

## WINTER PREY OF THE LONG-EARED OWL (*ASIO OTUS*) IN NORTHERN CROATIA

ZDRAVKO DOLENEC<sup>1\*</sup> & DARINKA KIŠ NOVAK<sup>2</sup>

<sup>1</sup> Department of Zoology, Faculty of Science, University of Zagreb,  
Rooseveltov trg 6, HR-10000 Zagreb, Croatia

<sup>2</sup> Faculty of Teacher Education, University of Zagreb, Centre in Čakovec,  
Starčevićeva 55, HR-40000 Čakovec, Croatia

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The study was conducted with pellets of the long-eared owls (*Asio otus*) from two periods (January 2006 and January 2007) in suburban area of Prelog (northern Croatia). A total of 113 pellets with 198 prey items were analysed. The averaged number of prey individuals per pellet was 1.75 (SD = 0.99). Twelve small mammalian species (97.9% in number and 97.1% in biomass) and three bird species (2.1% in number and 2.9% in biomass) were preyed upon. By comparing the number of prey items between 2006 and 2007 no significant differences were found.

**Key words:** long-eared owl, *Asio otus*, winter diet, northern Croatia

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U ovome radu analizirane su gvalice male ušare (*Asio otus*) sakupljene na području Preloga u siječnju 2006. i 2007. godine. Ukupno je sakupljeno 113 gvalica u kojima je bilo 198 primjeraka plijena. Prosječno je po gvalici bilo 1,75 (SD = 0,99) primjeraka plijena. U sastavu plijena, kako brojnošću (97,9%) tako i masom (97,1%), prevladavali su mali sisavci dok su ostali plijen činile ptice (2,1%, 2,9%). Nije bilo značajne razlike u brojnosti plijena između dviju istraživanih godina.

**Ključne riječi:** mala ušara, *Asio otus*, zimska prehrana, sjeverna Hrvatska

According to MIKKOLA (1983) long-eared owl has a circumpolar, holarctic distribution in boreal, temperate, Mediterranean and steppe climatic zones. This owl is a middle-sized member of the Strigiformes (CRAMP, 1998). In general, long-eared owl feed especially upon small mammals (e.g. KÄLLANDER, 1977; GLUTZ VON BLOTZHEIM & BAUER, 1980; CRAMP, 1998; RIGA & CAPIZZI, 1999; BALČIAUSKIENĖ *et al.*, 2006) and

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\* corresponding author; e-mail: [dolenec@zg.biol.pmf.hr](mailto:dolenec@zg.biol.pmf.hr)

**Tab. 1.** Winter diet composition in long-eared owls (N(%) – number of prey items (percentage of prey species in number); g(%) – biomass according to the prey species (percentage of prey biomass))

Prey	Jan 2006		Jan 2007		Total	
	N(%)	g(%)	N(%)	g(%)	N(%)	g(%)
<b>Mammals</b>						
<i>Apodemus flavicollis</i>	0(0.0)	0(0.0)	1(0.9)	32(1.1)	1(0.5)	32(0.6)
<i>Apodemus sylvaticus</i>	15(15.6)	315(8.3)	12(11.9)	252(8.3)	27(13.5)	567(9.4)
<i>Mus musculus</i>	2(2.1)	40(1.5)	6(5.9)	120(4.1)	8(4.0)	160(3.0)
<i>Micromys minutus</i>	2(2.1)	14(0.5)	5(4.9)	35(1.2)	7(3.8)	49(0.9)
<i>Ratus norvegicus</i>	1(1.1)	96(3.6)	2(2.0)	192(6.3)	3(1.6)	288(5.0)
<i>Ratus ratus</i>	1(1.1)	79(2.9)	3(3.0)	273(7.8)	4(2.0)	352(5.5)
<i>Microtus agrestis</i>	13(13.5)	377(14.1)	11(10.8)	319(10.5)	24(12.0)	696(12.2)
<i>Microtus arvalis</i>	57(59.1)	1653(61.7)	54(52.9)	1566(51.7)	111(56.0)	3219(56.4)
<i>Clethrionomys glareolus</i>	1(1.1)	21(0.8)	2(2.8)	42(1.4)	3(1.6)	63(1.1)
<i>Sorex</i> sp.	0(0.0)	0(0.0)	1(0.9)	9(0.3)	1(0.5)	9(0.2)
<i>Crocidura</i> sp.	1(1.1)	10(0.4)	3(3.0)	30(0.9)	4(2.0)	40(0.7)
<i>Talpa europaea</i>	0(0.0)	0(0.0)	1(0.9)	100(3.3)	1(0.5)	100(1.8)
<b>Birds</b>						
<i>Turdus merula</i>	0(0.0)	0(0.0)	1(0.9)	95(3.1)	1(0.5)	95(1.7)
<i>Erithacus rubecula</i>	1(1.1)	19(0.7)	0(0.0)	0(0.0)	1(0.5)	19(0.3)
<i>Passer domesticus</i>	2(2.1)	54(2.0)	0(0.0)	0(0.0)	2(1.0)	54(0.9)
<b>Total</b>	96(100.0)	2678(100.0)	102(100.0)	3065(100.0)	198(100.0)	5743(100.0)

that mainly includes voles and mice. Squirrels, bats, shrews, moles, dormice (e.g. SEÇKIN & COŞKUN, 2006) and birds (e.g. TOME, 2003) can also be preyed upon by long-eared owls. This short paper focuses on the diet of the long-eared owl in northern Croatia and presents an analysis of pellets collected during the winter (two years are included).

The study was conducted with pellets of the long-eared owls collected during two periods (January 2006 and January 2007) in suburban area of Prelog (46°20'13"N, 16°36'53"E; northern Croatia). A large proportion of the area is cultivated. The roost of the long-eared owl was in a conifer tree (*Thuja* sp.) in a private garden. The population of the long-eared owl consisted of 9 owls in the first (2006) and 12 owls in the second year (2007). Pellets were collected randomly at the places where birds were roosting. Only entire pellets were collected. Each pellet was soaked in water and then all bones were removed. The number of crania, mandibles (mammals) and bills (birds) was counted in order to estimate the number of individual prey represented in the pellets. Hair of the mammals was not identified. Results of the analysis are given as frequencies of occurrence and as weight percentage of a given food component. Small mammals and birds were identified with the determination keys of KRYŠTUFEK (1985) and BROWN *et al.* (2003). Body weights of birds and small mammals were taken from literature (PERRINS, 1987; TOME, 2003).

A total of 113 pellets with 198 prey items were analysed (2006–2007). Twelve small mammalian species were found in the pellets (97.9% in number and 97.1% in biomass), and common vole – *Microtus arvalis* (N=111; 56.0%), wood mouse – *Apodemus sylvaticus* (N=27; 13.5%) and field vole – *Microtus agrestis* (N=12.0; 12.0%) were the main species preyed upon by the owls. The proportion of all other species in the diet was less than 10% in number and biomass. Birds were also present (2.1% in number and 2.9% biomass: blackbird – *Turdus merula*, robin – *Erithacus rubecula* and house sparrow – *Passer domesticus*). Results of the analysis are presented in Tab. 1. The average number of preyed individuals per pellet was 1.75 (SD=0.99). The maximum number of preyed individuals per one pellet was six. By comparing numbers of prey between 2006 and 2007 there were no significant differences ( $\chi^2 = 0.18$ , df = 1,  $P > 0.05$ ). Results of this research show a strong dominance of *Microtus* sp. (68.0%). Other authors who analyzed the food composition of this owl species agree on the primary significance of voles (e.g. GLUTZ VON BLOTZHEIM & BAUER, 1980; GOSZCZYŃSKI, 1981; TOME, 2000; ALIVIZATOS *et al.*, 2005). MARKS & JANSEN (1980) indicated that the majority of the long-eared owls' prey weighs between 10 g and 60 g, and prey of over 100 g is probably not important in their diet. All these numbers are in accordance with our data.

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**S A Ž E T A K****Zimski plijen sove male ušare (*Asio otus*) na području sjeverne Hrvatske**

Z. Dolenec &amp; D. Kiš Novak

Gvalice male ušare (*Asio otus*) sakupljene su u zimskom razdoblju u Prelogu, smještenom na području sjeverne Hrvatske. Sove su noćile i zadržavale se danju na tujama u privatnom prigradskom dvorištu. Kao i u većini drugih područja sjeverne polutke, u gvalicama su brojnošću i masom dominirali sisavci. To se posebice odnosi na voluharice koje su činile 2/3 plijena istraživane vrste sove. Između dviju istraživanih godina nije zabilježena značajna razlika u brojnosti plijena.