

## *Materials on the diet of the Otter (*Lutra lutra* L.) in the West Rhodopes Mountain, South Bulgaria*

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**Abstract.** Otter spraints were collected from the West Rhodopes from Batak Dam, Chaya and Parvenetska River areas during 2005-2007. Main food resources in Batak Dam during autumn were the frogs dominated by representatives of the family *Ranidae*, followed by different fish species. In both rivers the main food was the fish with predominance of *Barbus cyclolepis*, the frogs, and the crabs.

**Keywords:** otter, diet, mountains.

### **Introduction**

The mountain regions of Bulgaria are not so favorable areas for the European Otter (*Lutra lutra* L.) providing mainly temporary usable habitats to the species, and probably low food resources (GEORGIEV, 2005). The diet of the otter in the country was studied only in the lowlands and the hilly areas and there is no any data on its food in the higher mountains (GEORGIEV, 2006).

The aim of this study was to (i) provide information on the number of species exploited by the otter in the mountain regions of Bulgaria and (ii) to point out which are the possible main food resource species.

### **Material and Methods**

Otter spraints (N = 171) were collected from the West Rhodopes from the following localities, dates and seasons: 1. Batak Dam, altitude > 1000 m a. s. l., autumn, 06.10.2006: 40 spraints; 2. Chaya River near Assenovgrad town, 300-400 m a. s. l., winter, 06.01.2007: 35 spraints; 3. Parvenetska River near village of Parvenets, 200-400 m a. s. l., spring, 06.05.2005: 9 spraints, 17.05.2006: 22 spraints; summer, 20.09.2005: 13 spraints,

15.09.2006: 12 spraints; autumn, 08.12.2005: 8 spraints, 15.12.2006: 6 spraints; winter, 30.03.2005: 9 spraints, and 25.02.2006: 17 spraints.

The otter food was studied in a laboratory by considering the minimal specimens found in spraints using the pair bones or body parts of the prey items. The species were determined using a reference collection of hairs, feathers, bones and scales. For the calculations the computer program Biodiversity Professional, Version 2, 1997 was used.

### **Results**

In the study area the otter diet consisted of crustaceans, arthropods, fish, frogs, reptiles, mammals and fruits (Table 1).

Main food resources in Batak Dam during autumn were the frogs dominated by representatives of the family *Ranidae* (34.1% from all specimens registered), followed by different fish species (22.9%). Relatively high percentage had also the mammals and the invertebrates (crustaceans). In both rivers the main food was the fish with predominance of *Barbus cyclolepis* (11.2 to 33.3% from all specimens registered), the

frogs (12.3 to 28.5%), and the crabs (16.0 to 18.0%).

Such proportions are typical for the species` diet in areas where the fish resources are scarce (GEORGIEV, 2005). In Bulgaria, mainly the high lands could be considered as rich in water resources but

poor on fish populations. Also and the fast changing water levels, long freezing period in winter, the rocky and steep terrains can be considered as characters of temporarily usable habitats by the otters which they visit only during favorable seasons.

**Table 1.** Diet of the otter (*Lutra lutra*) in the studied regions in the West Rhodopes Mountain. Legend: BD – Batak Dam, CHR – Chaya River, PR – Parvenetska River.

Species	BD		CHR		PR (spring-summer)		PR (autumn-winter)	
	N	%	N	%	N	%	N	%
<i>Potamon ibericum</i> Bieb.	0	0,0	13	16,0	42	16,9	31	18,0
<i>Astacus/Austropotamobius</i> sp.	22	9,9	0	0,0	0	0,0	4	2,3
<b>Total crustaceans</b>	<b>22</b>	<b>9,9</b>	<b>13</b>	<b>16,0</b>	<b>42</b>	<b>16,9</b>	<b>35</b>	<b>20,3</b>
Myriapoda indet.	3	1,3	0	0,0	0	0,0	0	0,0
Coleoptera indet.	29	13,0	0	0,0	12	4,8	0	0,0
Insecta indet.	3	1,3	0	0,0	13	5,2	0	0,0
<b>Total Tracheata</b>	<b>35</b>	<b>15,7</b>	<b>0</b>	<b>0,0</b>	<b>25</b>	<b>10,0</b>	<b>0</b>	<b>0,0</b>
Salmonidae indet.	14	6,3	0	0,0	0	0,0	0	0,0
<i>Esox lucius</i> L.	0	0,0	0	0,0	0	0,0	0	0,0
<i>Perca fluviatilis</i> L.	8	3,6	0	0,0	0	0,0	8	4,7
<i>Rutilus rutilus</i> L.	2	0,9	0	0,0	4	1,6	3	1,7
<i>Rhodeus amarus</i> Bloch	2	0,9	0	0,0	0	0,0	0	0,0
<i>Barbus cyclolepis</i> Heck.	0	0,0	27	33,3	28	11,2	25	14,5
<i>Gobio gobio</i> L.	0	0,0	0	0,0	0	0,0	4	2,3
<i>Leuciscus cephalus</i> L.	0	0,0	5	6,2	0	0,0	0	0,0
<i>Leuciscus</i> sp.	0	0,0	4	4,9	0	0,0	7	4,1
<i>Carassius gibelio</i> Bloch	0	0,0	0	0,0	5	2,0	0	0,0
<i>Carassius</i> sp.	0	0,0	0	0,0	5	2,0	1	0,6
<i>Hypoptalmychtis</i> sp.	5	2,2	0	0,0	0	0,0	0	0,0
Cyprinidae indet.	7	3,1	10	12,3	22	8,8	21	12,2
Cobitidae indet.	0	0,0	1	1,2	0	0,0	0	0,0
Pisces indet.	13	5,8	11	13,6	18	7,2	17	9,9
<b>Total fish</b>	<b>51</b>	<b>22,9</b>	<b>58</b>	<b>71,6</b>	<b>82</b>	<b>32,9</b>	<b>86</b>	<b>50,0</b>
<i>Bufo bufo</i> L.	0	0,0	0	0,0	0	0,0	3	1,7
<i>Bufo</i> sp.	0	0,0	0	0,0	4	1,6	0	0,0
<i>Rana temporaria</i> L.	15	6,7	0	0,0	0	0,0	0	0,0
<i>Pelophylax ridibundus</i> (Pall.)	11	4,9	0	0,0	0	0,0	15	8,7
Ranidae indet.	50	22,4	10	12,3	45	18,1	16	9,3
Anura indet.	10	4,5	0	0,0	8	3,2	15	8,7
<b>Total frogs</b>	<b>86</b>	<b>38,6</b>	<b>10</b>	<b>12,3</b>	<b>57</b>	<b>22,9</b>	<b>49</b>	<b>28,5</b>
Sauria indet.	0	0,0	0	0,0	1	0,4	0	0,0
<i>Natrix</i> sp.	4	1,8	0	0,0	26	10,4	0	0,0
Serpentes indet.	0	0,0	0	0,0	7	2,8	0	0,0
<b>Total reptiles</b>	<b>4</b>	<b>1,8</b>	<b>0</b>	<b>0,0</b>	<b>34</b>	<b>13,7</b>	<b>0</b>	<b>0,0</b>
<i>Neomys</i> sp.	0	0,0	0	0,0	3	1,2	0	0,0
Insectivora indet.	1	0,4	0	0,0	0	0,0	0	0,0
<i>Arvicola terrestris</i> L.	8	3,6	0	0,0	1	0,4	0	0,0
Microtinae indet.	4	1,8	0	0,0	1	0,4	0	0,0
Rodentia indet.	7	3,1	0	0,0	0	0,0	2	1,2
Mammalia indet.	3	1,3	0	0,0	4	1,6	0	0,0
<b>Total mammals</b>	<b>23</b>	<b>10,3</b>	<b>0</b>	<b>0,0</b>	<b>9</b>	<b>3,6</b>	<b>2</b>	<b>1,2</b>
<i>Prunus cerasifera</i> L.	2	0,9	0	0,0	0	0,0	0	0,0
<b>Total fruits</b>	<b>2</b>	<b>0,9</b>	<b>0</b>	<b>0,0</b>	<b>0</b>	<b>0,0</b>	<b>0</b>	<b>0,0</b>
<b>Total specimens</b>	<b>223</b>	<b>100,0</b>	<b>81</b>	<b>100,0</b>	<b>249</b>	<b>100,0</b>	<b>172</b>	<b>100,0</b>
<b>Simpsons Diversity</b>	<b>0,2</b>		<b>0,5</b>		<b>0,2</b>		<b>0,4</b>	

**References**

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