

**FAUNISTIC STUDIES ON CETONIINAE, DYNASTINAE,
MELOLONTHINAE, RUTELINAE (COLEOPTERA:
SCARABAEIDAE) GEOTRUPINAE (GEOTRUPIDAE)
OF KÜTAHYA PROVINCE, TURKEY.**

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ABSTRACT: This study was done in the city of Kütahya between 2003 and 2004. *Cetonia aurata*, *Oxythyrea cinctella*, *Oxythyrea Funesta*, *Potasia cuprea*, *Tropinota hirta*, *Pentodon bidens*, *Pentodon idiota*, *Polyphylla fullo*, *Blitopertha nigripennis*, *Geotrupes spiniger*, *Geotrupes stercorarius* were found. Their chorotypes, distributions in Kütahya, Turkey and world are given. *Cetonia aurata*, *Oxythyrea Funesta*, *Potasia cuprea*, *Pentodon bidens*, *Pentodon idiota*, *Polyphylla fullo*, *Blitopertha nigripennis*, *Geotrupes stercorarius* were found first time in Kütahya. *Pentodon bidens*, *Geotrupes spiniger*, and *Blitopertha nigripennis* were found first time in aegean region.

KEY WORDS: Cetoniinae, Chorotype, Coleoptera, Dynastinae, Geotrupinae, Kütahya, Melolonthinae, Rutelinae, Scarabaeidae, Turkey, World.

Turkey, at the centre of Asia, Europe and Africa continents, is located between 26° and 45° east meridians according to Greenwich, between 36° and 42° North paralel according to Ecvator. Some parts of the country belongs to Asia continent (Anadolu Peninsula), and the other belongs to Europe continent (Trakya Region). Also the country is related to Africa continent. According to these features, Turkey has three different bio-geographical regions, namely Europe-Siberian, Mediterranean and Iran-Turan. So, the country is a small continent according to its biodiversity (Lodos, 1995).

There are different migration pathways in Turkey. Some of them passes over Kütahya. This feature is another important subject on biodiversity.

Scarabaeidae is one of the biggest family in Coleoptera order. There have been different studies on Cetoniinae, Dynastinae, Melolonthinae Rutelinae, Geotrupinae subfamily in Turkey. Some of them were Tuatay et al., (1967, 1972), Lodos et al. (1978, 1999), Keith (1998a, 1998b, 1999, 2000a, 2000b, 2001), Rey (1999).

The aim of this study is to determine Cetoniinae, Dynastinae, Melolonthinae Rutelinae, Geotrupinae and the distributions of its members in Kütahya and its surroundings.

MATERIAL AND METHODS

This study was carried out between 2003 and 2004 in Kütahya and its surroundings. The samples were collected by hand and forceps. Then, they were killed by ethyl acetat. Some features of the identified species such as distribution,

synonyms were given according to Lobl Lobl and Smetana (2006) and Lodos et al. (1978, 1999).

The samples were identified according to Schaufuss, (1916), Paulian et al., (1959), Balthasar, (1963), by using Olympus SZX9 and then they were checked in Prof. Dr. Niyazi LODOS Musium in Ege University Campus.

RESULTS

Family SCARABAEIDAE Latreille, 1802

Subfamily Cetoniinae Leach, 1815

Cetonia aurata Linnaeus, 1761

Material examined: Bölcek köyü, 25.07.2003, Şenyüz Y. leg. and det., 2 ex.; Dereyalak köyü, 16.08.2003, Şenyüz Y. leg. and det., 1 ex.

Distribution in Turkey: Adana, Bartın, Bolu, Gaziantep, Karaman, Muğla, Sinop (Zümreoğlu-Gül, 1972, Lodos et al., 1999).

Distribution in the world: **Europe:** Albania, Austria, Belarus, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Netherlands, Norway, Poland, Romania, Russia: Central European Territory, Russia: North European Territory, Russia: South European Territory, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, Yugoslavia. **Asia:** Iran, Kazakhstan, Kyrgyzstan, Mongolia, Russia: East Siberia, Russia: West Siberia, Turkey, Uzbekistan, Xinjiang. (Lobl & Smetana 2006).

Chorotype: Asiatic - European. (Carpaneto et al. 2000).

Oxythyrea cinctella Schaum, 1841

Material examined: Bölcek köyü, 25.07.2003, Şenyüz Y. leg. and det., 2 ex.; Dumlupınar Köyü, 26.07.2003, Şenyüz Y. leg. and det., 2 ex.; Domaniç Orman işletmesi mevkii, 31.07.2003, Şenyüz Y. leg. and det., 1 ex.; Porsuk barajı, 05.08.2003, Şenyüz Y. leg. and det., 1 ex.; Erdoğan Köyü, 30.07.2003, Şenyüz Y. leg. and det., 3 ex.; Beyköy, 31.07.2003, Şenyüz Y. leg. and det. 1 ex.; Kozcağz köyü, 31.07.2003, Şenyüz Y. leg. and det., 1 ex.

Distribution in Turkey: Adana, Afyon, Ankara, Antalya, Aydın, Balıkesir, Bartın, Bilecik, Burdur, Bursa, Çanakkale, Çankırı, Çorum, Denizli, Gaziantep, Hatay, Isparta, İçel, İzmir, Kahramanmaraş, Karabük, Karaman, Kastamonu, Kayseri, Kırıkkale, Kırklareli, Kırşehir, Kilis, Konya, Kütahya, Manisa, Muğla, Nevşehir, Niğde, Osmaniye, Sakarya, Tekirdağ, Uşak (Lodos et al., 1978, Lodos et al., 1999).

Distribution in the World: **Europe:** Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece. Macedonia, Russia: South European Territory, Turkey, Yugoslavia. **Asia:** Afghanistan, Iran, Iraq, Israel, Jordan, Kazakhstan, Kyrgyzstan, Lebanon, Pakistan, Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan, Xinjiang. (Lobl & Smetana 2006).

Chorotype: Turano-Mediterranean. (Carpaneto et al. 2000).

Oxythyrea funesta Poda, 1761

Material examined: Bölcek köyü, 25.07.2003, Şenyüz Y. leg. and det., 6 ex.; Dereyalak köyü, 16.08.2003, Şenyüz Y. leg. and det., 1 ex.; Dumlupınar Köyü, 26.07.2003, Şenyüz Y. leg. and det., 3 ex.; Domaniç Orman işletmesi mevkii, 31.07.2003, Şenyüz Y. leg. and det., 9 ex.; Kozcağz Köyü, 31.07.2003, Şenyüz Y. leg. and det., 1 ex.

Distribution in Turkey: Antalya, Bolu, Bursa, Çanakkale, İzmir, Muğla, Tekirdağ (Lodos et al., 1978, Lodos et al., 1999).

Distribution in the World: **Europe:** Albania, Andora, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, France, Georgia, Germany, Greece, Hungary, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Moldavia, Netherlands, Poland, Portugal, Romania, Russia: Central European Territory, Russia: North European Territory, Russia: South European Territory, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine, Yugoslavia. **North Africa:** Algeria, Canary Islands, Libya, Morocco, Tunisia. (Lobl & Smetana 2006).

Chorotype: Europeo - Mediterranean. (Carpaneto et al. 2000).

Potasía cuprea Fabricius, 1775

Material examined: Bölcek Köyü, 25.07.2003, Şenyüz Y. leg. and det., 6ex.; Domaniç Orman işletmesi mevkii, 31.07.2003, Şenyüz Y. leg. and det., 5 ex.

Distribution in Turkey: Adana, Ankara, Antalya, Bolu, Gaziantep, Hatay, İçel, Kahramanmaraş, Karabük, Karaman, Kastamonu, Kayseri, Konya, Niğde, Osmaniye (Lodos et al., 1999).

Distribution in the World: Europe: France, Italy, Switzerland. (Lobl & Smetana 2006).

Chorotype: Centralasiatic-European-Mediterranean. (Carpaneto et al. 2000).

***Tropinota hirta* Poda, 1761**

Material examined: Büyük saka köyü, 10.04.2004, Şenyüz Y. leg. and det. 6 ex.

Distribution in Turkey: Adana, Afyon, Ankara, Antalya, Aydın, Balıkesir, Bilecik, Burdur, Bursa, Bolu, Çanakkale, Çankırı, Çorum, Denizli, Edirne, Gaziantep, Hatay, Isparta, İçel, İzmir, Kahramanmaraş, Karabük, Karaman, Kastamonu, Kayseri, Kırıkkale, Kırklareli, Kırşehir, Kilis, Konya, Kütahya, Manisa, Muğla, Niğde, Osmaniye, Sakarya, Tekirdağ, Uşak (Lodos et al., 1978, Lodos et al., 1999).

Distribution in the World: Europe: Albania, Andora, Austria, Belarus, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, France, Georgia, Germany, Greece, Hungary, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Poland, Portugal, Romania, Russia: Central European Territory, Russia: North European Territory, Russia: South European Territory, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine, Yugoslavia. **North Africa:** Morocco. **Asia:** Kazakhstan, Turkey. (Lobl & Smetana 2006).

Chorotype: Europeo-Mediterranean. (Carpaneto et al. 2000).

Subfamily Dynastinae MacLeay, 1840

***Pentodon bidens* Pallas, 1771**

Material examined: Akköprü köyü, 06.06.2004, Şenyüz Y. leg. and det. 1 ex.

Distribution in Turkey: Antalya, Karaman, Konya (Lodos et al., 1999).

Distribution in the World: Europe: Azerbaijan, Ukraine. **Asia:** Afghanistan, India: Kashmir, Kazakhstan, Kyrgyzstan, Russia: West Siberia, Tajikistan, Turkmenistan, Uzbekistan, Xinjiang. (Lobl & Smetana 2006).

Chorotype: Turano-European-Mediterranean. (Carpaneto et al. 2000).

***Pentodon idiota* Herbst, 1789**

Material examined: Akköprü köyü, 06.06.2004, Şenyüz Y. leg. and det., 1 ex.; Dumlupınar köyü, 05.07.2004, Şenyüz Y. leg. and det., 1 ex.

Distribution in Turkey: Adana, Ankara, İzmir, Kırşehir, Konya, Muğla (Zümreoğlu-Gül, 1972, Lodos et al., 1999).

Distribution in the World: Europe: Albania, Armenia, Austria, Azerbaijan, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Greece, Hungary, Macedonia, Russia, Russia: Central European Territory, Russia: South European Territory, Slovakia, Turkey, Ukraine, Yugoslavia. **Asia:** Cyprus, Iran, Iraq, Israel, Lebanon, Turkey, Xinjiang. (Lobl & Smetana 2006).

Chorotype: South European. (Carpaneto et al. 2000).

Subfamily Melolonthinae Samouelle, 1819

***Polyphylla fullo* Linnaeus, 1758**

Material examined: Dumlupınar köyü, 26.07.2003, Şenyüz Y. leg. and det.

Distribution in Turkey: Adana, Balıkesir, Bartın, Çankırı, İzmir, Kayseri, Kırklareli, Muğla, Tekirdağ, Zonguldak (Zümreoğlu-Gül, 1972, Lodos et al., 1978, Lodos et al., 1999).

Distribution in the World: Europe: Albania, Armenia, Austria, Belarus, Belgium, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, France, Georgia, Germany, Great Britain, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Macedonia, Netherlands, Poland, Romania, Russia: Central European Territory, Russia: South European Territory, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, Yugoslavia. (Lobl & Smetana 2006).

Chorotype: Sibero-European. (Carpaneto et al. 2000).

Subfamily Rutelinae MacLeay, 1819

***Blitopertha nigripennis* Reitter, 1888**

Material examined: Arslanlı köyü, 30.05.2004, Şenyüz Y. leg. and det., 4 ex.

Distribution in Turkey: Adana, Antalya, Gaziantep, Hatay, İçel, Kahramanmaraş, Kastamonu, Kayseri, Osmaniye, Sinop (Lodos et al., 1999).

Distribution in the World: Europe: Armenia, Azerbaijan, Georgia, Russia: South European Territory. **Asia:** Cyprus, Iran, Israel, Jordan, Lebanon, Syria, Turkey, Turkmenistan. (Lobl & Smetana 2006).

Chorotype: SW-Asiatic

Family GEOTRUPIDAE Latreille, 1802

Subfamily Geotrupinae Latreille, 1802

***Geotrupes spiniger* Marsham, 1802**

Material examined: Karaağaç köyü, 25.09.2003, Şenyüz Y. leg. and det., 14 ex.; Organize sanayi önü, 26.09.2003, Şenyüz Y. leg. and det., 1 ex.

Distribution in Turkey: Antalya, Kahramanmaraş (Lodos et al., 1999).

Distribution in the World: Europe: Albania, Armenia, Austria, Belgium, Bosnia Herzegovina, Bulgaria, Belarus, Croatia, Russia: Central European Territory, Czech Republic, Denmark, Estonia, France, Great Britain, Germany, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Netherlands, Norway, Romania, Russia, Slovakia, Slovenia, Spain, Russia: South European Territory, Sweden, Switzerland, Ukraine, Yugoslavia. **Asia:** Iran, Turkmenistan, Turkey. **Australian Region.** (Lobl & Smetana 2006).

Chorotype: Turano – European. (Carpaneto et al. 2000).

***Geotrupes stercorarius* Linnaeus, 1758**

Material examined: Organize sanayi önü, 26.09.2003, Şenyüz Y. leg. and det., 1 ex..

Distribution in Turkey: Muğla (Zümreoğlu-Gül, 1972).

Distribution in the World: Europe: Andora, Austria, Belarus, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Moldavia, Netherlands, Norway, Poland, Portugal, Romania, Russia: Central European Territory, Russia: North European Territory, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine. **Nearctic Region.** (Lobl & Smetana 2006).

Chorotype: Asiatic-European. (Carpaneto et al. 2000).

CONCLUSIONS

Pentodon bidens, *Geotrupes spiniger*, and *Blitopertha nigripennis* were found first time in aegean region.

Cetonia aurata, *Oxythyrea Funesta*, *Potasia cuprea*, *Pentodon bidens*, *Pentodon idiota*, *Polyphylla fullo*, *Blitopertha nigripennis*, *Geotrupes stercorarius* were found first time in Kütahya.

In Table I, percentage and number of species of chorological categories are given. Table II displays the values of results appeared from grouping this categories into main chorotypes. From the listed data, the numeric predominance of widely distributed Holarctic species (90.91%). The European taxa is represented in 9.09% of the total number.

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LITERATURE CITED

Balthasar, V. 1963. Monographie Der Scarabaeidae Und Aphodiidae Der Palaearktischen Und Orientalischen Region Band 1. 2. 3. Verlag Der Tscherhoslowakischen Akademie Der Wissenschaften Prag.

Carpaneto, G. M. 1976. Reperti Di Coleotteri Scarabaeoidea Laparosticti Del Vicino Oriente E Delle Isole Greche. Edito Dall'istituto Nazionale Di Entomologia-Roma

Carpaneto, G. M., Piattella, E. & Pittino, R. 2000. The Scarab Beetles Of Turkey: An Updated Checklist And Chorotype Analysis (Coleoptera, Scarabaeoidea). *Biogeographia*, 21: 217-240.

Keith, D. 1998a. Deux Maladera (Aserica) nouvelles d'*Anatolie* (Coleoptera, Melolonthidae). Bulletin mensuel de la Société Linnéenne de Lyon 67 (10): 287-290.

Keith, D. 1998b. Redécouverte de *Chaetopteroplita segetum* cordofana et description de la femelle (Scarabaeoidea: Rutelidae, Anomalinae, Anisopliini). *Lambillionea* XCVIII (3) : 361-364.

Keith, D. 1999. Remarques biogéographiques sur quelques Scarabaeoidea du Bassin Méditerranéen oriental. - *Lambillionea* XCIX (3): 469-471.

Keith, D. 2000a. Contribution à la connaissance des Scarabaeoidea du Moyen Orient: taxons nouveaux ou peu connus (Coleoptera). *Lambillionea*, C (3): 380 - 387.

Keith, D. 2000b. Contribution à la connaissance des Scarabaeoidea du Moyen Orient (2ème note): taxons nouveaux et méconnus. *Lambillionea* C (4): 564 - 571.

Keith, D. 2001. Contribution à la connaissance des Scarabaeoidea du Moyen-Orient (3ème note): sur le genre Triodontella Reitter, 1919 (Col. Melolonthidae). *Lambillionea* CI [1 (II)]: 153-160.

Lobl, I. & Smetana, A. 2006. Catalogue of Palaearctic Coleoptera: Vol. 3: Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea and Byrrhoidea. Apollo Books. Stenstrup.

Lodos, N. 1995. Türkiye Entomolojisi IV, İzmir: E.U" Ziraat Fakültesi, 250 s.

Lodos, N., Önder, F., Pehlivan, E., Atalay, R., Erkin, E., Karsavuran, Y., Tezcan, S. & Aksoy, S. 1999. Faunistic Studies on Scarabaeoidea (Coleoptera) of Western Black Sea, Central Anatolia and Mediterranean Regions of Turkey. İzmir.

Lodos, N., Önder, F., Pehlivan, E. & Atalay, R. 1978. Ege ve Marmara Bölgesinin Zararlı Böcek Faunasının Tespiti Üzerine Çalışmalar. Ankara.

Paulian, R. 1959. Faune De France Editions Paul Lechevalier, 12, Rue De Tournon, Paris.

Pehlivan, E. 1988. Türkiye Scarabaeidae (Coleoptera) Familyası Üzerinde Taksonomik Çalışmalar. I Scarabaeus L, Gymnopleurus III., Sisyphus Latr. Türkiye Entomoloji Dergisi.

Pehlivan, E. 1989. Türkiye Scarabaeidae (Coleoptera) Familyası Üzerinde Taksonomik Çalışmalar. II. Onthophagus Latr. Türkiye Entomoloji Dergisi.

Rey, A. 1999. Una nuova specie di Triodonta della Turchia sud-occidentale (Coleoptera, Melolonthidae). *Boll. Soc. entomol. ital.*, Genova 131(2): 121-124.

Schaufuss, C. 1916. Calwer's Käferbuch Band I-II 6. aufl E.Schweizerbart'sche Verlagsbuchhandlung – Stuttgart

Taglianti, A. V., Audisio, P. A., Biondi, M., Bologna, M. A., Carpaneto, G. M., Biase, A. D., Fattorini, S., Piattella, E., Sindaco, R., Venchi, A. & Zapparoli, M. 1999. A Proposal For A Chorotype Classification Of The Near East fauna, In The Framework Of The Western Palearctic Region. *Biogeographia* – vol. XX: 31–59.

Zümreoğlu, G. S. 1972. Böcek ve Genel Zararlılar Kataloğu. Bölge Zirai Mücadele Araştırma Enstitüsü Bornova.

Table I: Chorological categories with number of species and percentage.

Chorological categories	Number	%
Asiatic – European	2	18.18
Central Asiatic – European	1	9.09
Europeo – Mediterranean	2	18.18
Turano – European	1	9.09
Turano–European-Mediterranean	1	9.09
Turano – Mediterranean	1	9.09
Sibero – European	1	9.09
South European	1	9.09
SW-Asiatic	1	9.09
Total	11	100

Table II: Main chorotypes with number of species and percentage.

Main chorotypes	Number	%
Holarctic	10	90.91
European	1	9.09
Total	11	100