

REPORT

ABANDONED CLAY MINES: AN OPPORTUNITY FOR EURASIAN OTTERS IN NW SPAIN

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ABSTRACT: The Eurasian otter (*Lutra lutra*) is widely distributed in the north of the Iberian Peninsula, supposedly one of the best populations of Spain. Usually otters inhabit coastal and riverine habitats in this region, but in some cases they use man-made habitats. In the last three winters the seasonal use of old clay pits by otters has been studied in a locality from Galicia. The abundance of these artificial habitats could lead to a recolonization of Gandaras de Budiño and Ribeiras do Louro wetland, where the species disappeared in the last century.

Keywords: *Lutra lutra*, Mustelidae, clay pits, seasonal use, NW Spain.

INTRODUCTION

The Eurasian otter, *Lutra lutra* (Linnaeus, 1758), is widely distributed in the North of Spain (Delibes, 1990; Kruuk, 1995, 2006; Ruiz-Olmo and Delibes, 1998; Palomo et al., 2007), and after some years of population decline it seems that it is re-colonizing some areas (Nores et al., 1991; Agirre-Mendi, 1998; Ruiz-Olmo and Delibes, 1998; Lopez de Luzuriaga, 2006; Palomo et al., 2007). The species uses all available water bodies, and although they usually occur in coastal and riverine habitats in the Galicia region (Callejo Rey et al., 1979; Callejo, 1988; Delibes, 1990; Ruiz-Olmo and Delibes, 1998; Palomo et al., 2007), they also use artificial water bodies (Ayres and García, 2007).

The seasonal exploitation of resources has been studied in depth in the Mediterranean (Lizana and Pérez-Mellado, 1990; Delibes et al., 2000; Jedrzejewska et al., 2001; Clavero et al., 2003; 2004; 2005; 2006; 2007; García and Ayres, 2007; Remonti et al., 2009), but there are few studies about the feeding ecology of otters populations in the North of the Iberian Peninsula (Callejo Rey et al., 1979; Callejo, 1988). In this work seasonal use of artificial water bodies by otters during winter is reported (Figure 1).

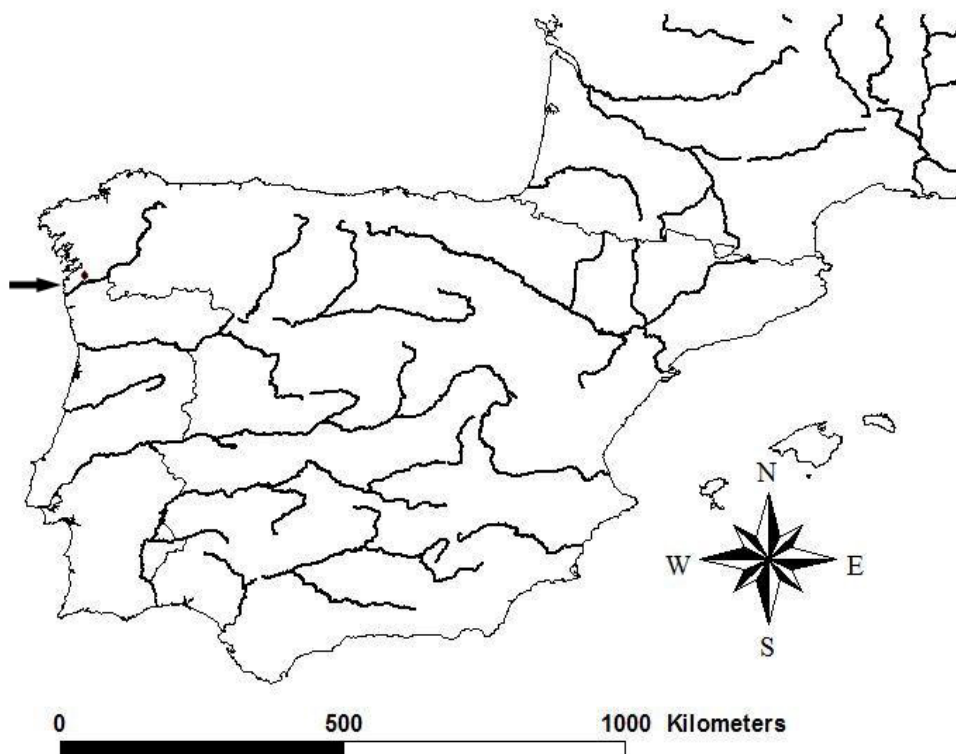


Figure 1. Iberian Peninsula and study area

MATERIAL AND METHODS

Fieldwork was carried out in a protected wetland of Northwestern Spain, Gandaras de Budiño e Ribeiras do Louro (GBRL), close to the border with Portugal. GBRL has been intensely monitored since 1998, particularly old clay pits, during a herpetological monitoring program. After the arrival of Eurasian otter in winter 2007, specific monitoring was performed throughout the following years. Clay pits are common in the study area, some of them being abandoned due to end of mining activities, and thereafter colonized by aquatic vegetation and several animals. As the Louro River is one of the most polluted rivers in Spain (Ayres and Cordero, 2004), clay pits represent an important resource for endangered species such as European pond turtle (*Emys orbicularis*), common teal (*Anas crecca*), and also provide an important breeding habitat for amphibians.

Clay pits are variable in size, from 100 m to 500 m of perimeter, and some of these water bodies are deep, more than 10 m in some cases. Some of them have been colonized by aquatic vegetation, with dense cover of *Potamogeton sp.*, and *Nymphaea alba* (Figure 2).

Monitoring of the presence of otters was carried out using secondary signs (Reuther et al., 2002), mainly spraints. The shores of the clay pits were thoroughly surveyed throughout the year, with nearly one visit per week during the last 11 years. Spraints were collected and analysed (Callejo Rey et al., 1979; Callejo, 1988; Kruuk, 1995, 2006; Jedrzejewska et al. 2001), and the biomass consumed assessed from the correction factors in Jedrzejewska and Jedrzejewski (1998). For further details see Ayres and Cordero (2004), Ayres and García (2007) and García et al., (2009).



Figure 2. Partially naturalized clay pit.

RESULTS AND DISCUSSION

The presence of the otter was not detected until winter 2006-2007 (Ayres and García, 2007), and the species returned during winter 2007-2008, and 2008-2009. Intensive monitoring reveals that otters frequently used GBRL clay pits during these three winters, looking for breeding aggregations of *B. bufo*. More than two hundred predated toads were found in the last three winters. The predation pattern of toads roughly follows the “progressive skinning” described by Slater (2002). Remains of red swamp crayfish (*Procambarus clarkii*) were also found in otter spraints (n=53), as a secondary prey item between amphibian breeding peaks. Other prey items found during spraint analysis can be listed as accidental, with less than 1% in biomass.

The keystone role of amphibians in the otter diet has been argued by several authors to be related to the scarcity of fish in the environment (Lizana and Pérez-Mellado, 1990; Kruuk, 1995, 2006; Pikulik and Sidorovich, 1996; Jedrzejewska et al., 2001; Remonti et al., 2009)

It is remarkable that, even when centrarchid fish were available, that they are not consumed by otters (as shown from spraint analysis), according to the findings of Blanco-Garrido et al. (2008). This fact could be a limitation to the permanence presence of *L. lutra* in the clay pits, as prey availability becomes low after the amphibian breeding season, leading the animals to leave the site (Delibes et al., 2000; Ruiz-Olmo et al., 2007).

Riparian and helophytic vegetation provides enough refuges for shelter (an important feature for the settlement of otters; Kruuk, 1995, 2006; Beja, 1996; Liles, 2003), and this is therefore not a limiting resource, although the human activity could have an impact on the habitat use by otters.

Otters leave the clay pits in March, and results support the hypothesis that they cannot breed in the area given the absence of suitable prey resources (a key constraint to otter reproduction; Kruuk, 1995, 2006; Beja, 1996; Pikulik and Sidorovich, 1996; Ruiz-Olmo et al., 2001). They therefore have to migrate to find suitable sites for rearing their cubs.

There is an important challenge for otter conservation associated with the management of these clay pits. As clay pits are very common in the study area, with natural regeneration and protection, these artificial habitats could serve as “stepping stones” for *L. lutra* and other endangered species, avoiding the use of polluted rivers, and increasing the availability of optimal habitat.

Despite this easy possibility to increase optimal habitat for many species in the protected wetland, some clay pits have been destroyed due to a misinterpretation of the mining law. This should be forbidden, and a network of ponds should be kept to improve the habitat availability in this wetland.

However, it is important to take into account that the presence of otters in this artificial water network is seasonal and relies on the high abundance of amphibians as an easy prey, and once this kind of prey reaches a low abundance, otters go out from the pits. This fact needs to be considered when working to establish otters, and the best option is by means of habitat and prey management. Maybe, the first option could be the management of fisheries to be friendly to otters (Callejo, 1988; Kruuk, 1995, 2006; Beja, 1996; Polédnik et al., 2004), by removing as far as possible feral fish and restocking populations of autochthonous fish. This has already been done in some areas of the Iberian Peninsula (Ruiz-Olmo, 1993).

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RESUME

MINES D'ARGILE ABANDONNÉES : UNE OPPORTUNITÉ POUR LA LOUTRE DANS LE NORD-OUEST DE L'ESPAGNE

La Loutre d'Europe (*Lutra lutra*) possède une large répartition dans le nord de la Péninsule Ibérique où elle constitue sans doute l'une des plus importantes populations d'Espagne. Habituellement, dans cette région, la Loutre occupe des habitats côtiers ou des rivières mais dans quelques cas elle utilise des milieux façonnés par l'homme. Durant les trois derniers hivers, son exploitation saisonnière d'anciennes mines d'argile a été étudiée dans une localité de Galice. L'abondance de ces habitats artificiels pourrait favoriser la recolonisation des zones humides de Gandaras de Budiño et de Ribeiras do Louro, d'où l'espèce aurait disparu au siècle dernier.

RESUMEN

ABANDONO DE LAS EXPLOTACIONES MINERAS DE ARCILLA: UNA OPORTUNIDAD PARA LA NUTRIA EN EL NO DE ESPAÑA

La nutria euroasiática esta ampliamente distribuida en el norte de la Península Ibérica, supuestamente es una de las mejores poblaciones de España. Habitualmente la nutria ocupa hábitats costeros y ribereños en esta región, pero en algunos casos usa medios antropizados. Durante los últimos tres inviernos el uso temporal de antiguas explotaciones de arcilla por la nutria ha sido estudiado en una localidad de Galicia. La abundancia de estos medios artificiales podría conducir a una recolonización del humedal Gandaras de Budiño e Ribeiras do Louro, donde la especie parecía haber desaparecido en el ultimo siglo.