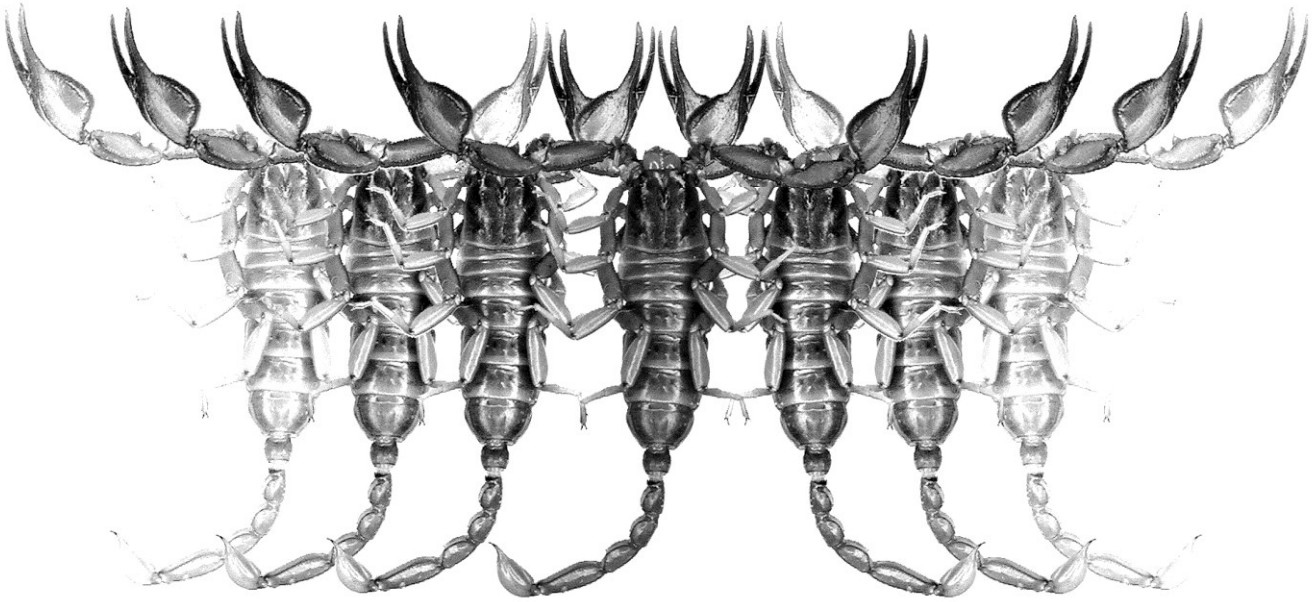
Euscorpius

Occasional Publications in Scorpiology



A New Locality of *Mesobuthus gibbosus* (Brullé, 1832) from Montenegro (Scorpiones: Buthidae)

Oskar Wiśniewski & Barbara Olech

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A new locality of *Mesobuthus gibbosus* (Brullé, 1832) from Montenegro (Scorpiones: Buthidae)

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Summary

A new locality close to northwestern boundary of the geographic range is reported for *Mesobuthus gibbosus* (Brullé, 1832), from Montenegro, Crmnica Region, near Virpazar (42º13' N 19º06' E).

Introduction

Mesobuthus gibbosus (Brullé, 1832) (Scorpiones: Buthidae) is a relatively large (up to 85 mm) yellow or brown-yellowish scorpion (Kinzelbach, 1975). It prefers arid and semi-arid habitats. The species is widespread in the Anatolia and the Balkan Peninsula; in the Balkans, it is the only member of family Buthidae. The confirmed locality reports came from Albania, Bulgaria, Macedonia, Greece, Montenegro, and the European part of Turkey (Fet, 2010).

Mesobuthus gibbosus has been a subject of several recent studies. Its population genetics has been studied in Turkey and Greece by Gantenbein & Largiadèr (2002) and Gantenbein & Keightley (2004). Parmakelis et al. (2006) published a detailed phylogeographic study of *M. gibbosus* from Turkey and Greece based on DNA markers. It is believed that the genus *Mesobuthus* originates from Central Asia, and that *M. gibbosus* is the Anatolian species that dispersed into Europe. Its complex history has been influenced by a variety of fragmentation factors and dispersal events. The Mediterranean region when the basin had desiccated during the Messinian Salinity Crisis when Mediterranean islands were connected to the continental land mass for ca. 100,000 years (Gantenbein & Keightley, 2004). The period of dryness was followed by the Zanclean flood, when the Mediterranean Sea has been refilled (ca. 5.33 million years ago). Therefore, this genus has a potential to be a very interesting object of ecological and biogeographical research.

Two Asian species of *Mesobuthus* are known to reach relatively high northern latitudes. The northern boundary of *Mesobuthus caucasicus* in Kazakhstan follows latitudes above 45°N (Gromov, 2001). The northern boundary of the second species, *Mesobuthus eupeus*, reaches even higher latitude; there are records from localities close to 50°N (Gromov, 2001). The northernmost record of *M. eupeus* came from Orenburg Province (Russia) (Davygora & Rusakov, 2001). This location lies at 51º13' N 57º75' E (Fet, 2010). The proposed limiting factor for *Mesobuthus* is the presence of unfavorable type of soil (Gromov, 2001).

The northern boundary of *Mesobuthus gibbosus* in Europe is less well known. The localities in Montenegro constitute presumably the very northwestern boundary of this species. The northeastern boundary was established by Teruel et al. (2004), who reported *M. gibbosus* from the Pirin Mountains (Bulgaria). The latitude of the Bulgarian locality is comparable to the localities mentioned below for Montenegro. A verification is needed on how permanent is the Bulgarian population since only a single specimen was found.

The distribution of *M. gibbosus* in Montenegro is poorly known due to the fact that this territory was a part of former Yugoslavia; numerous country records concern Yugoslavia as a whole, without precise data.

The majority of publications dealing with the Balkan scorpions has been devoted to the species of the genus *Euscorpius* Thorell, 1876 (fam. Euscorpiidae), while the single species of Buthidae received much less attention. Hadži (1931) reported a specimen of *M. gibbosus* collected near Podgorica, Montenegro (42º 26'N) (deposited in the Museum of Sarajevo, currently the National Museum of Bosnia and Herzegovina). He also mentioned a specimen collected by Stanko Karaman in Rudnik, Pčinja District in southern Serbia (about 42º45' N). Since that publication, this species has not been formally reported from Montenegro for years. Kovařík (1999) in his review mentioned *M. gibbosus* for Yugoslavia without a specific location. Radosavljevic &

Figures 1–2: Habitat of *Mesobuthus gibbosus*, Skadar Lake National Park, Montenegro (top). A juvenile *Mesobuthus gibbosus* from Skadar Lake National Park (bottom).

Ilic (2009) reported a case study on scorpionism of the species from Montenegro. These authors recorded patients stung by a scorpion in Krimovica (Kotor District). Pesic (personal communication, 2013) claimed that *M. gibbosus* is "relatively abundant" in the southern part of the country; however, no detailed information has been published.

The goal of this paper is to report a new locality of *Mesobuthus gibbosus* near Skadar Lake National Park (Montenegro).

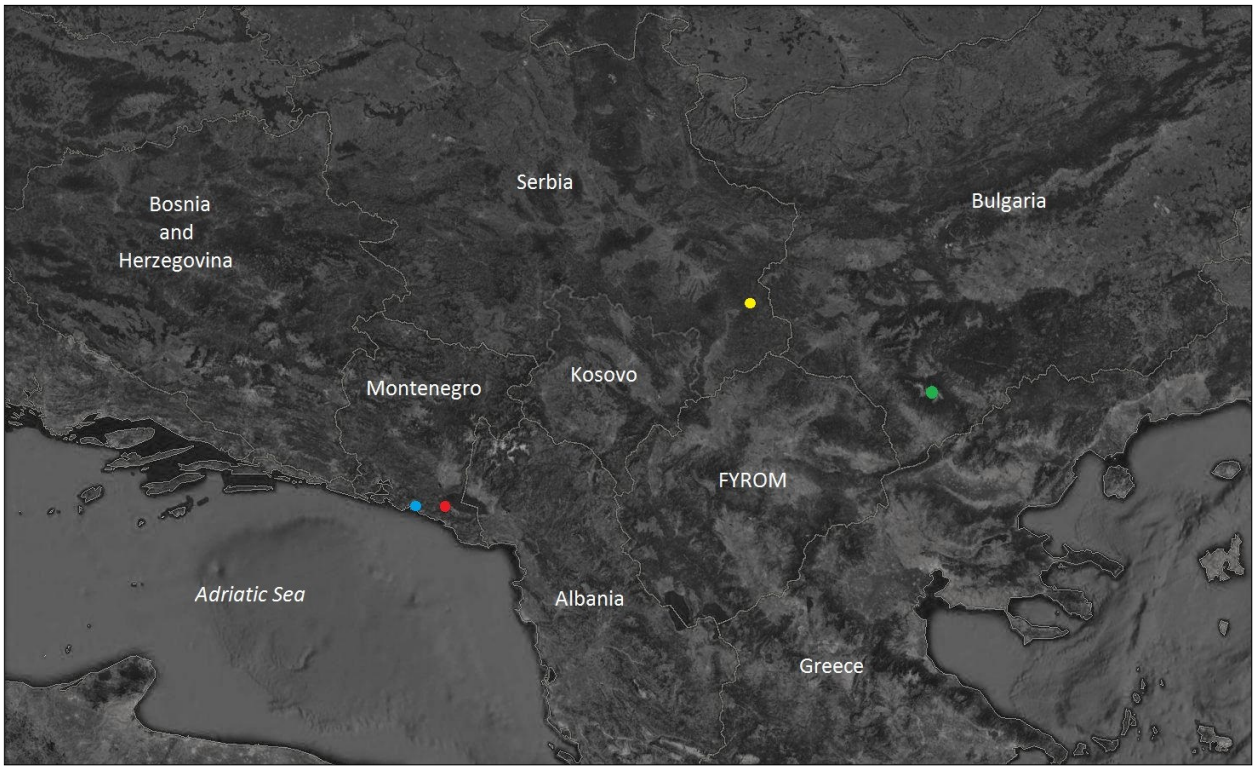

Figure 3: The northernmost localities of *Mesobuthus gibbosus (*marked with dots): blue, Krimovica (Radosavljevic & Ilic, 2009); red, Skadar Lake (collection by the first author); yellow, Rudnik (Hadži, 1931); green, Pirin Mountains (Teruel et al., 2004).

Material and Methods

The scorpions were observed and collected by O.W. during two field trips to Montenegro in 2013 and 2014. The area of collection is located in the northeastern part of Lake Skadar. This is a region where garrigue plant community dominates (calcareous soil). The specimens were collected underneath stone during daytime and preserved in 70% ethanol. Material was deposited in the collections of the Faculty of Biology, University of Warsaw.

A new locality of *Mesobuthus gibbosus*

1. Montenegro, Crmnica Region, near Virpazar (42º13' N 19º06' E), a viewpoint located on rocky (limestones) lake east-facing slope, 80 m asl, brown and red soil, 4 September 2013, 1 juvenile.

2. Same locality (42º13' N 19º06' E), 70 m asl, 12-13 July 2014, 3 juveniles.

Climatology and Biogeography of Skadar Lake Region

Lake Skadar (Shkodra) has a total surface area that seasonally fluctuates between 370 to 530 km^2. The size of the lake makes it the largest one at the Balkan Peninsula. It is a transboundary lake (Montenegro/Albania) in the outer part of the south-eastern Dinaric Alps. Geologically, its basin is of karstic character, as well as its surroundings. The lake is situated in the Zeta-Skadar valley, about 7 km from the coast of the Adriatic Sea.

This part of the Balkan Peninsula is considered to belong to the Mediterranean climate region, which means long, hot summers and mild, rainy winters occur. Matvejev & Puncer distinguished several types of landscapes in the proposed "Skadar Lake region" (Crnobrnja-Isailovic & Dzukic, 1995; Matvejev & Puncer, 1991). Generally, Mediterranean and Submediterranean habitats with evergreen woodlands and maquis are dominant. A typical floral element of Mediterranean landscape, *Quercus ilex*, is widespread in this area. According to the data provided by the Institute of Hydrometeorology and Seismology of Montenegro (IHMS, www.meteo.co.me) the average winter temperatures recorded at Virpazar (a town located nearby the northeastern part of Lake Skadar) are noticeably higher than those observed in the northern and central part of the country. All months in Virpazar have the average monthly temperature above 0 °C. The coldest month is January with an average temperature of 4.2 °C (Mrdak et al., 2011).

From a zoogeographical point of view the Skadar Lake region is located in the Palearctic ecozone. However, species typical for the Afrotropical ecozone are also found here (e.g. the permanent presence of the African cuckoo and flamingo has been noted) (Mrdak et al., 2011).

Conclusions

The juvenile specimens have been found for two seasons, which indicates a reproducing population. The habitat appears to be typical for *M. gibbosus*. Despite the fact that Skadar Lake is localized in a karst valley (which are characterized by generally more severe climate than the rest of southern Montenegro; IHMS data), the area seems to be suitable for this species. The climate at this place is affected by the proximity of the Adriatic Sea and relative low height of the mountains parallel to the coast.

The most important further issue is to recognize whether a continuous population of *M. gibbosus* exists in this region. The northern boundary of this species' range remains unclear, and further studies will be helpful to understand its ecology. Additionally, it should be noted that this region is frequently visited by tourists. The presence of a potentially dangerous scorpion may affect the safety of people (Lebez et al., 1980; Radosavljevic & Ilic, 2009; Pajovic et al., 2014).

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