Novelties in the fauna of the subfamily Zygaeninae (Lepidoptera: Zygaenidae) of Albania and the Republic of Macedonia

Ana Nahirnić & Stoyan Beshkov

National Museum of Natural History, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria; E-mails: ananahirnic@nmnhs.com, stoyan.beshkov@gmail.com

Abstract: Three species of the subfamily Zygaeninae are reported for the first time from Albania: *Zygaena brizae*, *Z. cynarae* and *Z. nevadensis*. They were all found in the south-eastern part of the country. *Zygaena cynarae* is a new species for the Republic of Macedonia as well. Localities of *Z. cynarae* in Macedonia and Albania represent the southernmost distribution points of this species in Europe.

Key words: Balkan Peninsula, *Zygaena brizae*, *Zygaena cynarae*, *Zygaena nevadensis*

Introduction

*Zygaena* Fabricius, 1775 (Lepidoptera: Zygaenidae: Zygaeninae) is a Palaearctic genus, which includes 108 species (Hofmann & Tremewan 2010). With the recently reinstated *Zygaena diaphana* Staudinger, 1887 (see Nahirnić 2016), the total number of species of the genus *Zygaena* is currently 109.

Studies on the Zygaenidae of Albania started no earlier than 1913, when the famous Austrian lepidopterologist Hans Rebel published several papers for this country (Rebel 1913, 1914, 1918, Rebel & Zerny 1931). The next comprehensive contribution was by Alberti (1966). Until today, the most important works on Albanian Zygaenidae have remained those by Rebel and Alberti. They paid special attention to the northern and central part of the country. Data on the Zygaenidae in the southern part are very poor. Studies have been undertaken in adjacent areas in neighbouring countries such as Galicica Mts. and Baba Mts. in the Republic of Macedonia and Pindos Mts. in Greece, which have shown the presence of several species not yet reported from Albania. The most recent species reported as new for Albania are *Zygaena minos* ([Denis & Schiffermüller], 1775) (see Nahirnić 2016), *Z. diaphana* Staudinger, 1887 (reported as *Z. minos* by Nahirnić et al. 2013) and *Z. sedi* Fabricius, 1787 (see Hofmann & Tremewan 2017).

The last review on the Zygaenidae of Macedonia by Daniel (1964) showed fairly well the knowledge on the composition of species. All subsequently newly discovered species *Z. nevadensis* Rambur, 1858 (see Reiss, 1976), *Z. diaphana* (see Naumann et al. 1983, published as *Z. minos*) and *Z. minos* (see Nahirnić 2016) are very rare on the Balkans and are known in Macedonia only from a few localities.

In the present article, we report three further zygaenid species for the fauna of Albania, one of them recorded also for the first time for the Republic of Macedonia.

Materials and Methods

In late June 2017, the authors visited southern and south-eastern Albania in order to continue their research on Albanian Lepidoptera. Our previous visits in 2016 provided much new data for some other lepidopteran families and revealed areas, which were likely to host previously unreported species of the family Zygaenidae for Albania.

All specimens of the family Zygaenidae were collected using an entomological net and some specimens were released after identification. Specimens of *Zygaena brizae* and *Z. purpuralis* (Brünnich, 1763)
were determined based on characters of their genitalia. Voucher specimens have been deposited in the collections of the authors. Zygaenidae from the collections of the Hungarian Natural History Museum in Budapest (HNHM) were examined as well.

**Results**

**Zygaena brizae (Esper, 1800)**

Only a single male (Fig. 1a) was found at Korçë County, Moravë Mts. near the Lajthisë summit, east of Dishnicë Village, N 40°39’00”, E 20°50’40”, 1420 m a.s.l. (Fig. 2) on 25.06.2017. This is the first record of *Z. brizae* in Albania and it is located in the same area as the records from the Republic of Macedonia and Greece (Fig. 3). *Zygaena brizae* is a small species and can be confused with small specimens of the *Z. purpuralis* complex. However, genitalia dissection is very rarely necessary. Our specimen belongs to subspecies *Z. brizae ochrida* Holik, 1937.

**Zygaena cynarae (Esper, 1789)**

During examination of the collections of Zygaenidae in HNHM, the first author discovered two males of *Z. cynarae* from the Republic of Macedonia, Šar-planina Mts., Popova Šapka, 02-05.08.1965, leg. Z. Varga (Fig. 1b). One specimen carries pollinaria of *Anacamptis pyramidalis* (L.) Rich. (Orchidaceae) on its proboscis. *Zynarae cynarae* has not been reported for the Scardo-Pindhic Mountains so far. The nearest reported localities are the Durmitor Mts. in Montenegro and the Zlatar Mts. in Serbia, at a distance, respectively, of about 205 km and 170 km as a crow flies.

*Zygaena cynarae* was the most striking discovery of our study in Albania, in a locality at about 170 km distance as a crow flies from Popova Šapka. On 27.06.2017 we found two male specimens in Korçë County, Kuq Mts., Qarrit Pass, west from Pepellash Village, N 40°28’53”, E 020°40’31”, 1180 m a.s.l. The habitat consisted of clearings in degraded forest of *Quercus cerris* L. and *Q. pubescens* Willd. with *Juniperus communis* L. The landscape was characterised by degraded deciduous forests, likely natural vegetation, *Pinus nigra* J. F. Arnold plantations, *J. communis* stands and meadows on serpentine bedrock (Fig. 4). Other species of the genus *Zygaena* recorded together with *Z. cynarae* are: *Zygaena purpuralis*, *Z. punctum* Ochsenheimer, 1808 (larvae and adult), *Z. carniolica* (Scopoli 1763) and *Z. filipendulae* (Linnaeus, 1758).

**Zygaena nevadensis Rambur, 1858**

We observed *Z. nevadensis* flying fast and low above the ground from the main mountain ridge of the Moravë Mts. near the Lajthisë summit at N 40°38’54”, E 20°51’27”, 1570 m a.s.l. downwards in direction to the Dishnicë Village along another ridge to N 40°39’00”, E 20°50’40”, 1420 m a.s.l. (Fig. 2) and then further down, on a very hot day from 4:30 to 6:30 PM on 25.06.2017. All specimens were flying and none was found resting or nectaring. Altogether ten males were collected, about ten more very worn males were released and about 20 specimens we did not catch (Fig. 1c). The observed behaviour could be explained as strong attraction to female sex pheromone. The collected material belongs to the subspecies *Zygaena nevadensis pelisterensis* Reiss, 1976 described from Baba Mts., Pelister in the Republic of Macedonia. This is the first record of *Z. nevadensis* in Albania (Fig. 3). Other species of the genus recorded together with *Z. nevadensis* and *Z. brizae* are *Z. carniolica*, *Z. viciae* ([Denis & Schiffermüller], 1775), *Z. loti* ([Denis & Schiffermüller], 1775), *Z. angelicae* Ochsenheimer, 1808, *Z. filipendulae* and *Z. loniceræ* (Scheven, 1777).

**Discussion**

The three species presented here as new members of the Albanian fauna comprise nearly 18% of all

---

Fig. 1. a – *Zygaena brizae* (Esper, 1800) male from Moravë Mts. near the Lajthisë summit, Dishnicë Village, 25.06.2017.; b – *Z. cynarae* (Esper, 1789), male from Kuq Mts., Qarrit Pass, Pepellash Village, 1180 m a.s.l., 27.06.2017; c – *Z. nevadensis* Rambur, 1858, male from site and date same as 1a. Scale line: 10 mm.
Novelties in the fauna of the subfamily Zygaeninae (Lepidoptera) of Albania and the Republic of Macedonia

Zygaeninae (17 species) known in this country. They were all collected in south-eastern Albania in the county of Korçë. With the newly reported Z. cynarae, the number of species of Zygaena in the Republic of Macedonia reached 17. For comparison, the genus Zygaena is represented in Greece by 14 species (Coutsis 2017). Albania and Macedonia could be considered as rich in species of Zygaena on the Balkans. They host the following species, which reach their distributional limits on their territories: Z. diaphana, Z. minos, Z. cynarae, Z. laeta (Hübner, 1790) (not in Albania) and Z. sedi (not in Macedonia).

The distribution of Zygaena brizae includes the south-western Alps, Central and Eastern Europe, the Balkan Peninsula, Anatolia, Syria, Lebanon, Israel, Russia north of the Black Sea, the Caucasus and Transcaucasia. On the Balkans, it is reported as rare. Considering that Z. brizae is distributed in the surrounding countries and due to the poor level of investigation of the family Zygaenidae in Albania, it was very much expected to be found here.

The main part of the distributional range of Zygaena cynarae is Eastern Europe and the steppe areas of Russia. Its distribution on the Balkan Peninsula is very dispersed, hitherto confined only to a few localities near the northern Adriatic Coast (Rebel 1916, Burgeff 1926, Šašić et al. 2016) and in the Dinaric Alps (Rauch 1977, Nahirnić et al. 2011a, 2011b, 2012). The currently known distribution of Z. cynarae in Albania and the Republic of Macedonia is presented on Fig. 3. Its known distribution is considerably expanded by the report from south-eastern Albania, representing the southernmost record in Europe. We suppose that the populations in Albania and the Republic of Macedonia represent relic populations, which have come to this part of their range while migrating from north to the south over mountain chains, such as the Dinaric Alps and the Scardo-Pindic Mountains, in search for refugia during the last glacial age and regressed in interglacials and latter in post glacial to the north and to higher altitudes. Due to the limited material and unresolved subspecific status of Z. cynarae on the Balkans (see Nahirnić et al. 2012), specimens from Albania and Macedonia cannot be assigned to any described subspecies.
Zygaena nevadensis occurs in Morocco, on the Iberian Peninsula, in France, Italy, the Balkan Peninsula, Romania, Turkey and the Caucasus on Russian territory and has a very disjunct distribution pattern (Hofmann & Tremewan 2017). The populations on the Balkan Peninsula are very isolated, with the majority of populations occurring in its central part. The nearest population to those found on the Balkans is situated in La Sila, in the very south of the Apennine Peninsula. Efetov et al. (2011) suggested that occurrence of Z. nevadensis in La Sila might be explained by the continuous range of Z. nevadensis in the Pleistocene, when a connection between the Apennine Peninsula and the Balkans probably existed. This species is very rare on the Balkans but in the last 20 years the knowledge on its distribution has improved. Several new records have been discovered in Serbia and the Republic of Macedonia (Nahirnić et al. 2011a), Bulgaria (Beshkov & Langourov 2011) and Greece (de Freina & Piatkowski 2006, Coutsis et al. 2014, Coutsis 2017). As this species has been already known from the nearby Baba Mts. in Macedonia (Reiss 1976) and the Konitsa Municipality in Greece (de Freina & Piatkowski 2006), its presence was highly expected in Albania, especially in its south-eastern part.

References


Rebel H. 1916. Adatok Magyarország lepkefauunájához (Beiträge zur Lepidopterenfauna Ungarns). Rovatapali Lapok 23: 103–119. [In Hungarian and German]


Received: 10.10.2017
Accepted: 12.01.2018