

**Preliminary list of Auchenorrhyncha with notes on distribution and importance of species in Turkey. XVII. Family - Cicadellidae : Deltocephalinae : Grypotini, Goniagnathini and Opsiini ( Part I )**

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**Summary**

The Turkish fauna of the tribes of Grypotini, Goniagnathini and Opsiini are represented by 16 species of 6 genera. *Goniagnathus palliatus* (Leth.) and *Nealiturus pulcher* (Haupt) are found as new records for the Turkish fauna. Distribution, abundance, importance and plants which the specimens were collected on for each species are given.

**Introduction**

Turkish Cicadellidae fauna, especially the subfamily Deltocephalinae is more extensively studied than the other groups of Auchenorrhyncha. As it is seen from the present list, most of the species were recorded previously in Turkey; only two species namely *Goniagnathus palliatus* (Leth.) and *Nealiturus pulcher* (Haupt), added as a new record to fauna for these tribes.

Fahringer (1922) listed only *Grypotes puncticollis* from Turkey. Young and Frazier (1954) recorded *Circulifer dumius* and *C. opacipennis* in Turkey. Linnavuori (1965) recorded about 5 species from Turkey. Metcalf (1967) and Nast (1972) both listed about 11 species each from Turkey which based on the pre-

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vious works. Kalkandelen (1974 a,b) recorded about 9 species from Central Anatolia and in her last work she listed also *Opsiüs cypriacus* and *O. smaragdinus* in this region. Dlabola (1957, 1981) listed several species from Turkey which most of the species collected by himself. In his last work he accepted *N. transversalis* and *N. guttatus* as synonyms of *N. fenestratus*. The present authors also accepted this latest concept of this species as there is no significant variation in the male genitalia as well as the colour variation of forebody and forewings. Nevertheless, since there should be more further work on this problem, the present material are given in 3 groups under the name of *N. fenestratus*. On the other hand *C. opacipennis* taken as a valid species also in this paper. The taxonomic characteristics of *Circulifer* Zach. and so of *C. opacipennis* are not suitable to that of *Neocaliturus* Oman, as it is stated by Quartau (1984). On the same basis *dubiosus* (Mats.) is placed in the genus of *Circulifer*.

Several species in these groups are economically important pests for cultivated plants. They are especially important for being vectors of plant diseases, beside causing direct damage to the plants. *C. opacipennis* is the vector of beet curly top virus (BCTV) disease in Turkey. However, according to Bennett and Tanrisever (1957), this Turkish virus is relatively mild on sugar beet, Turkish tobacco and tomato. This pest is also polyphagous and attacks several other plants. Gentry (1965) stated that it is a serious pest of sesame in Iran. Klein and Raccah (1980) accused *N. fenestratus* as being the vector of safflower phyllody disease of safflower (*Carthamus tinctorius*) in Israel. The other disease vector in this group is the vector of sesame phyllody in India (Mathur and Verma, 1973; Kooner and Doel, 1982), and also accused being the vector of witches broom disease of legumes in Japan (Ishihara, 1982). Sesame phyllody disease has been determined in Turkey by Türkmenoğlu and Arı (1959). The authors stated that the disease was seen unimportantly on the native variety of sesame in some places, but the disease was destructive at the rate of 40-50 % on the foreign and hybrid variety of sesame in the Aegean Region. Although the disease has not been found severely on that time, growers was warned against this disease. However, the vector of this disease was not found on that time and present authors believed that the symptoms might be confused with some other causes. Bodenheimer (1958), reported *G. puncticollis* as a pest of *Pinus nigra* and *P. brutia* in Turkey. Avidov and Harpaz (1969) stated that *O. lethierryi* attacks heavily to *Tamarix* at times and causes to dry branches of this plant, particularly in southern Israel.

The Deltocephalinae is the largest subfamily of Cicadellidae. Therefore the Turkish fauna of Deltocephalinae will be given in a series of papers, depending upon the number of species in each tribe, as it is done in the previous groups. In case of having large numbers of species, that will be beyond the ca-

capacity of this periodic, the papers will comprise several genera, following the sequence of Nast (1972). Synonyms, distribution of species in Palaearctic Region are taken from the same work. Additional countries are given with literature citations. Some of the species are identified by Dr. Dlabola, to whom the authors wish to express their thanks here and some identifications were made by the Junior author by using Ribaut (1952) Emelyanov (1964) and other related literature.

Grypotini Evans, 1947

*Grypotes puncticollis* (Herrich-Schäffer, 1834)

Synonymy : *Jassus pinicellus* Zett., 1840; *J. (Thamnotettix) fallax* Kbm., 1868.

General Distribution : Algeria, Austria, Belgium, Czechoslovakia, Denmark, England, Finland, France, Germany, Italy (also Pantelleria Is. and Sicily), Netherlands, Norway, Poland, Portugal, Spain (also Balearic Is.), Tunisia, Turkey, USSR, Yugoslavia.

Distribution in Turkey : Fahringer (1922) reported it from İstanbul (Belgrad forest) in 1909 and found it on *Pinus pinaster*. Bodenheimer (1958) accepts it as a pest of *Pinus nigra* and *P. brutia* in Turkey. Kalkandelen (1974 a, b) determined three female specimens in Çankırı (Ilgaz forest) on *Pinus*.

Material examined : Ankara (Beynam), Çankırı (Ilgaz) - Totally 6 specimens.

Occurrence : Occasionally.

Biological note : The specimens were collected in mid-August, mid-September and early November, on *Pinus*.

*Grypotes staurus* Ivanoff, 1855

Synonymy : *G. australis* Haupt, 1927.

General Distribution : Algeria, Canary Is., Cyprus, France, Greece, Israel, Italy (also Sardinia and Sicily), Libya, Morocco, Portugal, Turkey, Yugoslavia.

Distribution in Turkey : Dlabola (1957) collected specimens of this species in Adana (Ağapınarı, Kozan, Suluhan) and Linnavuori (1965) in Hatay (Yayladağ - Belen).

Material examined : İzmir (Yamanlar), Konya (Ermenek), Muğla and Samsun (Bafra - Alaçam) - Totally 13 specimens.

Occurrence : Occasionally.

Biological note : Specimens were collected in late April, August and early December while hibernating as adult. All specimens were taken from *Pinus* spp.. Lindberg (1948) and Linnavuori (1962) have given *Pinus halapensis* as a host plant of this species.

Goniagnathini Wagner, 1951

*Goniagnathus bolivari* (Melichar, 1907)

Synonymy : *G. hoberlandti* Dlabola, 1957.

General Distribution : Israel, Spain, Turkey, Iran (Dlabola, 1981).

Distribution in Turkey : Dlabola (1957) described this species under the name of *G. hoberlandti* from Adana (Gavurdağı) and Edirne. Linnavuori (1965) also found one specimen from Adana (Pozantı).

Material examined : Ankara (Lalahan), Nevşehir (Avanos) and Urfa (Ceylanpınar) - Totally 3 specimens.

Occurrence : Very occasionally.

Biological note : The specimens were collected in early June, mid-August and mid-September, from steppe vegetation. Dlabola (l.c.) also collected the specimens from steppe vegetation in Turkey.

*Goniagnathus brevis* (Herrich - Schaffer, 1835)

Synonymy : *Jassus annulipes* Lucas, 1849.

General Distribution : Albania, Algeria, Belgium, Bulgaria, Cyprus, Czechoslovakia, France, Germany, Hungary, Iran, Israel, Italy (also Pantelaria Is. and Sicily), Morocco, Netherlands, Poland, Portugal, Romania, Spain Switzerland, Tunisia, Turkey, USSR, Yugoslavia. Lebanon (Dlabola, 1974).

Distribution in Turkey : Dlabola (1957) collected several specimens of this species in Edirne. Metcalf (1967) also listed it from Turkey according to Horvath (1901). Kalkandelen (1974 a, b) reported it from Ankara (Çubuk Baraj 1, Elmadağ, Eymir gölü and Lalahan).

Material examined : Ankara (Çubuk Baraj 1, Elmadağ, Eymir gölü, Lalahan), Burdur, Diyarbakır, Manisa (Akhisar), Mardin (Midyat), Niğde (Çiftahan) and Samsun (Bafra - Karaköy) - Totally 12 specimens.

Occurrence : Occasionally.

Biological note : The specimens were collected from late April to late October. Dlabola (1957, 1981) collected the specimens from steppe vegetation and on *Artemisia*.

*Goniagnathus palliatus* (Lethierry, 1887)

General Distribution : Algeria, Egypt, Israel, Libya, Morocco, USSR, Iran (Dlabola, 1981).

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

Material examined : Bingöl - Only 2 specimens.

Occurrence : Very occasionally.

Biological note : The specimens were collected in mid - August on *Tamarix*. Linnavuori (1962) and Dlabola (l.c.) also reported it on tamarisks in the steppe vegetation.

*Opsius Emelyanov, 1962*

*Opsius cypriacus* Lindberg, 1958

General Distribution : Cyprus, Turkey, USSR, Iran (Dlabola, 1981).

Distribution in Turkey : Linnavuori (1965) collected many specimens in Adana (Pozantı). Kalkandelen (1974 b) listed it from Ankara, İzmir, Nevşehir. Dlabola (1981) reported it being in Malatya (Darende).

Material examined : Amasya (Osmancık), Ankara (Etimesgut), Kırıkkale), Artvin, Aydın (Söke - Samsundağı), Diyarbakır (Central province), Edirne (Enez), Erzincan (İliç), Erzurum (Central province, Horasan, Tortum), İzmir (Karşıyaka, Karaburun, Mordoğan), Kütahya (Donamış), Manisa (Akhisar, Alaşehir, Gölarmara), Nevşehir (Avanos, Gülşehir), Samsun (Kavak), Siirt (Kozluk), Van (Başkale) and Yozgat (Çekerek, Yerköy) - Totally 135 specimens.

Occurrence : Common and sometimes found somewhat in large numbers.

Biological note : Specimens were collected from late May to late September on tamarisks and this plant seems to be the host for this species.

*Opsius dagestanicus* Dlabola, 1960

General Distribution : Iran, USSR, Turkey (Dlabola, 1981).

Distribution in Turkey : Dlabola (l.c.) reported it from Malatya (Darende) and Sakarya (Sapanca gölü) on *Tamarix* in Turkey.

The authors have no representative material of this species.

*Opsius jucundus* (Lethierry, 1871)

General Distribution : Afghanistan, Algeria, Egypt, Iran, Iraq, Turkey, USSR, (Ethiopian region).

Distribution in Turkey : Nast (1972) listed this species from Turkey. Authors have no other records on the presence of this species in Turkey, nor any specimens in their collection that collected in Turkey.

*Opsius lethierryi* Wagner, 1941

Synonymy : *Athysanus heydeni* Lethierry, 1876( Primary homonym).

General Distribution : Afghanistan, Algeria, Bulgaria, Canary Is., Egypt, France (also Corsica), Iraq, Israel, Italy (also Sardinia), Madeira Archipelago, Morocco, Tunisia, Turkey, Yugoslavia.

Distribution in Turkey : Dlabola (1957) listed this species from Adana (Feke) and Ankara (Baraj) on *Tamarix*.

Material examined : Konya (Ermenek), Manisa (Alaşehir) - Totally 3 specimens.

Occurrence : Very occasionally.

Biological note : The specimens were collected in early July on *Tamarix*. Avidov and Harpaz (1969) stated that when it builds large population may cause damage on tamarisks.

*Opsius smaragdinus* Emelyanov, 1964

General Distribution : USSR (Ukraine "Crimea"). Turkey (Kalkandelen, 1974 b).

Distribution in Turkey : Kalkandelen (l.c.) recorded it in Nevşehir (Gülşehir).

Material examined : The same material given above.

Occurrence : Very occasionally.

Biological nite : The specimens were collected in September by light trap.

*Opsius stactogalus* Fieber, 1866

Synonymy : *Jassus (Thamnotettix) tamaricis* Kbm., 1868; *Athysanus (Opsius) heydeni* Fieber, 1872.

General Distribution : Algeria, Austria, Azores, Belgium, Bulgaria, Canary Is., Cyprus, Czechoslovakia, Egypt, England, France, Germany, Greece, Hungary, Italy (also Sardinia and Sicily) Libya, Morocco, Netherlands, Poland, Portugal, Romania, Spain, (also Balearic Is.), Sweden, Switzerland, Tunisia, USSR, Yugoslavia; (Nearctic region). Turkey (Metcalf, 1967; Kalkandelen, 1974 a, b).

Distribution in Turkey : Metcalf (1967) listed it according to Olsen (1921). Kalkandelen (1974 a, b) reported it from Ankara.

Material examined : Ankara (Central province) - Only 2 specimens.

Occurrence : Very occasionally.

Biological note : The specimens were collected in September on tamarisks.

#### *Orosius orientalis* (Matsumura, 1914)

Synonymy : *Thamnotettix filigranus* Haupt, 1927; *O. albicinctus* Distant, 1918 (Ishihara, 1982).

General Distribution : Egypt, Iraq, Israel, Madeira Archipelago, Morocco, Turkey; (Ethiopian and Oriental regions). Pakistan, Iran (Diabola, 1971 b; 1981), Japan and Taiwan (Ishihara, 1982).

Distribution in Turkey : Diabola (1957, 1981) listed it from Adana (Abacılar, Ağapınarı, Karataş, Kozan) and İçel (Alata, Erdemli). Giray (1982) reported this species from İzmir (Bornova) and being as a pest of *Mentha piperita*.

Material examined : İzmir (Bornova), Muğla (Fethiye), Nevşehir (Boyalı), Urfa (Ceylanpınar) - Totally 6 specimens.

Occurrence : Occasionally.

Biological note : Specimens were collected starting from late May through late August on *Medicago sativa*, *Sesamum indicum*, *Mentha piperita* and in light traps. Ishihara (1982) stated that this species is a vector of witches' broom disease of legumes in Japan and sesame phyllody in India. Kooner and Doel (1982) have given sannhemp (*Crotalaria juncea*), radish, purslane (*Portulaca oleracea*), lucerne, chicory, rape, sugarbeet and black gram (*Vigna mungo*) beside sesame as food plants in India and found out that sesame was the most suitable host plant for this species.

#### *Circulifer dubiosus* (Matsumura, 1908)

Synonymy : *Circulifer ruscinonensis* Ribaut, 1952; *C. dubiosus infirmus* Young et Fraizer, 1954.

General Distribution : Italy (Sardinia, Sicily), France, Libya, Morocco, Romania, Spain, Spanish Sahara, Tunisia, Turkey, USSR (Kazakhstan, Tajikistan).

Distribution in Turkey : Young and Fraizer (l.c.) recorded this species on the shore of Tuz gölü.

Unfortunately the authors have no representative material of this species.

*Circulifer opacipennis* (Lethierry, 1876)

Synonymy : *Cicadula vittiventris* Leth., 1876; *Thamnotettix opacus minor* Ferr., 1884; *Th. unicolor* Haupt, 1927; *Circulifer haupti* Zach., 1935; *C. viridiflavus* Lind., 1948.

General Distribution : Afghanistan, Algeria, Austria, Canary Isl., Cyprus, Czechoslovakia, Egypt, France, Germany F.R., Greece, Hungary, Iran, Italy (also Sardinia and Sicily), Jordan, Lebanon, Libya, Madeira Archipelago, Mongolia, Morocco, Poland, Romania, Spain, Syria, Tunisia, Turkey, USSR, Yugoslavia.

Distribution in Turkey : This species has been listed in many places in Turkey by Young and Frazier (1954), Bennett and Tanrisever (1957), Dlabola (1957, 1971, 1981), Öge (1959), Linnavuori (1965), Kalkandelen (1974 a, b) and Giray (1980). It is largely distributed nearly all over in Turkey.

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

Occurrence : Very common and found sometimes in large numbers.

Biological note : Specimens were collected starting from late April through mid - October, mostly found in June and July, mainly on *Beta vulgaris rapa*, *Sesamum indicum*, *Gossypium*, *Medicago sativa*, *Solanum tuberosum*, *Phaseolus vulgaris*, *Zea mays*, *Chenopodium* and many other weeds. Young and Fraizer (1954) have given the list of host plants as follows: *Atriplex* and *Cistus* in Spain, *Rosmarinus officinalis* in Sardinia, *Marribium*, *Salicornia* and *Chenopodiaceae* in Greece and *Portulaca oleracea*, *Thymus* sp., *Cruciferae*, *Chenopodiaceae*, *Amaranthaceae*, *Polygonum*, *Micromeria*, *Plantago* and *Beta vulgaris* in many countries. Linnavuori (1962) has given *Chenopodiaceae* as host plants of this species. Dlabola (1971) stated that this species is mostly found in dry and salty steppe biotops.

*Neoliturus fenestratus* (Herrich - Schaffer, 1834)

Synonymy : *Jassus (Deltocephalus) guttulatus* Kbm., 1868; *Thamnotettix fenestrata transversalis* Puton, 1881; *Th. fenestratus fasciata* Ferr., 1885; *Th. fenestratus venosa* Fieber, 1885; *Bothrognathus hui* Chang, 1938; *Circulifer guttulatus laeta* Ribaut, 1952.

General Distribution : Afghanistan, Albania, Algeria, Austria, Belgium, Bulgaria, Canary Is., China, Cyprus, Czechoslovakia, Denmark, Egypt, France, Germany, Greece, Hungary, Iran, Iraq, Israel, Italy (also Pantelleria Is., Sardinia and Sicily), Libya, Mongolia, Morocco, Netherlands, Poland,

Portugal, Romania, Spain, (also Balearic Is.), Switzerland, Syria, Tunisia, Turkey, USSR, Yugoslavia.

Distribution in Turkey : Dlabola (1957, 1971, 1981) reported under three names of this species from Turkey: Adana (Central province, Abacılar, Bürücek, Gavurdağı, Karataş, Kozan, Misis), Ankara (Baraj, Beynam, Çamlıdere, Işıkdagi, Moğan gölü), Edirne, Bitlis (Reşadiye), Bolu (Gerede), Kayseri (Topaluşagi), Nevşehir (Gülşehir, Ürgüp), Sivas (Gürün) and Van (Başka-  
le). Kalkandelen (1974 a, b) reported it under three names from Ankara, Konya, Nevşehir. Giray (1980) found it on *Pimpinella anisum* in İzmir (Çeşme).

Material examined : *Fenestratus* group - Ağrı (Tendürek dağı), Ankara (Central province, Bağlum, Çubuk, Eymir gölü, Hasanoğlan, Lalahan, Polatlı), Çorum (Bayat), Diyarbakır, Erzurum (Aşkale, Hasankale, İspir, Uzundere), İçel (Tarsus), İzmir (Bornova), Kars (Iğdır), Mardin (Cizre), Nevşehir (Gülşehir), Urfa (Harran), Van (Çatak) - Totally 35 specimens.

*Guttulatus* group- Ankara (Etimesgut, Karagöl, Kazan), Diyarbakır, İzmir (Bornova), Kars (Iğdır), Nevşehir (Gülşehir, Ürgüp, Çat), Tokat (Erbaa), Urfa (Ceylanpınar), Konya (Karaman) - Totally 43 specimens.

*Transversalis* group - Ankara, Çorum (İskilip), Diyarbakır (Central province, Devegeçidi), Erzincan (Çağlayan), İzmir (Karaburun), Muş, Siirt, Van (Gevaş) - Totally 15 specimens.

Occurrence : Very common and sometimes found in small numbers.

Biological note : Specimens were collected from late May through mid-September up to early October, but mostly in July on *Artemisia*, *Medicago sativa*, *Trifolium* spp., *Tamarix*, *Chenopodium*, *Hypericum*, cotton, apple, etc. and some also from light traps. Klein and Raccach (1980) stated that Safflower (*Carthamus tinctorius*) is the summer host plant and *Chrysanthemum segetum* is the winter host plant of this species.

#### *Neoliturus pulcher* (Haupt, 1927)

General Distribution : Iran, Israel, USSR (Georgia, Kazakhstan, Tajikistan).

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

Material examined : Diyarbakır and Muğla - Totally 11 specimens.

Occurrence : Occasionally.

Biological note : Most of the specimens were collected by light traps in July of 1977 and only one on *Verbascum* in August in Muğla.

## Özet

Türkiye Auchenorrhyncha türlerinin yayılışı ve önemlerine ait ön listesi.

XVII. Familya. Cicadellidae :

Deltocephalinae : Grypotini, Goniagnathini ve Opsiini (I. Kısım)

Bu çalışma sonunda Türkiye'de Grypotini, Goniagnathini ve Opsiini tribulardan alta cinse ait 16 tür tesbit edilmiştir. *Goniagnathus palliatus* (Leth.) ve *Neocaliturus pulcher* (Haupt) Türkiye için yeni kayıtlardır. Her bir türün yayılışı, ekonomik önemi ve üzerinde topladıkları bitkiler verilmeye çalışılmıştır.

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