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A preliminary review of the subfamily Chrysomelinae (Coleoptera, Chrysomelidae) of Turkey

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A b s t r a c t : The paper is based on the taxa recorded in literature so far and the material collected about last 10 years in Turkey. On a total of 95 taxa recorded from the country, three species and one subspecies, *Chrysolina coerulans angelica* (REICHE & SAULCY 1858), *Hydrothassa glabra* (HERBST 1783), *Timarcha tenebricosa* (FABRICIUS 1775), *Zygogramma suturalis* (FABRICIUS 1775), are new for the Turkish fauna. 14 chorotypes are recognized, 13 (13.69 % of whole fauna) taxa are endemic of Turkey. With 14 taxa the Asiatic-European (ASE) elements are the most abundant, follow by the SW-Asiatic (SWA) ones with 12 taxa.

K e y w o r d s : Chrysomelidae, Chrysomelinae, Check list, Turkey.

Introduction

The family Chrysomelidae (Leaf beetles) is one of the richest insect groups (SANTIAGO-BLAY 1995) and there are about 50000 described species in 19 subfamilies in the world (LOPATIN 1984). Chrysomelinae is one of the important subfamily among them. The subfamily Chrysomelinae is a large, mostly medium-sized, 2-30 mm long, usually shiny and metallic beetles. Their body shape is very variable, from narrow and elongate to broad or hemispherical, and from convex to flatten. They are characterized by the usually oblique head with more or less truncate front margin of the clypeus, filiform antennae with widely separated insertions, and the transverse procoxae with exposed trochantins.

Chrysomelines are apparently restricted to Dicotyledons, some feed on herbaceous plants while others are confined to shrubs or trees. Adult and larvae almost always feed openly, rarely in tubiform nests, and sometimes gregariously on the same host plants, causing similar damage to foliage and herbaceous stems (BOOTH et al. 1990). The eggs are often laid in groups, usually on the foliage, but sometimes in the soil. A few species are known to be viviparous or ovoviviparous. Pupation usually occurs in the soil, rarely on the foliage. Many species are pest of agricultural crops, causing considerable damage when population levels are high, and some have also been shown to transmit plant viruses (BOOTH et al. 1990). However, some species are important in controlling of weeds, for example *Chrysolina hyperici* (FÖRSTER) and *Zygogramma suturalis* (F.) have been used for the biological control *Hypericum perforatum* and *Ambrosia artemisiifolia* respectively (HARRIS et al. 1969, HARRIS 1973, KOVALEV et al. 1983, REZNIK 2000).

Although there are some contributions on chrysomelids of Turkey, the fauna of Turkish Chrysomelinae are not known very well. The aim of the present work is to set-up the current knowledge on the subfamily Chrysomelinae fauna of Turkey, providing an updated checklist of the species till now recorded in literature (indicated in text) and collected from field for about last ten years.

According to their distribution patterns, the species were classified into major chorotypes, in accordance with guidelines proposed by VIGNA TAGLIANTI et al (1999).

Results

A total of 95 species and subspecies in 16 genera were included occurring in Turkey. The list of the species:

***Chrysolina adzharica* LOPATIN 1988**

Chrysolina adzharica LOPATIN - Rev. d'Ent. URSS LXVII 3: 589-590.

Distribution in Turkey: Northeast Turkey (LOPATIN 2000).

General Distribution and Chorotype: Georgia, Asian part of Turkey; SW-Asiatic (Anatolo-Caucasian).

***Chrysolina aeneipennis* (REICHE 1858)**

Chrysomela aeneipennis REICHE - Ann. Soc. Ent. Fr. (3), VI: 328, WEISE 1916, WINKLER 1930, *Crosita aenipennis*: BECHYNÉ 1950.

Distribution in Turkey: Karaman (WEISE 1916), Amasya (WINKLER 1930), Asia Minor (BECHYNÉ 1950).

General Distribution and Chorotype: Egypt, Israel, Syria, Anatolia; SW-Asiatic (Anatolo-Caucasian).

***Chrysolina amasiensis* (WEISE 1894)**

Chrysomela amasiensis WEISE - Deutsche Ent. Zeitschr.: 92, WEISE 1894, 1900, WINKLER 1930, *Chrysolina amasiensis*: GRUEV & TOMOV 1979, KASAP 1988.

Distribution in Turkey: Amasya (WEISE 1895, 1900, WINKLER 1930), Baraj, Gölbaşı (Ankara) (GRUEV & TOMOV 1979), Temelli Köyü, Gölbaşı, Çubuk Barajı (Ankara) (KASAP 1988).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Chrysolina americana* (LINNAEUS 1758)**

Chrysomela americana LINNAEUS - Syst. Nat., ed. 10: 392, GÜL-ZÜMREOĞLU 1972, *Chrysolina americana*: TUATAY et al. 1972, KISMALI 1973.

Material examined: Antalya, Korkuteli, I.VIII.1991, 1 sample.

Distribution in Turkey: Bornova (İzmir) (GÜL-ZÜMREOĞLU 1972, KISMALI 1973), Salihli (Manisa) (TUATAY et al. 1972).

General Distribution and Chorotype: Mediterranean, Belgium, Madeira; Mediterranean.

***Chrysolina anatolica* (DAHLGREN 1984)**

Chrysolina anatolica DAHLGREN - Entomol. Blätter 80 (1): 42-43, *Chrysolina anatolica*: BOURDONNÉ & DOGUET 1991.

Distribution in Turkey: Amasya, Bulghar Maaden (DAHLGREN 1984), Turkey (BOURDONNÉ & DOGUET 1991).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Chrysolina bodemeyeri* (WEISE 1910)**

Chrysolina bodemeyeri WEISE - Verh. Naturf. Ver. Brunn XLVIII: 36, *Chrysolina marginata bodemeyeri*: LOPATIN 1963; *Chrysolina bodemeyeri*: BERTI & RAPILLY 1973.

Material examined: Erzurum, Oltu, Başaklı, 1550 m., 26.VI.1997, 3 samples.

Distribution in Turkey: Anatolia (LOPATIN 1963), Turkey (BERTI & RAPILLY 1973).

General Distribution and Chorotype: Iran, Turkey, Turkmenistan; Turanian.

***Chrysolina brunneli* (DEMAISSON 1896) n. comb.**

Chrysolina brunneli DEMAISSON - Bull. Soc. Ent. Fr.: 12, KASAP 1988.

Distribution in Turkey: Sivas, Tokat, Kayseri (erroneously: Syria) (DEMAISSON 1896), Sivas (KASAP 1988).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Chrysolina cerealis* (LINNAEUS 1767)**

Chrysolina cerealis LINNAEUS - Syst. Nat., ed. 12: 588; *Chrysolina cerealis* var. *heeri*: WEISE 1897; *Chrysolina cerealis*: BOURDONNÉ & DOGUET 1991.

Material examined: Samsun, Gelemen, 70 m, 24.VII.1994, 4 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Turkey (BOURDONNÉ & DOGUET 1991).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Kazakhstan, Siberia, Mongolia; Asiatic-European.

***Chrysolina chalcites* (GERMAR 1824)**

Chrysolina chalcites GERMAR - Ins. spec. nov.: 587, APFELBECK 1901, TOMOV & GRUEV 1975, *Chrysolina chalcites*: BECHYNÉ 1952, BOURDONNÉ & DOGUET 1991, GRUEV 1992, KISMALI et al. 1995, ASLAN & ÖZBEK 1999.

Material examined: Artvin, Ormanlı, 12.V.2000, 3 samples.

Distribution in Turkey: Küçükçekmece (APFELBECK 1901), İnegöl (Bursa) (BECHYNÉ 1952), Amasya, Engiz (Samsun) (TOMOV & GRUEV 1975), Turkey (BOURDONNÉ & DOGUET 1991), İstanbul (GRUEV 1992), Karacadağ (Diyarbakır) (KISMALI et al. 1995), İzmir (KISMALI 1973), Yusufeli (Artvin), Uzundere (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Egypt, Israel, Eastern Europe, Caucasus, Iran, Turkey, Rhodos, Cyprus, Syria, Mid Asia, Afghanistan; Centralasiatic-European.

***Chrysolina coerulans* (SCRIBA 1791)**

Chrysomela coerulans SCRIBA - Journ. Liebh. Ent. III: 286, FAIRMAIRE 1884, SHALBERG 1913; *Chrysolina coerulans*: BECHYNÉ 1950, MEDVEDEV 1970, KASAP 1988; *Chrysomela modesta coerulans*: ASLAN & ÖZBEK 1999.

Distribution in Turkey: Ayaş (Ankara), Göle (Kars) (FAIRMAIRE 1884, SHALBERG 1913), Anatolia (BECHYNÉ 1950); between Erzurum and Tortum (MEDVEDEV 1970), Akbaşı (Hatay), İspir (Erzurum) (KASAP 1988), Ardanuç, Yusufeli (Artvin), Üzümlü (Erzincan), Oltu, Narman, Olur, Pasinler, Pazaryolu (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Mid and Eastern Europe, France, Italy, Caucasus, Asia Minor, Turano-European.

***Chrysolina coerulans angelica* (REICHE & SAULCY 1858)**

Chrysolina coerulans angelica REICHE & SAULCY 1858 - Ann. De la Soc. Ent. De France 6: 5-60, *Chrysomela angelica* FAIRMAIRE 1865, *Chrysolina coerulans* var. *angelica* HEYDEN & KRAATZ 1885, WEISE 1898.

Material examined: İçel, Anamur, 25.VIII.1994, 8 samples

Distribution in Turkey: New to the fauna of Turkey.

General Distribution and Chorotype: Syria, Central Asia, Azarbaijan; SW-Asiatic.

***Chrysolina compuncta* (WEISE 1898)**

Chrysomela compuncta WEISE - Arch.f. Naturgesch. LXIV: 191, *Crosita compuncta*: BECHYNÉ 1950, *Crosita salviae compuncta*: DAHLGREN 1984, *Chrysolina compuncta*: BOURDONNÉ & DOGUET 1991.

Distribution in Turkey: Asia Minor (BECHYNÉ 1950), Bolkar Mt. (DAHLGREN 1984), Turkey (BOURDONNÉ & DOGUET 1991).

General Distribution and Chorotype: Asia Minor, Cyprus, Syria, Israel; SW-Asiatic.

***Chrysolina cuprina* (DUFTSCHIMID 1825) s. str.**

Chrysomela cuprina DUFTSCHIMID - Fauna Austr. III: 177, *Chrysolina cuprina*: ASLAN & ÖZBEK 1999.

Distribution in Turkey: İspir (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Mid Europe, Southeast Europe (Dalmatia, Serbia); Centralasiatic-European.

***Chrysolina cuprina staneki* BECHYNÉ 1949**

Chrysolina cuprina staneki BECHYNÉ - Ent. Listy 12: 52.

Distribution in Turkey: Turkey (BECHYNÉ 1949).

General Distribution and Chorotype: Turkey; Endemic to Turkey.

***Chrysolina didymata* (SCRIBA 1791)**

Chrysomela didymata SCRIBA - Journ. Liebh. Ent. I: 294, FAIRMAIRE 1866, WEISE 1884, 1916, BODEMEYER 1900, KERVILLE 1939, TOMOV & GRUEV 1975, DAHLGREN 1984, KASAP 1988, *Chrysolina didymata*: BECHYNÉ 1950, MEDVEDEV 1970.

Material examined: Antalya, Side, 2.V.1994, 2 samples.

Distribution in Turkey: Amasya (WEISE 1916, WINKLER 1930, TOMOV & GRUEV 1975), Asia Minor (BECHYNÉ 1950), Amasya, Mardin (DAHLGREN 1984), Kadirli, Karatepe (Adana) (MEDVEDEV 1970), Bilecik, Sultan Mt. (Afyon), Bozdağ, İzmir, Ankara, Amasya (FAIRMAIRE 1866, WEISE 1884; BODEMEYER 1900, KERVILLE 1939, KASAP 1988), Sivas, Amasya, Akşehir (KASAP 1988).

General Distribution and Chorotype: Europe (excl. the northern parts), Iran, Asia Minor, Israel, Turkmenistan; Centralasiatic-European.

***Chrysolina didymata syriaca* (WEISE 1884)**

Chrysomela syriaca WEISE - Ins. Deutschl. VI (3): 408, *Chrysomela didymata syriaca*: TOMOV & GRUEV 1975.

Distribution in Turkey: İçel (TOMOV & GRUEV 1975).

General Distribution and Chorotype: Syria, Anatolia; SW-Asiatic.

***Chrysolina fastuosa* (SCOPOLI 1763)**

Chrysomela fastuosa SCOPOLI - Ent. Larn.: 74, *Chrysomela fastuosa*: MEDVEDEV 1974, BROVDIJ 1977.

Distribution in Turkey: Anatolia (MEDVEDEV 1974, BROVDIJ 1977).

General Distribution and Chorotype: Europe, Caucasus, Anatolia, Afghanistan, West and Mid Siberia; Sibero-European.

***Chrysolina geminata* (PAYKULL 1799)**

Chrysomela geminata PAYKUL - Fauna Suec. II: 65, *Chrysolina geminata*: ASLAN & ÖZBEK 1999.

Material examined: Trabzon, Zigana, 2.VII.1996, 2 samples.

Distribution in Turkey: İspir (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia; Sibero-European.

***Chrysolina graminis* (LINNAEUS 1758)**

Chrysomela graminis LINNAEUS - Syst. Nat., ed. 10: 369, GÜL-ZÜMREOĞLU 1972.

Distribution in Turkey: Ödemiş, Bornova (İzmir), Denizli (GÜL-ZÜMREOĞLU 1972).

General Distribution and Chorotype: Mid, Southern and Southeastern Europe, east across Central Asia to the Russian Far East and North China; Asiatic-European.

***Chrysolina gypsophilae* (KUESTER 1845) s. str.**

Chrysomela gypsophilae KUESTER - Kaf. Eur. II: 71, FAIRMAIRE 1866, WEISE 1897, 1916, BODEMEYER 1900, GANGLBAUER 1905, FRANZ 1938, TOMOV & GRUEV 1975, KASAP 1988, *Chrysolina gypsophilae*: BECHYNÉ 1950, GRUEV & TOMOV 1979, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Central Anatolia, Anatolia (WEISE 1897, 1916), Ankara, Bilecik, Bursa, Bulghar-Maaden (GANGLBAUER 1905), Amasya, Eskişehir, Tarsus, Akşehir, Anatolia (FRANZ 1938), Asia Minor (BECHYNÉ 1950), Ayaş Mt (Ankara), Sartavul (İçel) (TOMOV & GRUEV 1975), Baraj (Ankara) (GRUEV & TOMOV 1979), Boz Mt., Bolkar Mt., Maden (FAIRMAIRE 1866, BODEMEYER 1900, KASAP 1988), Beytepe, Çubuk Barajı (Ankara), Hirfanlı Barajı (Kırşehir) (KASAP 1988), Borçka, Hopa (Artvin), Tortum (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Mid, South and Southeast Europe, Caucasus, Asia Minor, Turkmenistan, Kirghizstan, Kazakhstan; Israel, Syria, Palestine; Turano-European.

***Chrysolina gypsophilae lucidicollis* (KUESTER 1845)**

Chrysomela lucidicollis KUESTER - *Kafer Europas II*: 7, *Chrysomela gypsophilae lucidicollis*: FRANZ 1938.

Distribution in Turkey: Anatolia (FRANZ 1938).

General Distribution and Chorotype: Canary Islands, Northwest Africa, Sardinia, Sciliy, Iran, Armenia, Asia Minor; Turano-Europeo-Mediterranean.

***Chrysolina haemoptera* (LINNAEUS 1758)**

Chrysomela haemoptera LINNAEUS - *Syst. nat.*, ed. 10: 369; APFELBECK 1901, TOMOV & GRUEV 1975, *Chrysomela haemoptera* ab. *cameranoi*: WEISE 1916, WINKLER 1930; *Chrysolina haemoptera*: BECHYNÉ 1950, *Ch. ottomana*: JOLIVET 1951.

Distribution in Turkey: Kırklareli (APFELBECK 1901), Turkey (WEISE 1916) European Turkey (WINKLER 1930), Asia Minor (BECHYNÉ 1950) İstanbul (JOLIVET 1951), Büyükdere (İstanbul) (TOMOV & GRUEV 1975).

General Distribution and Chorotype: Europe, France, Caucasus, Asia Minor, Iran; Turano-Eurean.

***Chrysolina herbacea* (DUFTSCHIMID 1825) s. str.**

Chrysomela herbacea DUFTSCHIMID - *Fauna Austr.* 3: 192; BODEMEYER 1900, KERVILLE 1939, KISMALI 1973, TOMOV & Gruev 1975, KASAP 1988, *Chrysomela menthastris*: WEISE 1897, APFELBECK 1901, GANGLBAUER 1905, TUATAY et al. 1972 *Chrysolina herbacea*: BECHYNÉ 1950, MEDVEDEV 1970, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Central Asia, Elmadag (Ankara) (WEISE 1897), Kırklareli, Bujuk Dereh (APFELBECK 1901), Ankara, Konya, Kayseri, Bilecik, Bulghar-Maaden (GANGLBAUER 1905), Asia Minor (BECHYNÉ 1950), Düzcce and Akçakoca, Vakfikebir (Trabzon) (MEDVEDEV 1970), Muş, Denizli (TUATAY et al. 1972), Bursa, Edirne, Erzurum, İçel, İstanbul, Samsun, Sinop, Trabzon (TOMOV & GRUEV 1975), Eğirdir, Uludağ (Bursa), Kızılcahamam (Ankara) (GRUEV & TOMOV 1979), Bilecik, İzmit, Ankara, Kop Mt., Boz Mt., Bolkar Mt., Maden (FAIRMAIRE 1866, BODEMEYER 1900, KISMALI 1973, KASAP 1988), Beytepe, Ayaş, Balgum, Lalahan, Elmadag, Dodurga, Beynam, Karagöl (Ankara), Kızılca (Kırşehir), Boğazlıyan (Yozgat), Paşabahçe, Küllük, Yıldızeli (Sivas), Ürgüp, Hacibektaş (Nevşehir), Gezi (Kayseri), Eldivan, Kızılırmak (Çankırı), Ereğli, Kızılören, Çumra (Konya), Çiftelhan (Niğde), Sungurlu, Boğazkale (Çorum) (KASAP 1988), Yusufeli, Ardanuç, Borçka (Artvin), Erzincan, Tortum, Olur, Oltu, Narman, Pasinler, Uzundere (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Mid Asia, West Siberia, North India, Kazakhstan; Asiatic-European.

***Chrysolina herbacea alacris* BECHYNÉ 1950**

Chrysolina herbacea alacris BECHYNÉ - *Ent. Arb. Mus. G. Frey* 1: 77, 81.

Distribution in Turkey: Asia Minor, Tarsus (İçel), Kahramanmaraş (BECHYNÉ 1950).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Chrysolina hyperici* (FORSTER 1771)**

Chrysomela hyperici FORSTER - Nov. Spec. Ins. I: 20, TOMOV & GRUEV 1975, DAHLGREN 1984, *Chrysolina hyperici*: GRUEV & TOMOV 1979, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Engiz (Samsun) (TOMOV & GRUEV 1975), Uludağ (Bursa), Antalya, (GRUEV & TOMOV 1979), Amasya, Bursa, İstanbul (DAHLGREN 1984), Palandöken (Erzurum) (ASLAN & ÖZBEK 1999).

Ch. hyperici is one of the most effective biocontrol agents of *Hypericum perforatum* which is an important weed. The scores of insects that have been tried in various parts of the world against *H. perforatum* indicate that *C. hyperici* with 33 points is one of the best prospects (HARRIS 1973).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Mid Asia, North Africa; Palearctic.

***Chrysolina hyrcana* (WEISE 1884)**

Chrysomela hyrcana WEISE - Ins. Deutschl. VI (3): 389, BOURDONNE & DOGUET 1991, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Northeast Turkey (BOURDONNE & DOGUET 1991), Cevizli (Erzincan), Pasinler, Üniversite (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Northeast Turkey, Caucasus, Transcaspia, Northeast Iran; Turanian.

***Chrysolina kataevi* LOPATIN 2000**

Chrysolina kataevi LOPATIN - Rev. d'Ent. Russia LXXIX (4): 859-861.

Distribution in Turkey: Rize, East Black Sea Mountains, Gül Mt., Northeast Turkey (LOPATIN 2000).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Chrysolina kulzeri* BECHYNÉ 1950**

Chrysolina kulzeri BECHYNÉ - Entomol. Arb. Mus. G. Frey I: 166-16, GRUEV & TOMOV 1979.

Distribution in Turkey: Ardahan, Kars, Gölle (GRUEV & TOMOV 1979).

General Distribution and Chorotype: South Caucasus, Anatolia; SW-Asiatic (Anatolo-Caucasian).

***Chrysolina limbata* (FABRICIUS 1775)**

Chrysomela limbata FABRICIUS - Mant. Ins. I: 7, *Chrysolina limbata*: GRUEV & TOMOV 1979,

Distribution in Turkey: Kars, Gölle, Aygır Gölü (Gölle) (GRUEV & TOMOV 1979).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, West Siberia, Mongolia, Kazakhstan; Asiatic-European.

***Chrysolina marginata* (LINNAEUS 1758) s. str.**

Chrysomela marginata LINNAEUS - Syst. Nat., ed. 10: 371; WEISE 1897, KASAP 1988, *Chrysolina marginata*: GRUEV & TOMOV 1979, LOPATIN 1981, ASLAN & ÖZBEK 1999.

Material examined: Bayburt, 16.VI.2000, 5 samples; Kars, Sankamış, 11.VI.1998, 3 samples; 1.V.2000, 4 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Göle, Kars (GRUEV & TOMOV 1979), Tahir Mt., Northeast Anatolia (LOPATIN 1981), Nevşehir, Yıldızeli (Sivas), Eskişehir, Konya, Akşehir, Göle (Ardahan) (KASAP 1988), Yusufeli (Artvin), Cevizli (Erzincan), Aşkale, Narman, Palandöken, Üniversite (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Iran, Afghanistan, Mid Asia, Siberia, Mongolia, West China, North Africa; Palearctic.

***Chrysolina marginata unificans* BECHYNÉ 1950**

Chrysolina marginata unificans BECHYNÉ 1950 - Entomol. Arb. Mus. G. Frey 1: 163, 166.

Distribution in Turkey: Van, Eğirdir (Isparta) (BECHYNÉ 1950).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Chrysolina oricalica* (MUELLER 1776)**

Chrysomela oricalica MUELLER - Zool. Dan. Prodr.: 82, *Chrysolina oricalica*: BECHYNÉ 1950, GRUEV 1992.

Distribution in Turkey: Asia Minor (BECHYNÉ 1950), Kuru Dağ (GRUEV 1992).

General Distribution and Chorotype: Europe, Asia Minor, Mongolia, Siberia; Sibero-European.

***Chrysolina orientalis* (OLIVIER 1807)**

Chrysomela orientalis OLIVIER - Ent. V: 512, DAHLGREN 1984, *Chrysolina orientalis* ab. *bythinensis*: BECHYNÉ 1950; *Ch. orientalis*: BECHYNÉ 1952, TUATAY et al. 1972, BOURDONNÉ & DOGUET 1991, GRUEV 1992.

Distribution in Turkey: Turkey (BECHYNÉ 1950), Asia Minor (BECHYNÉ 1952), Aydın (TUATAY et al. 1972), İstanbul, Van (DAHLGREN 1984), Asian and European Turkey (BOURNONNÉ & DOGUET 1991), İstanbul (GRUEV 1992).

General Distribution and Chorotype: Turkey, Syria, Israel, Rhodes, Cyprus, Caucasus, Iran, Iraq, Tunisia; Centralasiatic-European-Mediterranean.

***Chrysolina palmyrensis* BECHYNÉ 1955**

Chrysolina palmyrensis BECHYNÉ - Bull. res.counc. Israel 4: 350, GRUEV & TOMOV 1979.

Distribution in Turkey: Gaziantep (GRUEV & TOMOV 1979).

General Distribution and Chorotype: Lebanon, Israel, Egypt, Jordan, Anatolia; SW-Asiatic.

***Chrysolina peregrina impavida* BECHYNÉ 1949**

Chrysolina peregrina impavida BECHYNÉ - Ent. Listy 12: 54.

Distribution in Turkey: Turkey, Asia Minor (BECHYNÉ 1949).

General Distribution and Chorotype: Israel, Jordan, Turkey; SW-Asiatic.

***Chrysolina planicollis* (BREIT 1919)**

Chrysomela planicollis BREIT - Kol. Rundschau 8 (1/3): 14; *Chrysolina planicollis* (LOPATIN 2000).

Distribution in Turkey: Trabzon (BREIT 1919), Trabzon, Bayburt (LOPATIN 2000).

General Distribution and Chorotype: Anatolia, Syria; SW-Asiatic.

***Chrysolina polita* (LINNAEUS 1758)**

Chrysolina polita LINNAEUS - Syst. Nat., ed. 10: 370, APFELBECK 1901, WEISE 1916, WINKLER 1930, TOMOV & GRUEV 1975, *Chrysolina polita*: KISMALI et al. 1995; ASLAN 1997, ASLAN & ÖZBEK 1999.

Material examined: Artvin, Arhavi, 10.IX.1992, 5 samples; Rize, Fındıklı, 23.VII.1992, 7 samples; Samsun, Çarşamba, 4.V.1994, 4 samples; Trabzon, Çaykara, 4.VII.1993, 10 samples.

Distribution in Turkey: Kırklareli (APFELBECK 1916), Anatolia (WEISE 1916), Amasya (WINKLER 1930), Erdemli (İçel), Erzurum (TOMOV & GRUEV 1975), Midyat (Mardin) (KISMALI et al. 1995), Erzurum (ASLAN 1997), Arhavi (Artvin), Oltu, Pasinler (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Turkey, West Siberia, Mongolia, Israel, Palestine, Syria; Asiatic-European.

***Chrysolina reitteri* (WEISE 1884)**

Chrysolina reitteri WEISE - Deutsche Ent. Zeitschr. 28: 163, *Chrysolina lurida*: WEISE 1897, GANGLBAUER 1905, KASAP 1988, *Chrysolina lurida*: BECHYNÉ 1950, GRUEV & TOMOV 1979, ASLAN & ÖZBEK 1999.

Material examined: Bayburt, 13.VI.1992, 2 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Ankara, Bilecik, Eskişehir, Bulghar-Maaden (GANGLBAUER 1905), Amasya, Eskişehir, Tarsus, Akşehir, Anatolia (FRANZ 1938), Asia Minor (BECHYNÉ 1950), Kızılcahamam (Ankara), Göle (Ardahan) (GRUEV & TOMOV 1979), Yerköy, Serikli (Yozgat), Ulukışla (Niğde) (KASAP 1988), Arhavi (Artvin), University Field (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Mid, East, South and Southeast Europe, Caucasus, Asia Minor, Mid Asia, South Siberia; Asiatic-European.

***Chrysolina reitteri pseudolurida* (ROUBAL 1917)**

Chrysolina reitteri pseudolurida ROUBAL 1917 - *Chrysolina lurida pseudolurida*: BECHYNÉ 1952, *Ch. pseudolurida*: BOURDONNE & DOGUET 1991.

Material examined: Kars, 3.VI.1999, 3 samples

Distribution in Turkey: Tokat (BECHYNÉ 1952), Turkey (ROUBAL 1917; BOURDONNE & DOGUET 1991).

General Distribution and Chorotype: West Caucasus, Anatolia; Turano-Mediterranean (Turano-Anatolian).

***Chrysolina sahlbergi* (MÉNÉTRIES 1832)**

Chrysolina sahlbergi MÉNÉTRIES - Cat. rais.: 235, WEISE 1897, KASAP 1988; *Chrysolina sahlbergi*: BECHYNÉ 1950, MEDVEDEV 1970, LOPATIN 1981, *Ch. halysa*: BECHYNÉ 1950 1952, MEDVEDEV 1970.

Material examined: Diyarbakır, Silvan, 17.IV.1995, 3 samples; Elazığ, 1.VIII.1983, 2 samples; Hatay, Dört Yol, Yeşilköy, 6.III.1995, 2 samples; Erzurum, Pazaryolu, 24.VI.2001, 3 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Adana, Tarsus (İçel), Asia Minor, Amasya, Tokat, İzmir, Akşehir, Eğirdir (BECHYNÉ 1950, 1952), Tekkiraz (Samsun), Kozan (Adana) (MEDVEDEV 1970), Kütahya (LOPATIN 1981), Atatürk Orman Çiftliği, Kızılcahamam (Ankara), Bilecik, Çifteler (Eskişehir), Tokat, Sivas, Konya, Akşehir, Sultandağı (Konya), Yıldızeli (Sivas), Bor (Niğde), Gülşehir (Nevşehir) Boğazlıyan (Yozgat), Kızılca (Kırşehir), İzmir, Adana (KASAP 1988).

General Distribution and Chorotype: Asia Minor, Syria, Israel, Lebanon, Egypt, Sporades, Transcaucasia, Iran; Centralasiatic-Mediterranean.

***Chrysolina salviae* (GERMAR 1824) s. str.**

Chrysomela salviae GERMAR - Ins. spec.nov.: 586, WEISE 1916, WINKLER 1930, *Crosita salviae*: BODEMEYER 1906, KERVILLE 1939, KASAP 1988.

Distribution in Turkey: Anatolia (WEISE 1897), Asia Minor (WINKLER 1930), Ankara, Bilecik, Sultandağı (Afyon), Bolkardağı (Niğde), Maden (KASAP 1988), Tire, Amasya (BODEMEYER 1900, KERVILLE 1939).

General Distribution and Chorotype: South Europe, northward to Hungary, Asia Minor; Centralasiatic-Mediterranean.

***Chrysolina salviae sculptipennis* (FALDERMANN 1837)**

Chrysomela sculptipennis FALDERMANN - Nouv. Mém. Mosc. V: 359, *Crosita salviae sculptipennis*: BECHYNÉ 1950.

Distribution in Turkey: Asia Minor (BECHYNÉ 1950).

General Distribution and Chorotype: Asia Minor, Caucasus; Turano-Mediterranean (Turano-Anatolian).

***Chrysolina sanguinolenta* (LINNAEUS 1758)**

Chrysomela sanguinolenta LINNAEUS - Syst. Nat., ed. 10: 371, *Chrysolina sanguinolenta*: GRUEV 1992.

Distribution in Turkey: İstanbul (GRUEV 1992).

General Distribution and Chorotype: Mid, Southeastern and East Europe, Finland, Canary Islands, Central Asia, Kazakhstan, Southern Siberia, Mongolia; Asiatic-European.

***Chrysolina sellata* (WEISE 1894) s.str.**

Chrysomela sellata WEISE - Deutsche Ent. Zeitschr.: 92, WEISE 1894 1916, GANGLBAUER 1905, WINKLER 1930, *Chrysolina sellata*: BECHYNÉ 1950.

Distribution in Turkey: Amasya (WEISE 1894, 1916), Konya, Kayseri (GANGLBAUER 1905), Asia Minor (WINKLER 1930), Amasya (BECHYNÉ 1950).

General Distribution and Chorotype: Asia Minor, Iraq; SW-Asiatic.

***Chrysolina sellata cilissa* (JACOBSON 1924) comb.n.**

Chrysomela cilissa JACOBSON - J. Wien. Ent. Zeit. 41: 81, WINKLER 1930, *Chrysolina sellata*: BECHYNÉ 1952.

Distribution in Turkey: Asia Minor, Tarsus, Gülek Pass (Adana) (JACOBSON 1924), Asia Minor (WINKLER 1930); Asia Minor (BECHYNÉ 1952).

General Distribution and Chorotype: Asia Minor; Endemic to Turkey.

***Chrysolina staphylea* (LINNAEUS 1758)**

Chrysomela staphylea LINNAEUS - Syst. Nat. ed. 10: 370, KASAP 1988, *Chrysolina staphylea*: BOURDONNÉ & DOGUET 1991, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Beytepe (Ankara) (KASAP 1988), Turkey (BOURNONNÉ & DOGUET 1991), Palandöken (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Kazakhstan, Siberia, Mongolia, China, Korea; Asiatic-European.

***Chrysolina trapezicollis* BECHYNÉ 1952**

Chrysolina trapezicollis BECHYNÉ - Entomol. Arb. Mus. G. Frey 3: 370-371, ASLAN & ÖZBEK 1999.

Material examined: Artvin, Yusufeli, 15.VIII.1997, 3 samples.

Distribution in Turkey: Ardanuç, Borçka (Artvin) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: West Caucasus, Anatolia; Turano-Mediterranean (Turano-Anatolian).

***Chrysolina turca* (FAIRMAIRE 1865)**

Chrysomela turca FAIRMAIRE - Ann. Soc. Ent. Fr. (4) V: 74, WEISE 1916, WINKLER 1930, DAHLGREN 1984, *Chrysolina turca*: BECHYNÉ 1950, BOURDONNE & DOGUET 1991, GRUEV 1992.

Distribution in Turkey: Turkey (WEISE 1916), European Turkey (WINKLER 1930), İstanbul, Bursa (BECHYNÉ 1950), Turkey, Asia Minor (DAHLGREN 1984), European Turkey (BOURDONNE & DOGUET 1991), İstanbul (GRUEV 1992).

General Distribution and Chorotype: Turkey, Bulgaria; Turano-European.

***Chrysolina varians* (SCHALLER 1783)**

Chrysomela varians SCHALLER - Abh. Naturf. Ges. Halle: 271, *Chrysolina varians*: BECHYNÉ 1950, GRUEV 1992.

Distribution in Turkey: Asia Minor (BECHYNÉ 1950), Anatolia (GRUEV 1992).

General Distribution and Chorotype: Europe, Asiatic Turkey, Algeria, Siberia; Palearctic.

***Chrysolina vernalis ottomana* (WEISE 1906)**

Chrysomela vernalis ottomana WEISE - Cat. Col. Eur.: 554, *Ch. vernalis*: HEYDEN 1884, DAHLGREN 1984 *Ch. vernalis* ab. *ottomana* WEISE 1916, WINKLER 1930, KASAP 1988, *Ch. vernalis heeri*: GÜL-ZÜMREOĞLU 1972, *Ch. vernalis ottomana*: BECHYNÉ 1950, GRUEV 1992, ASLAN & ÖZBEK 1999.

Material examined: İzmir, Bornova 7.V.1994, 2 samples.

Distribution in Turkey: İstanbul (HEYDEN 1884), Turkey (WEISE 1916), European Turkey (WINKLER 1930), Turkey (BECHYNÉ 1950), Denizli, İzmir, Isparta (GÜL-ZÜMREOĞLU 1972), İstanbul (DAHLGREN 1984), Tekirdağ, Çanakkale, European Turkey (GRUEV 1992), Borçka, Yusufeli (Artvin) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Turkey, Iran, Balkan Peninsula, Caucasus; Centralasiatic-European.

***Chrysolina wittmeri* MEDVEDEV 1975**

Chrysolina wittmeri MEDVEDEV - Mitt. Ent. Ges. Basel, N. F. 25: 13-14, *Chrysomela guichardi*: GRUEV 1976.

Distribution in Turkey: Zigana Mt. (Trabzon) (MEDVEDEV 1975, GRUEV 1976).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Chrysomela collaris* LINNAEUS 1758**

Chrysomela collaris LINNAEUS - Syst. Nat., ed. 10: 371, GRUEV et al. 1994, ASLAN 1997, ASLAN & ÖZBEK 1996, 1999, *Melasoma collaris* var. *flavipes*: GANGLBAUER 1905.

Distribution in Turkey: Erciyes Mt. (Kayseri) (GANGLBAUER 1905), Şenkaya (Erzurum) (GRUEV et al. 1994), Erzurum (ASLAN 1997), University Field, Pasinler, Tortum (Erzurum) (ASLAN & ÖZBEK 1996, 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Kazakhstan, Mongolia, Siberia, Northeast China; Asiatic-European.

C. collaris is an important poplar pest (SEKENDİZ 1974, ASLAN & ÖZBEK 1996, ASLAN 1997).

***Chrysomela populi* LINNAEUS 1758**

Chrysomela populi LINNAEUS - Syst. Nat., ed. 10: 370, GRUEV & TOMOV 1979; GRUEV 1992, ÇANAĞCIOĞLU 1993, ASLAN 1997, ASLAN & ÖZBEK 1999, *Melasoma populi*: BODEMEYER 1900, ACATAY 1943, SCHIMITSCHEK 1944, KISMALI 1973, GÜL-ZÜMREOĞLU 1972, TUATAY et al. 1972, SEKENDİZ 1974, TOMOV & GRUEV 1975, KASAP 1988a.

Distribution in Turkey: İzmir, İstanbul, Bilecik, Erzincan, Samsun, Amasya, Ankara, Aksaray, Nevşehir, Niğde, Sivas, Çorum (BODEMEYER 1900, KISMALI 1973, KASAP 1988a), İstanbul, Trabzon (ACATAY 1943, SCHIMITSCHEK 1944), Aydın, Bitlis, Denizli, Samsun (GÜL-ZÜMREOĞLU 1972, TUATAY et al. 1972), Sinop, İzmit (SEKENDİZ 1974), Amasya, Erzurum, Samsun (TOMOV & GRUEV 1975), İstanbul (GRUEV 1992), İstanbul, İzmit (ÇANAĞCIOĞLU 1993), Erzurum (ASLAN 1997), Very common in Erzurum, Erzincan and Artvin (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Palearctic.

C. populi is one of the most destructive poplar pest. It is a foliage feeder, both larva and adult feed gregariously damaging foliage and standing plant growth in particularly young trees. It is very destructive pest especially in central and eastern part of Turkey (SELMİ 1983, ASLAN 1997, ASLAN & ÖZBEK 1999).

***Chrysomela saliceti* (WEISE 1884)**

Melasoma saliceti WEISE - Naturgesch. Ins. Deutschl., Col. 6: 565; CHARAS 1972, KASAP 1988, *Chrysomela saliceti*: ASLAN 1997, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Turkey (CHARAS 1972), Ankara, Çankırı, Nevşehir, Yozgat, Sivas, Konya, Çorum, (KASAP 1988), Erzurum (ASLAN 1997), Erzincan, Pasinler, Tortum, Aşkale, (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Asia Minor, Iran, Kazakhstan, Mongolia, Siberia; Asiatic-European.

C. saliceti is important poplar and willow pest (ERDEM 1967, ASLAN 1997, ASLAN & ÖZBEK 1999).

***Chrysomela tremulae* FABRICIUS 1787**

Chrysomela tremulae FABRICIUS - Mant. 1: 69, MEDVEDEV 1975, TUATAY et al. 1972, ÇANAĞCIOĞLU 1993, *Melasoma tremulae*: ACATAY 1956, SEKENDİZ 1974.

Distribution in Turkey: Bursa, Eskişehir, Bolu, Muğla (ACATAY 1956), Elazığ (TUATAY et al. 1972), Maden (Gümüşhane) (MEDVEDEV 1975), Ankara, Trabzon, İzmit, Sinop (SEKENDİZ 1974), İstanbul, Çanakkale, Edirne, Eskişehir, Elazığ, Bolu, Muğla, Ankara, İzmit, Zonguldak, Kastamonu (ÇANAĞCIOĞLU 1993).

General Distribution and Chorotype: Europe, Palearctic Asia (including Japan); Asiatic-European.

C. tremulae is an important poplar pest (ACATAY 1956, SEKENDİZ 1974, ÇANAĞCIOĞLU 1993).

***Chrysomela vigintipunctata* (SCOPOLI 1763)**

Coccinella vigintipunctata SCOPOLI - Ent. Carn.: 78, *Chrysomela vigintipunctata*: SEKENDIZ 1974, ÇANAKÇIOĞLU 1993.

Distribution in Turkey: İzmit (SEKENDIZ 1974), Bilecik, İzmit, Çanakkale, Zonguldak, İstanbul (ÇANAKÇIOĞLU 1993).

General Distribution and Chorotype: Europe, Crimea, Caucasus, Mid and West Asia, Siberia, China, Mongolia, Japan, Russian Far East, Korea; Asiatic-European.

C. vigintipunctata is important poplar and willow pest (ÇANAKÇIOĞLU 1993).

***Colaphus apicalis* (MENETRIES 1849)**

Colaspidema apicalis MENETRIES - Ac. Petersb. VI: 270, *Colaphellus apicalis*: WEISE 1916.

Distribution in Turkey: Anatolia (WEISE 1916).

General Distribution and Chorotype: Asia Minor, Syria, Israel, Iran, Mid Asia, Kazakhstan; Centralasiatic-European.

***Colaphus hoefti* (MENETRIES 1832)**

Colaspidema hoefti MENETRIES - Cat. rais.: 235; *Colaphellus hoefti*: WEISE 1916, WINKLER 1930, *Colapellus sophiae hoefti*: LOPATIN 1964.

Distribution in Turkey: Anatolia (WEISE 1916, LOPATIN 1964), Asia Minor (WINKLER 1930).

General Distribution and Chorotype: South Russia, Caucasus, Asia Minor, Mid Asia, Kazakhstan; Centralasiatic-European.

***Colaphus sophiae* (SCHALLER 1783) s.str.**

Chrysomela sophiae SCHALLER - Abh. Hall. Ges. 1: 272, *Colaphellus sophiae*: WEISE 1897, 1916, SAHLBERG 1913, WINKLER 1930, TOMOV & GRUEV 1975, GRUEV & TOMOV 1979, KASAP 1988a, KISMALI et al. 1995, ASLAN & ÖZBEK 1999, *Colaphus sophiae* var. *iconiense*: PIC 1901, *Colaphellus sopiae transylvanicus*: MACHATSCHKE 1954.

Material examined: İzmir, Doğançay, 12.IV.1995, 4 samples; Çanakkale, 10.V.1995, 2 samples.

Distribution in Turkey: Anatolia, Central Anatolia (WEISE 1897, 1916), Konya (PIC 1901), Amasya, İzmir, İstanbul (SAHLBERG 1913), Asia Minor (WINKLER 1930), İzmir (MACHATSCHKE 1954), Çubuk (Ankara), Edirne (TOMOV & GRUEV 1975), Kayseri (GRUEV & TOMOV 1979), Ankara, Konya, Yozgat, Nevşehir, Aksaray, Niğde, Kayseri, Amasya, Akşehir (KASAP 1988a), Lice (Diyarbakır) (KISMALI et al. 1995), Erzurum (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Asia Minor; Sibero-European.

***Colaphus sophiae amasiae* (MACHATSCHKE 1954)**

Colaphellus sophiae amasiae MACHATSCHKE - Beitr. Entomol. 4 (2): 212.

Distribution in Turkey: Amasya (MACHATSCHKE 1954).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Cyrtanastes confusus* BERTI & DACCORDI 1974**

Cyrtanastes confusus BERTI ET DACCORDI - Ann. Soc. ent. Fr. (N.S.) 10 (3): 607-608.

Distribution in Turkey: Akbaş (BERTI & DACCORDI 1974).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Cyrtonastes grandis* LOPATIN 1994**

Cyrtonastes grandis LOPATIN - Lambillionea XCIV (4): 527.

Distribution in Turkey: Tarsus (Mersin) (LOPATIN 1994).

General Distribution and Chorotype: Anatolia; Endemic to Turkey.

***Cyrtonastes seriatoporus* FAIRMAIRE 1880**

Cyrtonastes seriatoporus FAIRMAIRE - Ann. Soc. ent. Fr. 5 (10): 243 (1), GÖK & AYVAZ 2000.

Distribution in Turkey: Aksu (Isparta) (GÖK & AYVAZ 2000).

General Distribution and Chorotype: Greece, Turkey; Turano-European.

***Entomoscelis adonidis* (PALLAS 1771)**

Chrysomela adonidis PALLAS - Reisen, 1 (2): 46, *Entomoscelis adonidis*: WEISE 1897, GANGLBAUER 1905, KERVILLE 1939, TOMOV & GRUEV 1975, TUATAY et al. 1972, GÜL-ZÜMREOĞLU 1972, KASAP 1988a, KISMALI et al. 1995, ASLAN & ÖZBEK 1999.

Material examined: Ardahan, 6.VII.1981, 4 samples; Denizli, Kale, 5.V.1994, 5 samples; Konya, 25.VII.2000, 5 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Eskişehir, Konya, Kayseri (GANGLBAUER 1905); Amasya, Ankara, Kayseri (TOMOV & GRUEV 1975), Hatay, Afyon (KERVILLE 1939), Afyon, Erzurum, Konya (TUATAY et al. 1972), Turhal (Amasya) (GÜL-ZÜMREOĞLU 1972), Ankara, Konya, Yozgat, Nevşehir, Kırşehir, Sivas, Niğde, Kayseri, Eskişehir (KASAP 1988a), Gaziantep, Diyarbakır (KISMALI et al. 1995), Oltu, Horasan, Şenkaya, Pasinler, University Field (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: South and East Europe, Caucasus, Asia Minor, Syria, Iran, Kazakhstan, Mid Asia, Pakistan, Siberia, Mongolia; Asiatic-European.

***Entomoscelis sacra* (LINNAEUS 1758)**

Chrysomela sacra LINNAEUS - Syst. Nat., ed. 10: 372, *Entomoscelis sacra*: GÜL-ZÜMREOĞLU, 1972.

Distribution in Turkey: Bornova (İzmir), Eskişehir (GÜL-ZÜMREOĞLU 1972).

General Distribution and Chorotype: Austria, Hungary, Lebanon, Syria, Palestine, Egypt, Israel, Rumania, Southern Europe; Centralasiatic-European.

***Entomoscelis suturalis* WEISE 1882**

Entomoscelis suturalis WEISE - Naturgesch. Ins. Deutschl., Col VI (2): 213, WEISE 1897, GANGLBAUER 1905, KERVILLE 1939, LOPATIN 1967a, TOMOV & GRUEV 1975, KASAP 1988a, GRUEV 1992, ASLAN & ÖZBEK 1999.

Material examined: Konya, Bozkır, 7.VII.2000, 5 samples; Konya, Çumra, 12.VIII.2000, 4 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Konya, Kayseri (GANGLBAUER 1905), Turkey (LOPATIN 1967a), Amasya (TOMOV & GRUEV 1975), Ankara (KERVILLE 1939), Ankara, Konya, Yozgat, Nevşehir, Kırşehir, Niğde (KASAP 1988a), Oltu, University Field (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Southeast Europe, Georgia, Transcaucasus, Asia Minor, Israel, Iran, Iraq, China; Asiatic-European.

***Gastrophysa polygoni* (LINNAEUS 1758)**

Chrysomela polygoni LINNAEUS - Syst. Nat., ed. 10: 370, *Gastroidea polygoni* var. *ruficollis*: WEISE 1897, *Gastroidea polygoni*: TOMOV & GRUEV 1975, KASAP 1988a, KISMALI et al. 1995; *Gastrophysa polygoni*: GRUEV & TOMOV 1979; GRUEV 1992; ASLAN & ÖZBEK 1999.

Material examined: Ankara, 2.VII.1992, 10 samples; Kars, 26.VII.1992, 5 samples; Trabzon, Tonya, 2.VII.1994, 5 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Edirne, Kars, Samsun (TOMOV & GRUEV 1975), Kılcahamam (Ankara), Göle (Ardahan) (GRUEV & TOMOV 1979), İstanbul (GRUEV 1992), Ankara, Nevşehir, Kayseri, Konya (KASAP 1988a), Diyarbakır (KISMALI et al. 1995), Samsun, Artvin, Erzurum, Erzincan (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, China, Syria, Israel, Kazakhstan, Mid Asia, Pakistan, Siberia, Mongolia, Korea, North Africa, Noerth America; Holarctic.

G. polygoni commonly feed on *Rumex* spp.. It has a potential a biological control agent of these plants.

***Gastrophysa viridula* (DE GEER 1775) s.str.**

Chrysomela viridula DE GEER - Mem. 5: 311, *Gastroidea viridula*: TOMOV & GRUEV 1975; *Gastrophysa viridula*: ASLAN & ÖZBEK 1999.

Distribution in Turkey: Zigana Mt. (Trabzon) (TOMOV & GRUEV 1975), Dumlubaba, Palandöken, Tortum (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Kazakhstan, Noerth America; Holarctic.

G. viridula commonly feed on some *Rumex* species and has a potential a biological control agent of these plants.

***Gastrophysa viridula caucasica* JOLIVET 1951**

Gastrophysa viridula caucasica JOLIVET - Inst. roy. Sci. nat. Belgique XXVII (21): 23-24, ASLAN & ÖZBEK 1995, 1999.

Distribution in Turkey: Karagöl, Borçka (Artvin) (ASLAN & ÖZBEK 1995, 1999).

General Distribution and Chorotype: Caucasus, Anatolia, Syria, Israel; Centralasiatic-European.

G. viridula caucasica feed on *Rumex alpinus* L. which is currently is the most problematic weed in spruce (*Picea* sp.) plantation in Borçka (Artvin). This weed occurs mainly in humid temperate areas with annual rainfall greater than 700 mm or the locations having high ground water levels with more organic matters. It is also prevalent in some parts of forest area of Artvin, where it competes with spruces, pines ant other trees durinh early stand establishment and effects their growth. Both larvae and adults of *G. viridula caucasica* feed on the leaves of *R. alpinus* so extensively that leaves have riddle like hallow bowl or shothore appearance and finally kill the young plants (ASLAN & ÖZBEK 1995). This species has a very good potential as biological control agent for control of *R. alp nus* in sprucenurseries and plantations.

***Gonioctena fornicata* (BRUEGGEMANN 1873)**

Phytodecta fornicata BRUEGGEMANN - Abh. Nat. Ver. Bremen: 518; WEISE 1897, 1916, BODEMEYER 1900, 1906, WINKLER 1930, KISMALI 1973, KOVANCI 1982, TUATAY et al. 1972, GÜL-ZÜMREOĞLU 1972, *Phytodecta forniculata*: KASAP 1988a; *Phytodecta fornicatus*: KISMALI et al. 1995, *Gonioctena fornicata*: MEDVEDEV 1970, GRUEV & TOMOV 1979, YILDIRIM et al. 1996, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Central Anatolia, Anatolia (WEISE 1897, 1916), Bilecik, Sapaca, Çankırı, İzmir, Konya, Diyarbakır (BODEMEYER 1900; 1906; TUATAY et al. 1972, GÜL-ZÜMREOĞLU 1972, KISMALI 1973), Ankara (KOVANCI 1982), İzmir (KISMALI 1973), Ankara, Çankırı, Konya, Yozgat, Nevşehir, Niğde, (KASAP 1988a), Gaziantep, Diyarbakır (KISMALI et al. 1995), Erzurum, Erzincan (YILDIRIM et al. 1996), Artvin, Erzincan, Erzurum (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Mid, South and Southeastern Europe, Asia Minor, Syria; Centralasiatic-European.

***Gonioctena linnaeana* (SCHRANK 1781)**

Chrysomela linnaeana SCHRANK - Enum.: 6, *Phytodecta linnaeana*: TOMOV & GRUEV 1975, *Gonioctena linnaeana*: ASLAN 1997, ASLAN & ÖZBEK 1999.

Material examined: Bingöl, 2.VI.2001, 7 samples.

Distribution in Turkey: Gümüşhane (TOMOV & GRUEV 1975); Erzurum (ASLAN 1997, ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Asia Minor, Siberia, Kazakhstan, Mongolia; Sibero-European.

G. linnaeana is a willow pest (ACATAY 1956; ÇANAKÇIOĞLU 1993, ASLAN 1997, ASLAN & ÖZBEK 1999).

***Gonioctena rufipes* (DE GEER 1775)**

Chrysomela rufipes DE GEER - Mém. 5: 295.

Material examined: Kars, Saikamış, 4.V.1996, 70 samples.

Distribution in Turkey: Sındırgı, Gönen (Balıkesir), İstanbul (SELMİ 1983).

General Distribution and Chorotype: Europe, Caucasus, Siberia, Kazakhstan, Mongolia, Thibet, Northeastern China, Japan, North America; Holarctic.

***Hydrothassa flavocincta* (BRULLÉ 1832)**

Chrysomela flavocincta BURULLÉ - Exped. Moree 3: 271; *Hydrothassa flavocincta*: APFELBECK 1901, 1916, GRUEV 1992.

Distribution in Turkey: İstanbul (APFELBECK 1901, 1916, GRUEV 1992).

General Distribution and Chorotype: Balkan Peninsula, Turkey, South Italy; Centralasiatic-European.

***Hydrothassa glabra* (HERBST 1783)**

Chrysomela glabra HERBST - Füessly, Arch. 4: 60.

Material examined: Erzurum, Aşkale, 23.V.2000, 15 samples.

Distribution in Turkey: New to the fauna of Turkey.

General Distribution and Chorotype: Europe, West Siberia; Sibero-European.

***Leptinotarsa decemlineata* (SAY 1824)**

Chrysomela decemlineata SAY - Journ. Ac. Philad. 3 (3): 453, *Leptinotarsa decemlineata*: TUATAY et al. 1972, GÜL-ZÜMREOĞLU 1972, KASAP 1988; ASLAN & ÖZBEK 1999.

Distribution in Turkey: Edirne (TUATAY et al. 1972), Bayramiç (Çanakkale) (GÜL-ZÜMREOĞLU 1972), Maltepe, Ayaş (Ankara), Çifteler (Eskişehir) (KASAP 1988), Artvin, Erzincan, Erzurum (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: America; Eurasia (introduced); Holarctic.

L. decemlineata is the most destructive insect pest of potatoes and it can also be a pest of eggplants and tomatoes in Turkey. It entered from Greece to Turkey in 1963 and separated all over the country up to 1990 (ASLAN AND ÖZBEK 1999).

***Linnaeidae aenea* (LINNAEUS 1758)**

Chrysomela aenea LINNAEUS - Syst. Nat., ed. 10: 369, SELMI 1983.

Distribution in Turkey: Balıkesir, Bartın, Çanakkale, İstanbul, Kırkkale (SELMİ 1983).

General Distribution and Chorotype: Europe, Asia, eastward with Japan; Palearctic.

***Phaedon armoraciae* (LINNAEUS 1758)**

Chrysomela armoraciae LINNAEUS - Syst. Nat., ed. 10: 369, *Phaedon armoraciae*: TOMOV & GRUEV 1975, KASAP 1988a, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Rize (TOMOV & GRUEV 1975), Nevşehir, (KASAP 1988a), Tortum, Şenkaya, Palandöken (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Kazakhstan, Mid Asia, Siberia; Sibero-European.

***Phaedon cochleariae* (FABRICIUS 1792)**

Chrysomela cochleariae FABRICIUS - Ent. Syst. 1: 330, *Phaedon cochleariae*: APFELBECK 1901, WEISE 1916, WINKLER 1930; TOMOV & GRUEV, 1975; TUATAY et al. 1972, KASAP 1988a; ASLAN 1997, ASLAN & ÖZBEK 1999.

Material examined: Tokat, 10.VII.1994, 5 samples.

Distribution in Turkey: Kırklareli (APFELBECK 1901), Anatolia (WEISE 1916), Asia Minor (WINKLER 1930), Ankara, Kayseri, Kırşehir, Niğde (TUATAY et al. 1972), Trabzon (TOMOV & GRUEV 1975), Ankara, Kırşehir, Kayseri, Niğde, (KASAP 1988a), Gaziantep, Diyarbakır (KISMALI et al. 1995), Erzurum (ASLAN 1997), Uzundere, Tortum, İspir (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Palearctic Asia; W. Palearctic.

***Phaedon pyritus* (ROSSI 1792)**

Chrysomela pyritus ROSSI - Mant. 1: 31, *Phaedon pyritus*: WEISE 1897, 1900, 1916, BODEMEYER 1900, TOMOV & GRUEV 1975, KASAP 1988a, GRUEV 1992, ASLAN & ÖZBEK 1999, *Neophaedon pyritus*: MEDVEDEV 1970.

Material examined: Şanlıurfa, Ceylanpınar, 5.V.1996, 5 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Mardin (WEISE 1900), Eskişehir (BODEMEYER 1900), Anatolia, (WEISE 1916), Maçka (Trabzon), Çarşamba (Samsun) (MEDVEDEV 1970), Çarşamba (Samsun) (TOMOV & GRUEV 1975), Ankara, Kırşehir, Yozgat, Sivas, Konya, Amasya (KASAP 1988a), İstanbul (GRUEV 1992), Palandöken, Köşkköyü (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, Kazakhstan, Mid Asia, North Africa; Palearctic.

***Phratora horioni* (MOHR 1968)**

Phyllodecta horioni MOHR - Nachrichtenblatt der Bayerischen Entomologen 3: 48, *Phaedon horioni*: TOMOV & GRUEV 1975.

Distribution in Turkey: Zigana Mt. (Trabzon) (TOMOV & GRUEV 1975).

General Distribution and Chorotype: Caucasus, Asiatic Turkey; SW-Asiatic (Anatolo-Caucasian).

***Phratora laticollis* (SUFFRIAN 1851)**

Phyllodecta laticollis SUFFRIAN - Linn. Ent. 5: 259, WEISE 1916, KASAP 1988a.

Distribution in Turkey: Anatolia (WEISE 1916), Kızılcahamam (Ankara), Kızılırmak (Çankırı) (KASAP 1988a).

General Distribution and Chorotype: Europe, Palearctic Asia; Palearctic.

***Phratora tibialis* (SUFFRIAN 1851)**

Phyllodecta tibialis SUFFRIAN - Linn. Ent. 5: 259, KASAP 1988a, *Phratora tibialis*: ASLAN 1997, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Kızılcahamam (Ankara) (KASAP 1988a), Erzurum (ASLAN 1997), Erzurum, Olur (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Asia Minor; Sibero-European.

P. tibialis is a willow pest (ACATAY 1956; ÇANAKÇIOĞLU 1993; ASLAN 1997; ASLAN & ÖZBEK 1999).

***Phratora vitellinae* (LINNAEUS 1758)**

Chrysomela vittellinae LINNAEUS - Syst. Nat., ed. 10: 370, *Phyllodecta vitellinae*: SEKENDİZ 1974, TOMOV & GRUEV 1975, KASAP 1988a, ÇANAKÇIOĞLU 1993, *Phratora vitellinae*: GRUEV & TOMOV 1979, ASLAN 1997, ASLAN & ÖZBEK 1999.

Distribution in Turkey: İzmit, Adapazarı (SEKENDİZ 1974), Ankara, Giresun (TOMOV & GRUEV 1975), Uludağ (Bursa) (GRUEV & TOMOV 1979), Ankara, Çorum (KASAP 1988a), Bursa, İzmit, Mardin, Samsun, Muş, Diyarbakır, Bolu, Kastamonu, Sinop, Zonguldak, Bilecik, Edirne, İstanbul (ÇANAKÇIOĞLU 1993), Erzurum (ASLAN 1997), Borçka (Artvin), Olur (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Palearctic Asia; Palearctic.

P. vittellinae is an important willow pest (ACATAY 1956, ÇANAKÇIOĞLU 1993, ASLAN 1997, ASLAN & ÖZBEK 1999).

***Phratora vulgatissima* (LINNAEUS 1758)**

Chrysomela vittellinae LINNAEUS - Syst. Nat., ed. 10: 370, *Phratora vulgatissima*: GRUEV 1992.

Distribution in Turkey: Turkey (GRUEV 1992).

General Distribution and Chorotype: Europe, Caucasus, Turkey, Kazakhstan, Siberia, Russian Far East, Mongolia, North America; Holarctic.

***Plagiodera versicolora* (LAICHARTING 1781)**

Chrysomela versicolora LAICHARTING - Verz. Tirol Ins. 1: 148, *Plagiodera versicolora*: GANGLBAUER 1905, ACATAY 1943, ERDEM 1947, MEDVEDEV 1975, GÜL-ZÜMREOĞLU 1972, KISMALI 1973, KISMALI 1973, SEKENDİZ 1974, TOMOV & GRUEV 1975, KASAP 1988a, KISMALI et al. 1995, ÇANAKÇIOĞLU 1993, ASLAN 1997, 2001, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Konya, Kayseri (GANGLBAUER 1905), İstanbul (ACATAY 1943, ERDEM 1947), İstanbul, İzmir, Sakarya, Amasya (GÜL-ZÜMREOĞLU 1972, KISMALI 1973, KASAP 1988a), İzmit (SEKENDİZ 1974), Yalova, İzmit (MEDVEDEV 1975), Samsun, Trabzon (TOMOV & GRUEV 1975), Lice (Diyarbakır), Nusaybin (Mardin) (KISMALI et al. 1995), İstanbul, Samsun, Zonguldak, Kastamonu, Ankara, Edirne, Bursa, Bolu, Kırklareli (ÇANAKÇIOĞLU 1993), Erzurum (ASLAN 1997, 2001), Erzincan, Erzurum, Artvin (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Palearctic region, India, Taiwan, North America; Holarctic.

P. versicolora is an important willow pest (ACATAY 1956, ÇANAKÇIOĞLU 1993, ASLAN 1997, 2000, ASLAN & ÖZBEK 1999).

***Prasocuris junci* (BRAHM 1802)**

Chrysomela junci BRAHM - Ins. Kalend 1: 62, *Prasocuris junci*: WEISE 1897, BODEMEYER 1900, TOMOV & GRUEV 1975, MEDVEDEV 1975, LOPATIN 1981, KASAP 1988a, ASLAN & ÖZBEK 1999.

Material examined: Diyarbakır, Silvan, 17.IV.1995, 4 samples.

Distribution in Turkey: Central Anatolia (WEISE 1897), Bolkar Mt. (Niğde) (BODEMEYER 1900), Marmaris (Muğla) (MEDVEDEV 1975), Samsun, Gümüşhane (TOMOV & GRUEV 1975), Başkale (Van) (LOPATIN 1981), Ankara, Kırşehir, Yozgat, Nevşehir, Kayseri, Sivas, Konya, Eskişehir, Afyon, (KASAP 1988a), İspir, University Field (Erzurum) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Europe, Caucasus, Asia Minor, South Siberia, North Africa; W-Palearctic.

***Prasocuris phellandrii* (LINNAEUS 1758)**

Chrysomela phellandrii LINNAEUS - Syst. Nat., ed. 10: 376, *Prasocuris phellandrii*: APFELBECK 1900, 1916, TOMOV & GRUEV 1975.

Distribution in Turkey: Kırklareli (APFELBECK 1901), İstanbul (APFELBECK 1916), Ladik Lake (Samsun) (TOMOV & GRUEV 1975).

General Distribution and Chorotype: Europe, Palearctic Asia, North America; Holarctic.

***Timarcha hummeli* FALDERMANN 1837**

Timarcha hummeli FALDERMAN - Nouv. Mem. Mosc. V: 351, ASLAN & ÖZBEK 1999.

Distribution in Turkey: Arhavi, Borçka (Artvin) (ASLAN & ÖZBEK 1999).

General Distribution and Chorotype: Armenia, Georgia, Transcaucasus, Anatolia.; Turano-European.

***Timarcha nicaeensis* VILLA 1835**

Timarcha nicaeensis VILLA - Suppl. Col. Eur. dupl.: 49, WEISE 1916, WINKLER 1930.

Distribution in Turkey: Turkey (WEISE 1916, WINKLER 1930).

General Distribution and Chorotype: Tirol, Italy, South France, Turkey (Questionable in Turkey); Turano-European.

Remarks: Although WEISE (1916) and WINKLER (1930) indicated presence of *T. nicaeensis* in Turkey, there is no any location, so it is questionable?

***Timarcha olivieri* FAIRMAIRE 1868**

Timarcha olivieri FAIRMAIRE - Gen. Col. d'Eur. IV, Cat.: 261, GANGLBAUER 1905, WEISE 1916, WINKLER 1930, BECHYNÉ 1946.

Distribution in Turkey: İstanbul, Eskişehir, Alayehir, Anatolia, Sultandağı (Konya) (GANGLBAUER 1905), İstanbul (WEISE 1916), European Turkey (Thrace) (WINKLER 1930, 1970), Bozdağ, Eskişehir, İstanbul (BECHYNÉ 1946).

General Distribution and Chorotype: Turkey; Endemic to Turkey.

***Timarcha pratensis* DUFTSCHIMID 1825**

Timarcha pratensis DUFTSCHIMID - Fauna Austr. 3: 162, BODEMEYER 1900, WEISE 1916, KASAP 1988a, *T. pratensis* var. *globulata*: WINKLER 1930.

Distribution in Turkey: İstanbul, Eskişehir, Alayehir (Konya), Akşehir, Amasya, Anatolia, Sultandağı (Konya) (BODEMEYER 1900, KASAP 1988a), Anatolia (WEISE 1916), Asia Minor (WINKLER 1930).

General Distribution and Chorotype: Southeast Europe, (South Alps, South Carpathians, Northern Balkan Peninsula), Turkey (Anatolia); Turano-European.

***Timarcha rugulosa* HERRICH-SCHAEFFER 1838**

Timarcha rugulosa HERRICH-SCHAEFFER - Fauna. Germ. 156: 32; JACOBSON 1925.

Distribution in Turkey: Asia Minor, Turkey (JACOBSON 1925).

General Distribution and Chorotype: Poland, Germany, Ukraine, Russia, Czechia, Slovakia, Hungary, Rumania, Turkey; Sibero-European.

***Timarcha tenebricosa* (FABRICIUS 1775)**

Chrysomela tenebricosa. FABRICIUS - Syst. Ent.: 94.

Material examined: Trabzon, Esiroğlu, 1.VII.1992, 3 samples.

Distribution in Turkey: New to the fauna of Turkey.

General Distribution and Chorotype: Mid, South and Southeastern Europe, Caucasus; Turano-European.

***Zygogramma suturalis* (FABRICIUS 1775)**

Chrysomela suturalis FABRICIUS - Syst. Ent.: 95.

Material examined: Adiyaman, Nemrut Mt., 8.VI.1985, 1 sample.

Distribution in Turkey: New to the fauna of Turkey.

General Distribution and Chorotype: New World, introduced to Russia; Holarctic.

Z. suturalis is a New World species, known as ragweed leaf beetle has been introduced

to Russia in 1978 against the common ragweed, *Ambrosia artemisiifolia* L. The introduction results can be considered as establishment and moderate biological success, but not as control success (KOVALEV et al. 1983; REZNIK 2000).

It is remarkable to emphasize that *Z. suturalis* was collected from Adiyaman in 1985. It is very difficult to explain how *Z. suturalis* reached from America or Russia to Adiyaman.

Discussion

The species of Chrysomelinae occurring in Turkey can be divided mainly into two groups in agricultural points of view, as destructive (pest) and useful insects. *Chrysomela collaris*, *Ch. populi*, *Ch. saliceti*, *Ch. tremulae*, *Ch. vigintipunctata*, *Goniocetena linnaeana*, *Phratora tibialis*, *P. vitelliana*, *Plagiodera versicolora* and *Leptinotarsa decemlineata* are important pest on trees and cultivated plants. The second group might be accepted as useful insects due to feeding on various species of weeds. They are mostly leaf feeders. As it has been known recently traditional methods of weed control, such as cultivation and the use of herbicides are not practical or desirable for some group of weeds and biological control has become an attractive strategy for control of pest weeds. Among these species, *Chrysolina hyperici* is one of the most effective biological control agents of *Hypericum perforatum*, *Gastrophysa viridula caucasica* is a good candidate for control of *Rumex alpinus*, those of *G. polygoni* and *G. viridula* for *Rumex* spp.

When we examine the Turkish Chrysomelinae from stand point of geographical distribution, we recognize 14 chorotypes. 13 taxa (13.69 %) are endemic to Turkey. The rest of the species are involved in 13 chorotypes. The Asiatic-European (ASE) elements are the most abundant (14 species), 14.74 % of the whole fauna, followed by the SW-Asiatic (SWA) ones with 12 species (12.63 %). The Centralasiatic-European (CAE) and Sibero-European (SIE) elements are third and fourth orders with 11 and 10 species (11.58 %, 10.53 %) respectively. Holarctic (OLA) and Turano-European (TUE) chorotypes have nine species each. Interestingly, introduction of various bio-control agents of weed pests reciprocally between Old World and New World have influenced to increase the Holarctic elements. Palearctic (PAL) and Turano-Mediterranean (TUM) have six and three species respectively. W-Palearctic (WPA) and Turanian (TUR) chorotypes have two species each. Mediterranean (MED), Centralasiatic-European-Mediterranean (CEM), Centralasiatic-Mediterranean (CAM) and Turano-European (TUE) chorotypes are represented only one species each.

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