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Distribution and Taxonomy of Gomphocerinae (Orthoptera, Acrididae) Species in The Anatolian Black Sea Basin and Check List of Turkey Subfamily Fauna

Abbas MOL[1] Ünal ZEYBEKOĞLU[2]

[1]Guzelyurt Vocational School, Aksaray University, Aksaray, TURKEY
*Corresponding author's e-mail: abbasmol19@gmail.com
[2] Departmentof Biology, Faculty of Art and Science, Ondokuz Mayıs University, Samsun, TURKEY

ABSTRACT

This study was carried out especially between 2003 and 2006, at different altitudes and habitats, and 5244 Gomphocerinae specimens were collected in Black Sea Regions to determine subfamily species ranging between 200 meter and 2460 meter in 175 different localities in this area. These specimens were prepared according to standart methods in the laboratory, then researched and compared with present literature, acoustics characteristics, museum specimens determined before, and specimens researched. Finally, 52 species belonging to 17 genera of the Gomphocerinae subfamily along with present literature were indicated in the Black Sea Region. Eight of 52 Gomphocerinae subfamily species were collected for the first time from the Black Sea Region and with previous studies totaly 60 Gomphocerinae subfamily taxon are distributed in this area. In addition to these, *Dociostaurus* (*Kazakia*) *tartarus* has been given a new record for Turkey. Original description name, printed journal, distributions for world, and variations, if existed, were given for every genus and species. By checking over previous studies, check list for Gomphocerinae subfamily fauna of Turkey was prepared, and evaluated in terms of taxonomic, faunistics, and biogeographic terms.

Key words: *Orthoptera, Acrididae, Gomphocerinae, Fauna, taxonomic,* Anatolian Black Sea Basin, Turkey.

INTRODUCTION

Gomphocerinae Tarbinsky, 1932, living in habitats such as lush lowland meadow, steppe, open woodland, and high mountains, is one of the most widespread Acrididae subfamily in Orthoptera. It is reported that Gomphocerinae grasshoppers include nearly 1350 taxon (species/subspecies) belonging to 186 genera in the whole Holoarktik Region (Otte *et al*., 2012). There are not any comprehensive studies which contain the whole Holoarktic Gomphocerinae taxon of this subfamily, except Jago (1971) who made a throughout revision for subfamily and Otte *et al*., (2012) who made the species list. Gomphocerinae grasshoppers have a lot of variations because they contain many taxa and prefer specific habitats. These features of the species in the subfamily created faults in their diagnosys, however the use of acoustic signals in the diagnosys of the taxon especially lately provided a solution for these faults.

Gomphocerinae grasshoppers are known use to produce elaborate species specific acoustic signals for intraspecific communication. The songs can be a useful tool to monitor and enable the identification of species, and might contain important taxonomic information (Stumpner and Helversen, 1994; Ragge and Reynolds, 1998; Mol *et al*., 2003; Çıplak *et al*., 2005; Mol, 2011; Şirin *et al.*, 2010b; Şirin *et al*., 2011; Şirin and Mol 2013). If their numbers increase in agricultural zones, they may be harmful for this area (Uvarov, 1921; Be-Bienko and Mistshenko, 1951; Karabağ, 1958; Jago, 1971; Harz, 1975; Çıplak, 2004; Otte *et al*., 2012).

There are numerous studies dealing with Gomphocerinae taxon of Holoartic region. Previous studies focused on morphology (Uvarov, 1934; Be-Bienko and Mistshenko, 1951; Jago, 1971; Harz, 1975; Demirsoy, 1977; Salman, 1978 and etc.);, however, most of the recent studies are based on songs, molecular characteristics, and other behavioural characteristics (Helversen, 1986; Ragge, 1986; Ragge and Reynolds, 1984; Ragge and Reynolds, 1998; Bukhvalova and Vedenina, 1998; Hewitt, 2000-2001; Mol *et al*., 2003; Çıplak *et al*., 2005; Vedenina and Helversen, 2009; Şirin, 2009; Şirin *et al*., 2010b-2011, Korkmaz *et al.,* 2010 and etc.).

The Gomphocerinae grasshoppers of Turkey have been comperatively well studied. The greatest contributions to these studies were made by Bolivar (1899), Ramme (1926-1931-1939-1951), Uvarov (1930-1934) Bei-Bienko and Mistshenko (1951), Karabağ (1949-1953-1957-1958-1959-1963), Weidner (1969), Demirsoy (1975-1977), Karabağ *et al*. (1971-1980), Salman (1978), Güneş (1984), Helversen (1989), Çıplak (1994-2004-2008), Çıplak and Demirsoy (1990-1991), Çıplak *et al*. (1993-1996a-1996b-2005), Naskrecki and Unal (1995); Unal (1997-1999-2007-2008-2010-2012), Onder *et al*. (1999), Sevgili and Çıplak (2000), Mol (2001-2007-2011), Mol *et al*. (2003), Berger (2008), Şirin *et al*. (2010a-2010b-2011), Şirin and Mol (2013).

The first significant information about the Gomphocerinae of Turkey was provided by Karabağ (1958) who reported about 60 species and subspecies, and Demirsoy (1977) reported 66 species and subspecies, then Çıplak *et al*. (1999-species list) reported a totaly of 80 taxon, (species-subspecies) belonging to 18 genera of subfamily Gomphocerinae, 35 of which are distributed in Black Sea Region. When related studies were examined (Karabağ, 1958; Weidner, 1969; Demirsoy, 1977; Salman, 1978; Karabağ *et al*., 1971-1980; Çıplak *et al*., 1999-2005; Ünal, 1999; Mol *et al*., 2003), it was concluded that a total of 46 taxon (species-subspecies) belonging to 15 genera of subfamily Gomphocerinae distributions in Black Sea Region were reported. It is hard to say that these studies uncover the subfamily of the Gomphocernae species in the Black Sea Region.

To evaluate biological diversity, Gomphocerinae grasshoppers have been used specifically since Uvarov (1921). Uvarov (1921) reported that Orthoptera order distributions in Palearktic region were divided into four district which are Boreal, Step, Mediterranean, and Afro-Eremial regions. The Black Sea Region is characterized euxinic vegetation and expected to have a fauna rich in subfamily species for a number of reasons such as that it has a cold climate, permanently green vegetation, different habitat types, that it was an entry aveanue and safe refugia for species/populations

which were spread from north to south and preferred cold climate, and that the faunistic elements of Eremial region act as a corridor for spreading from south to north.

Additionally, Anatolia was subjected to changes in its topographic feature due to its changing composition during the geological process, its rugged topograpghy today, climatic diversity and the fact that it was exposed to various orogenies. All of these may have caused an increase in Gomphocerinae subfamily diversity (Steininger and Rögl, 1984; Demirsoy, 1999; Rögl, 1999).

As the use of old methods and characteristics for subfamily taxonomy has proved to be insufficient lately, faults emerged in their diagnosis. It became a necessity to reevaluate the known taxon with sound characteristics as these characteristics are an important feature in their subfamily taxonomy (Helversen, 1986; Ragge, 1986; Ragge and Reynolds, 1984; Ragge and Reynolds, 1998 and etc.).

In this study, where we uncovered Gomphocerinae subfamily in the Black Sea Region due to the reasons we summarized above, we aimed (i) to reveal the Anatolian Black Sea Basin species of the subfamily Gomphocerinae and their distribution districts, (ii) to contribute to their taxonomic problems, (iii) to determine the species which damage agricultural fields, (iv) to present some speculation on their biogeography, (vi) to prepare the checlist for subfamily of Gomphocerinae fauna of Turkey.

MATERIAL AND METHODS

This study was carried out especially between 2003 and 2006 in the Anatolian Black Sea Basin in Turkey. By taking vegetation, topography, and altitude into account in the twenty five cities which are Bolu, Sakarya, Düzce, Zonguldak, Bartın, Karabük, Kastamonu, Çankırı, Sinop, Çorum, Yozgat, Samsun, Amasya, Tokat, Sivas, Erzincan, Ordu, Giresun, Gümüşhane, Trabzon, Rize, Bayburt, Erzurum, Artvin and Ardahan, study areas were determined, then these study areas were visited generally between every June and September, and Gomphocerinae specimens collected from 175 different localites (Fig.1). Of these 175 localities, 72, which were called main localities, were visited at least once or twice ever year. The rest of the localities were visited only once during this study.

During the field work, the songs of Gomphocerinae specimens were recorded and then the specimens were collected by sweep net. The specimens collected during the field studies were prepared as museum material by standard methods. Male genitalia were dissected and soaked into aqueous 10 % potassium hydroxide (KOH) solution at room temperature. Figures and measurements were obtained using a digital camera or a camera lucida attached to a stereo microscope.

The collected specimens were identified and also compared with specimen by Bolivar (1899), Uvarov (1930-1934), Bei-Bienko and Mistshenko (1951), Karabağ (1956-1957-1959-1963), Weidner (1969), Harz (1975), Demirsoy (1977), Salman (1978), Soltani (1978), Willemse (1985) and Vedenina and Helversen (2009). Afterwards, the collected materials were also compaired with specimens preserved

in the Biological Museum of Akdeniz University (Antalya). Most of the specimens examined during this study are preserved in Ondokuz Mayıs University, Department of Biology, Entomological Museum, (OMUEM), Samsun, Turkey. Original description name and printed journal were given for every genus and species. All specimens were collected by the first author. When localities of newly collected material are given, the following format is used: Province: city (or town), village (or district), altitude, collection date, number of male and female specimens. For given species, if there are any variations from previous studies, these variations were given as a seperate sub-topic.

Both morphology and acoustic attributes are very important taxonomic characteristics for subfamily Gomphocerinae species. To confirm our data, we recorded and evaluated male calling songs for some collected materials. Field recordings of the songs were made with a Sony Cassette-Recorder WM-GX 688 and a flat microphone (50 Hz to 18 kHz). Song recordings were made in the field in full sunshine, and air temperature was measured in the shade. Male calling songs were analysed with the aid of Cool Edit 96 schedule and printed using Turbolab (Stemmer AG) program. The terminology for song description was taken from Ragge and Reynolds (1998) and Çıplak *et al*. (2005).

RESULTS

SUBFAMILY: GOMPHOCERINAE TARBINSKY, 1932

Duroniella I. Bolivar, 1908

Duroniella I. Bolivar, 1908. Mem. Soc. Ent. Belg, XVI: 100

Type species: *Duroniella lucasii* (I. Bolivar, 1881)

Duroniella laticornis (Krauss, 1909)

Duronia laticornis Krauss, 1909. Verh. Nat. Ver., Karlsruhe, 21: 42, (118-119)

Distribution: Southeastern Europe, Caucasus, Kazakhstan, from Northern Africa to Russia and Middle Asia (Bei-Bienko and Mistshenko, 1951).

Material examined: Çorum: Sungurlu, Tuğcu köyü, 800 m, 26.V.2006, 5♂♂, 10♀♀.

Arcyptera Serville, 1839

Oedipoda (*Arcyptera*). Ins. Histoire naturelle des insectes, Orthoptères: 743

Type species: *Arcyptera fusca* (Pallas, 1773)

Arcyptera fusca fusca (Pallas, 1773)

Gryllus locusta fuscus Pallas, 1773. Reisen Russ. Reiches, 2: 727, n.77

Distribution: Southern Regions of European part of U.S.SR, Caucasus, Kazakhstan, Western Siberia, Altai, Yakutta; Western Europe, Mongolia and Turkey (Bei-Bienko and Mistshenko, 1951; Çıplak *et al*., 1999).

Material examined: Artvin: Şavşat, Yukarı Kocabey Yaylası İnişi, 1900-2000 m, 28.VII.2005, 10♂1♀; Rize: İkizdere, Başköy, 1851 m, 1♂, 2♀♀.

Pararcyptera Tarbinsky, 1940

Arcyptera subgen. *Pararcyptera* Tarbinsky, 1940. Zool. Anz. 91: 334

Type species: *Pararcyptera microptera* (F.W., 1833)

Pararcyptera labiata (Brullè, 1832)

Podisma labiata Brullè, 1832: 95. Expédition scientifique de Morée 4.3(1), 2:95.

Distribution: Balkan Peninsula, Asia Minor (Bei-Bienko and Mistshenko, 1951)

Material examined: Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 2460 m, 9.VIII.2004, 4♀♀; 25.VII.2005, 5♂♂, 5♀♀; Vaukdağı Geçidi, 1955 m, 8.VIII.2004, 3♀♀; Çorum: Çorum-Osmancık yolu, Beydili-Çatak köyü yol ayrımı, 865 m, 26.VI.2004, 3♂♂, 10♀♀; 10.VII.2005, 1♀; Erzurum: Erzurum-İspir yolu, Gölyurt Geçidi, 2380 m, 30.VII.2005, 2♂♂, 8♀♀; Giresun: Giresun-Şebinkarahisar yolu, Eğribel Geçidi, 1725 m, 7.VIII.2004, 1♂; Kastamonu: Kastamonu-Tosya yolu, Tosya Ilgazı Geçidi, 1650 m, 21.VIII.2004, 4♂♂; 20.VIII.2004, 2♂♂, 1♀; 13.VII.2005, 5♂♂, 7♀♀, Rize: İkizdere-İspir yolu, 75. km, 2000-2100 m, 30.VII.2005, 4♂♂, 1♀; Tokat: Zile, Yıldıztepe, Deveci Dağları, 1350 m, 16.VII.2004, 1♂.

Ramburiella I. Bolivar, 1906

Ramburiella Bolivar, 1906. Boll. Soc. Esp.Hist.Nat.6:393

Typ species: *Gryllus hispanica* Rambur, 1838

Ramburiellla turcomana (Fischer de Waldheim, 1846)

Oedipoda turcomana F.W.,1833. Bull.Soc.Nat.Mosc.32(1):133

Distribution: South-east of western Europe, western Asia, Crimea, South-east of European Russia, Transcaucasica, Kazakhstan, Middle Asia, Balkan Peninsula, Rhodes, Turkey, Syria and Palestine, (Demirsoy, 1977; Bukhvalova and Vedenina 1998; Sevgili and Çıplak, 2000).

Material examined: Çorum: Beydili-Çatak köyü yol ayrımı, 26.VI.2004, 865 m, 1♂, 2♂♂; 900 m, 20.VII.2006, 1♂, 1♀; Yozgat: Yozgat-Sorgun Yolu, 10.km, 1160 m, 11.VIII.2005, 1♀.

Ramburiellla bolivari (Kuthy, 1907)

Stethophyma bolivari Kuthy, 1907. Ann.hist.-nat.Mus.Hung. 5:431

Distribution: South-east Europe, a part of Russia, North west and east Kazakhstan, Turkey, northern Iran (Harz 1975).

Material examined: North East Anatolia, Artvin: Yusufeli, Aşpişen köyü, 600 m, 1.VII.2013, 2♂♂, 2♀♀ (A.Mol, D.Şirin, MS.Taylan).

Eremippus Uvarov, 1926

Eremippus Uvarov, 1926. Eos. 2:243-245

Type species: *Stenobothrus simplex* (Eversmann, 1859)

***Eremippus zeybekoglui* Mol, 2012**

Eremippus zeybekoglui Mol, 2012. Entomologica Fennica, 23:127-139.

Distribution: Known only from Turkey (Mol, 2012)

Material examined: North East Anatolia, Artvın: Yusufeli, Aşpişen köyü, 600 m, 17.VIII.2006, 1♂.

***Eremippus weidneri* Demirsoy, 1977**

Eremippus weidneri Demirsoy, 1977. Türkiye Caelifera (Insecta, Orthoptera) Faunasının Tesbiti ve İncelenmesi, 186-189

Distribution: Known only from Turkey (Çıplak *et al*., 1999).

Material examined: Giresun: Kümbet Yaylası, 1940 m, 3♂♂, 8♀♀, 23.VII.2005; Eğribel Geçidi, 1900 m, 15.VIII.2004, 2♂, 3♀; 2250 m, 7.VIII.2004, 5♂♂, 4♀♀; 23.VII.2005, 1725 -1950 m, 1♂, 4♀♀; 2250-2302 m, 1♀; Ordu: Kaladüzü, Çambaş Yaylası, 1741 m, 20.VIII.2006, 15♂♂, 8♀♀; Trabzon: Zigana Dağı, Gümüş Kayak merkezi, 2150 m, 14.VIII.2004, 4♂♂, 3♀♀; 26.VIII.2005, 1♀.

***Dociostaurus* Fieber, 1853**

Dociostaurus Fieber, 1838. Lotos. 3:118

Typ species: *Dociostaurus maroccanus* (Thunberg, 1815)

***Dociostaurus* (*Kazakia*) *brevicollis* (Eversmann, 1848)**

Oedipoda brevicollis Eversmann, 1848. Orth. Ross. 11

Distribution: South-east of Western Europe, Asia Minor, Ukraine, southern and central parts of European Russia, Caucasus, South-western Siberia, northern and eastern Kazakhstan, Kyrgyzstan, the Pamirs (Bukhvalova and Vedenina, 1998).

Material examined: Amasya: Ezinepazarı, Abacı köyü girişi, 1025 m, 15.VII.2004, 3♂♂, 16♀♀; 19.VIII.2004, 1♀; 2.VIII.2005, 1♂, 2♀♀; Ormanözü köyü girişi, 1255 m, 14.VIII.2004, 1♂, 5♀♀; Ardahan: Hanak-Ardahan yolu, Hanak çıkışı, 2100 m, 11.VIII.2004, 8♂♂, 8♀♀; Hanak yolu, 10.km, 1950 m, 11.VIII.2004 1♂, 2♀♀; Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 9.VIII.2004, 2460 m, 1♂, 10♀♀; 25.VII.2005, 2♂♂, 3♀♀; Vauk Dağı Geçidi, 1955 m, 8.VIII.2004, 4♂♂, 6♀♀; 25.VIII.2005, 2♂♂, 6♀♀; Bayburt-Çaykara yolu, Soğanlı Dağı etekleri, Kılıçkaya köyü, 1860 m, 1♂ 7♀♀; Bayburt-Aşkale yolu, 25.km, 1790 m, 25.VII.2005, 1♂, 3♀♀; Bolu: Yeniçağa Gölü, 950 m, 22.VII.2004, 1♂; Çankırı: Ilgaz, İndağı Geçidi, 1425 m, 14.VII.2005, 1♂; Çorum: Kösedağ, Zirve, 1700 m, 2.VIII.2004, 4♂♂, 12♀♀; 13.VIII.2005, 1♂, 2♀♀; Beydili-Çatak köyü, yol ayrımı, 900 m, 2.VIII.2004, 1♀; 10.VII.2005, 3♀♀; Merkez, Karşıyaka mahallesi, 894 m, 10.VII.2004, 1♂, 1♀; Çorum-Alaca yolu, Kürecik Beli Geçidi, 1100 m, 11.VIII.2005, 1♂; Alaca-Yozgat yolu, 10.km, 1000 m, 11.VIII.2005, 5♂♂; Sungurlu: Kamışlı köyü, girişi, 885 m, 11.VIII.2005, 1♀; Erzurum: Oltu-Erzurum yolu, 25. km, 2000-2200 m, 21.VIII.2000, 1♂; Erzurum-Pazar yolu, Laleli köyü, 1450 m, 9.VIII.2004, 1♂; İspir, Gölyurt Geçidi, 2380 m, 30.VII.2005, 4♂♂, 5♀♀; Giresun: Alucra, Aktepe köyü, 1500 m, 7.VIII.2004, 3♂♂, 2♀♀; Gümüşhane: Kale, Akçahisar köyü, 1450 m, 8.VIII.2004, 2♂♂, 2♀♀; Fındıkbeli Geçidi, 1700 m, 24.VII.2005, 3♂♂, 3♀♀; 7.VIII.2004, 2♂♂, 3♀♀; Kelkit, Pöske Dağı, 1500-2250 m, 24.VII.2005, 5♂♂, 14♀♀; Çilhoroz Geçidi, 1625 m, 24.VII. 2005, 4♂♂, 5♀♀; Kastamonu: Merkez, Aksinir köyü, 900 m, 26.VII.2004, 5♂♂, 10♀♀; Kastamonu-İnebolu yolu, 10.km, 900 m, 21.VIII.2004, 1♂, 2♀♀; Seydiler-Küre yolu, 1700 m, 26.VII.2004, 1♂, 2♀♀; Ecevit Geçidi, 1170 m, 26.VII.2004, 1♂; Tosya-İskilip yolu, Türbe Geçidi altı, 1285 m, 13.VII.2005, 1♂, 1♀; Türbe Geçidi, 1625 m, 13.VII.2005, 11♂, 23♀♀; 20.VII.2004, 12♂♂, 4♀♀; 20.VIII.2004, 10♂♂, 27♀♀; Devrekani-Çatalzetin yolu, Devrekani Çıkışı, 1050 m, 17.VII.2005, 2♂♂, 9♀♀; Ordu: Ünye-Niksar yolu, Ağa Geçidi, 1550 m, 31.VII.2005, 1♀; Rize: İkizdere-İspir yolu, 75.km, 2000-2100 m, 13.VIII.2004, 3♀♀; 30.VII.2005, 1♂ 6♀♀;

Sinop: Sinop-Boyabat yolu, Dranaz Geçidi, 1310 m, 27.VII.2004, 19♂♂, 16♀♀; 18.VII.2005, 7♂♂, 25♀♀; Sivas: Çamlıbel-Yıldızeli yolu, 20.km, 1300 m, 17.VII.2004, 4♂♂, 24♀♀; 19.VIII.2004, 1♂, 6♀♀; 1400 m, 1.VIII.2005, 3♂♂, 3♀♀; Tokat: Zile, Deveci Dağları, 1350 m, 16.VII.2004, 1♂, 13♀♀; Hasan Ağa köyü, çıkışı, 730 m, 1.VIII.2005, 2♀♀; Niksar, Ulusu, 1275 m, 6.VIII.2004, 4♂♂, 18♀♀; 31.VII.2005, 6♂♂, 4♀♀; Çamlıbel Geçidi, 1390 m, 17.VII.2004, 1♂, 2♀♀; 1670 m, 19.VIII.2004, 4♂♂, 10♀♀; 1.VIII.2005, 3♂♂ 4♀♀.

Dociostaurus (*Kazakia*) *tartarus* Stschelkanovzev, 1921

Dociostaurus crucigerus tartarus Shchelkanovtsev. 1921: Fieb. Bull. Ent. Res., London. 11(4):339

Distribution: South-east of European Russia, Caucasus, Kazakhstan, Middle Asia, Iraq, Northern Iran, Northern Afgahanistan, Pakistan (Bei-Bienko and Mistshenko, 1951; Soltani, 1978).

Material examined: Artvin: Yusufeli, Aşpişen köyü, 600 m, 17.VIII.2006 1♂, 2♀♀.

Remarks: In the previous studies (Demirsoy, 1977; Naskrecki and Unal, 1995; Çıplak *et al*., 1999), three taxa (species or subspecies) of *Kazakia* Bei-Bienko, 1933 subgenus were recorded in Turkey. Those species are: *Dociostaurus* (*Kazakia*) *brevicollis* (Eversmann, 1848), *Dociostaurus* (*Kazakia*) *jagoi jagoi* Soltani, 1978, and *Dociostaurus* (*Kazakia*) *genei* (Ocskay, 1832). In this study, we collected *Dociostaurus* Fieber species from Artvin-Yusufeli belonging to *Kazakia* Bei-Bienko subgenus specimens, which were different from above-mentioned species specimens. Thus, we identified this speciemens according to previous publications (Bei-Bienko and Mistshenko, 1951; Harz, 1975; Demirsoy, 1977; Soltani, 1978; Çıplak, 1992; Sevgili, 1997) and determined that these specimens belonged to *Dociostaurus* (*Kazakia*) *tartarus* Stschelkanovzev, 1921. For Turkey, this new record is easily distinguished from the species of *Kazakia* Bei-Bienko subgenus known in Turkey.

The new record is similar to *Dociostaurus* (*Kazakia*) *genei* (Ocskay, 1832), *Dociostaurus* (*Kazakia*) *jagoi jagoi* Soltani, 1978, and *Dociostaurus* (*Kazakia*) *brevicollis* (Eversmann, 1848) with the first segment of hind tarsi equal to length of 2/3 of the total length of the other two segments. However, it differs from *Dociostaurus* (*Kazakia*) *genei* (Ocskay, 1832) with stridulatory pegs number 92 (in *D. genei* 22-35), in male, supra-anal plate narrow (in *D. genei* male, supra-anal plate wider than long), in female vertical diameter of eye/length of subocular groove 2 (in *D. genei* 1.4-1.5).

The new record differs from *Dociostaurus* (*Kazakia*) *jagoi jagoi* Soltani with stridulatory pegs number 92 (in *D. jagoi* 69-76), apical valves of the penis equal in length with cingular valves (in *D. jagoi*, cingular valves longer than apical valves), tegmina surpasses the tip of hind femur in female (in *D. jagoi* tegmina does not reach the tip of hind femur in female).

The new record differs from *Dociostaurus* (*Kazakia*) *brevicollis* (Eversmann, 1848) as in male the total length of antenna is 1.25-1.45 times longer than head plus pronotum length (in *D.brevicollis* 1.5-1.75), hind tibia red (in *D.brevicollis* pale yellow), apical valves of penis slender straight (in *D.brevicollis* tick), tegmina surpasses the tip of hind femur in female (in *D.brevicollis* tegmina does not reach or nearly reach the tip of hind femur) tegmina length 18-19 mm in female (in *D.brevicollis* 15.6-16.6 mm).

***Dociostaurus* (*Dociostaurus*) *maroccanus* (Thunberg, 1815)**

Grylllus macroccanus Thunberg, 1815. Mem. Acad. Sci. St. Petersb., 5: 244

Distribution: N. Africa, Maderia and Canary Islands, S. Europe and Cyperus; Sardinia, Corsica, Sicily, U.S.S.R; Middle East, N.E. Africa, Somali Rep., the Caucasus, southern Kazakhstan and western and middle Asia, Turkey (Bei-Bienko and Mistshenko, 1951; Soltani, 1978; Çıplak *et al*.,1999).

Material examined: Tokat: Niksar-Ulusu, 1275 m, 6.VIII.2004, 1♂ 2♀♀.

***Dociostaurus* (*Dociostaurus*) *hauensteini hauensteini* Bolivar, 1893**

Stauronotulus hauensteini Bolivar, I. 1893. Rev. biol. N. France. 5:480

Distribution: Turkey, Iran, Iraq, Syria and Palestine (Sevgili and Çıplak, 2000).

Material examined: Bayburt: Bayburt-Aşkale yolu, 25. km, 1790 m, 25.VII.2005, 2♀♀; Bayburt-Köse yolu, 15-20. km.ler arası, 1680 m, 24.V.2005, 1♂.

***Notostaurus* Bei-Bienko, 1933**

Notostaurus Bei-Bienko, 1933. Bol. Soc. Esp. Hist. Nat.33:337- 338

Type species: *Notostaurus anatolicus* (Krauss, 1896)

***Notostaurus anatolicus* (Krauss, 1896)**

Stauronotulus anatolicus Krauss, 1896. Zool. Jahrb. Syst. 9: 560

Distribution: U.S.S.R, Yugoslavia, Greece, Iran, Turkey, Syria, Jordan, Israel (Soltani, 1978).

Material examined: Amasya: Merkez, Y. Bağları köyü, 600 m, 18.VII.2004, 2♀♀; Ormanözü köyü girişi, 1035 m, 14.VII.2004, 5♂♂, 6♀♀; 2.VIII.2005, 3♂♂, 2♀♀; 1440 m, 17.VII.2004, 2♂♂; Ezine Pazarı, Abacı köyü, girişi, 1025 m, 15.VII.2004, 3♂♂, 1♀; 1225 m, 19.VII.2004, 3♂♂, 8♀♀; 1250 m, 19.VIII.2004, 4♂♂, 1♀; 2.VIII.2005, 2♂♂, 1♀;Bayburt: Vauk Dağı, Geçidi, 1955 m, 8.VIII.2004, 1♂; 25.VII.2005, 2♀♀; Bolu: Geyve-Taraklı yolu, Kazkıran Geçidi, 800 m, 23.VII.2004, 6♂♂, 4♀♀; 15.VII.2005, 8♂♂, 19♀♀; Seben, Yağma köyü, 900 m, 15.VII.2005, 1♀; Çorum: Karşıyaka mahallesi, 894 m, 10.VII.2005, 1♂, 1♀; Çatak-Beydili köyü yol ayrımı, 960 m, 2.VIII. 2004, 7♀♀; 10.VII.2005, 5♂♂, 10♀♀; 13.VIII.2005, 2♀♀; Mecitözü, Üçköy, Simalı mevkii, 815 m, 13.VII.2004, 1♂, 3♀♀; Çorum-Alaca yolu, Kürecik Beli Geçidi, 1100 m, 11.VIII.2005, 1♂, 1♀; Sungurlu, Kamışlı köyü girişi, 885 m, 11.VIII.2005, 1♀; Yorga köyü, 14.VII.2006, 1♂; Erzurum: Erzurum-Pazar yolu, Laleli köyü, 1450 m, 9.VIII.2004, 4♂♂, 13♀♀; Giresun: Giresun-Erzurum-Şebinkarahisar yol ayrımı, 7.VIII.2004, 1275 m, 12♀♀; 24.VII.2005, 5♂♂, 2♀♀; 50 km, 23.VII.2005, 2♂♂, 2♀♀; Gümüşhane: Kale, Akçahisar köyü, 1450 m, 8.VIII.2004, 1♂; Kelkit, Pöske Dağı, 1500-1580 m, 8.VII.2004, 6♂♂, 3♀♀; 1500-580 m, 24.VII.2005, 1♂, 4♀♀; Fındıkbeli Geçidi, 1700 m, 7.VIII.2004, 2♂♂, 1♀; Karabük: Safranbolu-Bartın yolu, 3.km, 25.VII.2004, 1♂; Kastamonu: İnebolu yolu, 10 km, 900 m, 21.VIII.2004, 2♂♂, 6♀♀; Sivas: Çamlıbel-Yıldızeli yolu, 20 km, 1300 m, 17.VII.2004, 8♂♂, 1♀; 19.VIII.2004, 3♂♂, 5♀♀; 1.VIII.2005, 4♂♂,11♀♀; Koyulhisar-Suşehri yolu, 20 km, 525 m, 6.VIII.2004, 1♂; Tokat: Zile, Yıldıztepe girişi, 16.VII.2004, 3♂♂, 8♀♀; Hasanağa köyü çıkışı, 700-750 m, 18.VIII.2004, 6♂♂, 13♀♀ Çamlıbel, 17.VII.2004, 1220 m, 4♂♂, 5♀♀; 1.VIII.2005, 2♂♂, 1♀; Tokat-Çamlıbel-Artova yol ayrımı, 19.VIII.2004, 6♂♂, 14♀♀; Yozgat: Sorgun yolu, 10.km, 1160 m, 11.VIII.2005, 3♂♂, 1♀.

***Stenobothrus* Fischer-Waldheim, 1853**

Stenobothrus Fischer-Waldheim, 1853. Orth. Eur., 296, 313

Type species: *Stenobothrus lineatus* (Panzer, 1796)

Stenobothrus (*Stenobothrodes*) *werneri* Adelung, 1907

Stenobothrus werneri Adelung, 1907. Trudy Russkogo entomologicheskogo Obshchestva. 38:43.

Distribution: Transcaucasia, north-western Iran and Turkey (Bei-Bienko and Mistshenko, 1951; Demirsoy, 1977).

Material examined: Ardahan: Ardahan-Hanak yolu, 10.km, 1950 m, 11.VIII.2004, 4♂♂, 1♀; Hanak Çıkışı, 2100 m, 11.VIII.2004, 12♂♂, 3♀♀; Amasya: Ormanözü köyü çıkışı, 1526 m, 14.VII.2004, 1♂; 2.VII.2005, 3♂♂, 5♀♀; Artvin: Şavşat, Yukarı Kocabey Yaylası, 2450 m, 11.VIII.2004, 8♂♂, 3♀♀; 27.VII.2005, 3♂♂, 3♀♀; Yukarı Kocabey Yaylası, 1900 m, 28.VII.2005, 12♂♂, 5♀♀; Yusufeli, Yaylacık köyü, 1850 m, 10.VIII.2004, 2♂♂; Bayburt: Kılıçkaya köyü, 1860 m, 10.VIII.2004, 2♂♂, 1♀; Kop Dağı Geçidi, 9.VIII.2004, 2460 m, 3♂♂, 6♀♀; 25.VII.2005, 2♂♂, 5♀♀; Çorum: Kösedağ, Zirve, 1650 m, 2.VIII.2004, 6♂♂, 4♀♀; Erzurum: İspir, Gölyurt Geçidi, 2380 m, 27.VII.2003, 1♀; 30.VII.2005, 1♀; Gümüşhane: Kelkit, Pöske Dağı, 2250 m, 8.VIII.2004, 9♂♂, 1♀; Kastamonu: Devrekani, Yaralıgöz Geçidi, 1450 m, 26.VII.2004, 1♂, 1♀; Rize: İkizdere-İspir yolu, 25.km, 2000 m, 13.VIII.2004, 2♂♂, 3♀♀; 30.VII.2005, 1♀; Tokat: Çamlıbel, 1670 m, 19.VIII.2004, 2♂♂; 1.VIII.2005, 3♂♂, 1♀; Sivas: Çamlıbel-Yıldızeli yolu, 20.km, 1300 m, 17.VIII.2004, 2♂♂.

Stenobothrus (*Stenobothrodes*) *sviridenkoi* Ramme, 1930

Stenobothrus werneri sviridenkoi Ramme, 1930. Mitt. Zool. Mus. Berlin. 16(2): 394

Distribution: Armenia, Turkey (Bei-Bienko and Mistshenko, 1951; Demirsoy, 1977).

Material examined: Amasya: Ormanözü köyü, Çıkışı, 1526 m, 2.VIII.200, 1♀; Ardahan: Ardahan-Hanak yolu, 10. km, 1950 m, 11.VIII.2004, 1♀; Artvin: Şavşat, Yukarı Kocabey Yaylası inişi, 1900 m, 28.VII.2005, 4♀♀; Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 2460 m, 9.VIII.2004, 1♀; 25.VII.2005, 2♀♀; Bayburt-Çaykara yolu, Soğanlı Dağı Geçidi, Kılıçkaya köyü, 1860 m, 10.VIII.2004, 2♀♀; Çorum: Kösedağ, Zirve, 1650 m, 2.VIII.2004, 1♂, 1♀; Gümüşhane: Kelkit, Pöske Dağı, 2250 m, 8.VIII.2004, 1♂, 2♀♀; Karabük: Eskipazar, Çilekbeli Geçidi, 1440 m, 24.VII.2004, 1♂; Kastamonu: Devrekani-Çatalzeytin yolu, Bozarmut köyü, Yaralıgöz Geçidi, 1450 m, 26.VII.2004, 1♀; Tokat: Çamlıbel, 1.VIII.2005, 2♀♀; Sivas: Çamlıbel-Yıldızeli yolu, 20.km, 1400 m, 1.VIII.2005, 1♀.

Stenobothrus (*Stenobothrus*) *lineatus* (Panzer, 1796)

Gryllus lineatus Panzer, 1796, Faun., Ins., Germn.fasc.33

Distribution: Widespread in Europe South of latitude 55º N, but confined to mountains in the southern peninsulas; local in southern England. Eastwards, the range extends through Kazakhstan to southern Siberia and Mongolia (Ragge and Reynolds, 1998).

Material examined: Bartın: Safranbolu-Bartın Yolu, Ahmet Usta Geçidi, 1060 m, 25.VII.2004, 7♂♂, 3♀♀; 16.VII.2005, 1♀; Bayburt: Kop Dağı Geçidi, 9.VIII.2004, 2460 m, 1♂, 2♀♀; 25.VII.2005, 1♀; Çankırı: Ilgaz, İndağı Geçidi, 1260 m, 21.VII.2004, 7♂♂, 8♀♀; 14.VII.2005, 1270 m, 3♀♀; 1425 m, 21.VII.2004, 1♂, 1♀; Ilgaz Dağı, Doruk Oteller Civarı, 1920 m, 21.VIII.2004, 5♂♂, 2♀♀; Çorum: Kösedağ, Zirve, 1650 m, 2.VIII.2004, 5♂♂, 3♀♀; Giresun: Kümbet Yaylası, 1750 m, 23.VII.2005, 5♂♂; Karabük: Safranbolu Çıkışı, 10.km, 950 m, 25.VII.2004, 1♂, 2♀♀; 16.VII.2005, 2♂♂, 1♀; Eskipazar, Çilekbeli Geçidi, 1440 m, 24.VII.2004, 11♂♂, 5♀♀; Ahmet Usta Geçidi, 1060 m, 25.VII.2004, 9♂♂, 4♀♀; Kastamonu: Devrekani-Çatalzeytin Yolu, Yaralıgöz geçidi, Bozarmut köyü, 1450 m, 26.VII.2004, 10♂♂, 6♀♀; 17.VII.2005, 7♂♂, 10♀♀; Kastamonu-Seydiler yolu, Oyrak geçidi, 1210 m, 26.VII.2004, 6♂♂, 3♀♀; 21.VIII.2004, 1♂, 2♀♀; 17.VII.2005, 11♂♂, 8♀♀; Ilgaz Dağı, 1800 m, 4.VIII.2000, 1♂; Samsun: Samsun-Çorum yolu, 25.km, 350 m, 5.VII.2004, 1♂; 25.VIII.2005, 2♀♀; Sinop: Sinop-Boyabat yolu, Dranaz Geçidi, 1300 m, 27.VII.2004, 3♂♂, 3♀♀; 18.VII.2005, 1♂, 3♀♀; Erfelek, Kötü Güney Yaylası, 1065 m, 18.VII.2005, 7♂♂, 4♀♀; Trabzon: Zigana Dağı, Gümüş Yaylası, 2150 m, 14.VIII.2004, 11♂♂, 17♀♀; 26.VII.2005, 6♂♂, 10♀♀.

Remarks on morphology: Demirsoy, (1977) reported that tegmina reaching 9. abdominal terga and Harz (1975) reported that vertical diameter of eyes/minimum width of vertex 1.5-1.75 in male and 1.3-1.5 in female; the ratio between vertical diameter of the eyes/subocular groove 1.57-2.2 in male and 1.3-1.66 in female and, length of hind femur/its maximum width 4.5. In this study, we realize that tegmina shorter or longer than abdomen in female, In addition, vertical diameter of eyes/minimum width of vertex 1.3-1.6 in male and 1.2-1.4 in female; the ratio between vertical diameter of the eyes/subocular groove 1.36-2.25 in male and 1.38-1.67 in female and, length of hind femur/its maximum width 4-4.65 in male, 3.92-4.63 in female. Although Anatolian populations show deviations from remaining European population we consider these as intraspecies variation and Anatolian members to be belonging the same species.

Stenobothrus (*Stenobothrus*) *fischeri fischeri* (Eversmann, 1848)

Oedipoda fischeri Eversmann, 1848. Additamenta quaedam levia ad Fischeri de Waldheim Orthoptera Rossica 11

Distribution: Southern France, Spain, further east it occurs from Austria eastwards across eastern Europe (including the Balkan Peninsula) to Kazakhstan, Siberia and Mongolia, Turkey (Ragge and Reynolds, 1998; Çıplak *et al*., 1999).

Material examined: Çorum: Beydili-Çatak köyü yol ayrımı, 865 m, 26.VI.2004, 1♂, 1♀; 10.VII.2005, 2♀♀; Sivas: Çamlıbel Yıldızeli yolu, 20.km, 1300 m, 17.VII.2004, 2♀♀; 1.VIII.2005, 2♀♀.

Stenobothrus (*Stenobothrus*) *nigrogeniculatus* Krauus, 1878

Stenobothrus nigrogeniculatus Krauus, 1878. Sitzb. Akad. Wiss. Mathem.-nat. CL., LXXVIII: 451-147

Distribution: Transcaucasia, southeastern part of western Europe and Asia Minor (Bei-Bienko and Mistshenko, 1951).

Material examined: Amasya: Ormanözü köyü, 1550 m, 14.VII.2004, 1♂; VII. 2005, 2♂♂; Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 2460 m, 9.VIII.2004, 14♀♀; 25.VII.2005, 5♀♀; Vauk Dağı geçidi, 1955 m, 8.VIII.2004, 1♂, 3♀♀; Bayburt-Köse yolu, 15-20.km.ler arası, 1680 m, 24.VII.2005, 2♀♀; Bayburt-Aşkale yolu, 25.km, 1790 m, 25.VII.2005, 2♀♀; Çorum: Mecitözü, Emirbağ köyü, 650 m, 3.VIII.2003, 1♀; 13.VII.2004, 2♂♂, 3♀♀; 27.VI.2004, 2♂♂, 2♀♀; Beydili-Çatak köyü, yol ayrımı, 26.VI.2004, 4♀♀; 2.VIII.2004, 1♀; Kösedağ, Zirve, 2.VIII.2004, 1650 m, 2♂♂, Gümüşhane: Kelkit, Pöske Dağı, 8.VIII.2004, 1750 m, 2♂♂, 1♀; Erzurum: İspir Gölyurt Geçidi, 30.VII.2005, 8♀♀; Kastamonu: Kastamonu-Seydiler yolu, 1700 m, 26.VII.2004, 1♀; Rize: İkizdere-İspir yolu, 75.km, 13.VIII.2004, 1♀; Samsun: Ladik, Derinöz köyü, 870 m, 6.VII.2004, 1♂; Sivas: Çamlıbel-Yıldızeli yolu 20.km, 1300 m, 17.VII.2004, 1♂, 5♀♀; 1.VIII.2005, 3♀♀; Tokat: Zile, Yıldıztepe, Karaağaç mevkii, 16.VII.2004, 3♀♀.

Stenobothrus (*Stenobothrus*) *zubovskyi* I. Bolivar, 1899

Stenobothrus zubovskyi I. Bolivar, 1899. Ann.Soc. Ent. Belg., XLIII: 588-589

Distribution: Armenia, Nakhichevan, A.S.S.R., and Asia Minor (Bei-Bienko and Mistshenko, 1951).

Material examined: Amasya: Ezinepazarı, Abacı Köyü, 1250 m, 19.VIII.2004, 2♂♂; Bayburt: Kop Dağı Geçidi, 9.VIII.2004, 2460 m, 9♂♂, 8♀♀; 25.VII.2005, 4♂♂, 9♀♀; Bayburt-Köse yolu, 15-20. km,

6♂♂, 1♀; Vauk Dağı Geçidi, 1955 m, 25.VII.2005, 2♂♂, 1♀; Çorum: Beydili-Çatak köyü yol ayrımı, 865 m, 26.VI.2004, 19♂19♀; 2.VII.2005, 1♂; Kösedağ, Zirve, 2.VIII.2004, 1♀; Erzurum: İspir, Gölyurt Geçidi, 30.VII.2005, 2♂♂, 1♀; Rize: İkizdere-İspir yolu, 75. km, 13.VIII.2004, 1♂; 30.VII.2005, 3♂♂; Sivas: Çamlıbel-Yıldızeli yol ayrımı, 20 km, 1300 m, 17.vii.2004, 7♂♂, 1♀, 1 VIII. 2005, 1♂, 1♀; Tokat: Zile, Yıldıztepe, Karaağaç mevkii. 900 m, 16.VII.2004, 5♂♂, 8♀♀.

***Stenobothrus* (*Stenobothrus*) *graecus* Ramme, 1926**

Stenobothrus graecus **Ramme, 1926. Deutsche. Ent. Zschr., 2: 273**

Distribution: Makedonia, Yugoslavia, Greece, Turkey (Willemse, 1974; Çıplak *et al*., 1999).

Material examined: Amasya: Ormanözü köyü çıkışı, 1565 m, 14.VII.2004, 2♂♂; 1500 m, 1♂; Bayburt: VaukDağı Geçidi, 1955, 8.VIII.2004, 2♂♂, 9♀♀; 25.VII.2005, 1♀; Bayburt-Aşkale yolu, Kop Dağı Geçidi, 9.VIII.2004, 8♀; 25.VII.2005, 3♀; Bayburt-Köse yolu, 15-20. km, 1680 m, 24.VII.2005, 1♀; Çorum: Beydili-Çatak köyü yol ayrımı, 865 m, 26.VI.2004, 1♀; 10.VII.2005, 1♀; Kösedağ, Zirve, 1650 m, 26.VI.2004, 1♀; 2.VIII.2004, 2♀; Çorum-Alaca yolu, Kürecik Beli Geçidi, 1100 m, 11.VIII.2005, 1♀; Mecitözü, Emirbağ köyü, 650 m, 13.VII.2004, 3♂♂, 5♀♀; 27.VII.2004, 3♂♂, 4♀♀; Erzurum: İspir, Gölyurt Geçidi, 30.VII.2005, 2♀♀; Gümüşhane: Kelkit, Pöske Dağı, 1750 m, 8.VIII.2004, 1♂; Fındıkbeli Geçidi, 1700 m, 7.VIII.2004, 2♀♀; Kastamonu: Kastamonu-Seydiler yolu, 1700 m, 26.VII.2004, 1♀; Samsun: Ladik, Derinöz köyü, 870 m, 6.VII.2004, 1♀; Sivas: Çamlıbel-Yıldızeli yolu, 20.km, 1300 m, 17.VII.2004, 4♂♂, 5♀♀; 19.VIII.2004, 1♀; 1.VII.2005, 1♀; Tokat: Çamlıbel, 1390 m, 17.VII.2004, 1♂, 1♀.

***Stenobothrus* (*Stenobothrus*) *nigromaculatus* (Herrich-Schaeffer, 1840)**

Acridium nigromaculatus Herrich-Schåffer, 1840. Nomenclator entomologicus 2: 10-11

Distribution: Southern regions of the European part of U.S.S.R., the Caucasus, Kazakhstan, mts.of Kirghizia, southern Siberia, Western Europe, Asia Minor (Bei-Bienko and Mistshenko, 1951).

Material examined: Çankırı: Ilgaz Dağı, Doruk Otelleri, TRT vericisi civarı, 2035 m, 14.VII.2005, 3♂5♀; 9.VIII.2005, 5♀; 1920 m, 21.VIII.2004, 1♂, 2♀♀.

***Omocestus* I. Bolivar, 1878**

Omocestus I. Bolivar, 1878. Ann. Soc.Esp. 7: 472

Type species: *Omocestus viridulus* (Linnaeus, 1758)

***Omocestus* (*Omocestus*) *nanus* Uvarov, 1934**

Omocestus nanus Uvarov, 1934. Eos, Revista española de Entomologia. 10: 81.

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined: Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 8.IX.2004, 2460 m, 4♂♂, 7♀♀; Bayburt-Köse yolu, 15-20.km.ler arası, 1680 m, 24.VII.2005, 2♂♂, 3♀♀; Vauk Dağı, Geçidi, 8.VIII.2004, 1955 m, 7♂♂, 8♀♀; 19.VIII.2006, 3♂♂; Bayburt-Çaykara yolu, Soğanlı Dağı, Kılıçkaya köyü, 1860 m, 1♂; Çorum: Merkez, Kösedağ, Zirve, 2.VIII.2004, 1650 m, 13♂♂, 10♀♀; 1700 m, 13.VIII.2005, 3♂♂; Tokat: Çamlıbel Geçidi, 1670 m, 19.VIII.2004, 1♂; 1690 m, 1.VIII.2005, 9♂♂, 2♀♀.

***Omocestus* (*Omocestus*) *ventralis* (Zetterstedt, 1821)**

Gryllus ventralis Zetterstedt, 1821. Orth. Sueciae., p 89, n. 8

Distribution: Nearly all the European part of the U.S.S.R., northern Caucasus, Kazakhstan, southern part of Siberia, northwestern Africa, western Europe, Asia Minor (Bei-Bienko and Mistshenko, 1951).

Material examined: Bartın: Bartın-Safranbolu yolu, Ovacuma mevkii, 600 m, 25.VII.2004, 5♂♂, 4♀♀; Bolu: Hacıayaz Geçidi, 980 m, 23.VII.2004, 1♂, 1♀; Mudurnu, Güney Felaketler köyü, 1♂; Bolu-Mengen, yolu, m, 25.VII.2004, 1♂; Geyve-Taraklı yolu, Soğuksu çıkışı, 650-700 m, 23.VII.2004, 1♀; Akçakoca Dağları, 450 m, 15.VII.2005, 1♂; Çankırı: Ilgaz, İndağı Geçidi, 1260 m, 21.VII.2004, 1♂1♀; İnköy, 1200 m, 4.VIII.2000, 1♂; 21.VIII.2004, 1♂; Çorum: İskilip, Elma Beli Geçidi, 1150 m, 20.VIII.2004, 8♂♂, 3♀♀; Kastamonu: Küre yolu, Seydiler, 1150 m, 10.IX.1998, 1♀; Kastamonu-Araç yolu, 13.km, 885 m, 16.VI.2005, 1♀; Kastamonu-Seydiler yolu, Oyrak geçidi, 1210 m, 26.VII.2004, 2♂♂; 21.VIII.2004, 3♂♂, 4♀♀; Devrekani-Çatalzeytin yolu, Bozarmut köyü, Yaralıgöz Geçidi, 1450 m, 21.VIII.2004, 1♂; Isırganlık geçidi, 1170 m, 26.VII.2004, 2♂♂; Kastamonu-Tosya Yolu, 30. km, 950 m, 20.VIII.2004, 1♂, 1♀; Tosya-İskilip yolu, Türbe Geçidi Altı, 1100 m, 20.VIII.2004, 2♂♂, 4♀♀; Ordu: Kumru, Balı köyü, 940 m, 6.VIII.2004, 2♀♀; Kumru, Balı köyü, 1100 m, 6.VIII.2004, 9♂♂, 4♀♀; Odabaşı Yaylası, 1550 m, 8.VIII.2004, 1♂, 1♀; Ünye-Niksar yolu, Tekkiraz, 930 m, 29.VI.2003, 3♂♂, 2♀♀; Ünye-Niksar yolu, 23. km, 480 m, 31.VII.2005, 2♀♀; Ünye-Niksar yolu, Ağa Geçidi, 31.VII.2005, 1♀; Sakarya: Geyve-Taraklı yolu, Kazkıran Geçidi, 23.VII.2004, 800 m, 3♂♂; Samsun: Merkez, Atakum, 50 m, 2♂♂; Kurupelit Kampüsü, 200 m, 21.V.2002, 1♂; 200-300 m, 4-10.VI.2003, 4♂♂, 7♀♀; 9.VII.2003, 1♂; 28.VIII.2003, 200 m, 3♀♀; 5.VI.2004, 1♂; 31.VIII.2005, 2♀♀; İncesu köyü, 9.VI.2003, 1♂; Salıpazarı, Yavaşbey 200 m, 10.VI.2003, 1♂, 1♀; Samsun-Ladik yolu, 60.km, 848 m, 24.VIII.2005, 1♂, 2♀♀; Terme, Şeyhli köyü ve çevresi, 200 m, 14.IX.2005, 5♀♀; Zonguldak: Devrek, Babadağ, Geçidi, 750 m, 24.VII.2004, 1♂; 16.VII.2005, 1♀.

Omocestus (*Dirshius*) *minutus* (Brulle, 1832)

Oedipoda minuta Brullé, 1832. Expédition scientifique de Morée. 4.3(1).2: 94

Distribution: Bulgaria, Moldova, Romania, Ukraine, southern part of European Russia, the former Yugoslavia, Greece, Turkey (Willemse, 1985; Bukhvalova and Vedenina, 1998).

Material examined: Çankırı: Ilgaz-Çankırı yolu, 925 m, 21.VII.2004, 2♀♀; Çorum: Osmancık, Karaağaç mevkii, 550 m, 20.VII.2004, 3♂♂, 2♀♀; Gümüşhane: Fındıkbeli Geçidi, 1700 m, 7.VIII.2004, 1♂, 1♀; Merkez, Cezaevi yanı, Arzular beldesi, 1325 m, 21.VII.2005, 1♀; Kastamonu: Kastamonu-Tosya yolu, 10.km, 1100 m, 20.VIII.2004, 1♀; Sivas: Çamlıbel-Yıldızeli yolu, 20. km, 1400 m, 19.VII.2004, 1♂, 4♀♀; 19.VIII.2004, 1♂, 7♀♀; 1.VIII.2005, 1♂.

Omocestus (*Dirshius*) *haemorrhoidalis haemorrhoidalis* (Charpentier, 1825)

Gryllus haemorrhoidalis Charpentier, 1825. Horae entomologicae, adjectis tabulis novem coloratis 165

Distribution: European part of the U.S.S.R., except extreme north, nearly all of the Caucasus, Kazakhstan, Siberia, mts., of Middle Asia, western Europe, Mongolia, Korea, Asia Minor (Bei-Bienko and Mistshenko, 1951; Çıplak *et al*.,1999).

Material examined: Amasya: Ormanözü köyü, TRT vericisi yolu, 1526 m, 2.VIII.2005, 2♂♂, 6♀♀; TRT vericisi altı, 1770 m, 2.VIII.2005, 2♂♂, 3♀♀; Bartın: Karabük-Bartın yolu, Ahmet Usta Geçidi, 1080 m, 16.VIII.2005, 1♀; Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 2460 m, 9.VIII.2004, 1♂, 4♀♀; Bolu: Göynük, Hacıayaz Geçidi, 1120 m, 15.VIII.2005, 1♂; Aladağ, Şerif Yüksel Ormanları, 1900 m, 6.VIII.2004, 1♀; Çankırı: Ilgaz, İndağı Geçidi, 1250 m, 21.VIII.2004, 4♂♂, 1♀; 1260 m, 21.VII.2004, 19♂24♀; 14.VII.2005, 9♂♂, 2♀♀; 1250 m, 21.VIII.2004, 8♂♂, 3♀♀; İndağı Geçidi, 1425 m, 14.VII.2005, 1♂; İnköy, 1200 m, 4.VIII.2000, 1♂; Ilgaz Dağı, Doruk Otelleri civarı, 21.VIII.2004, 5♂♂, 1♀; Çorum: Beydili-Çatak köyü, yol ayrımı, 865 m, 26.VI.2004, 1♂; Kösedağ, Zirve, 1650 m, 2.VIII.2004, 6♂♂, 7♀♀;

1600-1700 m, 13.VIII.2005, 4♂♂, 6♀♀; Giresun: Giresun-Şebihkarahisar yolu, Eğribel Geçidi, 1900 m, 15.VIII.2004, 2♂♂, 4♀♀; Kümbet Yaylası, 1725 m, 23.VII.2005, 2♂♂; Karabük: Eskipazar, Çilekbeli Geçidi, 1440 m, 24.VII.2004, 3♂♂; Kastamonu: Tosya Ilgazı Geçidi, 1650 m, 20.VIII.2004, 2♂♂, 3♀♀; Kastamonu-Seydiler yolu, 1700 m, 26.VII.2004, 2♂♂, 7♀♀; Devrekani-Çatalzeytin yolu, Bozarmut köyü, Yaralıgöz Geçidi, 1450 m, 26.VII.2004, 18♂♂, 6♀♀, 21.VIII.2004, 24♂♂, 25♀♀; 17.VII.2005, 8♂♂, 1♀; Kastamonu-Araç yolu, 13.km, 885 m, 16.VII.2005, 1♀; Kastamonu-Seydiler yolu, Oyrak Geçidi, 1210 m, 21.VIII.2004, 1♂, 1♀; Daday, Meyri köyü, 1100 m, 25.VII.2004, 3♂♂, 3♀♀; Devrekani-Çatalzeytin yolu, Devrekani çıkışı, 1050 m, 17.VII.2005, 4♂♂, 1♀; Tosya-İskilip yolu, Türbe Geçidi altı, 1285 m, 13.VII.2005, 1♂; Türbe Geçidi, 1625 m, 13.VII.2005, 1♀; Kastamonu- Tosya yolu, 30. km, 950 m, 20.VIII.2004, 1♂; Ilgaz Dağı, 1800 m, 4.VIII.2000, 1♂, 1♀; Rize: İkizdere-İspir yolu, 75.km, 2000-2100 m, 30.VII.2005, 1♂, 2♀; Sinop: Sinop-Boyabat yolu, Dranaz Geçidi, 1300 m, 27.VII.2004, 3♂♂, 5♀♀; 18.VIII.2005, 1♂, 6♀♀; Tokat: Niksar, Ulusu, 1275 m, 6.VIII.2004, 5♀♀; Ulusu, Çamiçi, 1286 m, 31.VIII.2005, 1♀; Trabzon: Zigana Dağı, Gümüş Yaylası, 2150 m, 14.VIII.2004, 9♂♂, 5♀♀; Yozgat: Muslubelen Geçidi, 1420 m, 11.VIII.2005, 1♂, 1♀.

Omocestus (*Dirshius*) *haemorhoidalis ciscaucasicus* Bei-Bienko, 1951

Omocestus haemorrhoidalis ciscaucasicus Bei-Bienko, 1951. Keys to the fauna of the U.S.S.R.

Distribution: Northern Caucasus and Asia Minor (Bei-Bienko and Mistshenko, 1951; Demirsoy, 1977).

Material examined: Ardahan: Ardahan-Hanak yolu, 10. km, 2100 m, 11.VIII.2004, 1♂, 1♀; Artvin: Şavşat, Yukarı Kocabey Yaylası, 2450 m, 11.VIII.2004, 1♀; 17.VIII.2006, 3♂♂, 2♀♀; Yukarı Kocabey Yaylası inişi, 1900 m, 28.VII.2005, 3♂♂; Erzurum: Oltu, Kırdağ Tepesi, 2650 m, 20.VIII.2000, 3♂♂, 4♀♀; Oltu, Azot, Yayla Geçidi, 2300-2500 m, 21.VIII.2000, 1♀; Çat, Bekçimen Yaylası, 2400 m, 24.VIII.2001 2♂♂; Erzurum-İspir yolu, Gölyurt Geçidi, 2380 m, 30.VII.2005, 1♀.

Omocestus (*Dirshius*) *petraeus* (Brisuot de Barneville, 1855)

Acridium petraeum Brisout de Barneville, 1855. Ann. Soc. Entomol. Fr. (3) 3:114

Distribution: In west Europe known only from France, Italy and eastern Austria, Further east, from the Balkan Peninsula and Asia Minor to Kazakhstan and southern Siberia (Ragge and Reynolds, 1998).

Material examined: Amasya: Ormanözü köyü, girişi, 1163 m, 2.VIII.2005, 7♂; Çankırı: Ilgaz, İndağı Geçidi, 1260 m, 21.VII.2004, 2♂♂; 21.VIII.2004, 6♂♂, 9♀♀; Ilgaz-Çankırı yolu, 925 m, 21.VII.2004, 5♂♂, 4♀♀; Çorum: Merkez, Karşıyaka mahallesi, 1303 m, 13.VII.2005, 1♂; Kösedağ, 1303 m, 13.VIII.2005, 1♂; Çorum-Alaca yolu, Kürecik Beli Geçidi, 1100 m, 11.VIII.2005, 4♀♀; Boğazkale, Yer Kapı Geçidi, 1270 m, 11.VIII.2005, 1♀; Mecitözü, Emirbağ, köyü, 650 m, 13.VII.2004, 10♂♂, 4♀♀; 18.VIII.2004, 3♂♂, 2♀♀; 14.VIII.2005, 2♂♂; Üçköy, Simalı, mevkii, 815 m, 13.VII.2004, 3♂♂, 2♀♀; Osmancık, Karaağaç mevkii, 650 m, 20.VII.2004, 1♂, 4♀♀; Erzurum: Oltu, Başaklı Yayla Tepesi, 1800 m, 22.VIII.2000 1♀; Gümüşhane: Kelkit, Pöske Dağı, 1750 m, 8.VIII.2004, 2♀♀; 1500-1580 m, 24.VII.2005, 1♀; Fındıkbeli geçidi, 1700 m, 7.VII.2004, 2♂♂, 4♀♀; Kale, Akçahisar köyü, 1450 m, 8.VIII.2004, 6♂♂, 5♀♀; Sivas: Çamlıbel-Yıldızeli yolu, 20. km, 1300 m, 17.VII.2004, 10♂♂, 4♀♀; 19.VIII.2004, 4♂♂, 7♀; 1400 m, 1.VIII.2005, 3♂♂, 1♀; Tokat: Zile, Kuşsaray köyü, 900 m, 18.VIII.2004, 1♂, 1♀; Zile, Yıldıztepe, Karaağaç mevkii, 18.VIII.2004, 1♀; Tokat-Çamlıbel-Artova yol ayrımı, 1200 m, 19.VIII.2004, 2♂♂; Çamlıbel Geçidi, 1690 m, 1.VIII.2005, 2♂♂.

Stauroderus I. Bolivar, 1897

Stauroderus I. Bolivar, 1897. Ann. Sci. Nat. Porto, IV.224

Type species: *Stauroderus scalaris* (F. W., 1846)

***Stauroderus scalaris* (Fischer de Waldheim, 1846)**

Oedipoda scalaris F. de W., 1846, Orth. Ros., 317

Distributions: European, Caucasus, Kazakhstan, Northern Mongolia, Middle Asia Mountains, Siberia and Asia Minor (Bei-Bienko and Mistshenko, 1951).

Material examined: Artvin: Yusufeli, Yaylacık köyü, 2100 m, 10.VIII.2004, 6♂♂, 3♀♀; Şavşat, Aşağı Kocabey Yaylası, 1600-1700 m, 28.VII.2005, 1♂, 4♀♀; Yukarı Kocabey Yaylası inişi, 28.VII.2005, 1900 m, 2♂♂, 1♀; Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 9.VIII.2004, 2460 m, 5♂♂, 8♀♀; 25.VII.2005, 1♀; Bolu: Aladağ, Şerif Yüksel Ormanları, 1600 m, 22.VII.2004, 1♂; Çankırı: Ilgaz Dağı, Doruk Oteller Civarı, 21.VIII.2004, 4♂♂, 6♀♀; Ilgaz Dağı, Doruk Otelleri-TRT İstasyonu mevkii, 2035 m, 14.VII.2005, 12♂♂, 6♀♀; 9.VIII.2005, 1♂♂; Giresun: Giresun-Şebinkarahisar yolu, Eğribel Geçidi, 15.VIII.2004, 1900 m, 17♂♂, 12♀♀; Giresun-Şebinkarahisar yolu 50. km, 1250 m, 15.VIII.2004, 4♂♂, 7♀♀; 23.VII.2005, 9♂♂, 7♀♀; 1725-1950 m, 23.VII.2005, 1♂, 6♀♀; Kümbet Yaylası, 1725 m, 23.VII.2005, 3♂♂, 3♀♀; Gümüşhane: Kelkit, Pöske Dağı, 2100-2250 m, 24.VII.2005, 1♂, 1♀; Karabük: Eskipazar, Soğuk Ocak Yaylası, 1720 m, 24.VII.2004, 14♂♂, 17♀♀; Kastamonu: Ilgaz Dağı, 1800 m, 4.VIII.2000, 3♂♂, 4♀♀; Tosya Ilgazı Geçidi, 1650 m, 20.VIII.2004, 2♂♂, 2♀♀; 13.VII.2005, 10♂♂, 2♀♀; Ordu: Kumru, Akçadane köyü, 740 m, 3.VII.2004, 1♂; Kumru, Ballı köyü, 940 m, 6.VIII.2004, 4♂♂, 11♀♀; 1100 m, 9♂♂, 8♀♀; Ünye, Tekkiraz mevkii, 930 m, 8♂♂, 3♀♀; Kumru, Odabaşı Yaylası, 8.VIII.2004, 1550 m, 4♂♂, 1♀; Konculu köyü, 1130 m, 3.VII.2004, 2♂♂, 2♀♀; Ünye-Niksar yolu, Ağa Geçidi, 1350 m, 31.VII.2005, 1♂, 10♀♀; Sinop: Erfelek, Kötü Güney Yaylası, 1065 m, 18.VII.2005, 1♂.

***Euchorthippus* Tarbinsky, 1925**

Euchorthippus Tarbinsky, 1925. Rev. Russ. Ent. 19:192

Type species: *Euchorthippus pulvinatus pulvinatus* (F.-W., 1846)

***Euchorthippus pulvinatus pulvinatus* (Fischer de Waldheim, 1846)**

Oedipoda pulvinatus Fischer de Waldheim, 1846. Orth. Ros. p. 305, n. 23

Distribution: Central and southern Europea, Asia Minor, Kazakhstan and Central Asia, China (Bukhvalova and Vedenina, 1998).

Material examined: Ardahan: Ardahan-Hanak yolu, 10.km, 1950 m, 11.VIII.2004, 4♂♂, 4♀♀; Çankırı: Ilgaz, İndağı Geçidi, 1260 m, 21.VII.2004, 18♂♂, 5♀♀; 14.VII.2005, 3♂♂, 3♀♀; Kurşunlu-Atkaracalar-Bolu yolu, 1280 m, 14.VII.2005, 1♂; Çorum: Mecitözü, Emirbağ köyü, 650 m, 3.VIII.2003, 1♂, 3♀♀; 13.VII.2004, 5♂♂; 14.VIII.2005, 1♂; 18.VIII.2004, 1♂; Üç köy, Simalı mevki, 815 m, 13.VII.2004, 1♂; Beydili, Çatak köyü, yol ayrımı, 960 m, 2.VIII.2004, 1♂, 8♀♀; 10.VIII.2005, 1♀; 13.VIII.2005, 1♂, 2♀♀; Kösedağ, Zirve, 1600-1700 m, 13.VIII.2005, 2♀♀, 13.VIII.2005, 1303 m, 1♂; Çorum-Alaca yolu, Kürecik Beli Geçidi, 1100 m, 11.VIII.2005, 1♂; Giresun: Alucra, Aktepe köyü, 1500 m, 7.VIII.2004, 4♀♀; Gümüşhane: Kelkit, Pöske Dağı, 2250 m, 7.VIII.2004, 1♂, 1♀; Fındıkbeli Geçidi, 1700 m, 7.VIII.2004, 2♀♀; Karabük: Safranbolu, Safranbolu çıkışı, 950 m, 25.VII.2004, 15♂8♀; Safranbolu-Bartın yolu, 10.km, 950-980 m, 16.VII.2005, 5♂♂; 1285 m, 13.VII.2005, 1♀; 20.VIII.2004, 1♂; Kastamonu: Tosya-İskilip yolu, Türbe Geçidi altı 1100 m, 20.VIII.2004, 1♀; Türbe Geçidi altı, 1200 m, 20.VII.2004, 3♂♂, Türbe Geçidi, 1625 m, 13.VII.2005, 1♂; Tokat: Tokat-Çamlıbel-Artova yol ayrımı, 1200 m, 1.VIII.2005, 1♂♀; Çamlıbel, Yatmış köyü, 1150 m, 17.VII.2004, 5♂♂; Yozgat: Yozgat-Sorgun yolu, 10.km, 1160 m, 11.VIII.2005, 3♂♂, 15♀♀; Muslubelen Geçidi, 1420 m, 11.VIII.2005, 7♂♂, 2♀♀.

***Euchorthippus declivus* (Brisout-Barnevillei, 1848)**

Acridium declivus Brisout-Barnevillei, 1848. Ant. Soc.Ent.France 2(6): 420

Distribution: Central and east Europe except for south Spain, as far eastward as South-western Ukraine (Bukhvalova and Vedenina, 1998).

Material examined: Amasya: Amasya-Suluova yolu, 15.km, 600 m, 17.VII.2003, 3♂♂, 5♀♀; 2.VIII.2005, 3♂♂, 2♀♀.

Chorthippus Fieber, 1852

Chorthippus Fieber, 1852. Kent. Orth.Ober.1

Type species: *Chorthippus albomarginatus* (De Geer, 1773)

Chorthippus (*Chorthippus*) *paralleus parallelus* (Zetterstedt, 1821)

Gryllus parallelus Zetterstedt, 1821. Orth. Suec. 85: 6

Distribution: Common and widespread in Europe from southern Scandinavia and Finland southwards, including Britain but not Ireland. Eastwards, the range extends through temperate Asia to Mongolia (Ragge and Reynolds, 1998).

Material examined: Amasya: Suluova-Amasya yolu, 10 km, 600 m, 17.VII.2003, 1♀; Bayburt: Bayburt-Çaykara yolu, Soğanlı Dağı, Kılıçkaya köyü, 1860 m, 9.VIII.2004, 2♂♂, 2♀♀; Bolu: Mengen, Pazarköy Çıkışı, 850 m, 25.VII.2004, 1♂; Mudurnu, Güney Felaketler köyü, 1100 m, 23.VII.2004, 3♂♂; Aladağ, Karasu Yaylası, 22.VII.2004, 4♂♂, 2♀♀; Yeniçağa, 950 m, 22.VII.2004, 16♂♂, 5♀♀; Şerif Yüksel Ormanları, 1900 m, 5.VIII.2000, 3♂♂, 2♀♀; Aladağ, 1900 m, 6.VIII.2000, 26♂♂, 18♀♀; Şerif Yüksel Ormanları, 1600 m, 22.VII.2004, 18♂♂, 10♀♀; Şerif Yüksel Ormanları, 1400 m, 22.VII.2004, 3♂♂, 1♀♀; Çankırı: Ilgaz, TRT ist., 1900 m, 10.VIII.1996, 1♀; Ilgaz İlçesi, İn köyü, 1200 m, 4.VIII.2000, 9♂♂, 5♀♀; İndağı Geçidi, 24.VII.2004, 1425 m, 7♂♂, 3♀♀; Çankırı-Bolu yolu, 1200 m, 4.VIII.2000, 1♂; Ilgaz, Doruk Oteller civarı, 1920 m, 7♂♂, 1♀; Gümüşhane: Kelkit, Pöske Dağı, 2250 m, 8.VIII.2004, 2♀♀; Karabük: Safranbolu-Bartın yolu, Ahmet Usta Geçidi, 1060 m, 25.VII.2004, 11♂14♀; Eskipazar, Çileklibel Geçidi, 1440 m, 24.VII.2004, 17♂♂, 22♀♀; Kastamonu: Ilgaz Dağı, 1800 m, 4.VIII.2000, 6♂♂, 2♀♀; Küre yolu, Seydiler, 1050 m, 10.IX.1997, 3♂♂; 26,VII.2004, 1700 m, 2♂♂, 1♀; Daday, Meyri köyü, 1100 m, 25.VII.2004, 1♀; Küre yolu, Maruş geçidi, 1250 m, 10.IX.1997, 1♂, 1♀; Sakarya: Şerefiye, 100 m, 23.VII.2004, 5♂♂, 5♀♀; Ferizli, 100 m, 30.VI.2005, 11♂♂, 17♀♀; Sinop: Erfelek, Kötügüney Yaylası, 1065 m, 18.VII.2005, 5♂♂, 4♀♀; Tokat: Niksar, Ulusu, 1275 m, 25.VII.2004, 11♂♂, 5♀♀; Yozgat: Yozgat-Sorgun yolu, 10.km, 1160 m, 11.VIII.2005, 3♀♀.

Chorthippus (*Chorthippus*) *karelini* (Uvarov, 1910)

Stenobothrus karelini Uvarov, 1910. Trudy. Russk. Entomol. Obshch. 39: 367

Distribution: Ukraine, South-eastern part of European Russia, Transcaucasia, Kazakhstan and probably Middle Asia, In Russia, Crimea, Caucasus and northern Iran, Asia Minor (Helversen, 1986; Vedenina and Helversen, 2009).

Material examined: Bayburt: Bayburt-Çaykara yolu, Kılıçkaya köyü, Soğanlı Dağı Etekleri, 1860 m, 1♂, 1♀; Çorum: Alaca-Yozgat yolu, 10.km, 11.VIII.2005, 1000 m, 6♂♂, 2♀♀; Gümüşhane: Fındıkbeli Geçidi, 7.VIII.2004, 3♂♂, 2♀♀; Kale, Akçahisar köyü, 8.VIII.2004, 1♂; Kelkit, Pöske Dağı, 1750 m, 8.VIII.1750 m, 1♀; Yozgat: Sorgun yolu, 10.km, 1160 m, 11.VIII.2005, 1♀.

Chorthippus (*Chorthippus*) *labaumei* Ramme, 1926

Chorthippus labaumei Ramme, 1926. Deutsche Entomologia Zeitschrift, (4): 275-289

Distribution: known only from Anatolia (Çıplak *et al*., 1999)

Material examined: BAYBURT: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 2460 m, 9.VIII.2004, 1♂; 25.VII.2005, 1♂; ERZURUM: Çat, Bekçimen Yaylası, 2400 m, 24.VIII.2004, 11♂♂, 2♀.

Chorthippus (*Chorthippus*) *loratus* (Fischer de Waldheim, 1846)

Oedipoda brauneri Fischer de Waldheim, 1846. Ent. Imp.Ross.307: 25

Distribution: The range of this species covers Anatolia, Caucasica, south of western Europe, Ukraine, the Balkans, northern Iran and Syria (Bukhvalova and Vedenina, 1998; Sevgili and Çıplak, 2000).

Material examined: Amasya: Amasya-Suluova yolu, 15.km, 600 m, 2.VIII.2005, 3♂♂; Çorum: Kösedağ, Zirve, 1650 m, 2.VIII.2004, 1♂; Karşıyaka mahallesi, 1.VIII.2000, 4♂♂, 3♀♀; Mecitözü, Emirbağ köyü, 700 m, 3.VIII.2004, 1♂; Sungurlu-Kızılırmak yolu, 5.km, 788 m, 11.VIII.2005, 3♂♂; Erzurum: Oltu, Sağlık Ocağı Yanı, 1400 m, 19.VIII.2000, 27♂4♀; Tokat: Tokat-Sivas karayolu, Tokat çıkışı, 1. km, 700 m, 19.VIII.2004, 6♂♂, 18♀♀; Tokat-Çamlıbel-Artova yol ayrımı, 1200 m, 4.VIII.2004, 1♂; 1.VIII.2005, 1♂; Zile-Yıldıztepe, Hasanağa köyü çıkışı, 700-750 m, 18.VIII.2004, 18♂♂, 13♀♀; Samsun: Ondokuz Mayıs Üniversitesi, Kurupelit Kampüsü, 200 m, 28.VIII.2003, 3♂♂, 3♀♀; 31.VIII.2005, 3♂♂, 11♀♀; Atakum, Meral Can Okulu civarı, 300 m, 27.VIII.2003, 3♂♂, 5♀♀; Atakum, Türk-iş, 100 m, 27.VIII.2003, 6♂♂, 6♀♀; 31.X.2004, 3♂♂, 7♀♀; Terme, Şeyhli köyü, 200 m, 14.IX.2005, 1♂, 2♀♀; Sivas: Koyulhisar-Suşehri yolu, 20 km, 6.VIII.2004, 5♂♂, 3♀♀.

Chorthippus (*Chorthippus*) *dorsatus* (Zetterstedt, 1821)

Gryllus dorsatus Zetterstedt, 1821. Orthoptera Sueciae, 82

Distribution: Westhern Europe, northern Africa, European parts of Russia, Siberia, Asia Minor and northern Kazakhstan (Bei-Bienko and Mistshenko, 1951; Harz, 1975; Stumpner and Helversen, 1994).

Material examined: Bolu: Yeniçağa Gölü, 1050 m, 5.VIII.2000, 25♂♂, 18♀♀.

Chorthippus (*Chorthippus*) *dichrous* (Eversmann, 1859)

Oedipoda dichroa Eversmann, 1859, Bull. Soc. Nat. Mosc. 32:132

Distribution: Turkey, Austria, Hungary, Romania, Italy, Bulgaria, Greece, Russia, Caucasus, central Asia, Asia Minor (Sevgili and Çıplak, 2000).

Material examined: Amasya: Ezinepazarı, Abacı köyü, 1250 m, 19.VIII.2004, 1♂, 7♀♀; Ardahan: Ardahan-Hanak Yolu, Hanak Çıkışı, 11.VIII.2004, 2♂♂; Ardahan-Hanak Yolu, 10.km, 1950 m, 11.VIII.2004, 4♂♂, 3♀♀; Artvin: Şavşat, Yukarı Kocabey Yaylası, Yalnızçam Geçidi, 2460 m, 27.VIII.2005, 1♀; Bartın: Safranbolu-Bartın yolu, Ahmet Usta Geçidi, 1060 m, 25.VII.2004, 11♂♂, 6♀♀; Bartın-Safranbolu yolu, Ovacuma mevkii, 600 m, 25.VII.2004, 3♂♂, 8♀♀; Bayburt: Bayburt-Çaykara yolu, Soğanlı Dağı, Kılıçkaya köyü, 1860 m, 11♂♂, 6♀♀; Bayburt-Çaykara yolu, Kop Dağı Geçidi, 2460 m, 9.VIII.2004, 6♂♂, 15♀♀; 25.VII.2005, 2♂♂; Vauk Dağı Geçidi, 1955 m, 8.VIII.2004, 9♂♂, 2♀♀; 25.VII.2005, 2♂♂; Bayburt-Köse yolu, 15-20.km.ler arası, 1680 m, 24.VII.2005, 3♂♂, 2♀♀; Bolu: Mudurnu, Güney Felaketler köyü, 1100 m, 23.VII.2004, 15♂♂, 1♀; Aladağ, Karasu Yaylası, 1400 m, 22.VII.2004, 13♂♂, 8♂♂; Çankırı: Ilgaz, İndağı Geçidi, 1260 m, 21.VIII.2004, 9♂♂, 6♀♀; 21.VIII.2004, 2♂♂, 10♀♀; Çorum: Kösedağ, Zirve, 1650 m, 2.VIII.2004, 7♂♂, 1♀; Merkez, Karşıyaka mahallesi 900 m, 1.VIII.2000, 3♂♂, 1♀; İskilip, Elmalı Beli Geçidi, 1150 m, 20.VIII.2004, 6♂♂, 8♀♀; Alaca-Yozgat yolu, 10.km, 1000 m, 11.VIII.2005, 2♂♂, 1♀; Erzurum: İspir, Gölyurt Geçidi, 2380 m, 30.VII.2005, 3♂♂; Erzurum-Pazar yolu, Laleli köyü, 9.VIII.2004, 4♂♂, 10♀♀; Giresun: Alucra, Aktepe köyü, 1500 m, 7.VIII.2004, 1♂, 8♀♀; Gümüşhane: Kelkit, Pöske Dağı, 1750 m, 8.VIII.2004, 1♂, 3♀♀; 2250 m, 8.VIII.2004, 17♂♂, 8♀♀; Kale, Akçahisar köyü, 1450 m, 8.VIII.2004, 1♂, 5♀♀; Fındıkbeli Geçidi, 7.VIII.2004, 6♂♂, 6♀♀; Kastamonu: Araç, Sıragömü Yaylası, 900 m, 11.IX.1998, 1♀; Kastamonu-Tosya yolu, 20.km, 1350 m, 20.VIII.2004, 4♂♂, 1♀; Tosya-İskilip yolu, Türbe Geçidi, 1625 m, 20.VIII.2004, 7♂♂, 3♀♀; Türbe Geçidi Altı, 1200 m, 20.VII.2004, 9♂♂, 4♀♀; 20.VIII.2004, 2♂♂, 2♀♀; RİZE: İkizdere, İspir yolu, 25. km, 2000 m, 13.VIII.2004, 10♂♂, 9♀♀; 30.VII.2005,

2♀♀; SAMSUN: Samsun-Ladik yolu, 60. km, 848 m, 24.VIII.2005, 3♂♂, 2♀♀; Sinop: Sinop-Boyabat yolu, Dranaz Geçidi, 1300 m, 27.VII.2004, 6♂♂; 18.VII.2005, 1♂, 2♀♀; Sinop-Boyabat yolu, Soğuksu-Çakırlar arası, 900 m, 27.VII.2004, 2♂♂, 1♀; Boyabat, 900 m, 27.VII.2004, 3♂♂; Erfelek, Kötügüney Yaylası, 1065 m, 18.VII.2005, 3♂♂, 4♀♀; Sivas: Çamlıbel-Yıldızeli yolu, 20. km, 1300 m, 19.VII.2004, 3♂♂, 2♀♀; 1400 m, 19.VIII.2004, 6♂2♀; Tokat: Niksar, Ulusu, 1275 m, 6.VIII.2004, 10♂7♀; 31.VII.2005, 5♂4♀; Zile, Yıldızeli, Karaağaç mevkii, 4.VIII.2004, 1♂; Çamlıbel-Artova yol ayrımı, 1200 m, 4.VIII.2004, 2♀♀; Yozgat: Yozgat-Sorgun yolu, 10.km, 1160 m, 11.VIII.20005, 3♂♂, 5♀♀.

Chorthippus (*Glyptobothrus*) *apricarius apricarius* (Linnaeus, 1758)

Gryllus locusta Linneaus, 1758. Syst. Nat (ed.x), p 433, n. 54

Distribution: Nearly all the European part of the U.S.S.R., northern Caucasus, Kazakhstan, southern Siberia, western Europe, Asia Minor (?), northern Mongolia, North China, Manchuria (?) (Bei-Bienko and Miststhenko, 1951).

Material examined: Bolu: Aladağ, Şerif Yüksel Ormanları, 1600 m, 5.VIII.2000, 6♂♂, 5♀♀; 6.VIII.2000, 3♂♂, 2♀♀; Şerif Yüksel Ormanları, 1400 m, 22.VII.2004, 6♂♂, 8♀♀; 1600 m, 3♂♂, 1♀; ÇANKIRI: Ilgaz Dağı, 1550 m, 4♂♂, 1♀; Ilgaz Dağı, Doruk Otelleri Civarı 1920 m, 15♂♂, 11♀♀; Ilgaz Dağı, TRT İst., 1900 m, 10.VIII.1990, 1♂; Yenice köyü, 1100 m, 4.VIII.2000, 1♀; Çorum: Kösedağ, Zirve, 1600-1700 m, 2.VIII.2004, 4♂♂, 2♀♀; Gümüşhane: Kelkit, Pöske Dağı, 1500 m, 8.VIII.2004, 4♂♂, 4♀♀; Pöske Dağı, 1800 m, 8.VIII.2004, 1♂; Pöske Dağı, 2250 m, 8.VIII.2004, 1♂, 2♀♀; Kelkit, Fındıkbeli Geçidi, 1700 m, 8♂♂, 1♀; Kastamonu: Devrekani-Çatalzeytin yolu, Isırganlık Geçidi, 1170 m, 26.VII.2004, 14♂♂, 12♀♀; Kastamonu-Tosya yolu, 20 km, 1350 m, 20.VIII.2004, 3♂♂, 3♀♀; Seydiler-Küre yolu, Ecevit Geçidi, 1170 m, 2♂♂, 2♀♀; Ilgaz Dağı, 1800 m, 4.VIII.2000, 3♂♂, 2♀♀; Kastamonu-Küre yolu, Maruş geçidi, 1250 m, 10.IX.1998, 1♂; Kast-Tosya yolu, Tosya Ilgazı Geçidi, 1650 m, 20.VIII.2004, 4♂12♀; Tosya-İskilip yolu, Türbe Geçidi, Altı, 1100 m, 20.VII.2004, 1♀; 20.VII.2004, 3♂♂, 4♀♀; Rize: İkizdere-İspir yolu, 25. km 2000 m, 6♂♂, 13♀♀; SİNOP: Sinop-Boyabat yolu, Dranaz Geçidi, 1300 m, 2♂♂, 1♀; Sinop-Boyabat yolu, Soğuksu-Çakırlar arası, 900 m, 27.VII.2004, 3♂♂, 6♀♀; Trabzon: Ziğana Dağı, Gümüş Yaylası, 2150 m, 14.VIII.2004, 28♂39♀.

Chorthippus (*Glyptobothrus*) *apricarius major* (Plynov, 1914)

Stenobothrus apricarius major Pylnov, 1914, Rasskoe Entomologicheskoe obozrenic, XIV: 272

Distrribution: Nearly all the Caucasus, including southern Krassnodar, Territory; Eastern part of Asia Minor (?). (Bei-Bienko and Mistshenko, 1951).

Material examined: Ardahan: Ardahan-Hanak yolu 10.km,1950 m, 1♀; Artvin: Şavşat, Yukarı Kocabey Yaylası, 2450 m, 11.VIII.2004, 12♂♂, 14♀♀; Yusufeli, Yaylacık köyü, 1850 m, 10.VIII.2004, 11♂♂, 12♀♀; Yaylacık köyü, 2100 m, 10.VIII.2004, 4♂♂, 9♀♀; Bayburt: Kop Dağı Geçidi, 2460 m, 7♂♂, 39♀♀; 2400 m, 28.VII.1993, 2♂♂, 2♀♀; Vauk Dağı Geçidi, 1955 m, 8. VIII.2004, 2♀♀; Erzurum: Oltu, Yedigöller Yaylası, 2050m, 22.VIII.2000, 2♂♂; Oltu, Başaklı köyü, 1800 m, 22.VIII.2000, 2♂♂; Başaklı Yayla Tepesi, 2500 m, 22.VIII.2000, 6♂♂; Oltu-Erzurum yolu, 25.km, 2000-2200 m, 21.VIII.2000, 1♂.

Chorthippus (*Glyptobothrus*) *bornhalmi* Harz, 1971

Chorthippus (*Glyptobothrus*) *bornhalmi* Harz, 1971. Atalanta 3:336-337

Distribution: Balkan Peninsula and Turkey (Harz, 1975; Önder *et al*., 1999; Mol, 2001-2007).

Material examined: Amasya: Ormanözü köyü çıkışı, 1140 m, 17.VII.2004, 1♀; 1255 m, 14.VII.2005, 1♂, 1♀; 1565 m, 14.VII.2004, 2♀♀; TRT vericisi ist. 1800 m, 14.VII.2004, 4♂♂, 1♀; 1770 m, 2.VII.2005,

7♀♀; Bayburt: Bayburt-Çaykara yolu, Soğanlı Dağı, Kılıçkaya köyü, 1860 m, 4♀♀; Bayburt-Köse yolu, 15-20.km.ler arası, 1680 m, 24.VII.2005, 1♀; Bolu: Aladağ, Şerif Yüksel Ormanları, 5.VIII.2000, 1♂; Göynük, Hacıayaz Geçidi, 1120 m, 15.VII.2005, 1♂; Çankırı: Ilgaz Dağı, Doruk Otelleri civarı, 1920 m, 21.VIII.2004, 6♀♀; 14.VII.2005, 2♂♂, 1♀; TRT vericisi civarı, 2035 m, 14.VII.2005, 1♂; İndağı Geçidi, 1260 m, 21.VII.2004, 1♀; 21.VIII.2004, 1♀; 14.VII.2005, 1♀; Çorum: Merkez, Karşıyaka mahallesi, 26.VI.2004, 1♂, 2♀♀; 10.VII.2005, 1♂; Beydili-Çatak köyü, yol ayrımı, 26.VI.2004, 2♀♀; Kösedağ, 1500 m, 26.VI.2004, 1♀; Mecitözü, Emirbağ köyü, 27.VI.2004, 1♂, 2♀♀; Sungurlu, Tuğcu köyü, 800 m, 26.V.2006, 3♂♂, 1♀; Giresun: Giresun- Şebinkarahisar yolu, 630 m, 15.VIII.2004, 1♀; Eğribel Geçidi, 1900 m, 15.VIII.2004, 2♀♀; 7.VIII.2004, 1725 m, 1♂, 1♀; Isparta: Eğirdir, 25.IX.2003; Kastamonu: Seydiler-Küre yolu, Ecevit Geçidi, 1170 m, 26.VII.2004, 4♂♂, 5♀♀; Tosya yolu, Tosya Ilgazı Geçidi, 1650 m, 20.VIII.2004, 2♂♂, 1♀; 13.VII.2005, 1♂, 5♀♀; Kastamonu-Tosya yolu, 10. km, 900 m, 21.VIII.2004, 1♂, 1♀; Tosya-İskilip yolu, Türbe Geçidi Altı, 1100 m, 20.VII.2004, 1♂, 2♀♀; Türbe Geçidi, 1625 m, 13.VII.2005, 1♂; Ordu: Kumru, Akçadane köyü, 740 m, 3.VII.2004, 1♀; Rize: İkizdere-İspir yolu, 75. km, 2000 m, 13.VIII.2004, 2♂♂, 5♀♀; Samsun: Atakum, İncesu köyü, 200 m, 9.VI.2003, 1♀; Ondokuz Mayıs Üniversitesi, Kurupelit Kampüsü, 10.V.2002, 2♀♀; 5.VI.2003, 1♂, 2♀♀; Vezirköprü, İncesu köyü, 1350 m, 7.VII.2004, 1♂; Tokat: Zile, Yıldıztepe, Deveci Dağları, 16.VII.2004, 1♂, 1♀; Tokat-Sivas Yolu, 750 m, 17.VII.2004, 1♀; Çamlıbel, 17.VI.2004, 1220 m, 1♀.

Chorthippus (*Glyptobothrus*) *vagans* (Eversman, 1848)

Oedipoda vagans Eversmann, 1848. Orth., Ross., p 12, n. 10

Distribution: Widespread in Europe from Denmark southwards; common in the Iberian Peninsula, much less so in Italy and not reaching the southernmost part of the Balkan Peninsula and. very local in southern England. Farther east it occurs in the Ukraine, southern Russia and Kazakhstan. Also it was recorded from mountains in Morocco and Algeria (Ragge and Reynolds, 1998).

Material examined: Amasya: Ezinepazarı, Abacı köyü, 1250 m, 19.VIII.2004 1♂, 1♀; Merkez, Ormanözü köyü, TRT verici altı, 1526 m, 2.VIII.2005, 1♂; 1770 m, 2.VIII.2005, 1♀; Ardahan: Ardahan-Hanak yolu, 10.km, 1950 m, 11.VIII.2004, 2♂, 1♀; Artvin: Şavşat, Yukarı Kocabey Yaylası, 1600-1700 m, 27.VII.2005, 2♂; Bayburt: Bayburt-Çaykara yolu, Kılıçkaya köyü, Soğanlı Dağı, 1800 m, 1♂; Bayburt-Aşkale yolu, Kop Dağı Geçidi, 2460 m, 9.VIII.2004, 4♂♂, 2♀♀; Bayburt- Köse yolu, 15-20. km, 1680 m, 24.VIII.2005, 1♂; Çankırı: Ilgaz, İndağı Geçidi, 1420 m, 21.VIII.2004, 1♂; Ilgaz-Çankırı yolu, 925 m, 21.VII.2004, 1♂; Çorum: Mecitözü, Emirbağ köyü, 700 m, 3.VIII.2003, 3♂♂, 10♀♀; 26.VII.2004, 1♂, 1♀; 13.VII.2004, 5♂♂, 2♀♀; İskilip, Elmabeli Geçidi, 1150 m, 20.VIII.2004, 4♂♂, 3♀♀; Giresun: Alucra, Aktepe köyü, 1500 m, 7.VIII.2004, 3♂♂; 1725 m, 1♂; Giresun-Şebinkarahisar yolu, Eğribel Geçidi, 2250 m, 7.VIII.2004, 2♂♂; Gümüşhane: Kale, Akçahisar köyü, 1450 m, 8.VIII.2004, 11♂♂, 2♀♀; Kelkit, Pöske Dağı, 1500 m, 8.VIII.2004; 11♂♂, 2♀♀; 1750 m, 8.VIII.2004, 5♂♂; 2250 m, 8.VIII.2004, 2♂♂, 2♀♀; Köse Geçidi İnişi, 1800 m, 8.VIII.2004, 2♂♂, 1♀; Fındıkbeli, Geçidi, 1700 m, 7.VIII.2004, 6♂♂, 3♀♀; 24.VII.2005, 1♂; Kastamonu: Devrekani-Çatalzeytin yolu, Bozarmut köyü, Yaralı göz Geçidi, 1450 m, 26.VII.2004, 1♂; 21.VIII.2004, 5♂♂, 1♀; Tosya-İskilip yolu, Türbe Geçidi, altı, 1200 m, 20.VIII.2004, 1♀; Türbe Geçidi, 1625 m, 20.VIII.2004, 1♂, 1♀; Rize: Ardeşen, Ayder Yaylası, 790-850 m, 29.VII.2005, 2♂♂, 2♀♀; Aşağı Kavron-Yukarı Kavron arası, 1700-1800 m, 29.VII.2005, 1♂; İkizdere, İspir yolu, Ovit Dağı, 75.km, 2000 m, 13.VIII.2004, 4♂♂, 1♀; Samsun: Ladik, Derinöz köyü, 906 m, 24.VIII.2005, 3♂♂; Ondokuz Mayıs Üniversitesi, Kurupelit kampusü, Gölet, 220 m, 5.VI.2003, 1♂; Tokat: Çamlıbel- Artova yol ayrımı, 1200 m, 4.VIII.2004, 3♀♀; 1.VIII.2005, 4♂♂; Zile, Yıldıztepe, Karaağaç mevkii, 900 m, 18.VIII.2004, 1♀; Sinop: Sinop-Boyabat yolu, Soğuksu-Çakırlar arası, 900 m, 27.VII.2004, 1♂; Sivas: Yıldızeli, Çamlıbel yolu, 20.km, 1400 m, 19.VII.2004, 1♀; 19.VIII.2004, 1♂, 1♀.

Chorthippus (*Glyptobothrus*) *macrocerus macrocerus* (F. W., 1846)

Oedipoda macrocera Fischer de Waldheim, 1846. Entom. Imp. Ross. IV. Orth. Imp. Ross. M., p. 331

Distribution: Caucasus, Anatolia, Iraq, N. Iran (Naskrecki and Unal, 1995).

Material examined: Amasya: Suluova, 17.VII.2003, 1♂; Eraslan Kasabası, 17.VII.2003, 3♂♂, 4♀♀; Ardahan: Ardahan-Hanak Yolu, 10 km, 1950 m, 11.VIII.2004, 3♂♂, 9♀♀; Artvin: Şavşat, Aşağı, Kocabey Yaylası, 1600-1700 m, 28.VII.2005, 2♀♀; Yukarı Kocabey Yaylası, 2450 m, 11.VIII.2004, 1♂, 3♀♀; Bartın: Safranbolu-Bartın yolu, Ahmet Usta Geçidi, 1060 m, 25.VII.2004, 2♂♂, 2♀♀; Eskipazar, Çilekbeli Geçidi, 1440 m, 24.VII.2004, 1♂; Safranbolu-Bartın yolu, 3.km, 450 m, 25.VII.2004, 11♂♂, 9♀♀; Bartın-Safranbolu yolu, Ovacuma mevkii, 280 m, 25.VII.2004, 2♂♂, 2♀♀; 600 m, 8♂♂, 5♀♀; Bolu: Mengen, Pazarköy çıkışı, 850 m, 25.VII.2004, 5♂♂, 3♀♀; Bolu-Mengen yolu, 25.km, 23.VII.2004, 14♂♂, 1♀; Aladağ, Şerif Yüksel Ormanları, 1900 m, 6.VIII.2000, 1♂; Akçakoca Dağları, 450 m, 15.VII.2005, 1♂; Çankırı: Yenice köyü, 1100 m, 4.VIII.2000, 4♂♂, 1♀; Ilgaz, İn Dağı, 1550 m, 21.VII.2004, 1♀; Çorum: Beydili-Çatak köyü, yol ayrımı, 960 m, 2.VIII.2004, 1♂; Erzurum: Oltu, Azot Yayla Geçidi, 2300 m, 21.VIII.2000, 1♂; Oltu-Erzurum yolu, 25.km, 2000-2200 m, 21.VIII.2000, 1♂; Oltu, Yedigöller Yaylası, 2100 m, 20.VIII.2000, 1♀; Gümüşhane: Kelkit, Pöske Dağı, 8.VIII.2004, 2250 m, 4♂♂, 1♀; Torul Barajı üstü, K.çakar mevkii, 900 m, 14.VIII.2004, 1♂, 2♀♀; Giresun: Şebinkarahisar yolu, 25. km, 630 m, 5♂♂, 8♀♀; 50 km, 1250 m, 5♂♂, 1♀; Eğribel Geçidi, 1900 m, 15.VIII.2004, 1♀; Kastamonu: Merkez, Aksinir köyü, 900 m, 26.VII.2004, 1♀; Kastamonu-Seydiler yolu, Oyrak Geçidi, 1210 m, 21.VIII.2004, 1♂; Ecevit Geçidi, 1170 m, 26.VII.2004, 1♂; Araç, Sıragömü Yaylası, 900 m, 11.IX.1998, 1♀; Daday, Meyri köyü, 3♂♂; Ordu: Ünye-Niksar yolu, 23.km, 480 m, 31.VII.2005, 1♂; Rize: İkizdere, Ovit Dağı, 1600 m, 13.VIII.2004, 6♂♂, 10♀;♀; Sakarya: Geyve-Taraklı yolu, Soğuksu çıkışı, 650 m, 23.VII.2004, 7♂♂, 10♀♀; Geyve-Taraklı Yolu, Kazkıran Geçidi, 800 m, 23.VII.2004, 17♂♂, 6♀♀; Samsun: Ondokuz Mayıs Üniversitesi, Kurupelit Kampüsü, 200 m, 28.VIII.2004, 1♀; Sinop: Merkez, Sinecan köyü, 8♂♂, 4♀♀; Sinop-Boyabat yolu, Soğuksu-Çakırlar arası, 900 m, 2♂♂, 1♀; Sinop-Boyabat yolu, Dranaz Geçidi, 1300 m, 27.VII.2004, 2♂♂; Erfelek, Sinecan köyü, 620 m, 18.VIII.2005, 1♂; Tokat: Zile, Yıldıztepe girişi, 750 m, 16.VII.2004, 2♂1♀; Tokat-Sivas Yolu, Tokat Çıkışı, 750 m, 17.VII.2004, 3♂♂, 5♀♀; Trabzon: Trabzon-Maçka yolu, 30.km, 26.VII.2005, 1♂; Zonguldak: Devrek-Babadağı Geçidi, 750 m, 24.VII.2004, 11♂♂, 4♀♀; Devrek-Mengen yolu, 25. km, 650 m, 24.VII.2004, 1♂.

Chorthippus (*Glyptobothrus*) *demokidovi* (Ramme, 1930)

Omocestus demokidovi Ramme, 1930. Mitt. Zool.Mus.Berlin, 16(2): 394

Distribution: Armenia, Nakhichevan, Turkey (Çıplak *et al*., 2005).

Material examined: Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 9.VIII.2004, 2460 m, 12♂♂, 6♀♀; Erzurum: Erzurum-İspir yolu, Gölyurt Geçidi, 27.VII.2004, 2360 m, 5♂♂, 2♀♀.

Chorthippus (*Glyptobothrus*) *ilkazi* Uvarov, 1934

Chorthippus ilkazi Uvarov, 1934. Enstituto Espanol de Entomologica, 10: 84-86

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined: Çankırı: Ilgaz, İndağı Geçidi, 1250 m, 21.VIII.2004, 2♂♂, 1♀; Ilgaz Dağı, Doruk Otelleri civarı, 1920 m, 21.VIII.2004, 3♂♂, 1♀; 4.VIII.2000, 1800 m, 1♀; Kastamonu: Kastamonu-Tosya yolu, 10. km, 1100 m, 20.VIII.2004, 11♂♂, 8♀♀; 30.km, 950 m, 20.VIII.2004, 1♂, 1♀; Devrekani-Çatalzeytin yolu, Bozarmut köyü, Yaralıgöz Geçidi, 1450 m, 1♀; Tosya-İskilip yolu, Türbe Geçidi altı 1100 m, 20.VIII.2004, 1♂; 1200 m, 20.VIII.2004, 2♂♂, 1♀; Türbe Geçidi, 1625 m, 20.VIII.2004, 1♂, 3♀♀; 21.VIII.2004, Ilgaz, İndağı Geçidi, 1250 m, 28.VIII.2004, 1♂, 1♀; Türbe Geçidi altı, 1200 m, 20.VIII.2004, 1♀; Kastamonu-Tosya yolu, Türbe Geçidi, 1625 m, 20.VIII.2004, 1♂2♀; Kastamonu-İnebolu yolu, 10.km, 950 m, 21.VIII.2004, 2♂♂; Kastamonu-Seydiler yolu, Oyrak Geçidi, 1210 m, 21.VIII.2004, 1♂; Araç, Sıragömü Yaylası, 900 m, 11.IX.1998, 2♀♀; Küre, Maruş Geçidi, 1250 m, 10.IX.1998, 1♂, 1♀; Kastamonu-Küre yolu, Seydiler, 1050 m, 10.IX.1998, 1♂; Kastamonu-Küre yolu, Orman İşletme İstasyonu, 900 m, 10.IX.1998, 1♀.

Chorthippus (*Glyptobothrus*) *biguttulus euhedickei* Helversen, 1989

Chorthippus biguttulus euhedickei Helversen, 1989. Articulata, 4:26-35

Distribution: Makedonia, Bulgaria, Greece and Turkey (Şirin, 2009).

Material examined: Bartın: Safranbolu-Bartın yolu, Ahmet Usta Geçidi, 1060 m, 25.VII.2004, 4♂♂, 5♀♀; Bolu: Hacıayaz Geçidi, 980 m, 23.VII.2004, 9♂♂, 5♀♀; 15.VII.2005, 6♂♂, 1♀; Mudurnu, Güney Felaketler köyü, 1100 m, 23.VII.2004, 3♂♂, 1♀; Ordu: Ünye-Niksar yolu, 35-40.km 850 m, 31.VII.2005, 1♂, 1♀; Kumru, Ballı köyü, 1100 m, 6.VIII.2004, 1♂, 2♀♀; Sakarya: Sakarya-Geyve yolu, Şerefiye, 100 m, 2♀♀; Geyve-Taraklı yolu, Soğuksu çıkışı, 650 m, 23.VII.2004, 2♂♂, 11♀♀; 15.VII.2005, 1♀; Kazkıran Geçidi, 800 m, 23.VII.2004, 3♂♂, 12♀♀; 15.VIII.2005, 1♂; Sinop: Sinop-Boyabat yolu, Dranaz Geçidi 1♀; Erfelek, Kızılca Elma köyü, 620 m, 18.VII.2005, 1♀; Kötügüney Yaylası, 1310 m, 18.VII.2005, 1065 m, 18.VII.2005, 5♂♂, 7♀♀; Sinop-Boyabat yolu, Çakıldak civarı, 925 m, 18.VII.2005, 1♂♂, 3♀♀; Zonguldak: Devrek, Babadağ Geçidi, 750 m, 24.VII.2004, 12♂♂, 3♀♀; 16.VII.2005, 1♀; Zonguldak-Devrek-Mengen yol ayrımı, 25. km, 650 m, 24.VII.2004, 6♂♂, 1♀.

Chorthippus (*Glyptobothrus*) *mollis mollis* (Charpentier, 1825)

Gryllus mollis Charpentier, 1825. Horae Ent. P. 164

Distribution: Nearly all the European part of the U.S.S.R., the Caucasus, Siberia, Kazakhstan, Middle Asia, western and eastern Europe, Asia Minor and northern Iran (Bei-Bienko and Mistshenko, 1951; Harz, 1975).

Material examined: Ardahan: Ardahan-Hanak yolu 10. km,1950 m, 11.VIII.2004, 1♂, 1♀; AMASYA: Merkez, Ormanözü köyü girişi, 1163 m, 2.VIII.2005, 1♂, 1♀; Ezinepazarı, Abacı köyü, 1250 m, 19.VIII.2004, 1♂; Çorum: İskilip, Elmabeli Geçidi, 1150 m, 20.VIII.2004, 2♀♀; Kösedağ, Zirve, 1600-1700 m, 13.VIII.2005, 7♂♂, 11♀♀; Bogazkale, Yerkapı Geçidi, 1270 m, 11.VIII.2005, 6♂♂, 5♀♀; Erzurum: Oltu, Başaklı köyü, 1800 m, 22.VIII.2000, 1♂; Giresun: Giresun-Şebinkarahisar yolu, 630 m, 15.VIII.2004, 1♀; Giresun-Şebinkarahisar yolu, Eğribel Geçidi, 2250 m, 7.VIII.2004, 1♂; Gümüşhane: Kelkit, Pöske Dağı, 1500 m, 8.VIII.2004, 3♂♂, 1♀; 2250 m, 2♂♂; Kale, Akçahisar köyü, 1450 m, 3♂♂, 4♀♀; Fındıkbeli Geçidi, 1700 m, 7.VIII.2004, 2♂♂; Kastamonu: Kastamonu-Seydiler yolu, Oyrak Geçidi, 1210 m, 26.VII.2004, 1♀; Tosya-İskilip yolu, Türbe Geçidi altı, 1100-1200 m, 20.VIII.2004, 2♂♂; Türbe Geçidi, 1625 m, 20.VIII.2004, 2♂♂; Devrekani-Çatalzeytin yolu, Bozarmut köyü, Yaralıgöz Geçidi, 1450 m, 21.VIII.2004, 1♂; Rize: İkizdere-İspir yolu, 75.km, 2000 m, 13.VIII.2004, 2♂♂; Ovit Dağı, 2♂♂, 2♀♀; Ayder Yaylası, 790-850 m, 29.VII.2005, 1♀; Samsun: Ondokuz Mayıs Üniversitesi, Kurupelit Kampüsü, 28.VIII.2003, 1♂; Sivas: Yıldızeli-Çamlıbel yolu, 20.km, 1400 m, 19.VIII.2004, 2♂♂; 1.VIII.2005, 1♀; Tokat: Çamlıbel-Artova yol ayrımı, 1200 m, 4.VIII.2004, 1♂, 1♀; 1.VIII.2005, 3♂♂, 4♀♀; Çamlıbel Geçidi, 1670 m, 19.VII.2004, 2♂♂, 2♀♀; 19.VIII.2004, 3♂♂; Zile, Yıldıztepe, Karaağaç mevkii, 900 m, 18.VIII.2004, 45♂♂, 30♀♀.

Gomphocerus Thunberg, 1815

Gomphocerus Thunberg, 1815. Mem.Acad.Sci.St.Petersb., 5:213

Type species: *Gryllus sibiricus* Linnaeus, 1767

Gomphocerus transcaucasicus Mistshenko, 1951 stat.n. (Mol 2011)

Gomphocerus sibiricus transcaucasicus Mistshenko 1951. In Bei-Bienko and Mistshenko. Keys to the fauna of the U.S.S.R

Distribution: Nakichevan A.S.S.R., Turkey (Bei-Bienko and Mistshenko, 1951).

Material examined: Artvin: Şavşat: Yukarı Kocabey Yaylası, 2450 m, 11.VIII.2004, 4♀♀; 27.VII.2005, 16♂♂, 31♀♀; Ardahan: Hanak-Ardahan yolu, Hanak çıkışı, 2100 m, 11.VIII.2004, 3♂♂, 1♀; Erzurum: Oltu, Kırdağ Tepesi, 2650 m, 20.VIII.2000, 2♂♂.

***Gomphocerus sibiricus acutus* Karabağ, 1957**

Gomphocerus sibiricus acutus Karabağ, 1957. Communications, 16-17

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined: Rize: İkizdere-İspir yolu, 25.km, 2000 m, 13.VIII.2004, 2♀♀; 30.VII.2005, 3♂♂, 2♀♀.

***Gomphocerus sibiricus hemipterus* Karabağ, 1953**

Gomphocerus sibiricus hemipterus Karabağ, 1953**.** Eos 29:186-188

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined: Giresun: Giresun-Şebinkarahisar yolu, Eğribel Geçidi, 2300 m., 7.VIII.2004, 3♂♂, 8♀♀.

***Gomphocerus armeniacus dimorphus* Karabağ, 1953**

Gomphocerus armeniacus dimorphus Karabağ, 1953. Eos 29:188-200

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined: Bayburt: Bayburt-Aşkale yolu, Kop Dağı Geçidi, 2460 m, 8♂♂, 8♀♀.

***Aeropedellus* Hebard, 1935**

Aeropedellus Hebard, 1935. Ent. News. Philad., 46:184-188, 202-208

Type species: *Aeropedellus clavatus* (Thom., 1873).

***Aeropedellus turcicus* Karabağ, 1959**

Aeropedellus turcicus Karabağ, 1959. Proc.R.ent.Soc.London (B) 28, 58-60

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined: Trabzon: Ziğana Dağı, Gümüş Yaylası, 14.VIII.2004, 2150 m, 5♂♂, 27♀♀.

***Dasyhippus* Uvarov, 1930**

Dasyhippus Uvarov, 1930. Enstituto Espanol de Entomologica, 357-358

Type species: *Dasyhippus escaleari* (I. Bolivar, 1899)

***Dasyhippus uvarovi* Karabağ, 1953**

Dasyhippus uvarovi Karabağ, 1953: Eos, 29: 190-191

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined*:* Çankırı: Çankırı-Atkaracalar-Bolu yolu, 1280 m, 14.VII.2005, 6♂♂, 5♀♀.

***Microhippus* Ramme, 1939**

Microhippus Ramme, 1939. Mitt. Zool. Mus. Berlin, 24:129

Type species: *Microhippus turcicus* Ramme, 1939.

***Microhippus turcicus* Ramme, 1939**

Microhippus turcicus Ramme, 1939. Mitt. Zool. Mus. Berlin, 24:129

Distribution: Known only from Anatolia (Çıplak *et al*., 1999).

Material examined: Çankırı: Ilgaz Dağı, Doruk Otelleri-TRT vericisi civarı, 2035 m, 9.VIII.2005, 2♀♀; Kastamonu: Devrekani-Çatalzeytin yolu, Bozarmut köyü, Yaralıgöz Geçidi, 26.VII.2004, 1450 m, 31♂♂, 52♀♀; Yaralıgöz Geçidi, 1450 m, 21.VIII.2004, 12♂♂, 9♀♀; 17.VII.2005, 11♂♂, 2♀♀; Kastamonu-Küre yolu, Oyrak geçidi, 26.VII.2004, 5♂♂, 2♀♀; 21.VIII.2004, 1210 m, 4♂♂, 1♀; 17.VII.2005, 7♂♂, 3♀♀; Tosya-İskilip yolu, Türbe Geçidi, 1625 m, 20.VII.2004, 5♂♂, 5♀♀; 20.VIII.2004, 6♂♂, 3♀♀; 13.VII.2005, 10♂♂, 4♀♀; Türbe Geçidi altı, 1100 m, 20.VII.2004, 2♂♂, 4♀♀; Türbe Geçidi altı, 1100 m, 20.VIII.2004, 4♂♂, 3♀♀; 13.VII.2005, 1♂.

***Myrmeleotettix* I. Bolivar, 1914**

Myrmeleotettix Bolivar, I. 1914. Trab.Mus.Cienc.nat., Madrid (Ser.zool.) 20: 61

Type species: *Myrmeleotettix maculatus* (Thunberg, 1815)

***Myrmeleotettix maculatus maculatus* (Thunberg, 1815)**

Gomphocerus maculatus Thunberg, 1815. Mém. Ac. Pétersbrg, 5:22

Distribution: Widespread in Europe except for the extreme north and southern Spain, Anatolia, Kazakhstan, Siberia, NW Africa (Bukhvalova and Vedenina, 1998; Şirin *et al*., 2011)

Material examined: Giresun: Giresun-Şebinkarahisar yolu, Eğribel Geçidi, 2250 m, 7.VIII.2004, 30♂♂, 45♀♀; 23.VII.2005, 2♂♂, 4♀♀; Rize: İkizdere-İspir yolu, 75. km, 2000 m, 13.VIII.2004, 2♂♂, 2♀♀; İkizdere-İspir yolu, Ovit Dağı Geçidi, 2630 m, 13.VIII.2004, 19♂♂, 25♀♀; 2500- 2640 m, 30.VII.2005, 2♀♀; Trabzon: Zigana Dağı, Gümüş Yaylası, 2150 m, 26.VII.2005, 1♂, 1♀.

CONCLUSION AND DISCUSSION

Karabağ (1958), Demirsoy (1977), Salman (1978), Karabağ *et al.,* (1980), Çıplak *et al.,* (1999), and Ünal (1999), reported 46 taxon belonging to Gomphocerinae subfamily distributed in Black Sea Region of Turkey. However, some of the taxon which was reported in previous studies was not collected from this region. Those species are *Ptygippus brachiopterus* Mistshenko, 1951; *Dociostaurus genei* (Ocskay, 1832); *Stenobothrus selmae* Ünal, 1999; *Stenobothrus nigromaculatus transcaucasicus* (Ramme, 1933); *Euchorthippus transcaucasicus* Tarbinski, 1930; *Chorthippus* (*Glyptobothrus*) *brunneus brunneus* (Thunberg, 1815), and *Chorthippus* (*Glyptobothrus*) *biguttulus biguttulus* (Linneaeus, 1758).

In this study, some species belonging to subfamily of Gomphocerinae have been collected for the first time from Black Sea Region, These species are: *Ramburiellla turcomana* (Fischer de Waldheim, 1846); *Stenobothrus* (*Stenobothrodes*) *sivridenkoi* Ramme, 1930; *Stenobothrus* (*Stenobothrus*) *zubovskyi* Bolivar, 1899; *Stenobothrus* (*Stenobothrus*) *graecus* Ramme, 1930; *Omocestus* (*Omocestus*) *nanus* Uvarov, 1934; *Chorthippus* (*Glyptobothrus*) *bornhalmi* Harz, 1971; *Gomphocerus armeniacus dimorphus* Karabağ; 1953, and *Dasyhippus uvarovi* Karabağ, 1953.

Willemse (1985) reported that *Euchorthippus declivus* (Brisout-Barnevillei, 1848) is distributed in Anatolia but he did not indicate the locality it was collected. In this study, we collected *Euchorthippus declivus* from Amasya. Likewise, Unal (2012) reported *Omocestus* (*Dirshius*) *minutus* (Brullé, 1832) distributions in Turkey, but he didn't indicate the locality it was collected. We collected these specimens from Çankırı, Çorum, Kastamonu, Sivas, and Gümüşhane in the Black Sea Region.

Çıplak *et al*. (1999) reported that *Stenobothrus* Fischer, 1853 is represented with four subgenera in Turkey; these are *Stenobothrus* Fischer, 1853; *Stenobothrodes* Tarbinsky, 1948; *Crotalacris* Chopard, 1951; and *Stauroderus* Bolivar, 1897. Ragge (1987) and Berger (2008) reported that the subgenera *Stenobothrodes* Tarbinsky and *Crotalacris* Chopard are certainly not distinct from each other at the subgeneric level, and they do not recognize them as a distinct subgenus. In addition to that, *Stauroderus* Fischer de Waldheim, 1846 is considered as a distinct genus rather than the subgenus of *Stenobothrus.* Likewise, *Dasyhippus* Uvarov, 1930 is considered as a distinct genus rather than the subgenus of *Chorthippus* Fieber, 1852 (Bei-Bienko and Mistshenko, 1951; Demirsoy, 1977; Ragge, 1987).

Previous studies (Bolivar, 1899; Demirsoy, 1977; Güneş, 1984; Ragge and Reynolds, 1998; Çıplak *et al*., 1999) reported that *Stenobothrus stigmaticus* (Rambur, 1838), *S. festivus* Bolivar, 1897 and *S. posthomus* Ramme, 1931 are distributed in Turkey. However, Berger (2008) reported that there is one record of *S. stigmaticus* by Bolivar (1899) from the South-eastern part of Turkey, but this species has not been recovered until today due to a very likely misidentification or confusion with a later described species. Likewise, Berger (2008) reported that *S. posthomus* Ramme, 1931 is endemic to mountain ranges of Montenegro (near the Adriatic Sea, in Balkan Peninsula). Ragge and Reynolds (1998) reported that *S. festivus* Bolivar, 1897 is distributed in Iberian Peninsula and locally in southern France. Inferring from the above statements, we think that these species mentioned above are not distributed in Turkey and therefore do not take place in the check list given below. *S. eurasius macedonicus* was described by Willemse (1974) and Berger (2008) who reported that *S. eurasius macedonicus* Willemse, 1974 is distributed in Turkey. That's why we added this subspecies in the checklist given below.

Demirsoy (1977) and Çıplak *et al*. (1999) reported that *Chorthippus parallelus parallelus* (Zetterstedt, 1821) and *C. parallelus tenuis* (Brulle, 1832) are distributed in Turkey. However, the specimens belonging to this two subspecies were found in the same locality. Likewise, Hewitt (1996) reported that nominant subspecies belonging to *C. parallelus* are distributed in Turkey. It must be indicated that this species shows variations especially among very local but very isolated populations and populations located at different altitudes on the same mountain ranges in Anatolia. We accepted that nominant subspecies is distributed in Turkey (Mol, 2001-2007; Unal, 2008; Çıplak, 2008; Korkmaz *et al*., 2010).

Helversen (1986) and Vedenina *et al*., (2009) reported that *Chorthippus albomarginatus* (De Geer, 1773) species group consists of five species. Those species

are: *Chorthippus albomarginatus* (De Geer, 1773), *C. oschei* von Helversen, 1986, *C. lacustris* La Greca et Messina, 1975, *C. karelini* (Uvarov, 1910), *C. ferdinandi* Vedenina and Helversen, 2009. We think that *C. labaumei* Ramme, 1926 and *C. albomarginatus hakkaricus* Demirsoy, 1977 must be implicated likewise in this species group, but Helversen (1986) accepted that these taxon are a variation of *C. karelini*. However, Mol (2001-2007) reported that *C. labaumei* Ramme, 1926 is distinct from *C. karelini* in terms of morphological and acoustics characteristics, and *C. albomarginatus hakkaricus* Demirsoy, 1977 is different from *C. karelini* in terms of morphological charactersitics. In the light of these statements, *C. albomarginatus*-species group is represented with three taxon in Turkey. Those taxon are *C. karelini karelini* (Uvarov, 1910) *C. karelini hakkaricus* Demirsoy, 1977 and *C. labaumei* Ramme, 1926.

Previous studies (Karabağ, 1958; Weidner, 1969; Demirsoy, 1977; Güneş, 1984; Çıplak *et al*., 1999) indicated that *Chorthippus brunneus brunneus* (Thunberg, 1815) and *C. biguttulus biguttulus* (Linnaeaus, 1758) are distributed in Anatolia. Şirin *et al.* (2010) reported that *C. brunneus* does not exist in Anatolia. The Anatolian species similar to *C. brunneus* is *C. relicticus* Sirin, Helversen and Ciplak, 2010 and the old records of *C. brunneus* probably refer to *C. bornhalmi* Harz, 1971. Likewise, Şirin (2009) reported that *C. biguttulus biguttulus* (Linnaeaus, 1758) does not exist in Anatolia, but this species is represented in Turkey with *C. biguttulus euhedickei* Helversen, 1989. We collected specimens of this subspecies from Nortwest Anatolia in Turkey.

Bei-Bienko and Mistshenko (1951), Weidner (1969), Çıplak *et al*. (1999) and Unal (2012) reported that *Chorthippus satunini* Mistshenko, 1951 is distributed in Turkey, but Çıplak *et al*. (2005) reported that this species is synonim with *C.* (*Glyptobothrus*) *demokidovi* (Ramme, 1930).

Demirsoy (1977) reported that *Gomphocerus sibiricus acutus* Karabağ, 1957 is synonim with *G. armeniacus dimorphus* Karabağ, 1953. Based on the examined material of these two subspecies collected from the Black Sea Region, Turkey, we revealed that *G. sibiricus acutus* Karabağ is different from *G. armeniacus dimorphus* Karabağ as follows: in male the length of the front tibia/the greatest width of the front tibia is 2.2 (in *G. armeniacus dimorphus* 3.6-4.35). Mol (2012) reported that all taxa belonging to *Gomphocerus* Thunberg, 1815 genus need further revision.

Be-Bienko and Mistshenko (1951), Jago (1971), Harz (1975) and Ragge (1987) reported that if Gomphocerinae grasshoppers such as *Dociostaurus moraccanus* Fieber, *Stenobothrus* (*Stenobothrus*) *lineatus* (Panzer), *Omocestus* (*Dirshius*) *petraeus* (Brisuot de Barneville) increase in number in agricultural zones, they may be harmful for this area. In Ordu province, farmers said that *Stauroderus scalaris* (F. de W., 1846) specimes hurts especially seedling of *Solanum* spp.

The genera belonging to Gomphocerinae subfamily in Turkey is not clearly distinct. *Duroniella* Bolivar and *Morphacris* Thunberg were given by Çıplak *et al.* (1999) and *Truxalis* Fabricius, 1775 was given in Gomphocerinae subfamily by Naskrecki and Unal (1995). We think that these genera don't take place in this subfamily because *Duroniella* Bolivar was given in Locustinae by Harz (1975) and in Acridinae by Demirsoy (1977).

Likewise, *Duroniella* Bolivar and *Morphacris* Thunberg were given in Oedipodinae by Naskrecki and Unal (1995). In addition to that, the genus *Truxalis* Fabricius were given in Gomphocerinae subfamily by Naskrecki and Unal (1995), but this genus was given in Acridinae by Harz (1975) and in Truxalinae by Demirsoy (1977) and Willemse (1984). The subfamily to which these three genera belong is suspicious. In this study, we follow the species list by Çıplak *et al*. (1999), and the genera *Duroniella* Bolivar and *Morphacris* Thunberg were given in this subfamily.

According to Hewitt (1996), Çıplak (2004-2008), Tarknishvili *et al*. (2000) and Veith (2003) reported that the regions of Southern Alpine, Carpathian and Caucasian mountains, i.e. the Mediterrranean Basin from Iberia to Anatolia and Iran, were important Pleistocene refugia inhabited by the organisms that changed their range southwards during each glacial period. The important refugial role of the Northern Mediterranean Basin has been documented in numerous studies published in the last two decades (Hewit 1996, 1999, 2000; Demirsoy 1999; Çıplak 2004, 2008; Çıplak *et al.* 2005; Şirin *et al*. 2011). As to Anatolia, this means that during each glacial period, a very active faunal communication has occured, both between Anatolia and Europe through the Balkans and Thrace, and between Anatolia and Asia through the Caucasus (Çıplak, 2008). To evaluate biological diversity, Gomphocerinae grasshoppers have been used especially since Uvarov (1921). In addition to that, Demirsoy (1977) reported that some species belonging to the genera, such as *Chorthippus* Fieber, 1852, *Stenobothrus* Fischer, 1853, *Omocestus* Bolivar, 1852 and *Euchorthippus* Tarbinsky, 1925 used both the Balkans and the Caucasus to pass from Anatolia to Asia and Europe. At the end of this study, many examples were revealed for the species distributed only in Anatolian Black Sea Basin. These species are *Stenobothrus derrai* Harz, 1988, *Stenobothrus miramae* Dirsh, 1931, *Omocestus haemorhoidalis ciscaucasicus* Bei-Bienko, 1951; *Chorthippus biguttulus euhedickei* Helversen, 1989, *Chorthippus dorsatus* (Zetterstedt, 1821), *Chorthippus apricarius apricarius* (Linnaeus, 1758), *Euchorthippus declivus* (Brisout-Barnevillei, 1848). During each glacial period, some populations/species such as *Stenobothrus werneri* Adelung, 1907*, Stenobothrus sivridenkoi* Ramme, 1930, *Chorthippus apricarius major* Plynov, 1914, and the whole *Gomphocerus* Thunberg, 1815 species, used the Caucasus to spread in Anatolia from Asia.

Uvarov (1934), Jago (1971) and Demirsoy (1977) reported that the genus *Eremippus* Uvarov, 1926 is an Eremial element, and six species are distributed in Turkey. Those species are *Eremippus simplex* (Eversmann, 1859), *Eremippus angulatus* Uvarov, 1934, *Eremippus gracilis* Uvarov, 1934 *Eremippus turcicus* Ramme, 1951, *Eremippus weidneri* Demirsoy, 1977, and *Eremippus zeybekoglui* Mol, 2012. The last five species are endemic to Turkey and distributed in Central Anatolia and Black Sea Region. Among those, *Eremippus weidneri* Demirsoy, 1977 is a mountain form and prefers distributions in high altitudes in Black Sea Region of Turkey. This species may came to Anatolia in glacial periods and may have come from European via using Thrace avenue.

Demirsoy (1999) reported that Afro-Eremial elements use and/or used the border of Syria to enter Anatolia. Similarly, the fact that the world is in an interglacial warming

period, global warming, the deforestration have created a great opportunity to enter and spread northwards for Afro-Eremial elements.

The fact that Middle Anatolian region consists of step vegetation and some of this region shows desert-like characteristics provides *Eremippus* Uvarov species exampling *E. angulatus* Uvarov, *E. gracilis* Uvarov, and *E. turcicus* Ramme the opportunity to spread. In addition, we have not encountered any *Eremippus* species which prefer to spead from Middle Anadolia to Black Sea Region. Inferring from these data, it is revealed that Black Sea Region has a barrier for Afro-Eremial element to spread northwards. The fact that the Black Sea Region is now a barrier for Eremial elements to spread northwards does not prevent the species/populations of Eremial elements from spreading northwards. On the other hand, Demirsoy (1999) reported that the other entry avenue for Eremial elements is the triangle of Iğdır-Aralık and Hakkari-Van plateu in south, except the Syrian border. While the spreading of *Eremippus* species is blocked through the Black Sea Mountains in Anatolia, the spreading of *Eremippus zeybekoglui* Mol, 2012 and *Dociostaurus* (*Kazakia*) *tartarus* Stschelkanovzev, 1921 species, which were collected from Artvin-Yusufeli belonging to Iranian and Turanian region with steppe elements, continues to spread northwards from the these regions. It wouldn't be wrong to state that these species spreads from south to north while *E. weidneri* Demirsoy, 1977 spreads from north to south. It must be added that Anatolia served as a refugia for the populations/species coming from north during glacial periods. As long as the interglacial periods and global warming continue, the high alititude habitats of Anatolia will still be refugia for Eremial elements. The temperature will increase because of the interglacial period and global warming, therefore, Eremial elements will migrate to higher habitats, such as mountains. After the interglacial period we are currently in, the populations/species which migrated to higher altitudes will spread southwards, differentiate to form new species, change their habitat, or be extinct in a possible glacial period (Demirsoy, 1977-1999; Mol, 2001; Çıplak, 2008).

In the view of all these evaluations, Gomphocerinae subfamily taxon stated in this and previous studies are as follows for Turkey (the species with * are distributed in the Black Sea Region). Checklist of genera and species currently included within the subfamily Gomphocerinae Tarbinsky, 1932.

SUPERFAMILY: GROUP ACRIDOMORPHA

FAMILY: ACRIDIDAE MACLEAY, 1821

SUBFAMILY GOMPHOCERINAE TARBINSKY, 1932

I. GENUS: *DURONIELLA,* BOLIVAR, 1890

1- **Duroniella laticornis* (Krauss, 1909)

2- *Duroniella fracta* (Krauss, 1909)

II. GENUS*: PTYGIPPUS* MISTSHENKO, 1951

3- **Ptygippus brachypterus* Mistshenko, 1951

III. GENUS: *XEROHIPPUS* UVAROV, 1942

4- *Xerohippus alkani* Karabağ, 1953
5- *Xerohippus anatolicus* Ramme, 1951
6- *Xerohippus azami* (Bolivar, 1901)

IV. GENUS: *OCHRILIDIA* STAL, 1873

7- *Ochrilidia pruinosa* Brunner von Wattenwyl, 1882
8- *Ochrilidia acuta* (Bolivar, 1905)
9- *Ochrilidia obtusa* (Salfi, 1931)
10- *Ochrilidia tibialis* (Fieber, 1853)

V. GENUS: *EUTHYSTIRA*

11- **Euthystira brachyptera* (Ocskay, 1826)

VI. GENUS: *RAMBURIELLA* BOLIVAR, 1906

12- **Ramburiellla turcomana* (Fischer de Waldheim, 1846)
13- **Ramburiella bolivari* (Kuthy, 1907)

VII. GENUS: *ARCYPTERA* SERVILLE, 1839

14- **Arcyptera fusca fusca* (Pallas, 1773)

VIII. GENUS*: PARARCYPTERA T*ARBINSKY, 1940

15- **Pararcyptera labiata* (Brullé, 1832)
16- *Pararcyptera microptera karadagi* (Karabağ, 1956)
17- *Pararcyptera microptera microptera* (Fischer de Waldheim, 1833)
18- *Pararcyptera microptera transcaucasica* (Uvarov, 1917)

IX. GENU*S: EREMIPPUS UVA*ROV, 1926

19- *Eremippus simplex* (Eversmann, 1859)
20- *Eremippus angulatus* Uvarov, 1934
21- *Eremippus gracilis* Uvarov, 1934
22- *Eremippus turcicus* Ramme, 1951
23- **Eremippus weidneri* Demirsoy, 1977
24- **Eremippus zeybekoglui* Mol, 2012

X. GENU*S: DOCIOSTAURUS FIEBER*, 1853

25- **Dociostaurus* (*Kazakia*) *brevicollis* (Eversmann, 1848)
*26- *Dociostaurus* (*Kazakia*) *genei genei* (Ocskay, 1832)
27- *Dociostaurus* (*Kazakia*) *jagoi jagoi* Soltani, 1978

28- **Dociostaurus* (*Kazakia*) *tartarus* Stschelkanovzev, 1921

29- Dociostaurus (Kazakia) icconium Şirin & Mol, 2013

30- **Dociostaurus* (*Dociostaurus*) *maroccanus* (Thunberg, 1815)

31- **Dociostaurus* (*Stauronotulus*) *hauensteini hauensteini* Bolivar, 1893

32- *Dociostaurus* (*Stauronotulus*) *cappadocicus* (Azam, 1913)

33- *Dociostaurus* (*Stauronotulus*) *salmani* Demirsoy, 1977

XI.GENUS: NOTOSTAURUS BEI-BIENKO, 1933

34- **Notostaurus anatolicus* (Krauss, 1896)

XII. GENUS: STENOBOTHRUS FISCHER, 1853

35- **Stenobothrus* (*Stenobothrus*) *fischeri fischeri* (Eversmann, 1848)

36- **Stenobothrus* (*Stenobothrus*) *nigrogeniculatus* Krauus, 1899

37- **Stenobothrus* (*Stenobothrus*) *zubowskyi* Bolivar, 1899

38- **Stenobothrus* (*Stenobothrus*) *graecus* Ramme, 1926

39- *Stenobothrus* (*Stenobothrus*) *graecus malatyensis* Çıplak, 1994

40- **Stenobothrus* (*Stenobothrus*) *nigromaculatus nigromaculatus* (Her-Sch., 1840)

41- **Stenobothrus* (*Stenobothrus*) *nigromaculatus transcaucasicus* (Ramme, 1933)

42- *Stenobothrus* (*Stenobothrus*) *burri* Karabağ, 1953

43- **Stenobothrus* (*Stenobothrus*) *lineatus* (Panzer, 1796)

44- *Stenobothrus* (*Stenobothrus*) *bozcuki* Çıplak, 1994

45- **Stenobothrus* (*Stenobothrus*) *selmae* Unal, 1999

46- *Stenobothrus* (*Stenobothrus*) *derrai* Harz, 1988

47- **Stenobothrus* (*Stenobothrus*) *miramae* Dirsh, 1931

48- **Stenobothrus* (*Stenobothrodes*) *werneri* Adelung, 1907

49- **Stenobothrus (Stenobothrodes) sivridenkoi* Ramme, 1930

50- *Stenobothrus* (*Stenobothrodes*) *eurasius macedonicus* Willemse, 1974

XIII. GENUS: OMOCESTUS I. BOLIVAR, 1852

51- **Omocestus* (*Omocestus*) *nanus* Uvarov, 1934

52- **Omocestus* (*Omocestus*) *ventralis* (Zetterstedt, 1821)

53- **Omocestus* (*Dirshius*) *minutus* (Brullé, 1832)

54- **Omocestus* (*Dirshius*) *haemorrhoidalis haemorrhoidalis* (Charpentier, 1825)

55- **Omocestus* (*Dirshius*) *haemorhodalis ciscaucasicus* Mistshenko, 1951

56- **Omocestus* (*Dirshius*) *petraeus* (Brisuot de Barneville, 1855)

XIV. GENUS: *STAURODERUS* I. BOLIVAR, 1897

57- ***Stauroderus scalaris znojkoi* (Miram, 1938)

58- **Staurodorus scalaris scalaris* (Fisher-Waldheim, 1846)

XV. GENUS: EUCHORTHIPPUS TARBINSKY, 1925

59- **Euchorthippus pulvinatus pulvinatus* (Fischer de Waldheim, 1846)
60- **Euchorthippus declivus* (Brisout-Barnevillei, 1848)
61- **Euchorthippus transcaucasicus* Tarbinsky, 1930

XVI. GENUS: *CHORTHIPPUS* FIEBER, 1852

62- *Chorthippus (Chorthippus) paralleus parallelus (Zetterstedt, 1821)
63- **Chorthippus* (*Chorthippus*) *karelini karelini* (Uvarov, 1910)
64- *Chorthippus* (*Chorthippus*) *karelini hakkaricus* Demirsoy, 1977
65- **Chorthippus* (*Chorthippus*) *labaumei* Ramme, 1926
66- **Chorthippus* (*Chorthippus*) *loratus* (Fischer de Waldheim, 1846)
67- **Chorthippus* (*Chorthippus*) *dorsatus* (Zetterstedt, 1821)
68- **Chorthippus* (*Chorthippus*) *dichrous* (Eversmann, 1859)
69- **Chorthippus* (*Glyptobothrus*) *apricarius apricarius* (Linnaeus, 1758)
70- **Chorthippus* (*Glyptobothrus*) *apricarius major* Plynov, 1914
71- **Chorthippus* (*Glyptobothrus*) *bornhalmi* Harz, 1971
72- **Chorthippus* (*Glyptobothrus*) *aktaci* Ünal, 2010
73- *Chorthippus* (*Glyptobothrus*) *antecessor* Şirin and Çıplak, 2010
74- *Chorthippus* (*Glyptobothrus*) *relicticus* Şirin, Helversen and Çıplak
75- **Chorthippus* (*Glyptobothrus*) *vagans* (Eversman, 1848)
76- **Chorthippus* (*Glyptobothrus*) *macrocerus macrocerus* (Fischer de Waldheim, 1846)
77- **Chorthippus* (*Glyptobothrus*) *demokidovi* (Ramme, 1930)
78- *Chorthippus* (*Glyptobothrus*) *kazdaghensis* Mol and Çıplak, 2005
79- *Chorthippus* (*Glyptobothrus*) *taurensis* Şirin and Çıplak, 2005
80- **Chorthippus* (*Glyptobothrus*) *ilkazi* Uvarov, 1934
81- *Chorthippus* (*Glyptobothrus*) *bozdaghi* Uvarov, 1934
82- *Chorthippus* (*Glyptobothrus*) *helverseni* Mol, 2003
83- *Chorthippus (Glyptobothrus) biguttulus euhedickei Helversen, 1989
84- **Chorthippus* (*Glyptobothrus*) *mollis mollis* (Charpentier, 1825)
85- *Chorthippus* (*Glyptobothrus*) *binotatus* (Charpentier, 1825)

XVII. GENUS: *MICROHIPPUS* RAMME, 1939

86- **Microhippus turcicus* Ramme, 1939
87- *Microhippus dinaricus* (Ramme, 1950)

XVIII. GENUS: *GOMPHOCERUS* THUNBERG, 1815

88- *Gomphocerus turcicus* Mistshenko, 1951

89- **Gomphocerus transcaucasicus* Mistshenko, 1951

90- **Gomphocerus sibiricus acutus* Karabağ, 1957

91- **Gomphocerus sibiricus hemipterus* Karabağ, 1953

92- **Gomphocerus armeniacus dimorphus* Karabağ, 1953

XIX. GENUS: *AEROPEDELLUS* HEBARD, 1935

93- **Aeropedellus turcicus* Karabağ, 1959

XX. GENUS: *DASYHIPPUS* UVAROV, 1930

94- **Dasyhippus uvarovi* Karabağ, 1953

95- *Dasyhippus escalerai* (Bolivar, 1899)

XXI. GENUS: *MYRMELEOTETTIX* BOLIVAR, 1914

96- **Myrmeleotettix maculatus maculatus* (Thunberg, 1815)

97- *Myrmeleotettix ethicus* Şirin and Çıplak, 2011

XXII. GENUS: *MORPHACRIS*

98- *Morphacris fasciata* (Thunberg, 1815)

When we take previous studies (Karabağ, 1958; Demirsoy, 1977; Salman, 1978; Karabağ *et al*., 1980; Çıplak *et al*., 1999-2005; Ünal, 1999; Mol *et al*., 2003, Şirin and Mol, 2013) into account, it is revealed that 97 taxa are distributed in Turkey. 59 of them are collected from the Black Sea Region, which makes 61% of the species in Turkey, and 7 of them are endemics for this region. These taxon are *Eremippus weidneri* Demirsoy, 1977, *Eremippus zeybekoglui* Mol, 2012, *Stenobothrus* (*Stenobothrus*) *selmae* Unal, 1999*, Chorthippus ilkazi* Uvarov, 1934*, Chorthippus aktaci* Ünal, 2010*, Gomphocerus sibiricus hemipterus* Karabağ, 1953, *Aeropedellus turcicus* Karabağ, 1959.

Black Sea Region has a rich Gomphocerinae taxon (61%), but it can't be said so in terms of endemism. It has constantly green vegetation habitats and forested areas, and this causes a reduced rate of endemism. Because of the boreal characteristic and continuous mountains of the region, there are not any izolated localities with different habitat preferences for populations / species; it doesn't allow spreading and speciation. This fact is stated by Çıplak *et al*., (2005) for Chorthippus demokidovi species group.

Jago (1971) carried out the most comprehensive revision for Gomphocerinae subfamily, but it did not resolve the taxonomic problem. So far, a lot of researchers indicated that most of genera belonging to Gomphocerinae species distributed in Turkey needs comprehensive revision. For example, Jago (1971) asked for a revision *Eremippus* Uvarov, 1926, Demirsoy (1977) asked for a revision for *Ochrilidia* Stal, 1873; *Eremippus* Uvarov, 1926, *Duroniella* Bolivar, and *Aeropedellus* Hebard, 1935; Çıplak (1994) for *Stenobothrus* Fischer, 1853; Çıplak and Demirsoy (1996) for *Chorthippus*

Fieber, 1852; Mol (2007-2011) for *Stauroderus* Bolivar, 1897 and *Gomphocerus* Thunberg, 1815. In addition to these genera, we think that most of the genera need revision. These genera are *Xerohippus* Uvarov, 1942; *Dociostaurus* Fieber, 1853; *Pararcyptera* Tarbinsky, 1940; *Euchorthippus* Tarbinsky, 1925; *Chorthippus* Fieber, 1852; *Gomphocerus* Thunberg, 1815, and *Dasyhippus* Uvarov, 1930.

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