

## New records of Zygaenidae (Lepidoptera) from Montenegro

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**Abstract:** Four areas in Montenegro were visited at the end of June – beginning of July 2020. We found 12 species of Zygaenidae. Second records for *Adscita statures drenowskii* (Alberti, 1939) and *Jordanita globulariae* (Hübner, 1793) for Montenegro are provided here. Additional records are given for *J. notata* (Zeller, 1847) and *Zygaena punctum* Ochsenheimer, 1808 for which there are less than ten localities known in Montenegro.

**Keywords:** faunistics, Montenegro, Procrinae, Zygaeninae

### Introduction

Montenegro and Albania are the least studied Balkan countries considering Zygaenidae (Nahirnić, 2018). In the last ten years, four species were reported for the first time in Montenegro: *Zygaena bizaie* (Esper, 1800), *Z. minos* ([Denis & Schiffermüller], 1775), *Z. cynarae* (Esper, 1789), and *Z. transalpina* (Esper, 1780) (Nahirnić et al., 2011; Nahirnić et al., 2013; Nahirnić & Tarmann, 2014) increasing the total number of species occurring in the country to 23. In addition, a few other species are expected, such as *Theresimima ampellophaga* (Bayle-Barelle, 1808), *Rhagades pruni* ([Denis & Schiffermüller], 1775), *Adscita albanica* (Naufock, 1926), and *Jordanita graeca* (Jordan, 1907). Published data for many species, even those common in the wider region, are scarce; for some species of Procrinae data are not reliable because genitalia examination has not been done. Most of the attention was given to coastal areas, Mt Durmitor, the Tara River Canyon and their adjacent areas. Despite its small size, vast areas of the country lack any data on Zygaenidae. Here we present data for ar-

reas where there are no data or just single records, with the exception of Mt Lovćen. However, our records from Lovćen are from the main ridge, where Zygaenidae were not reported before.

We explored 18 localities in four areas: Vtulja in North Montenegro, Mt Orjen and Grahovsko Polje, Mt Lovćen and Mt Visitor. The field work was conducted from 28.VI.2020 to 9.VII.2020 by Predrag Jakšić. List of the localities and dates (in chronological order):

1. Vtulja, N 43°12'44", E 19°27'23", 959 m, 28.VI.2020
2. Grahovsko Polje, Gradine, N 42°39'06", E 18°36'10", 975 m, 28.VI.2020
3. Orjen, Bijela Gora, N 42°38'04", E 18°34'07", 1240 m, 28.VI.2020
4. Orjen, Vrbanje Village, N 42°32'45", E 18°30'38", 1124 m, 29.VI.2020
5. Orjen, Vrbanje Village SE, Prodoli, N 42°32'11", E 18°31'13", 1124 m, 29.VI.2020
6. Mt Orijen, Rujišta, N 42°32'51", E 18°31'10", 1137 m, 29.VI.2020

7. Mt Orijen, Kape, N 42°33'51", E 18°29'47", 976 m, 29.VI.2020
8. Mt Orijen, Subra, N 42°30'46", E 18°33'16", 1177 m, 30.VI.2020
9. Mt Lovćen, Ivanova Korita, N 42°22'46", E 18°49'53", 1280 m, 2.VII.2020
10. Mt Lovćen, Štirovnik Summit foothill, Međuvršje, N 42°24'06", E 18°49'31", 1370 m, 2.VII.2020
11. Mt Lovćen, Ugnji W-SW, below Veliki Siljevik Summit, N 42°19'43", E 18°52'58", 1300 m, 3.VII.2020
12. Lovćen, Majstori SE, below Maini Vrh Summit, N 42°19'56", E 18°52'03", 1202 m, 3.VII.2020
13. Mt Lovćen, Ivanova Korita, Treštenski Vrh foothill, N 42°22'26", E 18°50'51", 1316 m, 4.VII.2020
14. Lovćen, Majstori NNW, N 42°21'41", E 18°50'43", 1330 m, 4.VII.2020
15. Mt Lovćen, Treštenski Vrh, N 42°22'19", E 18°50'51", 1469 m, 5.VII.2020
16. Mt Visitor, Zaparenik Katun, N 42°38'32", E 19°54'12", 1183 m, 8.VII.2020.
17. Mt Visitor, Jagnjičar, N 42°37'35", E 19°53'12", 1820 m, 8.VII.2020.
18. Mt Visitor, Kruševo, N 42°40'14", E 19°51'54", 890 m, 9.VII.2020

## Methods

Procridinae and *Zygaena purpuralis* were determined by the examination of genitalia. Dissection of genitalia was done according to Robinson (1975). All genitalia were preserved in micro vials filled with glycerol with the exception of genitalia of one male specimen of *Adscita statures statures* (Linnaeus, 1758) x *A. statures drenowskii* (Alberti, 1939), which was mounted in Euparal on a slide. Photo of the genitalia slide was taken using Nikon Camera with AF-S Micro Nikkor Lens. The material is deposited in the collection of the first author.

## Results and discussion

We recorded a total of twelve species: four of Procridinae and eight of Zygaeninae. In the list of the species below, each species is followed by the numbers of localities and comments on its occurrence in Montenegro.

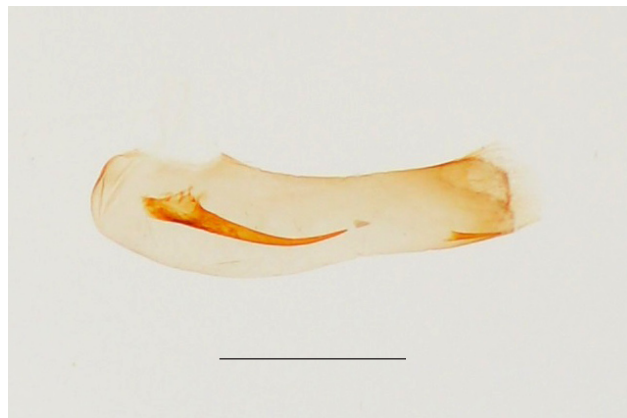


Fig. 1. Aedeagus of *Adscita statures statures* (Linnaeus, 1758) x *Adscita statures drenowskii* (Alberti, 1939) hybrid, Grahovsko Polje, Gradine, 28.VI.2020. Scale = 1 mm.

## Procridinae

- *Adscita statures statures* (Linnaeus, 1758): 2, 13, 14. *Adscita statures statures* x *A. statures drenowskii* (Alberti, 1939): 2. Dissection of genitalia is necessary for the proper determination of *A. statures*. The two subspecies *A. statures statures* and *A. statures drenowskii* differ in the largest cornutus of the aedeagus. In the aforementioned subspecies cornutus is curved, while in the latter – cornutus is straight. Intermediate forms show curviness of cornutus of different degree. Drawings are given in Tarmann (1979) and Jakšić (1990). This is the first photo of genitalia of a male hybrid (Fig. 1, ANZ 781). Here we emphasize the importance of exploring cornutus of *A. statures*. *A. statures drenowskii* is distributed on the Southern Balkans and the hybridisation belt goes from eastern, central, southern and western Serbia, northern Montenegro, northeastern Albanian and northwestern North Macedonia. Our record in Grahovsko Polje is a continuation of the northern border of its distribution and it is the westernmost record of *A. statures drenowskii*. In Montenegro, a hybrid was found only once at Čeline at the Crno Jezero on Mt Durmitor (Jakšić, 1990). There are no other records on *A. statures drenowskii* in the country. In fact, there are no records of *A. statures* in almost the whole southern part of Montenegro.
- *Adscita mannii* (Lederer, 1853): 10, 18. We consider almost all published records for Montenegro (Rebel, 1913, 1917; Rebel & Zerny, 1931; Vasić et

al., 1990) as not reliable, since voucher specimens have not been found in respective collections and genitalia have most probably not been checked. Only Jakšić et al. (2019) provided two reliable records. *A. mannii* is a widespread species on the Balkans and more records should be expected in Montenegro. It can be confused with several species of *Adscita*, thus every reliable record, based on genitalia dissection, is valuable.

- *Jordanita notata* (Zeller, 1847): 2, 10, 12. Up to date, four records are known from Montenegro: two from Mt Durmitor and two from near Podgorica (Jakšić, 1990; Jakšić et al., 2019). Our three additional records are located in new areas.
- *Jordanita globulariae* (Hübner, 1793): 18. The only published record for *J. globulariae* for Montenegro is from the Lijeva Reka (Veruša) (Sijarić, 1991). Kruševo on Mt Visitor is the second record of this species in the country. *J. globulariae* is not rare in the surrounding countries and, therefore, we expect this species to be recorded relatively frequently in Montenegro as research on Zygaenidae intensifies.

#### Zygaeninae

- *Zygaena purpuralis* (Brünnich, 1763): 3, 10, 12, 17. In Montenegro two species of *Z. purpuralis* complex occur: *Z. purpuralis* and *Z. minos* ([Denis & Schiffermüller], 1775). These species can be distinguished only on the basis of genitalia or larvae (Nahirnić, 2019). *Z. purpuralis* is known to occur at 16 localities in Montenegro based on reliable and precise records published in Naumann et al. (1983), Jakšić (1990, 2003), Nahirnić et al. (2011b) and Jakšić et al. (2019). Our new data originate from the areas where it has not been found before. Other papers that mention *Z. purpuralis* exist but determination has not been based on the examination of genitalia. Every reliable record based on dissection is valuable and will contribute to the knowledge on distribution of both *Z. purpuralis* and *Z. minos* in Montenegro.
- *Zygaena punctum* Ochsenheimer, 1808: 10, 14. It has been reported from less than ten localities in Montenegro, mostly in the southern part of the country. It is a xerothermophilous species feeding on *Eryngium* spp., of which *E. campestre* L. is a common species in Montenegro. Its suitable habi-

tats are well-represented in the coastal lowlands and mountains and we expect it to be a common species there. Previously, it has been found at two localities on Mt Lovćen. Here we add two more localities from Mt Lovćen.

- *Zygaena carniolica* (Scopoli, 1763): 3, 4, 6, 7, 8, 9, 10, 11, 12. In comparison with the surrounding countries, *Z. carniolica* is not a widespread species in Montenegro. This is certainly the result of lack of research.
- *Zygaena viciae* ([Denis & Schiffermüller], 1775): 11, 18. These are the first data of *Z. viciae* in the southern and the eastern Montenegro.
- *Zygaena loti* ([Denis & Schiffermüller], 1775): 3, 11. In comparison with the surrounding countries, *Z. loti* is not a widespread species in Montenegro. This is certainly the result of lack of research.
- *Zygaena angelicae* Ochsenheimer, 1808: 10, 11, 16. In comparison with the surrounding countries, *Z. angelicae* is not a widespread species in Montenegro. This is certainly the result of lack of research.
- *Zygaena filipendulae* (Linnaeus, 1758): 1, 3, 5, 11, 12, 15. Even *Z. filipendulae*, the most common and widespread species in the region, is not distributed throughout the country. This is certainly the result of lack of research.
- *Zygaena lonicerae* (Scheven, 1777): 2, 9, 10, 11, 12, 13, 15. Common and widespread species in the region but not widespread in Montenegro. This is certainly the result of lack of research. Our record from the Grahovsko Polje fills the distributional gap in the area of southern Bosnia and Herzegovina and western Montenegro.

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