Türk. entomol. derg., 2015, 39 (4): 381-392
DOI: http://dx.doi.org/10.16970/ted.89501

ISSN 1010-6960

Orijinal araştırma (Original article)

Contribution to the knowledge of the Notodontidae (Lepidoptera) of Turkey[1]

Notodontidae familyasının (Lepidoptera) Türkiye'deki durumuyla ilgili bilgiye katkı

Feza CAN CENGİZ[2*] **Başak ULAŞLI[2]** **Alexander SCHINTLMEISTER[3]**

Summary

The aim of this paper is to summarize our knowlegde of the recent distribution and systematic classification of the Notodontidae (Lepidoptera) occuring in 23 provinces located in the central and eastern Anatolian, Mediterranean and Black Sea regions of Turkey, based on recordsaccrued during the years 1968-2015. In this study, 93 notodontid specimens from seven collections were examined. A total of 29 species belonging to 17 genera and representing six subfamilies of Notodontidae were determined. The detailed study of specimens of the Notodontidae from four different regions of Turkey shows that *Stauropus fagi* (Linnaeus, 1758) is a new record for the Mediterranean region of Turkey.

Keywords: Notodontidae, Lepidoptera, new record, fauna, Turkey

Özet

Çalışmanın amacı 1968-2015 yılları süresince, Türkiye'nin Orta ve Doğu Anadolu, Akdeniz ve Karadeniz Bölge'lerinde 23 ilde belirlenen Notodontidae (Lepidoptera) familyasına giren türlerin, güncel yayılış alanları ve sınıflandırılmaları hakkındaki bilgileri özetlemektir. Bu çalışmada, yedi koleksiyondan 93 notodontid bireyi incelenmiştir. Toplam olarak, Notodontidae familyasının, altı alt familyasına bağlı 17 cinse ait 29 tür belirlenmiştir. Türkiye'nin dört farklı bölgesinden Notodontidae familyası türlerinin incelendiği bu ayrıntılı çalışma ile *Stauropus fagi* (Linnaeus, 1758) Türkiye'nin Akdeniz Bölgesi için yeni kayıt olarak belirlenmiştir.

Anahtar sözcükler: Notodontidae, Lepidoptera, yeni kayıt, fauna, Türkiye

[1] This study was submitted and published as an abstract at the XIX. European Congress of Lepidopterology (27 September- 2 October Radebeul-Dresden, Germany).

[2] Mustafa Kemal University, Agricultural Faculty, Deparment of Plant Protection, Entomology Section 31040 Hatay-Turkey
[3] Calberlastr. 3, 01326 Dresden-Germany
* Sorumlu yazar (Corresponding author) e-mail: cezafan_onurcan@hotmail.com
Alınış (Received): 15.12.2015 Kabul ediliş (Accepted): 07.01.2016 Çevrimiçi Yayın Tarihi (Published Online): 18.01.2016

Introduction

The Noctuoidea is the most species-rich superfamily in the Lepidoptera. The Notodontidae or Prominent Moths which forms part of the superfamily Noctuoidea contains nearly 3.000 described species and currently is known world-wide except in the Arctic regions and New Zeland (Schintlmeister, 2008). Most of them occur in the Neotropical region (Heppner, 1991; Müller et al., 2005). 209 species are recorded from the Palaearctic region (Heppner, 1991; Müller et al., 2005) of which 48 species are found in Europe and North Africa; their larvae usually feed on trees and bushes, and often are oligophagous or even monophagous (De Freina & Witt, 1987). Schintlmeister (2008) contended in his book on Notodontidae-Palaearctic Macroheterocera that 716 species belongs to ten subfamilies in the Palearctic region.

The state of Turkey extends from Asia into Europe and is one of the most species-rich countries in the western Palaearctic region. Unfortunately, previous studies on the biodiversity of Turkey have only been a few. Determination of moth species, their biology and distribution, therefore, are crucial for Turkey's faunistic studies. Like many other species, some notodontid species are facing extinction due to global climate change and human activities that are destroying their habitats, in particular deforestration. However, Schintlmeister (1986 & 1988) showed that notodontids are able to adapt well to urbanized habitats, such as parks and gardens in cities and villages. Studies on the Turkish Notodontidae, on the other hand are available in limited numbers. But other faunistic and systematic studies and lists of species recorded in Turkey includes the Notodontidae (De Freina, 1979, 1981 & 1983; Okyar (Göbekçioğlu) & Aktaç, 1997; Okyar & Aktaç, 2007; Koçak & Kemal, 2007; Baron, 2008; Schintlmeister, 2008; Okyar et al., 2009; Beşkardeş, 2012). But none of these studies specifically targeted the Notodontidae in Turkey, although they partly included some of the species.

The study area, Turkey, was divided into seven regions including the Black Sea region based on climatic parameters, location, topography, flora and fauna etc. The Black Sea region has a steep, rocky coast with rivers that cascade through the gorges of the coastal mountain ranges. The southern slopes are mostly unwooded, but the northern slopes are covered in dense deciduous and evergreen trees. Access to the inland from the coast is limited to a few narrow valleys because the mountain ridges form, with elevations of 1,525 to 1,800 m in the west and 3,000 to 4,000 m in the east in the Kackar Mountains, an almost unbroken wall separating the coast from the interior (Can, 2008). The higher slopes facing northwest tend to be densely forested. Because of these natural conditions, the Black Sea coast has been isolated from Anatolia for a very long time. Due to the rainy and temperate climate, the dominant plant cover in the Black Sea region is forest consists of beech (*Fagus* spp.) (Fagaceae), oak (*Quercus* spp.) (Fagaceae), hornbeam (*Carpinus* spp.) (Betulaceae), black pine (*Pinus* spp.) (Pinaceae), and fir (*Abies* spp.) (Pinaceae) are observed at the upper elevations from 600-700 m altitude above sea level (Can, 2008). In addition, hazel nut shrubs are very widely distributed and common in the region (Can, 2008).

The Mediterranean climate prevails at lower elevations, whilst the higher elevations are characterized by Mediterranean mountain range climate (Aytaç et al., 2012). The biodiversity of the Taurus and Amanos mountains is notably rich as a consequence of all the above mentioned geological and climatical diversity. These mountains, situated in the eastern Mediterranean region of Turkey, rise sharply from sea level and have topographical, geological and geomorphological features which support a high rate of endemism and a large amount of still ongoing speciation (Aytaç et al., 2012; Özkoçak, 1993). There are maquis shrubs and pine forests up to 1,000 m elevation and above that forests of larch (*Larix*

spp) (Pinaceae), cedar (*Cedrus* spp.) (Pinaceae) and fir trees can be observed. Furthermore, the Amanos mountain range is the southernmost point where beech forests occur (Ezer, 2008; Anonim, 2007; Aytaç, 2010; Aytaç & Semenderoğlu, 2012).

Turkey is situated in a large Mediterranean geographical location where climatic conditions are quite temperate and the diverse nature of the landscape and the existence in particular of the mountains that run parallel to the coasts, result in significant differences in climatic conditions from one region to the other. While the coastal areas enjoy milder climates, the inland Anatolian plateau experiences extremes of hot summers and cold winters with limited rainfall (Şensoy et al., 2015). The central Anatolian region occupies the area between the two zones of the folded mountains, extending eastward to the point where the two ranges converge. The plateau-like, semi-arid highlands of Anatolia are considered to be the heartland of the country. The region varies in elevation from 600 to 1,200 m from west to east. The western parts of Anatolia, often consist of black pine (*Pinus nigra* Arnold) (Pinaceae), in the east nearly exclusively Scot's pine (*P. sylvestris* L.) (Pinaceae). Penetrating further into the central parts of inner Anatolia leads to still dryier and cold winter conditions. Today the lower parts of central Anatolia are virtually treeless. Eastern Anatolia, where the Pontic and Anti-Taurus mountain ranges converge, is rugged country with higher elevations, a more severe climate, and greater precipitation than can be found on the Anatolian Plateau. The western part of the eastern Anatolian region is known as the Anti-Taurus, where the average elevation of mountain peaks exceeds 3,000 m. *P. sylvestris* is the dominant tree in the dry and cold areas of north-eastern Anatolia.

Materials and Methods

The examined material originates from seven different collections and was made available by museum curators as well as by private collections.

Abbreviations

CASD	Private collection Alexander Schintlmeister, Dresden, Germany
NTM	Nazife Tuatay Plant Protection Museum, Directorate of Plant Protection Central Research Institute, Ankara, Turkey
MMKU	Museum of Mustafa Kemal University, Hatay, Turkey
MTU	Museum of Trakya Universitesi, Faculty of Science, Biology Department, Edirne,Turkey
NHM	Natural History Museum, Vienna, Austria
MWM	Museum Witt, Munich, Germany
ZFMK	Zoological Research Museum Alexander Koenig, Bonn, Germany

A list of examined material is given in the appendix. Most of the specimens were collected by the authors in different localities in Turkey using light-traps at different elevations with different climatic conditions, plant cover and surface features in Çankırı, Kırıkkale, Ankara, Konya, Kayseri, Nevşehir, Hakkari, Ağrı, Erzincan, Kars, Tunceli and Erzurum provinces that are located in central and eastern Anatolia; in Hatay, Adana, Osmaniye and Antalya in the Mediterranean region and Çorum, Bolu, Trabzon, Ordu, Giresun, Rize and Samsun from the Black Sea region of Turkey and their villages and surroundings, and the Amanos, inner part of the Taurus and the eastern Black Sea mountains during the years 1968-2015. Some notodontid species were observed and photographed in the field. Their

identification and the terminology of morphological structures are based on Schintlmeister (2008). Moreover, the taxonomy and nomenclature follow Schintlmeister (2008) and Saldaitis et al. (2013). All specimens were dissected in the laboratory, with the genitalia embedded in Entellan on slides, following standard procedures.

Collection localities in 23 provinces of the four different regions in Turkey are coded as follows:

A- Mediterranean Region

A1 Hatay-Belen, **N:** 36º52' **E:** 36º15', 477m

A2 Hatay-Samandağ, **N:** 36º8' **E:** 35º59', 232m

A3 Adana-Kozan, Düzağaç, **N:** 37º34' **E:** 35º49', 564m

A4 Adana-Pozantı, **N:** 37º28' **E:** 34º54', 1120m

A5 Adana-Feke, Tenkerli, **N:** 37º44' **E:** 36º56', 741m

A6 Adana-Aladağ **N:** 37º 34' **E:** 35º23', 770m

A7 Osmaniye-Zorkun, Karacalar, **N:** 37º01' **E:** 36º16', 700m

A8 Osmaniye-Hınzırlı, **N:** 37º00' **E:** 36º27', 1504m

A9 Antalya 700 m

B- Central Anatolian Region

B1 Çankırı-Ilgaz, Kırkpınar, **N:** 41º 00' **E:** 33º 38', 1700m

B2 Çankırı-Eldivan, **N:** 40º30' **E:** 33º28', 1200m

B3 Çankırı-Eldivan-Kavak, **N:** 40º31' **E:** 33º30', 1000m

B4 Çankırı-Kenbağ, **N:** 40 º 38' **E:** 33º35', 750m

B5 Kırıkkale-Büyükyağlı, **N:** 39º56' **E:** 33º58', 700m

B6 Ankara-Köprüköy, 750m

B7 Ankara- Kızılcahamam, 950m

B8 Konya-Beyşehir, 1400m

B9 Kayseri, **N:** 38º28' **E:** 35º09', 1075m

B10 Nevşehir-Ürgüp, **N:** 38º34' **E:** 35º07', 1500m

C- Black Sea Region

C1 Çorum-Kargı, Saraycık Dağı, **N:** 41 º01' **E:** 35 º04', 1600m

C2 Bolu-Yedigöller, **N**: 40º56' **E:** 31º44'

C3 Bolu-Cepni, **N**: 40º39' **E:** 31º30', 800m

C4 Trabzon-Maçka, **N:** 40º 45' **E:** 39º37', 427m

C5 Trabzon-Maçka, Çamlıdüz, **N:** 40º42' **E:** 39º29', 1004m

C6 Trabzon-Maçka, Ormanüstü, **N:** 40º45' **E:** 39º28', 1561m

C7 Trabzon-Maçka, Zigana, 1500m

C8 Ordu-Perşembe, **N:** 41º06' **E:** 37º40', 300m

C9 Giresun

C10 Rize-İkizdere, **N:** 40º33' **E:** 40º46', 525m

C11 Rize-Ayder, **N:** 40º57' **E:** 41º05', 1350m

C12 Samsun-Çarşamba, **N:** 41º18' **E:** 36º72', 1350m

D- Eastern Anatolian Region

D1 Hakkari, 1350-1400m

D2 Hakkari-Mutluca, **N:** 37º29' **E:** 43º06', 2100m

D3 Ağrı, **N:** 39º47' **E:** 42º28', 2100m

D4 Erzincan, **N:** 39º34' **E:** 40º03', 1350m

D5 Kars-Sarıkamış, **N:** 42º35' **E:** 40º20', 2150m

D6 Tunceli, 1000m.

D7 Erzurum, 1850m

Results and Discussion

In the present study, the results of the identification of notodontid moth samples collected at 38 different localities in 23 provinces of the central and eastern Anatolia, Mediterranean and Black Sea regions of Turkey are presented. In all, 29 species belonging to 17 genera and representing six subfamilies were identified: Two genera and five species belong to the Cerurinae: *Cerura vinula vinula* (Linnaeus, 1758), *C. intermedia* (Teich, 1896), *Furcula furcula turcica* Schintlmeister, 1998, *F. bifida bifida* (Brahm, 1787); *F. interrupta interrupta* (Christoph, 1867) and *F. interrupta syra* (Grum-Grshimailo, 1899); three genera and three species belong to the Dicranurinae: *Dicranura ulmi* ([Denis & Schiffermüller], 1775), *Harpyia milhauseri* (Fabricius, 1775) and *Stauropus fagi fagi* (Linnaeus, 1758); five genera and 11 species belong to the Notodontinae: *Drymonia dodonaea wageneri* de Freina, 1981, *D. melagona esmera* de Freina, 1981, *D. querna djezina* Bang-Haas, 1937, *D. velitaris pontica* (Rebel, 1908), *Notodonta dromedarius pontica* Witt, 1980, *N. derbendica* Daniel, 1965, *N. tritopha irfana* de Freina, 1983, *Peridea anceps* (Goeze, 1781), *P. korbi korbi* (Rebel, 1918), *Pheosia tremula* Clerck, 1759, and *Paradrymonia vittata vittata* (Staudinger, 1892); three genera and three species belong to the Ptilodontinae: *Pterosoma palpina palpina* Clerck, 1759; *P. palpina pontica* Staudinger, 1901, *Ptilodon saerdabensis* (Daniel, 1938) and *Ptilophora plumigera* ([Denis & Schiffermüller], 1775); one genus and two species belong to the Phalerinae: *Phalera bucephala becephala* (Linnaeus, 1758) and *P. bucephaloides* (Ochsenheimer, 1810); and three genera and five species belong to the Pygaerinae: *Spatalia argentina* ([Denis & Schiffermüller], 1775), *Rhegmatophila alpina osmana* Friedel, 1967, *Clostera curtula curtula* (Linnaeus, 1758), *C. pigra staudingeri* Koçak, 1980, and *C. anastomosis* (Linnaeus, 1758). *Stauropus fagi* was reported as a species new for the fauna of the Mediterranean region of Turkey (Table 1.).

We compared the number of notodontid species recorded in different regions of Turkey in this study. Eleven species were identified from the Mediterranean region, 11 species from the central Anatolia, 12 species from the Black Sea region and nine species from eastern Anatolia (Figure 1.). The relatively higher number of species recorded in the Black Sea region is not surprising. The Black Sea coast is the only region of Turkey that receives high precipitation throughout the year. Because of the rainy and different climate zone of this region, the Black Sea coast has a special fauna and is isolated from the other regions in Turkey.

Table 1. Distribution of the notodontid species that identified in four different regions of Turkey. Asterix (*), means that first record of the Mediterranean region of Turkey

	A- Mediterranean	B- Central Anatolia	C- Black Sea	D- Eastern Anatolia
CERURINAE Butler, 1881				
1. *Cerura vinula vinula* (Linnaeus, 1758)	+	+		
2. *C. intermedia* (Teich, 1896)				+
3. *Furcula furcula turcica* Schintlmeister, 1998		+		+
4. *F. bifida bifida* (Brahm, 1787)	+		+	
5. *F. interrupta interrupta* (Christoph, 1867)			+	+
F. interrupta syra (Grum-Grshimailo, 1899)	+			
DICRANURINAE Duponchel, 1845				
6. *Dicranura ulmi* (Denis & Schiffermüller, 1775)		+		
7. *Harpyia milhauseri* (Fabricius, 1775)	+			
8. *Stauropus fagi fagi* (Linnaeus, 1758) *	+	+	+	
NOTODONTINAE Stephens,1829				
9. *Drymonia dodonaea wageneri* de Freina, 1981			+	
10. *D. melagona esmera* de Freina, 1981			+	
11. *D. querna djezina* Bang-Haas, 1937	+			
12. *D. velitaris pontica* (Rebel, 1908)			+	
13. *Notodonta dromedarius pontica* Witt, 1980				+
14. *N. derbendica* Daniel, 1965		+		
15. *N. tritopha irfana* de Freina, 1983				+
16. *Peridea anceps* (Goeze, 1781)	+			
17. *P. korbi korbi* (Rebel, 1918)	+			
18. *Pheosia tremula* Clerck, 1759	+			
19. *Paradrymonia vittata vittata* (Staudinger, 1892)				+
PTILODONTINAE Packard, 1864				
20. *Pterosoma palpina palpina* Clerck, 1759			+	
P. palpina pontica Staudinger, 1901		+		+
21. *Ptilodon saerdabensis* (Daniel, 1938)			+	
22. *Ptilophora plumigera* (Denis & Schiffermüller, 1775)				+
PHALERINAE Butler, 1886				
23. *Phalera bucephala bucephala* (Linnaeus, 1758)			+	
24. *P. bucephaloides* (Ochsenheimer, 1810)		+		+
PYGAERINAE Duponchel, 1845				
25. *Spatalia argentina* (Denis & Schiffermüller, 1775)	+	+	+	
26. *Rhegmatophila alpina osmana* Friedel, 1967	+	+	+	
27. *Clostera curtula curtula* (Linnaeus, 1758)		+		
28. *C. pigra staudingeri* Koçak, 1980		+		
29. *C. anastomosis* (Linnaeus, 1758)			+	

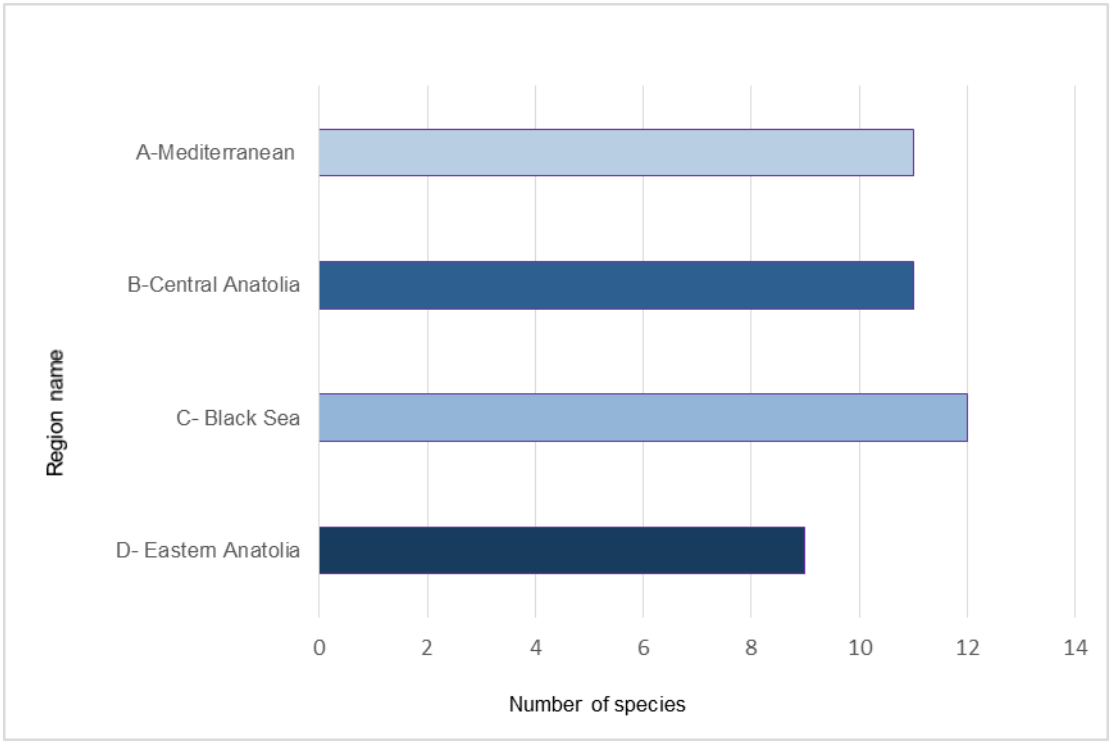

Figure 1. The number of notodontid species recorded in different regions of Turkey.

The present paper lists 17 genera and the maximum number of species belong to *Drymonia* Hübner, 1819, with four species and subspecies. *Drymonia dodonaea* ([Denis & Schiffermüller], 1775) is known from Europe, Caucasus and Scandinavia. *Drymonia dodonaea wageneri* de Freina, 1981, inhabits southern Turkey (Schintlmeister, 2008), *D. querna djezina* Bang-Haas, 1937, occurs in Turkey, Syria and Lebanon. The larval hostplants are *Quercus* spp. (Fagaceae) which are very common in Turkey (Müller et al., 2005). The distributional areas of *D. velitaris velitaris* (Hufnagel, 1767) and *D. velitaris pontica* (Rebel, 1908) are clearly different from each other. *D. velitaris velitaris* is distributed in France, central Europe and Italy; the other subspecies is *D. velitaris pontica* which occurs in north-eastern Turkey and the Caucasus. During the present study, this subspecies was recorded from the central Black Sea region of Turkey.

The genus *Furcula* Lamarck, 1816, was represented by three species and four subspecies in this paper. *F. furcula* (Clerck, 1759) is one of the most variable notodontids. *F. furcula turcica* Schintlmeister, 1998, is a small subspecies characterized by whitish coloured forewings mixed with greyish lemon yellow and its distributional area is restricted to Turkey (Schintlmeister, 2008). *F. bifida* comprises two closely related subspecies: *F. bifida bifida* (Brahm, 1787) is the predominant subspecies in the Palaearctic region and *F. bifida lype* (Seifers, 1933) occurs only in northern Fennoscandia (Schintlmeister, 2008). *F. interrupta* is larger and white coloured with a contrasting black pattern on the forewings; it is represented by three subspecies (Schintlmeister, 2008), viz *F. interrupta interrupta* (Christoph, 1867), which is distributed in south-eastern Russia, Turkey and İran, *F. interrupta syra* (Grum-Grshimailo, 1899), which occurs in south-eastern Turkey, Lebanon, Syria, Israel and Cyprus ((Müller et al., 2005; Schintlmeister, 2008).

A list of determined specimens of Notodontidae is provided below. The list includes material examined from four different regions of Turkey, collected from 1968 to 2015. The localities in this list are cited as they appear on the pin-labels.

Cerurinae Butler, 1881

1- *Cerura vinula vinula* (Linnaeus, 1758)

Locality **B3**, 04.IV.1997, 1 ♀, leg Y. Özdemir (NTM); Locality **A3**, 15.III.2001, 1 ♂, leg. F. Can Cengiz (MMKU).

2- *C. intermedia* (Teich, 1896)

Locality **D1**, 09.VI.1982, 2 ♂♂, 1 ♀, leg. De Freina (MWM).

3- *Furcula furcula turcica* Schintlmeister, 1998

Locality **D5**, 16-24.VII.1978, 1 ♂, leg. De Freina (MWM); Locality **B10**, 21.V.1985, 1 ♂, leg. Werner Weise (CASD); Locality **D3**, 12.VII.1996, 1 ♂, leg. P. Kautt & V. Weise (CASD).

4- *F. bifida bifida* (Brahm, 1787)

Locality **A9**, X.1987, 1 ♀, leg. Hubert Mayer (CASD); Locality **C8**, 20.XII.1998, 1 ♀, leg. M. Özdemir (NTM).

5- *F. interrupta interrupta* (Christoph, 1867)

Locality **D4**, 09.VI.1996, 1 ♂, leg. P. Kautt & V. Weise (CASD); Locality **C5**, 2 ♂♂ 29.VI. 2005, leg. F. Can Cengiz (MMKU).

F. interrupta syra (Grum-Grshimailo, 1899)

Locality **A3**, 13.III.2002, 1 ♂; 7.V.2002, 1♂, leg. F. Can Cengiz (MMKU); Locality **A6,** 04.VI.2001, 1 ♂, 1 ♀, leg. F. Can Cengiz (MMKU)..

Dicranurinae Duponchel, 1845

6- *Dicranura ulmi* (Denis & Schiffermüller, 1775)

Locality **B9,** 21.V.1985, **1** ♂, leg. Werner Wolf (CASD).

7- *Harpyia milhauseri* (Fabricius, 1775)

Locality **A1,** 02.V.1987, 1 ♂, leg. Werner Wolf (CASD).

8- *Stauropus fagi fagi* (Linnaeus, 1758)

Locality **C2**, 02.VI.1999, 4 ♂♂, leg. M. Özdemir (NTM); Locality **A5**, 30.V.2002, 1 ♂, leg. F. Can Cengiz (MMKU); Locality **A8**, 10.VI.2002, 2 ♂♂, leg. F. Can Cengiz (MMKU); Locality **A7**, 11.VI.2002, 2 ♂♂, leg. F. Can Cengiz (MMKU); Locality **B1**, 12.VI.2003, 2 ♂♂, leg. F. Can Cengiz (MMKU).

New record for the Mediterranean region of Turkey. Not recorded by Okyar (Göbekçioğlu) & Aktaç (1997), Okyar & Aktaç (2007), Baron (2008) and Beşkardeş (2012). In Schintlmeister (2008) a distribution map and the lists of Koçak & Kemal (2007) and Okyar et al. (2009), *S. fagi* is recorded for Turkey, but the localities are outside of the Mediterranean region.

The moth is remarkable for its whitish pattern in the median area of the forewings and paler coloured hind wings (Figure 1.). The male genitalia are distinctive in the structure of the 8th tergite and the

shape of the very large socii (Schintlmeister 2008) (Figure 2.). Throughout its range *S. fagi* occurs in different types of habitats, such as xerothermic hills, steppe, semi-deserts to dense Taiga forests. The species readily adapts to cultivated areas and also occurs in the urban centres of the larger cities. The well-known, ant-like larvae are polyphagous. They were recorded mostly on *Quercus, Fagus* and many species of Rosaceae such as *Malus* (Schintlmeister 2008).

The European distribution of *S. fagi* includes Ireland, southern England, southern Fennoscandia, Spain, northern Turkey, northern Iran and the Caucasus, irs range eastwards being bordered by the River Volga and the Ural Mountains (Schintlmeister 2008).

Figure 2. *Stauropus fagi,* male, Adana-Feke, 30.V. 2002.

Figure 3. a- *Stauropus fagi,* male, Adana-Feke, 30.V. 2002, sclerotized plate of the 8th tergite; b- *Stauropus fagi fagi,* Adana-Feke, 30.V. 2002, male genitalia and aedeagus.

Notodontinae Stephens, 1829

9- *Drymonia dodonaea wageneri* de Freina, 1981 (MWM).

Locality, **C6**, 30.VI.2005, leg. 1 ♂, F. Can Cengiz (MMKU).

10- *D. melagona esmera* de Freina, 1981

Locality, **C7**, 09.VI.1969, 1 ♂, leg. F. Kasy (CASD); Locality **C12**, 4.VI. 1969, 1 ♂, leg. F. Kasy (CASD).

11- *D. querna djezina* Bang-Haas, 1937

Locality **A3**, 15.III. 2001, 1 ♂, leg. F. Can Cengiz (MMKU).

12- *D. velitaris pontica* (Rebel, 1908)

Locality **C8**, 15-20.VIII.1999, 1 ♂, leg. M. Özdemir (NTM).

13- *Notodonta dromedarius pontica* Witt, 1980

Locality **C8**, 15-20.VIII.1999, 1 ♂, 1 ♀, leg. M. Özdemir (NTM).

14- *N. derbendica* Daniel, 1965

Locality **B2**, 21.VIII.1998, 1 ♂, leg. M. Özdemir (NTM).

15- *N. tritopha irfana* de Freina, 1983

Locality **D5,** 24-26.VI.1981, 1 ♂, leg. De Freina (MWM).

16- *Peridea anceps* (Goeze, 1781)

Locality **A3**, 20.IV.2002, 1 ♂, leg. F. Can Cengiz (MMKU); Locality **A1**, 03.V.2002, 1 ♂, leg. F. Can Cengiz (MMKU).

17- *P. korbi korbi* (Rebel, 1918)

Locality **A4**, 07.V.2002, 1 ♀, leg. F. Can Cengiz (MMKU).

18- *Pheosia tremula* Clerck, 1759

Locality **A3**, 13.III.2002, 1 ♂, leg. F. Can Cengiz (MMKU); Locality **A8**, 10.VI.2002, 1 ♀, leg. F. Can Cengiz (MMKU).

19-*Paradrymonia vittata vittata* (Staudinger, 1892)

Locality **D2**, 12.V.1985, 1 ♀, leg. Werner Wolf (CASD); 23.IV.1987, 1 ♂, leg. Werner Wolf (CASD).

Ptilodontinae Packard, 1864

20-*Pterosoma palpina palpina* (Clerck,1759)

Locality **C3**, 02.VI.1999, 1 ♀, leg. M. Özdemir (NTM); Locality **C2**, 02.VI.1999, 1 ♂, leg. M. Özdemir (NTM); Locality **B5**, 28.VII.2000, 1 ♂, leg. M. Özdemir (NTM).

P. palpina pontica Staudinger, 1901

Locality **B6**, 21.VI.1968, 1 ♂, leg. E&A Vartian (NHM); Locality **D6**, 1.VII.1983, 1 ♂, leg. De Freina (MWM).

21- *Ptilodon saerdabensis* (Daniel, 1938)

Locality **C10**, 17.VII.1983, 1 ♂, leg. W. Thomas (CASD).

22- *Ptilophora plumigera* (Denis & Schiffermüller, 1775)

Locality **D3**, 20-22.X.2000, 1 ♀, leg. György Fabian (CASD)

Phalerinae Butler, 1886

23- *Phalera bucephala bucephala* (Linnaeus, 1758)

Locality **C2**, 02.VI.1999, 2 ♂♂, leg. M. Özdemir (NTM); Locality **C4**, 29.VI.2005, 1 ♀, leg. F. Can Cengiz (MMKU); Locality **C11**, 26.VII.2015, 1 ♂, leg. F. Can Cengiz (MMKU).

24- *P. bucephaloides* (Ochsenheimer, 1810)

Locality **B8,** 22.VI.1974, 1 ♂, leg. M. Forst (CASD); Location **D6,** 7-9.VIII.1992, 4 ♂♂, 1 ♀, leg. P. Kautt & Weiss (CASD).

Pygaerinae Duponchel, 1845

25- *Spatalia argentina* (Denis & Schiffermüller, 1775)

Locality **B7**, 28.V-10.VI.1970, 1 ♀, leg. M.u. W. Glaser (CASD); Locality **B2**, 21.VIII.1998, 1 ♂,1 ♀, leg. Z. Şimşek (NTM); Locality **C2**, 02.VI. 1999, 5 ♂♂, leg. M. Özdemir (NTM); Locality **A4**, 20.IV. 2001, 1 ♂, leg. F. Can Cengiz (MMKU); Locality **C1**, 19.VII.2009, 1 ♂, leg. Z. Okyar (MTU); Locality **A2,** 17.V. 2015, 1 ♂, leg. B.Ulaşlı (MMKU).

26- *Rhegmatophila alpina osmana* Friedel, 1967

Locality **A4**, 07.V.2002, 1 ♀ 4 ♂♂, leg. F. Can Cengiz (MMKU); Locality **C2**, 02.VII1999, 2 ♂♂, leg. M. Özdemir (NTM); Locality **B2**, 18.VI.1998, 2 ♂♂, leg. Z. Şimşek (NTM).

27- *Clostera curtula curtula* (Linnaeus, 1758)

Locality **B4**, 09.VIII.1999, 1 ♀, leg. Z. Şimşek (NTM); Locality **B2**, 06.VIII.1998; 1 ♂, 17.VII.1998, 1 ♂, leg. Z. Şimşek (NTM).

28- *C. pigra staudingeri* Koçak, 1980

Locality **B2**, 21.VIII.1998, 6 ♂♂, leg. Z. Şimşek (NTM).

29- *C. anastomosis* (Linnaeus, 1758)

Locality **C9**, 26.VIII.1969, 1 ♂, leg. A. Palik (CASD).

Acknowledgements

This study was made possible through the kind support of numerous entomologists who loaned material of the examined taxa. For this important help we thank the custodians of the museums listed in the Abbreviations section. We wish to express our thanks to Mustafa Özdemir, Yasemin Özdemir and Ziya Şimşek (Collection of Nazife Tuatay (Directorate of Plant Protection Central Research Institute), Ankara, Turkey) for their additional records and also to Zühal Okyar (Museum of Trakya Universitesi, Faculty of Science, Biology Department, Edirne, Turkey) for her additional record of *Spatalia argentina.* We are grateful to Dr W. Gerald Tremewan, Truro, U.K., for his kind corrections of the English language. We are also thankful to the reviewers for their valuable comments.

References

Anonymous, 2007. 9 Sıcak Nokta- Amanos Dağları. National Geographic, Türkiye, Ek:7, 19s.

Aytaç, A.S., 2010. Amanos Dağlarının Orta Kesiminin Doğal Ortam, Sosyo-Ekonomik Faaliyetler, Koruma Kriterleri ve Çevre Eğitimi Açısından Değerlendirilmesi. (Basılmamış) Doktora tezi, Dokuz Eylül Üniversitesi, Eğitim Bilimleri Enstitütüsü, İzmir, 327s.

Aytaç, A.S. & A. Semenderoğlu, 2012. Amanos Dağları'nın orta kesiminin, doğa koruma kriterleri açısından değerlendirilmesi. Anadolu Doğa Bilimleri Dergisi, 3(1): 1-14.

Baron, T., 2008. The moths fauna (Lepidoptera) of Şile in the Asian part of Istanbul province, Turkey. Esperiana Band 14: (pl. 39): 545-558.

Beşkardeş, V., 2012. Lepidoptera fauna of Yuvacık dam watershed in Kocaeli, Turkey. African Journal and Agricultural Research, 11: 1749-1754.

Can, F., 2008. The Geometrid moths (Lepidoptera) from the Middle and Eastern Black Sea Regions of Turkey. Turkish Journal of Zoology, 32: 351- 358.

De Freina, J., 1979. 1. Beitrag zur systematischen Erfassung der Bombyces- und Sphinges-Fauna Kleinasiens. Atalanta 10: 175-224.

De Freina, J., 1981. 2. Beitrag zur systematischen Erfassung der Bombyces- und Sphinges- Fauna Kleinasiens. Atalanta 12: 18-63.

De Freina, J., 1983. 4. Beitrag zur systematischen Erfassung der Bombyces- und Sphinges-Fauna Kleinasiens. Mitteilungen der Münchner Entomologischen Gesellschaft, 72: 57-127.

De Freina, J. & T. Witt, 1987. Die Bombyces und Sphinges der Westpalearktis. Bd.1.-Edition Forschung und Wissenschaft, Munchen, 708 pp.

Ezer, T., 2008. Güney Amanos Dağları (Musa dağı) Biryofit Florası ve Epifitik Biryofit Vejetasyonunun Araştırılması. (Basılmamış) Doktora Tezi, Çukurova Üniversitesi, Fen Bilimleri Enstitüsü, Adana, 304 s.

Heppner, J.B.,1991. Faunal regions and the biversity of Lepidoptera. Tropical Lepidoptera 2 (Suppl. 1): 85 pp.

Koçak, A.Ö., & M. Kemal, 2007. Revised and Annotated Checklist of the Lepidoptera of Turkey. Priamus, Serial Publication of the Centre for Entomological Studies Ankara. 8: 26-42.

Müller, G.C., V.D. Kravchenko, C. Li, J. Mooser, O.B. Orlova, A. Phillips, W. Speidel & T. Witt, 2005. The Notodontidae (Lepidoptera) of Israel. Atalanta, 36 (1/2): 237-247.

Okyar (Göbekçioğlu), Z. & N. Aktaç, 1997. Trakya Bölgesi Heterocera (Lepidoptera) faunasına katkılar. Türkiye Entomoloji Dergisi, 22 (1): 47-56.

Okyar, Z. & N. Aktaç, 2007. Heteroceran fauna of Gökçeada and Bozcada (Northaegean Islands, Turkey) with new record of Noctuidae (Lepidoptera), and biogeoraphical analyses. Entomological News, 118 (3): 263-272.

Okyar Z., S. Yurtsever, N. Aktaç & G. Çakan, 2009. Some aspects of the moth (Lepidoptera, Heterocera) species diversity in Western Black Sea Region of Turkey. North- Western Journal of Zoology, 5(1): 104-120.

Özkoçak O.M., 1993. Hatay horst ve graben yapısının Amanos Dağları altın yatak zuhurları. Joeoloji Mühendisliği, 42: 52-59.

Saldaitis, A., B. Ivinskis & J. Rimsaite, 2013. *Notodonta valeria*, a new species (Lepidoptera, Notodontidae) from China, with taxonomic remarks on *Notodonta ziczac* (Linnaeus, 1758). Zootaxa, 368(5): 589-594.

Schintlmeister, A., 1986. Zahnspinner (Lepidoptera: Notodontidae) als Stadtbewohner. Verh. IX. SIEEC Gotha 1986: 91-92

Schintlmeister, A., 1988. Zahnspinner in den Kulturlandschaften Mitteleuropas (Lep.: Notodontidae). Verhandlungen Westdeutscher Entomologentag 1988: 275-280.

Schintlmeister, A., 2008. Palaearctic Macrolepidoptera, Notodontidae. Volume 1, Apollo Books, Stenstrup, 482pp.

Sensoy S., M. Demircan, Y. Ulupınar & İ. Balta, 2015. Climate of Turkey. (Web page: http://www.mgm.gov.tr/files/en-us/climateofturkey.pdf) (Date accessed: Dec. 2015).