

**NEW OR INTERESTING RECORDS OF SEVEN MOTH SPECIES  
(NOCTUIDAE & GEOMETRIDAE) FOR THE FAUNA  
OF BOSNIA AND HERZEGOVINA**

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**Abstract** – Data on seven rare moth species from two families (Noctuidae and Geometridae) are given in the present paper. Specimens were collected on two mountains, Zelengora and Ljubuša. The following species are reported as new for the fauna of Bosnia and Herzegovina: *Chersotis margaritacea*, *Autographa bractea*, *Crypsedra gemmea*, *Episema tersa* and *Thera cognata*. As Bosnia and Herzegovina remains one of the least studied countries in the north-western Balkans, further records of other rare and interesting moth species are to be expected.

**KEY WORDS:** Lepidoptera, rare species, Zelengora, Ljubuša

**Izvešček** – NOVE ALI ZANIMIVE NAJDBE SEDEM VRST VEŠČ (NOCTUIDAE IN GEOMETRIDAE) ZA FAVNO BOSNE IN HERCEGOVINE

Podatki o sedmih vrstah redkih večč dveh družin (Noctuidae in Geometridae) so predstavljeni v tem članku. Osebkni so bili zbrani na dveh hribih, Zelengori in Ljubuši. Naslednje vrste so nove najdbe za favno Bosne in Hercegovine: *Chersotis margaritacea*, *Autographa bractea*, *Crypsedra gemmea*, *Episema tersa* in *Thera cognata*. Glede na to, da je Bosna in Hercegovina najmanj raziskana država severnega Balkana, pričakujemo dodatne najdbe redkih in zanimivih vrst.

**KLJUČNE BESEDE:** Lepidoptera, redke vrste, Zelengora, Ljubuša

**Introduction**

The moth fauna of Bosnia and Herzegovina has been studied in the past by the leading European lepidopterologists, the most important works being those of Hans

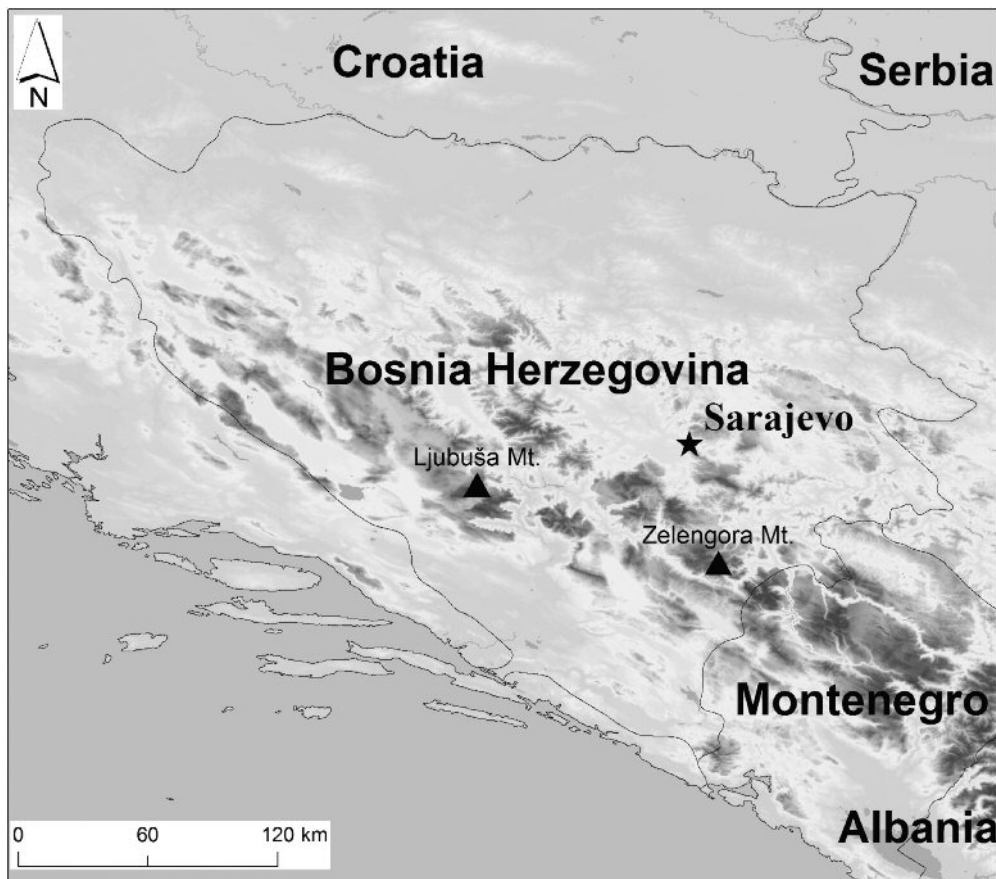
Rebel (Rebel 1898, 1901, 1904, 1906) who collected and revised the material collected by his contemporaries and created the first checklist of Lepidoptera for the country. After him, the comprehensive contributions were done by Schawerda (1908-1922). Between the beginning of the 20<sup>th</sup> century and the last decade, the extensive moth surveys have ceased. In the last few years, several small contributions were made, usually containing data for one or several moth species recorded in the country (e.g. Žujo Zekić et al. 2009, Đurić et al. 2012, Hanjalić & Lelo 2014, Karabeg & Lelo 2014, Kurz & Horvat 2010). The most important recent contribution was the revision of the systematic list of Lepidoptera of Bosnia and Herzegovina (Lelo 2004), however, it does not present new data, but is solemnly based on the already mentioned published data. Nevertheless, it is a good starting point for any entomologist wanting to conduct surveys in Bosnia and Herzegovina.

Here we want to present the data of several rare or local moth species recorded during several visits to Bosnia and Herzegovina in 2016. When compared to the online database Fauna Europaea (de Jong et al. 2014) the occurrence of some species in Bosnia and Herzegovina is marked on the maps and lists, but the origin of the data is unknown and, due to this, certain species presented here as new for the country could already be listed in some literature unknown to us. However, we think that the inclusion of such species is indeed beneficial, as they have not been listed in the current Lepidoptera checklist of the country (Lelo 2004).

### Materials and methods

This study took place at two mountain complexes, Zelengora and Ljubuša. Both are in northern Herzegovina and are a part of the Dinaric Alps. They are characterised by Late Pleistocene unconsolidated clastids and morphological forms. Limestone is the predominant rock type (Hrvatović 2005). Zelengora Mt. is located in the Sutjeska National Park. The highest peak is Bregoč (2014 m a.s.l.). It is situated on the border between the SE Bosnian (Igman-Zelengora Region) and the Submediterranean-Mountain ecological-vegetation zones. As a result, the vegetation communities are quite diverse. Additionally, there are quite a few lakes on the mountain. Ljubuša Mt.'s SE part, which intersects with the NE part of Vran Mt., falls within the Blidinje Nature Park. The highest peak is Velika Ljubuša (a.k.a. Ljubuša or Crnovrh, 1797 m a.s.l.). Its numerous dolines give it its characteristic moon-like landscape. It is within the Submediterranean-Mountain ecological-vegetation zone.

This work was carried out on one location per mountain (Fig. 1). The first location, on Zelengora, is situated at the camp site just above Orlovačko Lake, at the humid meadows, N: 43.375109°, E: 18.549857°, 1477 m a.s.l. We visited it between 18-20 August 2016. Swaths of deciduous beech forest border the location to the north, between the camping site and the lake, and to the south. The camp site itself and other immediate areas are covered in wet grasslands and the occasional bush, with the bushes becoming more frequent near the forest edge. The immediate camping area is regularly mown every year, while all grasslands in the area are used as pastures in the traditional way, grazed by a large number of sheep and the occasional cow. The



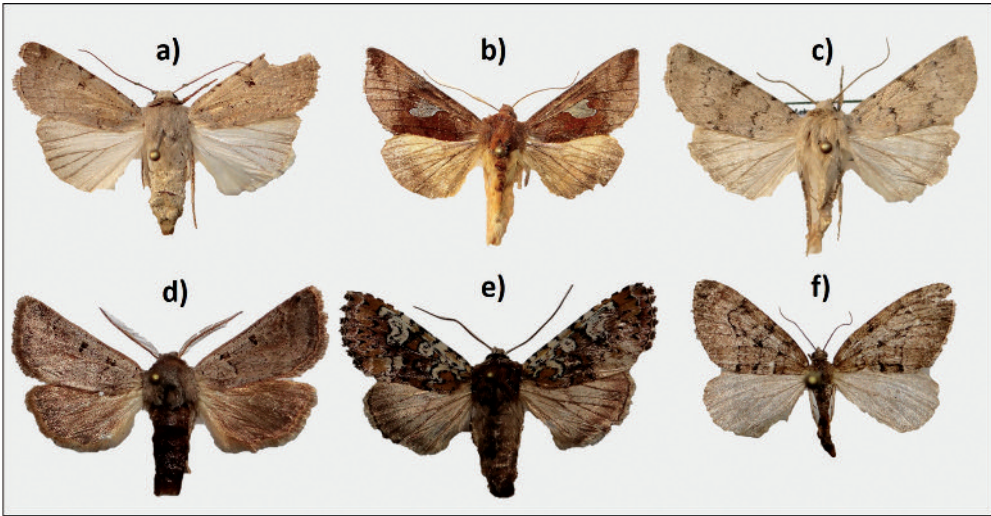
**Fig. 1.** Surveyed localities in Bosnia and Herzegovina.

second location, on the SE outcrop of Ljubuša Mt., north-west from the village Lagumovići, on dry karstic meadows, N: 43.699326°, E: 17.546090°, 1480 m a.s.l., was visited on 6.9.2016. The locality is composed of a large grassland, mostly used as a pasture by local shepherds. Succession is evident in some areas.

On average, four hours were spent on each locality on each date, depending on the time-of-year and climate conditions. Six UV light tents were used per locality to attract moths. Most of the attracted moths were identified in the field and released. The nomenclature follows the online database Fauna Europaea (de Jong et al. 2014).

### **Results and discussion**

During our visit we recorded several species which either represent new country records, or represent rare or local species worth mentioning. For each species basic



**Fig. 2.** Newly recorded or rare moth species for the fauna of Bosnia and Herzegovina: a) *Chersotis margaritacea*, b) *Autographa bractea*, c) *Epipsilia grisescens*, d) *Crypsedra gemmea*, e) *Episema tersa*, f) *Thera cognata*.

information about their occurrence, biology and presence in the neighbouring countries is given. The six newly recorded species are presented in Fig. 2 (a-f).

### Noctuidae

*Chersotis margaritacea* (Villers, 1789)

Material examined: Zelengora Mt., 1 ex.

Note: A Palearctic species, present in central and southern Europe towards central Asia (Macek et al. 2012). It can be found on xerothermophilous rocky terrains, mostly on karstic surfaces. The moth flies in a single generation from June to September depending on the location. The occurrence of this species in Bosnia and Herzegovina was not mentioned by Lelo (2004). While several records of this species exist for Croatia (Stauder 1925, Kučinić & Lorković 1999) no records from Bosnia and Herzegovina are known to us. In Fibiger (1997), the range of this species includes also Bosnia and Herzegovina, but this may indeed just represent the presupposed distribution.

*Chersotis cuprea* ([Denis & Schiffermüller], 1775)

Material examined: Zelengora Mt., 10 ex.

Note: Euro-Siberian, boreal species, inhabiting mountainous areas of Europe. Adults fly in a single generation between July and September. Records from the northern Balkans are fairly scarce. Carnelutti (1992) lists it for Slovenia, Kučinić & Lorković (1999) for Croatia. In B&H it is known only from Vlačić Mt. (Rebel 1904), so, accordingly, ours is the second known locality for this species in the country.

*Autographa bractea* ([Denis & Schiffermüller], 1775)

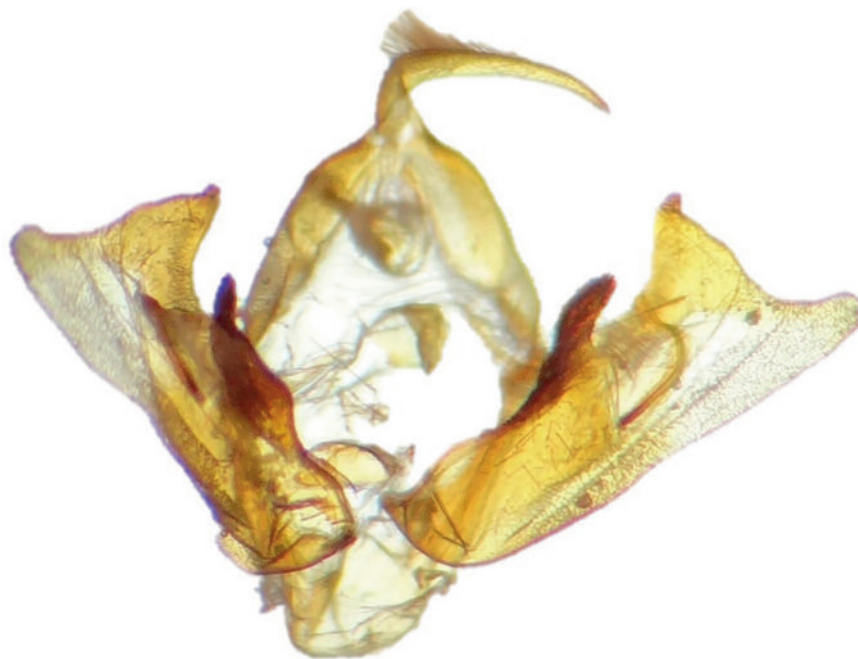
Material examined: Zelengora Mt., 3 worn ex.

Note: A Palearctic species present in most parts of Europe, from the Pyrenees in the west, across Eastern Europe to Altai in the east. Adults fly in a single generation between June and August. This species was not recorded in Bosnia and Herzegovina in the past but its occurrence was expected. During our visit to Zelengora Mt. we recorded three worn specimens, probably at the end of their flight season. This is the first record for Bosnia and Herzegovina.

*Epipsilia grisescens* (Fabricius, 1794)

Material examined: Zelengora Mt., 1 m, 6 f.

Note: A western Palearctic species with fragmented distribution in Europe, in northern Spain, the Alps, Apennines and the Balkans. This xeromontane species inhabits open, dry, rocky habitats of the alpine and subalpine zone. It flies between June and September. Caterpillars feed on different grasses. This is the only species of the genus *Epipsilia* present in Bosnia and Herzegovina, known from Kalinovik and Jablanica (Rebel 1904). A similar species, *Epipsilia latens* (Hübner, 1809) is present in nearby countries, so the correct species identification was confirmed by the examination of the male genitalia (according to Fibiger 1997) (Figure 3). This is a rare and local species, with a limited number of records in the northern Balkans, and as such, is included in this manuscript.



**Fig. 3.** Male genitalia of *Epipsilia grisescens* from Mt. Zelengora.



*Crypsedra gemmea* (Treitschke, 1825)

Material examined: Zelengora Mt., 2 ex.

Note: A predominantly montane species distributed in most parts of Europe. While its occurrence in Bosnia and Herzegovina was expected, its presence in the country was not confirmed in any former works dealing with moths of Bosnia and Herzegovina (Lelo 2004).

*Episema tersa* (Denis & Schiffermüller, 1775)

Material examined: Ljubuša Mt., 2 m, 10 f.

Note: A Ponto-Mediterranean species, distributed from south-eastern Europe to central Asia. Adults fly in a single generation from the second half of August till October. This is a sister species of *Episema glaucina* (Esper, 1789) from which it can be reliably distinguished only based on the genital morphology. On Ljubuša Mt. we collected ten females and two males belonging to this species. The identification was confirmed by the dissection of the male genitalia and comparison with *E. glaucina* (Nowacki 1998). According to Lelo (2004) this is a new country record for Bosnia & Herzegovina.

### **Geometridae**

*Thera cognata* (Thunberg, 1792)

Material examined: Zelengora Mt., 3 ex.

Note: A Western Palearctic species. Adults fly between July and August, mainly in moorlands in northern Europe and mountainous areas in the southern Europe (Macek et al. 2012). This species was not previously recorded from Bosnia and Herzegovina (Lelo 2004, Hausmann & Viidalepp 2012) therefore it can be regarded as the first country record.

### **Conclusions**

The moth fauna of Bosnia & Herzegovina has for a long period been neglected in terms of systematic moth surveys, and is probably one of the least surveyed countries in Europe. This is partially due to the last war that occurred in the region, as well as because of the lack of experts and amateurs within the country. Our results contribute only slightly to the knowledge about the moth fauna, but may indeed be a next step towards more systematic surveys of moths of the country.

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