

Preliminary list of Auchenorrhyncha with notes on distribution and  
importance of species in Turkey. XII. Family Cicadellidae  
Typhlocybinae : Empoascini

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Summary

According to this study, Turkish fauna of Empoascini comprised 17 species belonging to six genera. Three species, *Empoasca* (*Kybos*) *populi* (Edw.), *Austroasca* (*Austroasca*) *vittata* (Leth.) and *Asymmetrasca paolii* (Oss.) constituted as new records for Turkey. Distribution, abundance and plants of which the specimens were collected on of each species are given.

Introduction

Although some species of Empoascini are recorded previously, the Turkish Typhlocibid bugs are not worked as a whole. They are quite widely distributed and sometimes found in large numbers. Fahringer (1922), Zachvatkin (1946), Dlabola (1957, 1971, 1981), Alkan (1961) and Linnavuori (1965) worked about Turkish species of this group. Bozkurt (1970), studied on *Empoasca* species that attack to Cotton in Western Anatolia. He found that *A. decedens* and *E. decipiens* are the most important species on Cotton in that Region.

In this paper, as it will be seen in the text, *E. decipiens*, *E. solani*, *A. decedens* and *K. bipunctata* are known as potential pests in the tribe of Empoascini. Especially *E. decipiens* and *A. decedens* are largely and widely distributed in Turkey. *E. decipiens* is mostly found on various vegetables,

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fruit trees, Cotton, Sugar Beets, Alfalfa and Grapevine. *A. decedens* is one of most important pest of Cotton in Turkey, as it is for other countries. It is distributed mainly Cotton growing places in Aegean Region and South and Southeastern parts of Turkey. It feeds also other cultivated plants and causes severe damage. These last two species have been reported as economic pests in other countries also (Khristova and Loginova, 1975; Wysoki and Izhar, 1978). *K. bipunctata* Osh. reported dominant pest of Cotton in Turkmenia (Alekseev et al., 1976).

There are some differences between Nast (1972) and present systematics about *Empoascini*. For example, *Kibos* is accepted as a subgenus of *Empoasca*, as it did by Dworakowska (1976). *E. decedens* and *Chlorita poolii* are treated in the genus of *Assymetrasca*. Subgenus *Eromochlorita* of *Chlorita* is accepted as valid genus, as did by most workers in recent years. However synonyms, distribution are taken from Nast (l. c.). Additional countries are given with the literature citations at the end.

The authors would like to express their thanks to Dr. Diabola, of National Museum (Nat. Hist.) Pragae, Czechoslovakia, for the identification of some species. Most of the species are identified by the authors by using Ribaut (1936), Emelyanov (1964), Dworakowska (1976) and Diabola (1957, 1971).

*Empoasca (Kibos) candelabricus* (Diabola, 1958)

General Distribution : Turkey, USSR (Georgia), Bulgaria (Dworakowska, 1976).

Distribution in Turkey : Linnavuori (1965) collected some specimens near Ankara and Ankara (Kızılcahamam) and Dworakowska (l. c.) has examined the same material and given figures of male genitalia for their variation from the original drawings of Diabola (l. c.). Later on Diabola (1981) reported it from Malatya (Balaban and Topaluşağı).

Material examined : Ankara (Central province, Çubuk, Karagöl, Eymir gölü), Erzincan (Çağlayan), Kırşehir, Nevşehir (Boyalı, Nar), Van (Başkale - Güzelsu), Yozgat (Sarıkaya, Sargun) - Totally 29 specimens.

Occurrence : Somewhat common, but found in small numbers.

Biological note : Specimens were collected from mid - July through the beginning of October, mainly on Willow and from light traps. Diabola (1981) found it in mid - June. Linnavuori (l. c.), Dworakowska (l. c.) and Diabola (l. c.) all found it on Willow.

1981. 2. 21. (Dworakowska) 2011A

*Empoasca (Kybos) populi* (Edwards, 1903)

Synonymy : *Kybos populi tremulae* Zach., 1953; *K. zaisanensis* Mitjaev, 1963 (Dworakowska, 1976).

General Distribution : Belgium, Bulgaria, Czechoslovakia, Denmark, England, Finland, France, Germany, Hungary, Italy, (?) Morocco, Netherlands, Norway, Poland, Sweden, Switzerland, USSR, Yugoslavia (Dworakowska, 1976).

Distribution in Turkey : This species constitutes a new record for Turkey.

Material examined : İzmir (Bayındır) - Only one specimen.

Occurrence : Very rare.

Biological note : The specimen was collected in late June. Ribaut (1936) reported it on *Populus nigra*. China (1943) has given *Populus canescens*, *P. tremulae* and *P. serotina* as hosts. Trolle (1974) reported also on *Populus* from June - September, Günhart (1974) on *Ainus*, in August. Dworakowska (1. c.) reported *P. nigra* and *P. alba* as hosts and *P. tremulae* as food plant, and it has two generations in Poland (the first one in June and the second in August - September).

*Empoasca (Kybos) smaragdulus* (Fallén, 1806)

Synonymy : *Euperyx viridipes* Curtis, 1837.

General Distribution : Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, England, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, USSR, Yugoslavia.

Distribution in Turkey : Although this species has been reported from İstanbul (Belgrad Ormanı, 1901, 1911) by Fahringer (1. c.), Nast (1. c.) and Dworakowska (1. c.) did not include Turkey as its distribution areas. Only Metcalf (1963) reported it from Turkey according to Fahringer (1. c.). Also Dworakowska (1. c.) stated that some records in older publications require confirmation. Since there has been no any other record that indicating its presence in Turkey and the authors also could not find any specimens, it needs further confirmation.

*Empoasca (Kybos) virgator* (Ribaut, 1933)

Synonymy : *E. virgator saageri* Wagner, 1935.

General Distribution : Austria, Belgium, Czechoslovakia, Denmark, England, Finland, France, Germany, Greece, Hungary, Italy (also Sardinia), Mongolia, Netherlands, Poland, Romania, Sweden, Switzerland, USSR. Turkey (Dlabola, 1971), Yugoslavia (Dworakowska, 1. c.).

Distribution in Turkey : Dlabola (1. c.) recorded it from Eskişehir and Bilecik.

Material examined : Ankara (Çubuk, Eymır gölü, Etimesgut), İzmir (Ödemiş - Bozdağ), Kırşehir (Kaman), Konya (Akşehir, İçeri Çumra), Van (Başkale, Çatak) - Totally 56 specimens.

Occurrence : Somewhat common, but found in small numbers.

Biological note : Specimens were collected starting from early July through mid - October, but mostly in July, on Willow and some on Poplar. It has been reported to feeding on *Salix* (*S. alba*, *S. pentandra*, *S. amygdalina*, *S. fragilis*, *S. purpurea*) and on *Alnus glutinosa* by Ribaut, 1936; Trolle, 1974; Günhart, 1974 and Dworakowska, 1.c..

*Empoasca decipiens* Paoli, 1930

Synonymy : *E. decipiens minor* Zach., 1935; *E. decipiens bifurcata* Cerutti, 1939; *E. decipiens meridiana* Zach., 1947; *E. decipiens minutissima* Vilbaste, 1961.

General Distribution : Afghanistan, Austria, Bulgaria, Czechoslovakia, Egypt, England, France, Germany, Iran, Iraq, Israel, Italy, Jordan, Lebanon, Libya, Morocco, Netherlands, Poland, Romania, Spain, Switzerland, Tunisia, Turkey, USSR; (Ethiopian region). Cyprus (Lindberg, 1948), Pakistan (Dlabola, 1971), Greece (Dlabola, 1977a).

Distribution in Turkey : Dlabola (1957), made the first record of this species from Adana and Mersin (Alata) in Turkey. Later on Bozkurt (1970), reported it many places in Western Anatolia. Now, it is found nearly all over in Turkey except that in Black Sea Coast.

Material examined : Unlimited specimens which were collected nearly in all the geographical regions of Turkey.

Occurrence : Very common and found usually in large populations.

Biological note : Specimens were collected starting from late April up to the end of September. It is a polyphagous pest and for this reason has been collected from the following plants : Grapevine, Cotton, Potato, Eggplant, Tomato, Tobacco, Okra, Broad Bean, French Bean, Cucumber, Sesame,

Alfalfa, Clover, Sunflower, Sugar Beet, Fig, Hemp, *Datura* sp., *Citrus* spp., *Glycyrrhiza glabra* and also found on several species of Labiatae and Gramineae. Bozkurt (1970) reported it on *Dolichos* sp., Corn, Raddish, Common Mint in addition to the above given plants. Giray (1980) found it on Anise in Western Anatolia. However it has been reported by other workers being a pest on several plants that mentioned above (Linnavuori 1962; Gentry 1965; Avidov and Harpaz 1969; Vidano and Arzone 1978).

At the moment is a potential pest on Cotton, Potato, Tobacco, Sesame and several species of leguminous plants in Turkey.

*Empoasca solani* (Curtis, 1846)

Synonymy : *Typhlocyba pteridis* Dahlbom, 1850; *T. solanituberosi* Kollar, 1852; *Chlorita solani roseiventris* Rey, 1894; *Empoasca dlabolae* Lind., 1960; *Empoasca tullgreni* R.b., 1933.

General Distribution : Albania, Algeria, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, England, Finland, France, Germany, Italy (also Sardinia), Mongolia, Morocco, Netherlands, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Tunisia, Turkey, USSR, Yugoslavia, Crete (Dlabola, 1977b), Iran (Dlabola, 1981).

Distribution in Turkey : Fahringer (1922) recorded it in İstanbul (Pole-nezköy). Later Dlabola (1957) reported it in Adana (Abacılar, Bürücek, Karataş) and Ankara (Mogan gölü).

Material examined : Ankara (Çubuk, Elmadağ, Lalahan, Eymir gölü, Kayaş, Karagöl), Bilecik (Pazaryeri), Burdur (Ağlasun), Çankırı (Festikhan), Erzincan (Çağlayan, Ilıç, Kuruçay, Refahiye), Gaziantep (Nurgana), Kars (İğdır, Küllük, Kağızman), Kastamonu (İlgaz - Belören), Konya (Ereğli Karaman, Kasımhan, Meram), Nevşehir (Boyalı, Çat, Göreme, Nar, Ürgüp), Samsun (Gelemen), Sinop (Ahmetyeri, Durağan, Kanlıçay), Urfa (Ceylanpınar), Van (Beyüzümü, Edremit, Gevaş) - Many specimens.

Occurrence : Common and sometimes found in large numbers.

Biological note : Specimens were collected from the beginning of June through October, on various plants. Specimens were taken on Sugar Beet, Potato, Tomato, Red Pepper, Cucurbitaceous plants, Alfalfa, Apple tree, Mullein, Cotton, Strawberry, Hop, Gramineous plants and some also from light traps. Fahringer (l. c.) reported it on Hollyhock; Bodenheimer (1958) Hollyhock, Mallow and Musk Mallow; Günthart (1974) on Hazelnut, Sugar Beet, Broad Bean; Vidano and Arzone (1978) on *Angelica archangelica*, *Verbana officinalis* and Blessed Thistle as host plants of this species.

*Empoasca vitis* (Göthe, 1875)

Synonymy : *Chlorita aurantiaca* Leth., 1880; *Typhlocyba viticola* Targ. - Toz., 1888; *Chlorita flavescens subvaria* Rey, 1894; *Empoasca vitium* Paoli 1931; *Chlorita flavescens* (Sic) *punctata* Kato, 1923; *Empoasca flavescens petiolata* Cerutti, 1939.

General Distribution : Algeria, Austria, Belgium, Bulgaria, China (Manchuria), Czechoslovakia, Denmark, Egypt, England, Finland, France, Germany, Hungary, Ireland, Italy, Japan, Korean Peninsula, Netherlands, Norway, Palestine, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Tunisia, Turkey, USSR, Yugoslavia; (Nearctic and Oriental Regions).

Distribution in Turkey : This species has been listed from Turkey by Oshanin (1912) and Nast (l. c.). However Iyriboz (1942), Iren and Ahmed (1973) are also recorded it as an injurious species on Grapevine in some parts of Turkey. Lodos (1982) has also been reported it from Turkey according to the earlier works. The above mentioned records need further confirmations and probably erroneous. Because so far our investigations to find out this species in Turkey were unsuccessful. It is believed that it might be confused with that of *E. decipiens* or *A. decedens*.

*Asymmetrasca decedens* (Paoli, 1932)

General Distribution : Cyprus, Czechoslovakia, Egypt, Iraq, Israel, Italy (also Sardinia and Sicily), Jordan, Libya, USSR (Georgia) : (? Oriental Region). Turkey (Dlabola, 1957), Pakistan (Dlabola, 1971), Iran (Askari and Hussain, 1977).

Distribution in Turkey: It is largely distributed all over in Turkey except in Northern Anatolia and Thrace.

Material examined: Unlimited specimens that collected nearly all over in Turkey.

Occurrence: Very common and sometimes found in large numbers.

Biological note : Specimens were collected starting from mid April through up to October, even late November but, most abundantly found in June-August. It was collected mainly on Cotton, Potato, French Bean, *Citrus* spp., Broad Bean, Grapevine, Sesame, Tobacco, Eggplant, Okra, Pistachio, Alfalfa, Common Mint, Willow, Tamarisk and also in humid meadows. It is usually confused with *E. decipiens* of which found sometimes together at the same place. However, in Turkey especially in Western Anatolia *A. decedens*

is found more abundantly on Grapevine than of *E. decipiens*. Linnavuori (1962) recorded it on Eggplant, Grapevine and Willow. Avidov and Harpaz (1969) reported Peanut, Big-bud Hickory, Melon, Peach, Pear, Apple, Grapevine and Willow, as its host plants. Bozkurt (1970) found it on several cultivated plants in addition to the above plants. Adults and nymphs feed on the under surface and the edge of leaves and cause changing the color to light green, then to yellow and red. This damage spread towards inner parts and the edge of leaves curve and dry. Such leaves drop prematurely. This damage is very serious especially on young plants having 3-5 leaves which causes the plants dry up completely. Feeding of insects on older plants effects to developments and decrease the yield and its value. Damaged Citrus fruits have dirty whitish patches. It has been stated infesting Cotton at the of 91 % on the average, Castor Oil Plant, Orange, Peach at 100 %, Corn, Raddish, Hyacinth Bean, Broad Bean at 92-95 %, Sesame at 80 %. Askari and Hussain (1.c.) stated that it is dominant pest on Cotton in Iran.

*Asymmetrasca paolii* (Ossiannilsson, 1939)

General Distribution: Austria, Bulgaria, Czechoslovakia (Moravia), Finland, France, Germany, Hungary, Italy, Netherlands, Poland, Sweeden, USSR, Yugoslavia, Czechoslovakia (Bohemia, Slovakia) (Dlabola, 1977 a), Iran (Dlabola, 1981).

Distribution in Turkey: This is the first record of this species in Turkey.

Material examined: Adana - Totally 12 specimens.

Occurrence: Occasionally.

Biological note: Specimens were collected on Orange trees in 1973. Unfortunately there is no exact collecting date on the labels.

*Austroasca (Austroasca) vittata* (Lethierry, 1884)

Synonymy: *Empoasca artemisiae* Haupt, 1924.

General Distribution: Austria, China (Manchuria), Czechoslovakia, England, s. France, Germany, Italy (also Sicily), Japan (Honshu, Kyushu), Korean Peninsula, Mongolia, Poland, Romania, Switzerland, USSR, Yugoslavia.

Distribution in Turkey: This is the first record of this species in Turkey.

Material examined: Ankara (Eymir gölü, Çubuk Baraj I) - Totally 21 specimens.

Occurrence: Occasionally.

Biological note: Specimens were collected from late May through mid - July on Wormwood. Ribaut (1936) And Emelyanov (1964) reported also its host plant as Wormwood.

*Kyboasca bipunctata* (Oshanin, 1871)

Synonymy: *Chlorita frontalis* Leth., 1884; *Empoasca punctatum* Haupt, 1912 (Primary homonym); *E. haupti* Rib., 1933; *Kybos bipunctatus ulmicola* Zach., 1953.

General Distribution: Austria, China (Manchuria), Czechoslovakia, Denmark, Finland, Germany, Hungary, Italy, Mongolia, Netherlands, Poland, Romania and USSR, Turkey (Alkan, 1961; Bozkurt, 1970; Dlabola, 1971, 1981).

Distribution in Turkey: Alkan (l.c.) collected specimens of this species in Artvin (Murgul) in 1956, now in the collection of Department of Plant Protection of Agricultural Faculty, Ankara University. Dlabola (l.c.) reported it from Isparta - (Keçiborlu), Bilecik, Adapazarı and Nevşehir (Ürgüp).

Material examined: Ağrı (Hamur), Amasya (Suluböcükhanı), Ankara (Kızılcahamam, Çubuk, Elmadağ, Lalahan), Artvin (Murgul), Diyarbakır (Kulp), Erzincan (Ilıç), Kars (İğdir, Küllük, Kağızman), Malatya (Pötürge), Mardin (Cizre), Muş, Nevşehir (Gülşehir, Boyalı, Göreme, Ürgüp), Siirt (Eruh, Kozluk) - Totally 200 specimens.

Occurrence: Common but sometimes in small numbers.

Biological note: Specimens were collected from June through the beginning of October. Specimens were taken, especially from Cotton, Licorice, Elm and some on Alfalfa, Clover, Corn, Hemp, Rice and light traps. Alkan (1961) collected specimens on Corn, Hemp, Millet, Tobacco, Grapevine, Potato, Elder and Grasses. Dlabola (1981) reported it on one species of Elder, Nettle and Alfalfa. Alekseev et al. (1976) reported it as the dominant pest of Cotton with *A. decedens* in Turkmenia.

*Chlorita brevispina* Linnavuori, 1965

General Distribution: Turkey.

Distribution in Turkey: Linnavuori (l.c.) collected his material from Hatay (İskenderun) on Wormwoods.



The authors have no representative of this species in their collection.

*Chlorita moganica* (Dlabola, 1957)

General Distribution: Turkey.

Distribution in Turkey: Dlabola (l.c.) described this species from the material collected in Ankara (Mogan gölü) at steppe vegetation.

Material examined: Ankara (Eymir gölü, Çubuk, Şereflikoçhisar, Tuz gölü), Nevşehir (Central province - Bağcılık İst.), Çorum (Bayat) - Totally 42 specimens.

Occurrence: Occasionally but sometimes in small numbers.

Biological note: Specimens were collected on Wormwood from the beginning of May through up to September.

*Chlorita osmanica* Dlabola, 1971

General Distribution: Turkey (Dlabola, l.c.).

Distribution in Turkey: Dlabola described this species from the material collected in Ankara near Delice river.

Material examined: Ankara (Polatlı) - Totally 11 specimens.

Occurrence: Occasionally.

Biological note: Specimens were collected in late May, on steppe vegetation.

*Chlorita vana* Dlabola, 1971

General Distribution: Turkey and Iran (Dlabola 1971, 1981).

Distribution in Turkey: Dlabola described this species from the material collected in Van. Later on he reported it again from Sivas (Gürün). He collected the specimens on Wormwoods, Milkvetch and *Acantholimon* sp. in steppe habitat.

The authors have no representative of this species.

*Eremochlorita tessellata* (Lethierry, 1884)

General Distribution: Bulgaria, Czechoslovakia (Slovakia), Greece, Italy, Romania, Tunisia, Turkey, USSR.

Distribution in Turkey: Dlabola (1957) collected specimens of this species in Ankara (Mogan gölü) on Wormwoods.

Material examined: Ankara (Central province, Çubuk, Elmadağ, Lalahan, Eymir gölü, Polatlı, Şereflikoçhisar), Erzincan (Demirpınar), İzmir, Kastamonu (Ilgaz - Belören), Konya (Karapınar, Meram), Nevşehir (Central province - Bağcılık İst.) Totally 273 specimens.

Occurrence: Common and found sometimes in large numbers.

Biological note: Specimens were collected starting from late May through the mid-October, mostly in July-August, on Wormwoods.

### *Eremochlorita uvaroviana* (Zachvatkin, 1946)

Synonymy: *Chlorita* (*Eromochlorita*) *uvaroviana azerbeidzhanica* Zach., 1946.

General Distribution: Turkey, USSR (Azerbaijan).

Distribution in Turkey: Zachvatkin (l.c.) described this species from the material collected in Manisa (Salihli and Borlu) by B.P. Uvarov. The subspecies *azerbeidzhanica* Zach. were collected on *Artemisia scoparioides* abundantly. The type form might be found on other species of Wormwoods too.

The authors have no representative material of this species.

### Ö z e t

Türkiye Auchenorrhyncha türlerinin yayılışı ve önemlerine ait ön listesi. XII. Familya Cicadellidae, Typhlocybinae: Empoascini

Bu çalışmaya göre Türkiye Empoascini faunasını altı cinse ait 17 tür oluşturmaktadır. Bunlar içersinden üç tür: *Empoasca* (*Kybos*) *populi* (Edw.), *Austroasca* (*Austroasca*) *vittata* (Leth.) ve *Asymmetrasca* *paolii* (Oss.) Türkiye için yeni kayıtlardır. Metin içinde her bir türün yayılışı, ekonomik önemi ve üzerinde toplandığı bitkiler verilmeye çalışılmıştır.

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