

ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

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ADDITIONS TO SCARABAEOIDEA (COLEOPTERA) FAUNA OF ESKİŞEHİR

ABSTRACT

In this study examples of Glaphyridae and Scarabaeidae were collected. The results of this study a total 34 species were identified. *Eulasia (Rudeulasia) papaveris* (Sturm, 1843), *Eulasia (Vittateulasia) vittata vittata* (Fabricius, 1775), *Gymnopleurus sturmii* MacLeay, 1821, *Cheironitis ungaricus* (Herbst, 1789), *Caccobius histeroides* (Ménétriés, 1832), *Onthophagus (Palaeonthophagus) coenobita* (Herbst, 1783), *Onthophagus (Palaeonthophagus) muelleri* P. Novak, 1921, *Onthophagus (Palaeonthophagus) osellai* Pittino, 1982, *Onthophagus (Palaeonthophagus) ovatus* (Linnaeus, 1767) are recorded for the first time for fauna of Eskişehir. Of all species are given Palaearctic Region and new distributions in Turkey.

Keywords: Coleoptera, Eskişehir, fauna, Scarabaeidae, Scarabaeoidea.

ESKİŞEHİR SCARABAEOIDEA FAUNASINA KATKILAR

ÖZ

Bu çalışmada Glaphyridae and Scarabaeidae örnekleri toplanmıştır. Bu çalışmanın sonucunda toplam 34 tür tespit edilmiştir. *Eulasia (Rudeulasia) papaveris* (Sturm, 1843), *Eulasia (Vittateulasia) vittata vittata* (Fabricius, 1775), *Gymnopleurus sturmii* MacLeay, 1821, *Cheironitis ungaricus* (Herbst, 1789), *Caccobius histeroides* (Ménétriés, 1832), *Onthophagus (Palaeonthophagus) coenobita* (Herbst, 1783), *Onthophagus (Palaeonthophagus) muelleri* P. Novak, 1921, *Onthophagus (Palaeonthophagus) osellai* Pittino, 1982, *Onthophagus (Palaeonthophagus) ovatus* (Linnaeus, 1767) Eskişehir faunası için ilk kez kaydedilmiştir. Tüm türlerin Palearktık Bölge ve Türkiye'deki yeni dağılımları verilmiştir.

Anahtar Kelimeler: Coleoptera, Eskişehir, fauna, Scarabaeidae, Scarabaeoidea.

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1. INTRODUCTION

Coleoptera is the biggest order of Insects with approximately 350,000 species. This number is 40% of all known insect species (Küçükayk, et al. 2013). The order, Coleoptera, is the most diverse on earth (Khanyile et al., 2008). The superfamily Scarabaeoidea include worldwide more than 35.000 species (Anlaş et al., 2011b; Şenyüz et al. 2013). The family Glaphyridae includes five genera and approximately 190 species in the Palaearctic region and one genus with nine species in the Nearctic region (Kesar et al. 2010). The family Scarabaeidae comprises about 91% of all scarabaeoids and includes about 27,800 species worldwide (Şenyüz et al., 2013). Scarabaeoidea ecological niches are based on the use of many different resources, mainly leaves, flowers, fruits, roots, fungi, rotten wood and dung (Carpeneto et al, 2000). Invertebrates usually dominate terrestrial ecosystems and play important functional roles. Because most insects are short-lived, have large populations and are sensitive to fine-scale environmental variation, their abundance responds rapidly to ecological changes, especially to fragmentation (Larsen et al., 2007). These beetles have been widely proposed as an ideal group for biodiversity inventories and monitoring (Libarel et al., 2011). The Scarabaeoidae fauna of Eskişehir have been studied poorly. Some important studies on the Scarabaeoidae of study area have been established by Lodos et al. (1999) and Küçükayk et al., (2013). The main aim of this study is to contribute to the knowledge of the Scarabaeidae Fauna of Eskişehir in Turkey.

2. MATERIAL and METHOD

This study was carried out 2005, 2007, 2008 and 2013 in Eskişehir and its surroundings. The materials were collected by from different localities of Eskişehir in Turkey. Forceps and sweeping nets were used to collect samples. The specimens were killed by killing jar with ethyle acetate and pinned according to taxonomic rules and regulations. The specimens are deposited as dried in the first author's private collection of Biology department at Dumlupınar University. Identification, classification and Distribution of Scarabaeoidae suggested by Balthasar (1963, 1964), Baraud et al., (1990) Dellacasa & Dellacasa (2006), Dellacasa &

Kırgız (2002), Kabakov (2006), Küçükayk et al., (2013), Löbl & Smetana (2006), Lodos et al. (1978), Lodos et al. (1999), Pehlivan (1988, 1989 Rozner & Rozner (2009), Şenyüz & Şahin (2009a, 2009b), Şenyüz (2004, 2009), Tuatay et al. (1972) have been followed in this study.

3. RESULTS

Superfamily **SCARABAEOIDEA**
Latreille, 1802

Family **GLAPHYRIDAE** MacLeay, 1819

Genus *Eulasia* Truqui, 1848

Eulasia (Rudeulasia) papaveris (Sturm, 1843)

Material examined: Sulukaraağaç village, 1137 m., 16.V.2013, 8 exx.

Distribution in Turkey: Adana, Hatay, Mersin, Kahramanmaraş, Karaman, Kastamonu, Kırşehir (Lodos et al., 1999).

Distribution in the World: A: IN, IQ, IS, JO, LE, SY, TR (Löbl and Smetana, 2006).

Eulasia (Trichopleurus) vittata vittata (Fabricius, 1775)

Material examined: Sulukaraağaç village, 1137 m., 16.V.2013, 6 exx.

Distribution in Turkey: Adana, Antalya, Balıkesir, Çanakkale, Denizli, Hatay, Isparta, İzmir, Kahramanmaraş, Kayseri, Manisa, Mersin, Muğla, Nevşehir, Osmaniye, Uşak (Lodos et al., 1999; Rozner and Rozner, 2009; Mitter, 2011).

Distribution in the World: E: BU, GR, TR
A: TR (Löbl and Smetana, 2006).

Family **SCARABAEIDAE** Latreille, 1802

Subfamily **Aphodiinae** Leach, 1815

Aphodius fimetarius (Linnaeus, 1758)

Material examined: Söğütönü, 830 m., 31.III.2013, 4 exx.

Distribution in Turkey: Adana, Afyon, Amasya, Ankara, Antalya, Artvin, Balıkesir, Bartın, Bingöl, Bolu, Burdur, Bursa, Çankırı, Çorum, Denizli, Edirne, Erzurum, Eskişehir, Gaziantep, Giresun, Gümüşhane, Hatay, Isparta, İzmir, Kahramanmaraş, Kastamonu, Kayseri, Kırklareli, Kırşehir, Kütahya, Manisa, Mersin, Niğde, Ordu, Osmaniye, Rize, Samsun, Tekirdağ, Zonguldak (Tuatay et al., 1967, 1972; Lodos et al., 1999; Dellacasa and Kırgız, 2002; Şenyüz, 2004; Bellmann, 2007; Rozner and

Rozner, 2009; Şenyüz, 2009; Şenyüz and Şahin, 2009a; Anlaş et al., 2011b; Şenyüz et al., 2013a, 2013b; Özgen et al., 2014).

Distribution in the World: E: AL, AN, AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IR, IT, KZ, LA, LT, LU, MA, MC, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST, SV, SZ, TR, UK, YU N: AG, EG, LB, MO, MR, TU A: CY, ES, FE, FUJ, IN, IQ, IS, KA, KI, KZ, MG, NP, PA, SY, TD, TM, TR, UZ, WS, XIN, XIZ, AURi, NARi, NTRi, ORR (Löbl and Smetana, 2006).

Acrossus luridus (Fabricius, 1775)

Material examined: Söğütözü, 830 m., 31.III.2013, 47 exx.

Distribution in Turkey: Adana, Adıyaman, Afyon, Ağrı, Ankara, Antalya, Artvin, Bartın, Bitlis, Bolu, Burdur, Bursa, Çorum, Denizli, Diyarbakır, Edirne, Elazığ, Erzurum, Eskişehir, Gaziantep, Gümüşhane, İzmir, Kahramanmaraş, Kars, Kırklareli, Kütahya, Manisa, Mersin, Niğde, Ordu, Osmaniye, Rize, Siirt, Sivas, Tekirdağ (Tuatay et al., 1967, 1972; Lodos et al., 1999; Dellacasa and Kırgız, 2002; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Şenyüz, 2009; Şenyüz and Şahin, 2009a; Anlaş et al., 2011b; Şenyüz et al., 2013a, 2013b; Özgen et al., 2014).

Distribution in the World: E: AL, AR, AU, BE, BH, BU, BY, CR, CT, DE, EN, FI, FR, GB, GE, GG, GR, HU, LR, IT, KZ, LA, LT, MC, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST, SV, SZ, TR, UK, YU N: MO, TU A: CH, CY, ES, FE, IN, IS, KI, KZ, SY, TD, TM, TR, WS (Löbl and Smetana, 2006).

Calamosternus granarius (Linnaeus, 1767)

Material examined: Söğütözü, 830 m., 31.III.2013, 1 ex.

Distribution in Turkey: Adana, Ankara, Antalya, Bartın, Bolu, Burdur, Bursa, Çankırı, Edirne, Eskişehir, Gaziantep, İzmir, Kahramanmaraş, Karaman, Kayseri, Kırklareli, Konya, Kütahya, Mersin, Niğde, Osmaniye, Zonguldak (Tuatay et al., 1967; Lodos et al., 1999; Tezcan and Pehlivan, 2001; Dellacasa and Kırgız, 2002; Şenyüz, 2009; Şenyüz et al., 2013b).

Distribution in the World: E: AL, AR, AU, AZ, BE, BH, BU, CR, CT, DE, EN, FI, FR, GB, GE, GG, GR, HU, IR, IT, KZ, LA, LT,

MA, MC, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST, SV, SZ, TR, UK, YU N: AG, CI, EG, MO, MR, TU A: AF, CY, ES, IN, IS, KI, KZ, LE, SA, SI, SY, TD, TM, TR, WS, COS (Löbl and Smetana, 2006).

Chilothorax distinctus (O. F. Müller, 1776)

Material examined: Alpagut village, 430 m., 16.03.2013, 11 exx. ; Söğütözü, 830 m., 31.III.2013, 3 exx.

Distribution in Turkey: Ağrı, Ankara, Antalya, Antalya, Bartın, Bolu, Denizli, Edirne, Eskişehir, Karaman, Kastamonu, Kırşehir, Konya, Kütahya, Manisa, Mersin, Nevşehir, Niğde (Tuatay et al., 1967, 1972; Lodos et al., 1999; Dellacasa and Kırgız, 2002; Şenyüz, 2004, Bellmann, 2007; Rozner and Rozner, 2009; Şenyüz, 2009; Şenyüz and Şahin, 2009a; Anlaş et al., 2011b).

Distribution in the World: E: AL, AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IT, KZ, LA, LT, MC, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST, SV, SZ, TR, UK, YU N: LB, TU A: ES, KZ, MG, TR, WS, NARi (Löbl and Smetana, 2006).

Aphodius (Colobopterus) erraticus
(Linnaeus, 1758)

Material examined: Atalan village, 924 m., 20.IV.2013, 1 ex.

Distribution in Turkey: Adana, Adıyaman, Afyon, Amasya, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bartın, Bolu, Burdur, Bursa, Çorum, Diyarbakır, Edirne, Erzincan, Erzurum, Eskişehir, Gaziantep, Giresun, Gümüşhane, Hatay, Isparta, İstanbul, İzmir, Kahramanmaraş, Karaman, Kars, Kastamonu, Kayseri, Kırklareli, Kırşehir, Konya, Kütahya, Manisa, Mersin, Muğla, Nevşehir, Niğde, Osmaniye, Ordu, Rize, Sakarya, Samsun, Siirt, Sinop, Sivas, Tekirdağ, Tokat, Trabzon, Zonguldak (Tuatay et al., 1967, 1972; Carpaneto, 1973; Lodos et al., 1999; Dellacasa and Kırgız, 2002; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Şenyüz, 2009; Şenyüz and Şahin, 2009a; Anlaş et al., 2011b; Şenyüz et al., 2013a, 2013b; Özgen et al., 2014).

Distribution in the World: E: AL, AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IR, IT, KZ, LA, LT, MC, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST,

SV, SZ, TR, UK, YU N: AG, MO, TU A: AF, CH, CY, ES, FE, IN, IQ, IS, KI, KZ, LE, MG, PA, SY, TD, TM, TR, UZ, WS, XIZ, NARi, ORR (Löbl and Smetana, 2006).

Coprimorphus scrutator (Herbst, 1789)

Material examined: Atalan village, 924 m., 16.V.2013, 1 ex.

Distribution in Turkey: Edirne, Eskişehir, Giresun, Kırklareli, Kütahya, Rize (Dellacasa and Kırgız, 2002; Şenyüz, 2004; Rozner and Rozner, 2009; Şenyüz, 2009; Şenyüz and Şahin, 2009a; Şenyüz et al., 2013a).

Distribution in the World: E: AR, AU, AZ, BH, BU, CR, CT, CZ, FR, GB, GE, GG, GR, HU, IT, MC, MD, PL, PT, RO, SK, SL, SP, ST, SZ, TR, UK, YU N: CL A: IN, TR (Löbl and Smetana, 2006).

Melinopterus prodromus (Brahm, 1790)

Material examined: Alpagut village, 430 m., 16.III.2013, 1 ♂; 19.III.2013, 1 ♂; Söğütözü, 830 m., 31.III.2013, 10 ♂♂, 7 ♀♀.

Distribution in Turkey: Adana, Ankara, Burdur, Bursa, Çorum, Edirne, Erzurum, Eskişehir, Gaziantep, Giresun, Hatay, Kırklareli, Kırşehir, Kütahya, Mersin, Van (Tuatay et al., 1967, 1972; Lodos et al., 1999; Dellacasa and Kırgız, 2002; Bellmann, 2007; Rozner and Rozner, 2009; Şenyüz, 2009; Şenyüz et al., 2013b).

Distribution in the World: E: AL, AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IR, IT, KZ, LA, LT, LU, MC, NL, NR, NT, PL, PT, RO, SK, SL, ST, SV, SZ, TR, UK, YU N: AG, MO A: CY, ES, IN, IS, KI, KZ, MG, SY, TD, TM, TR, UZ, WS, NARi (Löbl and Smetana, 2006).

Melinopterus pubescens (Sturm, 1800)

Material examined: Söğütözü, 830 m., 31.III.2013, 3 ♂♂, 3 ♀♀.

Distribution in Turkey: Adana, Ankara, Antalya, Bartın, Bolu, Burdur, Eskişehir, Gaziantep, Kahramanmaraş, Kastamonu, Konya, Kütahya (Tuatay et al., 1967, 1972; Lodos et al., 1999; Belmann, 2007; Rozner and Rozner, 2009; Şenyüz, 2009).

Distribution in the World: E: AL, AR, AU, BH, BU, CR, CZ, GE, GR, HU, MC, PL, RO, SK, ST, SZ, UK, YU, N: TU A: IS, TR (Löbl and Smetana, 2006).

Plagiogonus arenarius (Olivier, 1789)

Material examined: Söğütözü, 830 m., 31.III.2013, 1 ex.

Distribution in Turkey: Kütahya (Dindar, 2013) and this species was noted by Carpaneto et al. (2000) without giving a place in Turkey.

Distribution in the World: E: AL, AR, AU, BE, BH, BY, CR, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IT, LA, LT, NL, PL, RO, SK, SL, SP, ST, SV, SZ, UK, YU A: CY, KZ, TM, TR (Löbl and Smetana, 2006).

Trichonotulus scrofa (Fabricius, 1787)

Material examined: Söğütözü, 830 m., 31.III.2013, 1 ex.

Distribution in Turkey: Afyon, Ankara, Bartın, Burdur, Bursa, Edirne, Eskişehir, Giresun, Kırklareli, Kırşehir, Kütahya, Nevşehir, Sakarya (Tuatay et al., 1967, 1972; Lodos et al., 1999; Dellacasa and Kırgız, 2002; Rozner and Rozner, 2009; Şenyüz, 2009; Şenyüz et al., 2013b).

Distribution in the World: E: AR, AU, BE, BH, BU, CR, CT, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IT, LA, LT, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST, SV, SZ, TR, UK, YU N: MO A: AF, IN, KI, KZ, MG, TD, TM, TR, NARi (Löbl and Smetana, 2006).

Subfamily **Scarabaeinae** Latreille, 1802

genus *Copris* Geoffroy, 1762

Copris lunaris (Linnaeus, 1758)

Material examined: Bayramşah Mevkii, 1005 m., 15.IV.2008, 5 ♂ 3 ♀.

Distribution in Turkey: Adana, Afyon, Ankara, Bartın, Bolu, Çorum, Edirne, Erzincan, Eskişehir, Giresun, Gümüşhane, İzmir, Kahramanmaraş, Karaman, Kars, Kastamonu, Kayseri, Kırşehir, Kütahya, Manisa, Mersin, Nevşehir, Ordu, Osmaniye, Samsun, Sivas, Yozgat, Zonguldak (Tuatay et al., 1967, 1972; Lodos et al., 1999; Şenyüz, 2004; Rozner and Rozner, 2009; Anlaş et al., 2011a, 2011b; Şenyüz et al., 2013a; Şenyüz and Şahin, 2013).

Distribution in the World: E: AR, AL, AU, BH, BU, CR, CT, DE, EN, FR, GB, GE, GR, HU, IT, KZ, LA, LT, LU, MC, NL, NR, PL, PT, RO, SK, SP, ST, SV, SZ, TR, UK, YU A: IN, KI, KZ, TD, TR, UZ, XIN, AURi (Löbl and Smetana, 2006).

genus *Gymnopleurus* Illiger, 1803

Gymnopleurus geoffroyi geoffroyi (Fuessly, 1775)

Material examined: Uluçayır Mevkii, 831 m., 10.VII.2007, 2 ♂♂, 1 ♀; Atalan village, 924 m., 16.V.2013, 4 exx. ; Atalan village, 924 m., 20.VI.2013, 15 exx.

Distribution in Turkey: Adana, Adıyaman, Afyon, Amasya, Ankara, Antalya, Balıkesir, Bartın, Bilecik, Bitlis, Bolu, Burdur, Bursa, Çorum Çanakkale, Denizli, Diyarbakır, Edirne, Eskişehir, Gaziantep, Giresun, Hakkari, Hatay, Isparta, İzmir Kahramanmaraş, Karabük, Kastamonu, Kayseri, Kırklareli, Kırşehir, Kocaeli, Kütahya, Manisa, Mersin, Muğla, Osmaniye, Samsun, Siirt, Tekirdağ, Tokat, Uşak, Zonguldak (Tuatay et al., 1967, 1972; Pehlivan, 1988; Lodos et al., 1999; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011b; Şenyüz et al., 2013a, 2013b).

Distribution in the World: E: AL, AR, AU, BH, BU, CR, CZ, FR, GE, GR, HU, IT, MC, MD, PL, SK, RO, ST, SZ, TR, UK, YU N: AG, EG A: CY, IS, KU, SI, TR (Löbl and Smetana, 2006).

Gymnopleurus sturmii MacLeay, 1821

Material examined: Atalan village, 924 m., 16.V.2013, 1 ex. ; 20.VI.2013, 1 ex.

Distribution in Turkey: This species was noted by Carpaneto et al. (2000) without giving a place in Turkey.

Distribution in the World: E: AL, AU, BH, BU, CR, FR, GR, HU, IT, MC, PT, RO, SP, TR, YU N: AG, EG, LB, MO, TU A: IS, JO, SY, TR (Löbl and Smetana, 2006).

genus *Cheironitis* Lansberge, 1875

Cheironitis ungaricus (Herbst, 1789)

Material examined: Atalan village, 924 m., 20.VI.2013, 2 exx.

Distribution in Turkey: Manisa (Anlaş et al., 2011b).

Distribution in the World: E: BH, BU, CR, FR, GR, HU, IT, MC, RO, SP, ST, TR, UK, YU (Löbl and Smetana, 2006).

genus *Caccobius* C. G. Thomson, 1859

Caccobius histeroides (Ménétriés, 1832)

Material examined: İnli Yaylası, 1100 m., 18.VIII.2007, 1 ♂; Atalan village, 924 m., 20.V.2013, 1 ex.

Distribution in Turkey:

Adana, Adıyaman, Ağrı, Ankara, Antalya, Burdur, Bursa, Çankırı, Denizli, Edirne, Gaziantep, Hatay, İzmir, Kahramanmaraş, Kırşehir, Konya, Kütahya, Manisa, Mersin, Nevşehir, Ordu, Tekirdağ, Uşak, Van (Tuatay et al., 1967; Lodos et al., 1999; Tezcan and Pehlivan, 2001; Şenyüz, 2004; Rozner and Rozner, 2009; Anlaş et al., 2011a, 2011b; Şenyüz et al., 2013a; Şenyüz and Şahin, 2013).

Distribution in the World: E: AB, AL, AR, BU, CR, GG, GR, HU, MC, RO, ST, TR, UK (Krym), YU A: CY, IN, IQ, IS, SY, TM, TR (Löbl and Smetana, 2006).

Caccobius schreberi (Linnaeus, 1767)

Material examined: Uluçayır Mevkii, 831 m., 10.VII.2007, 3 ♂♂, 1 ♀; Atalan village, 924 m., 16.V.2013, 1 ex.

Distribution in Turkey:

Adana, Adıyaman, Ağrı, Amasya, Ankara, Antalya, Artvin, Aydın, Bolu, Burdur, Bursa, Çorum, Denizli, Erzincan, Eskişehir, Gaziantep, Giresun, Gümüşhane, Hatay, Isparta, İzmir, Kahramanmaraş, Karaman, Kastamonu, Kayseri, Kırşehir, Konya, Kütahya, Manisa, Mersin, Niğde, Ordu, Osmaniye, Rize, Sakarya, Siirt, Sivas, Tekirdağ, Uşak, Yozgat, Zonguldak (Tuatay et al., 1967, 1972; Lodos et al., 1999; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011b; Şenyüz et al., 2013a, 2013b; Şenyüz and Şahin, 2013).

Distribution in the World: E: AB, AL, AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FR, GE, GG, GR, HU, IT, KZ, LA, LT, MC, PL, PT, RO, SK, SL, SP, SV, ST, SZ, TR, UK, YU N: AG, EG, LB, MO, TU A: AF, IN, IQ, IS, KZ, SY, TR (Löbl and Smetana, 2006).

genus *Euonthophagus* Balthasar, 1959

Euonthophagus amyntas alces (Fabricius, 1792)

Material examined: Bozan village, 813 m., 10.VI.2005, 1 ♂; Atalan village, 924 m., 20.VI.2013, 1 ♂.

Distribution in Turkey:

Adana, Adıyaman, Afyon, Ağrı, Ankara, Antalya, Aydın, Balıkesir, Burdur, Bursa, Çanakkale, Çorum, Denizli, Diyarbakır, Edirne, Eskişehir, Gaziantep, Giresun, Gümüşhane, Hatay, Isparta, İzmir, Kahramanmaraş, Kars, Kastamonu, Kayseri, Kütahya, Manisa, Mersin, Nevşehir,

Niğde, Osmaniye, Rize, Samsun, Siirt, Sivas, Tekirdağ, Uşak, Van (Tuatay et al., 1967, 1972; Pehlivan, 1989; Lodos et al., 1999; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011b; Şenyüz et al., 2013b; Şenyüz and Şahin, 2013).

Distribution in the World: E: AL, AR, AU, BH, BU, CR, GG, GR, HU, KZ, MC, MD, PL, RO, SK, ST, TR, UK, YU A: AF, CY, IN, IS, JO, KI, KZ, SY, TD, TM, TR, UZ, XIN (Löbl and Smetana, 2006).

Euonthophagus gibbosus (Scriba, 1790)

Material examined: Karacaören (Kıyak deposu), 1142 m, 20.V.2005, 1 ♂; 21.V.2007, 2 ♂♂, 2 ♀♀; Belkese, (Güvem), 1243 m, 21.V.2005, 2 ♂♂; Gökçekaya dam, 448 m., 21.V.2007, 1 ♂; Karacaören (Kıyak deposu), 1142 m, 20.V.2005, 1 ♂; Karakütük, 10.VI.2005, 1 ♂; Alpagut village, 430 m., 16.III.2013, 1 ♂.

Distribution in Turkey: Adana, Adıyaman, Ankara, Antalya, Artvin, Burdur, Bursa, Çorum, Erzincan, Eskişehir, Gaziantep, Hatay, Kahramanmaraş, Kastamonu, Kayseri, Kırklareli, Kırşehir, Kütahya, Mersin, Nevşehir, Niğde, Osmaniye, Rize, Siirt, Sivas, Tokat (Tuatay et al., 1967; Pehlivan, 1989; Lodos et al., 1999; Şenyüz, 2004; Rozner and Rozner, 2009; Şenyüz et al., 2013a; Şenyüz and Şahin, 2013).

Distribution in the World: E: AL, AR, BH, BU, FR, GG, GR, IT, MC, RO, PT, SP, SZ, TR, UK, YU "Caucasus" A: AF, CY, ES, IN, IS, KI, KZ, MG, SY, TD, TM, TR, UZ, XIN, XIZ (Löbl and Smetana, 2006).

genus *Onthophagus* Latreille, 1802

Onthophagus (Palaeonthophagus)

coenobita (Herbst, 1783)

Material examined: Atalan village, 924 m., 20.IV.2013, 3 ♂♂, 3 ♀♀.

Distribution in Turkey: Artvin, Bursa, Erzurum, Ordu, Rize (Rozner and Rozner, 2009; Şenyüz et al., 2013a, 2013b).

Distribution in the World: E: AL, AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, FR, GB, GE, GG, GR, HU, IT, MC, LA, LU, LT, NL, PL, PT, RO, SK, SL, SP, SV, SZ, TR, UK, YU, A: IS, TM, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus)

fissicornis Steven, 1809

Material examined: Karacaören (Kıyak deposu), 1142 m., 20.V.2005, 1 ♂; Ağaçhisar-Yalınkaya village, 1563 m., 20.V.2005, 1 ♀; Alpagut village, 430 m., 16.III.2013, 1 ♂; Atalan village, 924 m., 20.IV.2013, 2 ♀♀; Atalan village, 924 m., 16.V.2013, 3 ♀♀.

Distribution in Turkey: Adana, Adıyaman, Afyon, Ankara, Antalya, Artvin, Balıkesir, Burdur, Bursa, Çanakkale, Denizli, Diyarbakır, Edirne, Eskişehir, Gaziantep, Gümüşhane, Hatay, Isparta, İzmir, Kahramanmaraş, Kars, Kastamonu, Kayseri, Kırşehir, Konya, Kütahya, Mersin, Niğde, Osmaniye, Sivas, Tekirdağ, Tokat, Uşak (Tuatay et al., 1967, 1972; Pehlivan, 1989, Lodos et al., 1999; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Şenyüz et al., 2013a, 2013b; Şenyüz and Şahin, 2013).

Distribution in the World: E: AL, AR, BU, CR, GG, GR, MC, RO, ST, TR, UK, YU A: IN, IQ, IS, SY, TM, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus)

fracticornis (Preyssl, 1790)

Material examined: Alpagut village, 430 m., 16.III.2013, 1 ♀; Atalan village, 924 m., 20.IV.2013, 1 ♂.

Distribution in Turkey: Adana, Afyon, Ankara, Antalya, Balıkesir, Burdur, Denizli, Erzincan, Eskişehir, Gaziantep, Hatay, Isparta, Kahramanmaraş, Kars, Kütahya, Manisa, Mersin, Muğla, Ordu, Osmaniye, Rize (Tuatay et al., 1967, 1972; Pehlivan, 1989; Lodos et al., 1999; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011b; Şenyüz et al., 2013a; Şenyüz and Şahin, 2013).

Distribution in the World: E: AL, AR, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FI, FR, GB, GE, GG, GR, HU, IT, LA, LS, LT, LU, MC, NL, NR, NT, PL, PT, RO, SK, SL, SP, ST, SV, SZ, TR, UK, YU A: CY, IN, SY, TR, WS "Palestina" (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus) lemur

(Fabricius, 1781)

Material examined: Alpagut village, 430 m., 16.III.2013, 8 ♂♂, 4 ♀♀.

Distribution in Turkey: Adana, Antalya, Erzincan, Eskişehir, Gaziantep, Giresun, Isparta, İzmir, Kahramanmaraş, Kütahya, Mersin, Muğla, Rize, Sivas (Pehlivan, 1989; Bellmann, 2007; Rozner and Rozner, 2009; Dindar, 2013).

Distribution in the World: E: AL, AR, AU, BE, BH, BU, CR, CZ, FR, GE, GR, HU, IT, LS, LU, MC, PL, PT, RO, SK, SL, SP, ST, SZ, TR, UK, YU A: IN, SY, TM, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus) lucidus
(Sturm, 1800)

Material examined: Alpagut village, 430 m., 16.III.2013, 2 ♂♂ ; Atalan village, 924 m., 20.IV.2013, 1 ♀ ; Söğütönü, 830 m., 31.III.2013, 5 ♂♂, 1 ♀.

Distribution in Turkey: Adana, Afyon, Ankara, Antalya, Bartın, Bolu, Burdur, Bursa, Denizli, Diyarbakır, Erzurum, Eskişehir, Gümüşhane, İzmir, Kahramanmaraş, Kars, Kastamonu, Kırşehir, Kütahya, Mersin, Niğde, Sivas, Uşak, Van, Zonguldak (Tuatay et al., 1967, 1972; Pehlivan, 1989; Lodos et al., 1999; Bellmann, 2007; Rozner and Rozner, 2009; Şenyüz et al., 2013b).

Distribution in the World: E: AL, AR, AU, BU, CR, GG, GR, HU, MC, MD, RO, SK, ST, TR, UK, YU A: CY, IN, IQ, JO, IS, SY, TR (Löbl and Smetana 2006).

Onthophagus (Palaeonthophagus) muelleri
P. Novak, 1921

Material examined: Söğütönü, 830 m., 31.III.2013, 7 ♂♂, 1 ♀.

Distribution in Turkey: Hatay, Konya (Pittino, 1982; Pehlivan, 1989).

Distribution in the World: A: IN, IS, JO, LE, SY, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus) opacicollis Reitter, 1893

Material examined: Alpagut village, 430 m., 16.III.2013, 1 ♂.

Distribution in Turkey: Adana, Antalya, Balıkesir, Bolu, Eskişehir, Gaziantep, Hatay, Kahramanmaraş, Kütahya, Manisa, Mersin, Niğde, Ordu, Tokat (Pehlivan, 1989; Lodos et al., 1999; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011b; Şenyüz et al., 2013a; Şenyüz and Şahin, 2013).

Distribution in the World: E: AL, BH, BU, CR, FR, GR, HU, IT, MC, PT, SK, SP, SZ,

TR N: AG, MO, TU A: CY, IS, SY, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus) osellai
Pittino, 1982

Material examined: Söğütönü, 830 m., 31.III.2013, 5 ♂♂, 3 ♀♀.

Distribution in Turkey: Adana, Adıyaman, Afyon, Amasya, Ankara, Antalya, Bolu, Burdur, Bursa, Çankırı, Çorum, Denizli, Erzincan, Erzurum, Gaziantep, Hatay, Kahramanmaraş, Kars, Kastamonu, Kütahya, Mersin, Yozgat, Zonguldak (Pittino, 1982, 2004; Rozner and Rozner, 2009; Şenyüz et al., 2013b).

Distribution in the World: A: IN, SY, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus) ovatus
(Linnaeus, 1767)

Material examined: Belkese, (Güvem), 1243 m., 21.V.2005, 2 ♂♂; Karacaören (Kıyak deposu), 1142 m., 20.V.2005, 3 ♂♂, 1 ♀; Ağaçhisar-Yalınkaya village, 1563 m., 20.V.2005, 3 ♂♂, 1 ♀; Bozan village, 813 m., 20.V.2005, 4 ♂♂, 1 ♀; Gökçekaya dam, 448 m., 21.V.2007, 1 ♂; Söğütönü, 830 m., 31.III.2013, 10 ♂♂, 20 ♀♀; Atalan village, 924 m., 20.IV.2013, 2 ♂♂; Atalan village, 924 m., 16.V.2013, 1 ♀.

Distribution in Turkey: Adana, Amasya, Antalya, Bartın, Bolu, Bursa, Çanakkale, Çankırı, Çorum, Gaziantep, Giresun, Hatay, İzmir, Kahramanmaraş, Karabük, Karaman, Kastamonu, Kırşehir, Konya, Kütahya, Manisa, Mersin, Niğde, Ordu, Osmaniye, Sakarya, Samsun, Uşak, Zonguldak (Pehlivan, 1989; Lodos et al., 1999; Şenyüz, 2004; Anlaş et al., 2011a; Şenyüz et al., 2013a, 2013b; Şenyüz and Şahin, 2013).

Distribution in the World: E: AB, AL, AU, BE, BH, BU, BY, CR, CT, CZ, DE, EN, FR, GB, GE, GG, HU, IT, KZ, LA, LS, LU, NL, PL, PT, RO, SK, SL, SP, ST, SV, SZ, UK, YU A: IN, KZ, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus) ruficapillus Brullé, 1832

Material examined: Belkese, (Güvem), 1243 m., 21.V.2005, 2 ♂♂; 10.VI.2005, 2 ♂♂; Bozan Köyü, 813 m., 20.V.2005, 2 ♂♂, 1 ♀; Ağaçhisar-Yalınkaya village, 1563 m., 20.V.2005, 3 ♂♂, 1 ♀; Karacaören village, 1100 m., 21.V.2005, 1 ♂; Gökçekaya dam, 448 m.,

21.V.2007, 1 ♂; Söğütözü, 830 m., 31.III.2013, 1 ♂, 10 ♀♀.

Distribution in Turkey: Adana, Afyon, Amasya, Ankara, Antalya, Aydın, Balıkesir, Bartın, Bolu, Burdur, Bursa, Çanakkale, Çankırı, Çorum, Denizli, Edirne, Erzurum, Eskişehir, Gaziantep, Giresun, Hatay, Isparta, İzmir, Kahramanmaraş, Kastamonu, Kırklareli, Kırşehir, Kilis, Konya, Kütahya, Manisa, Mardin, Mersin, Muğla, Nevşehir, Niğde, Ordu, Osmaniye, Sakarya, Samsun, Sinop, Sivas, Tekirdağ, Tokat, Yozgat, Zonguldak (Pehlivan, 1989; Lodos et al., 1999; Tezcan and Pehlivan, 2001; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011b; Şenyüz et al., 2013a, 2013b; Şenyüz and Şahin, 2013; Özgen et al., 2014).

Distribution in the World: E: AB, AL, AR, AU, BH, BU, CR, CT, CZ, FR, GG, GR, IT, HU, MC, MD, PL, PT, RO, SK, SL, SP, ST, SZ, TR, UK, YU A: CY, IN, IQ, IS, JO, SY, TR (Löbl and Smetana, 2006).

Onthophagus (Palaeonthophagus) vacca
(Linnaeus, 1767)

Material examined: İdris plateau, 979 m., 27.IV.2007, 2 ♂♂, 2 ♀♀; 18.V.2007, 3 ♂♂.

Distribution in Turkey: Adana, Afyon, Ağrı, Amasya, Ankara, Antalya, Aydın, Balıkesir, Bursa, Çanakkale, Çorum, Denizli, Edirne, Erzincan, Eskişehir, Gümüşhane, İzmir, Kahramanmaraş, Kars, Kırşehir, Kütahya, Manisa, Mersin, Niğde, Osmaniye, Sivas, Tekirdağ (Tuatay et al., 1967, 1972; Pehlivan, 1989; Lodos et al., 1999; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011b; Şenyüz et al., 2013a, 2013b; Şenyüz and Şahin, 2013).

Distribution in the World: E: AL, AR, AU, AZ, BE, BH, BU, BY, CR, CT, CZ, DE, FI, FR, GB, GE, GG, GR, HU, IT, KZ, LA, LT, LU, MC, NL, PL, PT, RO, SK, SP, SV, SZ, TR, UK, YU N: MO A: IN, SY, TM, TR "Palestina" AURi (Löbl and Smetana, 2006).

genus *Sisyphus* Latrielle, 1807

Sisyphus schaefferi schaefferi (Linnaeus, 1758)

Material examined: Sulukaraağaç village, 1137 m, 30.IX.2007, 1 ♂, Sandıközü Mevkii, 1316 m., 30.IX.2007, 2 ♂♂, 1 ♀.

Distribution in Turkey: Adıyaman, Ankara, Antalya, Balıkesir, Bilecik, Burdur, Bursa, Çorum, Edirne, Erzurum, Eskişehir, Gümüşhane, Hatay, Isparta, İzmir, Kahramanmaraş, Kars, Kırklareli, Kütahya, Manisa, Mersin, Muğla, Osmaniye, Rize, Samsun, Sivas, Tekirdağ, Uşak, Van (Tuatay et al., 1967, 1972; Lodos et al., 1999; Şenyüz, 2004; Bellmann, 2007; Rozner and Rozner, 2009; Anlaş et al., 2011a, 2011b; Şenyüz et al., 2013a, 2013b; Şenyüz and Şahin, 2013).

Distribution in the World: E: AB, AL, AR, AU, BE, BH, BU, CR, CZ, FR, GE, GG, GR, HU, IT, LU, MC, MD, NL, PL, PT, RO, SK, SL, SP, ST, SZ, TR, UK, YU N: AG, MO, TU A: CY, IS, IN, JO, KZ, SY, TM, TR (Löbl and Smetana, 2006).

Subfamily **Cetoniinae** Leach. 1815

genus *Tropinota* Mulsant, 1842

Tropinota (Epicometis) hirta (Poda, 1761)

Material examined: Sulukaraağaç village, 1137 m., 16.V.2013, 1 ex. ; Sulukaraağaç village, 1137 m., 19.V.2013, 1 ex.

Distribution in Turkey: Adana, Afyon, Ankara, Antalya, Aydın, Balıkesir, Bilecik, Burdur, Bursa, Bolu, Çanakkale, Çankırı, Çorum, Denizli, Diyarbakır, Edirne, Eskişehir, Gaziantep, Hatay, Isparta, İzmir, Kahramanmaraş, Karabük, Karaman, Kastamonu, Kayseri, Kırıkkale, Kırklareli, Kırşehir, Kilis, Konya, Kütahya, Manisa, Mersin, Muğla, Niğde, Osmaniye, Sakarya, Tekirdağ, Uşak (Lodos et al., 1978, 1999; Tezcan and Pehlivan, 2001; Şenyüz and Şahin, 2009b; Anlaş et al., 2011a; Küçükçaykır, et al., 2013; Özgen et al., 2014).

Distribution in the World: E: AL, AN, AU, BE, BH, BU, BY, CR, CT, CZ, EN, FR, GE, GG, GR, HU, IT, LA, LS, LT, LU, MC, NT (Kaliningrad) PL, PT, RO, SK, SL, SP, SZ, TR UK, YU N: MO A: KZ, TR (Löbl and Smetana, 2006).

genus *Oxythyrea* Mulsant 1842

Oxythyrea cinctella (Schaum, 1841)

Material examined: Atalan village, 924 m., 16.III.2013, 7 exx.

Distribution in Turkey: Adana, Adıyaman, Afyon, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bartın, Bilecik, Burdur, Bursa,

Çanakkale, Çankırı, Çorum, Denizli, Edirne, Erzincan, Erzurum, Eskişehir, Gaziantep, Hatay, Isparta, İzmir, Kahramanmaraş, Karabük, Karaman, Kars, Kastamonu, Kayseri, Kırıkkale, Kırşehir, Kilis, Konya, Kütahya, Manisa, Mardin, Mersin, Muğla, Nevşehir, Niğde, Osmaniye, Sakarya, Siirt, Tekirdağ, Uşak (Lodos et al., 1978, 1999; Tezcan and Pehlivan, 2001; Bellmann, 2007, Şenyüz and Şahin, 2009b; Anlaş et al., 2011a; Küçükaykay et al., 2013; Özgen et al., 2014).

Distribution in the World: E: AB, AL, AR, BU, GG, GR, MC, ST, TR, YU A: AF, IN, IQ, IS, JO, KI, KZ, LE, PA, SY, TD, TM, TR, UZ, XIN (Löbl and Smetana, 2006).

4. DISCUSSION

In this study we found total 9 species and 1 subspecies new record for fauna of Eskişehir. *Eulasia papaveris* (Sturm, 1843), *E. vittata vittata* (Fabricius, 1775) *Aphodius arenarius* (Olivier, 1789), *Gymnopleurus sturmii* MacLeay, 1821, *Cheironitis ungaricus* (Herbst, 1789), *Caccobius histeroides* (Ménétriés, 1832), *Onthophagus coenobita* (Herbst, 1783), *O. muelleri* P. Novak, 1921, *O. osellai* Pittino, 1982 and *O. ovatus* (Linnaeus, 1767) were found first time in Eskişehir. In addition *Gymnopleurus sturmii* MacLeay, 1821, *Aphodius (Plagiogonus) arenarius* (Olivier, 1789), *Cheironitis ungaricus* (Herbst, 1789), *Onthophagus (Palaeonthophagus) coenobita* (Herbst, 1783) were found first time in central anatolia region.

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