



ORIGINAL RESEARCH PAPER

## THE HERPETOFAUNA OF KRNOVO (MONTENEGRO)

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### Ključne riječi:

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### SYNOPSIS

In Krnovo area we recorded 3 species of amphibians (*Mesotriton alpestris*, *Bombina variegata*, *Bufo bufo*) and 9 species of reptiles (*Lacerta agilis*, *Lacerta viridis*, *Podarcis muralis*, *Dinarolacerta mosorensis*, *Natrix natrix*, *Natrix tessellata*, *Coronella austriaca*, *Zamenis longissimus*, *Vipera ammodytes*) in 8 localities.

### SINOPSIS

#### HERPETOFAUNA KRNOVA (CRNA GORA)

Na području Krnova registrovali smo 3 vrste vodozemaca (*Mesotriton alpestris*, *Bombina variegata*, *Bufo bufo*) i 9 vrsta gmizavaca (*Lacerta agilis*, *Lacerta viridis*, *Podarcis muralis*, *Dinarolacerta mosorensis*, *Natrix natrix*, *Natrix tessellata*, *Coronella austriaca*, *Zamenis longissimus*, *Vipera ammodytes*) na 8 lokaliteta.

## INTRODUCTION

Previous herpetological studies in Montenegro included only few areas, mostly National Parks (DŽUKIĆ, 1991; CRNOBRNJA-ISAILOVIĆ & DŽUKIĆ, 1995; TOMOVIĆ et al., 2004; POLOVIĆ & LJUBISAVLJEVIĆ, 2010). Detailed amphibian and reptile species lists are generally missing. The most detailed available lists of herpetofauna for the northern part of Montenegro are species list of the Massif of Durmitor and Tara River Canyon (DŽUKIĆ, 1991) and species list of Bjelasica Mountain (TOMOVIĆ et al., 2004).

Krnovo is situated in North-Western Montenegro, on a plateau between the Vojnik and Lola mountains. The altitude of this plateau varies from 1300 m to 1850 m a.s.l. Krnovo area is characterized by mesophilic meadows and pastures, cultivated fields, bordered by beech forest and boscage, and sporadically parted by communities of rocky pastures. There are several springs, streams and small ponds (as well as several temporary streams). Streamlet that runs through the plateau and artificial ponds made for cattle watering, are important habitats for amphibians. The

study area occupies a surface of about 19 km<sup>2</sup> and the centroid coordinates are 42°52'53.79"N; 19°6'38.78"E.

Since there are no previously existed literature data regarding the herpetofauna of Krnovo area, our main aim was to provide inventory of amphibian and reptile species of Krnovo and to contribute to the knowledge of Montenegrin herpetofauna.

## MATERIAL AND METHODS

Our study was conducted in 2012. During field surveys specimens were directly observed, but some of them were captured and released in the study area after determination. We have also collected and identified animals killed by predators, cars or local people. Killed specimens were preserved with 70% ethanol and stored in the herpetological collections of the Natural History Museum of Montenegro. Identification of the amphibian and reptile species was conducted by using appropriate literature (RADOVANOVIĆ, 1951; ARNOLD & OVENDEN, 2002; KWET, 2009).

## RESULTS AND DISCUSSION

A total of 65 specimens were recorded for the amphibians and 48 for the reptiles. Specimens recorded in 8 investigated localities belong to 12 species (1 is caudata, 2 are anurans, 4 are lizards and 5 are snakes), 10 genera and 6 families (Tab. 1).

We recorded 3 amphibian species and 9 reptile species, which represents 17,6% of amphibian species and 25% of reptile species known in Montenegro (DŽUKIĆ 1991; DŽUKIĆ 1995; CRNOBRNJA-ISAILOVIĆ & DŽUKIĆ, 1995; TOMOVIĆ et al., 2004; LJUBISAVLJEVIĆ et al., 2007; POLOVIĆ & LJUBISAVLJEVIĆ, 2010) (Tab. 2).

The most abundant amphibian species according to the number of recorded specimens in the study area are: *Bombina variegata* (LINNAEUS, 1758) (n: 49) (Fig. 1) and *Mesotriton alpestris* (LAURENTI, 1768) (n: 11); the most abundant reptilian species are: *Lacerta agilis* LINNAEUS, 1758 (n: 26) (Fig. 2) and *Podarcis muralis* (LAURENTI, 1768) (n: 8) (Figs. 3,4).

*Dinarolacerta mosorensis* (KOLOMBATOVIĆ, 1886), previously *Lacerta mosorensis* (ARNOLD et al., 2007) (Fig. 5) specimens were registered from only one locality in the research area. This species is particularly important because it represents relict and a steno-endemic species of the Balkan Peninsula (CRNOBRNJA-ISAILOVIĆ & DŽUKIĆ, 1997). Its distribution is restricted to the south-western Dinaric mountain karst in Croatia, Bosnia & Herzegovina, Montenegro and Albania, exposed

to the influence of the Mediterranean climate. It is patchily distributed there and restricted to altitudes ranging between 450 m and 1900 m a.s.l. (DŽUKIĆ, 1989; CRNOBRNJA-ISAILOVIĆ & DŽUKIĆ, 1997).

**Table 1. List of amphibian and reptile species (n: number of specimens).**

Family	Species	n
Salamandridae	<i>Mesotriton alpestris</i> (LAURENTI, 1768)	11
Bombinatoridae	<i>Bombina variegata</i> (LINNAEUS, 1758)	49
Bufo	<i>Bufo bufo</i> (LINNAEUS, 1758)	5
Lacertidae	<i>Lacerta agilis</i> LINNAEUS, 1758	26
	<i>Lacerta viridis</i> (LAURENTI, 1768)	2
	<i>Podarcis muralis</i> (LAURENTI, 1768)	8
	<i>Dinarolacerta mosorensis</i> (KOLOMBATOVIĆ, 1886)	2
Colubridae	<i>Natrix natrix</i> (LINNAEUS, 1758)	4
	<i>Natrix tessellata</i> (LAURENTI, 1768)	1
	<i>Coronella austriaca</i> LAURENTI, 1768	2
	<i>Zamenis longissimus</i> (LAURENTI, 1768)	1
Viperidae	<i>Vipera ammodytes</i> (LINNAEUS, 1758)	2



**Figure 1: Adult *Bombina variegata* (LINNAEUS, 1758) from Krnovo. Photo: Lidija Polović**



**Figure 2:**  
**Adult *Lacerta agilis* LINNAEUS, 1758. from Krnovo.**

Photo: Ilinka Četković



**Figure 3:**  
**Adult male *Podarcis muralis* (LAURENTI, 1768) from Krnovo.**

Photo: Lidija Polović



**Figure 4:**  
**Adult female *Podarcis muralis* (LAURENTI, 1768) from Krnovo.**

Photo: Lidija Polović



**Figure 5:**  
**Subadult *Dinarolacerta mosorensis* (KOLOMBATOVIĆ, 1886) from Krnovo.**  
 Photo: Lidija Polović

**Table 2. Diversity of the herpetofauna. Number of taxa on Krnovo area compared with Durmitor Massif and Tara River Canyon, Bjelasica Mountain and Montenegro.**

Taxa	Krnovo (this study)	Bjelasica Mountain (TOMOVIĆ et al., 2008)	Durmitor Massif and Tara River Canyon (DŽUKIĆ, 1991)	Montenegro (summarized)
Caudata	1	2	3	7
Anura	2	7	8	10
<b>AMPHIBIA</b>	<b>3</b>	<b>9</b>	<b>11</b>	<b>17</b>
Chelonia	0	0	1	6
Sauria	4	4	6	15
Ophidia	5	5	7	15
<b>REPTILIA</b>	<b>9</b>	<b>9</b>	<b>14</b>	<b>36</b>

## CONCLUSION

Krnovo area provides suitable habitats for various amphibian and reptile species. In this area we recorded 12 species of amphibians and reptiles (1 is caudata, 2 are anurans, 4 are lizards and 5 are snakes) belonging to 10 genera and 6 families. This study is particularly important because all recorded species have been documented in the research area for the first time.

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