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Contributions to Geometridae (Lepidoptera) Fauna of Karabük Province

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Abstract

Aim of study: The present study aimed to contribute Geometridae (Lepidoptera) fauna of Karabük province.

Area of study: The study was carried out in Karabük province located in Western Black Sea Region.

Material and methods: The samples were collected by light trap in May-October between in 2008-2012.

Main results: In this study, 755 samples were evaluated. As a result of the study, 88 species belonging to 5 subfamilies have been determined as Orthostixinae (1 species), Geometrinae (5), Sterrhinae (27), Larentiinae (25) and Ennominae (30).

Highlights: Knowledge of the Geometridae fauna of Karabük province was very limited. There were 83 species recorded from Karabük province for the first time during this research. Faunistic records on *Cyclophora punctaria fritzae* were discussed and figure of male genitalia presented.

Keywords: *Cyclophora punctaria fritzae*, Geometridae, Fauna, Karabük, Türkiye

Karabük İlinin Geometridae (Lepidoptera) Faunasına Katkılar

Öz

Çalışmanın amacı: Bu çalışmada Karabük ilinin Geometridae (Lepidoptera) faunasına katkı sağlanması amaçlanmıştır.

Çalışma alanı: Çalışma Batı Karadeniz Bölgesinde yer alan Karabük İlinde yapılmıştır.

Materyal ve yöntem: Örnekler 2008-2012 yılları arasında, Mayıs-Ekim aylarında ışık tuzağı ile toplanmıştır.

Temel sonuçlar: Bu çalışmada 755 örnek değerlendirilmiştir. Çalışma sonucunda 5 alt familyaya ait 88 tür belirlenmiştir (Orthostixinae 1 tür, Geometrinae 5, Sterrhinae 27, Larentiinae 25 ve Ennominae 30).

Araştırma vurguları: Karabük ilinin Geometridae faunası ile ilgili bilgiler oldukça sınırlıdır. Bu çalışma ile 83 tür Karabük ilinde ilk defa tespit edilmiştir. *Cyclophora punctaria fritzae* ile ilgili faunistik kayıtlar tartışılmış ve erkek genital fotoğrafı verilmiştir.

Anahtar Kelimeler: *Cyclophora punctaria fritzae*, Geometridae, Fauna, Karabük, Türkiye.



Introduction

The geometrids (Geometridae) are the most species-rich family of Lepidoptera apart from Noctuidae and Pyralidae. There are over 23000 decypted species known worldwide (Scoble & Hausmann, 2007), 900 in Europe (Hausmann, 2001) and 685 in Turkey (Koçak & Kemal, 2018). Geometrid species are ordinarily nocturnal, they often fly preferably at dusk, others are said to be active mainly after midnight, but some species fly by day. This group served as indicators for environmental changes and appear to be effective at colonizing habitats after natural or anthropogenic disturbances also (Enkhtur et al., 2020). Some species are important pests for agriculture and forestry (Hausmann, 2001).

The study area, located in the Western Black Sea Region of Turkey, has an oceanic climate character in general. On the other hand, floristically, its central and southern parts are in the Mediterranean or the drier regions are in Irano-Turanian characters. Humid-mild deciduous forests composed of *Fagus orientalis* Lipsky. Mixed forests in humid areas consist of *Abies nordmanniana* subsp. *bornmulleriana* Mattf. *F. orientalis* and *Pinus sylvestris* L. Coniferous forests are in the form of *P. sylvestris* forest, *Pinus nigra* J. F. Arnold forest and *Pinus brutia* Ten. mixed forest. In the southward, in areas where the effect of the Black Sea has decreased, *Quercus* sp. and *Pinus nigra* communities are seen. Some areas are covered by shrubs with maquis elements. *Arbutus andrachne* L. communities are found in low areas where this vegetation is seen. (Coşkun, 2017). Yenice Forests, located in Karabük province, are among the 100 hot spots (important regions on global scale for conservation of biodiversity that include high numbers of species) determined by WWF (World Wide Fund for Nature) in the world. It is also one of the 9 hot spots and 122 Important Plant Areas in Turkey floristically (Ayteğin et al., 2019)

Studies on Geometridae fauna in the Western Black Sea Region started with Schwingenschuss (1939a, 1939b) in Bolu province. Seven (1991, 1995), Koçak & Seven (1996), Koçak & Kemal (2001, 2002, 2006a, 2006b), Akbulut et al. (2003),

Özdemir (2007), Can (2008), Okyar et al. (2009), Akkuzu et al. (2015) and Özdemir (2016, 2019a) can be given as important studies on Geometridae in close places to study area. The knowledge on Geometridae fauna of Karabük province is quite limited. There were 9 species recorded from Karabük until this research (Okyar, 2012; Koçak & Kemal, 2018).

In the last study (Özdemir, 2019b), in which the habitat preferences of Geometridae species detected in the Western Black Sea region were evaluated, the species were listed together with the habitat preferences, but locality data could not be given. In this study, the species identified from Karabük province are presented together with locality information and distribution in Turkey and discussed together with previous faunistic records. This study was carried out to contribute to the limited knowledge about the Geometridae fauna of Karabük province.

Material and Methods

Study area located in between 40° 57', 41° 34' N and 32° 04', 33° 06' E coordinates. The specimens collected by light trap (8W black light fluorescent lamp) from Karabük Province during the years 2008-2012 were investigated. Hausmann (2001, 2004), Mironov (2003), Hausmann & Viidalepp (2012), Skou & Sihvonen (2015) were used for identification. Materials were stored at Nazife Tuatay Plant Protection Museum of Ankara Plant Protection Central Research Institute.

Result

Subfamily: ORTHOSTIXINAE

Orthostixis cribraria (Hübner, [1799])

Material: Yenice, Urban forest 24.06.2009 300m 1 ♀ 41° 10' 37" N 32° 21' 14" E.

Distribution in Turkey: Adana, Amasya, Ankara, Ardahan, Batman, Bingöl, Bitlis, Bolu, Bursa, Çanakkale, Diyarbakır, Gümüşhane, Hatay, Kahramanmaraş, Konya, Mersin, Osmaniye, Siirt, Van (Koçak & Kemal, 2018; Seven, 2020a).

Subfamily: GEOMETRINAE

Aplasta ononaria (Fuessly, 1783)

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♀ 41° 3' 37" N 32° 42' 50" E;

Yenice, Urban forest 24.06.2009 300m 1 ♂
41° 10' 37" N 32° 21' 14" E.

Distribution in Turkey: Adana, Adıyaman, Amasya, Ankara, Aydın, Bingöl, Bitlis, Bolu, Bursa, Çanakkale, Diyarbakır, Elazığ, Hakkari, Hatay, İçel, Karabük, Kırıkkale, Kırklareli, Kırşehir, Kocaeli, Konya, Malatya, Kahramanmaraş, Muğla, Osmaniye, Siirt, Tekirdağ, and Van (Koçak & Kemal, 2018; Okyar, 2012).

***Chlorissa cloraria* (Hübner, [1813])**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Balıkesir Bartın, Bolu, Düzce Edirne Zonguldak (Koçak & Kemal, 2018; Altıparmak, 2010; Okyar, 2012, Özdemir, 2019a).

***Chlorissa viridata* (Linnaeus, 1758)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Ankara, Bolu, Bursa, Çanakkale, Çankırı, Düzce, Kastamonu, Muğla, Sinop (Akbulut et al., 2003; Koçak & Kemal, 2018; (Seven & Yılmaz, 2021).

***Hemithea aestivaria* (Hübner, 1789)**

Material: Yenice, Bağbaşı 1.08.2011 935m 2 ♂ 41° 10' 19" N 32° 15' 29" E; Yenice Urban forest 24.06.2009 130m 1 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Amasya, Bartın, Bolu, Bursa, Düzce, Edirne, İstanbul, Ordu, Trabzon provinces (Okyar & Mironov, 2008; Özdemir, 2016, 2019a; Koçak & Kemal, 2018).

***Thalera fimbrialis* (Scopoli, 1763)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Amasya, Ardahan, Bitlis, Bursa, Çanakkale, Düzce, Edirne, Hakkari, Hatay, Kocaeli, Konya, Mersin, Niğde, İstanbul, Sivas, Siirt, Tunceli, Van (Koçak & Kemal, 2018).

**Subfamily: STERRHINAE Meyrick, 1892
Cyclophora albiocellaria (Hübner, 1789)**

Material: Safranbolu, Örencik 22.07.2009 950m 1 ♀ 2 ♂ 41° 23' 41" N 32° 47' 41" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Amasya, Bartın, Bursa, Düzce (Akbulut et al., 2003; Koçak & Kemal, 2018, Özdemir, 2019a).

***Cyclophora annularia* (Fabricius, 1775)**

Material: Yenice, Bağbaşı 1.08.2011 900m 5 ♀ 6 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 3 ♀ 4 ♂ 41° 10' 19" N 32° 15' 29" E; Yenice, Yazıköy 1.08.2011 500m 4 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Bartın, Bolu, Bursa, Düzce, İstanbul, Rize, Kahramanmaraş, Trabzon (Koçak & Kemal, 2018, Özdemir, 2019a).

***Cyclophora linearia* (Hübner, [1799])**

Material: Ovacık, Çukurca 11.08.2010 1000m 12 ♀ 14 ♂ 41° 3' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 900m 21 ♀ 14 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 23 ♀ 36 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 11 ♀ 12 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Bartın, Bolu, Düzce, Edirne, Hatay, İstanbul, Kastamonu, Kırklareli Ordu, Rize, Trabzon, Van (Okyar, 2010; Koçak & Kemal, 2018; Özdemir, 2019a).

***Cyclophora punctaria fritzae* Hausmann, 2003**

Material: Yenice, Bağbaşı 1.08.2011 900m 2 ♀ 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Bitlis (Kemal & Koçak, 2017)

***Cyclophora pupillaria* (Hübner, [1799])**

Material: Province center, Yeşilköy 1.08.2011 300m 2 ♂ 41° 9' 38" N 32° 32' 48" E; Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 2 ♀ 4 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 5 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Ankara, Antalya, Bartın, Bolu, Bursa, Çanakkale, Düzce, Hatay, İçel, İstanbul,

Kahramanmaraş, Konya, Manisa, Muğla, Ordu, Osmaniye, Sivas, Van (Koçak & Kemal, 2018; Özdemir, 2016; 2019a).

***Cyclophora quercimontaria* (Bastelberger, 1897)**

Material: Yenice, Bağbaşı 1.08.2011 935m 3 ♀ 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Artvin, Bartın, Bolu, Düzce, Kastamonu, Ordu, Van (Nezir, 2007; Koçak & Kemal, 2018; Özdemir, 2016; 2019a).

***Idaea aversata* (Linnaeus, 1758)**

Material: Eflani, Karabayır geçidi 22.07.2009 1050m 1 ♂ 41° 28' 18" N 33° 5' 39" E; Safranbolu, Örencik 22.07.2009 950m 1 ♀ 41° 23' 41" N 32° 47' 41" E; Yenice, Bağbaşı 1.08.2011 900m 2 ♀ 2 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 4 ♀ 9 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 5 ♀ 7 ♂ 41° 9' 38" N 32° 21' 24" E; Yenice Urban forest 24.06.2009 130m 1 ♀ 2 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Amasya, Ardahan, Bartın, Bolu, Bursa, Çanakkale, Düzce, Edirne, Hatay, İstanbul, Kırklareli, Konya, Ordu, Sakarya, Siirt, Tekirdağ, Trabzon, Van (Okyar & Mironov, 2008; Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2016; 2019a).

***Idaea biselata* (Hufnagel, 1767)**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 4 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Amasya, Bolu, Düzce, Edirne, İstanbul, Kırklareli, Ordu, Trabzon (Okyar & Mironov, 2008; Koçak & Kemal, 2018; Özdemir, 2016).

***Idaea deversaria* (Herrich-Schäffer, 1847)**

Material: Eflani, Karabayır geçidi 22.07.2009 1050m 2 ♀ 2 ♂ 41° 28' 18" N 33° 5' 39" E; Safranbolu, Örencik 22.07.2009 950m 1 ♂ 41° 23' 41" N 32° 47' 41" E; Yazıköy 24.06.2009 500m 1 ♀ 41° 14' 21" N 32° 43' 47" E; Yenice, Urban forest 24.06.2009 300m 1 ♀ 41° 10' 37" N 32° 21' 14" E; Yenice Urban forest 24.06.2009 130m 1 ♀ 1 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: 29 30 31 33 34 39 42 61 80 81 Amasya, Ankara, Antalya, Bartın, Bolu, Bursa, Düzce, Elazığ, Gümüşhane, Hakkari, Hatay, İçel, İstanbul, Kırklareli, Konya, Osmaniye, Rize, Siirt, Trabzon (Koçak & Kemal, 2018; Okyar, 2010; Özdemir, 2019a; Çakır & Seven, 2019).

***Idaea dimidiata* (Hufnagel, 1767)**

Material: Yenice, Yazıköy 1.08.2011 500m 1 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Amasya, Ardahan, Bolu, Bursa, Düzce, Gaziantep, Hatay, İstanbul, Kırklareli, Manisa, Mersin, Muğla, Ordu, Kahramanmaraş, Van, Zonguldak (Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2016; 2019a; Koyuncu & Kütük, 2020).

***Idaea humiliata* (Hufnagel, 1767)**

Material: Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E.

Distribution in Turkey: Amasya, Ankara, Bolu, Bursa, Edirne, Iğdır, Karabük, Kırıkkale, Kırklareli, Van, Zonguldak (Okyar, 2012; Koçak & Kemal, 2018).

***Idaea infirmaria* (Rambur, 1833)**

Material: Province center, Yeşilköy 1.08.2011 300m 1 ♀ 41° 9' 38" N 32° 32' 48" E.

Distribution in Turkey: 17 48 Bartın, Çanakkale, Muğla (Koçak & Kemal, 2018; Özdemir, 2019a).

***Idaea moniliata* ([Denis and Schiffermüller], 1775)**

Material: Yenice, Yazıköy 1.08.2011 500m 1 ♂ 41° 9' 38" N 32° 21' 24" E; Yenice Urban forest 24.06.2009 130m 1 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Adana, Amasya, Ankara, Bitlis, Bolu, Bursa, Çanakkale, Düzce, Edirne, Hatay, İçel, İstanbul, Kars, Kastamonu, Kırklareli, Konya, Ordu, Rize, Tokat, Zonguldak (Okyar & Mironov, 2008; Koçak & Kemal, 2018; Özdemir, 2016).

***Idaea obsoletaria* (Rambur, 1833)**

Material: Province center, Yeşilköy 1.08.2011 300m 3 ♂ 41° 9' 38" N 32° 32' 48" E.

Distribution in Turkey: Amasya, Antalya, Bartın, Bolu, Bursa, Erzurum, İzmir, Kırklareli, Konya, Manisa, Muğla, Siirt Sivas Tekirdağ, (Seven, 2014; Koçak & Kemal, 2018; Özdemir, 2019a; Seven & Yılmaz, 2021).

***Idaea politaria* (Hübner, [1799])**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♀ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Adana, Amasya, Antalya, Bartın, Bolu, Bursa, Düzce, Edirne, Elazığ, Hatay, İçel, İstanbul, Kastamonu, Kırklareli, Manisa, Ordu, Siirt, Van (Okyar, 2012; Seven, 2014; Koçak & Kemal, 2018; Özdemir, 2016; 2019a; Çakır & Seven, 2019).

***Idaea rubraria* (Staudinger, 1901)**

Material: Province center, Karaağaç 11.08.2010 530m 1 ♀ 41° 4' 39" N 32° 30' 6" E; Ovacık, Çukurca 11.08.2010 1000m 1 ♀ 41° 3' 37" N 32° 42' 50" E.

Distribution in Turkey: Bartın (Özdemir, 2019a), Scattered populations in Turkey (Hausmann, 2004).

***Idaea rufaria* (Hübner, [1799])**

Material: Safranbolu, Cincihan 22.07.2009 468m 5 ♀ 30 ♂ 41° 14' 21" N 32° 42' 56" E; Yazıköy 24.06.2009 500m 2 ♀ 3 ♂ 41° 14' 21" N 32° 43' 47" E; Yenice, Yenice Urban forest 24.06.2009 130m 1 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Adana, Amasya, Bartın, Bolu, Bursa, Çanakkale, Çorum, Edirne, Hakkari, Iğdır, İçel, İstanbul, Karabük, Kastamonu, Kırklareli, Konya, Osmaniye, Sivas, Van (Okyar, 2012, Koçak & Kemal, 2018; Özdemir, 2019a).

***Idaea subsericeata* (Haworth, [1809])**

Material: Province center, Yeşilköy 1.08.2011 300m 2 ♂ 41° 9' 38" N 32° 32' 48" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 3 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♀ 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yenice, Yazıköy 1.08.2011 500m 1 ♀ 1 ♂ 41° 9' 38" N 32° 21' 24" E; Ağlı, Sabuncular 23.05.2012 838m 1 ♂ 41° 43' 34" N 33° 27' 28" E.

Distribution in Turkey: 01 05 07 16 17 22 30 31 33 34 46 52 59 81 Adana, Amasya,

Antalya, Bartın, Bolu, Bursa, Düzce, Çanakkale, Edirne, Elazığ, Hakkari, Hatay, İçel, İstanbul, Kahramanmaraş, Ordu, Siirt, Tekirdağ (Koçak & Kemal, 2018; Okyar, 2012; Seven, 2014; Özdemir, 2016; 2019a; Çakır & Seven, 2019).

***Idaea trigeminata* (Haworth, [1809])**

Material: Yenice, Yenice Urban forest 24.06.2009 130m 1 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: 01 05 07 13 14 16 17 30 31 33 34 46 52 61 65 80 81 Adana, Amasya, Antalya, Bitlis, Bolu, Bursa, Çanakkale, Düzce, Elazığ, Hakkari, Hatay, İçel, İstanbul, Kahramanmaraş, Karabük, Muğla, Ordu, Osmaniye, Trabzon. Van, Zonguldak (Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2016; Çakır & Seven, 2019; Seven & Yılmaz, 2021).

***Rhodostrophia discopunctata* Amsel, 1935**

Material: Yenice, Yenice Urban forest 24.06.2009 130m 2 ♂ 41° 11' 9" N 32° 21' 27" E; 24.06.2009 300m 1 ♀ 5 ♂ 41° 10' 37" N 32° 21' 14" E.

Distribution in Turkey: Adıyaman, Amasya, Ankara, Bartın, Batman, Bitlis, Bolu, Bursa, Çanakkale, Çankırı, Diyarbakır, Düzce, Elazığ, Gaziantep, Girasun, Gümüşhane, Hakkari, Hatay, İçel, Karabük, Kars, Kastamonu, Kayseri, Kırıkkale, Konya, Kahramanmaraş, Malatya, Muş, Nevşehir, Osmaniye, Rize, Siirt, Sivas, Tokat, Van (Okyar, 2010; Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2019; Çakır & Seven, 2019; Koyuncu & Kütük, 2020).

***Rhodostrophia vibicaria* (Clerck, 1759)**

Material: Eflani, Karabayır geçidi 22.07.2009 1050m 1 ♀ 3 ♂ 41° 28' 18" N 33° 5' 39" E; Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Amasya, Ardahan, Bartın, Bayburt, Bitlis, Bolu, Çanakkale, Düzce, Edirne, Gümüşhane, Iğdır, İstanbul, Kastamonu, Kayseri, Kırklareli, Konya, Ordu, Siirt, Sinop, Tekirdağ, Tokat, Trabzon, Van, Bayburt, Iğdır (Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2016; 2019a).

***Scopula flaccidaria* (Zeller, 1852)**

Material: Yenice, Yazıköy 1.08.2011 500m 2 ♀ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Amasya, Bartın, Bursa, Edirne, Hatay, İçel, Kırklareli, Kahramanmaraş, Tekirdağ (Koçak & Kemal, 2018; Özdemir, 2019a).

***Scopula imitaria* (Hübner, [1799])**

Material: Yenice, Bağbaşı 1.08.2011 900m 2 ♂ 41° 10' 31" N 32° 15' 34" E; 935m 1 ♀ 41° 10' 19" N 32° 15' 29" E; Urban forest 24.06.2009 300m 2 ♂ 41° 10' 37" N 32° 21' 14" E; Yazıköy 1.08.2011 500m 1 ♂ 41° 9' 38" N 32° 21' 24" E; Yenice Urban forest 24.06.2009 130m 1 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Adana, Amasya, Antalya, Aydın, Balıkesir, Bartın, Bolu, Bursa, Düzce, Edirne, Hatay, Iğdır, İstanbul, İzmir, Manisa, Muğla, Sinop, Tekirdağ (Akbulut et al., 2003; Toper Kaygın et al., 2009; Altıparmak, 2010; Koçak & Kemal, 2018).

***Scopula marginepunctata* (Goeze, 1781)**

Material: Province center, Yeşilköy 1.08.2011 300m 3 ♂ 41° 9' 38" N 32° 32' 48" E; Yenice, Urban forest 24.06.2009 300m 1 ♂ 41° 10' 37" N 32° 21' 14" E.

Distribution in Turkey: Adana, Adıyaman, Amasya, Ankara, Bartın, Batman; Bitlis, Bolu, Bursa, Çanakkale, Diyarbakır, Düzce, Edirne, Elazığ, Erzincan, Hakkari, Iğdır, İçel, İstanbul, İzmir, Kayseri, Kırıkkale, Kırklareli, Konya, Kahramanmaraş, Malatya, Muğla, Ordu, Osmaniye, Siirt, Sivas, Tekirdağ, Tokat, Trabzon, Van (Koçak & Kemal, 2018; Özdemir, 2016; 2019a; Çakır & Seven, 2019; Seven, 2019; Seven & Yılmaz, 2021).

***Scopula nigropunctata* (Hufnagel, 1767)**

Material: Yenice, Bağbaşı 1.08.2011 900m 2 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 2 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: 06 14 22 34 39 52 54 81 Ankara, Bartın, Bolu, Düzce, Edirne, İstanbul, Kastamonu, Kırklareli, Ordu, Sakarya (Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2016; 2019a).

***Scopula ornata* (Scopoli, 1763)**

Material: Yenice, Yazıköy 1.08.2011 500m 1 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Amasya, Ankara, Antalya, Aydın, Bartın, Bilecik, Bitlis, Bolu, Bursa, Çanakkale, Çankırı, Düzce, Edirne, Elazığ, Gümüşhane, Hakkari, Iğdır, İstanbul, Kırklareli, Malatya, Ordu, Tekirdağ, Trabzon, Van, Yalova (Özdemir 2016; 2019; Koçak & Kemal, 2018; Çakır & Seven, 2019).

***Scopula rubiginata* (Hufnagel, 1767)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♀ 1 ♂ 41° 3' 37" N 32° 42' 50" E.

Distribution in Turkey: Amasya, Ankara, Antalya, Ardahan, Artvin, Bartın, Bitlis, Bolu, Bursa, Düzce, Erzincan, Erzurum, İstanbul, Kastamonu, Kırklareli, Konya, Malatya, Ordu, Sivas, Tekirdağ, Van (Toper Kaygın et al., 2009; Göktürk, 2011; Okyar 2012; Özdemir, 2016; Koçak & Kemal 2018).

Subfamily: LARENTIINAE

***Aplocera efformata* (Guenée, [1858])**

Material: Safranbolu, Yazıköy 24.06.2009 500m 1 ♀ 5 ♂ 41° 14' 21" N 32° 43' 47" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Bartın, Bolu, Çanakkale, Düzce, Edirne, İstanbul, Kırklareli, Manisa, Samsun (Koçak & Kemal, 2018; Özdemir, 2019a).

***Aplocera plagiata* (Linnaeus, 1758)**

Material: Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E.

Distribution in Turkey: Adana, Amasya, Ankara, Ardahan, Bitlis, Bolu, Bursa, Çanakkale, Çankırı, Diyarbakır, Düzce, Edirne, Elazığ, Erzincan, Gümüşhane, Hakkari, Hatay, İstanbul, İzmir, Kahramanmaraş, Kastamonu, Kayseri, Kırıkkale, Kırklareli, Konya, Manisa, Mersin, Osmaniye, Siirt, Sivas, Tokat, Trabzon, Tunceli, Van (Okyar, 2012; Koçak & Kemal, 2018; Seven 2020b).

***Aplocera uniformata* (Urbahn, 1971)**

Material: Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E.

Distribution in Turkey: Ankara, Bolu, Gümüşhane, Kars, Rize, Tunceli (Koçak & Kemal, 2018).

***Asthena albulata* (Hufnagel, 1767)**

Material: Yenice, Bağbaşı 1.08.2011 900m 3 ♀ 9 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 3 ♀ 12 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 3 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Bartın, Bolu, Düzce, Edirne, İstanbul, Kastamonu, Kırklareli, Trabzon Zonguldak (Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2019a).

***Catarhoe cuculata* (Hufnagel, 1767)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 3 ♀ 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 2 ♀ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Bitlis, Çanakkale, Konya (Koçak & Kemal, 2018).

***Catarhoe rubidata* ([Denis and Schiffermüller], 1775)**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 4 ♀ 7 ♂ 41° 9' 38" N 32° 21' 24" E; Yenice Urban forest 24.06.2009 130m 3 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Adana, Amasya, Bartın, Bingöl, Bitlis, Bursa, Edirne, İstanbul, Kırklareli, Van (Koçak & Kemal, 2018; Özdemir 2019a).

***Cidaria fulvata* (Forster, 1771)**

Material: Eflani, Karabayır geçidi 22.07.2009 1050m 2 ♂ 41° 28' 18" N 33° 5' 39" E.

Distribution in Turkey: Ankara, Ardahan, Bartın, Bayburt, Bitlis, Bolu, Erzincan, Gümüşhane, Iğdır, Kastamonu, Konya, Sivas, Trabzon, Van (Okyar, 2012; Koçak & Kemal, 2018)

***Colostygia pectinataria* (Knoch, 1781)**

Material: Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E.

Distribution in Turkey: Bolu, Edirne, İstanbul, Kırklareli, Trabzon (Koçak & Kemal, 2018).

***Cosmorhoe ocellata* (Linnaeus, 1758)**

Material: Province center, Karaağaç 11.08.2010 530m 1 ♀ 41° 4' 39" N 32° 30' 6" E; Ovacık, Çukurca 11.08.2010 1000m 1 ♀ 4 ♂ 41° 3' 37" N 32° 42' 50" E; Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E; Yenice, Bağbaşı 1.08.2011 900m 2 ♀ 1 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 4 ♀ 5 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 2 ♀ 12 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Amasya, Ankara, Bartın, Bolu, Bursa, Düzce, Edirne, Gaziantep, Hatay, İçel, İstanbul, İzmir, Kastamonu, Kocaeli, Osmaniye; Tekirdağ, Trabzon (Beşkardeş, 2012; Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2019a; Koyuncu & Kütük, 2020).

***Ecliptopera silaceata* ([Denis and Schiffermüller], 1775)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 3' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 935m 3 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Bolu, Ordu, Rize, Trabzon (Özdemir, 2016; Koçak & Kemal, 2018).

***Epirrhoe alternata* (Müller, 1764)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Ardahan, Bilecik, Bolu, Bursa, Düzce, Kırıkkale, Ordu, Rize, Samsun, Trabzon (Koçak & Kemal, 2018).

***Epirrhoe galiata* ([Denis and Schiffermüller], 1775)**

Material: Ovacık, Çukurca 11.08.2010 1000m 2 ♂ 41° 3' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 900m 2 ♀ 2 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 9 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 2 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Amasya, Ankara, Bartın, Bolu, Bursa, Gümüşhane, Hatay, İstanbul, Konya, Kahramanmaraş, Muğla, Niğde Osmaniye (Koçak & Kemal, 2018; Özdemir, 2019a).

***Eupithecia alliaris* Staudinger, 1870**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♀ 41° 3' 37" N 32° 42' 50" E.

Distribution in Turkey: Ankara, Ardahan, Konya, Sivas (Koçak & Kemal, 2018).

***Eupithecia breviculata* (Donzel, 1837)**

Material: Yenice, Urban forest 24.06.2009 300m 1 ♂ 41° 10' 37" N 32° 21' 14" E.

Distribution in Turkey: Adana, Adıyaman, Amasya, Ankara, Balıkesir, Bartın, Bolu, Bursa, Çanakkale, Diyarbakır, Elazığ, Hakkari, Hatay, İzmir, Kars, Kahramanmaraş, Kırıkkale, Kırklareli, Konya, Osmaniye, Siirt, Van (Koçak & Kemal, 2018; Özdemir, 2019a; Çakır & Seven, 2019).

***Eupithecia denotata* (Hübner, [1813])**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♀ 3 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Ankara, Antalya, Bolu, Kars, Kastamonu (Okyar, 2012; Koçak & Kemal, 2018).

***Eupithecia haworthiata* Doubleday, 1856**

Material: Yenice, Yenice Urban forest 24.06.2009 130m 1 ♀ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Bartın, Ordu, Trabzon (Koçak & Kemal, 2018; Özdemir, 2016; 2019a).

***Eupithecia linariata* ([Denis & Schiffermüller], 1775)**

Material: Yenice, Bağbaşı 1.08.2011 900m 3 ♂ 41° 10' 31" N 32° 15' 34" E, Yazıköy 1.08.2011 500m 2 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Bolu, Düzce (Koçak & Kemal, 2018).

***Eupithecia pyreneata* Mabille, 1871**

Material: Yenice, Bağbaşı 1.08.2011 935m 2 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Turkey (Mironov, 2003; Koçak & Kemal, 2018).

***Eupithecia succenturiata* (Linnaeus, 1758)**

Material: Ovacık, Çukurca 11.08.2010 1000m 2 ♀ 41° 3' 37" N 32° 42' 50" E.

Distribution in Turkey: Artvin, Bolu, Bursa, Düzce (Koçak & Kemal 2018).

***Gymnoscelis rufifasciata* (Haworth, [1809])**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Adana, Amasya, Antalya, Bartın, Bolu, Bursa, Çanakkale, Edirne, Elazığ, Düzce, Hatay, Iğdır, İçel, İstanbul, İzmir, Kırıkkale, Konya, Malatya, Mardin, Muğla, Ordu, Osmaniye, Siirt (Koçak & Kemal, 2018; Özdemir, 2019a; Çakır & Seven, 2019).

***Horisme corticata* (Treitschke, 1835)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♀ 41° 10' 19" N 32° 15' 29" E; Yenice Urban Forest 24.06.2009 300m 1 ♂ 41° 10' 37" N 32° 21' 14" E.

Distribution in Turkey: Adana, Amasya, Ankara, Bartın, Bolu, Bursa, Düzce, Hatay, İstanbul, Kahramanmaraş (Koçak & Kemal, 2018; Özdemir, 2019a).

***Horisme tersata* ([Denis and Schiffermüller], 1775)**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Amasya, Bartın, Bolu, Bursa, İstanbul (Koçak & Kemal, 2018; Özdemir, 2019).

***Melanthia procellata* ([Denis and Schiffermüller], 1775)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 3' 37" N 32° 42' 50" E; Yenice, Yazıköy 1.08.2011 500m 2 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Bolu, Düzce, Edirne, İstanbul, Kırklareli, Ordu, Sinop, Trabzon (Koçak & Kemal, 2018; Özdemir, 2016; 2019a).

***Minoa murinata* (Scopoli, 1763)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 3' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 900m 2 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Amasya, Bolu, Bursa, Çanakkale, Çorum, İstanbul,

Kastamonu, Kırklareli, Mersin, Trabzon, Van (Okyar, 2012; Koçak & Kemal, 2018).

***Thera obeliscata* (Hübner, 1787)**

Material: Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E.

Distribution in Turkey: Amasya, Bolu, Kars, Kastamonu, Rize, Sinop (Okyar, 2010, 2012; Koçak & Kemal, 2018).

Subfamily: ENNOMINAE

***Apeira syringaria* (Linnaeus, 1758)**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Bartın, Bolu, İstanbul, Kırklareli, Ordu, Sinop (Koçak & Kemal, 2018; Özdemir, 2019a).

***Ascotis selenaria* ([Denis and Schiffermüller], 1775)**

Material: Province center, Karaağaç 11.08.2010 530m 1 ♂ 41° 04' 39" N 32° 30' 06" E; Yeşilköy 1.08.2011 300m 1 ♀ 41° 09' 38" N 32° 32' 48" E; Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 03' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E; 935m 2 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 2 ♀ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Amasya, Balıkesir, Bartın, Bolu, Bursa, Çanakkale, Diyarbakır, Düzce, Edirne, Hatay, İçel, İstanbul, Manisa, Muğla, Kahramanmaraş, Ordu, Siirt, Sinop, Trabzon, Van (Koçak & Kemal, 2019; Özdemir, 2019; Seven & Yılmaz, 2021).

***Asovia maeoticaria* (Alpheraky, 1876)**

Material: Safranbolu, Yazıköy 24.06.2009 500m 4 ♂ 41° 14' 21" N 32° 43' 47" E; Yenice, Bağbaşı 1.08.2011 900m 10 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 6 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Amasya, Bartın, Bolu, Isparta, Kastamonu, Kırklareli, Konya, Manisa, Samsun, Tokat (Okyar, 2012; Koçak & Kemal, 2018; Özdemir, 2019).

***Biston betularius* (Linnaeus, 1758)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 03' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 935m 2 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Ardahan, Artvin, Bolu, Çankırı, Çorum, Düzce, Ordu, Rize, Sinop, Trabzon (Koçak & Kemal, 2018).

***Cabera exanthemata* (Scopoli, 1763)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 03' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 2 ♂ 41° 09' 38" N 32° 21' 24" E.

Distribution in Turkey: Aydın, Bartın, Bursa, Edirne, Kastamonu (Okyar, 2012; Koçak & Kemal, 2018).

***Cabera pusaria* (Linnaeus, 1758)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 7 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 3 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♂ 41° 09' 38" N 32° 21' 24" E.

Distribution in Turkey: Bartın, Bolu, Düzce İstanbul, Kastamonu, Kırklareli, Ordu, Tokat, Trabzon, Zonguldak (Koçak & Kemal, 2018; Özdemir, 2019).

***Charissa obscurata* ([Denis and Schiffermüller], 1775)**

Material: Province center, Karaağaç 11.08.2010 530m 2 ♂ 41° 04' 39" N 32° 30' 06" E; Ovacık, Çukurca 11.08.2010 1000m 1 ♀ 41° 03' 37" N 32° 42' 50" E.

Distribution in Turkey: Amasya, Bartın, Bolu, Bursa, Çanakkale, Düzce, Edirne, İstanbul, Konya, Mersin (Koçak & Kemal, 2018; Özdemir, 2019).

***Chiasmia clathrata* (Linnaeus, 1758)**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♀ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Adıyaman, Amasya, Ankara, Ardahan, Balıkesir, Bitlis, Bolu, Bursa, Çankırı, Diyarbakır, Düzce, Edirne, Elazığ, Hakkari, Hatay, İstanbul, Kars, Kahramanmaraş, Kırıkkale, Konya, Mersin, Muş, Nevşehir, Osmaniye, Siirt, Van (Koçak & Kemal, 2018; Çakır & Seven, 2019).

***Cleorodes lichenaria* (Hufnagel, 1767)**

Material: Eflani, Karabayır geçidi 22.07.2009 1050m 2 ♂ 41° 28' 18" N 33° 05' 39" E; Yığlıca 11.08.2010 900m 1 ♂ 41° 23' 35" N 32° 50' 42" E; Yenice, Bağbaşı

1.08.2011 900m 6 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Bolu, İstanbul, Trabzon (Koçak & Kemal, 2018).

***Crocallis inexpectata* Warnecke 1940**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Amasya, Çankırı, Erzurum, Konya, Mersin, Niğde, Ordu, Sivas, Van, Yozgat (Stadie & Fiebig, 2014).

***Ectropis crepuscularia* ([Denis and Schiffermüller], 1775)**

Material: Bağbaşı, 1.08.2011 900m 16 ♀ 41° 10' 31" N 32° 15' 34" E; Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 1 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Bartın, Bursa, Ordu, Düzce (Koçak & Kemal, 2018; Özdemir, 2019).

***Ematurga atomaria* (Linnaeus, 1758)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Amasya, Ankara, Bartın, Bilecik, Bingöl, Bitlis, Bolu, Bursa, Çanakkale, Diyarbakır, Düzce, Edirne, İçel, İstanbul, Kastamonu, Kırklareli, Kocaeli, Manisa, Ordu, Sakarya, Samsun, Sinop, Sivas, Tokat, Zonguldak (Koçak & Kemal, 2018; Seven, 2020b).

***Ennomos quercinaria* (Hufnagel, 1767)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 03' 37" N 32° 42' 50" E; Safranbolu, Örencik 22.07.2009 950m 1 ♀ 3 ♂ 41° 23' 41" N 32° 47' 41" E; Yenice, Bağbaşı 1.08.2011 900m 3 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 10 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 5 ♂ 41° 09' 38" N 32° 21' 24" E; Urban forest 24.06.2009 130m 2 ♂ 41° 11' 09" N 32° 21' 27" E.

Distribution in Turkey: Bilecik, Bartın, Bolu, Düzce, İstanbul, Kırklareli, Kocaeli, (Beşkardeş, 2012; Koçak & Kemal, 2018; Özdemir, 2019).

***Epione repandaria* (Hufnagel, 1767)**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Bartın, İstanbul (Koçak & Kemal, 2018; Özdemir, 2019).

***Heterolocha laminaria* (Herrich-Schäffer, [1852])**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Bitlis, Bolu, Bursa, Rize, Trabzon (Koçak & Kemal, 2018; Okyar, 2010).

***Hylaea fasciaria* (Linnaeus, 1758)**

Material: Safranbolu, Yazıköy 24.06.2009 500m 1 ♂ 41° 14' 21" N 32° 43' 47" E.

Distribution in Turkey: 01 06 07 10 14 17 22 31 33 46 52 59 80 Adana, Ankara, Anyalya, Balıkesir, Bartın, Bolu, Çanakkale, Edirne, Hatay, İçel, Kahramanmaraş, Muğla, Ordu, Osmaniye, Tekirdağ (Koçak & Kemal, 2018; Özdemir, 2019; Seven & Yılmaz, 2012).

***Hypomecis punctinalis* (Scopoli, 1763)**

Material: Yenice, Urban forest 24.06.2009 300m 1 ♂ 41° 10' 37" N 32° 21' 14" E; Yenice Urban forest 24.06.2009 130m 2 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: 05 13 14 16 31 33 39 52 57 61 80 81 Amasya, Bartın, Bitlis, Bolu, Bursa, Düzce, Hatay, Kırklareli, Ordu, Osmaniye, Sinop, Trabzon (Koçak & Kemal, 2018; Özdemir, 2016; 2019).

***Hypomecis roboraria* ([Denis and Schiffermüller], 1775)**

Material: Safranbolu, Örencik 22.07.2009 950m 1 ♂ 41° 23' 41" N 32° 47' 41" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E.

Distribution in Turkey: Artvin, Bolu, Düzce, Ordu (Koçak & Kemal, 2018; Özdemir, 2016; 2019).

***Lomaspilis bithynica* Wehrli, 1954**

Material: Yenice, Bağbaşı 1.08.2011 900m 2 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 2 ♀ 4 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Ankara, Ardahan, Artvin, Çankırı, Düzce, Erzurum, İstanbul, Kars, Kayseri, Rize, Sinop, Tokat, Trabzon, Van (Koçak & Kemal, 2018).

***Lomographa temerata* ([Denis and Schiffermüller], 1775)**

Material: Yenice, Bağbaşı 1.08.2011 900m 2 ♀ 2 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 4 ♀ 2 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 2 ♀ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Düzce, Ordu, Tokat (Koçak & Kemal, 2018).

***Macaria liturata* (Linnaeus, 1761)**

Material: Safranbolu, Örencik 22.07.2009 950m 1 ♀ 41° 23' 41" N 32° 47' 41" E; Yazıköy 24.06.2009 500m 2 ♀ 3 ♂ 41° 14' 21" N 32° 43' 47" E.

Distribution in Turkey: Ardahan, Bartın, Bolu, Düzce, Trabzon (Koçak & Kemal, 2018; Özdemir, 2019).

***Macaria notata* (Linnaeus, 1758)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 7 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 2 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 37 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Bartın, Düzce, Kırklareli, Ordu, Rize, Sinop, Trabzon (Okyar, 2010; Koçak & Kemal, 2018; Özdemir, 2019.)

***Opisthograptis luteolata* (Linnaeus, 1758)**

Material: Ovacık, Çukurca 11.08.2010 1000m 1 ♂ 41° 3' 37" N 32° 42' 50" E; Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Amasya, Ankara, Artvin, Bartın, Bitlis, Bolu, Bursa, Düzce, Çanakkale, Çankırı, İstanbul, Kastamonu, Kırklareli, Kocaeli, Manisa, Ordu, Rize, Sinop, Trabzon, Van (Okyar, 2010; Göktürk, 2011; Beşkardeş, 2012; Akkuzu et al., 2015; Koçak & Kemal, 2018; Özdemir, 2019).

***Pachycnemia hippocastanaria* (Hübner, [1799])**

Material: Yenice, Bağbaşı 1.08.2011 900m 3 ♀ 3 ♂ 41° 10' 31" N 32° 15' 34" E;

1.08.2011 935m 2 ♀ 5 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 1 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Amasya, Bartın, Bolu, Bursa, Çanakkale, Düzce (Koçak & Kemal, 2018; Özdemir, 2019).

***Peribatodes rhomboidaria* ([Denis and Schiffermüller], 1775)**

Material: Province center, Yeşilköy 1.08.2011 300m 7 ♂ 41° 9' 38" N 32° 32' 48" E; Safranbolu, Yazıköy 24.06.2009 500m 1 ♀ 2 ♂ 41° 14' 21" N 32° 43' 47" E; Yenice, Bağbaşı 1.08.2011 935m 2 ♂ 41° 10' 19" N 32° 15' 29" E; Urban forest 24.06.2009 300m 2 ♀ 4 ♂ 41° 10' 37" N 32° 21' 14" E; Yazıköy 1.08.2011 500m 1 ♀ 41° 9' 38" N 32° 21' 24" E; Yenice Urban forest 24.06.2009 130m 2 ♀ 4 ♂ 41° 11' 9" N 32° 21' 27" E.

Distribution in Turkey: Adana, Amasya, Artvin, Bartın, Bolu, Burdur, Bursa, Çanakkale, Düzce, Edirne, Elazığ, Hakkari, Hatay, İçel, İstanbul, Kars, Konya, Kahramanmaraş, Kastamonu, Kocaeli, Manisa, Muğla, Ordu, Osmaniye, Rize, Siirt, Sinop, Tekirdağ, Tokat, Trabzon, Van, Yalova (Beşkardeş, 2012; Koçak & Kemal, 2018; Özdemir, 2019; Çakır & Seven, 2019).

***Peribatodes umbrarius* (Hübner, [1809])**

Material: Province center, Karaağaç 11.08.2010 530m 1 ♀ 41° 4' 39" N 32° 30' 6" E.

Distribution in Turkey: Amasya, Bingöl, Bolu, Elazığ, Hakkari, Hatay, Konya, Malatya, Manisa, Muğla, Kahramanmaraş, Kırıkkale, Siirt, Van (Koçak & Kemal, 2018; Çakır & Seven, 2019; Seven & Yılmaz, 2021).

***Plagodis dolabraria* (Linnaeus, 1767)**

Material: Yenice, Bağbaşı 1.08.2011 900m 1 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Bartın, Bolu, Düzce, İstanbul, Kırklareli, Ordu, Sinop (Koçak & Kemal, 2018; Özdemir, 2019).

***Selenia dentaria* (Fabricius, 1775)**

Material: Safranbolu, Örencik 22.07.2009 950m 1 ♀ 1 ♂ 41° 23' 41" N 32° 47' 41" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 7 ♂

41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 4 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 4 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Artvin, Bartın, Bolu, Düzce Ordu (Koçak & Kemal, 2018; Özdemir, 2019).

***Selenia lunularia* (Hübner, 1788)**

Material: Safranbolu, Örencik 22.07.2009 950m 1 ♂ 41° 23' 41" N 32° 47' 41" E; Yenice, Bağbaşı 1.08.2011 900m 1 ♀ 4 ♂ 41° 10' 31" N 32° 15' 34" E; 1.08.2011 935m 3 ♂ 41° 10' 19" N 32° 15' 29" E; Yazıköy 1.08.2011 500m 1 ♀ 7 ♂ 41° 9' 38" N 32° 21' 24" E.

Distribution in Turkey: Adana, Amasya, Ardahan, Bartın, Bitlis, Bolu, Çanakkale, Düzce, İstanbul, Kocaeli, Ordu, Osmaniye, Rize, Samsun, Sinop, Trabzon, Van (Okyar, 2010; Beşkardeş, 2012; Koçak & Kemal, 2018; Özdemir, 2019).

***Stegania dilectaria* (Hübner, 1790)**

Material: Yenice, Bağbaşı 1.08.2011 935m 1 ♂ 41° 10' 19" N 32° 15' 29" E.

Distribution in Turkey: Adana, Bartın, Bitlis, Bolu, Diyarbakır, Düzce, Edirne, Elazığ, İstanbul, Kırıkkale, Konya, Kahramanmaraş, Malatya, Samsun, Siirt, Tokat, Van (Koçak & Kemal, 2018; Özdemir, 2019; Çakır & Seven, 2019; Seven, 2020b).

Discussion

In this study, 755 samples were examined and 88 species belonging to 5 subfamilies were identified. The distribution of these species to their subfamilies are Orthostixinae 1 species, Geometrinae 5, Sterrhinae 27, Larentiinae 25 and Ennominae 30. Nine species, such as *Aplasta ononaria*, *Camptogramma bilineata* (L.) *Idaea fuscovenosa*, *I. humiliata*, *I. ochrata*, *I. rufaria*, *I. trigeminata*, *Rhodostrophia discopunctata* and *Scotopteryx luridata* (Hufnagel, 1767) were previously known from the Karabük province (Okyar, 2012, Koçak and Kemal, 2018). Among them *A. ononaria*, *I. humiliata*, *I. rufaria*, *I. trigeminata*, *R. discopunctata* were recorded from the study area with this paper also. Consequently, 83 species were recorded for

the first time from this province and the number of known species increased to 92.

Cyclophora punctaria (Linnaeus, 1758) was known in Turkey from Adana, Amasya, Artvin, Bitlis, Bursa, Çanakkale, Düzce, İstanbul, Konya, Kahramanmaraş, Ordu, Samsun, Siirt and Tokat, provinces (Koçak and Kemal, 2018). *C. punctaria* ssp. *fritzae* was described by Hausmann (2003) from Caucasus. Hausmann (2004) diagnosed it from nominative subspecies with a strongly curved fibula (30-70°) of the male genitalia and gave its distribution from the Crimean peninsula to the Caucasus, the north east of Turkey and the north of Iran. In the same study, the distribution of nominative subspecies in Turkey was presented as a part of Thrace and the eastern Mediterranean and southwestern Aegean regions. Kemal and Koçak (2017) recorded ssp. *fritzae* from Mutki district in Bitlis province where southeastern part of Turkey. In this study, the curation of fibula was measured above 70 degrees in the examined materials and determined as ssp. *fritzae*. This record is important to see the distribution of this spp. in the North-western part of Anatolia. It is clear that the new studies are necessary for evaluation on distribution of *C. punctaria* ssp. *fritzae* and nominative subspecies in Turkey. Male genitalia of ssp. *fritzae* were given in figure 1.



Figure 1. Male genitalia of *Cyclophora punctaria fritzae* (Hausmann, 2003).

Ethics Committee Approval

N/A

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Author Contributions

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Conflict of Interest

The authors have no conflicts of interest to declare.

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