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CURRENT DISTRIBUTION OF THE COYPU (*MYOCASTOR COYPUS*) IN THE BASQUE AUTONOMOUS COMMUNITY, NORTHERN IBERIAN PENINSULA

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ABSTRACT - The distribution of the coypu (*Myocastor coypus*) in the Iberian Peninsula is restricted to the Atlantic region, even though recent data suggest an expansion into the western part of the Basque Autonomous Community (northern Iberian Peninsula). With the aim of providing new data on coypu distribution in this region, 76 transects (mean length = 1369 m; range = 900-1800 m) along riverbanks and marsh shorelines were surveyed, to record the presence of coypus by means of their signs: footprints, burrows, and droppings. Transects were distributed in 14 river basins, corresponding to 45 UTM 10x10 km squares. Between January and September 2004, we detected 105 activity signs in 4 river basins, verifying the presence of the species in 10 UTM squares. Our results confirm that the coypu is expanding into new areas in the north of the Iberian Peninsula.

Key words: *Myocastor coypus*, distribution, invasive species, south-western Europe

RIASSUNTO - ***Distribuzione della nutria (*Myocastor coypus*) nella Regione Autonoma Basca, penisola iberica settentrionale.*** Nella penisola iberica, la presenza della nutria (*Myocastor coypus*) è limitata alla regione atlantica, anche se dati recenti suggeriscono una sua espansione nella Regione Autonoma Basca (penisola iberica settentrionale). Con lo scopo di raccogliere nuovi dati sulla distribuzione della nutria in questa regione, i segni di presenza della specie (impronte, tane, feci) sono stati ricercati lungo 76 transetti (lunghezza media = 1369 m; min-max = 900-1800 m), corrispondenti a tratti di corsi d'acqua e sponde di acquitrini. I transetti comprendevano 14 bacini idrografici, corrispondenti a 45 quadrati di 10 km di lato del sistema UTM. Tra gennaio e settembre 2004 sono stati trovati 105 segni di presenza in 4 diversi bacini, accertando la presenza della nutria in 10 quadrati UTM. I risultati confermano la colonizzazione di nuove aree della penisola iberica settentrionale.

Parole chiave: *Myocastor coypus*, distribuzione, specie invasive, Europa sud-occidentale

INTRODUCTION

The coypu (*Myocastor coypus*) is a semi-aquatic rodent native to the southern part of South America, where it is locally abundant (Gosling and Baker, 1996). In the early part of the 20th century it was introduced into several re-

gions of the world such as North America, Africa, Europe, the Middle East and Japan, and in most of these regions wild populations have become established as a result of escapes and releases from fur farms (Carter and Leonard, 2002). The coypu is considered to be one of the most damaging invasive species (Gosling and Baker 1996), because of the damage they cause to crops, native flora and fauna and drainage systems. The species was successfully eradicated from the UK after 16 years of trapping effort, whereas it is widespread in France, Germany, and Italy (Alvarez, *et al*., 1989; Gosling and Baker, 1987; Reggiani, 1999; Panzacchi *et al*., 2007).

Free-living individuals in the Iberian Peninsula were first documented in the 1970s from the Atlantic region (Herrero and Couto, 2002). Currently, the distribution of coypus is mostly restricted to the basin of the River Bidasoa in the eastern part of the Basque Autonomous Community (BAC), adjacent to the French border (Alvarez *et al*., 1989; Herrero and Couto, 2002). However, recent data suggest a westward expansion of coypus (Echegaray and Hernando, 2003). In the Mediterranean climatic zone of Spain, coypus are recorded only from the River Ebro basin (Herrero and Couto, 2002). In the BAC and in the neighbouring Navarre region it is considered as an exotic invasive species (Ihobe, 2009).

The aims of this study were to provide new data on the distribution of the coypu in the BAC, to investigate reports of an expanding distribution and to outline recent variation in its distribution.

STUDY AREA

The study area is 7,482 km^2 in size and includes the provinces of Araba, Bizkaia and Gipuzkoa, constituting the Basque Autonomous Community, located in the northern part of the Iberian Peninsula (Figure 1). Altitude ranges from the sea level to 1500 m a.s.l. The principal mountain chain crosses the area in a clear East-West trajectory, providing a clear distinction between the dryer Mediterranean basin in the south and the wetter Atlantic region in the north.

This northern Atlantic basin is mountainous, with narrow valleys and short and rapid rivers, with a torrential flow regimen. This region is characterized by a warm oceanic climate, with warm temperatures and rainfall throughout the year. The vegetation is highly patchy and mainly consists of a mosaic of meadows, heathlands, and deciduous woodland copses dominated by *Quercus robur* in lowland areas and by *Fagus sylvatica* in the highlands. Traditional cattle breeding has been abandoned and plantations of exotic coniferous species (mainly *Pinus radiata*) now cover vast areas. Riparian vegetation consists of alder groves (*Alnus glutinosa*) that occur around most rivers and marshes, although crops have substituted riparian vegetation along the shores of the main rivers (Aseginolaza *et al*., 1996).

The Mediterranean basin is much less mountainous and valleys are broad, with long and slow rivers. All the rivers in this basin are tributaries of the River Ebro. Climate is continental, with hot dry summers and mild wet winters. Cereal crops have replaced the original lowland woodlands dominated by *Q. faginea*. The dominant tree species on siliceous mountain slopes are *Q. pyrenaica* and *F. sylvatica*; whereas *Q. rotundifolia* dominates karstic slopes. Riparian vegetation is better preserved in this region, where human colonization has been less intense, and is dominated by poplars (*Populus* sp.) (Ortubay, 1995).

METHODS

Fieldwork was carried out from January to September 2004. We adapted the standard method of Mason and Macdonald (1986) for the study of riparian mammals for the rivers in our study area. Coypus prefer deep and slow water (Macdonald and Barret 1993; Reggiani, 1999; Herrero and Couto, 2002). With the help of a Geographic Information System (Arcview 3.2, ESRI), we drew 76 transects (mean length = 1369 m; range = 900–1800 m) along river banks and marshes belonging to 14 basins. We designed transects to incorporate those habitat types preferred by coypu and each transect was sampled twice during the study period. Wherever possible, both river banks were sampled, searching for signs of coypu, namely burrows, tracks and droppings (Colantoni, 1993; Sutherland, 1997; Bang and Dahlstrom, 1999). The droppings, easily identifiable, are cylindrical (20-30 x 11 mm), brown coloured, and grooved longitudinally. Their presence is regarded as an excellent indicator of recent coypu presence (Gosling *et al*., 1988). Footprints of the posterior feet may be up to 15 cm long and are characterized by their interdigital membrane (Bang and Dahlstrom, 1999).

The location of signs of coypu activity or observed individuals were noted on preprinted ortho-photograph layouts and the information subsequently transferred into a GIS to obtain UTM coordinates.

RESULTS AND DISCUSSION

Overall, we surveyed 104.7 km of river banks and marsh shorelines, distributed among 45 UTM squares. We detected 105 activity signs during the study period in 31 transects (40.8%), corresponding to 10 positive UTM squares (22.2%; Figure 1). Footprints (38.4%) and droppings (34.3%) were the most common activity sign of the coypu in the studied basins, whereas burrows were the rarest (15.0%). We observed coypu individuals in 12.3% of transects. The altitudinal range of activity signs and observations extended from 0 m to 416 m a.s.l..

The distribution of coypus in the BAC was restricted to the eastern part of the study area (Figure 1), in the Bidasoa, Oiartzun, Urumea and Oria river basins (province of Gipuzkoa). We found coypu activity signs along the River Bidasoa, especially in marshes (1.73 signs/km and 5.25 signs/km, respectively), where all sampled transects were positive for the presence of coypu. Although we did not detect any activity sign in the lower part of the River Oiartzun, we observed 5 individuals feeding in an urban park in the area. Coypu activity signs were also found in the lower part of the River Urumea (2.20 signs/km), while no activity sign was recorded in its upper reaches. According to our observations, the basin of the River Oria represents the westernmost border of the distribution area of coypu. We found some coypu activity signs (droppings and footprints; 0.54 signs/km) along the main tributary of the River Oria, close to some small hydro-electric reservoirs. Although we did not detect any activity sign in the upper part of the River Oria during our study period, coypu had previously been recorded (I. Irizar, *pers comm*.). We also found some sporadic signs of activity in the lower part of the River Oria, while an individual was observed in one out of three shallow water reservoirs in the basin of the River Urumea.

To the best of our knowledge, we re-

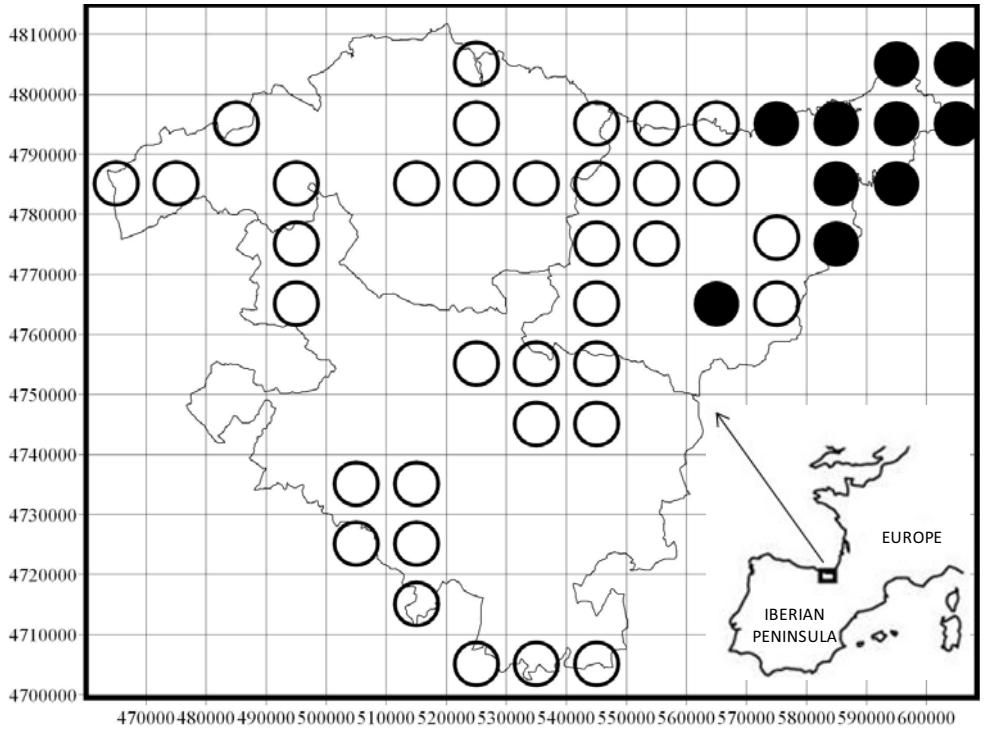

Figure 1 - Distribution of the coypu (*Myocastor coypus*) in the Basque Autonomous Community, northern Iberian Peninsula, according to UTM squares (10 x 10 km). Circles (white = negative, black = positive for coypus) show the surveyed squares.

port for the first time the presence of coypu in the lower part of the River Oria. Although, according to the distribution and abundance of activity signs, coypu density in the BAC may be considered low compared to other European areas (Doncaster and Micol, 1990; Velatta and Ragni, 1991), our results confirm that the coypu is expanding its range in the northern Iberian Peninsula. The resulting patchy distribution is probably due to the scarcity of suitable river habitat, since the coypu prefers slow-moving and deep water-bodies (D'Adamo *et al*., 2000). The torrential flow regimens of the surveyed rivers make those habitats somewhat unsuitable for the coypu. Although the species is present on the River Ebro, in the neighbouring Navarre province, (Herrero and Couto, 2002), we did not record any coypu activity within the portion of the basin included in our study area. However, we suggest that the colonization of the Mediterranean region of our study area is only a matter of time.

Finally, considering that the coypu is an exotic and invasive species and the damage it causes to the local fauna and flora, a control or eradication plan should be formulated as soon as possible (Gosling and Baker, 1987; Veletta and Ragni, 1991; Reggiani, *et al*., 1993; Prigioni *et al*., 2005). Preliminary trapping sessions carried out in the

River Bidasoa with cage-traps, have shown high capture-efficiency (I. Mendiola, pers. comm.). Cage-traps could be effective to control or even eradicate coypu populations, given that populations remain patchily distributed (e.g. Baker and Clarke, 1988; Bertolino *et al*., 2005; Prigioni *et al*., 2005).

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