

## First Data on Small Mammal Fauna from Krnjeuša (Bosanska Krajina), as Obtained by a Barn Owl, *Tyto alba* (SCOP., 1769) Pellet Analysis

Prvi podaci o fauni sitnih sisara Krnjeuše (Bosanska Krajina), dobijeni analizom sadržaja gvalica kukuvije, *Tyto alba* (SCOP., 1769)

Purger J.J., T. Karanović

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**Abstract.** In barn owl pellets from Krnjeuša, 12 species of small mammals were found. The diet consisted of Soricidae (43.47%), Arvicolidae (40.82%), and Muridae (15.71%).

Deskriptori: Mammalia / Bosanska krajina

Ključne reči: *Tyto alba* / analiza gvalica / sitni sisari / Krnjeuša, Bosanska Krajina

**Sažetak.** U gvalicama kukuvije iz Krnjeuše pronadjeno je 12 vrsta sitnih sisara. Ishranu kukuvije čine Soricidae sa 43.47%, Arvicolidae sa 40.82% i Muridae sa 15.71%.

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### Introduction

The diet of the barn owl *Tyto alba* (Scopoli, 1769) consists mainly of small mammals (SCHMIDT 1967). Valuable data on the small mammal fauna of the study area can be obtained by the separation and analysis of their remains from pellets (MIKUSKA et al. 1977). These investigations had not been conducted in the Bosanska Krajina region where small mammal fauna is poorly known. The aim of the present paper is thus to describe the diet of the barn owl from the village of Krnjeuša and to present a preliminary list of small mammals of this area.

### Description of the Study Area

The village of Krnjeuša is situated in the Krnjeuško polje karst plain in the Bosanska Krajina region (NW Bosnia). The village center (church point) lies at an altitude of 564 m. The geographical coordinates of the village are 44° 42' N 16° 14' E (DAVIDOVIĆ 1981a, b).

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Jene J. PURGER — Institut za biologiju  
YU-21000 Novi Sad, Trg Dositeja Obradovića 2  
Tomislav KARANOVIĆ — NIDSB "Josif Pančić"  
YU-21000 Novi Sad, Trg Dositeja Obradovića 2

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The locality is situated in the WK94 square of the 10 km UTM grid. The plain around Krnjeuša is surrounded by the Grmeč Mts. on three sides (the highest peaks are Lisina 1113 m and Vranovača 795 m in the west and Željeznik 1279 m in the east), opening in the south to the Petrovačko polje karst plain.

The climate reveals a continental-mountain character (DAVIDOVIĆ 1981b, 1984). The biome of the south-European, mostly broad-leaved woodlands dominates the study area (MATVEJEV & PUNCER 1989).

## Material and Methods

The pellets were collected in the church attic in Krnjeuša on 1 December 1990 and 18 February 1991. The separation of bones from the pellets was performed by dry technique (SCHMIDT 1967, MIKUSKA et al. 1977). The determination of the prey species was done under a dissecting microscope on the basis of the diagnostic characters of the skull and mandible (SCHMIDT 1967, MÄRZ 1972, NIETHAMMER & KRAPP 1978, 1982, UJHELYI 1989). Mice from the subgenus *Sylvaemus* were determined according to TVRTKOVIĆ 1979, and voles from the genus *Pitymys* according to TVRTKOVIĆ et al. 1979. The material which could not be determined as regards the species due to its being badly damaged was identified only as regards the higher taxonomic categories.

## Results and Discussion

One hundred and forty-seven complete barn owl pellets were collected on 1 December 1990, and additional 15 on 18 February 1991. Extracted from the first sample were 423 specimens and from the second 67 specimens. On average, there were 3.02 items of prey per pellet (Table 1).

Only small mammals were found in the diet of the barn owl from the study area. Shrews dominated with 43.47%, being represented by 5 species. *Sorex araneus*, *S. minutus*, and *Neomys anomalus* were rare, while 29.39% of the small mammals' remains belonged to *Crocidura leucodon*. *Crocidura suaveolens* was represented by 11.63%. Voles (Arvicolidae) were less common in the pellets (40.82%). They were represented by two species only: *Pitymys liechtensteini* (1.43%) and *Microtus arvalis*. The latter was the most common small mammal in the barn owl diet, with 39.39%. Five species of mice (Muridae) were found: *Micromys minutus*, *Apodemus flavicollis*, *A. sylvaticus*, *Rattus norvegicus*, and *Mus musculus*. Mice were represented by 15.71% (Table 1).

Barn owl nests and rests mostly in anthropogenic sites in Europe, i.e. house attics and church towers (SCHMIDT 1967). The high frequency of *Microtus arvalis*, *Crocidura leucodon*, and *C. suaveolens* indicates that our sample originates from the cultivated area around the village. This explains also a low frequency of *Sorex araneus* and *Apodemus flavicollis*, which are characteristic forest dwellers.

*Micromys minutus* has so far been known from one single locality in Bosnia and Herzegovina (KRYŠTUFEK & KOVAČIĆ 1984). The same is the case with *Pitymys liechtensteini*. Our record of this vole completes the distribution area as given by TVRTKOVIĆ et al. 1979.

Table 1. Contents of barn owl pellets

Prey	Krnjeuša		Total	
	Dec. 01, 1990	Feb. 18, 1991	n	%
<i>Sorex araneus</i>	8	1	9	1.84
<i>Sorex minutus</i>	1	—	1	0.20
<i>Neomys anomalus</i>	2	—	2	0.41
<i>Crocidura suaveolens</i>	46	11	57	11.63
<i>Crocidura leucodon</i>	120	24	144	29.39
<i>Soricidae</i>	177	36	213	43.47
<i>Pitymys liechtensteini</i>	7	—	7	1.43
<i>Microtus arvalis</i>	178	15	193	39.39
<i>Arvicolidae</i>	185	15	200	40.82
<i>Micromys minutus</i>	5	2	7	1.43
<i>Apodemus flavicollis</i>	6	1	7	1.43
<i>Apodemus sylvaticus</i>	16	5	21	4.29
<i>Apodemus</i> sp.	23	7	30	6.12
<i>Rattus norvegicus</i>	1	—	1	0.20
<i>Mus musculus</i>	10	1	11	2.24
<i>Muridae</i>	61	16	77	15.71
Total number of prey	423	67	490	100.00
Number of pellets	147	15	162	100.00
Prey per pellet ratio	2.87	4.46	3.02	

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