REPORT

PAST HOLOCENE EXPLOITATION OF EURASIAN OTTERS (Lutra lutra) IN ROMANIA, BASED ON ARCHEozoOLOGICAL DISCOVERIES

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Abstract: The current paper aims to present archeozoological and historical data about the Eurasian otter (Lutra lutra) distribution and its exploitation in Romania from the Mesolithic to the Middle Ages. Little is known about Eurasian otter ancient history, because most attention is given to study of the present populations. In order to be able to give information about the past exploitation of otters in Romania, literature reviews were used as a tool to provide answers, and more than 200 literature titles about faunal samples found in the area comprising modern Romania were consulted. This study is based on archeozoological data concerning 16 archeological sites dating from the Mesolithic to the Middle Ages, where Eurasian otter remains were identified in ancient settlements and cemeteries. The otter was not hunted solely for fur as today, but also for ceremonial and religious reasons and for its meat. In addition, data suggests that various cultures that lived in the present territory of Romania knew the Eurasian otter and its ecology. It has to be highlighted that it was difficult to coordinate the disparate data. Under these conditions the aim was to present a state of knowledge, avoiding generalization.


Keywords: otter history, archeozoology, past Holocene mammals, otter exploitation

INTRODUCTION

At the current time, Lutra lutra has one of the largest population distributions of all otter species in the world (Kruuk, 2006). Its range extends from the cool damp climate of West Ireland to the humid tropical forests of Asia, and from the hot dry lands of North Africa to the cold lands of northern Russia and Finland (Chanin, 2013). The presence of the otter in Romania has been reported for all regions of the country, mainly along the large rivers and their tributaries, from the Danube Delta to the
Carpathian Mountains (Botnariuc and Tatole, 2005). But what about its past distribution and habitats?

Little is known about the ancient history of the Eurasian otter (Kruuk, 2008), as most of the attention is given to present Lutra lutra populations. In order to be able to answer the above question, a literature review was chosen as the best methodological tool to provide answers.

This paper aims to bring together, for the first time, archeozoological and historical data about Eurasian otter distribution and exploitation in Romania from the Mesolithic to the Middle Ages.

The interests of ancient human populations living in the territory of today’s Romania, and their knowledge of the Eurasian otter, is driven by interest hunting them for fur and meat, but also because of competition for fish resources.

MATERIAL AND METHODS

The exploitation of the natural environment by humans in ancient societies is mainly through fishing and hunting. The list of species of wild animals determined in an archaeological site can illustrate the exploitation of a certain type of biotope from an ecological point of view (Bejenaru, 1998).

When one wants to find information about the past fauna, a literature review of domains like paleontology and archeozoology may be a good methodological tool to provide answers. This study is based on archeozoological data concerning 16 archeological sites where Eurasian otter remains were identified, dating from the Mesolithic to the Middle Ages, located on the present-day territory of Romania (Fig. 1), found in a review of more than 200 published documents covering archeological sites where animal bones were identified.

RESULTS

The presence of the otter in archaeological sites confirms that the otter has been known and exploited by people living in the present territory of Romania, since the Mesolithic period.

Eurasian otter remains were found at 16 archeological sites from the present territory of Romania in four different historical regions. Fauna samples, excavated from archaeological sites, that contain remains of Eurasian otter belonged to different cultures that used the territory of present-day Romania and used Eurasian otters in different ways, as will be detailed later.

The main uses of otter as a resource were for meat and fur. It is interesting that some archaeological evidence confirms the continuity of the presence of the otter in the vicinity of human settlements from the Mesolithic period to the Middle Ages.

Of course, the archeozoology studies carried out for the 16 settlements where Eurasian otter remains were identified, do not cover the entire area of distribution of Eurasian otter during the Mesolithic to the Middle Ages, and do not give a general picture of the situation, due to the lack of data. In many of the sites, the otter remains have been ignored or not determined. In addition, there are differences in methodology, both at the archaeological level of sampling the organic remains, and at the archeozoological level of processing and interpretation. We refer here to the lack of sifting of the sediment for the complete recovery of material from the complexes, to the lack of biometrics, and the determination of the species. In the consulted studies, there is a significant percentage of undetermined mammal remains. These are major impediments to a complete faunal study. Therefore, the main aim of this paper is to present all the archeozoological material studied so far, and to show the sites...
where remains of the Eurasian otter have been positively identified, taking into account the limits presented above.

Table 1. Eurasian otter discoveries in the archeological sites

<table>
<thead>
<tr>
<th>No.</th>
<th>Region</th>
<th>Period</th>
<th>Culture/Epoch</th>
<th>Archeological site</th>
<th>County</th>
<th>City</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Banat</td>
<td>Mesolithic 8000−6500 BC</td>
<td>Lepenski Vir</td>
<td>Schela Ostrovul Banului</td>
<td>Mehedinți</td>
<td>Gura Văii</td>
<td>Boroneanț, 2011</td>
</tr>
<tr>
<td>2</td>
<td>Banat</td>
<td>Mesolithic 8000−6500 BC</td>
<td>Lepenski Vir</td>
<td>Ogradena Schela Cladovei</td>
<td>Mehedinți</td>
<td>Eșelnița</td>
<td>Bolomey, 1973</td>
</tr>
<tr>
<td>3</td>
<td>Banat</td>
<td>Mesolithic 8000−6500 BC</td>
<td>Lepenski Vir</td>
<td>Ostrovul Corbului Schela Cladovei</td>
<td>Mehedinți</td>
<td>Ostrovul Corbului</td>
<td>Boroneanț, 2011</td>
</tr>
<tr>
<td>4</td>
<td>Banat</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Vinča 5500−4500 BC</td>
<td>Timiș Uivar</td>
<td></td>
<td></td>
<td>El Susi, 2017</td>
</tr>
<tr>
<td>5</td>
<td>Muntenia</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Boian 5200−4600 BC</td>
<td>Teleorman Stoenești</td>
<td></td>
<td></td>
<td>Bălășescu and Radu, 2001</td>
</tr>
<tr>
<td>6</td>
<td>Muntenia</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Boian 5200−4600 BC</td>
<td>Teleorman Măgura</td>
<td></td>
<td></td>
<td>Bălășescu and Radu, 2001</td>
</tr>
<tr>
<td>7</td>
<td>Muntenia</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Boian 5200−4600 BC</td>
<td>Teleorman Magura</td>
<td></td>
<td></td>
<td>Balasescu et al., 2005</td>
</tr>
<tr>
<td>8</td>
<td>Dobrogea</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Boian 5300−4600 BC</td>
<td>Tulcea Isaccea</td>
<td></td>
<td></td>
<td>Balasescu et al., 2005</td>
</tr>
<tr>
<td>9</td>
<td>Dobrogea</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Hamangia 5200−4800 BC</td>
<td>Constanța Cernavodă</td>
<td></td>
<td></td>
<td>Voinea, 2009</td>
</tr>
<tr>
<td>10</td>
<td>Dobrogea</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Gumelnița 4600−3500 BC</td>
<td>Tulcea Luncavița</td>
<td></td>
<td></td>
<td>Bălășescu, 2003</td>
</tr>
<tr>
<td>11</td>
<td>Muntenia</td>
<td>Neolithic 6600−3000 BC (including Chalcolithic)</td>
<td>Gumelnița 4600−3500 BC</td>
<td>Ilfov Chitila Farm</td>
<td></td>
<td></td>
<td>Balasescu et al., 2003</td>
</tr>
</tbody>
</table>
### DISCUSSION

Among the oldest remains of the Eurasian otter (*Lutra lutra*), discovered so far in the present-day territory of Romania, are those found in the Danube Gorge, in the Iron Gates area of Mehedinți County, in Eselnita village; it is at an archaeological site (Ogradena - Icoana), which represents one of the oldest human settlements in Europe (about 9,000 years ago), belonging to the Lepenski Vir - Schela Cladovei culture, which developed at the beginning of the Holocene (Bolomey, 1973; Boroneanț, 2011). The representatives of this culture, which was named after the localities of Schela Cladovei and Lepenski Vir, inhabited the area called today the Iron Gates on both banks of the Danube, both inside and outside the Danube Gorge.

Remains of Eurasian otters dated to the Mesolithic period (8,000-6,500 BC) were also found at other archaeological sites, belonging to the same culture (Lepenski Vir - Schela Cladovei) in the area of the Danube Gorge, Ostrovul Banului and Ostrovul Corbului, near the current localities of Gura Văii and Ostrovu Corbului (Boroneanț, 2011). The archaeological remains of this culture prove the importance of the aquatic environment for this Mesolithic culture. They practiced intensive fishing, due to the richness of the waters in fish species, and were harvesting mussels and

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#### Table 1: Chronology of archaeological sites in Romania

<table>
<thead>
<tr>
<th>Region</th>
<th>Time Period</th>
<th>Site</th>
<th>City</th>
<th>Author and Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moldova</td>
<td>Neolithic  (including Chalcolithic)</td>
<td>Foltesti</td>
<td>Galați</td>
<td>Haimovici, 2009</td>
</tr>
<tr>
<td>Dobrogea</td>
<td>Antiquity</td>
<td>IV-VII centuries</td>
<td>Mărgineni</td>
<td>El Susi, 2008</td>
</tr>
<tr>
<td>Dobrogea</td>
<td>Middle Ages</td>
<td>XI centuries</td>
<td>Isaccea</td>
<td>Bejenaru, 2003</td>
</tr>
<tr>
<td>Dobrogea</td>
<td>Middle Ages</td>
<td>X-XI centuries</td>
<td>Garvan-Dinogetia</td>
<td>Haimovici, 1989</td>
</tr>
</tbody>
</table>

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**Figure 1.** Map of the Eurasian otter (*Lutra lutra*) presence at archaeological sites from Romania
snails. Thus, the otter might be hunted both as competition for fish resources and also for increasing the surplus of meat in their diet. Hunting was also an important practice of this population; however, as one would expect, it was not the otter that was of greatest interest, but large species that can be captured relatively easily such as aurochs (*Bos primigenius*), red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*) and wild boar (*Sus scrofa*). To supplement the diet of these populations, gathering fruits, seeds and roots was another strategy (Rusu, 2014). The Mesolithic people from the Lepenski Vir - Schela Cladovei culture developed hunting weapons made from stone, wood, ropes, antlers, bones and wild boar tusk, and various tools were identified in the archeological sites in the Danube Gorge area (Rusu, 2014).

The exploitation of otters continued and intensified in the Neolithic epoch (6,600-3,000 BC), with the emergence of new cultures and settlements in what is now Romania.

The Neolithic Vinča culture (5,500-4,500 BC) were hunting otters: otter bone remains and a whole otter humerus were discovered at Uivar village, in Timiș county, south-west of Romania. The presence of the otter at this site is linked to the rich hydrographic network of the Bega River from the Banat Plain. In prehistory, the site was apparently surrounded on the eastern, northern and western sides by an ancient tributary of the River Bega, in an area with large swamps (El Susi, 2017).

Amongst the Neolithic cultures that were present in Romania, a particular culture called Hamangia (5,200-4,800 BC) is characterized by the practice of animal offerings. Bone remains of Eurasian otter were found in an ancient cemetery near Cernavodă town, in south-eastern Romania, located on the right bank of the Danube (Bălășescu and Radu 2004). The Hamangia culture is present only in the south-eastern European area in the Dobruja region (Romania and Bulgaria); the practice of animal offerings is present both in settlements and, especially, in cemeteries. The animal offerings made by Hamangia culture indicate totemic ancestral beliefs, the fauna individuals killed as offerings representing only species present in the normal diet of Hamangia culture communities.

The practice of depositing cranial fragments (skulls / dentition) of wild fauna was found not only in Cernavodă necropolis, but also in other Hamangia culture sites. The authors of the findings state “the practice of depositing with the dead human a rich supply of animal meat, snails and shells. Symbolically, in almost every grave a wild boar tusk and sometimes fragments or entire jaws or skulls of wild carnivores was deposited” (Berciu et al., 1959).

The large number of animal remains found in Cernavodă archeological site, means that Hamangia culture sites provide the richest assemblage of Neolithic European fauna (Voinea, 2009).

Despite *Lutra lutra* remains being at a low percentage in faunal samples discovered, and having little chance of the bone fragments being collected during archaeological excavations, and after that being recognized as belonging to *Lutra lutra*, Eurasian otter remains were identified in four Neolithic settlements belonging to the Boian culture (5,200- 4,600 CAL BC), in Isaccea, Lăceni, Măgura and Tangăru (Bălășescu and Radu, 2001).

In the Neolithic period, humans begun to keep domestic animals, and thus hunting lost some of its importance, becoming a supplementary source of meat, which is probably the reason why wildlife remains are rare in Neolithic archaeological sites.

However, prehistoric communities which belonged to the Boian culture hunted reptiles, birds and mammals, fished and continued to gather fruits, seeds and building materials. Boian culture settlements were located close to the riverbanks, in habitats
that were used by Eurasian otter: the Isaccea settlement is located on the right bank of the Danube, Tângâru on Câlniştea river, and Lăceni and Măgura were located on Teleorman river.

Hunting was a more important activity for settlements located in the valleys of the larger rivers such as Teleorman and the Danube, where the fauna was much richer and more varied. However, the Neolithic cultures appear to have had a reduced anthropic pressure on the environment, if we consider the rich fauna that was identified in most settlements of the Boian culture.

The Neolithic population exploited all the environmental resources surrounding their settlement, starting with gathering fruits, seeds, and mollusks, fishing, raising animals and continuing with hunting. All this information is revealed to us by the discoveries made at the archaeological sites belonging to another Neolithic culture, the Gumelnița culture (4,600-3,500 BC), that occupied the southeastern part of today’s Romania, the eastern half of Bulgaria and northern Greece.

Among remains of wildlife at two sites belonging to the Gumelnița culture, archeologists have been identified a small number of otter remains, at Chitila and Luncavița (Bălășescu et al. 2003). It is worth noting that in the vicinity of these settlements there were also fish-rich water sources: in Chitila, the Colentina river and in Luncavița, the Danube river. Given that there are not many otter bones remains in these sites, they may represent by-catches or may have been intentionally hunted due to competition for fish resources, which were very important to these prehistoric communities.

A new culture then replaced the previous ones: the Cernavodă culture (4,200-3,700 BC). This seems to represent nomadic migration from the north Pontic steppes to southeastern Romania: Dobrogea and eastern Muntenia and northeastern Bulgaria (Mallory et al., 1997).

From a house belonging to this culture, an otter femur belonging to an adult specimen was found (El Susi, 2016). The Neolithic settlement of the Cernavodă culture was discovered in the present Radovanu village, in the south-east of Romania, located on the right bank of the Argeș river. Based on bone distribution, the settlement was characteristic of an animal economy focused more on the exploitation of domestic mammals and less on hunting. The bones of domestic species prevail in proportion of 92% compared to those of the game species (8%) (El Susi, 2016), which reflects species caught not necessarily for food, but probably for fur.

This culture was followed by an Eastern European culture: Foltești (3,700-3,500 BC). At a site in Foltești village, located on the right bank of the Prut river, numerous animal remains were identified, including bone remains of two otters (Haimovici, 2009). It seems that this Neolithic culture, at the period of transition from the Neolithic to the Bronze Age, knew Lutra lutra and hunted it occasionally for fur or/and meat.

The otter was also known as a game species during the Roman period in the province of Dacia, and was hunted especially for fur, but the possibility of consumption of meat cannot be excluded (Bunoiu, 2010). At the fortress of Halmyris, dating from the late Roman era (Sec. IV - VII), numerous faunal remains have been discovered, including those from at least 3 different otters (El Susi, 2008). The ancient harbour of Halmyris is located near Murighiol village in south-eastern Romania, on the right side of the Danube branch. The inhabitants of the Halmyris fortress hunted a lot of big and medium sized-mammals such as wild boar, red deer, roe deer, and aurochs, either to supplement the meat of domestic animals, or to procure raw materials as furs, bones or antlers. Small aquatic and terrestrial animals
as marten, otter, fox and beaver were also hunted, for fur. Some of the animals identified in this site may have been hunted for amusement or practice by the soldiers. According to El Susi (2008) ten bones of Eurasian otter - two humerii, three radii, two ulnae, one tibia, one pelvis and a fragment from skull - were found. The Eurasian otter is abundant in the Danube Delta nowadays and most likely it was the same during the Roman period.

In the medieval period we find the use of otter for both fur and meat, especially in the Christian period. During the Middle Ages, there were numerous discussions and disputes over the nature of certain animals based on the morphology of their bodies (Delaunay, 1997). Those which were partially covered with “scales” were by some considered to be completely fish, while others considered only the “scaly” part was fish. In this way, several disputes arose over whether the beaver was to be considered a fish only in its posterior part or for the entire body, since it has scales only on its tail. Some leaders of the church considered beavers and otters as fish and some naturalists as Guillaume Rondelet and Pierre Belon agreed with this opinion in their classification. In any case, the uncertainty regarding the nature of these animals allowed many religious communities to decide whether or not to eat these animals on fast days, such as Lent (de Grossi Mazzorin and Minniti, 1999). The otter was therefore considered together with the beaver as part of the class of Aquatilia and their consumption was allowed on days of abstinence from meat for certain Christian religious communities.

The first evidence of otter consumption by the Christians from the present territory of Romania comes from the archaeological site of Garvăn – Dinogetia, a Roman-Byzantine settlement (9th-12th centuries). Bone remains and a skull fragment discovered in the Medieval settlement were identified as belonging to Eurasian otter (Haimovici, 1989).

In another nearby medieval settlement, animal remnants identified as Eurasian otters (based on archaeozoological analysis) were found at the medieval settlement of Isaccea – Noviodunum, active during the XI-XII centuries. The material comes mainly from animals used as food, as shown by the numerous traces of butchery identified on the bone remains (Bejenaru, 2003).

CONCLUSIONS

This paper focuses on the past exploitation of the Eurasian otter in Romania, and reveals that hunting otters was a popular practice from the Mesolithic to the Middle Ages. The reasons for otter hunting were different from culture to culture: fur, meat, practice, competition for fish resources or religious reasons.

We have shown that the otter was not only hunted for fur, as it is today, but also for ceremonial reasons, religious reasons and for meat. In addition, we showed that various cultures that lived in the present territory of Romania knew the Eurasian otter and its ecology. The people of the past Holocene had much more in-depth knowledge about the fauna and the natural environment that surrounds them than people today; in the period to which we refer, people were not only hunter-gatherers, but also farmers with more or less temporary settlements, and hunting was not the primary activity.

Finally, it should be emphasized that it is difficult to coordinate disparate data, which come from different sources and which are approached in different ways. In these conditions we have only tried to present a stage of research, without being able to generalize further.
REFERENCES


RÉSUMÉ

Exploitation De La Loutre Eurasienne (Lutra lutra) Basée Sur Des Découvertes Archéozoologiques Durant L’holocène En Roumanie

Le présent article vise à présenter des données archéozoologiques et historiques sur la distribution de la loutre eurasienne (Lutra lutra) et son exploitation en Roumanie du Mésolithique au Moyen Âge. On sait peu de choses sur l'histoire ancienne de la loutre eurasienne, tandis que la plupart des efforts sont consacrés à l'étude des populations actuelles. Afin de pouvoir donner des informations sur l'exploitation passée de la loutre en Roumanie, des synthèses bibliographiques ont été utilisées comme outil destiné à fournir des réponses et plus de 200 titres de publication sur des échantillons faunistiques trouvés sur le territoire actuel de la Roumanie ont été consultés. Cette étude est basée sur les données archéozoologiques de 16 sites archéologiques allant du Mésolithique jusqu'au Moyen Âge, où des restes de loutres eurasiennes ont été identifiés dans d'anciennes habitations et cimetières. La loutre n'était pas chassée uniquement pour sa fourrure, comme on le sait déjà, mais également pour des raisons cérémoniales et religieuses et pour sa viande. En outre, les données suggèrent que diverses cultures qui étaient présentes sur le territoire actuel de la Roumanie, connaissaient la loutre eurasienne et son écologie. Il convient de souligner qu'il fut difficile de regrouper les données dispersées. Dans ces conditions, l’objectif était de présenter un état des connaissances en évitant toute généralisation.