

**ARTICLE**

**ESTIMATING RIVER OTTER *LUTRA LONGICAUDIS* POPULATION IN  
IBERÁ LAGOON USING A DIRECT SIGHTINGS METHODOLOGY**

**Aníbal PARERA**

*Fundación Vida Silvestre Argentina. Departamento de Conservación, Defensa 245 6º K  
1065 Buenos Aires, Argentina*

**Abstract:** The real status of the Neotropical river otter in Argentina is largely unknown. Heavy hunting pressure in the middle decades of the 20th century has subsided and the population is believed to be recovering, especially in protected areas. This study surveyed otters in the subtropical swampy Iberá lagoon using direct sightings. A high rate of otter sightings was found, indicating a good otter population in this area.

**Keywords:** *Lutra longicaudis* current status, distribution, Argentina

(Received March 18th, 1996, accepted July 7th, 1996)

**INTRODUCTION**

The neotropical river otter (*Lutra longicaudis*, Olfers 1818) has been poorly studied in its range, including Argentina. The species was listed as "vulnerable" in the IUCN/Red Data Book, but its real status is largely unknown in Argentina. It seems to have disappeared from some areas in the southern part of its original range, as a consequence of poaching, which was very intense during the middle of the century. Hunting pressure has shown a decrease since the eighties, and now this otter seems to be experiencing a population recovery, especially in protected sites, such as the present working area. However there is little information about this issue.

In Argentina we have broad surveys of *Lutra longicaudis*, reporting only "presence/absence" of the species, but never reaching a population density analysis in their goals (García-Mata, 1979; Parera and Bosso, 1991).

The main methodology employed for estimating otter populations in the world involve interpretation of signs (tracks and spraints mainly): for example "scent stations" in Georgia (USA), tracks in the snow in the Scandinavian Peninsula, radioactive spraints in Louisiana (USA) or inclusive "cold" spraints in Great Britain and other European countries (Clark et al., 1987; Skarén and Jäderholm, 1987; Shirley et al., 1988; Mason and MacDonald, 1986).

There are few population estimates based on direct observation of *Lutra* species (Lejeune and Frank, 1990; Ruiz-Olmo, 1996; Kruuk, 1995; Arden Clarke, 1986; Kruuk and Goudswaard, 1990), principally because otters are elusive animals.

In this work I employed a direct sightings sample method for estimating the otter population in a subtropical swampy lagoon.

**MATERIAL AND METHODS**

The work was carried out along the perimeter of the Iberá lagoon (28° 30' S, 57° 10' W), one of the most important water bodies (51 square kilometres) of the "Iberá swamps and lagoons system", in the Iberá Provincial Reserve, Corrientes Province (Figure 1).

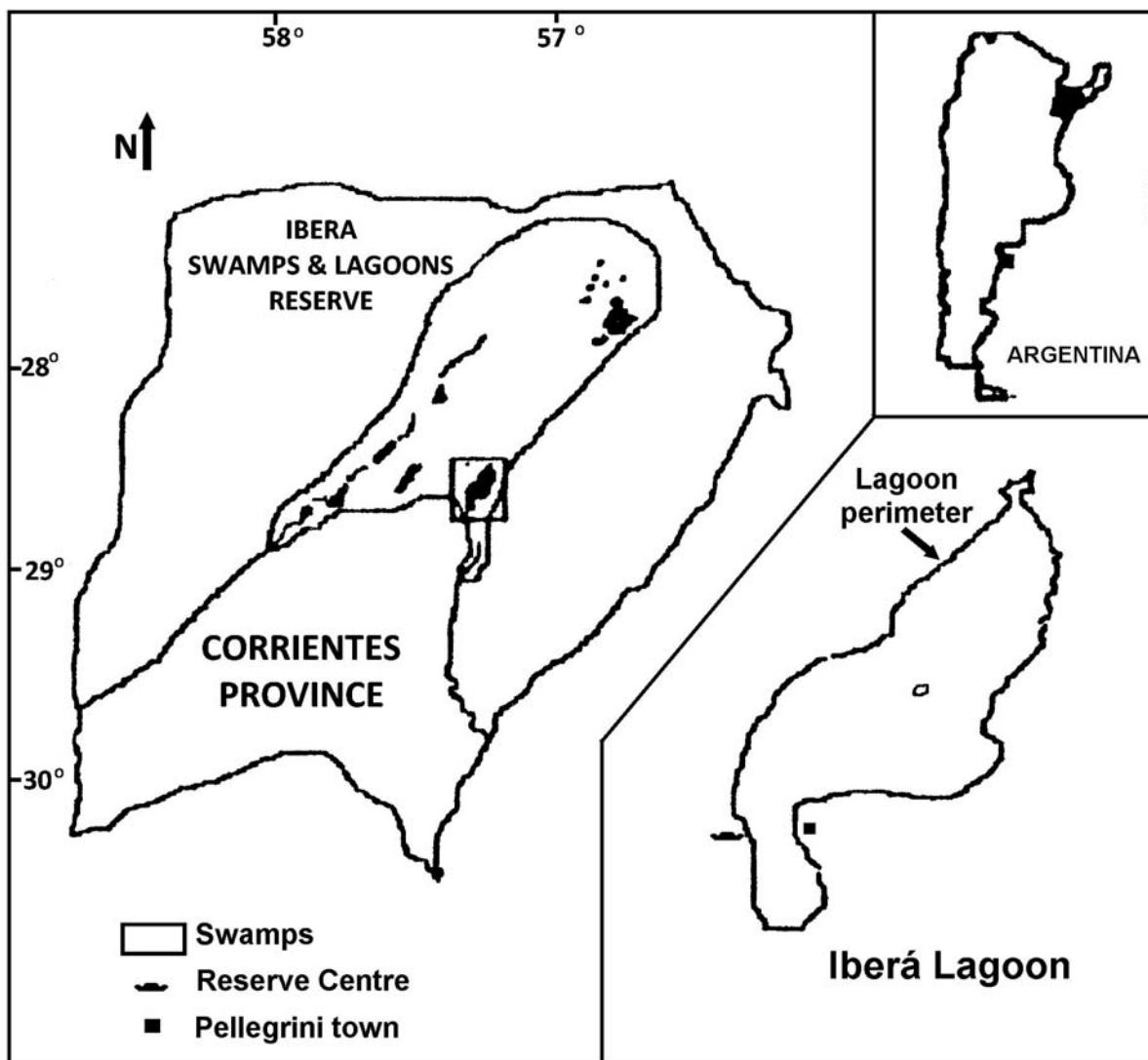


Figure 1: Iberá lagoon perimeter, and situation in Corrientes Province and Argentina.

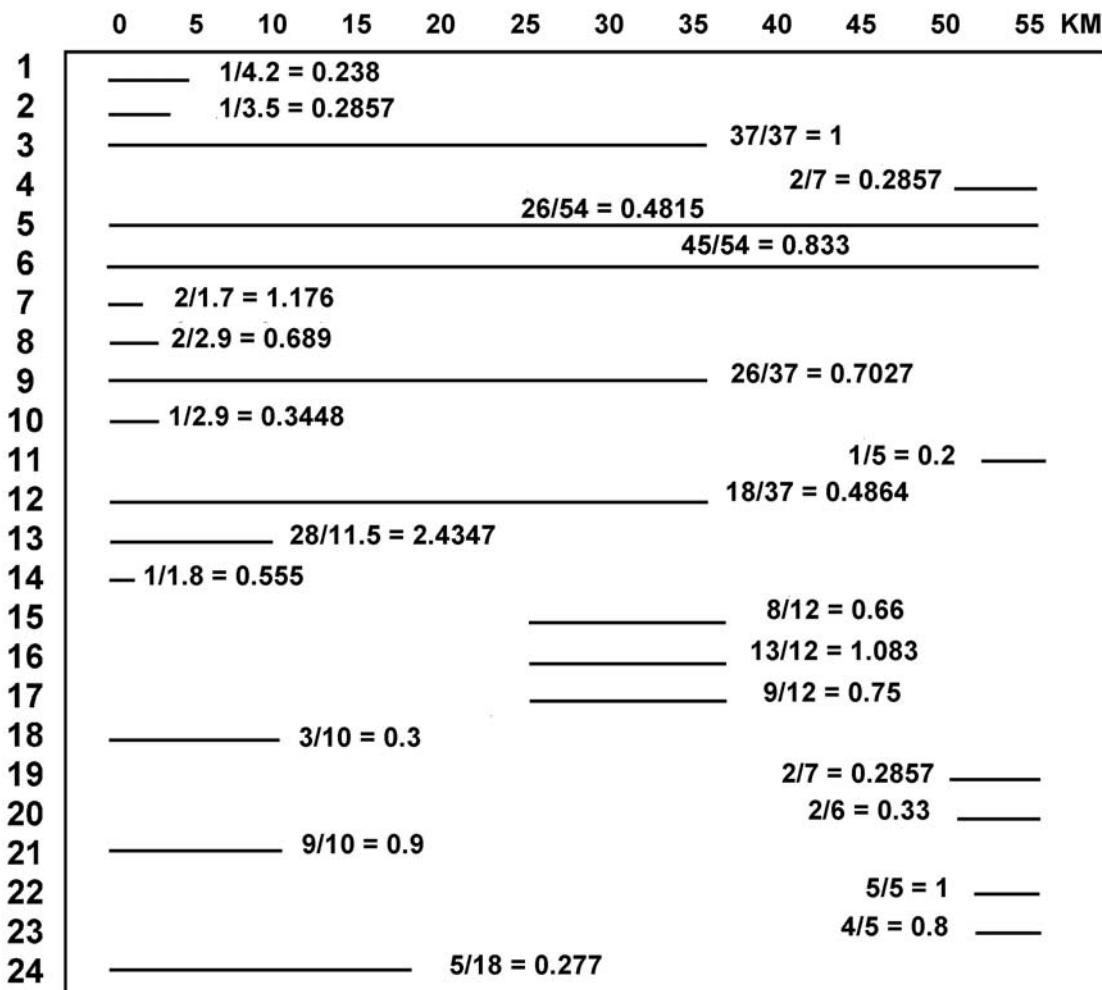
The coastline consists of the "embalsado" (organic floating soil) with vegetation community largely dominated by plants of the genera *Thalia*, *Fuirena*, *Typha* and *Cyperus* (8 percent of the perimeter); embalsado with woody plants, mainly *Nectandra microcarpa* (Lauraceae) and *Erithryna crista-galli* (Papilionaceae) (10 %) and dry coast (2 %). Water depth varies from 1 m to 3 m along the census line, occasionally reaching 5m. Neiff (1981) offers a detailed description of this particular type of wetland.

Censuses were carried out using a silent "carpinchera" canoe, propelled by a large bamboo. Twenty four censuses (two observers each) were carried out between November 1989 and January 1992. For data analysis, I assume a constant otter density through the working period. Two of the samples covered the total perimeter (54 km) and the rest were partial, as is shown in Figure 2, totalling 222.3 km. Adults and subadult otters (recognized by their body size) were counted using 10 x 50 binoculars. Each otter was recorded only when it was clear that it had not been counted before in the same census (double counting avoided).

The total field work consisted of 389 hours of navigation and 331.3 linear kilometres of coast, considering total and partial census.

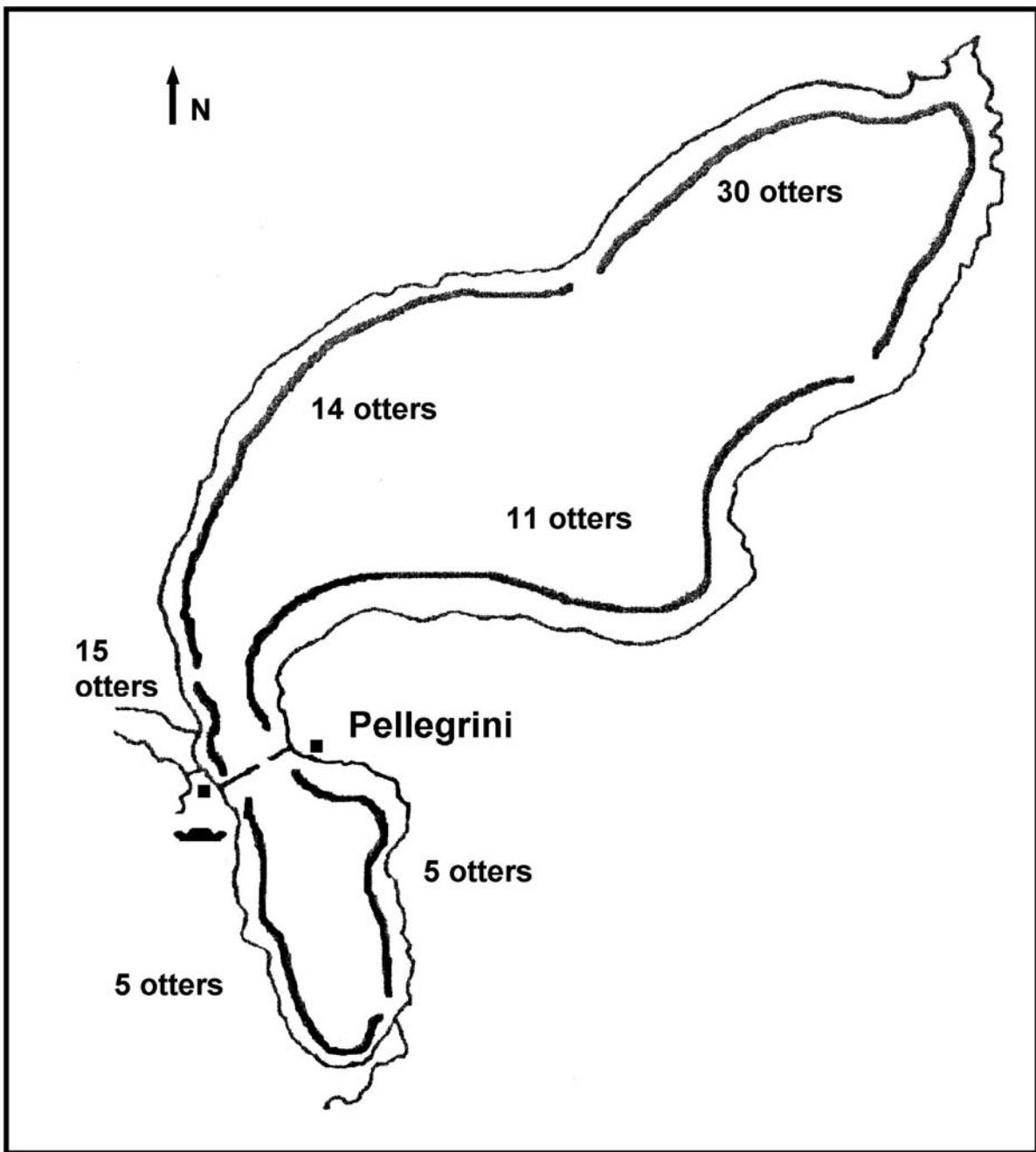
## RESULTS

The total for all censuses was 251 sightings, implying 0.645 otters per hour navigated and a mean of 0.81 otters per coastal kilometre. The more successful of the total perimeter censuses (number 6 in Figure 2), reported 45 otters sighted. It was considered that the minimum number of otters along the lagoon perimeter was 0.82 otters per coastal kilometre. In partial censuses, higher values were obtained (Figure 2).



**Figure 2:** Length and relative location of the samples ("census"). The X axis represents the length of the perimeter with "0" in the "Interpretation Centre" of the Reserve (see Figure 1), advancing in clockwise sense. The 24 samples are indicated along Y axis. Census 5 and 6 covered the total perimeter. The formula indicates "otters/km=density observed".

Using these partial censuses, a range of "more accurate" density values was estimated. The lower value of this range of densities was obtained by summing the partial results of the coastal segments showed in Figure 3. This produced an estimate of 80 otters for the total perimeter (1.48 otters/coastal km). The segments in Figure 3 were defined using environmental considerations (such as vegetation type, coast irregularities) and having consistently spaced start and end points for the transects. The top of the range was estimated extrapolating the more successful partial census, which was number 13 in Figure 2. This indicated a maximum of 131 otters (2.43 otters/km x 54 km) for the total lagoon perimeter.



**Figure 3:** Iberá lagoon perimeter divided in six segments with a minimum reliable number of otter for each.

Thus, the "more reliable range" was between 80 and 131 otters (1.48 – 2.43 otters/km). This range is listed in Table 1 with other numbers obtained for wild otter densities by other authors.

## DISCUSSION

At least in this part of its range and in this type of habitat, where otters show high levels of diurnal activity, direct counts can give a good estimate of population numbers. Most of the discrepancy between the values in the sample results could be attributed to climatic

conditions, mainly wind, which makes sightings of swimming otters difficult, and different activity patterns or habitat use of the species throughout the year, and also on a daily basis.

The density figures obtained here are amongst the highest reported for *Lutrinae* (the comparison among different species of genus *Lutra* is generally accepted, see Mason and Macdonald, 1986; Kruuk, 1995; Ruiz-Olmo, 1996). For example, in marine habitats of the northern Hemisphere - where the numbers reported are considered the highest – the densities reported reach approximately one otter per linear kilometre of shoreline (see Table 1).

**Table 1:** Some examples of otter density reports in other parts of the world.

Species	District	Habitat	Density	Method	Source
<i>Lutra canadensis</i>	Alaska	Marine coast	0.47-0.53/km	Telemetry	Larsen (1983)
	Alaska	Marine coast	0.85/km	Telemetry	Woolington (1984)
	Alberta	Lake	0.1-0.06/km	Telemetry	Reid (1984)
	Idaho	Mountain river	0.26/km	Telemetry	Melquist & Hornocker (1983)
	Texas	Swamp	1 otter per 71 - 106 ha	Telemetry	Foy (1984)
<i>Lutra lutra</i>	Louisiana	Swamp	1 otter per 86 ha	Radioactive Scats	Shirley et al (1988)
	Shetland	Marine coast	0.10-2.61/km	Direct counts + otter dens	Kruuk et al (1989)
	Shetland	Marine coast	~1/km	Direct counts (tagged otters)	Kruuk & Moorhouse (1991)
	Sweden	Lake & river	0.2-0.5/km	Tracks	Erlinge (1968)
	Byelorussia	Rivers, lakes, channels	0-0.6/km	Tracks	Sidorovich & Lauzhel (1992)
<i>Lutra maculicollis</i>	Spain	Rivers	0.1-0.91	Direct counts	Ruiz-Olmo (1995)
	Tanzania	Tropical lake	0.9-1.0/km	Direct counts	Kruuk & Goudswaard (1995)
	Argentina	Subtropical lake	1.48/2.43/km	Direct counts	This study

This fact probably reflects the high productivity of this type of subtropical lagoon set in a swampy matrix. But, on the other hand, it is important to consider that this is not an entirely linear habitat, due to an interface existing between the water body and the swamps, rich in ponds and creeks, that maximize the habitat supply (i.e. prey and shelter). Thus the values obtained here, if presented in a linear sense, are probably over-estimated. I have no data about how far the otters from the shoreline in the water body or swamps, so the data cannot be presented in surface terms.

This present communication contributes a first estimation of the *Lutra longicaudis* density in this type of habitat. I believe this area is quite representative of nearby similar environments with low human impact in the central portion of the Corrientes Province, Argentina.

**Acknowledgements:** I am very grateful to the Iberá Reserve staff for their collaboration in the field and to Lic. Alejandro Vila for his comments on the manuscript.

## REFERENCES

- Arden-Clarke, C. H. G. (1986).** Population density, home range size and spatial organization of the Cape clawless otter, *Aonyx capensis*, in a marine habitat. *J. of Zoo., London* **209**:201-211.
- Clark, J., Hon, T., Ware, K., Jenkins, J. (1987).** Methods for evaluating abundance and distribution of river otters in Georgia. *Proc. Annu. Conf. SEAFWA* **41**: 358-364.
- Foy, R. (1984).** Seasonal movement, home range, and habitat use of river otter in southeastern Texas. MSc. Thesis, Texas A&M Univ., College Station, 101 pp.
- Erlinge, S. (1968).** Territoriality of the otter *Lutra lutra* L. *Oikos* **19**: 81-98
- García Mata, R. (1979).** Report on *Lutra platensis* and *Lutra provocax* in Argentina. Otter Specialist Group report to IUCN/SSC.
- Kruuk H (1995).** Wild otters: predation and populations. Oxford University Press, Oxford, UK
- Kruuk, H., Moorhouse, A. (1991).** The spatial organization of otters (*Lutra lutra*) in Shetland. *J. Zool. Lond.* **224**: 41-57.
- Kruuk, H., Moorhouse, A., Conroy, J.W.H., Durbin, L., Fears, S. (1989).** An estimate of numbers and habitat preferences of otters *Lutra lutra* in Shetland, UK. *Biol. Cons.* **49**: 241-254.
- Kruuk, H., Goudswaard, P.C. (1990).** Effects of changes in fish populations in Lake Victoria on the food of otters (*Lutra maculicollis* Schinz and *Aonyx capensis* Lichtenstein). *Afr. J. Ecol.* **28**: 322-329.
- Larsen, D. (1983).** Habitats, movements and foods of river otters in coastal southeastern Alaska. MSc. thesis. Univ of Alaska.
- Lejeune, A. & Frank, V. (1990)** Distribution of *Lutra maculicollis* in Rwanda: Ecological constraints *IUCN Otter Spec. Group Bull.* **5**: 8- 16
- Mason, C., Macdonald, S.M. (1986).** Otters: Ecology and Conservation. Cambridge University Press, London.
- Melquist, W., Hornocker, M. (1983).** Ecology of river otters in west central Idaho. *Wildlife Monograph* **83**: 1-60.
- Neiff, J. (1981).** Panorama ecológico de los cuerpos de agua del nordeste argentino. VI Jornadas argentinas de zoología. pp. 115-151.
- Parera, A., Bosso, A. (1991).** Mustélidos acuáticos del río Iguazú superior. FUCEMA. 35pp. Ined. report.
- Reid, D.G. (1984).** Ecological interaction of river otters and beavers in Boreal ecosystem. Master Thesis. University of Alberta, Calgary, Alberta. 199 pp.
- Ruiz-Olmo, J. (1995).** Visual census of Eurasian otter (*Lutra lutra*): a new method. *Habitat* **11**: 125-130.
- Shirley, M., Linscombe, R., Kinler, N., Knaus, R., Wright, V. (1988).** Population estimates of river otters in a Louisiana coastal marshland. *J. Wildlife Manag.* **52**: 512-515.
- Sidorovich, V.E. & Lauzhel, G.O. (1992)** Numbers of Otters and Approach to Population Estimation in Byelorussia *IUCN Otter Spec. Group Bull.* **7**: 13 - 16
- Skarén, U., Jäderholm, K.K. (1987).** Otter (*Lutra lutra*) count in Central Finland in 1986-1987. *Memoranda Soc. Fauna Flora Fennica* **63**: 101-104.
- Woolington, J. (1984).** Habitat use and movements of river otters at Kelp Bay, Baranof Island, Alaska. MSc. Thesis Univ. of Alaska, Fairbanks, Alaska. 147 pp.