



New records of *Adscita obscura* (Zeller, 1847) (Lepidoptera, Zygaenidae, Procridinae) on the Balkan Peninsula

Ana Nahirnić^{1*}, Stoyan Beshkov¹, Dimitar Kaynarov²

1 - National Museum of Natural History, Tsar Osvoboditel Blvd.1, 1000 Sofia, BULGARIA;

2 - Pazardzhik Region, Byaga Village, 12th Street № 4, BULGARIA

*Corresponding author: ananahirnic@nmnhs.com

Abstract. *Adscita obscura* (Zeller, 1847) is recorded in Albania for the first time. Several new records are given for Bulgaria where it has been known only from a single locality. One new record is presented for Greece where it is rare species.

Key words: *Adscita obscura*, Albania, Bulgaria, Greece.

Introduction

There are seven *Adscita* species (Zygaenidae, Procridinae) on the Balkan Peninsula and almost all of them are very similar to each other. *Adscita obscura* (Zeller, 1847) can be confused with *A. statices* (Linnaeus, 1758), *A. geryon* (Hübner, [1813]), *A. mannii* (Lederer, 1853) and with the female of *A. albanica* (Naufock, 1926), thus examination of genitalia is necessary for correct identification. Nothing is known on early stages, host-plants and habitats of *A. obscura* in the Balkans. Larvae and host plants are studied in Turkey and Iran where host-plants are proven to be *Helianthemum* spp., *Sanguisorba minor* (Scop.) and *Lotus dorycnium* L. (syn. *Dorycnium pentaphyllum* Scop.) (TARMANN & TREMEWAN, 2001; DE FREINA, 2003; KEIL, 2014). It is known to occur in North Macedonia, Greece, Bulgaria, Turkey, Syria, Lebanon, Israel, Jordan, Egypt, Georgia, Armenia, Dagestan Republic in Russia, Azerbaijan, Iran and Iraq (NAUMANN *et al.*, 1999) and Romania (GUENIN, 2019).

Although Albania is included in the distribution of *A. obscura* by both NAUMANN *et al.* (1999) and DE FREINA & WITT (2001),

the source of this data is not known and no voucher specimen has been found in any European museum collection (Ana Nahirnić, Gerhard Tarmann, pers. obs.). Studies on Procridinae in Albania are very scarce and data exist mainly from the northern part of the country and studies have been undertaken, exclusively, by foreign authors (e.g. REBEL & ZERNY, 1931; ALBERTI, 1966). A promising exception appeared in 2016 where only species collected in Albania were listed (VRENOZI *et al.*, 2016) and more recently *Theresimima ampellophaga* (Bayle-Barelle, 1808) has been found for the first time in Albania by means of sexual attractants (VRENOZI *et al.*, 2018). So far twelve Procridinae species were known from Albania based on reliable data (REBEL & ZERNY, 1931; ALBERTI, 1966; VRENOZI *et al.*, 2016, 2018). Many Procridinae species known to be common in the Balkans are rarely reported from Albania and the reason for this poor knowledge can be attributed to the necessity of genitalia examination for correct determination of almost all species in the region.

The aim of this study is to present new record and notes on habitats of *A. obscura* in the Balkans. We also drew attention to closer

examination of Procridinae in museum and private collections as this can reveal more data on *A. obscura* occurrence.

Material and Methods

Specimens were collected with an entomological net and deposited in collections of the authors, indicated in the following list by collection of Ana Nahirnić in Kruševac, Serbia (CANK), collection of Stoyan Beshkov, housed in NMNHS (SB in NMNHS) and collection of Dimitar Kaynarov in Sofia, Bulgaria (CDKS). The collection of the National Museum of Natural History in Sofia (NMNHS) was also examined. All specimens were determined on the base of genitalia. Abdomens were boiled in 10% KOH and the abdominal skin and genitalia either preserved in microvials filled with glycerol or mounted on a glass slide in Euparal.

Results

Albania

Moravë Mt., between Boboshticë and Dardhë Villages, (Fig. 1), N 40°32'24", E 20°47'30", 1240 m, serpentinite slopes with sparse vegetation, 09.VII.2016, 1 ♀ (Fig. 2a), leg. A. Nahirnić & S. Beshkov (CANK).

Bulgaria

Volcanic Hill of Kozhuh, N 41°27'37", E 23°15'16", 170 m, dry grasslands, 20.V.2014, 1 ♂, leg. A. Nahirnić & S. Beshkov (CANK).

Pirin Mt., Melnik town, Rozhen Village, Rozhenski Manastir Monastery, N 41°31'50", E 23°25'19", 630-570 m, dry grasslands, 18.V.2014, 1 ♂, leg. A. Nahirnić & S. Beshkov (CANK).

Besaparski Ridove Hills, Byaga Village vicinity, 25.V.1984, 1 ♂ (Fig. 2b), leg. S. Beshkov. det. J. Ganev, prep. No 234 as *Jordanita notata* (Zeller, 1847), re-determined by S. Beshkov as *A. obscura* (SB in NMNHS).

Besaparski Ridove Hills, northern slopes ca. 2 km from Ognyanovo Village, (Fig. 3), N42°07'53", E024°24'36", 313 m, steppe-like grasslands with single trees and shrubs, 20.V.2016, 1 ♂, leg. D. Kaynarov (CDKS).

Besaparski Ridove Hills, between Isparihovo and Ognyanovo Villages, above vinery "Bessa Valley", southern slopes of hills, N42°07'28", E024°24'32", 467 m, slopes with steppe-like grasslands and single trees and bare ground, 29.IV.2017, 2 ♂♂, leg. D. Kaynarov (CDKS).

Besaparski Ridove Hills, ridge between Trivoditsi Village and Hadzhievo Railway station, N42°07'27", E024°26'29", 365 m, steppe-like grasslands, 01.V.2016, 2 ♂♂ and 1 female and 06.V.2016 1 ♂ and 1 ♀, leg. D. Kaynarov (CDKS).

Besaparski Ridove Hills, Byaga Village and the vicinity of "Hisara" Summit, "Elenki vrah" Summit, N42°05'30", E024°22'43", 417 m, steppe-like grasslands with single trees and shrubs (*Paliurus spina-christi*, *Juniperus* spp.), 22.IV.2017, 3 ♂♂, leg. D. Kaynarov (CDKS).

Besaparski ridove Hills, Byaga Village, below "Hisara" Summit, N42°05'25", E024°23'11", 324 m, open grasslands with single trees and shrubs (*Paliurus spina-christi*, *Juniperus* spp.), 25.IV.2017, 1 ♀, leg. D. Kaynarov (CDKS).

Besaparski ridove Hills, Byaga Village, locality "Imata", N42°04'20", E024°22'41", 269 m, steppe-like grasslands with single trees and shrubs, 24.IV.2017, 9 ♂♂, leg. D. Kaynarov (CDKS).

Plovdiv district, Perushtitsa town, Pastusha quarter, 25.V.1942, 1 ♂ (ANZ 769), 4 ♀♀ (genitalia in glycerol) (Fig. 4), leg. I. Buresh (NMNHS).

Eastern Rhodopi Mts., near Gorni Yurutsi Village, N 41°20'26", E 25°54'41", 504 m, 16.V.2018, 1 ♀ (Fig 2c), leg. S. Beshkov, B. Zlatkov & R. Bekchiev (SB in NMNHS).

Greece

Phocis region, Vargiani Village 1.5 km NW, N 38°38'50", E 22°24'31", 650 m, grasslands, 13.V.2016, 1 ♂ and 2 ♀♀, leg. A. Nahirnić & S. Beshkov (CANK).



Fig. 1. Albania, Mt. Moravë, between Boboshticë and Dardhë Villages.
Photo: S. Beshkov

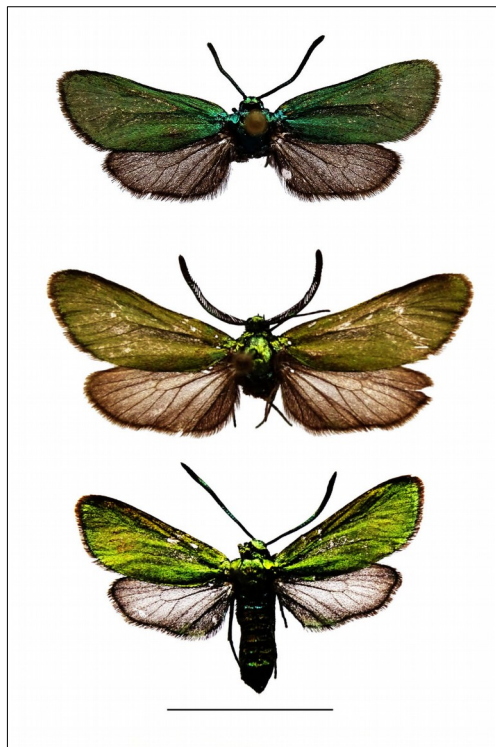


Fig. 2. *Adscita obscura*, a - ♀ Moravë Mt., between Boboshticë and Dardhë Villages, b - ♂ Besaparski Ridove Hills, Byaga Village, c - ♀ Eastern Rhodopi Mts., near Gorni Yurutsi Village. Scale line = 1 cm.



Fig. 3. Bulgaria, Besaparski Ridove Hills, northern slopes ca. 2 km from Ognyanovo Village. Photo: D. Kaynarov.

Discussion

All our new records of *A. obscura* are within the boundaries of its known distribution, although some gaps are filled in (Fig. 5). The



Fig. 4. *Adscita obscura*, ♀ genitalia in glycerol, Plovdiv district, Perushtitsa Town, Pastusha quarter. Scale line = 1 mm.

report of this species from Moravë Mt. represents the first one in Albania.

As *A. obscura* was known on Galičica Mt. and Ohrid in North Macedonia (THURNER 1938-1941; DANIEL, 1964) it was expected species in Albania. Mt. Moravë, Mt. Galičica and Ohrid are the westernmost localities of *A. obscura*.

The first and the only published record of *A. obscura* in Bulgaria is given in DE FREINA & WITT (2001) for Asenovgrad (=Stanimaka) where it has been collected in 01-10.07.1933. There are more dots on a map of distribution of *A. obscura* given in GUENIN (2019), however exact localities and sources are not provided and thus not included in our map. In

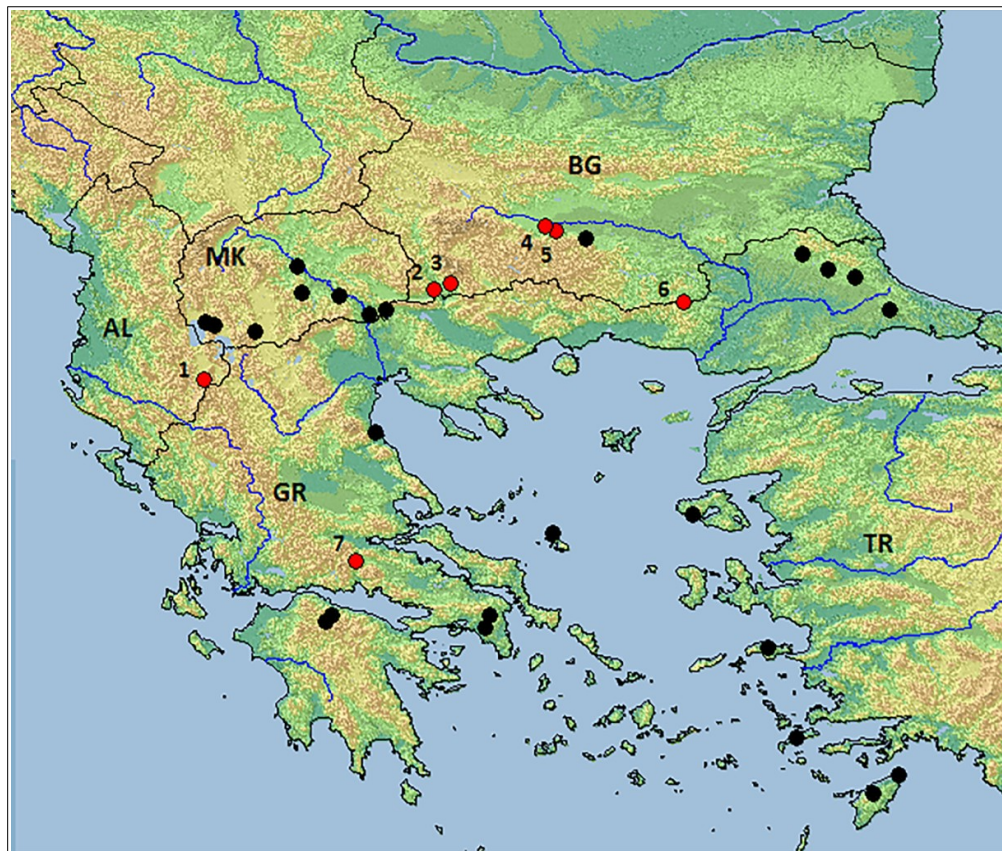


Fig. 5. Distribution of *Adscita obscura* on the Balkan Peninsula. AL - Albania, MK - Republic of North Macedonia, BG - Bulgaria, GR - Greece, TR - Turkey. Black dots - published records, red dots - new records. 1 - between Boboshticë and Dardhë, 2 - Kozhuh Hill, 3 - Rozhenski Manastir Monastery, 4 - Besaparski Ridove Hills, 5 - Pastusha, 6 - Gorni Yurutsi, 7 - Vargiani.

Stoyan Beshkov's collection in NMNHS there is one *Adscita* male from Byaga Village determined as *Jordanita notata* (Zeller, 1847) by Julius Ganev in 1984. Dimitar Kaynarov studied Macrolepidoptera of Besaparski Ridove Hills for his Master Diploma work and noticed that it was very strange that he didn't find *J. notata*. Stoyan Beshkov checked the specimen and genitalia slide and realized that it is *A. obscura*. Julius Ganev must have made a mistake because of the similarity of male genitalia of *A. obscura* and *J. notata* whilst also failing to pay attention to habitus. These two species are very easy to distinguish by their antennae, which are pointed distally in all *Jordanita* species and clubbed distally in all *Adscita* species. If determination of the mentioned specimen had been done correctly, this would have been the first report of *A. obscura* in Bulgaria, 14 years before DE FREINA & WITT (2001).

Our new findings in Besaparski Ridove Hills and Pastusha are situated in the same area as Asenovgrad Town and they represent the northern distributional limit of *A. obscura*. Only Tulcea in Dobrogea is more in the North (GUENIN, 2019). Gorni Yurutsi Village fills the gap between Asenovgrad Town and the Thrace region of Turkey, where it has been reported from four localities in Kırklareli and Istanbul provinces (CAN CENGİZ *et al.*, 2018). Gorni Yurutsi Village is 120 km distant from the nearest locality near Kırklareli town and ca. 115 km from Asenovgrad Town. Our finding near Rozhenski Manastir Monastery fills the gap between Besaparski Ridove Hills and Dojran Lake. Guenin (2019) presented dots on a map which correspond to Struma Valley, however there is no any data on these localities in the paper.

In Greece *A. obscura* is recorded from the islands of Aegean Sea and on the mainland

from nearly sea level to 1500 m on Mt. Chelmos in the Peloponnesos (e.g. MOLLET, 1995; GOZMÁNY, 2012; COUTSIS, 2017). GUENIN (2019) gave a map with additional dots in Greece, but not any further information on *A. obscura* in Grece. It is very rarely reported, but it is certainly more widely distributed in Greece as its suitable habitats are frequent there. In the Greek mainland previously it has been known from Mt. Olympos foothills, Athens and Mt. Chelmos (GOZMÁNY, 2012; COUTSIS, 2017) and our record from Vargiani falls between them.

Acknowledgements

We are thankful to Gerhard M. Tarmann for determination of specimen from Rozhenski Manastir Monastery. Colin W. Plant (Bishops Stortford, UK) kindly made some linguistic improvements to the manuscript.

References

- ALBERTI B. 1966. Ergebnisse der Albanien-Expedition des Deutschen Entomologischen Institutes, 1961. 54. Beitrag. Lep.: Zygaenidae. *Beiträge zur Entomologie Berlin*, 16(3,4): 467-481.
- CAN CENGİZ F., K.A. EFETOV, K. KAYA, E.E. KUCHERENKO, Z. OKYAR, G.M. TARMANN 2018. Zygaenidae (Lepidoptera) of Thrace Region of Turkey. *Nota lepidopterologica*, 41 (1): 23-36.
- COUTSIS J.G. 2017. Procridinae and Zygaeninae records from Greece, 1960-2015 (Lepidoptera: Zygaenidae). *Entomologist's Gazette*, 68(2): 85-97.
- DANIEL F. 1964. Die Lepidopterenfauna jugoslawisch Mazedoniens. II. Bombyces et Sphinges. Posebno Izdanie 2. Prirodonaučni Muzej Skopje, 74 p.
- DE FREINA J.J., T.J. WITT 2001. *Die Bombyces und Sphinges der Westpalaearktis (Insecta, Lepidoptera). Band 3 Zygaenoidea: Zygaenidae*. EFW Edition Forschung & Wissenschaft Verlag GmbH, München, 575 p.
- DE FREINA J.J. 2003. Neue Wirtspflanzennachweise für *Adscita (Adscita) obscura* (Zeller, 1847) und *Jordanita (Roccia) budensis* (Speyer & Speyer, 1858) in Kleinasien (Lepidoptera, Zygaenidae, Procridinae). *Atalanta*, 34(3/4): 453-456.
- GOZMÁNY L. 2012. *Fauna Graeciae IX. The Lepidoptera of Greece and Cyprus. Volume 1*. Hellenic Zoological Society, Athens, 409 p.
- GUENIN R. 2019. *Adscita (Adscita) obscura* (Zeller, 1847) (Lepidoptera: Zygaenidae, Procridinae) - Erstnachweis für Rumänien. *Entomologica romanica*, 23: 5-12.
- KEIL T. 2014. *Die Widderchen des Iran: Biologie und Verbreitung (Lepidoptera, Zygaenidae)*. 17. Beiheft der Entomologischen Nachrichten und Berichte, 461 p.
- MOLLET B. 1995. Contribution a la connaissance des Procridinae de Turquie et des îles grecques de l'est de mer Egée (Lepidoptera, Zygaenidae). *Linneana Belgica*, 15(3): 127-136.
- NAUMANN C.M., G.M. TARMANN, W.G. TREMEWAN 1999. *The Western Palaearctic Zygaenidae*. Apollo Books, Stenstrup, 304 p.
- REBEL H., H. ZERNY 1931. Die Lepidopterenfauna Albaniens (mit Berücksichtigung der Nachbargebiete). *Denkschriften der Akademie der Wissenschaften in Wien, Mathematisch-Naturwissenschaftliche Klasse*, 103: 37-161.
- TARMANN G.M., W.G. TREMEWAN 2001. Notes on the biology and ecology of *Adscita (Adscita) obscura* (Zeller, 1847) (Lepidoptera: Zygaenidae, Procridinae). *Entomologist's Gazette*, 52: 91-99.
- THURNER J. 1938-1941. Die Schmetterlinge der Ochrid Gegend in Mazedonien. *Mitteilungen aus den Königl. Naturwissenschaftlichen Instituten in Sofia*, 11: 121-179, 14: 9-35.
- VRENOZI B., E. AISTLEITNER, G.M. TARMANN 2016. Contribution to the knowledge of Procridinae (Zygaenidae) of Albania. In: Tarmann M.G., Tremewan W.G., A. Spalding (Eds.) Book of Abstracts. XV International Symposium on Zygaenidae 11-18 September 2016 Mals/Malles, Südtirol/Alto Adige, Italy, p. 28.
- VRENOZI B., T.B. TOSHOVA, K.A. EFETOV, G.M. TARMANN 2018. The first discovery of the vine bud moth *Theresimima ampellophaga* (Lepidoptera: Zygaenidae) in Albania by the use of sex pheromone/attractant traps. In: Can, F., Z. Okyar (Eds.) Abstracts of the XVI. International Symposium on Zygaenidae, İzmir, Turkey, 1-5 May 2018, p. 18.

Accepted: 12.05.2019
Published: 31.07.2019