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E. S. Devenish and C. Sayer

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A Review of the Ecology and Conservation of the Neotropical River Otter, *Lontra longicaudis* (Olfers, 1818), with Special Reference to Trinidad

E. S. Devenish[†] and C. Sayer

Dept. of Geography, University College London, 26 Bedford Way, London, WC1H 0AP, UK

[†]Correspondence address: 13 Peacock Road, Oxford, OX3 0DQ, UK

E-mail: e_devenish@hotmail.com

ABSTRACT

Trinidad hosts the only insular population of the Neotropical River Otter, *Lontra longicaudis*. A brief literature review of the species is given here, based on studies from the mainland South American population and recent research in Trinidad. The conservation status of this island species is poorly known, and an overview is presented, together with some distributional data for Trinidad.

Key words: *Lontra longicaudis*, insular population, ecology, conservation.

INTRODUCTION

The Neotropical River Otter, *Lontra longicaudis*, is one of the least studied otter species in the New World (Quadros and Monteiro-Filho 2002; Pardini 1998; Chehébar 1990). Indeed, relatively few published studies exist of the mainland population (see Quadros and Monteiro-Filho 2002; Pardini and Trajano 1999; Pardini 1998), and no published ecological studies exist for the Trinidad population.

CLASSIFICATION

There are 13 species of otter spanning Europe, Africa, Asia and the Americas, belonging to the order Carnivora, family Mustelidae. *Lontra* was proposed as a new genus due to the morphological differences between the New World species and the Old World *Lutra* species (van Zyll de Jong 1972). The genus *Lontra* has four species: North American River Otter, *L. canadensis*; Sea Cat, *L. felina*; Southern River Otter, *L. provocax* and Neotropical River Otter, *L. longicaudis*.

The Neotropical River Otter was described fifteen times in Latin America between 1818 and 1924 and Cuvier initially classified the Trinidadian subpopulation in 1823 as *Lutra insularis* (Larivière 1999). Currently there are three recognised subspecies of *L. longicaudis* (Larivière 1999): *L.l. annectens*; *L.l. enudris* (= with *L. insularis*); and *L.l. longicaudis* (= *L. platensis*). Little is known about their geographic distribution and genetic variation (van Zyll de Jong 1972).

RANGE

Lontra longicaudis has the most extensive range of the four Latin American otters (Giant otter, *Pteronura brasiliensis*, *L. provocax* and *L. felina*) and is sympatric in parts of its range with *P. brasiliensis* (Mason and MacDonalld 1986). Its mainland distribution spans from northern

Mexico to Argentina, and it is found up to an elevation of 3000 m (Emmons 1997). Trinidad hosts the only Caribbean and only insular population of *L. longicaudis*.

IDENTIFICATION

Lontra longicaudis has short, dense fur, with a dark brown upper body, whitish belly, a long tail and webbed feet (Emmons 1997). Sexual dimorphism is exhibited, with males 20 - 25% larger than females (Larivière 1999). Average measurements for *L. longicaudis* are 400 - 809 mm for head-body, 360 - 570 mm for tail length, with average weights of 5 - 14.75 kg (combined from Emmons 1997 and Eisenberg 1989).

The distinguishing features of *L. longicaudis* are the variable shapes of the rhinarhium (muzzle) (Larivière 1999). In Trinidad, the rhinarhium is reportedly divided by a median strip of hair (van Zyll de Jong 1972).

HABITAT PREFERENCES

Like the majority of otter species, *Lontra longicaudis* is solitary (Emmons 1997). Owing to their semi-aquatic behaviour, home ranges are linearly spaced along waterways. Home ranges in Brazil are approximately 5 km (Quadros and Monteiro-Filho 2002) and density of the Argentinean population is estimated at between 0.81 to 2.76 otters per km of river (Larivière 1999).

L. longicaudis has a plastic denning behaviour, using natural cavities as well as excavating burrows (Quadros and Monteiro-Filho 2002; Pardini and Trajano 1999; Eisenberg 1989). Holts (dens) are used to rest, sleep, give birth and rear young. Several are utilised by an individual, and apart from natal holts can be used by more than one otter, although not simultaneously (Pardini and Trajano 1999).

Although foraging occurs throughout the day, activity is concentrated in the late afternoon (Larivière 1999).

Preferred habitats of *L. longicaudis* are fast-flowing rivers and streams in both deciduous and evergreen forests (Emmons 1997).

A recent study of three watersheds in the Northern Range of Trinidad (Madamas, Marianne, and Arima), found that deep rocky pools with abundant potential holt sites were favoured by *L. longicaudis* (Devenish 2003). Similar preferences for substrates and size of river are found for *L. lutra* (see Kruuk 1995; Prenda and Granados-Lorencio 1996) and are likely to be due to the distribution and biomass of prey species (Kruuk 1995). Alternatively, heavily silted rivers in disturbed catchments (e.g. Arima) inhibit fish presence and had fewer signs of otter habitation (Devenish 2003). Studies show tolerance of human disturbance may depend on the availability of sufficient shelter (MacDonald and Mason 1990). In this context disturbance may become a major limiting factor only if other habitat attributes are not satisfied. As habitat features have strong associations with each other, it is likely that multiple factors affect the distribution of *L. longicaudis*. Rivers with a combination of variables below a certain threshold may sustain lower populations of *L. longicaudis*, or of their prey, resulting in a population decline.

SPRAINTING BEHAVIOUR

The role of sprainting in communication and information transfer is indicated by routine sprainting on exposed locations and centres of activity, such as banks, logs and boulders (Melquist and Hornocker 1979) and holts (Quadros and Monteiro-Filho 2002). There is evidence that habitat change and anthropogenic impacts can affect sprainting behaviour (Hutchings and White 2000) with fragmented and declining otter populations leaving fewer signs than healthy ones (Hussain and Choudhury 1997).

Sprainting behaviour fluctuates throughout the year. A proliferation in spraints and spraint sites was observed



Fig. 1. Spraint of the Neotropical Otter, *L. longicaudis*, found along the Madamas River.

for *L. longicaudis* in Brazil during July to September, coinciding with a reduction in one of the major prey items (in this case members of the armoured catfish family, Loricariidae) (Pardini and Trajano 1999). Possible explanations include the greater need to advertise resource use due to decreased prey availability. Fewer spraints were also observed for *L. longicaudis* while cubs were present (Quadros and Monteiro-Filho 2002) probably due to the risk of attracting predators.

DIET

Lontra longicaudis is classified as piscivorous (Eisenberg 1989; Emmons 1997). However, Pardini (1998) found that invertebrates made up a substantially higher proportion of prey items of a Brazilian population of *L. longicaudis*, compared to the Eurasian otter *Lutra lutra*. Similarly, crustaceans (*Aegla*, *Macrobrachium* spp.) appear to be dominant prey items of Trinidadian otters (Devenish and Nelson pers. obs.). A possible explanation for this specialisation is variation in dentition, as the crowns of molars are wider in *L. longicaudis* than in *L. lutra* (Pardini 1998).

Additionally, preference for slow-moving, bottom-dwelling prey such as *Aegla schmitti*, and *Trichodactylus fluviatilis* has been reported for *L. longicaudis* (Pardini 1998), suggesting the importance of low escape ability. Prey choice is therefore a trade-off between foraging success and prey quality (i.e. calorific value).

BREEDING

Most otter species typically reach sexual maturity at two years (Kruuk 1995). Although no reproductive records exist for the wild population in Trinidad, *Lontra longicaudis* is thought to breed mainly from March to May (Larivière 1999). However, cubs have been reported during October and December in Suriname (Mason and MacDonald 1986). Litters are typically made up of one to five cubs (Larivière 1999). Male *L. longicaudis* play no role in rearing offspring (Larivière 1999). *L. longicaudis* females show evidence of delayed implantation (Larivière 1999). This ability to suppress the development of an embryo for months, allowing a female to mate while still having dependent offspring, is also found in *L. canadensis* (Kruuk 1995).

CONSERVATION STATUS

The status of the Neotropical River Otter is categorised as 'data deficient' in the IUCN Red List 2004 (IUCN 2005). However, it is designated as 'vulnerable' in Mexico, Argentina, Brazil and Uruguay (IUCN 2005) and is commonly classified as 'endangered' in Trinidad (EMA 2001). Although the IUCN (2005) lists its pres-

ence in Trinidad as 'uncertain' it has long been known to exist there (Thomas 1892; Ulrich 1895; Harris 1968; Alkins 1979). Harris (1968), in his review of the Lutrinae, described the Trinidad subspecies *L.l. enudris* as rare. Another indication of its conservation status is the fact that *L. longicaudis* remains listed on Appendix I of the Convention on International Trade in Endangered Species (CITES) (Emmons 1997), which prohibits the commercial trade in species threatened with extinction. *L. longicaudis* is currently legally protected within most countries where it occurs and in Trinidad it is protected under the Conservation of Wildlife Act (Ch 67:01).

The status of *L. longicaudis* is poorly known in Trinidad. According to the IUCN Specialist Group 'Otter Action Plan' *L. longicaudis* has been recorded in rivers located in the north, east and south of the island (Chehébar 1990). Nelson (pers. comm.) estimated the population to be between 200 and 500. More recent studies have recorded Neotropical River Otters in the Arima, Aripo, Las Cuevas, Madamas, Marianne, North Oropouche, Ortoire, Shark, and Yarra river systems in Trinidad (Lucas pers. comm.; Nelson pers. comm.; Quesnel pers. comm.; Nelson *et al.* 2004; Devenish 2003). Furthermore, a recent survey suggests that the distribution of otters is higher on the north-facing slopes of the Northern Range, in particular the Madamas Valley (Devenish 2003).

More mammals are in danger of extinction than species from all other major taxon (Bright 2000) and nearly a third of recent mammalian extinctions have occurred in the Caribbean islands (Pimm 1998). Additionally, a higher number of mustelids (38%) are threatened compared to all other mammal species (15%) (Bright 2000). The Trinidadian population of *L. longicaudis* falls into several categories of vulnerability to extinction (Primack 1998), including: small population size, low population density, specialised niche requirements, hunted by people, and large body size.

L. longicaudis is currently extirpated throughout much of its range (Eisenberg 1989), with intense hunting for fur, and human-induced habitat degradation and pollution, being likely causes of its decline and continued rarity (Larivière 1999; IUCN 2005). In this context, the specific conservation priorities listed for Trinidad in the IUCN Otter Action Plan are to initiate surveys to establish the distribution and to determine existing threats (Chehébar 1990) to *L. longicaudis*.

The unique semi-aquatic life of the otter requires that conservation strategies consider both its riverine and terrestrial habitat requirements. Otter conservation, through protecting a top-predator and a highly charismatic species, offers a chance to achieve this if done in conjunction with a wider watershed approach.

The Neotropical River Otter probably exists at a low population density in Trinidad. Little prime habitat remains on the island yet with increased awareness and watershed management, this species may be able to coexist with humans. In this context, stringent protected area infrastructure is necessary to protect vital *Lontra longicaudis* strongholds such as the Madamas Watershed.

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