

**CHOROTYPE IDENTIFICATION
FOR TURKISH CHRYSOMELOIDEA (COLEOPTERA)
PART V – CHRYSOMELIDAE: EUMOLPINAE**

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ABSTRACT: The paper gives chorotype identifications for Turkish Eumolpinae (Coleoptera: Chrysomelidae). In association with this, some zoogeographical remarks are also given in the text.

KEY WORDS: Eumolpinae, Chrysomelidae, Fauna, Zoogeography, Turkey.

Works on Turkish leaf beetles began in late 19th century. Especially since the last century, they were increased as chiefly faunistic and taxonomic works. Recently, they continue with an increased speed.

Clearly, there is no any work on zoogeographical regionalisation of Turkish Chrysomeloidea related the whole territories of Turkey or regions of Turkey (see Part I for regions in Turkey) at the present.

As known, a series work was planned that is aim to expose zoogeographical regionalisations of Turkish Chrysomeloidea fauna. Özdikmen & Kaya (2014), Özdikmen & Mercan (2014), Özdikmen & Cihan (2014) and Özdikmen & Özbek (2014) are the previous works for this aim. The present study is attempted as the fifth step of this aim.

ARRANGEMENT OF INFORMATION

Information in the present text is given in the following order:

The subfamily, genus, species and subspecies names are given simply.

For each genus, species and subspecies are presented with the author name and date of description.

The data, **Range, Records in Turkey, Remarks** and **Chorotype** under the title for each taxon is given.

Range. In these parts, the whole distribution areas in world are provided for each taxon as in Löbl & Smetana (2010) (see the cited reference for the abbreviations).

Records in Turkey. In these parts, the whole distribution areas in Turkey are provided for each taxon as in Ekiz et al. (2013) (see the cited reference for the abbreviations).

Remarks. In these parts, regional and general distribution in Turkey are given chiefly.

Chorotype. The present zoogeographical characterization.

The present zoogeographical characterization is based on the chorotype classification of Anatolian fauna, recently proposed by Vigna Taglianti et al. (1999). In the text, as far as possible one chorotype description can be identified for each taxon. But this kind of description can not be possible for some taxa, so two or more chorotypes are used for them.

With this purpose, Löbl & Smetana (2010) for the range in the world, Ekiz et al. (2013) for the provincial distribution in Turkey and Özdikmen et al. (2014) for the fauna of Turkey are used chiefly.

According to Özdikmen et al. (2014), Turkish Eumolpinae comprises of 23 species group taxa (20 species + 3 subspecies) of 11 genera.

Subfamily EUMOLPINAЕ

Genus *Bedelia* Lefèvre, 1875

B. insignis Lefèvre, 1875

Range: E: AB AR GG ST **A:** AF IN KI KZ TD TM TR UZ **Records in Turkey:** TR-A: DEN, ERZ **Remarks:** The species has been recorded only from 2 Turkish regions as Aegean Region and Eastern Anatolian Region until now. **Chorotype:** Centralasiatic-European or Centralasiatic + SW-Asiatic

Genus *Bromius* Chevrolat, 1836

B. obscurus (Linnaeus, 1758)

Range: E: AB AU BE BH BU BY CR CT CZ DE EN FI FR GE HU IT KZ LA LS LT MC MD NR NT PL RO SK SL SP ST SV SZ TR UK YU **A:** ES FE GAN GUI HEB HEI HUN JA JIA KI KZ MO NC SC SCH SHX UZ WS XIN XIZ **NAR Records in Turkey:** TR-A: OSM – TR-E **Remarks:** The species has been recorded only from 2 Turkish regions as Marmara Region and Mediterranean Region until now. **Chorotype:** Holarctic

Genus *Colaspinella* Weise, 1893

C. grandis (Frivaldszky, 1880)

Range: A: TR **Records in Turkey:** TR-A: ADA, ANT, BRS, IST, KON – TR-E: IST **Remarks:** The endemic species has been recorded only from 3 Turkish regions as Central Anatolian Region, Marmara Region and Mediterranean Region until now. **Chorotype:** Anatolian

Genus *Chloropterus* Morawitz, 1861

C. versicolor (Morawitz, 1860)

Range: E: AB ST UK **A:** KZ TM **Records in Turkey:** TR-A: AYD, IZM (Aslan et al., 2013) **Remarks:** The species has been recorded only from Aegean Region in Turkey until now. **Chorotype:** Turano-Mediterranean (Turano-Anatolian)

Genus *Chrysochares* Morawitz, 1861

C. asiaticus (Pallas, 1771)

Range: E: AB ST **A:** KZ MG TD TM UZ XIN **Records in Turkey:** TR-A: KRS **Remarks:** The species has been recorded only from Eastern Anatolian Region until now. **Chorotype:** Centralasiatic-European or Centralasiatic + SW-Asiatic (Anatolo-Caucasian)

Genus *Crysochus* Chevrolat, 1836

C. asclepiadeus (Pallas, 1773)

C. a. asiaeminoris DeMonte, 1848

Range: A: TR **Records in Turkey:** TR-A: DEN **Remarks:** The endemic subspecies has been recorded only from Aegean Region in Turkey until now. **Chorotype:** Anatolian

Genus *Damasus* Chapuis, 1874

D. albicans Chapuis, 1874

Range: A: SY TR **Records in Turkey:** TR-A: DIY **Remarks:** The species has been recorded only from South-Eastern Anatolian Region in Turkey until now. **Chorotype:** SW-Asiatic (Syro-Anatolian)

Genus *Floricola* Gistel, 1848

F. ulema (Germar, 1813)

Range: E: BU CR GR HU MC RO TR **Records in Turkey:** TR-A **Remarks:** Provincial distribution of the species is unknown. **Chorotype:** Turano-Mediterranean (Balkano-Anatolian)

Genus *Macrocoma* Chapuis, 1874***M. brunnipes* (Olivier, 1808)*****M. b. obscuricolor* (Pic, 1905)**

Range: A: TR **Records in Turkey:** TR-A: ADA **Remarks:** The endemic subspecies has been recorded only from Mediterranean Region in Turkey until now. **Chorotype:** Anatolian

***M. delagrangei* (Pic, 1898)**

Range: A: SY TR **Records in Turkey:** TR-A: DIY, ISP, MER **Remarks:** The species has been recorded only from 2 Turkish regions as Mediterranean Region and South-Eastern Anatolian Region until now. **Chorotype:** SW-Asiatic (Syro-Anatolian)

***M. doboszi* Borowiec, 2005**

Range: A: TR **Records in Turkey:** TR-A: MAR – TR-E: KRK **Remarks:** The endemic species has been recorded only from 2 Turkish regions as Marmara Region and South-Eastern Anatolian Region until now. **Chorotype:** Anatolian

***M. fortidens* (Berti & Rapilly, 1973)**

Range: A: TR **Records in Turkey:** TR-A: DIY, HAT, VAN **Remarks:** The endemic species has been recorded only from 3 Turkish regions as Eastern Anatolian Region, Mediterranean Region and South-Eastern Anatolian Region until now. **Chorotype:** Anatolian

***M. korbi* (Pic, 1901)**

Range: A: TR **Records in Turkey:** TR-A: KON, MER, NIG **Remarks:** The endemic species has been recorded only from 2 Turkish regions as Central Anatolian Region and Mediterranean Region until now. **Chorotype:** Anatolian

M. rubripes* (Schaufuss, 1862)**M. r. rubripes* (Schaufuss, 1862)**

Range: E: AB AR BU GR RO TR **A:** CY IN SY TR **Records in Turkey:** TR-A: ADA, ANK, ANT, CNK, EZU, GAZ, ISP, IZM, KAY, KON, MER, NIG **Remarks:** The subspecies is probably rather widely distributed in Turkey. It has been recorded from 5 Turkish regions. But it has not been recorded only from Black Sea Region and Marmara Region until now. **Chorotype:** Turano-Mediterranean (Turano-Balkan)

***M. substriata* Weise, 1904**

Range: A: IN TR **Records in Turkey:** TR-A: DIY **Remarks:** The species has been recorded only from South-Eastern Anatolian Region in Turkey until now. **Chorotype:** SW-Asiatic (Irano-Anatolian)

Genus *Malegia* Lefèvre, 1883***M. colchica* Reitter, 1912**

Range: E: AB AR TR **Records in Turkey:** TR-A **Remarks:** Provincial distribution of the species is unknown. **Chorotype:** SW-Asiatic (Anatolo-Caucasian)

Genus *Pachnephorus* Chevrolat, 1836**Subgenus *Pachnephorus* Chevrolat, 1836*****P. bistriatus* Mulsant & Wachanru, 1852**

Range: E: FR IT MA **N:** AG MO **A:** TR **ORR Records in Turkey:** TR-A **Remarks:** Provincial distribution of the species is unknown. **Chorotype:** Mediterranean + Oriental

***P. canus* Weise, 1882**

Range: E: AL BU GR IT ST TR UK **A:** TM TR **Records in Turkey:** TR-A: IST, IZM – TR-E: IST **Remarks:** The species has been recorded only from 2 Turkish regions as Aegean Region and Marmara Region until now. **Chorotype:** Turano-European (Turano-Apeninian)

***P. cylindricus* Lucas, 1849**

Range: E: FR GR SP N: AG MO **Records in Turkey:** TR-A: ADA **Remarks:** The species has been recorded only from Mediterranean Region in Turkey until now. **Chorotype:** Mediterranean

***P. pilosus* (Rossi, 1790)**

Range: E: AB AL AU BE BH BU BY CR CT CZ EN FI FR GE HU LA LS LT LU NT PL RO SK SP ST SZ TR UK YU **A:** ES TR WS **Records in Turkey:** TR-A **Remarks:** Provincial distribution of the species is unknown. **Chorotype:** Sibero-European

***P. robustus* Desbrochers, 1870**

Range: E: ST UK **A:** TR **Records in Turkey:** TR-A: ANK **Remarks:** The species has been recorded only from Central Anatolian Region in Turkey until now. **Chorotype:** E-European

***P. tessellatus* (Duftschmid, 1825)**

Range: E: AB AL AR AU BE BH BU BY CR CT CZ EN FR GE GR HU IT LA LS LT PL RO SK SP ST SZ TR UK YU **N:** CI **A:** AF ES FE KI KZ MO NE NO NW TD TM UZ WS **NAR** **Records in Turkey:** TR-A **Remarks:** Provincial distribution of the species is unknown. **Chorotype:** Holarctic

***P. villosus* (Duftschmid, 1825)**

Range: E: AB AL AU BH BU CR CZ GR HU IT RO SK ST TR UK YU **A:** TR **Records in Turkey:** TR-A: ADA, ANK, ANT, BAL, BRS, CAN, HAT, ISP, KON, MER, OSM, SAK, SAM, SIN **Remarks:** The species has been recorded only from 4 Turkish regions. But it has not been recorded from Aegean Region, Eastern Anatolian Region and South-Eastern Anatolian Region until now. **Chorotype:** C and E-European

ZOOGEOGRAPHICAL ANALYSIS

Turkish Eumolpinae includes 23 species group taxa (20 species and 3 subspecies) of 11 genera. 6 species, namely 26.09 % of the species have "Anatolian" chorotype. 4 species, namely 17.39 % of the species have "SW-Asiatic" chorotype. 3 species, namely 13.04 % of the species have "Turano-Mediterranean" chorotype. 2 species, namely 8.70 % of the species have "Centralasiatic-European or Centralasiatic + SW-Asiatic" chorotype. 2 species, namely 8.70 % of the species have "Holarctic" chorotype. Each of the remaining 6 species group taxa has a different chorotype. One species, namely about 4.35 % of the taxa has "C and E-European" chorotype. One species, namely about 4.35 % of the taxa has "E-European" chorotype. One species, namely about 4.35 % of the taxa has "Mediterranean" chorotype. One species, namely about 4.35 % of the taxa has "Mediterranean + Oriental" chorotype. One species, namely about 4.35 % of the taxa has "Sibero-European" chorotype. One species, namely about 4.35 % of the taxa has "Turano-European" chorotype (Fig. 1). So the dominant chorotype for Turkish Eumolpinae is "Anatolian". "SW-Asiatic" chorotype follows it. Also the members of "Turano-Mediterranean" chorotype presents an important contribution for Turkish fauna.

For zoogeographical evaluation, the all known species group taxa of Turkish Eumolpinae are presented as follows:

A total of 6 species have "Anatolian" chorotype as *C. grandis*, *C. a. asiaeminoris*, *M. b. obscuricolor*, *M. doboszi*, *M. fortidens* and *M. korbi*.

A total of 4 species have "SW-Asiatic" chorotype as *D. albicans*, *M. delagrangei*, *M. substriata* and *M. colchica*.

A total of 3 species have "Turano-Mediterranean" chorotype as *C. versicolor*, *F. ulema* and *M. r. rubripes*.

A total of 2 species have “Centralasiatic-European or Centralasiatic + SW-Asiatic” chorotype as *B. insignis* and *C. asiaticus*.

A total of 2 species have “Holarctic” chorotype as *B. obscurus* and *P. tessellatus*.

One species as *P. villosus* has “C and E-European” chorotype.

One species as *P. robustus* has “E-European” chorotype.

One species as *P. cylindricus* has “Mediterranean” chorotype.

One species as *P. bistriatus* has “Mediterranean + Oriental” chorotype.

One species as *P. pilosus* has “Sibero-European” chorotype.

One species as *P. canus* has “Turano-European” chorotype.

On the other side, Turkish Eumolpinae includes a total of 23 species group taxa. However, provincial distributions of 5 species group taxa are unknown. So Turkish Eumolpinae have 2 different evaluations necessarily. But, results of both assessments are the same except the occurrence ratio (Table 1).

For the subfamily Eumolpinae (according to all species group taxa):

4 species are represented in Marmara Region (17 %)

6 species are represented in Aegean Region (26 %)

8 species are represented in Mediterranean Region (35 %)

4 species are represented in Central Anatolian Region (17 %)

0 species are represented in Black Sea Region (0 %)

4 species are represented in Eastern Anatolian Region (17 %)

7 species are represented in South-Eastern Anatolian Region (30 %)

For the subfamily Eumolpinae (according to known provincial distribution of 18 species group taxa):

4 species are represented in Marmara Region (22 %)

6 species are represented in Aegean Region (33 %)

8 species are represented in Mediterranean Region (44 %)

4 species are represented in Central Anatolian Region (22 %)

0 species are represented in Black Sea Region (0 %)

4 species are represented in Eastern Anatolian Region (22 %)

7 species are represented in South-Eastern Anatolian Region (39 %)

So Turkish Eumolpinae that includes a total of 23 species group taxa or 18 species group taxa of which are known provincial distributions in Turkey, are rather widely distributed in all Turkish Regions except Black Sea Region. The most number of species is represented in Mediterranean Region. South-Eastern Anatolian Region and Aegean Region follow it respectively. Central Anatolian Region, Marmara Region and Eastern Anatolian Region are represented with an important number of species. However, Black Sea Region has not been included any recorded species until now. Because, probably the region has been unworked for Eumolpinae.

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Table 1. The regional distribution of all known species of Eumolpinae in Turkey.

TAXON	R	E	G	I	O	N	S
	MAR	AER	MER	CAR	BSR	EAR	SEAR
Subfamily EUMOLPINAE							
<i>B. insignis</i>	-	+	-	-	-	+	-
<i>B. obscurus</i>	+	-	+	-	-	-	-
<i>C. grandis</i>	+	-	+	+	-	-	-
<i>C. versicolor</i>	-	+	-	-	-	-	-
<i>C. asiaticus</i>	-	-	-	-	-	+	-
<i>C. a. asiaeminoris</i>	-	+	-	-	-	-	-
<i>D. albicans</i>	-	-	-	-	-	-	+
<i>F. ulema</i>	?	?	?	?	?	?	?
<i>M. b. obscuricolor</i>	-	-	+	-	-	-	-
<i>M. delagrangi</i>	-	-	+	-	-	-	+
<i>M. doboszi</i>	+	-	-	-	-	-	+
<i>M. fortidens</i>	-	-	+	-	-	+	+
<i>M. korbi</i>	-	-	+	+	-	-	-
<i>M. r. rubripes</i>	-	+	+	+	-	+	+
<i>M. substriata</i>	-	-	-	-	-	-	+
<i>M. colchica</i>	?	?	?	?	?	?	?
<i>P. bistratus</i>	?	?	?	?	?	?	?
<i>P. canus</i>	+	+	-	-	-	-	-
<i>P. cylindricus</i>	-	-	+	-	-	-	-
<i>P. pilosus</i>	?	?	?	?	?	?	?
<i>P. robustus</i>	-	-	-	+	-	-	-
<i>P. tessellatus</i>	?	?	?	?	?	?	?
<i>P. villosus</i>	-	+	-	-	-	+	+

Abbreviations: MAR: Marmara Region, AER: Aegean Region, MER: Mediterranean Region, CAR: Central Anatolian Region, BSR: Black Sea Region, EAR: Eastern Anatolian Region, SEAR: South-Eastern Anatolian Region.

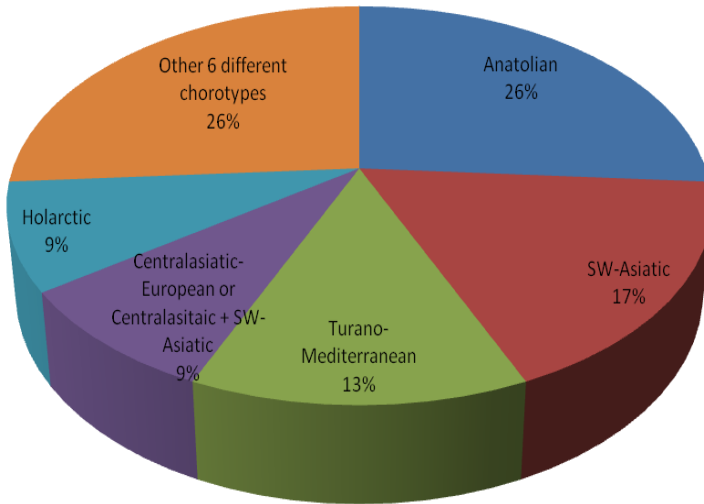


Figure 1. Chorotypical distribution of Turkish Eumolpinae.