

## Research on the Presence of Otter (*Lutra lutra*) along the Rivers and Water Accumulations in North Dobrogea

Cercetări privind prezența vidrei (*Lutra lutra*) pe cursul râurilor și acumulărilor de apă din Dobrogea de Nord

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### Abstract

*Knowledge about the distribution of otter (Lutra lutra) in Romania is limited to a few island observations. Although it is known that the otter is still widespread in Romania, there are not enough data to determine the most important conservation areas of the species, except the Danube Delta.*

*The Romanian population estimates for otter are subjective and also the estimation methods used are different. The estimate of about 3,000 specimens published in the Red Book is not based on systematic population studies of the species.*

*The presence of the species was identified as probable, due to the presence of the identified traces, on the rivers Jijila, Taița, Slava, Casimcea, Topolog and on the Peceneaga Accumulation.*

*The identification of the presence of excrement (debris), anal jelly, traces impregnated in the substrate, slides and the testimonies of animal companions certifies the safe presence of the species at Traian Lake, Horia Accumulation and Hazarlâc Lake.*

*The hydrological regime and the surface runoff of the studied rivers and lakes are influenced by the uneven distribution of precipitation, both during the year and from one year to the next, in late winter and early spring, with a maximum average flow recorded, usually in February. For most of the year, low-level waters are specific, on the background of which, especially in summer and spring, there are occasional floods, with high intensity.*

*On the upper reaches of rivers, Jijila, Taița, Slava, Casimcea and Topolog, solitary males, in search of new territories, explore vast areas, consuming predominant, in the absence of fish species, insects, shells, crayfish, occasionally birds and small mammals.*

*The trophic base of the species consists mainly of fish species, to which are added amphibians, insects, birds and small mammals, which is why we have a definite presence on Traian Lake, Hazarlâc Lake and Horia Accumulation and sporadic appearance on the Peceneaga Accumulation.*

**Keywords:** North Dobrogea, otter, rivers, water accumulations

## Introduction

After an analysis of the specialized bibliography and field trips on rivers and water accumulations in North Dobrogea we found that there are no published data on the presence of the species on rivers and water accumulations here, data on the presence and distribution of otter not yet published in the area.

Aware that at European level the populations of several mammal species are suffering a significant population decline, for some species even severe, posing a serious danger to their conservation, highlighting the size of the species population in wetlands of Romania and beyond, is appropriate.

Otter population estimates in Romania are subjective and also the estimation methods used are different. The estimate of about 3,000 specimens published in the Red Book (MURARIU, 2005) is not based on systematic population studies of the species.

The distribution of otter (*Lutra lutra*) in the region has not been studied so far and knowledge about distribution in Romania is limited to sporadic observations. Although it is known that the otter is still widespread, there are no relevant data to determine the most important conservation areas, except the Danube Delta.

The main objective of the research was to inventory and estimate the otter population on rivers and water accumulations in North Dobrogea, also to identify the distribution of the species in the area, observations on partial migrations and finally, enriching the scientific database with data on species. Attempts were also made to highlight the ecological status and characteristics of the species.

The hydrological regime and the surface runoff of the studied rivers, water accumulations and lakes are influenced by the uneven distribution of precipitation, both during the year and from one year to another, of high water level, in late winter and early spring, with a maximum average flow recorded, usually in February. For most of the year, low-level waters are specific, on the background of which, especially in summer and spring, there are occasional floods, with high intensity.

The minimum temperatures generally appear in the summer-autumn period, due to the low amounts of precipitation, high temperatures and intense evapotranspiration, thus appearing situations with low, very low flows, of the order of liters per second. The drying phenomenon is rare and usually has a local character, in some places, appearing only in extremely dry years, on certain parts of rivers (for example, the spring area) or in their tributaries and in the Peceneaga Accumulation.

The studied running waters are partially included in SCI and SPA protected areas – Natura 2000 sites:

- ✓ Danube Delta Biosphere Reserve (DDBR) Natura 2000 sites, wholly or partially overlapping with D.D.B.R. (SCI, SPA): ROSCI0065 Delta Dunării, ROSPA0031 Delta Dunării și Complexul Razim-Sinoie;
- ✓ Dobrogea Plateau Natura 2000 sites are represented by: ROSCI012 Munții Măcinului, ROSCI0201 Podișul Nord-Dobrogean, ROSPA0100 Stepa Casimcea, ROSPA0073 Măcin-Niculițel, ROSPA0091 Pădurea Babadag, ROSCI0215 Recifii Jurasici Cheia, ROSPA0019 Cheile Dobrogei.

**General description.** The otter is a slender mammal, adapted to aquatic life (Photo 1). The head is small and hydrodynamically shaped, the snout is short and the tail is long and muscular. The sexual dimorphism is not accentuated, but males are older. Regarding the body dimensions, the body length is 70-90 cm, the height is 30 cm, the tail is 35-40 cm and the weight is between 8-15 kg, but this mustelid can reach sizes up to 150 cm in length and 15 kg in weight. The fur is dark brown, with soft, silky and shiny hairs, the part on the abdomen is lighter and in winter it is thicker and glossier. On the sides of the chin and in the middle of the upper lip, there are some irregular white spots.

In relation to the body, the legs are short, with five toes joined by an interdigital membrane, which helps a lot in swimming and propelling. It is a solitary animal, preferring to avoid each other.



Photo 1. Otter – *Lutra lutra* (photo D. Petrescu)  
Foto 1. Vidra

**Population.** In Europe, the otter population is recovering from the historical decline recorded in the years 1960-1970, but there is also a decrease in the population in certain areas of its range. The population size trend is unknown. The size of the otter population at national level was estimated at about 3,000 specimens, the trend being increasing.

**The national level distribution.** To date, there are no recent data on the number of otters in Romania, nor has their distribution been established at the country level. Knowledge about the distribution of otter (*Lutra lutra*) in Romania is limited to a few island observations. Although it is known that the otter is still widespread, there is no relevant information to determine the most important conservation areas of the species.

In the European literature of the 1980s we find references that this species was probably widespread in both Bulgaria and Romania, although in Romania in some areas the number of otters in general seems to show clear signs of decline (REUTHER, 1980; MASON & MACDONALD, 1986).

Later, GEORGESCU (1994) reported that the species can be found throughout the country, from sea level to the subalpine area.

Romanian population estimates for otter are subjective and the estimation methods used are very different, but in any case in the last 25-30 years it shows a decrease (CONROY & CHANIN, 2002).

According to official statistics from Romsilva (Ministry of Waters, Forests and Environmental Protection), the otter population has been unstable in recent decades. The numerical decline could be explained as only an appearance by the fact that the identification of the species in the field is very difficult or by the progressive deterioration of the hydrological balance in the last 35 years.

From the point of view of the degree of protection, the otter is found in Council Directive 92/ 43/ EEC, O.U.G. 57/2007, Berne Convention (Parliament 1993), IUCN – Red List of Threatened Species – LC (least concern) – low interest, declining population trend, 2018, CITES Washington Convention.

**Species` habitat and ecological requirements.** Otter is a species adapted to the aquatic environment (Photo 2). The burrows are usually dug on the banks of rivers or in riparian forests but at a maximum distance of 500 m and are equipped with several entrances, the main one often located underwater. It prefers dense vegetation locations.

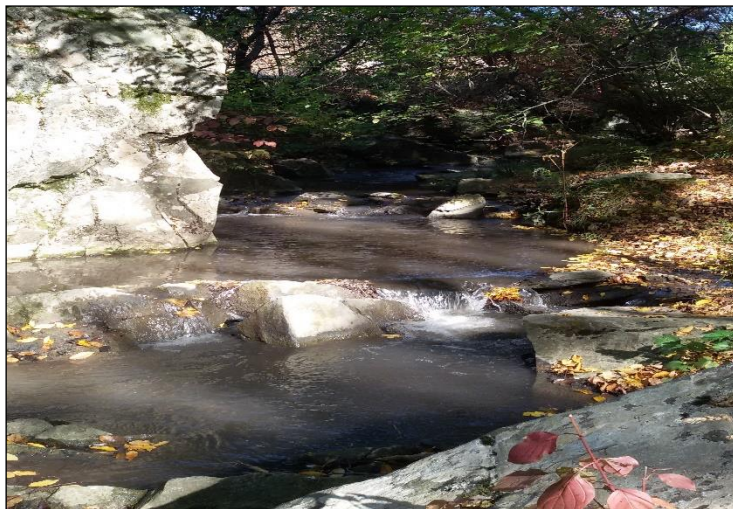


Photo 2. Casimcea River. Characteristic habitat of the otter (photo V. Cuzic)  
*Foto 2. Râul Casimcea. Habitat caracteristic vidrei*

Males live alone, looking for a mate only during mating. Females are with the pups only during their rearing. It is a territorial species; the animals mark their revival with the help of the anal glands.

The presence of the otter is closely linked to the existence of food resources. In Romania, otter is widespread throughout the country, especially in lakes and valleys, but especially in ponds in the Danube Delta. The existence of places rich in fish attracts the otter to the top of the mountain, at over 1.500 m, near the trout streams. Sometimes, in search of suitable places, the water weighs over the ridge of the mountains. Occasionally it also occurs in seasonal waters (ponds, canals with non-permanent waters) which are an important feeding habitat.

Often several individuals use the same points to mark territories, so the excrement has an informative role about the menu and territoriality along the watercourses. The territory can be 5 km for females, reaching 15 km for males, the size being determined by the abundance of food. The maximum activity period is in the morning and in the evening, when it hunts, covering up to 10 km in one night.

**Food.** It has a diverse diet: most of the food consists of small fish, present in high density, but also eats frogs, crustaceans, aquatic invertebrates (waterfowl), rodents, occasionally and fruits. Food is procured predominantly from water. It is a nocturnal animal, hunting about 3-5 hours a day. The daily feed of an otter varies between 15 and 25% of the animal's body weight and is also influenced by the season.

**Breeding.** It has a biannual reproduction. It mates in February, but the breeding season is heavily influenced by environmental factors (food). After a gestation period of 9 weeks, the female generally gives birth to two pups (the number of pups varies between 1 and 5), which are blind until the age of four weeks. The pups leave the mother at the age of about two years and reach sexual maturity at the age of 2-3 years.

**Longevity.** In the wild the otter can survive 15-18 years and in captivity up to 23 years.

**Threats.** The main threatening factors of the species are: poaching, destruction of riparian vegetation, hydrotechnical works, stray dogs (hunting in packs), and near roads, increased traffic intensity.

Aquatic habitats occupied by otters are extremely vulnerable to human intervention. River drainage, shoreline removal, dam construction, wetland drainage, fisheries and aquaculture activities and other human-related impacts on aquatic ecosystems are unfavorable for otter populations (REUTHER & HILTON-TAYLOR, 2004).

Pollution is a major threat to otters in Europe, the main pollutants that pose a threat to otters being: organochlorines, dieldrin, DDT/ DDE, polychlorinated biphenyls (PCBs), mercury and heavy metals (OTTINO *et alii*, 1995).

Poaching is a widespread threat in Romania, the species not being poached for its hunting importance but for the damage it causes to fish farm owners and fishermen.

## **Materials and Methods**

Research on the presence of the species was carried out in North Dobrogea, on the follow rivers: Casimcea, Ciucurova, Hamangia, Slava, Telița, Taița, Luncavița, Jijila, Greci, Cerna, Peceneaga, Valea Roștrilor, Topolog and in the water accumulations: Horia, Traian Lake, Peceneaga Reservoir and Hazarlâc Lake (Figure 1).

The collection of field data to establish the presence and distribution of the species was carried out over a period of four years, from May 2018 to May 2022. Research campaigns: spring, summer, autumn and winter.

### **Methods of work:**

- direct observations;
- search for the presence of excrement (debris), as they are stored for a long time in the area, of the presence of anal jelly and of the latrines;
- search for the presence of traces impregnated in the substrate and slides;
- interviews and discussions with locals/ companions of local herds of animals, who have relevant information in the field.



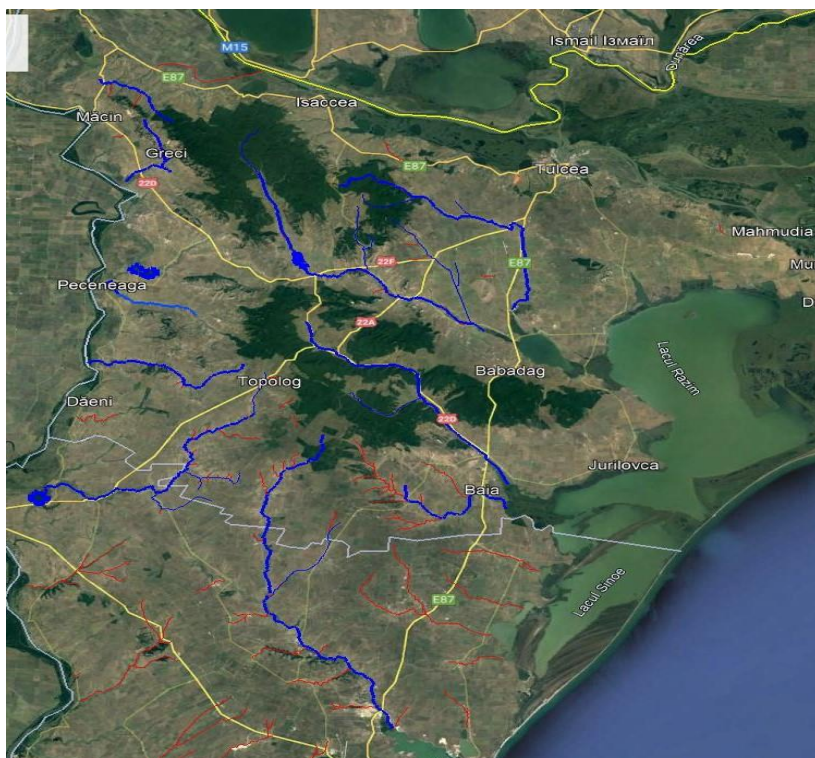


Figure 1. Researched rivers and water accumulations to identify the presence of otter  
 Fig. 1. Cursurile și acumulările de apă cercetate pentru identificarea prezenței vidrei

The distribution of the species was identified using several of the methods listed. The first involved identifying areas with a presence along rivers and water accumulations in North Dobrogea. Monitoring transects have been established for the preliminary identification of the distribution of the species. The transects were chosen to best cover the habitats known as optimal for feeding, but also to maintain an objective level of observation. The results were processed and the potential areas in which the species is active were identified.

Transects were randomly selected from the potential habitats of the species taking into account the accessibility of the area and the river network. The aquatic transect has a minimum length of 600 m and starts near the randomly assigned point and follows a route along a river, or the shore of a lake/ pond.

The easiest clue to identify an otter-populated habitat is the excrement left by them, as they are kept in the area for a long time (during periods without heavy rainfall). Depending on the study period, the content and shape of the feces vary, due to the diet that differs from one season to another. Otter leaves

(excrement) contain mostly fish, vertebrate and amphibian`s bones, but the remains of snails, beetles, mice, etc. can also be identified. Most of the debris is found under bridges, embossed stones, promontories, mounds, concrete walls and can be easily recognized by the content of fish bones and the strong smell of fish. The excrement is also used to mark the territory (photos 3, 4), but for this purpose the otter more often marks the anal excretion (jelly), easily recognizable by the fact that it does not contain vertebrae or remains of eaten prey. In general, the otters are faithful to the defecation places, so in some places real latrines are formed.



Photo 3. Territorial marking with excrement placed in a place that comes out in evidence (e.g. stone), on the course of the Casimcea River (photo V. Cuzic)

*Foto 3. Marcaj teritorial cu excremente amplasat într-un loc ce iese în evidență (ex. piatră), pe cursul Râului Casimcea*



Photo 4. Territorial marking with excrement, the course of the Topolog River (photo V. Cuzic)

*Foto 4. Marcaj teritorial cu excremente, cursul Râului Topolog*



Traces are very important in the inventory of the species. The front and rear paws printed by the otter on surfaces of mud, sand or snow can be found on the water edge. Depending on the size of the traces, the age and sex of the individual can be recognized as follows: <5.0 cm for pup/ juvenile, 6.0–7.0 cm for adult female, > 7.0 cm for adult male (OTTINO & GILLER, 2004). Otter tracks can be seen throughout the year both in winter, when the snow is present, and in autumn, summer and spring, on the sandy, fine gravel, shore or mud banks of rivers.

During daily activities, the otter can leave other signs of presence in an area. Throughout the year, fish carcasses can be seen on the waterfront. In winter, the traces left by the otter and its tail can be seen, and when the snow is heavier, real ditches can be seen in the snow, produced by the otter sliding on the snow. Also in winter, it can see tunnels under the snow and small stitches in the ice, used to accumulate the necessary food – hunting under the ice.

Otter burrows usually have two entrances, one aerial and one underwater and are easy to spot due to the latrines near them; they are usually dug in the banks firmly fixed to the roots of the trees.

In the area used by the otter can be observed in areas with large grass and dense small color, having the shape of a tunnel, which is used by the otter (Photo 5). Also in these areas we can see places used by otter to dry their fur and for rest, they are usually devoid of vegetation and have a sandy substrate.



Photo 5. Access slide on the Casimcea River (photo V. Cuzic)

*Foto 5. Topogan de acces pe cursul Râului Casimcea*

## Results and Discussion

The presence of excrement (debris), anal jelly, traces impregnated in the substrate, slides and testimonials of animal companions certify the presence of the species at Traian Lake, Horia Accumulation, Hazarlâc Lake, the topology of the Topolog River and the Cas River Hamangia River. The presence of the species can be considered probable, due only to the presence of traces impregnated in the substrate, on the rivers Jijila, Taița and Slava (Figure 2).

Solitary males, in search of new territories, explore vast areas, consuming mostly, in the absence of specific ichthyofauna, insects, shells, crayfish, occasionally birds and small mammals, they being observed on the upper reaches of the rivers Jijila, Taița, Slava, Casimcea, Topolog (Photo 6).

However, the trophic base of the species consists mainly of fish, which is why we have a definite presence on the Traian Lake, Hazarlâc Lake, Horia Accumulation and sporadic presence around the Peceneaga Accumulation.

According to the field experience, the otter is present in all aquatic habitats with permanent water, which provides adequate shelter being bordered by shrubby or reed vegetation, where a stable population of fish lives, and where there is no significant disturbance due to human presence.

Aquatic habitats occupied by otters are extremely vulnerable to man-made changes. Rivers regularization, shoreline removal, dam construction, drainage of wetlands, and other impacts associated with human activities on

aquatic ecosystems are unfavorable for otter populations on North Dobrogea rivers and water accumulations. However, activities such as fish farming and aquaculture attract specimens of the species like a magnet, forming independent families in these areas, exemplifying here the case of Traian Lake, the Horia Accumulation and Hazarlâc Lake.



Photo 6. Topolog River. Habitat in which the otter was identified (photo V. Cuzic)

*Foto 6. Râul Topolog. Habitat în care s-a identificat prezența vidrei.*

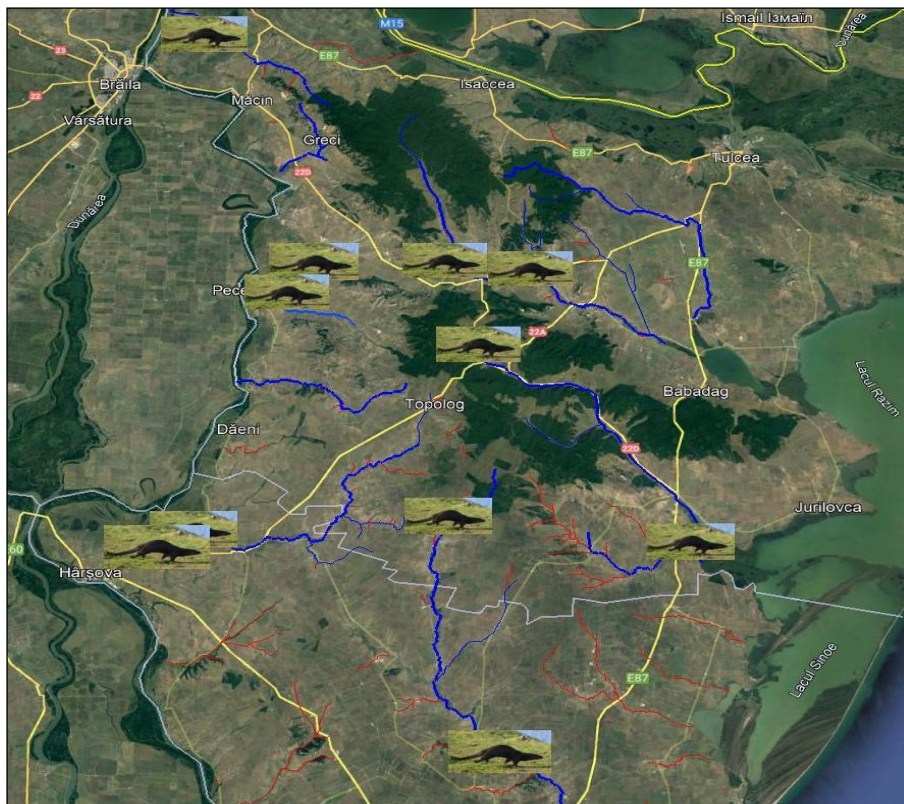


Figure 2. Presence of the otter on the researched rivers and accumulations  
 Figura 2. Prezența speciei pe cursurile și acumulările de apă cercetate

## Conclusions

As a result of the inventory of the traces of presence and the observations, it was determined that the target species is resident in the researched area, having an independent character. The data obtained currently attest to a constant presence of the species in the researched area.

Due to the uncertain elements identified in the field (non-surprise of the complete cycle in the annual development of the species – relatively short period allocated to investigations), we consider that the conservation status of the species in the researched area is not fully known.

The periods considered critical for the species correspond to those of temporary vulnerability (mating-gestation-rearing pups: late winter-spring-summer), but the species is vulnerable all year round by pollution of waters with pesticides and fertilizers for agriculture, habitat degradation, hunting, poaching, fighting around fishing facilities.



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