçüler, Çandır village, 17.03.2017, 37°27'18"N, 30°54'26"E, 298 m; Güneyce village, 21.08.2017, 27°39'43"N, 30°43'23"E, 699 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m; Uluborlu, 10.09.2017, 38°04'19"N, 30°25'19"N, 1083 m; Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Eğirdir, Kasnak Oak Nature Protection Area, 27.09.2017, 37°42'27"N, 30°50'55"E, 1048 m; Eğirdir, Ağılköy, 24.02.2017, 37°48'26"N, 30°55'15"E, 1130 m; Eğirdir, Kovada Lake Nature Park, 30.04.2017, 37°38'16"N, 30°51'51"E, 932 m; Şarkikaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m.

Distribution in Turkey: Afyon, Amasya, Ankara, Antalya, Balıkesir, Bolu, Burdur, Bursa, Denizli, Düzce, Erzincan, Gümüşhane, Isparta, İstanbul, İzmir, Kırklareli, Kütahya, Kocaeli, Konya, Malatya, Muğla, Sakarya, Sinop, Tokat, Uşak, Van (Acatay, 1943; Schimitschek, 1953; Çanakçıoğlu, 1956; Baş, 1973; Bayram et. al., 1999; Özkazanç, 2000; Kiyak et. al., 2008; Katılmış & Kiyak, 2008, 2011; Mutun & Dinç, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus cerris*, *Q. petraea*, *Q. infectoria*, *Q. pubescens* and *Q. vulcanica*.

Andricus ceconii Kieffer, 1901

Material examined: Eğirdir, Kıvrıntı village, 30.04.2017, 37°39'03"N, 30°51'36"E, 991 m; Gelendost, Afşar village, 09.09.2017, 38°06'34"N, 30°57'50"E, 985 m; Gelendost, Bağlılı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Gelendost, Madenli village, 18.03.2017, 38°11'12"N, 31°05'59"E, 1005 m; Senirkent, Gençali village, 21.10.2017, 38°14'24"N, 30°45'51"E, 947 m; Keçiözümlü, Aydoğmuş village, 23.05.2017, 37°56'33"N, 30°16'18"E, 1043 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m.

Distribution in Turkey: Afyon, Antalya, Burdur, Denizli, Isparta, İstanbul, Kütahya, Uşak (Azmaz & Katılmış, 2017a,b).

Host: *Quercus cerris*, *Q. ithaburensis*.

***Andricus coriarius* (Hartig, 1843)**

Material examined: Eğirdir, Kırıntı village, 30.04.2017, 37°39'03"N, 30°51'36"E, 991 m; Gelendost, Afşar village, 09.09.2017, 38°06'34"N, 30°57'50"E, 985 m; Gelendost, Bağlıllı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Gelendost, Madenli village, 18.03.2017, 38°11'12"N, 31°05'59"E, 1005 m; Senirkent, Gençali village, 21.10.2017, 38°14'24"N, 30°45'51"E, 947 m; Keçiörlü, Aydoğmuş village, 23.05.2017, 37°56'33"N, 30°16'18"E, 1043 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Uluborlu, 10.09.2017, 38°04'19"N, 30°25'19"E, 1083 m; Sütçüler, Yeşilyurt village, 03.02.2017, 37°32'05"N, 30°51'41"E, 647 m; Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m; Eğirdir, Kovada Lake Nature Park, 30.04.2017, 37°38'16"N, 30°51'51"E, 932 m; Sütçüler, Yeşilyurt village, Gökbüvet location, 17.03.2017, 14.04.2017, 37°33'42"N, 30°52'30"E, 734 m; Sütçüler, Yeşilyurt village, 17.03.2017, 37°32'08"N, 30°51'52"E, 666 m; Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Şarkıkaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m; Gelendost, Bağlıllı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m.

Distribution in Turkey: Afyon, Ankara, Antalya, Balıkesir, Bitlis, Burdur, Bursa, Denizli, Erzincan, Gümüşhane, Isparta, İstanbul, Kırklareli, Kütahya, Malatya, Tokat, Uşak (Acatay, 1943; Baş, 1973; Katılmış & Kiyak, 2008; Hellriegl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria*, *Q. pubescens* and *Q. vulcanica*.

***Andricus coronatus* (Giraud, 1859)**

Material examined: Sütçüler, Yeşilyurt village, 03.02.2017, 37°30'49"N, 30°52'50"E, 650 m; Yalvaç, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m; Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m.

Distribution in Turkey: Afyon, Amasya, Antalya, Denizli, Isparta, İstanbul, Kütahya, Malatya, Muğla, Uşak (Baş, 1973; Katılmış & Kiyak, 2008; Hellriegl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria* and *Q. pubescens*.

***Andricus curtisii* (Müller, 1870)**

Material examined: Şarkıkaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m; Uluborlu, 10.09.2017, 38°04'19"N, 30°25'19"E, 1083 m; Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Keçiörlü, Aydoğmuş village, 23.05.2017, 37°56'33"N, 30°16'18"E, 1043 m; Uluborlu, 10.09.2017, 38°04'19"N, 30°25'19"E, 1083 m.

Distribution in Turkey: Afyon, Ankara, Antalya, Aydın, Burdur, Bursa, Denizli, Erzincan, Gümüşhane, Isparta, Kütahya, Malatya, Uşak (Katılmış & Kiyak, 2008; Kiyak et. al., 2008; Mutun & Dinç, 2011; Mete & Demirsoy, 2012; Hellriegl & Bodur, 2015; Azmaz & Katılmış, 2017b).

Host: *Quercus pubescens* and *Q. infectoria*.

***Andricus curvator* Hartig, 1840**

Material examined: Eğirdir, Yuvalı village, 06.10.2017, 37°41'37"N, 30°56'48"E, 1234 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m.

Distribution in Turkey: Afyon, Ankara, Aydın, Bolu, Burdur, Bursa, Denizli, İstanbul, Kırklareli, Kütahya, Uşak (Acatay, 1943; Baş, 1973; Katılmış & Kiyak, 2008; Azmaz & Katılmış, 2017a,b).

Host: *Quercus pubescens* and *Q. infectoria*.

***Andricus cydoniae* Giraud, 1859**

Material examined: Gelendost, Afşar village, 09.09.2017, 38°06'34"N, 30°57'50"E, 985 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Gelendost, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Gelendost, Bağlıllı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Senirkent, Gençali village, 21.10.2017, 38°14'24"N, 30°45'51"E, 947 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m.

Distribution in Turkey: Afyon, Kütahya, Uşak (Katılmış & Kiyak, 2008, 2011).

Host: *Quercus ithaburensis*.

***Andricus foecundatrix* (Hartig, 1840)**

Material examined: Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m.

Distribution in Turkey: Afyon, Ankara, Balıkesir, Erzincan, İstanbul, Kocaeli, Kütahya, Malatya, Manisa (Acatay, 1943; Schimitschek, 1953, Baş, 1973; Katılmış, 2010; Katılmış & Kiyak, 2008, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria* and *Q. pubescens*.

***Andricus gallaearnaeformis* (Fonscolombe, 1832)**

Material examined: Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Gelendost, Afşar village, 09.09.2017, 38°06'34"N, 30°57'50"E, 985 m; Güneyce village, 21.08.2017, 37°39'35"N, 30°42'54"E, 714 m; Eğirdir, Aşağıgökdere village, 21.08.2017, 37°33'43"N, 30°45'17"E, 366 m.

Distribution in Turkey: Afyon, İstanbul, Kütahya, Uşak (Katılmış & Kiyak 2008, 2011; Azmaz & Katılmış, 2017a,b).

Host: *Quercus ithaburensis* and *Q. cerris*.

***Andricus grossulariae* Giraud, 1859**

Material examined: Eğirdir, Aşağıgökdere village, Gökbüvet location, 17.03.2017, 14.04.2017, 37°33'42"N, 30°52'30"E, 734 m; Gelendost, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Kovada Lake Nature Park, 30.04.2017, 37°38'16"N, 30°51'51"E, 932 m; Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m; Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m; Aksu, Yılanlı village, 06.09.2017, 37°47'37"N, 30°59'29"E, 1217 m.

Distribution in Turkey: Afyon, Antalya, Aydın, Burdur, Denizli, Erzincan, Gümüşhane, Isparta, İstanbul, Kırklareli, Kütahya, Malatya, Sinop, Uşak (Acatay, 1943; Baş, 1973; Kiyak et. al., 2008; Katılmış & Kiyak, 2008; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus vulcanica* and *Q. infectoria*.

***Andricus infectorius* (Hartig, 1843)**

Material examined: Eğirdir, Kasnak Oak Nature Protection Area, Oniki Kardeşler location, 27.09.2017, 37°44'32"N, 30°49'44"E, 1551 m; Sütçüler, 03.02.2017, 37°29'38"N, 30°53'05"E, 525 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m; Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Sütçüler, Gökbüvet location, 14.04.2017, 37°33'42"N, 30°52'30"E, 734 m; Gelendost, Afşar village, 09.09.2017, 38°08'11"N, 30°58'20"E, 933 m.

Distribution in Turkey: Afyon, Ankara, Aydın, Balıkesir, Batman, Burdur, Çanakkale, Çorum, Denizli, Diyarbakır, Isparta, İstanbul, İzmir, Kütahya, Malatya, Manisa, Marin, Muğla, Niğde, Şırnak, Uşak (Acatay, 1943; Baş, 1973; Özkazanç, 2000; Katılmış & Kiyak, 2008; Kiyak et. al., 2008; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus vulcanica*, *Q. robur* and *Q. infectoria*.

***Andricus istvani* Melika, 2008**

Material examined: Keçiözümlü, Aydoğmuş village, 23.05.2017, 37°56'33"N, 30°16'18"E, 1043 m; Gelendost, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m.

Distribution in Turkey: Afyon, Kütahya, Uşak (Azmaz & Katılmış, 2017b).

Host: *Quercus ithaburensis*.

***Andricus kollari* (Hartig, 1843)**

Material examined: Eğirdir, Aşağıgökdere, Gökbüvet location, 17.03.2017, 37°33'42"N, 30°52'30"E, 734 m; Gelendost, Bağlılı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m; Eğirdir,

Kovada Lake Nature Park, 30.04.2017, 37°38'16"N, 30°51'51"E, 932 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m.

Distribution in Turkey: Ankara, Aydın, Balıkesir, Bitlis, Burdur, Bursa, Denizli, Eskişehir, Gümüşhane, Isparta, İstanbul, Kütahya, Malatya, Uşak, Van (Acatay, 1943; Çanakçıoğlu, 1956; Baş, 1973; Özkazanç, 2000; Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011a; Mutun & Dinç, 2011; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus pubescens* and *Q. infectoria*.

***Andricus lignicolus* (Hartig, 1840)**

Material examined: Sütçüler, Kuzca village, 24.02.2017, 37°37'09"N, 31°00'53"E, 1318 m; Eğirdir, Sipahiler village, 24.02.2017, 37°39'28"N, 30°58'24"E, 1215 m; Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Isparta, Güneyce village, Küplübelen location, 24.03.2017, 37°39'34"N, 30°42'54"E, 712 m; Eğirdir, Aşağıgökdere village, Araçay location, 21.08.2017, 37°33'53"N, 30°45'10"E, 380 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Sütçüler, Ayvalıpınar village, 06.10.2017, 37°41'04"N, 31°01'44"E, 1123 m.

Distribution in Turkey: Afyon, Antalya, Balıkesir, Burdur, Çanakkale, Denizli, Düzce, Eskişehir, Isparta, İstanbul, Kahramanmaraş, Kayseri, Kırıkkale, Konya, Kütahya, Malatya, Manisa, Uşak, Van (Acatay, 1943; Schimitschek, 1953; Katılmış & Kıyak, 2008, 2011; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017b).

Host: *Quercus cerris* and *Q. ithaburensis*.

***Andricus lucidus* (Hartig, 1843)**

Material examined: Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Sütçüler, Karadiken village, 30.04.2017, 37°33'10"N, 30°54'17"E, 1018 m; Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m; Gelendost, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Uluborlu, 10.09.2017, 38°04'19"N, 30°25'19"E, 1083 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m; Eğirdir, Yukarıgökdere village; 27.09.2017, 37°42'19"N, 30°51'01"E, 1003 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m; Yalvaç, Çamharman village; 21.10.2017, 38°25'44"N, 31°06'43"E, 1292 m.

Distribution in Turkey: Adıyaman, Afyon, Antalya, Bingöl, Bitlis, Burdur, Denizli, Elazığ, Erzincan, Gümüşhane, Isparta, İstanbul, Kayseri, Kahramanmaraş, Kütahya, Malatya, Muş, Uşak, Van (Katılmış & Kıyak, 2008, 2011; Katılmış, 2010; Mutun, 2011; Mutun & Dinç, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015).

Host: *Quercus cerris*, *Q. ithaburensis*, *Q. infectoria* and *Q. vulcanica*.

***Andricus megalucidus* Melika, Stone, Sadeghi ve Pujade-Villar, 2004**

Material examined: Eğirdir, Aşağıgökdere village, Cumali district, 03.02.2017, 37°33'07"N, 30°45'44"E, 345 m; Gelendost, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Şarkıkaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m; Aksu, Yılanlı village, 06.10.2017, 37°47'40"N, 30°59'29"E, 1227 m.

Distribution in Turkey: Afyon, Bitlis, Burdur, Denizli, Erzincan, Isparta, İstanbul, Kütahya, Malatya, Uşak, Van (Melika et. al., 2004; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria* and *Q. pubescens*.

***Andricus miriami* Shachar, 2015**

Material examined: Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m.

Distribution in Turkey: It is a new record for Turkey.

Host: *Quercus cerris*.

***Andricus moreae* (Graeffe, 1905)**

Material examined: Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Aşağıgökdere village, Gökbüvet district, 17.03.2017, 14.04.2017, 37°33'42"N, 30°52'30"E, 734 m; Kovada Lake Nature Park, 30.04.2017, 37°38'16"N, 30°51'51"E, 932 m.

Distribution in Turkey: Denizli, Erzincan, İstanbul, Kütahya, Malatya, Van (Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria*.

***Andricus multiplicatus* Giraud, 1859**

Material examined: Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m.

Distribution in Turkey: Afyon, Denizli, İstanbul, Kütahya, Van (Katılmış & Kıyak, 2008; 2011; Azmaz & Katılmış, 2017a,b).

Host: *Quercus ithaburensis*.

***Andricus quercuscalicis* (Burgsdorf, 1783)**

Material examined: Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Gelendost, Afşar village, 09.09.2017, 38°08'11"N, 30°58'20"E, 933 m.

Distribution in Turkey: Afyon, Denizli, İstanbul, Kütahya, Van (Katılmış & Kıyak, 2008; 2011; Azmaz & Katılmış, 2017a,b).

Host: *Quercus cerris* and *Q. robur*.

***Andricus quercustozae* (Bosc, 1792)**

Material examined: Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Gelendost, Bağılı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Gelendost, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Gelendost, Afşar village, 09.09.2017, 38°08'11"N, 30°58'20"E, 933 m; Şarkikaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m; Uluborlu, 10.09.2017, 38°04'19"N, 30°25'19"E, 1083 m; Eğirdir, Çayköy; 13.09.2017, 19.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Kasnak Oak Nature Protection Area, 27.09.2017, 37°42'27"N, 30°50'55"E, 1048 m; Yalvaç, Çamharman village, 21.10.2017, 38°25'44"N, 31°06'43"E, 1292 m.

Distribution in Turkey: Adıyaman, Afyon, Aksaray, Ankara, Antalya, Aydın, Balıkesir, Bayburt, Bitlis, Bolu, Burdur, Bursa, Çanakkale, Çankırı, Denizli, Elazığ, Erzincan, Gümüşhane, Isparta, İstanbul, Kahramanmaraş, Kayseri, Kırklareli, Kütahya, Malatya, Mersin, Muğla, Muş, Sakarya, Sivas, Tekirdağ, Uşak, Van (Acatay, 1943; Schimitschek 1953; Çanakçıoğlu, 1956; Baş, 1973; Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011; Mutun & Dinç, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış 2017a,b).

Host: *Quercus trojana*, *Q. infectoria*, *Q. vulcanica* and *Q. robur*.

***Andricus seckendorffi* (Wachtl, 1879)**

Material examined: Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m; Eğirdir, Kasnak Oak Nature Protection Area, Armutalan location, 27.09.2017, 37°44'25"N, 30°49'46"E, 1530 m; Aksu, Yılanlı village, 06.10.2017, 37°47'40"N, 30°59'29"E, 1227 m.

Distribution in Turkey: Afyon, Antalya, Aydın, Balıkesir, Burdur, Denizli, Isparta, İstanbul, İzmir, Kırklareli, Kütahya, Malatya, Sinop, Uşak (Acatay, 1943; Schimitschek, 1953; Baş, 1973; Hellrigl & Bodur, 2015; Katılmış & Kıyak, 2008; 2011; Kıyak et. al., 2008).

Host: *Quercus vulcanica* and *Q. infectoria*.

***Andricus sternlichti* Bellido, Pujade-Villar ve Melika, 2003**

Material examined: Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Gelendost, Bağılı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Yalvaç, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Şarkikaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m; Gelendost, Afşar village, 09.09.2017, 38°08'11"N, 30°58'20"E, 933 m.

Distribution in Turkey: Afyon, Denizli, İstanbul, Erzincan, Kütahya, Manisa, Uşak, Van (Katılmış & Kıyak, 2008, 2011; Mete & Demirsoy, 2012; Azmaz & Katılmış, 2017a, 2017b; Eş et. al, 2017).

Host: *Quercus pubescens* and *Q. infectoria*.

***Andricus theophrastea* (Trotter, 1866)**

Material examined: Şarkikaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m; Yalvaç, Çamharman village, 21.10.2017, 38°25'44"N, 31°06'43"E, 1292 m.

Distribution in Turkey: Afyon, Denizli, Gümüşhane, Konya, Kütahya, Malatya, Uşak (Katılmış & Kıyak, 2008, 2011; Mutun & Dinç, 2011; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017b).

Host: *Quercus pubescens*.

***Andricus tomentosus* (Trotter, 1901)**

Material examined: Süleyman Demirel University, Faculty of Forestry garden, 04.02.2017, 37°49'54"N, 30°32'16"E, 1026 m; Süleyman Demirel University, Botanic Garden, 28.10.2017; 20.09.2017, 37°51'04"N, 30°31'39"E, 1013 m, Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m.

Distribution in Turkey: Afyon, Ankara, Antalya, Balıkesir, Bursa, Denizli, Erzincan, Isparta, İstanbul, Kütahya, Malatya, Manisa, Muğla, Samsun, Uşak (Acatay, 1943; Schimitschek, 1953; Baş, 1973; Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus robur*.

***Andricus vindobonensis* Müllner, 1901**

Material examined: Keçiözümlü, Aydoğmuş village, 23.05.2017, 37°56'33"N, 30°16'18"E, 1043 m.

Distribution in Turkey: Afyon, Denizli, Kütahya, Uşak (Katılmış & Kıyak, 2009a; Azmaz & Katılmış, 2017b).

Host: *Quercus ithaburensis*.

***Aphelonxy cerricola* (Giraud, 1859)**

Material examined: Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Sütçüler, Kuzca village, Sağlıkpinarı location, 24.02.2017, 37°37'09"N, 31°00'53"E, 1318 m; Gelendost, Bağlıllı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Sütçüler, Kesme village, 24.03.2017, 37°27'19"N, 31°14'08"E, 927 m; Yalvaç, Madenli village, 18.03.2017, 38°11'12"N, 31°05'59"E, 1005 m; Güneyce village, Küplübelen location, 24.03.2017, 37°39'34"N, 30°42'54"E, 712 m; Sütçüler, Karadiken village, 30.04.2017, 37°33'10"N, 30°54'17"E, 1018 m; Kovada Lake Nature Park, 30.04.2017, 37°38'16"N, 30°51'51"E, 932 m; Eğirdir, Kırntı village, 30.04.2017, 37°39'03"N, 30°51'36"E, 991 m; Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m; Gelendost, Madenli village, 02.06.2017, 38°11'12"N, 31°05'59"E, 1005 m; Aşağıgökdere village, Araçay location, 21.08.2017, 37°33'53"N, 30°45'10"E, 380 m; Eğirdir, Aşağıgökdere village, 21.08.2017; 37°32'45"N, 30°46'14"E, 335 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m; Eğirdir, Kasnak Oak Nature Protection Area, Armutalan location, 27.09.2017, 37°44'25"N, 30°49'46"E, 1530 m; Senirkent, Gençali village, 21.10.2017, 38°14'24"N, 30°45'51"E, 94 m; Yalvaç, Çamharman village, 21.10.2017, 38°25'44"N, 31°06'43"E, 1292 m.

Distribution in Turkey: Aydın, Burdur, Denizli, Isparta, Konya (Kıyak et. al., 2008).

Host: *Quercus cerris*, *Q. ithaburensis* and *Q. trojana*.

***Aphelonxy persica* Melika, Stone, Sadeghi ve Pujade-Villar, 2004**

Material examined: Eğirdir, Sipahiler village, 24.02.2017, 37°39'28"N, 30°58'24"E, 1215 m; Sütçüler, Kesme village, 24.02.2017, 37°27'32"N, 31°13'46"E, 998 m; Eğirdir, Yuvalı village, 24.03.2017, 37°41'37"N, 30°56'48"E, 1234 m; Gelendost, Bağlıllı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Sütçüler, Karadiken village, 30.04.2017, 37°33'10"N, 30°54'17"E, 1018 m; Eğirdir, Kırntı village, 30.04.2017, 37°39'03"N, 30°51'36"E, 991 m; Eğirdir, Kovada Lake Nature Park, 30.04.2017, 37°38'16"N, 30°51'51"E, 932 m; Kasnak Oak Nature Protection Area, 30.04.2017, 37°44'25"N, 30°49'46"E, 1530 m; Aşağıgökdere village, Araçay location, 21.08.2017, 37°33'53"N, 30°45'10"E, 380 m; Eğirdir, Aşağıgökdere village, 21.08.2017, 37°32'45"N, 30°46'14"E, 335 m; Güneyce village, 21.08.2017, 37°39'43"N, 30°43'23"E, 699 m; Gelendost, Afşar village, 09.09.2017, 38°07'05"N, 30°58'00"E, 953 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m; Eğirdir, Kasnak Oak Nature Protection Area, Oniki Kardeşler location, 27.09.2017, 37°44'32"N, 30°49'44"E, 1551 m; Senirkent, Gençali village, 21.10.2017, 38°14'24"N, 30°45'51"E, 947 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m; Yalvaç, Çamharman village, 21.10.2017, 38°25'44"N, 31°06'43"E, 1292 m.

Distribution in Turkey: Afyon, Denizli, İstanbul, Malatya, Manisa, Uşak, Van (Hellrigl & Bodur, 2015; Katılmış & Kıyak, 2009b; Azmaz & Katılmış, 2017a, 2017b; Eş et. al., 2017).

Host: *Quercus cerris*, *Q. ithaburensis* and *Q. trojana*.

***Biorhiza pallida* (Oliver, 1791)**

Material examined: Eğirdir, Kasnak Oak Nature Protection Area, 30.04.2017, 37°42'27"N, 30°50'55"E, 1048 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m.

Distribution in Turkey: Afyon, Ankara, Burdur, Denizli, Gümüşhane, Isparta, İstanbul, Kütahya, Malatya, Trabzon, Uşak, Van (Acatay, 1943; Schimitschek 1953; Baş 1973; Bayram et. al., 1999; Kıyak et. al., 2008; Katılmış & Kıyak, 2008; 2011; Mutun & Dinç, 2011; Hellrigl & Bodur, 2015; Özkazanç, 2000; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria*.

***Callirhytis rufescens* (Mayr, 1882)**

Material examined: Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m.

Distribution in Turkey: İstanbul, Kütahya (Azmaz & Katılmış, 2008, 2011, 2017a,b).

Host: *Quercus pubescens* and *Q. infectoria*.

***Cerroneuroterus lanuginosus* (Giraud, 1859)**

Material examined: Eğirdir, Sipahiler village, 24.02.2017, 37°40'46"N, 30°57'35"E, 1286 m; Sütçüler, Kesme village, 24.02.2017, 37°27'32"N, 31°13'46"E, 998 m; Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Gelendost, Bağlıllı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Gelendost, Afşar village, 09.09.2017, 38°08'11"N, 30°58'20"E, 933 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m; Eğirdir, Kasnak Oak Nature Protection Area, 27.09.2017; Senirkent, Gençali village, 21.10.2017, 38°14'24"N, 30°45'51"E, 947 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m.

Distribution in Turkey: Afyon, Aydın, Burdur, Denizli, Erzincan, Isparta, İstanbul, Kütahya, Uşak (Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011; Mete & Demirsoy, 2012; Azmaz & Katılmış, 2017b).

Host: *Quercus cerris*, *Q. ithaburensis* and *Q. trojana*.

***Cerroneuroterus minutulus* (Giraud, 1859)**

Material examined: Gelendost, Bağlıllı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Gelendost, Afşar village, 09.09.2017, 38°06'34"N, 30°57'50"E, 985 m; Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m; Yalvaç, Aşağıkaşıkara village, 21.10.2017, 38°15'42"N, 30°48'05"E, 959 m.

Distribution in Turkey: Afyon, Uşak (Katılmış, 2010; Azmaz & Katılmış, 2017b).

Host: *Quercus ithaburensis*.

***Cerroneuroterus obtectus* (Wachtl, 1880)**

Material examined: Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m.

Distribution in Turkey: Afyon, Denizli, İstanbul, Kütahya (Katılmış & Kıyak, 2011; Azmaz & Katılmış, 2017a,b).

Host: *Quercus ithaburensis*.

***Chilaspis israeli* (Sternlicht, 1968)**

Material examined: Eğirdir, Yukarıgökdere village, 30.04.2017, 37°42'19"N, 30°51'01"E, 1003 m.

Distribution in Turkey: It is a new record for Turkey.

Host: *Quercus cerris*.

***Cynips agama* Hartig, 1840**

Material examined: Eğirdir, 09.09.2017, 37°55'10"N, 30°55'09"E, 966 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m.

Distribution in Turkey: Afyon, Burdur, Denizli, İstanbul, Kütahya (Schimitschek, 1953; Kıyak et. al., 2008; Katılmış & Kıyak, 2008; 2011; Azmaz & Katılmış, 2017b).

Host: *Quercus infectoria*.

***Cynips cornifex* Hartig, 1843**

Material examined: Isparta, Güneyce village, 21.08.2017, 37°39'35"N, 30°42'54"E, 699 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m.

Distribution in Turkey: Afyon, Antalya, Denizli, Erzincan, İstanbul, Kütahya, Malatya, Sinop (Baş, 1973; Katılmış & Kıyak, 2008, 2011; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria*.

***Cynips disticha* Hartig, 1840**

Material examined: Eğirdir, Yukarıgökdere village, Kasnak Oak Nature Protection Area, 27.09.2017, 37°44'32"N, 30°49'44"D, 1551 m.

Distribution in Turkey: Afyon, İstanbul (Azmaz & Katılmış, 2017a, 2017b; Katılmış & Kıyak, 2011).

Host: *Quercus pubescens* and *Q. vulcanica*.

***Cynips divisa* Hartig, 1840**

Material examined: Yalvaç, Eğirler village, 02.06.2017, 38°11'36"N, 31°06'09"E, 1016 m; Eğirdir, 09.09.2017, 37°55'10"N, 30°55'09"E, 966 m; Şarkikaraağaç, 09.09.2017, 38°05'07"N, 31°21'48"E, 1170 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Kasnak Oak Nature Protection Area, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m; Yalvaç, Çamharman village, 21.10.2017, 38°25'44"N, 31°06'43"E, 1292 m; Yalvaç, Sücüllü village, 21.10.2017, 38°21'43"N, 31°08'44"E, 1161 m.

Distribution in Turkey: Afyon, Ankara, Artvin, Bolu, Denizli, İstanbul, Kütahya, Malatya, Niğde, Sakarya, Uşak (Acatay, 1943; Baş 1973; Hellrigl & Bodur, 2015; Katılmış & Kıyak 2008, 2011).

Host: *Quercus infectoria*, *Q. pubescens*, *Q. vulcanica* and *Q. petraea*.

***Cynips korsakovi* Belizin, 1961**

Material examined: Eğirdir, Yukarıgökdere village, 27.09.2017 37°41'59"N, 30°50'56"E, 959 m; Eğirdir, Yuvalı village, 06.10.2017, 37°41'37"N, 30°56'48"E, 1234 m.

Distribution in Turkey: Gümüşhane (Mutun & Dinç, 2011).

Host: *Quercus pubescens*.

***Cynips longiventris* Hartig, 1840**

Material examined: Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m.

Distribution in Turkey: Bolu, Edirne, İstanbul, Sakarya, Tekirdağ, Zonguldak (Azmaz & Katılmış, 2015; Mutun & Dinç, 2015).

Host: *Quercus infectoria*.

***Cynips quercusfolii* (Linnaeus, 1758)**

Material examined: Yalvaç, Sücüllü village, 18.03.2017, 38°21'43"N, 31°08'44"E, 1161 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Gelendost, Afşar village, 09.09.2017, 38°08'11"N, 30°58'20"E, 933 m; Uluborlu, 10.09.2017, 38°04'19"N, 30°25'19"E, 1083 m; Eğirdir, Kasnak Oak Nature Protection Area, Oniki Kardeşler location, 27.09.2017, 37°44'32"N, 30°49'44"E, 1551 m; Eğirdir, Kasnak Oak Nature Protection Area, Armutalan location, 27.09.2017, 37°44'25"N, 30°49'46"E, 1530 m; Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m.

Distribution in Turkey: Afyon, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bolu, Burdur, Denizli, Erzincan, Gümüşhane, Isparta, İstanbul, Kırklareli, Kütahya, Malatya, Manisa, Muğla, Tunceli, Uşak, Van (Acatay 1943; Schimitschek, 1953; Baş, 1973; Bayram et. al., 1999; Özkazanç, 2000; Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011; Mutun & Dinç, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Eş et. al., 2017; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria*, *Q. robur* and *Q. vulcanica*.

***Neuroterus anthracinus* (Curtis, 1838)**

Material examined: Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m; Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 27.09.2017, 37°44'32"N, 30°49'43"E, 1555 m; Yalvaç, Yukarıkaşıkara village, 21.10.2017, 38°20'54"N, 30°51'03"E, 1244 m.

Distribution in Turkey: İstanbul, Kütahya, Malatya, Van (Acatay, 1943; Hellrigl & Bodur, 2015; Katılmış & Kıyak, 2008, 2011; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria* and *Q. vulcanica*.

***Neuroterus numismalis* (Geoffroy, 1785)**

Material examined: Eğirdir, Kasnak Oak Nature Protection Area, Armutalan location, 27.09.2017, 37°44'25"N, 30°49'46"E, 1530 m; Eğirdir, Kasnak Oak Nature Protection Area, Oniki Kardeşler location, 27.09.2017, 37°44'32"N, 30°49'44"E, 1551 m.

Distribution in Turkey: Afyon, Ankara, Antalya, Aydın, Burdur, Denizli, Erzincan, Isparta, İstanbul, Kütahya, Sakarya, Samsun, Uşak (Acatay, 1943; Baş, 1973; Katılmış & Kıyak, 2008; Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a,b).

Host: *Quercus vulcanica*.

***Neuroterus quercusbaccarum* (Linnaeus, 1758)**

Material examined: Sütcüler, Kesme village, 24.03.2017, 37°27'19"N, 31°14'08"E, 927 m; Şarkıkaraağaç, Salur village, 09.09.2017, 38°17'18"N, 31°08'53"E, 1069 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Gelendost, Afşar village, 09.09.2017, 38°08'11"N, 30°58'20"E, 933 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Gelendost, Balcı village, 13.09.2017, 38°09'08"N, 31°04'59"E, 1032 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m; Aksu, Yılanlı village, 06.10.2017, 37°47'37"N, 30°59'29"E, 1217 m; Yalvaç, Sücüllü village, 21.10.2017, 38°21'43"N, 31°08'44"E, 1161 m.

Distribution in Turkey: Afyon, Ankara, Aydın, Burdur, Denizli, Erzincan, Gümüşhane, Isparta, İstanbul, Kırklareli, Kütahya, Malatya, Manisa, Sakarya, Van (Acatay, 1943; Baş, 1973; Bayram et. al., 1999; Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011; Mutun & Dinç, 2011; Mete & Demirsoy, 2012; Hellrigl & Bodur, 2015; Azmaz & Katılmış, 2017a, 2017b; Eş et. al., 2017).

Host: *Quercus infectoria*, *Q. petraea* and *Q. robur*.

***Plagiotrochus quercusilicis* (Fabricius, 1789)**

Material examined: Isparta, Mount Davraz road, 29.04.2017, 37°41'19"N, 30°37'02"E, 1520 m; Isparta, Direkli village, 14.06.2017, 37°43'12"N, 30°37'02"E, 1087 m; Eğirdir, 09.09.2017, 37°54'15"N, 30°54'23"E, 1053 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m.

Distribution in Turkey: Afyon, Denizli, İstanbul, Uşak (Katılmış & Kıyak, 2008, 2011; Kıyak et. al., 2008; Azmaz & Katılmış, 2017a,b).

Host: *Quercus coccifera*.

***Pseudoneuroterus macropterus* (Hartig, 1843)**

Material examined: Eğirdir, Yuvalı village, 24.02.2017, 37°41'37"N, 30°56'48"E, 1234 m; Gelendost, Bağlılı village, 18.03.2017, 38°09'06"N, 31°04'10"E, 1007 m; Aşağıgökdere village, Araçay location, 21.08.2017, 37°33'53"N, 30°45'10"E, 380 m; Eğirdir, Çayköy, 13.09.2017, 37°48'21"N, 30°56'26"E, 994 m; Eğirdir, Ağlıköy, 06.10.2017, 37°48'26"N, 30°55'15"E, 1130 m.

Distribution in Turkey: Afyon, Aydın, Balıkesir, Bolu, Denizli, İstanbul, Kırklareli, Kütahya, Sivas, Tokat, Uşak (Baş, 1973; Kıyak et. al., 2008; Katılmış & Kıyak, 2008, 2011; Azmaz & Katılmış, 2017a,b).

Host: *Quercus cerris*.

***Pseudoneuroterus saliens* (Kollar, 1857)**

Material examined: Eğirdir, Yuvalı village, 06.10.2017, 37°41'37"N, 30°56'48"E, 1234 m; Senirkent, Gençali village, 21.10.2017, 38°14'24"N, 30°45'51"E, 947 m.

Distribution in Turkey: Afyon, Denizli, Kütahya, Uşak (Katılmış & Kıyak, 2011; Azmaz & Katılmış, 2017b).

Host: *Quercus cerris* and *Q. ithaburensis*.

***Trigonaspis synaspis* (Hartig, 1841)**

Material examined: Eğirdir, Kasnak Oak Nature Protection Area, Oniki Kardeşler location, 27.09.2017, 37°44'32"N, 30°49'44"E, 1551 m; Eğirdir, Kasnak Oak Nature Protection Area, Beşbahçe location, 37°44'32"N, 30°49'43"E, 1555 m; Eğirdir, Kasnak Oak Nature Protection Area, Armutalan location, 37°44'25"N, 30°49'46"E, 1530 m; Eğirdir, Yukarıgökdere village, 27.09.2017, 37°41'59"N, 30°50'56"E, 959 m.

Distribution in Turkey: Adıyaman, Afyon, Amasya, Bingöl, Bitlis, Bolu, Çankırı, Çorum, Denizli, Edirne, Elazığ, Erzincan, Giresun, İstanbul, Karaman, Kastamonu, Kayseri, Kırşehir, Konya, Kütahya, Muş, Nevşehir, Sivas, Tokat, Tunceli, Yozgat (Katılmış & Kıyak, 2008, 2011; Mete & Demirsoy, 2012; Azmaz & Katılmış, 2017a,b).

Host: *Quercus infectoria* and *Q. vulcanica*.

DISCUSSIONS

In this study the species from Cynipini tribe were investigated in Isparta *Quercus* forests. We identified 51 oak gall wasps species belonging to 11 genera from Cynipini tribe. *Andricus miriami* and *Cynips israeli* were recorded from Turkey for the first time. *A. miriami* was previously known as *A. morula* (Shachar, Inbar & Dorchin) (Sharchar et. al., 2018). *A. morula* is now considered synonymous and it was reported from Israel and Jordan. *C. israeli* was reported from Israel, Lebanon, Jordan and Iran until now.

Andricus amenti, *A. burgundus*, *A. curator*, *A. cydoniae*, *A. foecundatrix*, *A. gallaeurnaeformis*, *A. istvani*, *A. moreae*, *A. multiplicatus*, *A. quercuscalicis*, *A. sternlichti*, *A. theophrastea*, *A. vindobonensis*, *Aphelonxy persica*, *Callirhytis rufescens*, *Cerroneuroterus obtectus*, *Cynips agama*, *C. cornifex*, *C. disticha*, *C. divisa*, *C. korsakovi*, *Neuroterus anthracinus*, *Cerroneuroterus minutulus*, *Plagiotrochus quercusilicis*, *Pseudoneuroterus macropterus*, *Pseudoneuroterus saliens* and *Trigonaspis synaspis* were recorded for the first time from Isparta oak forests.

We examined eight oak species (*Quercus cerris*, *Q. ithaburensis*, *Q. vulcanica*, *Q. robur*, *Q. petraea*, *Q. trojana*, *Q. infectoria* ve *Q. coccifera*) in the study area (Table 1). The highest number of gall wasp species was found on *Q. infectoria* (24 species). Number of gall wasp species found on *Q. cerris*, *Q. vulcanica* and *Q. pubescens* was 12, on *Q. ithaburensis* 12, on *Q. robur* 5, on *Q. trojana* 4 and on *Q. petraea* 3.

27 of listed species were recorded for the first time for cynipid fauna of Isparta, of which two species were also new records for cynipid fauna of Turkey. After updating according to our results, Cynipidae fauna of Isparta currently consists of 57 species. This work made significant contributions to the fauna of Isparta and Turkey. Discovering two new species for Turkish Cynipidae fauna in Isparta province suggests that more species from this tribe could be found in Turkey in the future.

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LITERATURE CITED

- Acatay, A.** 1943. İstanbul Çevresi ve Bilhassa Belgrad Ormanlarındaki Zararlı Orman Böcekleri, Mücadeleleri ve İşletme Üzerine Tesirleri. Ankara Yüksek Ziraat Enstitüsü, (142): 107-120.
- Azmaz, M. & Katılmış, Y.** 2015. Four New Records of Oak Gall Wasp (Hymenoptera: Cynipidae, Cynipini) from Turkey. *Munis Entomology & Zoology*, 10 (1): 201-204.
- Azmaz, M. & Katılmış, Y.** 2017a. Cynipidae (Insecta: Hymenoptera) Fauna of İstanbul. *Munis Entomology and Zoology*, 12 (1): 151-167.
- Azmaz, M. & Katılmış, Y.** 2017b. Updated Species List of Cynipidae (Hymenoptera) from Turkey. *Zootaxa*, 4303 (3): 361-378.
- Azmaz, M., Katılmış, Y., Tepe, M., Kızılkaya, E., Karaca, M. & Urban, R.** 2012. Kale İlçesi ve Çevresinin Meşe Gal Anıları (Hymenoptera, Cynipidae). Kaledavaz Sempozyumu, 2-3 Nisan, Denizli, 300-307.
- Baş, R.** 1973. Türkiye'de Orman Ağaçlarına Zarar Yapan Zar Kanatlılar (Hymenoptera) Üzerine Araştırmalar. OGM Sıra No: 570, Seri No: 23, Ongun Kardeşler Matbaası, Ankara, VII+169 s.
- Bayram, Ş., Ülgentürk, S. & Toros, S.** 1999. Ankara ve Çevresinde Gal Oluşturan Cynipidae (Hymenoptera) Türleri ve Bunların Parazitoidlerinin Saptanması Üzerine Araştırmalar. Türkiye 4. Biyolojik Mücadele Kongresi, 26-29 Ocak, Adana, 513-525.

- Csóka, G., Stone, G. N. & Melika, G.** 2005. Biology, Ecology, and Evolution of Gall-Inducing Cynipidae. *Biology, Ecology and Evolution of Gall-Inducing Arthropods*, 2: 573-642.
- Çanakçıoğlu, H.** 1956. Bursa Ormanlarında Entomolojik Araştırmalar. İstanbul Üniversitesi Yayınları, No: 690, 29-30.
- Eş, Ö., Şik, L., Katılmış, Y. & Tezcan, S.** 2017. Contributions to the Gallwasp (Hymenoptera: Cynipidae) Fauna of Manisa Province, Turkey. *Munis Entomology & Zoology*, 12 (1): 351-353.
- Hellrigl, K. & Bodur, S.** 2015. Researches about Oak-Gall Wasps (Hymenoptera, Cynipidae) in Turkey. *Forest Observer*, 7: 121-182.
- Katılmış, Y.** 2010. İç Batı Anadolu Bölgesi'nde *Quercus* Türlerinde Gal Oluşturan Cynipidae (Insecta: Hymenoptera) Türlerinin Araştırılması. Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Doktora Tezi, 365s., Ankara.
- Katılmış, Y. & Kiyak, S.** 2008. Checklist of Cynipidae of Turkey with a New Genus Record. *Journal of Natural History*, 42 (31-32): 2161-2167.
- Katılmış, Y. & Azmaz, M.** 2015. Investigation on the inquilines (Hymenoptera: Cynipidae, Syngergini) of oak galls from inner western Anatolia, Turkey. *Turkish Journal of Zoology*, 39: 168-173.
- Katılmış, Y. & Kiyak, S.** 2009a. New Records of Oak Gallwasps of the Genus *Andricus* (Burgsdorf, 1783) from Turkey (Hymenoptera: Cynipidae). *Zoology in the Middle East*, 48 (1): 108-110.
- Katılmış, Y. & Kiyak, S.** 2009b. The Oak Gallwasp *Aphelonyx persica*: a New Record from Turkey, with some New Host Records. *Phytoparasitica*, 37 (1): 95-97.
- Katılmış, Y. & Kiyak, S.** 2011. Oak Gallwasps (Hymenoptera: Cynipidae) Fauna of Inner-Western Anatolian. *Munis Entomology & Zoology*, 6 (2): 735-757.
- Kılıç, T.** 2003. Güney Batı Anadolu Cynipini Tribusu (Hymenoptera: Cynipidae, Cynipinae) Galleri. Gazi Üniversitesi, Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi, 130s., Ankara.
- Kiyak, S., Kılıç, T. & Katılmış, Y.** 2008. A Contribution to the Knowledge of the Cynipini Fauna of Turkey (Hymenoptera: Cynipidae). *Munis Entomology & Zoology*, 3 (1): 523-536.
- Melika, G.** 2006. Gall wasps of Ukraine. Cynipidae. Schmalhausen Institute of Zoology, National Academy of Sciences of Ukraine, 492s., Kiev, Ukraine.
- Melika, G., Stone, G. N., Sadeghi, S. E. & Pujade-Villar, J.** 2004. New species of cynipid gallwasps from Iran and Turkey (Hymenoptera: Cynipidae: Cynipini). *Acta Zoologica Academiae Scientiarum Hungaricae*, 50 (2): 139-151.
- Mete, Ö. & Demirsoy, A.** 2012. A Preliminary Study on the Gallwasp Fauna of Kemalîye (Erzincan, Turkey) and a New Record for Turkey. *Hacettepe Journal of Biological Chemistry Special*, 351-363.
- Mutum, S. & Dinç, S.** 2011. Contributions to the Gallwasp (Hymenoptera: Cynipidae) Fauna of Turkey with One New Record. *Journal of Applied Biological Sciences*, 5 (3): 83-85.
- Özkazanç, N. K.** 2000. Batı Karadeniz Bölgesi'ndeki Meşelerde Tespit Edilen Önemli Mazı Arıları (Hymenoptera, Cynipidae) ve Biyolojileri. Zonguldak Karaelmas Üniversitesi Bartın Orman Fakültesi Dergisi, (1-2): 139-154.
- Ronquist, F., Nieves-Aldrey, J. L., Buffington, M. L., Liu, Zh., Liljeblad, J. & Nylander, J. A. A.** 2015. Phylogeny, Evolution and Classification of Gall Wasps: The Plot Thickens. *PLoS ONE*, 10 (5): 1-40.
- Sharchar, E., Melika, G., Inbar, M. & Dorchin, N.** 2018. The oak gall wasps of Israel (Hymenoptera, Cynipidae, Cynipini)—diversity, distribution and life history. *Zootaxa*, 4521 (4): 451-498.
- Schimitschek, E.** 1953. Türkiye Orman Böcekleri ve Muhiti. (Çeviren: Acatay, A.) İstanbul Üniversitesi Yayın No: 556, Orman Fakültesi Yayın No: 24, 471s., İstanbul.
- Stone, G. N., Schönrogge, K., Atkinson, R. J., Bellido, D. & Pujade-Villar, J.** 2002. The Population Biology of Oak Gall Wasps (Hymenoptera: Cynipidae). *Annual Review of Entomology*, 47 (1): 633-668.

Table 1. Oak gall wasps species and their hosts in Isparta.

Number	Species names	Host
1	<i>Andricus amenti</i> Giraud, 1859	<i>Quercus vulcanica</i>
2	<i>Andricus aries</i> (Giraud, 1859)	<i>Q. vulcanica</i>
3	<i>Andricus burgundus</i> Giraud, 1859	<i>Q. cerris</i>
4	<i>Andricus caputmedusae</i> (Hartig, 1843)	<i>Q. cerris</i> , <i>Q. petraea</i> , <i>Q. infectoria</i> , <i>Q. pubescens</i> , <i>Q. vulcanica</i>
5	<i>Andricus ceconii</i> Kieffer, 1901	<i>Q. cerris</i> , <i>Q. ithaburensis</i>
6	<i>Andricus coriarius</i> (Hartig, 1843)	<i>Q. infectoria</i> , <i>Q. pubescens</i> , <i>Q. vulcanica</i>
7	<i>Andricus coronatus</i> (Giraud, 1859)	<i>Q. infectoria</i> , <i>Q. pubescens</i>
8	<i>Andricus curtisii</i> (Müller, 1870)	<i>Q. pubescens</i> , <i>Q. infectoria</i>
9	<i>Andricus curvator</i> Hartig, 1840	<i>Q. pubescens</i> , <i>Q. infectoria</i>
10	<i>Andricus cydoniae</i> Giraud, 1859	<i>Q. ithaburensis</i>
11	<i>Andricus foecundatrix</i> (Hartig, 1840)	<i>Q. infectoria</i> , <i>Q. pubescens</i>
12	<i>Andricus gallaeurnaeformis</i> (Fonscolombe, 1832)	<i>Q. ithaburensis</i> , <i>Q. cerris</i>
13	<i>Andricus grossulariae</i> Giraud, 1859	<i>Q. vulcanica</i> , <i>Q. infectoria</i>
14	<i>Andricus infectoria</i> (Hartig, 1843)	<i>Q. vulcanica</i> , <i>Q. robur</i> , <i>Q. infectoria</i>
15	<i>Andricus istvani</i> Melika, 2008	<i>Q. ithaburensis</i>
16	<i>Andricus kollari</i> (Hartig, 1843)	<i>Q. pubescens</i> , <i>Q. infectoria</i>
17	<i>Andricus lignicolus</i> (Hartig, 1840)	<i>Q. cerris</i> , <i>Q. ithaburensis</i>
18	<i>Andricus lucidus</i> (Hartig, 1843)	<i>Q. cerris</i> , <i>Q. ithaburensis</i> , <i>Q. infectoria</i> , <i>Q.</i>

		<i>vulcanica</i>
19	<i>Andricus megalucidus</i> Melika, Stone, Sadeghi, Pujade-Villar, 2004	<i>Q. infectoria</i> , <i>Q. pubescens</i>
20	<i>Andricus moreae</i> (Graeffe, 1905)	<i>Q. infectoria</i>
21	<i>Andricus miriami</i> Shachar, 2015	<i>Q. cerris</i>
22	<i>Andricus multiplicatus</i> Giraud, 1859	<i>Q. ithaburensis</i>
23	<i>Andricus quercuscalicis</i> (Burgsdorf, 1783)	<i>Q. robur</i> , <i>Q. cerris</i>
24	<i>Andricus quercustozae</i> (Bosc, 1792)	<i>Q. trojana</i> , <i>Q. infectoria</i> , <i>Q. vulcanica</i> , <i>Q. robur</i>
25	<i>Andricus seckendorffi</i> (Wachtl, 1879)	<i>Q. vulcanica</i> , <i>Q. infectoria</i>
26	<i>Andricus sternlichti</i> Bellido, Pujade-Villar, Melika, 2003	<i>Q. infectoria</i> , <i>Q. pubescens</i>
27	<i>Andricus theophrastea</i> (Trotter, 1866)	<i>Q. pubescens</i>
28	<i>Andricus tomentosus</i> (Trotter, 1901)	<i>Q. robur</i>
29	<i>Andricus vindobonensis</i> Müllner, 1901	<i>Q. ithaburensis</i>
30	<i>Aphelonxy cerricola</i> (Giraud, 1859)	<i>Q. cerris</i> , <i>Q. ithaburensis</i> , <i>Q. trojana</i>
31	<i>Aphelonxy persica</i> Melika, Stone, Sadeghi, Pujade-Villar, 2004	<i>Q. cerris</i> , <i>Q. ithaburensis</i> , <i>Q. trojana</i>
32	<i>Biorhiza pallida</i> (Oliver, 1791)	<i>Q. infectoria</i>
33	<i>Callirhytis rufescens</i> (Mayr, 1882)	<i>Q. pubescens</i> , <i>Q. infectoria</i>
34	<i>Cerroneuroterus lanuginosus</i> (Giraud, 1859)	<i>Q. cerris</i> , <i>Q. ithaburensis</i> , <i>Q. trojana</i>
35	<i>Cerroneuroterus minutulus</i> (Giraud, 1859)	<i>Q. ithaburensis</i>
36	<i>Cerroneuroterus obtectus</i> (Wachtl, 1880)	<i>Q. ithaburensis</i>
37	<i>Chilaspis israeli</i> Sternlicht, 1968	<i>Q. cerris</i>
38	<i>Cynips agama</i> Hartig, 1840	<i>Q. infectoria</i>
39	<i>Cynips cornifex</i> Hartig, 1843	<i>Q. infectoria</i>
40	<i>Cynips disticha</i> Hartig, 1840	<i>Q. vulcanica</i> , <i>Q. pubescens</i>
41	<i>Cynips divisa</i> Hartig, 1840	<i>Q. infectoria</i> , <i>Q. pubescens</i> , <i>Q. vulcanica</i> , <i>Q. petraea</i>
42	<i>Cynips korsakovi</i> Belizin, 1961	<i>Q. pubescens</i>
43	<i>Cynips longiventris</i> Hartig, 1840	<i>Q. infectoria</i>
44	<i>Cynips quercusfolii</i> (Linnaeus, 1758)	<i>Q. infectoria</i> , <i>Q. robur</i> , <i>Q. vulcanica</i>
45	<i>Neuroterus anthracinus</i> (Curtis, 1838)	<i>Q. vulcanica</i> , <i>Q. infectoria</i>
46	<i>Neuroterus numismalis</i> (Geoffroy, 1785)	<i>Q. vulcanica</i>
47	<i>Neuroterus quercusbaccarum</i> (Linnaeus, 1758)	<i>Q. infectoria</i> , <i>Q. petraea</i> , <i>Q. robur</i>
48	<i>Plagiotrochus quercusilicis</i> (Fabricius, 1789)	<i>Q. coccifera</i>
49	<i>Pseudoneuroterus macropterus</i> (Hartig, 1843)	<i>Q. cerris</i>
50	<i>Pseudoneuroterus saliens</i> (Kollar, 1857)	<i>Q. cerris</i>
51	<i>Trigonaspis synaspis</i> (Hartig, 1841)	<i>Q. infectoria</i> , <i>Q. vulcanica</i>