



Contributions to the knowledge autumnal lepidoptera species of Dağlıca (Hakkari, Southeastern Turkey) with two poorly known noctuid moths

Erdem Seven

Department of Gastronomy and Culinary Arts, School of Tourism and Hotel Management, Batman University, Batman, 72060, Turkey
erdem_seven@hotmail.com

Abstract

This paper evaluates a collection of autumnal Lepidoptera species from Dağlıca vicinity of Hakkari Province. A total of 58 species are examined belonging to 9 families. Of all, 33 species in Dağlıca vicinity and 21 species in Hakkari Province are determined for the first time. All the species are listed alphabetically within the families, together with synonyms and studied materials. Furthermore, distribution of endemic and poorly known two noctuid species, *Osthelderia arne* L. Ronkay & Varga, 1994 and *Hakkaria varga* (Hacker, [1987]) are discussed and, their adults and genital pictures are illustrated.

Key words: Fauna, Lepidoptera, Dağlıca, Hakkari, Turkey.

Özet

Bu makale, Hakkari İlinin Dağlıca bölgesinin sonbahar Lepidoptera faunasına ait bir koleksiyonunu değerlendirmektedir. Toplamda, 9 familya içerisindeki 58 tür incelenmiştir. Bunlardan 33 tür Dağlıca'da, 21 tür Hakkari'de ilk kez tespit edilmiştir. Tüm türler familyaları içerisinde alfabetik olarak, sinonimleri ve incelenen örnekleri ile birlikte listelenmiştir. Bununla birlikte, endemik ve az bilinen iki noctuid türü, *Osthelderia arne* L. Ronkay & Varga, 1994 ve *Hakkaria varga* (Hacker, [1987])'nın dağılımları tartışılmış, ergin ve genital resimleri eklenmiştir.

Anahtar kelimeler: Fauna, Lepidoptera, Dağlıca, Hakkari, Türkiye.

Introduction

Dağlıca vicinity is located in Hakkari Province within the south-east of Turkey. It is very near to the northern border of Iraq and surrounded by steep mountains. Hakkari is an extremely mountainous region, and is one of the most challenging areas in Turkey regarding the studies on nocturnal Lepidoptera species due to security and geographical conditions.

Autumn species of Dağlıca is sufficiently not known. However, some recent studies have attempted to useful in this respect. Kemal et al. (2017, 2018) are listed 189 spring species of 25 families in 2017 and subsequently, 390 species of 35 families from Dağlıca vicinity in 2018. Furthermore, according to studies published at irregular intervals, totally 1012 Lepidoptera species were known in Hakkari Province (Koçak and Kemal 2015, 2018; Kemal and Koçak 2018). The results in this paper concluded that 21 species are new to fauna of Hakkari Province and 33 species are new to fauna of Dağlıca vicinity. Moreover, endemic and poorly known two noctuid species, *Hakkaria varga* (Hacker, [1987]) (fig. 1)

and *Ostheldera arne* L. Ronkay & Varga, 1994 (fig. 2), which are active in autumn, have also been determined in the research region.

The genus *Ostheldera* Nye, 1975 is the sister group of *Asteroscopus* Boisduval, 1828 and comprises 6 species: *O. gracilis* (Osthelder, 1933); *O. persa* Ronkay & Varga, 1994; *O. arne* Ronkay & Varga, 1994; *O. minna* Ronkay & Varga, 1994; *O. kondara* Varga & Ronkay, 1991 and *O. pakistana* Ronkay, Ronkay & Gyulai, 2011 (Ronkay et al. 2011). In Turkey, two of them, *O. arne* L. Ronkay & Varga, 1994 and *O. gracilis* (Osthelder, 1933) are known (Koçak and Kemal 2018).

Ostheldera arne L. Ronkay & Varga, 1994 is known from a relatively small area extending from southeastern Turkey to north-west Iran. Type locality of the species is 5 km south of Hakkari, 1800 m, holotype of male in coll. M. Fibiger (Ronkay et al. 2011). *Hakkaria varga* (Hacker, [1987]) was firstly described in *Polymixis* genus by Hacker in 1987. After that Ronkay and Varga (1990) transferred this species in a newly created genus "*Hakkaria*". The genus is represented by a single species which belongs to another phyletic line, being transitional between the generic groups *Polymixis* and *Dasypolia* (Ronkay and Varga 1990). It represents phyletic line of unique combination of features. Until now, the species is only known in its type locality that is Şırnak Province, Tanin Mountain, Elke Passage, 7 km from Uludere, 2200 m, 15.09.1985 (leg. and coll. H. Hacker). After long years, the second locality of these rare species have been found in Dağlıca vicinity, Hakkari Province, south-easternmost of Turkey with this study.

Material and Methods

Samples were collected from Dağlıca vicinity of Hakkari Province on 19 September 2016, 1280 m, 37°22'22"N 44°04'57"E, 21-22 September 2017, 1130 m, 37°23'09"N 44°04'46"E and 3-7 October 2017, 1350 m, 37°22'41"N 44°05'05"E, in step areas containing sparse oaks, with a simple UV light trap system (UV strip led, 12V 7Ah battery and a transparent box). After field studies, pinned specimens were stretched and diagnosed according to these sources: De Freina and Witt (1987), Fibiger (1990, 1993, 1997), Ronkay and Varga (1990, 1994), Hesselbarth et al. (1995), Ronkay et al. (2001, 2011), Hausmann (2001, 2004), Hacker et al. (2002), Goater et al. (2003), Mironov (2003), Zilli et al. (2005), Fibiger and Hacker (2007), Leraut (2006, 2009), Fibiger et al. (2009, 2010), Hausmann and Viidalepp (2012). Identified materials are preserved in the Biology Laboratory of Batman University and special collection of the author in Batman Province.

In the results part, species are presented in alphabetical order within the families. New records in Dağlıca vicinity are marked with an asterisk (*) symbol and likewise new records in Hakkari Province are marked with a plus (+) symbol after the name of the species.

Results

Butterflies:

Argynnididae

Argynnis pandora ([Denis & Schiffermüller], 1775)

Synonym(s): *pandora* [Denis & Schiffermüller], 1775; *maja* Cramer, 1775 nec Fabricius, 1775; *cynara* Fabricius, 1777; *cyrnea* Schwerda, 1926; *transcaucasica* Moucha, 1967; *deserticola* Gross & Ebert, 1975. **Material studied:** 3♂♂, 19.IX.2016; 1♂, 03.X.2017.

Satyridae

Chazara briseis (Linnaeus, 1764)

Synonym(s): *briseis* Linnaeus, 1764; *daedale* Bergsträßer, 1780; *bataia* Fruhstorfer, 1909; *interjecta* Verity, 1916; *variabilis* Varin, 1958; *pictonica* Varin, 1958. **Material studied:** 1♂, 22.IX.2017.

Moths:

Arctiidae

Axiopoena karelini Ménétréés, 1863*

Synonym(s): *karelini* Ménétréés, 1863; *transcaucasia* Sheljuzhko, 1926; *manissadjiani* O.Bang-Haas, 1927. **Material studied:** 1♀, 22.IX.2017.

Ctenuchidae

Dysauxes famula (Freyer, 1836)*

Synonym(s): *famula* Freyer, 1836; *hyalina* Freyer, 1845; *ragusaria* Zickert, 1904; *herthina* Stauder, 1921; *burgeffi* Draudt, 1931; *taurica* Draudt, 1931; *pseudoservula* Naufock, 1933; *pontica* Friese, 1959; *sofiata* De Laever, 1983; *lucana* De Laever, 1983. **Material studied:** 4♂♂ 3♀♀, 21.IX.2017; 2♀♀, 04-07.X.2017.

Geometridae

Aplocera plagiata (Linnaeus, 1758)

Synonym(s): *plagiata* Linnaeus, 1758; *pallidata* Staudinger, 1879. **Material studied:** 3♂♂, 19.IX.2016; 1♂ 06.X.2017.

Apochima diaphanaria (Püngeler, 1904)

Synonym(s): *diaphanaria* Püngeler, 1904. **Material studied:** 5♂♂ 3♀♀, 22.09.2017; 3♂♂ 05-07.X.2017.

Charissa dubitaria (Staudinger, 1892)*

Synonym(s): *dubitaria* Staudinger, 1892. **Material studied:** 3♂♂ 4♀♀, 21.IX.2017; 2♀♀, 03-05.X.2017.

Charissa onustaria (Herrich-Schäffer, [1852])* +

Synonym(s): *onustaria* Herrich-Schäffer, [1852]; *oneraria* Guenée, [1858]. **Material studied:** 2♂♂ 2♀♀, 21.IX.2017.

Chesistege korbi (Bohatsch, 1910)

Synonym(s): *korbi* Bohatsch, 1910. **Material studied:** 3♂♂, 04.X.2017.

Coenotephria schneideraria (Lederer, 1855)* +

Synonym(s): *schneideraria* Lederer, 1855; *taurica* Staudinger, 1901; *eteocretica* Rebel, 1906. **Material studied:** 2♂♂ 4♀♀, 21.IX.2017; 5♀♀, 06.X.2017.

Crocallis elinguarina (Linnaeus, 1758)* +

Synonym(s): *elinguarina* Linnaeus, 1758; *trapezaria* Boisduval, 1840. **Material studied:** 3♂♂ 5♀♀, 22.IX.2017; 2♀♀, 04-06-07.X.2017.

Ennomos quercarius (Hübner, [1813])* +

Synonym(s): *quercaria* Hübner, [1813]. **Material studied:** 2♂♂ 1♀, 04.X.2017.

Eumera hoeferi Wehrli, 1934* +

Synonym(s): #*höferi* Wehrli, 1934; *hoeferi* Wehrli, 1934; #*hoferi* Wiltshire, 1937. **Material studied:** 2♀♀, 21.IX.2017.

Glossotrophia sacraria (A.Bang-Haas, 1910)

Synonym(s): *sacraria* A.Bang-Haas, 1910. **Material studied:** 3♂♂ 5♀♀, 22.IX.2017; 3♂♂, 05-06.X.2017.

Gnophos pseudosnelleni Rjabov, 1964*

Synonym(s): *pseudosnelleni* Rjabov, 1964. **Material studied:** 2♂♂ 6♀♀, 22.IX.2017; 1♂ 1♀, 05-07.X.2017.

Idaea degeneraria (Hübner, [1799])

Synonym(s): *degeneraria* Hübner, [1799]; *degenerata* Treitschke, 1828; *floridaria* Turati, 1913. **Material studied:** 3♂♂ 2♀♀, 03-04.X.2017.

Odontognophos zacharius (Staudinger, 1879)* +

Synonym(s): *zacharia* Staudinger, 1879. **Material studied:** 1♂, 03.X.2017.

Scopula immistaria (Herrich-Schäffer, [1852])

Synonym(s): #*elisabetharia* Heydenreich, 1851; *immistaria* Herrich-Schäffer, [1852]. **Material studied:** 3♂♂ 1♀, 04-05.X.2017.

Scopula marginepunctata (Goeze, 1781)

Synonym(s): *marginepunctata* Goeze, 1781; *conjugata* Borkhausen, 1794; *aniculosata* Rambur, 1829; *puellaria* Boisduval, 1840; *mutaria* Heydenreich, 1851; *promutata* Guenée, [1858]; *promutaria* Morris, 1861; *apertaria* Walker, [1863]; *madoniata* Fuchs, 1901; *pastoraria* De Joannis, 1891. **Material studied:** 3♂♂ 2♀♀, 19.IX.2016; 2♂♂ 21.IX.2017; 3♂♂, 04-07.X.2017.

Lasiocampidae

Lasiocampa eversmanni (Kindermann, 1843)

Synonym(s): *eversmanni* Kindermann, 1843; *eversmanni* Freyer, 1844; *attrita* Stshetkin, 1960. **Material studied:** 3♂♂ 2♀♀, 21.IX.2017; 3♂♂, 03-04.X.2017.

Lasiocampa grandis (Rogenhofer, 1891)

Synonym(s): *grandis* Rogenhofer, 1891. **Material studied:** 2♂♂ 1♀, 22.IX.2017; 3♂♂, 04.X.2017.

Trichiura stroehlei Zolotuhin, 2007*

Synonym(s): *stroehlei* Zolotuhin, 2007. **Material studied:** 2♂♂, 04.X.2017.

Lemoniidae

Lemonia pia Püngeler, 1902

Synonym(s): *pia* Püngeler, 1902. **Material studied:** 3♂♂ 1♀, 05.X.2017.

Noctuidae

Agrochola lactiflora (Draudt, 1934)* +

Synonym(s): *lactiflora* Draudt, 1934; *fibigeri* Hacker & Moberg, 1989. **Material studied:** 3♂♂ 1♀, 04-05.X.2017.

Agrochola humilis (Fabricius, 1787)*

Synonym(s): *#humilis* [Denis & Schiffermüller], 1775; *humilis* Fabricius, 1787. **Material studied:** 2♀♀, 03.X.2017.

Allophyes renalis (Wiltshire, 1941)*

Synonym(s): *renalis* Wiltshire, 1941; *crassicornis* Brandt, 1941. **Material studied:** 2♂♂, 05.X.2017.

Ammoconia caecimacula (Fabricius, 1787)* +

Synonym(s): *caecimacula* Fabricius, 1787; *millegrana* Esper, [1790]; *respersa* Brahm, 1791; *rhaeticaria* Dannehl, 1926; *marsicaria* Dannehl, 1929. **Material studied:** 2♂♂, 07.X.2017.

Autophila ligaminosa (Eversmann, 1851)* +

Synonym(s): *ligaminosa* Eversmann, 1851; *caucasica* Herz, 1904. **Material studied:** 3♂♂ 2♀♀, 21.IX.2017, 3♂♂, 04.X.2017.

Catocala elocata (Esper, [1787])

Synonym(s): *elocata* Esper, [1787]; *marita* Hübner, [1813]; *nurus* Hübner, [1822]. **Material studied:** 1♂, 22.IX.2017.

Chersotis margaritacea (Villers, 1789)* +

Synonym(s): *margaritacea* Villers, 1789; *i-intactum* Hübner, [1803]; *#abruzzensis* Corti & Draudt, 1933; *espunensis* Calle, 1982. **Material studied:** 2♂♂ 1♀, 03-05.X.2017.

Chersotis obnubila (Corti, 1926)*

Synonym(s): *obnubila* Corti, 1926; *maraschi* Corti & Draudt, 1933 (p.61) nec Corti & Draudt, 1933 (p.58); *ebertorum* Koçak, 1980. **Material studied:** 2♂♂, 05-07.X.2017.

Dichagyris amoena (Staudinger, 1892)

Synonym(s): *amoena* Staudinger, 1892; *flavida* Corti & Draudt, 1933. **Material studied:** 3♂♂ 3♀♀, 03-04.X.2017.

Dichagyris fredii (Brandt, 1938)

Synonym(s): *fredii* Brandt, 1938. **Material studied:** 3♂♂ 1♀, 21.IX.2017; 2♂♂, 03-07.X.2017.

Dichagyris singularis (Staudinger, 1877)

Synonym(s): *singularis* Staudinger, 1877. **Material studied:** 11♂♂ 5♀♀, 19.IX.2016, 3♂♂, 21-22.IX.2017; 5♂♂, 03-04-05.X.2017.

Dichagyris nachadira (Brandt, 1941)* +

Synonym(s): *nachadira* Brandt, 1941. **Material studied:** 3♂♂ 2♀♀, 03-04.X.2017.

Dichonia aeruginea (Hübner, [1803])* +

Synonym(s): *aeruginea* Hübner, [1803]; *mioleuca* Geyer, [1828]; *chioleuca* Treitschke, 1835; *mesembrina* Schawerda, 1913. **Material studied:** 3♂♂, 04-05.X.2017.

Dryobotodes carbonis (F.Wagner, 1931)* +

Synonym(s): *carbonis* F. Wagner, 1931; *taurica* Osthelder, 1933; *europaea* Pinker, 1976. **Material studied:** 2♂♂ 1♀, 05-06.X.2017.

Episema korsakovi (Christoph, 1885)

Synonym(s): *korsakovi* Christoph, 1885; *paenulata* Christoph, 1885. **Material studied:** 2♂♂ 1♀, 06-07.X.2017.

Eugnorisma enargiaris (Draudt, 1936)

Synonym(s): *enargiaris* Draudt, 1936. **Material studied:** 3♂♂ 1♀, 21.IX.2017; 1♀, 04-07.X.2017.

Gortyna flavago ([Denis & Schiffermüller], 1775)* +

Synonym(s): *flavago* [Denis & Schiffermüller], 1775; *ochracea* Hübner, 1786; *lappae* Donovan, 1801; *ochracea* Howarth, 1809; *cinerea* Goossens, 1880. **Material studied:** 2♂♂, 04.X.2017.

Hakkaria varga (Hacker, [1987])* + (fig. 1)

Synonym(s): *varga* Hacker, [1987]. **Material studied:** 1♂, 03.X.2017, slide no. 576♂.

Helicoverpa armigera (Hübner, [1808])

Synonym(s): *obsoleta* auct. nec Fabr., 1775; *barbara* Fabricius, 1794 [rejected]; *armigera* Hübner, [1808]; *pulverosa* Walker, [1857]; *uniformis* Wallengren, 1860; *rama* Bhattacharjee & Gupta, 1972. **Material studied:** 2♂♂, 06-07.X.2017.

Hoplodrina ambigua ([Denis & Schiffermüller], 1775)

Synonym(s): *ambigua* [Denis & Schiffermüller], 1775; *plantaginis* Hübner, [1813]; *uniformis* Swinhoe, 1885. **Material studied:** 7♂♂ 3♀♀, 22.IX.2017; 2♀♀, 03-07.X.2017.

Lacanobia thalassina (Hufnagel, 1766)* +

Synonym(s): *thalassina* Hufnagel, 1766; *humeralis* Haworth, 1809; *achates* Hübner, [1813]. **Material studied:** 2♂♂, 06-07.X.2017.

Luperina rjabovi (Kljutschko, 1967)* +

Synonym(s): *rjabovi* Kljutschko, 1967. **Material studied:** 4♂♂ 1♀, 03-07.X.2017.

Melanchra persicariae (Linnaeus, 1761)*

Synonym(s): *persicariae* Linnaeus, 1761; *sambuci* Hufnagel, 1766; *graphica* Geoffroy, 1785; *accipitrina* Esper, [1788]. **Material studied:** 2♂♂, 03.X.2017.

Metopodicha ernesti Draudt, 1936*

Synonym(s): *ernesti* Draudt, 1936; *achaemenica* Wiltshire, 1941. **Material studied:** 3♂♂ 1♀, 22.IX.2017; 1♀, 03.X.2017.

Ostheldera arne L. Ronkay & Varga, 1994* (fig. 2)

Synonym(s): *arne* L. Ronkay & Varga, 1994. **Material studied:** 1♂ 1♀, 04.X.2017; slide no. 575♂, 581♀.

Oxytripia stephania Sutton, [1964]

Synonym(s): *stephania* Sutton, [1964]; *danilevskyi* Miljanovsky, 1973. **Material studied:** 2♂♂, 04.X.2017.

Polymixis rufocincta (Geyer, 1828)* +

Synonym(s): *rufocincta* Geyer, [1828]; *farinosa* Freyer, 1848; *mucida* Guenée, 1852. **Material studied:** 3♂♂, 21.IX.2017; 1♀, 06.X.2017.

Polymixis manisadjiani (Staudinger, 1881)

Synonym(s): *manisadjiani* Staudinger, 1881. **Material studied:** 4♂♂, 19.06.2016; 1♂, 22.IX.2017.

Polymixis rosinae (Bohatsch, 1910)* +

Synonym(s): *rosinae* Bohatsch, 1910; *paradisiaca* Boursin, 1944; *gilva* Sukhareva, 1976; *paravarga* L.Ronkay, 1990; *himalaya* Hacker & Weigert, 1990. **Material studied:** 1♂ 2♀♀, 04.X.2017.

Pseudenargia regina (Staudinger, 1892)* +

Synonym(s): *regina* Staudinger, 1892. **Material studied:** 4♂♂, 1♀ 22.IX.2017; 3♂♂, 03-07.X.2017.

Scotochrosta pulla ([Denis & Schiffermüller], 1775)

Synonym(s): *#pulla* [Denis & Schiffermüller], 1775. **Material studied:** 2♂♂, 06.X.2017.

Xanthia cypreago (Hampson, 1906)* +

Synonym(s): *cypreago* Hampson, 1906. **Material studied:** 3♂♂, 05-07.X.2017.

Zethes brandti Janzon, 1977

Synonym(s): *nemea* Brandt, 1938 (p.p.); *nemea* sensu Koçak, 1977; *brandti* Janzon, 1977. **Material studied:** 1♂, 06.X.2017.

Saturniidae

Saturnia caecigena Kupido, 1825

Synonym(s): *caecigena* Kupido, 1825; *unicolor* Schultz, 1910; *wiskotti* Niepelt, 1914; *derosata* Schawerda, 1914. **Material studied:** 4♂♂ 1♀, 22.IX.2017; 5♂♂, 03-05-07.X.2017.

Saturnia naessigi (De Freina, 1992)*

Synonym(s): *naessigi* De Freina, 1992. **Material studied:** 5♂♂ 2♀♀, 05-06-07.X.2017.

Discussion and Conclusion

This study contributes to Lepidoptera species of Dağlıca vicinity (Hakkari), which is one of the hardest region in Turkey because of geographical and security conditions. And, the research will also contribute to the determining of Lepidoptera fauna of Turkey.

In this paper, autumnal Lepidoptera species of Dağlıca vicinity are examined faunistically. Totally, 58 species are evaluated belonging to Argynniidae (1), Satyridae (1) and, Arctiidae (1), Ctenuchidae (1), Geometridae (15), Lasiocampidae (3), Lemoniidae (1), Noctuidae (33), Saturniidae (2) families. Among them, 33 species are determined as new to the fauna of Dağlıca vicinity and 21 species are detected as new to the fauna of Hakkari Province. A large part of the collected species are composed of Noctuidae and Geometridae families. Thus, the number of Lepidoptera species reached 1033 in Hakkari Province.

Moreover, distributionally endemic and poorly known *Hakkaria varga* (Hacker, [1987]) (fig. 1) and *Osthelderia arne* L. Ronkay & Varga, 1994 (fig. 2) species are assessed. *O. arne* was known a small area from south-eastern Turkey (Hakkari) to north-west Iran (Miyane, Azerbaijan Prov.) (Ronkay et al. 2011). *H. varga* was known only type locality, Şırnak Province (Turkey) so far (Hacker 1987). The second locality of these rare species have been discovered in Dağlıca vicinity, near to the type localities of the species. Both species are distributed in a very limited area and their populations are very low-density. By this way, these new data also contribute to the spreading area of the species.

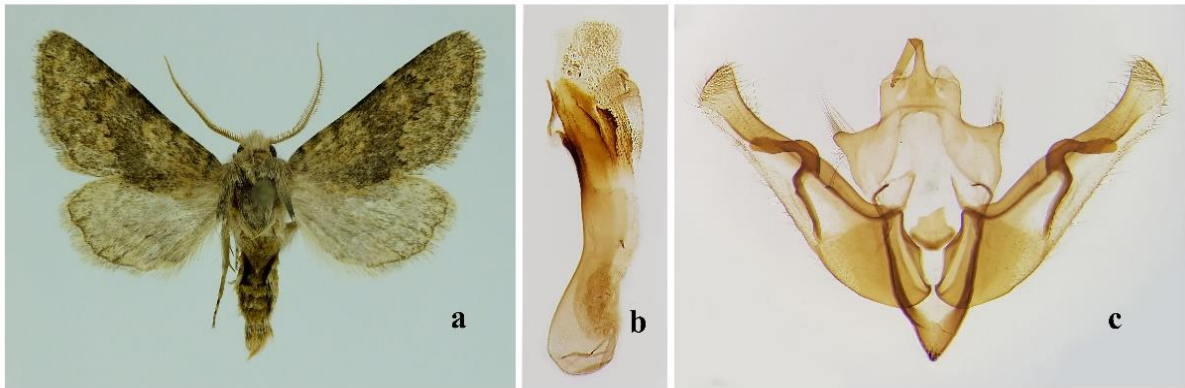


Figure 1. *Hakkaria varga*, a. adult male, b-c. male genitalia (slide no. 576♂), b. aedeagus, c. genital capsule.

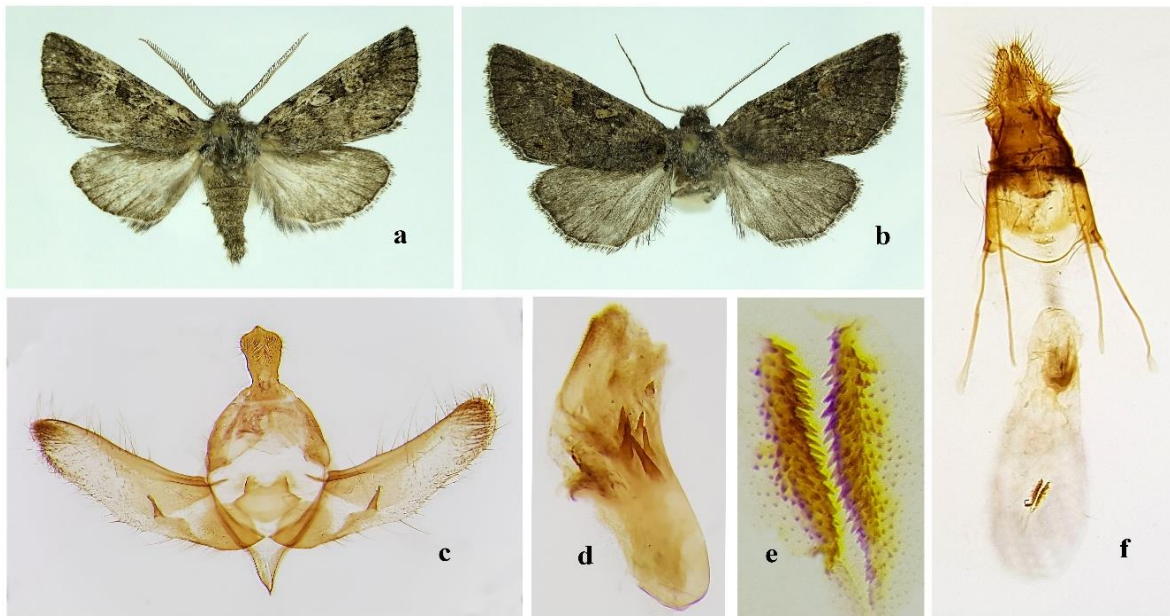


Figure 2. *Osthelderia arne*, a. adult male, b. adult female, c-d. male genitalia (slide no 575♂), c. genital capsule, d. aedeagus, e. signum, f. female genitalia (slide no. 581♀).

Acknowledgments

The author would like to thank Doğan YOLBAŞ for help in collecting of the samples.

References

De Freina, J., Witt, T. (1987). Die Bombyces und Spingies der Westpalaerktis. Band 1: Nolidae, Arctiidae, Syntomidae, Dilobidae, Lymantriidae, Notodontidae, Thaumetopoeidae, Thyretidae, Axiidae, Drepanidae,

Thyatiridae, Bombycidae, Brahmaeidae, Endriomidae, Lasiocampidae, Lemoniidae, Saturniidae, Sphingidae. 47 Farbtafeln, 330 Karten; München, pp, 708.

Fibiger, M. (1990). Noctuidae Europaeae. Vol. 1, Noctuinae I, Entomological Press, Soro, Denmark, pp, 208.

Fibiger, M. (1993). Noctuidae Europaeae. Vol. 2, Noctuinae II, Entomological Press, Soro, Denmark, pp, 230.

Fibiger, M. (1997). Noctuidae Europaeae. Vol. 3, Noctuinae. Entomological Press, Soro, Denmark, pp, 418.

Fibiger, M., Hacker, H. (2007). Noctuidae Europaeae. Vol. 9, Amphipyridae, Condicinae, Eriopinae, Xyleninae. Entomological Press, Soro, Denmark, pp, 410.

Fibiger, M., Ronkay, L., Steiner, A., A, Zilli. (2009). Noctuidae Europaeae. Vol. 11, Pantheinae, Dilobinae, Acronictinae, Eustrotiinae, Nolinae, Bagisarinae, Acontiinae, Metoponiinae, Heliolithinae and Bryophilinae. Entomological Press, pp, 504.

Fibiger, M., Ronkay, L., Yela, J.L., A, Zilli. (2010). Noctuidae Europaeae. Vol. 12, Rivulinae, Boletobiinae, Hypenodinae, Araeopteroninae, Eublemminae, Herminiinae, Hypeninae, Phytometrinae, Euteliinae and Micronoctuidae. Including Supplement to Volumes 1-11. Entomological Press, pp, 451.

Goater, B., Ronkay, L., Fibiger, M. (2003.) Noctuidae Europaeae. Vol. 10, Catocalinae, Plusiinae. Entomological Press, pp, 452.

Hacker, H. (1987). Fünfter beitrage zur systematik Erfassung der Noctuidae der Türkei. Beschreibung neuen taxa und faunistisch bemerkenswerte funde aus den aufsammlungen von Wolf und Hacker aus dem Jahr 1985 sowie ergänzungen zu früheren arbeiten (Lepidoptera). Atalanta, 17:27–83.

Hacker, H., Ronkay, L., Hreblay, M. (2002). Noctuidae Europaeae. Vol. 4, Hadeninae I. Entomological Press, pp, 419.

Hausmann, A. (2001). The Geometrid Moths of Europe Vol. 1, 8 Pls. Apollo Books, pp, 282.

Hausmann, A. (2004). The Geometrid Moths of Europe Vol. 2 Sterrhinae. Apollo Books, pp, 600.

Hausmann, A., J, Viidalepp. (2012). The Geometrid Moths of Europe. Volume 3., Apollo Books, Stenstrup, pp, 743.

Hesselbarth, G., Oorschot H.V., Wagener, S. (1995). Die Tagfalter der Türkei unter Berücksichtigung der angrenzenden Länder. Selbstverlag S.Wagener, Bocholt. Bde. 1 & 2: 1354 S. Bd.3: pp, 847.

Kemal, M., Koçak, A.Ö. (2018). First faunistic results of the Lepidoptera of Zap Valley in Hakkari Province (SE Turkey). Priamus 16 (4):119-199.

Kemal, M., Koçak, A.Ö., Uçak, H. (2017). On a collection of Lepidoptera from Dağlıca (South-East Turkey, Hakkâri Province). Cesa News 139:1–24.

Kemal, M., Koçak, A.Ö., Uçak, H. (2018). List of the Lepidoptera species of Dağlıca (Hakkari Province, SE Turkey). Cesa News 159:1–21.

Koçak, A.Ö., Kemal, M. (2015). Annotated List of the Lepidoptera of Hakkâri (SE Turkey). Cesa News 116:1–146.

Koçak, A.Ö. Kemal M (2018). A synonymous and distributional list of the species of the Lepidoptera of Turkey.’’

Cent. ent. Stud., Memoirs 8:1–487.

Leraut, P. (2006). Moths of Europe, volume 1, Saturniids, Lasiocampids, Hawkmoths, Tiger Moths. N. A. P. Editions, pp, 387.

Leraut, P. (2009). Moths of Europe. Volume 2 Geometrid moths. N.A.P. editions, pp, 808.

Mironov, V. (2003) The Geometrid Moths of Europe Vol. 4, Larentiinae II. Apollo Books, pp, 462.

Ronkay, L., Varga, Z. (1990). Taxonomic and zoogeographical studies on the subfamily Cuculliinae (Lepidoptera, Noctuidae) II Esperiana 1:471–497.

Ronkay, G., Ronkay, L., Gyulai, P. (2011). Cucullinae II and Psaphidinae. A taxonomic atlas of the Eurasian and North African Noctuoidea. Vol. 5. Heterocera Press, Budapest, pp, 380.

Ronkay, L., Varga, Z. (1994). On the taxonomy of the genus *Osthelderia* Nye, 1975 (Lepidoptera, Noctuidae, Cuculliinae). Acta Zoologica Academiae Scientiarum Hungaricae 40 (2):157–170.

Ronkay, L., Yela, J.L., Hreblay, M. (2001). Noctuidae Europaeae. Vol. 5, Hadeninae II. Entomological Press, Soro, Denmark, pp, 452.

Zilli, A., Ronkay, L., Fibiger, M. (2005). Noctuidae Europaeae: Apameini. Vol. 8, Entomological Press, Soro, Denmark, pp, 323.

Submitted: 01.10.2018

Accepted: 26.12.2018