

Contributions to The Aphid Diversity of Çanakkale Province with New Entries


Çanakkale İli Yaprak Biti Çeşitliliğine Yeni Kayıtlarla Birlikte Katkılar


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Abstract


Studies concerning the determination of aphid fauna in Türkiye are important for biodiversity, ecological, and applied sciences. The country's biogeographical position, diverse climatic conditions, microclimatic variations, its role as a transition zone between continents, rich flora, and a wide variety of crops make aphid studies in Türkiye particularly valuable. Approximately 6071 aphid species have been identified worldwide, and 689 aphid species have been reported from Türkiye by various researchers, with an increasing number of studies in recent years. This study was conducted in July and September 2024, across 10 localities in Gökçeada, 7 localities in Gelibolu, and 7 localities in Eceabat. Aphid samples were collected from the host plants during field surveys using a no "0" brush, without damaging their morphological structures, and were transferred into sample vials containing 96% ethanol. The identification of aphid populations was performed using taxonomic keys provided by aphid specialists. The study aimed to contribute to the knowledge of aphid diversity in the Thracian part of Çanakkale Province and to provide information on six aphid species that are newly recorded for the aphid fauna of Türkiye. In total, 57 aphid species were identified from different localities and host plants in the Thracian region of Çanakkale. Among these, *Drepanosiphoniella remaudierei*, *Phyloxera tuberculifera*, *Rhopalosiphum cerasifoliae*, *Staticobium staticis*, *Tinocallis nikkoensis*, and *Yamatochitophorus albus* represent the first records of these species in Türkiye. With these additions, the aphid fauna of Türkiye, previously represented by 689 species, has increased to 695. Among the 57 aphid species observed in the Thracian region of Çanakkale province, 39 have not been recorded in the rest of Çanakkale province outside the Thracian region. Conversely, the 55 aphid species previously recorded in the southern part of the Sea of Marmara were not observed in the Thrace region. The results of this study support the idea that natural barriers have a significant influence on biodiversity.

Keywords: Aphid, Hemiptera, Natural barriers, New records, Turkey

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Öz

Türkiye'deki yaprak biti faunasının tanımlanmasıyla ilgili çalışmalar, biyolojik çeşitlilik, ekoloji ve uygulamalı bilimler için önemlidir. Biyocoğrafik konumu ve özellikleri, çeşitli iklim özellikleri, mikroklimatik farklılıklar, kıtalar arası geçiş bölgesi olması, flora açısından zenginliği ve tarım ürünlerinin çeşitliliği, Türkiye'de yaprak biti çalışmalarını oldukça önemli hale getirmektedir. Dünya genelinde yaklaşık 6071 yaprak biti türü tanımlanmış olup, Türkiye'de farklı araştırmacılar tarafından 689 yaprak biti türü tanımlanmıştır ve son yıllarda bu sayı artmaktadır. Çalışma, 2024 yılının Temmuz ve Eylül aylarında Gökçeada'nın 10 farklı lokasyonunda, Gelibolu'nun 7 farklı lokasyonunda ve Eceabat'ın 7 farklı lokasyonunda gerçekleştirilmiştir. Arazi çalışmaları esnasında, bitkilerden yaprak biti örnekleri, morfolojik yapılarına zarar vermeden, yavaşça ve “0” numaralı fırça ile toplanarak %96 alkol içeren epanдорf tüplerine alınmıştır. Yaprak bit popülasyonlarının tanımlanması, yaprak biti uzmanları tarafından kullanılan teşhis anahtarlarına göre gerçekleştirildi. Yaprak bit popülasyonlarının tanımlanması, yaprak biti uzmanları tarafından kullanılan tanımlama anahtarları izlenerek gerçekleştirildi. Bu çalışmada, Çanakkale ilinin Trakya kesiminin yaprak biti çeşitliliğine katkıda bulunmak ve Türkiye yaprak biti faunası için ilk kez tanımlanan altı yaprak biti türü hakkında bilgi vermek amaçlanmıştır. Çanakkale ilinin Trakya bölgesinde farklı yerlerden ve konak bitkilerden 60 yaprak biti türü belirlenmiştir. Bunlar arasında *Drepanosiphoniella remaudierei*, *Phyloxera tuberculifera*, *Rhopalosiphum cerasifoliae*, *Staticobium staticis*, *Tinocallis nikkoensis* ve *Yamatohitophorus albus* türleri, Türkiye'nin yaprak biti faunasında ilk kez kaydedilen türlerdir. Türkiye yaprak biti faunası 689 türle temsil edilirken bu çalışmayla birlikte tür sayısı 695'e çıkmıştır. Çanakkale ilinin Trakya bölgesinde gözlemlenen 60 yaprak biti türünden 39'u, Çanakkale ilinin Trakya bölgesi dışındaki bölümünde kaydedilmemiştir. Bununla birlikte, Marmara Denizi'nin güney kesiminde kaydedilen 55 yaprak biti türü Trakya'da gözlemlenmemiştir. Doğal bariyerlerin biyolojik çeşitliliği etkilediği görüşü, bu çalışmanın sonuçları ile desteklenmektedir.

Anahtar Kelimeler: Yaprak biti, Hemiptera, Doğal bariyer, Yeni kayıtlar, Türkiye

3. Results and Discussion

In this study, 57 aphid species were determined from different localities and host plants in the Thracian region of Çanakkale province. Among them, *Drepanosiphoniella remaudierei*, *Phyloxera tuberculifera*, *Rhopalosiphum cerasifoliae*, *Staticobium loachoaense*, *Tinocallis nikkoensis*, and *Yamatochitophorus albus* were recorded for the first time in Türkiye. Detailed information on the host plants, locations, and collection dates of the species recorded during this study is provided below.

Family: Aphididae

Subfamily: Aphidinae

Acyrtosiphon (Acyrtosiphon) malvae (Mosley, 1841)

Sampling site: Çanakkale, Eceabat, Martyrdoms (16.IX.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Persicaria maculosa*

Aphis (Aphis) coreopsidis (Thomas, 1878)

Sampling site: Çanakkale, Gökçeada province center (15.IX.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Hibiscus* sp.

Aphis (Aphis) craccivora Koch, 1854

Sampling site: Çanakkale, Gökçeada province center (13.VII.2024; 14.IX.2024)

Field observation: Black individuals were feeding on fruits and young shoots of *Acacia* sp.

Aphis (Aphis) gossypii Glover, 1877

Sampling site: Çanakkale, Gökçeada province centrum (13.VII.2024; 14.IX.2024); Çanakkale, Gökçeada, Uğurlu village (15.IX.2024); Çanakkale, Eceabat, Alçitepe village (16.IX.2024); Çanakkale, Gelibolu province centrum, Evreşe and Kavak village (17.IX.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Ecballium elaterium*, flower bases of *Althaea* sp., flower buds of *Rosa* sp., and *Campsis* sp. Yellow individuals were feeding on the undersides of leaves of *Cucurbita* sp.

Aphis (Aphis) hederæ Kaltenbach, 1843

Sampling site: Çanakkale, Gökçeada district center (14.IX.2024); Çanakkale, Gökçeada, Kale village (15.IX.2024)

Field observation: Black and yellow individuals were feeding on young shoots and fruits of *Cynanchum* sp.

Aphis (Aphis) illinoisensis Shimer, 1866

Sampling site: Çanakkale, Gökçeada district centrum (14.IX.2024); Çanakkale, Gökçeada, Zeytinli village (15.IX.2024)

Field observation: Black individuals were feeding on young shoots and the undersides of leaves of *Vitis* sp.

Aphis (Aphis) nasturtii Kaltenbach, 1843

Sampling site: Gökçeada, Zeytinli village (13.VII.2024); Çanakkale, Gelibolu, Pazarlı region (14.VII.2024)

Field observation: Bright green individuals were feeding on the undersides of leaves and on fruits of *Paliurus spina-christi*.

Aphis (Aphis) nerii Boyer de Fonscolombe, 1841

Sampling site: Çanakkale, Gökçeada, Tepe village (13.VII.2024); Çanakkale, Gökçeada, Zeytinli village (13.VII.2024); Çanakkale, Gökçeada province centrum (14.VII.2024); Çanakkale, Gelibolu province centrum

(14.VII.2024); Çanakkale, Gökçeada-Şirin village (15.IX.2024); Çanakkale, Eceabat, Kilitbahir region (16.IX.2024)

Field observation: Yellow individuals were feeding on the undersides and upper sides of leaves and young shoots of *Nerium oleander*.

Aphis (Aphis) umbrella (Börner, 1950)

Sampling site: Çanakkale, Gökçeada, Uğurlu village (15.IX.2024); Çanakkale, Gelibolu, Kavakköy (17.IX.2024)

Field observation: Green individuals were feeding on young shoots of *Hibiscus* sp. and the undersides of leaves of *Malva* sp.

Aphis (Aphis) passeriniana (Del Guercio, 1900)

Sampling site: Çanakkale, Gelibolu, Burhanlı village (15.VII.2024)

Field observation: Black individuals were feeding on the flower bases of *Salvia* sp.

Aphis (Aphis) punicae Passerini, 1863

Sampling site: Çanakkale, Gökçeada, Yenibademli (13.VII.2024); Çanakkale, Eceabat, Kilitbahir (16.IX.2024)

Field observation: Green individuals were feeding on young shoots and fruit of *Punica granatum*.

Aphis (Aphis) ruborum (Börner, 1931)

Sampling site: Çanakkale, Evreşe, Koru mountain (17.IX.2024).

Field observation: Green individuals were feeding on young shoots of *Rubus* sp.

Aphis (Aphis) salviae Walker, 1852

Sampling site: Çanakkale, Eceabat, Kilitbahir region (16.IX.2024)

Field observation: Black individuals were feeding on young shoots of *Salvia* sp.

Aphis (Aphis) spiraecola Patch, 1914

Sampling site: Çanakkale, Gökçeada province centrum (13.VII.2024); Çanakkale, Gökçeada, Yenibademli (13.VII. 2024); Çanakkale, Gökçeada province centrum (14.IX.2024); Çanakkale, Eceabat, Martyrdoms (16.IX.2024); Çanakkale, Eceabat, Alçitepe village (16.IX.2024); Çanakkale, Gelibolu, Kavak village (17.IX.2024); Çanakkale, Gelibolu, Evreşe province centrum (17.IX.2024).

Field observation: Green individuals were feeding on young shoots, leaf petioles, flower bases of *Erigeron* sp., young shoots of *Pyracantha* sp., flower buds of *Rosa* sp., and undersides of leaves of *Portulaca* sp. Black individuals were feeding on leaf petioles of *Datura stramonium*, and young shoots of *Foeniculum* sp. Yellow individuals were feeding on the undersides of leaves of *Mirabilis* sp.

Aphis (Aphis) viticis Ferrari, 1872

Sampling site: Çanakkale, Gökçeada, Harbour (13.VII.2024); Çanakkale, Gökçeada province center (14.IX.2024)

Field observation: Green individuals were feeding on the undersides of leaves and young shoots of *Vitex agnus-castus*.

Aulacorthum (Aulacorthum) solani (Kaltenbach, 1843)

Sampling site: Çanakkale, Gökçeada province center (14.IX.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Ailanthus* sp.

Brachycaudus (Acaudus) lateralis (Walker, 1848)

Sampling site: Çanakkale, Gökçeada province center (13.VII.2024)

Field observation: Black individuals were feeding on the undersides of leaves of *Scolymus hispanicus*. There was a lot of ant activity around them.

Brachycaudus (Brachycaudus) helichrysi (Kaltenbach, 1843)

Sampling site: Çanakkale, Gökçeada province center (14.IX.2024)

Field observation: Yellow individuals were feeding on fruits of *Cynanchum* sp.

Drepanosiphoniella remaudierei Wieczorek, 2015

Sampling site: Çanakkale, Gökçeada, Tepeköy village (15.IX.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Acer monspessulanum*. There was a lot of ant activity around them. *D.remaudierei* is a new record for Turkish aphid fauna. Inner margin of pterostigma is dusky and shape of pterostigma is trapezoid. Measurements of characteristic features of this species are as follows: BL: 0.95; ANT L (length of antennal segment): 0.82; PT: 0.24; Base: 0.07; SIPHL: 0.11; SIPHW: 0.06

Hyadaphis coriandri (Das, 1918)

Sampling site: Çanakkale, Gökçeada, Castle (13.VII.2024)

Field observation: Dull green individuals were feeding on stem of *Eryngium* sp.

Hyalopterus arundiniformis Ghulamullah, 1942

Sampling site: Çanakkale, Gökçeada province center, and Yenibademli village (13.VII.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Prunus persica*.

Hyalopterus pruni (Geoffroy, 1762)

Sampling site: Çanakkale, Gökçeada province centrum, and Yenibademli village (13.VII.2024, 14.IX.2024); Çanakkale, Gelibolu province centrum (14.VII.2024); Çanakkale, Gelibolu, Bigali Castle (15.VII.2024); Çanakkale, Gökçeada, Eşelek village (15.IX.2024); Çanakkale, Eceabat, Martyrdom (16.IX.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Prunus domesticus* and the upper sides of leaves of *Phragmites* sp.

Hyperomyzus (Hyperomyzus) carduellinus (Theobald, 1915)

Sampling site: Çanakkale, Gelibolu, Bolayır village (15.VII.2024); Çanakkale, Eceabat, Kilitbahir (16.IX.2024)

Field observation: Green individuals were feeding on buds of *Sonchus* sp. There was an ant activity around them.

Hyperomyzus (Hyperomyzus) lactucae (Linnaeus, 1758)

Sampling site: Çanakkale, Eceabat province center (16.IX.2024)

Field observation: Green individuals were feeding on buds of *Sonchus* sp.

Myzocallis (Myzocallis) boernerii Stroyan, 1957

Sampling site: Çanakkale, Gökçeada, Tepeköy village (13.VII.2024)

Field observation: Apteran and alatae green individuals were feeding on the undersides of leaves of *Quercus* sp.

***Protaphis* sp. (Czech Republic, BMNH collection)**

Sampling site: Çanakkale, Evreşe, Korudağ mountain (17.IX.2024)

Field observation: Green individuals were feeding on the roots of *Dittrichia* sp. There was an ant activity around them.

Rhopalosiphum cerasifoliae (Fitch, 1855)

Sampling site: Çanakkale, Gökçeada province centrum, Tepe village, Çınaraltı province (13.VII.2024)

Field observation: Green individuals were feeding on the inside of curled leaves of *Juncus effusus*. *R.cerasifoliae* is a new record for the Turkish aphid fauna. Measurements of characteristic features of this species are as follows: RIV+V (length of ultimate rostral segment): 0.09; CL: (Length of cauda): 0.15; PT (length of terminal process of last antennal segment): 0.56; Base (length of base of last antennal segment): 0.19.

***Rhopalosiphum maidis* (Fitch, 1856)**

Sampling site: Çanakkale, Gelibolu, Cevizli village (13.VII.2024)

Field observation: Dark green individuals were feeding on upper sides of leaves of *Zea mays*.

***Staticobium staticis* (Theobald, 1923)**

Sampling site: Çanakkale, Gelibolu, Kavakköy village (17.IX.2024)

Field observation: Black individuals were feeding on the undersides and upper sides of leaves of *Limonium narbonense*. There was an ant activity around them. *S.staticis* is a new record for Turkish aphid fauna. Measurements of characteristic features of this species as follow: BL: 1.50; SIPHL: 0,33; ANTIIL (length of third antennal segment): 0.35; PT: 0.37; Base: 0.09; HTII: 0.10; RIV+V: 0.12; CaL (length of cauda): 0.15; CaW (basal width of cauda): 0.11

***Uroleucon (Lambersius) erigeronense* (Thomas, 1878)**

Sampling site: Çanakkale, Gelibolu, Kavakköy village (17.IX.2024)

Field observation: Black individuals were feeding on the undersides of leaves of *Crepis* sp.

***Uroleucon (Uroleucon) sonchi* (Linnaeus, 1767)**

Sampling site: Çanakkale, Eceabat, Kilitbahir (16.IX.2024)

Field observation: Brown individuals were feeding on the stem of *Sonchus* sp.

Subfamily: Chaitophorinae

***Chaitophorus melanosiphon* Pintera, 1987**

Sampling site: Çanakkale, Gökçeada province center (13.VII.2024, 17.IX.2024), Çanakkale, Eceabat, Kilitbahir (15.VII.2024)

Field observation: Green individuals were feeding on the undersides and upper sides of leaves of *Populus* sp. There was a lot of ant activity around them.

***Chaitophorus populiabae* (Boyer de Fonscolombe, 1841)**

Sampling site: Çanakkale, Gökçeada province center (13.VII.2024)

Field observation: Green individuals were feeding on the upper sides of leaves of *Populus* sp. There was a lot of ant activity around them.

***Chaitophorus salicti* (Schränk, 1801)**

Sampling site: Çanakkale, Gelibolu, Evreşe region (15.VII.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Salix* sp.

***Yamatochaitophorus albus* (Takahashi, 1961)**

Sampling site: Çanakkale, Gökçeada province center (13.VII.2024)

Field observation: Green individuals were feeding on the undersides of leaves of *Acer* sp. *Y.albus* is a new record for Turkish aphid fauna. Measurements of characteristic features of this species as follow: SIPHL (Length of siphunculi): 0.12; SIPHW (basal weight of siphunculi): 0.14; ANTI L (length of first antennal segment): 0.05; HLFH (hairs length of first antennal segment): 0.09; PT: 0.32; Base: 0.09

Subfamily: Calaphidinae

***Chromaphis juglandicola* (Kaltenbach, 1843)**

Sampling site: Çanakkale, Gökçeada province center (14.VII.2024)

Field observation: Yellow individuals were feeding on the undersides of leaves of *Juglans* sp.

***Sarucallis kahawaluokalani* (Kirkaldy, 1907)**

Sampling site: Çanakkale, Gelibolu, Evreşe region (17.IX.2024).

Field observation: Yellow individuals were feeding on the undersides of leaves of *Lagerstromia* sp.

***Tiliaphis shinjii* Higuchi, 1972**

Sampling site: Çanakkale, Gökçeada province centrum (13.VII.2024); Çanakkale, Gelibolu province centrum (14.VII.2024); Çanakkale, Eceabat province centrum (14.VII.2024); Çanakkale, Gelibolu, Evreşe region (17.IX.2024).

Field observation: Green aptera and yellow alatae individuals were feeding on the undersides of leaves of *Tilia* sp.

***Tinocallis (Sappocallis) nikkoensis* Higuchi, 1972**

Sampling site: Çanakkale, Gelibolu province centrum (15.VII.2024)

Field observation: Alatae and aptera green individuals were feeding on the undersides of leaves of *Ulmus* sp. The head colour of alatae individuals is black. *T.nikkoensis* is a new record for Turkish aphid fauna. Inner margin of pterostigma is dusky and shape of pterostigma is trapezoid. Measurements of characteristic features of this species are as follows: BL: 1.35; PT: 0.11; Base: 0.10; HTIIL (length of second segment of hind tarsus): 0.08; SIPHL: 0.07; RIV+V: 0.08

***Tinocallis (Sappocallis) takachihoensis* Higuchi, 1972**

Sampling site: Çanakkale, Gökçeada province center (13.VII.2024, 14.IX.2024)

Field observation: Alatae and aptera bright green individuals were feeding on the undersides of leaves of *Ulmus* sp. Alatae individuals had black heads.

Subfamily: Eriosomatinae

***Baizongia pistaciae* (Linnaeus, 1767)**

Sampling site: Çanakkale, Eceabat, Martyrdoms (16.IX.2024)

Field observation: Yellow individuals were feeding in the horn-shaped gall on *Pistacia* sp.

***Forda formicaria* von Heyden, 1837**

Sampling site: Çanakkale, Gökçeada, Zeytinliköy village (13.VII.2024); Çanakkale, Eceabat, Martyrdoms (17.IX.2024).

Field observation: Yellow individuals were feeding in the half-moon-shaped gall on leaves of *Pistacia* sp.

***Geoica utricularia* (Passerini, 1856)**

Sampling site: Çanakkale, Gökçeada, Zeytinliköy village (13.VII.2024)

Field observation: Yellow individuals were feeding in the coarsely spherical gall on leaves of *Pistacia* sp.

***Eriosoma lanigerum* (Hausmann, 1802)**

Sampling site: Çanakkale, Gelibolu province center (14.VII.2024); Çanakkale, Gökçeada, Şirinköy village

Field observation: Wax-powdered brownish individuals were feeding on a branch of *Malus sylvestris*.

***Paracletus cimiciformis* von Heyden, 1837**

Sampling site: Çanakkale, Eceabat, Martyrdoms (16.IX.2024)

Field observation: Yellow individuals were feeding in the flat folds of leaf edges of *Pistacia* sp.

Subfamily: Lachninae

***Eulachnus cembrae* Börner, 1950**

Sampling site: Çanakkale, Eceabat, Yalova village (14.VII.2024)

Field observation: Green individuals were feeding on the upper sides of leaves of *Pinus* sp.

***Eulachnus tuberculostemmatus* (Theobald, 1915)**

Sampling site: Çanakkale, Gökçeada, Gökçeada dam, (15.IX.2024)

Field observation: Green individuals were feeding on upper sides of leaves of *Pinus nigra*

***Lachnus crassicornis* Hille Ris Lambers, 1948**

Sampling site: Çanakkale, Gökçeada, Gökçeada dam (13.VII.2024)

Field observation: Brown individuals were feeding on the bottom of the acorns and branches of *Quercus ilex*.

***Lachnus roboris* (Linnaeus, 1758)**

Sampling site: Çanakkale, Gökçeada, Gökçeada dam, (15.IX.2024); Çanakkale, Gökçeada, Zeytinli village, (15.IX.2024); Çanakkale, Eceabat, Gallipoli War Promotion Centre Museum (16.IX.2024); Çanakkale, Eceabat, Martyrdoms (16.IX.2024); Çanakkale, Eceabat, Soğanlıdere Martyrdom (16.IX.2024)

Field observation: Brown individuals were feeding on the bottom of the acorns and branches of *Quercus ilex*. There was an ant activity around them.

***Lachnus swirskii* Hille Ris Lambers, 1954**

Sampling site: Çanakkale, Eceabat, Martyrdoms (16.IX.2024)

Field observation: Brown individuals were feeding on the bottom of the acorns and branches of *Quercus ilex*. There was a lot of ant activity around them.

***Pterochloroides persicae* (Cholodkovsky, 1898)**

Sampling site: Çanakkale, Gökçeada province centrum (13.VII.2024); Çanakkale, Gelibolu province centrum (15.VII.2024, 17.IX.2024)

Field observation: Brown individuals were feeding on the branch of *Prunus domestica*, *Prunus dulcis*.

Subfamily: Thelaxinae

***Kurisakia querciphila* Takahashi, 1960**

Sampling site: Çanakkale, Gelibolu, Cevizli village (15.07.2024)

Field observation: Green individuals were feeding on acorns of *Quercus* sp.

***Thelaxes californica* (Davidson, 1919)**

Sampling site: Gallipoli War Promotion Centre Museum (16.IX.2024); Çanakkale, Eceabat, Martyrdoms (16.IX.2024)

Field observation: Green individuals were feeding on acorns of *Quercus cerris*. There was a lot of ant activity around them.

***Thelaxes suberi* (Del Guercio, 1911)**

Sampling site: Çanakkale, Gökçeada province center, Tepe village (13.VII.2024, 14.IX.2024), Gökçeada dam (14.IX.2024); Çanakkale, Gelibolu, Pazarlı province (14.VII.2024); Çanakkale, Eceabat province and Cevizli village (15.VII.2024), Martyrdom, Kilitbahir (16.IX.2024), and Evreşe, Kuru Mountain (17.IX.2024)

Field observation: Green and yellow individuals were feeding on acorns and the undersides of leaves of *Quercus coccifera*, *Q.ilex*, and *Q.robur*. There was a lot of ant activity around them.

***Thelaxes valtadorosi* Remaudière, 1983**

Sampling site: Çanakkale, Eceabat, Yalova village (14.VII.2024)

Field observation: Black individuals were feeding on acorns of *Quercus* sp. There was a lot of ant activity around them.

Family: Phyloxeridae

Subfamily: Phyloxerinae

***Phylloxera glabra* (von Heyden, 1837)**

Sampling site: Çanakkale, Gökçeada, Tepeköy village (15.IX.2024)

Field observation: Orange individuals were feeding on the undersides of leaves of *Quercus* sp.

***Phylloxera tuberculifera* Duncan, 1922**

Sampling site: Çanakkale, Gökçeada, Tepeköy village (13.VII.2024)

Field observation: Yellowish brown individuals were feeding on the undersides of leaves of *Quercus* sp. *P.tuberculifera* is a new record for the Turkish aphid fauna. Measurements of characteristic features of this species are as follows: BL (body length): 0.48.

Although only 14 aphid species have been recorded from Gelibolu and Eceabat districts in the Thracian part of Çanakkale province, none have been reported from Gökçeada, an island with unique characteristics. Regarding representativeness, the studies from which the records were obtained are also quite old. Although recent research on aphids has been conducted in Çanakkale, it is noticeable that only a few cosmopolitan aphid species have been reported from the Thracian part of the province (Kök et al., 2016; Kök and Kasap, 2022). Previous studies have identified 77 species in Çanakkale, the majority of which were from the Anatolian section (Kök et al., 2016; Kök and Kasap, 2019). In the present study, 57 species were detected in the Thracian part of Çanakkale province (Table 1). Among the recorded species, *Drepanosiphoniella remaudierei*, *Phylloxera tuberculifera*, *Rhopalosiphum cerasifoliae*, *Staticobium staticis*, *Tinocallis nikkoensis*, and *Yamatochitophorus albus* represent new records for Türkiye. With these additions, the number of aphid species recorded from Türkiye has increased from 689 to 695.

Table 1. Comparison of the diversity of aphids in the region of Thrace and the rest of the province of Çanakkale (* the new recorded species for the Turkish aphid fauna)

		Anatolian part of Çanakkale district (Kök et al., 2016, 2018; Kök and Kasap, 2018, 2019)	Thrace part of Çanakkale district (Current study)
Aphid species			
Subfamily: Aphidinae	<i>Acyrtosiphon (Acyrtosiphon) bistorti</i> Ivanovskaya, 1973	-	+
	<i>Acyrtosiphon (Acyrtosiphon) gossypii</i> Mordvilko, 1914	+	-
	<i>Acyrtosiphon (Acyrtosiphon) lactucae</i> (Passerini, 1860)	+	-

Table 1 (continue). Comparison of the diversity of aphids in the region of Thrace and the rest of the province of Çanakkale (* the new recorded species for the Turkish aphid fauna)

Aphid species	Anatolian part of Çanakkale district	Thrace part of Çanakkale district
	(Kök et al., 2016, 2018; Kök and Kasap, 2018, 2019)	(Current study)
<i>Acyrtosiphon (Acyrtosiphon) malvae</i> (Mosley, 1841)	+	-
<i>Acyrtosiphon (Acyrtosiphon) pisum</i> (Harris, 1776)	+	-
<i>Anoecia (Anoecia) corni</i> (Fabricius, 1775)	+	-
<i>Aphis (Aphis) arbuti</i> Ferrari, 1872	+	-
<i>Aphis (Aphis) catalpa</i> Mamontova, 1953	+	-
<i>Aphis (Aphis) coreopsidis</i> (Thomas, 1878)	-	+
<i>Aphis (Aphis) craccivora</i> Koch, 1854	+	+
<i>Aphis (Aphis) fabae</i> Scopoli, 1763	+	+
<i>Aphis (Aphis) frangulae</i> Kaltenbach, 1845	+	-
<i>Aphis (Aphis) gossypii</i> Glover, 1877	+	+
<i>Aphis (Aphis) hederæ</i> Kaltenbach, 1843	+	+
<i>Aphis (Aphis) nasturtii</i> Kaltenbach, 1843	-	+
<i>Aphis (Aphis) nerii</i> Boyer de Fonscolombe, 1841	+	+
<i>Aphis (Aphis) passeriniana</i> (Del Guercio, 1900)	-	+
<i>Aphis (Aphis) pomi</i> De Geer, 1773	+	-
<i>Aphis (Aphis) punicae</i> Passerini, 1863	+	+
<i>Aphis (Aphis) ruborum</i> (Börner, 1931)	+	+
<i>Aphis (Aphis) rumicis</i> Linnaeus, 1758	+	-
<i>Aphis (Aphis) salvia</i> Walker, 1852	-	+
<i>Aphis (Aphis) spiraecola</i> Patch, 1914	+	+
<i>Aphis (Aphis) sambuci</i> Linnaeus, 1758	+	-
<i>Aphis (Aphis) sedi</i> Kaltenbach, 1843	+	-
<i>Aphis (Aphis) solanella</i> Theobald, 1914	+	-
<i>Aphis (Aphis) umbrella</i> (Börner, 1950)	+	+
<i>Aphis (Aphis) vallei</i> Hille Ris Lambers and Stroyan, 1959	+	-
<i>Aphis (Aphis) viticis</i> Ferrari, 1872	+	+
<i>Aulacorthum (Aulacorthum) solani</i> (Kaltenbach, 1843)	+	+
<i>Brachycaudus (Acaudus) lateralis</i> (Walker, 1848)	-	+
<i>Brachycaudus (Brachycaudus) helichrysi</i> (Kaltenbach, 1843)	+	+
<i>Brachycaudus (Prunaphis) cardui</i> (Linnaeus, 1758)	+	-

Subfamily: Aphidinae

Table 1 (continue). Comparison of the diversity of aphids in the region of Thrace and the rest of the province of Çanakkale (* the new recorded species for the Turkish aphid fauna)

	Aphid species	Anatolian part of Çanakkale district (Kök et al., 2016, 2018; Kök and Kasap, 2018, 2019)	Thrace part of Çanakkale district (Current study)
Subfamily: Aphidinae	<i>Brachycaudus (Thuleaphis) amygdalinus</i> (Schouteden, 1905)	+	-
	<i>Brachyunguis (Brachyunguis) tamaricis</i> (Lichtenstein, 1886)	+	-
	<i>Brevicoryne brassicae</i> (Linnaeus, 1758)	+	-
	<i>Cavariella (Cavariella) aegopodii</i> (Scopoli, 1763)	+	-
	<i>Drepanosiphoniella remaudierei</i> Wieczorek, 2015*	-	+
	<i>Dysaphis (Dysaphis) devectora</i> (Walker, 1849)	+	-
	<i>Dysaphis (Pomsaphis) plantaginea</i> (Passerini, 1860)	+	-
	<i>Hayhurstia atriplicis</i> (Linnaeus, 1761)	+	-
	<i>Hyadaphis coriandri</i> (Das, 1918)	-	+
	<i>Hyadaphis foeniculi</i> (Passerini, 1860)	+	-
	<i>Hyalopterus amygdali</i> (Blanchard, 1840)	+	-
	<i>Hyalopterus arundiniformis</i> Ghulamullah, 1942	-	+
	<i>Hyalopterus pruni</i> Nieto Nafria, 1974	+	+
	<i>Hyperomyzus (Hyperomyzus) carduellinus</i> (Theobald, 1915)	-	+
	<i>Hyperomyzus (Hyperomyzus) lactucae</i> (Linnaeus, 1758)	+	+

Table 1 (continue). Comparison of the diversity of aphids in the region of Thrace and the rest of the province of Çanakkale (* the new recorded species for the Turkish aphid fauna)

	Aphid species	Anatolian part of Çanakkale district	
		(Kök et al., 2016, 2018; Kök and Kasap, 2018, 2019)	Thrace part of Çanakkale district (Current study)
Subfamily: Aphidinae	<i>Liosomaphis berberidis</i> (Kaltenbach, 1843)	+	-
	<i>Macrosiphoniella</i> (<i>Macrosiphoniella</i>) <i>sanborni</i> (Gillette, 1908)	+	-
	<i>Macrosiphum</i> (<i>Macrosiphum</i>) <i>euphorbiae</i> (Thomas, 1878)	+	-
	<i>Macrosiphum</i> (<i>Macrosiphum</i>) <i>funestum</i> (Macchiati, 1885)	+	-
	<i>Macrosiphum</i> (<i>Macrosiphum</i>) <i>rosae</i> (Linnaeus, 1758)	+	-
	<i>Myzocallis</i> (<i>Myzocallis</i>) <i>boernerii</i> Stroyan, 1957	-	+
	<i>Myzocallis</i> (<i>Myzocallis</i>) <i>carpini</i> (Koch, 1855)	+	-
	<i>Myzus</i> (<i>Myzus</i>) <i>cerasi</i> (Fabricius, 1775)	+	-
	<i>Myzus</i> (<i>Nectarosiphon</i>) <i>persicae</i> (Sulzer, 1776)	+	-
	<i>Ovatus</i> (<i>Ovatus</i>) <i>insitus</i> (Walker, 1849)	+	-
	<i>Protaphis</i> sp.	-	+
	<i>Rhodobium porosum</i> (Sanderson, 1900)	+	-
	<i>Rhopalosiphum cerasifoliae</i> (Fitch, 1855)*	-	+
	<i>Rhopalosiphum maidis</i> (Fitch, 1856)	+	+
	<i>Schizaphis</i> (<i>Schizaphis</i>) <i>graminum</i> (Rondani, 1852)	+	-
	<i>Sitobion</i> (<i>Sitobion</i>) <i>avenae</i> (Fabricius, 1775)	+	-
	<i>Sitobion</i> (<i>Sitobion</i>) <i>fragariae</i> (Walker, 1848)	+	-
	<i>Staticobium staticis</i> (Theobald, 1923)*	-	+
	<i>Uroleucon</i> (<i>Lambersius</i>) <i>erigeronense</i> (Thomas, 1878)	-	+
	<i>Uroleucon</i> (<i>Uroleucon</i>) <i>sonchi</i> (Linnaeus, 1767)	+	+
Subfamily: Calaphidinae	<i>Chromaphis juglandicola</i> (Kaltenbach, 1843)	+	+
	<i>Eucallipterus tiliae</i> (Linnaeus, 1758)	+	-
	<i>Panaphis juglandis</i> (Macchiati, 1884)	+	-
	<i>Sarucallis kahawalvokalani</i> (Kirkaldy, 1907)	+	+
	<i>Therioaphis</i> (<i>Pterocallidium</i>) <i>trifolii</i> (Monell, 1882)	+	-
	<i>Tinocallis</i> (<i>Sappocallis</i>) <i>nikkoensis</i> Higuchi, 1972*	-	+
	<i>Tinocallis</i> (<i>Sappocallis</i>) <i>saltans</i> (Nevsky, 1929)	+	-
	<i>Tinocallis</i> (<i>Sappocallis</i>) <i>takachihoensis</i> Higuchi, 1972	-	+
	<i>Tiliaphis shinjii</i> Higuchi, 1972	-	+

Table 1 (continue). Comparison of the diversity of aphids in the region of Thrace and the rest of the province of Çanakkale (* the new recorded species for the Turkish aphid fauna)

	Anatolian part of Çanakkale district (Kök et al., 2016, 2018; Kök and Kasap, 2018, 2019)	Thrace part of Çanakkale district (Current study)	
Subfamily: Chaitophorinae	Aphid species		
	<i>Chaitophorus leucomelas</i> Koch, 1854	+	-
	<i>Chaitophorus melanosiphon</i> Pintera, 1987	-	+
	<i>Chaitophorus saliciniger</i> (Knowlton, 1927)	+	-
	<i>Chaitophorus populiabae</i> (Boyer de Fonscolombe, 1841)	-	+
	<i>Chaitophorus salicti</i> (Schrank, 1801)	-	+
	<i>Chaitophorus tremulae</i> Koch, 1854	+	-
	<i>Periphyllus obscurus</i> Mamontova, 1955	+	-
<i>Yamatochitophorus albus</i> (Takahashi, 1961)*	-	+	
Subfamily: Eriosomatinae	<i>Baizongia pistaciae</i> Blackman and Eastop, 1984	+	+
	<i>Eriosoma lanigerum</i> (Hausmann, 1802)	-	+
	<i>Eriosoma laniginosum</i> (Hartig, 1839)	-	+
	<i>Forda formicaria</i> von Heyden, 1837	-	+
	<i>Geoica utricularia</i> (Passerini, 1856)	-	+
	<i>Paralectus cimiciformis</i> von Heyden, 1837	-	+
	<i>Patchiella reaumuri</i> (Kaltenbach, 1843)	+	-
	<i>Pemphigus immunis</i> Buckton, 1896	+	+
	<i>Prociphilus (Prociphilus) fraxini</i> (Fabricius, 1777)	+	-
	<i>Tetraneura (Tetraneura) caerulescens</i> (Passerini, 1856)	+	-
	<i>Tetraneura (Tetraneura) ulmi</i> (Linnaeus, 1758)	+	+
	<i>Tetraneura (Tetraneurella) nigriabdominalis</i> (Sasaki, 1899)	+	-
Subfamily: Lachninae	<i>Cinara (Cinara) cedri</i> Mimeur, 1936	+	-
	<i>Cinara (Cinara) pini</i> (Linnaeus, 1758)	+	-
	<i>Cinara (Cupressobium) fresai</i> Blanchard, 1939	+	-
	<i>Cinara (Cupressobium) oxycedri</i> Binazzi, 1996	+	-
	<i>Cinara (Cupressobium) tujafilina</i> (Del Guercio, 1909)	+	+
	<i>Eulachnus cembrae</i> Börner, 1950	-	+
	<i>Eulacnus tuberculostemmatum</i> (Theobald, 1915)	-	+
	<i>Lachnus crassicornis</i> Hille Ris Lambers, 1948	-	+
	<i>Lachnus roboris</i> (Linnaeus, 1758)	-	+
	<i>Lachnus swirskii</i> Hille Ris Lambers, 1954	-	+
	<i>Pterochloroides persicae</i> Ghosh, 1982	+	+
	<i>Trama (Neotrampa) caudata</i> Del Guercio, 1909	+	-

Table 1 (continue). Comparison of the diversity of aphids in the region of Thrace and the rest of the province of Çanakkale (* the new recorded species for the Turkish aphid fauna)

Aphid species	Anatolian part of Çanakkale district (Kök et al., 2016, 2018; Kök and Kasap, 2018, 2019)	Thrace part of Çanakkale district (Current study)
Subfamily: Thelaxinae	<i>Kurisakia querciphila</i> Takahashi, 1960	-
	<i>Thelexes californica</i> (Davidson, 1919)	-
	<i>Thelexes suberi</i> (Del Guercio, 1911)	-
	<i>Thelexes valtodorosi</i> Remaudière, 1983	-
Subfamily: Phylloxerinae	<i>Phylloxera glabra</i> (von Heyden, 1837)	-
	<i>Phylloxera tuberculifera</i> Duncan, 1922*	-

The Sea of Marmara serves as an important natural barrier between Thrace and Anatolia in Turkey, influencing the distribution of terrestrial species. Historically, the Turkish Straits system likely played a biogeographical role in differentiating numerous sister populations on either side of the straits. Population distribution in the Balkans and Anatolia reflects ancient connections and discontinuities in the region's territories. These processes have significantly influenced the current phylogeographic patterns of terrestrial organisms, providing the basis for genetic diversity and speciation (Chobonov et al., 2017). Among the 57 aphid species observed in the Thracian region of Çanakkale province, 39 species have not been recorded elsewhere in the province. Conversely, 55 aphid species recorded in the southern part of the Marmara Sea were not observed in the Thrace region.

4. Conclusions

The differences in aphid species between the Thracian and Anatolian parts of Çanakkale province can be partly attributed to the barrier effects of the strait system. In addition, the limited number of studies conducted in the Thracian region also contributes to the lower number of recorded species from these localities. The findings of ongoing research strongly suggest that the current documented aphid diversity does not reflect the true composition in the study area, as these localities possess unique characteristics that may support additional aphid species.

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Ethical Statement

There is no need to obtain permission from the ethics committee for this study.

Authorship Contribution Statement

Concept: Şenol, Ö., Görür, G.; Design: Başer, G.; Data Collection or Processing: Şenol, Ö., Görür, G., Başer, G.; Diagnosis: Şenol, Ö., Görür, G., Başer, B., Akyıldırım Beğen, H.; Literature Search: Şenol, Ö.; Writing, Review and Editing: Şenol, Ö., Görür, G.

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