

Contributions to the Paederinae (*Staphylinidae*) Fauna of Kırkkale Province in Central Anatolia

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ABSTRACT

In this study, Paederinae species from Kırkkale province of central Anatolia were studied. The present paper is based on material collected by aspirator and sifter between June 2016 and April 2019 in seven localities of southern Kırkkale province, At the end of the study, 17 species belonging to 11 genera were reported. 14 of them are new record for Kırkkale Paederinae fauna. *Leptobium yagmuri* Anlaş, 2017 and *Tetartopeus inexcisus* Assing, 2009 represented the first record since the description of the species. In addition, *Achenium scimbaliodes* Koch, 1937 and *Tetartopeus inexcisus* Assing, 2009 are recorded for the first time from Central Anatolia Region of Turkey.

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ÖZET

Bu çalışmada Kırkkale ilinin Paederinae faunası araştırılmıştır. Bu çalışmada incelenen materyal aspiratör ve eleme yöntemleri kullanılarak Haziran 2016 ve Nisan 2019 tarihleri arasında Kırkkale'nin güneyinden toplanmıştır. Çalışma sonunda 11 cinse bağlı 17 tür saptanmıştır. Bunlardan 14 tür Kırkkale için yeni kayıt niteliğindedir. *Leptobium yagmuri* Anlaş, 2017 ve *Tetartopeus inexcisus* Assing, 2009 türleri deskripsiyonlarından sonra ilk defa kaydedilmiştir. *Achenium scimbaliodes* Koch, 1937 ve *Tetartopeus inexcisus* Assing, 2009 türleri İç Anadolu Bölgesi faunası için ilk kez bildirilmiştir.

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INTRODUCTION

According to recent literature, more than 1900 species of Staphylinidae are known in Turkey (Anlaş, 2009; Schülke & Smetana, 2015). The subfamily Paederinae is one of the largest subfamilies of Staphylinidae, containing over 250 species in Turkey (Anlaş, 2009: updated).

Despite many contributions, some parts of the country, especially the central, eastern and southeastern Anatolia have yet not been studied thoroughly. The fauna of Paederinae of Kırkkale province has been poorly studied. Only five species of Paederinae have been recorded from Kırkkale province up to now (Sert et al., 2013)

The aim of this study was to make a contribution to fauna of Paederinae of Kırkkale province.

MATERIAL and METHODS

The present paper is based on material collected by aspirator and sifter between June 2016 and April 2019 in seven localities of southern Kırkkale province, Central Anatolia (Figure 1).

Specimens collected in the field were taken into 70% ethanol and then the specimens were cleaned from clay and muddy substances by a paintbrush in the laboratory. Sternite VII, sternite VIII and aedeagus were dissected under a Stemi 2000-C microscope (Zeiss Germany). The aedeagus was placed into a 10% solution of KOH to dissolve soft tissues. The collected material was identified by first and third authors.

The material referred to in this study was deposited in the collection of the Alaşehir Zoological Museum, Manisa (AZMM) of Manisa Celal Bayar University. The map was created using DIVA-GIS 7.5.0.

Classification and nomenclature of the subfamily Paederinae suggested by Schülke and Smetana (2015)

have been followed in the study.



Figure 1. Sampling localities of studied area in Kırıkkale province of Turkey
Şekil 1. Türkiye'nin Kırıkkale ilindeki araştırma alanının örnekleme lokaliteleri.

RESULTS

In this study, 17 species of 11 genera belonging to the subfamily Paederinae are reported from Kırıkkale province in Central Anatolia Region of Turkey. 14 of them are new record for Kırıkkale Paederinae fauna.

Astenus procerus (Gravenhorst, 1806)

Material examined: Kırıkkale: 1♂, 1♀, 07.III.2018, Bahşili, Sarıkayalar, 39°41'42"N, 33°18'38"E, 1414 m, leg. Yaman & Örgel.

Distribution in Turkey: This species is widely distributed in Turkey (Anlaş, 2009; Sert et al., 2013; Anlaş, 2017b). This species is recorded for the first time from Kırıkkale province.

Distribution in the world: *A. procerus* is distributed in Europe, North Africa, Middle Asia, Turkey and Cyprus (Schülke & Smetana, 2015).

Astenus pulchellus (Heer, 1839)

Material examined: Kırıkkale: 1♂, 3♀, 07.III.2018, Bahşili, Sarıkayalar, 39°41'42"N, 33°18'38"E, 1414 m, leg. Yaman & Örgel.

Distribution in Turkey: The recently recorded species is only known from Göktepe, Karaman province, in Southern Turkey (Anlaş, 2017b).

Distribution in the world: This species is widely distributed in Europe and also known from Uzbekistan and Turkey (Schülke & Smetana, 2015; Anlaş, 2017b).

Astenus thoracicus (Baudi di Selve, 1857)

Material examined: Kırıkkale: 4♀, 29.VI.2016, Balıseyh, Uzunlar–Gazibeyli road, 39°46'58"N, 33°43'57"E, 1515 m, leg. Anlaş, Yaman & Örgel. 1♂, 2♀, 07.III.2018, Bahşili, Sarıkayalar, 39°41'42"N, 33°18'38"E, 1414 m, leg. Yaman & Örgel. 1♂, 1♀, 30.IV.2019, Keskin, Konur 2 km W, 39°33'37"N, 33°30'38"E, 1430 m, leg. Örgel & Köksal.

Distribution in Turkey: This species is widely distributed in Turkey (Anlaş, 2009; Assing, 2013a; Sert et al., 2013; Anlaş, 2017b).

Distribution in the world: *A. thoracicus* is distributed from Italy, Canary Islands, Greece, Morocco, Georgia,

Cyprus, Syria and Turkey (Schülke & Smetana, 2015).

Leptobium gracile (Gravenhorst, 1802)

Material examined: **Kırıkkale:** 3♂, 5♀, 07.III.2018, Bahşili, Sarıkayalar 8 km N, 39°44'12"N, 33°17'13"E, 1310 m, leg. Yaman & Örgel. 2♂, 3♀, 30.IV.2019, Keskin, Konur 2 km W, 39°33'37"N, 33°30'38"E, 1430 m, leg. Örgel & Köksal.

Distribution in Turkey: This species is widely distributed in Turkey (Anlaş, 2009, 2017a; Sert et al., 2013).

Distribution in the world: This species occurs in Europe, North Africa, Middle East, Middle Asia and Turkey (Schülke & Smetana, 2015).

Leptobium yagmuri Anlaş, 2017

Material examined: **Kırıkkale:** 4♂, 5♀, 07.III.2018, Bahşili, Sarıkayalar, 39°41'42"N, 33°18'38"E, 1414 m, leg. Yaman & Örgel.

Distribution in Turkey: The recently described species is only known from Ankara province, in central Anatolia (Anlaş, 2017a). The above specimens represent the first records since the original description.

Distribution in the world: Turkey (Anlaş, 2017a).

Achenium humile (Nicolai, 1822)

Material examined: **Kırıkkale:** 2♀, 08.III.2018, Çelebi, Tilkili 3 km E, 39°33'12"N, 33°30'41"E, 1427 m, leg. Yaman & Örgel. 3♂, 3♀, 30.IV.2019, Keskin, Konur 2 km W, 39°33'37"N, 33°30'38"E, 1430 m, leg. Örgel & Köksal.

Distribution in Turkey: Ankara, Erzincan, Eskişehir, Gümüşhane, Isparta, Kars, Kastamonu, Muş, Niğde, Tunceli, Van (Anlaş, 2009; Anlaş et al., 2011; Assing 2010, Sert et al., 2013; Altın & Yağmur, 2018). *A. humile* is recorded for the first time from Kırıkkale Province.

Distribution in the world: *A. humile* is widely distributed in Europe and also known from Middle Asia and Turkey (Schülke & Smetana, 2015).

Achenium scimbalioides Koch, 1937

Material examined: **Kırıkkale:** 1♂, 3♀, 08.III.2018, Çelebi, Tilkili 3 km E, 39°33'12"N, 33°30'41"E, 1427 m, leg. Yaman & Örgel. 3♂, 4♀, 07.III.2018, Bahşili, Sarıkayalar 8 km N, 39°44'12"N, 33°17'13"E, 1310 m, leg. Yaman & Örgel. 1♂, 2♀, 30.IV.2019, Keskin, Konur 2 km W, 39°33'37"N, 33°30'38"E, 1430 m, leg. Örgel & Köksal.

Distribution in Turkey: Adana, Bayburt, Çanakkale, Gümüşhane, Manisa, Tunceli, Uşak (Anlaş, 2009; Anlaş et al., 2011; Assing 2010, Örgel & Anlaş, 2016). The species is recorded for the first time from Central Anatolia Region.

Distribution in the world: Bulgaria, Turkey and Greece (Schülke & Smetana, 2015).

Lobrathium rugipenne (Hochhuth, 1851)

Material examined: **Kırıkkale:** 2♂, 1♀, 29.VI.2016, Balşeyh, Uzunlar–Gazibeyli road, 39°46'58"N, 33°43'57"E, 1515 m, leg. Yaman & Örgel. 1♀, 22.V.2018, Çelebi, 1320 m, 39°28'07"N, 33°29'43"E, leg. Yaman & Örgel.

Distribution in Turkey: This species is widespread and common in Turkey (Anlaş, 2009; Sert et al., 2013; Örgel & Anlaş, 2016).

Distribution in the world: This species is distributed from the southern Balkans to the Caucasus region and Turkey (Schülke & Smetana, 2015).

Micrillus testaceus (Erichson 1840)

Material examined: **Kırıkkale:** 1♂, 30.IV.2019, Keskin, Konur 2 km W, 39°33'37"N, 33°30'38"E, 1430 m, leg. Örgel & Köksal.

Distribution in Turkey: This species is widespread in Turkey (Anlaş, 2009; Assing, 2014, 2018; Örgel & Anlaş, 2016). This species is recorded for the first time from Kırıkkale province.

Distribution in the world: This species is known from Europe, Middle Asia, North Africa, Middle East, Iran and Turkey (Schülke & Smetana, 2015).

Scymbalium anale (Nordmann, 1837)

Material examined: **Kırıkkale:** 1♂, 3♀, 08.III.2018, Çelebi, Tilkili 3 km E, 39°33'12"N, 33°30'41"E, 1427 m, leg. Yaman & Örgel. 1♂, 30.IV.2019, Keskin, Konur 2 km W, 39°33'37"N, 33°30'38"E, 1430 m, leg. Örgel & Köksal.

Distribution in Turkey: Ankara, Antalya, Bingöl, Bolu, Bursa, Çankırı, Diyarbakır, Elazığ, Giresun, Isparta, İstanbul, İzmir, Karaman, Kastamonu, Kütahya, Manisa, Muğla, Niğde, Sinop (Anlaş, 2009; Assing, 2013b, 2018). This species is recorded from Kırıkkale province for the first time.

Distribution in the world: This species is distributed in Europa, Caucasus, Middle Asia, Middle East, Iran and Turkey (Schülke & Smetana, 2015).

Tetartopeus inexcisus Assing, 2009

Material examined: **Kırıkkale:** 1♂, 3♀, 07.III.2018, Bahşili, Sarıkayalar, 39°41'42"N, 33°18'38"E, 1414 m, leg. Yaman & Örgel.

Distribution in Turkey: Kastamonu (Assing, 2009). The above specimens represent the first records since the original description and also this species is recorded for the first time from Central Anatolia Region.

Distribution in the world: Turkey (Assing, 2009).

Luzea graeca (Kraatz, 1857)

Material examined: **Kırıkkale:** 1♀, 29.VI.2016, Balşeyh, Uzunlar–Gazibeyli road, 39°46'50"N, 33°43'44"E, 1577 m, leg. Yaman & Örgel. 1♂, 07.III.2018, Bahşili, Sarıkayalar, 39°41'42"N,

33°18'38"E, 1414 m, leg. Yaman & Örgel.

Distribution in Turkey: *L. graeca* is widespread and common in Turkey (Assing, 2006, 2013a; Anlaş, 2009; Sert et al., 2013). This species is recorded for the first time from Kırıkkale province.

Distribution in the world: This species is distributed in Southern Europa, Caucasus, Cyprus, Israel, Lebanon, Iran and Turkey (Schülke & Smetana, 2015).

Medon ferrugineus (Erichson, 1840)

Material examined: **Kırıkkale:** 3♂♂, 4♀♀, 07.III.2018, Bahşili, Sarıkayalar, 39°41'42"N, 33°18'38"E, 1414 m, leg. Yaman & Örgel.

Distribution in Turkey: Ankara, Bingöl, Bolu, Eskişehir, Gümüşhane, Isparta, Kastamonu, Konya, Muş, Ordu, Sakarya, Samsun, Sinop, Trabzon, Tunceli (Assing, 2004, Anlaş, 2009; Anlaş, 2015). This species is recorded for the first time from Kırıkkale province.

Distribution in the world: Europa and Turkey (Assing, 2004; Schülke & Smetana, 2015).

Scopaeus debilis Hochhuth, 1851

Material examined: **Kırıkkale:** 1♂, 29.VI.2016, Balşeyh, Uzunlar–Gazibeyli road, 39°46'58"N, 33°43'57"E, 1515 m, leg. Yaman & Örgel.

Distribution in Turkey: Adana, Adıyaman, Afyonkarahisar, Ankara, Antalya, Aydın, Denizli, Diyarbakır, Eskişehir, Hakkari, Isparta, İstanbul, İzmir, Kilis, Kocaeli, Mardin, Manisa, Mersin, Muğla, Yozgat (Anlaş, 2009; Assing, 2013a; Anlaş & Frisch, 2014; Çiftçi & Hasbenli, 2016). *S. debilis* is recorded for the first time from Kırıkkale province.

Distribution in the world: Europe, Caucasus, Middle East, Lebanon, Syria and Turkey (Anlaş & Frisch, 2014; Schülke & Smetana, 2015).

Scopaeus elegans Luze, 1910

Material examined: **Kırıkkale:** 1♂, 29.VI.2016, Balşeyh, Uzunlar–Gazibeyli road, 39°46'50"N, 33°43'44"E, 1577 m, leg. Yaman & Örgel.

Distribution in Turkey: This species is widely distributed in Turkey (Anlaş, 2009, Sert et al., 2013; Anlaş & Frisch, 2014). *S. elegans* is recorded for the first time from Kırıkkale province.

Distribution in the world: Lebanon, Israel, Jordan, Syria and Turkey (Anlaş & Frisch, 2014; Schülke & Smetana, 2015).

Rugilus maltzevi Gusarov, 1991

Material examined: **Kırıkkale:** 1♂, 1♀, 29.VI.2016, Balşeyh, Uzunlar–Gazibeyli road, 39°46'58"N, 33°43'57"E, 1515 m, leg. Yaman & Örgel.

Distribution in Turkey: Antalya, Denizli, Konya, Manisa, Uşak (Anlaş, 2009, 2017c; Örgel & Anlaş, 2016). *R. maltzevi* is recorded for the first time from

Kırıkkale province.

Distribution in the world: Turkey and Ukraine (Schülke & Smetana, 2015).

Rugilus orbiculatus (Paykull, 1789)

Material examined: **Kırıkkale:** 1♂, 07.III.2018, Bahşili, Sarıkayalar 8 km N, 39°44'12"N, 33°17'13"E, 1310 m, leg. Yaman & Örgel. 1♀, 07.III.2018, Balşeyh, Uzunlar–Gazibeli road, 39°46'58"N, 33°43'57"E, 1510 m, leg. Yaman & Örgel.

Distribution in Turkey: This species is widely distributed in Turkey (Anlaş, 2009, 2017c; Sert et al., 2013; Çiftçi & Hasbenli, 2016). *R. orbiculatus* is recorded for the first time from Kırıkkale province.

Distribution in the world: This species is widely distributed in the Palaearctic Region and also known from Australian and Nearctic regions (Schülke & Smetana, 2015).

DISCUSSION

Up to present study, only five species were known from Kırıkkale province. These were *Astenus thoracicus* (Baudi Di Selve, 1857), *Leptobium gracile* (Gravenhorst, 1802), *Lobrathium rugipenne* (Hochhuth, 1851), *Paederus fuscipes* Curtis, 1826 and *Paederus littoralis* Gravenhorst, 1802 (Sert et al., 2013). First three species were reported in this study but remaining two species were not. Although the field study was conducted in all Kırıkkale provincial borders, the specimens could be collected only from the south of the province. At the end of the study, 17 species belonging to 11 genera were reported. Amongst them, *Leptobium yagmuri* Anlaş, 2017 and *Tetartopeus inexcisus* Assing, 2009 represented the first record since the description of the species. *Achenium scimbaliodes* Koch, 1937 and *Tetartopeus inexcisus* are recorded for the first time from Central Anatolia Region of Turkey.

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Researchers Contribution Rate Declaration Summary

The authors declare that they have contributed equally to the article.

Conflicts of Interest Statement

None of the authors had any financial or personal relationships with other individuals or organizations that might inappropriately influence their work during the submission process.

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