

**IUCN OTTER SPECIALIST GROUP BULLETIN
VOLUME 18 ISSUE 2 PAGES 86 - 92**

Citation: González, I. & Utrera, A. (2004)Distribution of the Neotropical Otter *Lontra longicaudis* in the Venezuelan Andes: Habitat and Status of its Population *IUCN Otter Spec. Group Bull.* 21(2): 86 - 92

**DISTRIBUTION OF THE NEOTROPICAL OTTER *Lontra longicaudis* IN
THE VENEZUELAN ANDES: HABITAT AND STATUS OF ITS
POPULATION**

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(received 12th September 2001, accepted 5th January 2002)

Abstract: The current distribution and status of *Lontra longicaudis annectens* on the Southern slope of the Venezuelan Andes was established by carrying out interviews with local people. Following this, 25 rivers were surveyed for direct evidence of the presence of this species. The species was recorded on 23 of these rivers, and a clear decreasing trend in the species' population was detected. Based on these results, the main threats for the species appear to be reduction of their natural habitat and the contamination of watercourses, with illegal poaching of secondary importance. It is suggested that more detailed studies are carried out to quantify species' abundance, identify more precisely the potential factors determining population decrease, and detect optimal sites for its protection.

INTRODUCTION

The Neotropical river otter *Lontra longicaudis* is widely distributed in America, ranging from central Mexico to southern Peru and Uruguay (Wilson and Reeder, 1992). Three sub-species are believed to occur in Venezuela: *Lontra longicaudis enudris* and *Lontra longicaudis longicaudis* south of the River Orinoco, and *Lontra longicaudis annectens* to the north (Larivière, 1999). The latter is distributed throughout the Lago de Maracaibo Basin (Zulia State), the Andes, and the central chain of mountains (Bisbal, 1989; Linares, 1998) and is considered as data deficient by the IUCN (Reuther, 1999). In Venezuela, *L. l. annectens* is considered the most threatened species due to the significant destruction of its original habitat and the contamination and reduction in water bodies (Rodríguez and Rojas-Suárez, 1995). Until the beginning of this research programme (July, 1999), the occurrence of this sub-species on the southern slopes of the Venezuelan Andes had only been referenced in recent literature by a single visual record. Our main objective was, therefore, to confirm the occurrence of *L. l. annectens* along a strip of ca. 340 km on the southern flank of the Venezuelan Andes, evaluate the current status of its population, and describe the characteristics of the habitat with which the species is associated.

STUDY AREA

The study area covers a surface area of about 7700 km², altitudes range from 200 to 700 m, and piedmont and mountain landscapes predominate (Fig 1). The average annual temperature fluctuates between 16 and 20°C and there is a marked seasonality in precipitation. The annual average precipitation varies between 1300 and 1800 mm per year. The original vegetation is made up of moist and semi-moist forest, presently reduced and fragmented. Although some unmodified forest remains, areas devoted to growing coffee, subsistence agriculture and extensive cattle raising predominate.

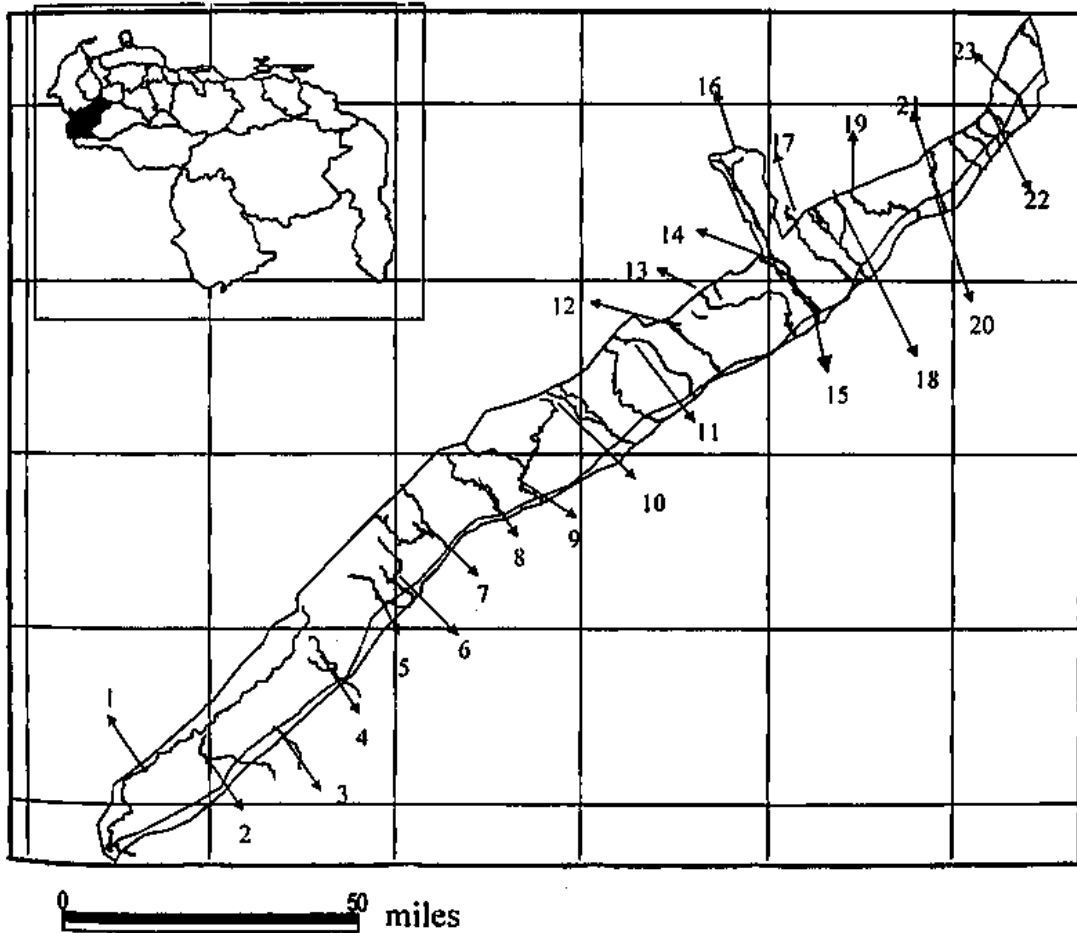


Figure 1: Location of the study area and sampling sites en the Southern slope of the Venezuelan Andes.

METHODOLOGY

The current distribution and population status of *L. l. annectens* was assessed in the following manner:

1. Preliminary sampling sites were chosen at localities where species' occurrence had been confirmed or was suspected (based upon cartographic information on hydrology, vegetation and current use of land obtained from a GIS map projection of 1:250,000).
2. Every site was visited and local people interviewed in order to gather information on the occurrence and abundance of the species. With the aid of semi-structured and dynamic questionnaires, we asked questions about the current and past occurrence of the species, current and past abundance, recent sightings, and potential uses of the species (e.g. poaching, as pets, magic or religious use, others). Additional sampling sites were added based upon the information provided by locals and other researchers working in the area.
3. At each sampling point, surveys of about 600 m, both upstream and downstream from the initial point (see Macdonald 1990), were undertaken with the aim of detecting latrines or other signals revealing the presence of the species.
4. In order to establish abundance and use of habitat, we gathered data on the number and spacing of latrines, as well as recording their geographical position with a GPS receiver (Magellan 315; precision = 10m).
5. Bodies of water and adjacent areas were characterised using the following parameters: water quality (physical/chemical characteristics, hardness, and transparency; measured using Oximetro YSI 51B, and a Secchi disc), vegetation (type and cover, stratification, life forms), and human pressure (accessibility, distance and size of the nearest human settlement).

RESULTS AND DISCUSSION

This study provided new information regarding the distribution of *L. l. annectens* in Venezuela. The presence of otters was confirmed in 23 of the rivers draining towards the Southern slope of the Venezuelan Andes (Table 1, Fig. 1) and, in 14 of these rivers, signs of the presence of the species were collected or detected, including latrines, direct observation, presence of holts, and animals killed by dogs. Another nine localities counted as positive arose from the information provided by interviews with locals or data provided by other researchers. In one case a visual record of the species was obtained on the River Tucupido, Portuguesa State (González and Utrera, 2000), and the carcasses of two animals killed by dogs were found on the River Morador, also in the Portuguesa State. Only on two of the rivers where otter presence was suspected did we not find any evidence. However, on one of these (Paguey), locals assured us that otters were abundant in the past. Analysis of the results of the interviews suggests a decreasing trend in the species' population as most of those interviewed knew the otter and had frequently observed it, but that it was currently scarce and had disappeared in some localities.

Table 1. Sampling sites, geographic location, altitude, type of record and degree of human intervention

Location	State	Coordinate N	Coordinate W	Altitude a.s.l	Type of record	Degree of Intervention
Escaguey	Barinas	08°34'44"	70°29'03"	220	L	high
Paguey	Barinas	08°33'02"	70°29'35"	200	N	high
Las Acequias	Barinas	08°24'58"	70°42'09"	230	L-RM	middle
Bumbura	Barinas	08°19'32"	70°47'11"	295	L	low
Socopó	Barinas	08°15'17"	70°50'26"	225	L	high
Curbatí	Barinas	08°33'10"	70°36'17"	380	L	low
Caparo	Barinas	07°41'21"	71°27'00"	320	L	high
Capitanejo	Barinas	07°59'30"	71°00'52"	320	L	low
Sta. Barbara	Barinas	07°46'17"	71°17'03"	220	L	low
Quiu	Barinas	08°10'57"	70°54'05"	420	L	low
Sto. Domingo	Barinas	08°46'34"	70°23'58"	460	OP	high
Masparro	Barinas	08°55'35"	70°14'13"	380	L	middle
Boconó	Portuguesa	08°57'49"	70°07'23"	320	OP	high
Tucupido	Portuguesa	09°02'46"	70°03'45"	330	L-OdOP	middle
Guanare	Portuguesa	09°14'11"	69°55'48"	200	OP	high
Chabasquén	Portuguesa	09°22'05"	69°59'06"	650	N	low
Anús	Portuguesa	08°08'18"	69°56'24"	240	OP	low
Las Marías	Portuguesa	09°15'20"	69°46'23"	330	OP	low
Portuguesa	Portuguesa	09°14'58"	69°50'26"	460	OP	low
Morador	Portuguesa	09°17'08"	69°40'23"	335	L-Ope-RM	low
Ospino	Portuguesa	09°24'32"	69°29'42"	325	L-RM	high
Guache	Portuguesa	09°31'04"	69°21'19"	240	OP	high
Bumbum	Portuguesa	09°33'05"	69°21'36"	340	L	middle
La Reinosá	Portuguesa	09°22'16"	69°30'09"	240	OP	high
Acarigua	Portuguesa	09°37'14"	69°20'31"	360	OP	high

L: latrines;

RM: dens or holts;

OP: observations realised by other researchers or local people;

OdOp: direct sights realized by other people;

Ope; animal killed by dogs

A variable density of latrines per kilometre (1 to 4 latrines/km) was quantified throughout the survey area, the highest density being recorded on the River Ospino. Latrines were generally located on large stones in the main watercourse. Although the number of otters cannot be quantified based on the number of latrines, the number of signals may be correlated with their abundance (Macdonald, 1990; Soldatelli and Blacher, 1996). With this in mind, based upon both the number of signs and the distance between them, we estimated the presence of two or more family groups on the 7 km survey distance along the River Ospino. On this basis, the variability in latrine density was interpreted as an indication of the differing abundance of this species in the study area.

In general, watercourses were transparent, and had a maximum width of 40 m and a maximum depth of 1.8 m in pools. The rivers mainly had a moderate slope with an average water speed of 0.88 m/sec, and had a substrate predominantly comprised of gravel, large stones, and some sand. The average environmental temperature recorded was 32°C, and 26.1°C in the water. Usually, areas adjacent to these small rivers did not maintain much cover, a high level of riverine vegetation only appearing about 30 m away from the watercourse. The vegetation was usually modified by human activity and consisted mainly of perennial trees and shrubs, forming two or three strata with heights that varied between 15 and 25 m. There were also numerous climbing plants, epiphytes, and grasses. The degree to which each site suffered from human intervention is indicated in Table 1.

In the areas where the species was recorded, the minimum distance between the nearest human settlement and the sites where otters lived was measured in order to establish the tolerance of otters to human pressure. Such distances ranged from 300 m to 5 km. Although these are small settlements (1,000 to 2,000 inhabitants), we detected sites where human presence was very close and where the animals seemed not to be affected.

There has been a significant reduction in the original habitat in the region studied (Paredes, 1997; 2001) and the resulting disruption of hydrological systems and the resulting fragmentation of habitat are seen as the major contributing factors to the drop in numbers and range of this species (Rodríguez and Rojas-Suárez, 1995). In addition, based upon our own studies of habitat quality and interviews with local people and fishermen, we identified deforestation, contamination of water, and changes in the beds of watercourses as other major threats. Secondary threats include poaching for fur and incidental death caused by hunting dogs.

This study provided evidence for the presence of *L. l. annectens* in a strip of ca. 340 km on the southern slope of the Venezuelan Andes, where the species had not been recorded before. We also detected a clear decreasing trend in the population through interviews with local people. We consider that recent human colonisation of the areas adjacent to the otters natural habitats may significantly affect their survival in the future. None of the sites where otters were recorded is legally protected. However, there are two National Parks and other protected areas adjacent to the study area where no sampling has been carried out to date.

Due to the apparent population status of this sub-species in Venezuela, we strongly suggest that further intensive studies are initiated to quantify otter abundance, to identify more precisely the potential factors influencing population decrease, and to identify sites for more intensive protection.

ACKNOWLEDGEMENTS - *The International Otter Survival Fund (IOSF), Idea Wild, and the National University 'Ezequiel Zamora' (UNELLEZ) financed this project. We acknowledge the help of TSU José G. Quintero for his cooperation with the GIS, RNR Engineer Diego Molina, who acted as field assistant, and Alvaro Soutullo for translating this manuscript to English.*

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Résumé : Répartition Actuelle de la Loutre le Rivière Sud-Américaine *Lontra longicaudis annectens* le Versant Sud des Andes Vénézuéliennes. Caractérisation des Habitats et Première Évaluation du Statut des Populations

Nous avons interviewé les populations locales du versant sud des Andes vénézuéliennes, afin d'y déterminer la répartition actuelle et le statut des populations de loutres de rivière sud-américaine *Lontra longicaudis annectens*. Pour confirmer leur présence, nous avons ensuite contrôlé 25 rivières différentes. Bien que 23 d'entre elles se soient avérées effectivement positives, une régression des populations de loutres a été clairement constatée. Sur la base de ces résultats nous en avons déduit que les principales menaces qui pèsent sur l'espèce sont la réduction de leurs habitats naturels et la contamination des cours d'eau, secondairement le braconnage. Nous envisageons d'engager des études plus poussées pour estimer l'abondance de l'espèce, discerner plus précisément les facteurs potentiellement responsables du déclin des populations, et identifier des sites optimaux pour sa protection.

Resumen: Distribución de la Nutria de Río Neotropical *Lontra longicaudis annectens* en los Andes Venezolanos. Hábitat y su Estado Poblacional

Con el objeto de determinar la distribución actual y el estado poblacional de *Lontra longicaudis annectens* en la slope sur de los andes de Venezuela, se realizaron entrevistas a pobladores rurales en el área de estudio. Posteriormente se efectuaron muestreos en 25 ríos con el fin de detectar evidencias de la presencia de esta especie, a través de registros directos e indirectos. Se registró dicha especie en 23 de los ríos visitados y se detectó una clara tendencia en la disminución de sus poblaciones. Con base a los datos obtenidos se determinó que el peligro más inminente que debe enfrentar la especie corresponde a la reducción de sus hábitat naturales, contaminación de los cuerpos de agua y en menor importancia la cacería ilegal. Proponemos efectuar estudios más detallados con el fin de cuantificar su abundancia, precisar los factores que influyen sobre la disminución de sus poblaciones y determinar lugares idóneos para su protección.