

SURVEY OF NEOTROPICAL OTTERS: TESTING METHODS TO ACCESS DISTRIBUTION

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ABSTRACT: The use of standardized methodologies to assess the distribution of species is important for comparing data collected in different areas and at different times. We evaluated the distribution of Neotropical otters (*Lontra longicaudis*) in 2 states in Brazil, the Taquari River Basin, central Rio Grande do Sul (RS) state, and the southern Rio de Janeiro (RJ) coast during 2002-2003. We surveyed 12 sites on 9 riverine systems (hereafter rivers) in RS and 9 sites on 9 rivers in RJ to search for the sign (primarily tracks and spraints) along 2 km of riverbank at each site, with 1 bank surveyed at RS and both banks at RJ. At RS, and RJ, respectively, 11 of 12 (92%) and 7 of 9 sites (89%) were positive for Neotropical otters. Among positive sites, the first sign was detected within the first 400 m at 90% of the sites at RS and within the first 1500 m at 90% of sites at RJ. Of the 9 sites surveyed in RJ, 5 were positive for sign on both banks, 2 were negative for sign on both banks, 1 was positive for sign on the chosen bank, and 1 was positive for sign on the bank that was not chosen. To develop a standardized methodology for Neotropical otters we recommend that future studies focus on the influence of riparian habitat conditions (e.g., flow characteristics, vegetative cover and human disturbance) and seasonal conditions on detection rates for the tracks, sparints, and other sign.

KEY WORDS: Brazil, *Lontra longicaudis*, Neotropical otter, sign surveys.

Otters are mustelids (subfamily Lutrinae) dependent on aquatic environment for food and shelter (Pardini 1998, Quadros and Monteiro-Filho 2001, Rheingantz et al. 2011). The populations of various otter species have undergone declines during the last century from persecution and habitat degradation (Foster-Turley et al. 1990, Ruiz-Olmo et al. 2001).

Because of the wide geographical range of the Neotropical otter (*Lontra longicaudis*; Olfers 1818), adequate, current knowledge on the species' conservation status throughout its range is scarce (Larivière 1999, Waldemarin and Alvarez 2008). Thus, Neotropical otters have been listed as 'data deficient' in the IUCN Red List of threatened species since 2000 (IUCN 2008).

Determining the distribution and abundance of a species is essential for their successful conservation and management. Moreover, the use of standardized methodologies is important for comparing distribution data collected from different areas and at different times. However, as otters live at low densities and are often nocturnal or crepuscular, studying their behavior and movements is not straightforward (Ruiz-Olmo et al. 2001). Additionally, obtaining data from aquatic habitats can be difficult, and efficacy and reliability of surveys are likely to vary among survey techniques (Melquist and Hornocker 1983). The presence of otters in an area is most easily ascertained through the detection of sign, including scats, tracks, food remains, and dens (Cezare et al. 2002).

Reuther et al. (2000) described the standard methodology for assessing Eurasian otter (*Lutra lutra*) distribution, which involved systematically selecting sites on a map and subsequently surveying each site for sign to determine the presence or absence of otters. Through radio-telemetry, Ruiz-Olmo et al. (2001) demonstrated that the standard methodology used by Reuther et al. (2000) was generally an effective and low-cost approach for portraying the distribution of Eurasian otters (*Lutra lutra*) in Spain.

The aim of our study was to provide additional information about the occurrence of Neotropical otters in different rivers within 2 regions of Brazil. Moreover, we provide suggestions for establishing a standard method for assessing the distribution of Neotropical otters based on techniques developed for *Lutra lutra*.

STUDY AREA

The study was conducted in 2 Brazilian territory states (Fig. 1): first focusing on the Taquari River Basin, central Rio Grande do Sul state (RS), and, second, on the southern Rio de Janeiro coast (RJ). During 2002 and 2003 we surveyed 12 sites on 9 riverine systems (hereafter rivers) in RS and 9 sites on 9 rivers in RJ. A survey site consisted of a 2-km section of riverbank.



Fig. 1. Locations of surveys conducted for the Neotropical otter at the Taquari River Basin, central Rio Grande do Sul state, and the southern Rio de Janeiro coast, Brazil, 2002-2003.

METHODS

The surveys were based on the locating and recording reliable sign (mainly tracks and spraints). Otters typically leave spraints on visible habitat features (e.g., stones, rocks, and base of trees) and in predictable locations (e.g., under bridges and at junctions of rivers) (Reuther et al. 2000, Ruiz-Olmo et al. 2001). The conspicuous nature of otter spraint marking enables researchers to easily verify the presence of otters in an area and estimate local densities based on the quantity of sign. This method of obtaining distribution data was originally developed for *Lutra lutra* (Reuther et al. 2000), and subsequently expanded to include other species of otter, such as the southern river otter (*Lontra provocax*; Chehebar 1985), and spotted-necked otter (*Lutra maculicollis*) and Cape clawless otter (*Aonyx capensis*) (Rowe-Rowe 1992).

We compared 2 different survey methods: 1) walking up to 2 km along one side of the river bank (at RS) and, 2) walking 2 km along both sides of the river bank (at RJ) from the same starting location. We initiated surveys at locations where there was easy access to the rivers (i.e., at bridges or at locations where the road was close to the river). At RS, we randomly surveyed 1 bank of each river using a “stop at the first sign” method. At RJ, we surveyed the entire 2-km survey distance along both shorelines

We used descriptive statistics (percentages) to express occurrence of positive sites and, for positive sites, the occurrence of the first sign in relation to distance surveyed from the beginning point of a survey.

RESULTS

At RS, and RJ, respectively, 11 of 12 (92%) and 7 of 9 sites (89%) were positive for Neotropical otters (Fig. 2). Only spraints were detected at RS. Spraints were the first sign encountered at RJ, but tracks and scratchings were also encountered. Among positive sites, the first sign was detected within the first 400 m at 90% of the sites at RS (Fig. 3) and within the first 1500 m at 90% of sites at RJ (Fig. 4). Of the 9 sites surveyed at RJ, 5 were positive for sign on both banks, 2 were positive for sign on 1 bank, and 2 were negative for sign on both banks.

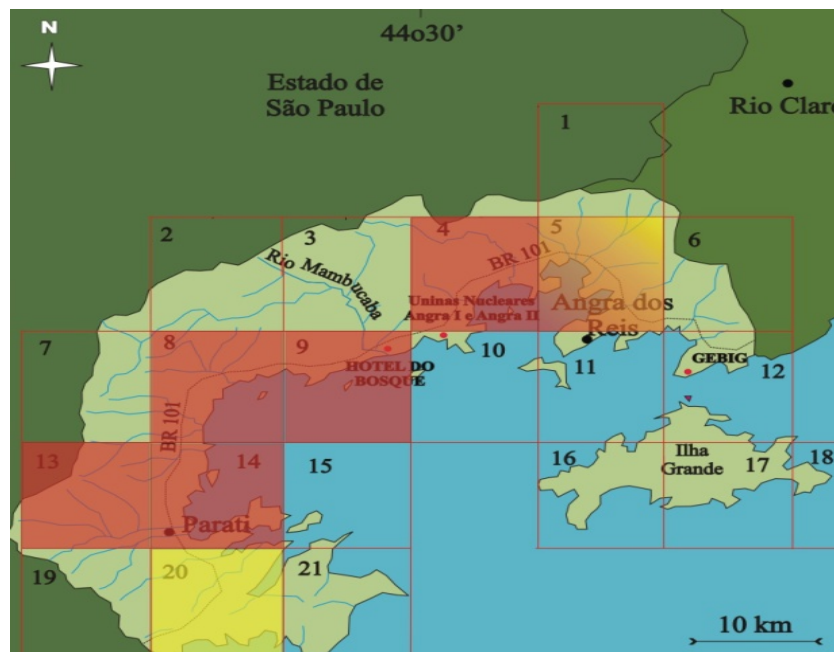


Fig. 2. Location of positives (red) and negative (yellow) sites for the Neotropical otter at southern Rio de Janeiro State, Brazil, 2002-2003.

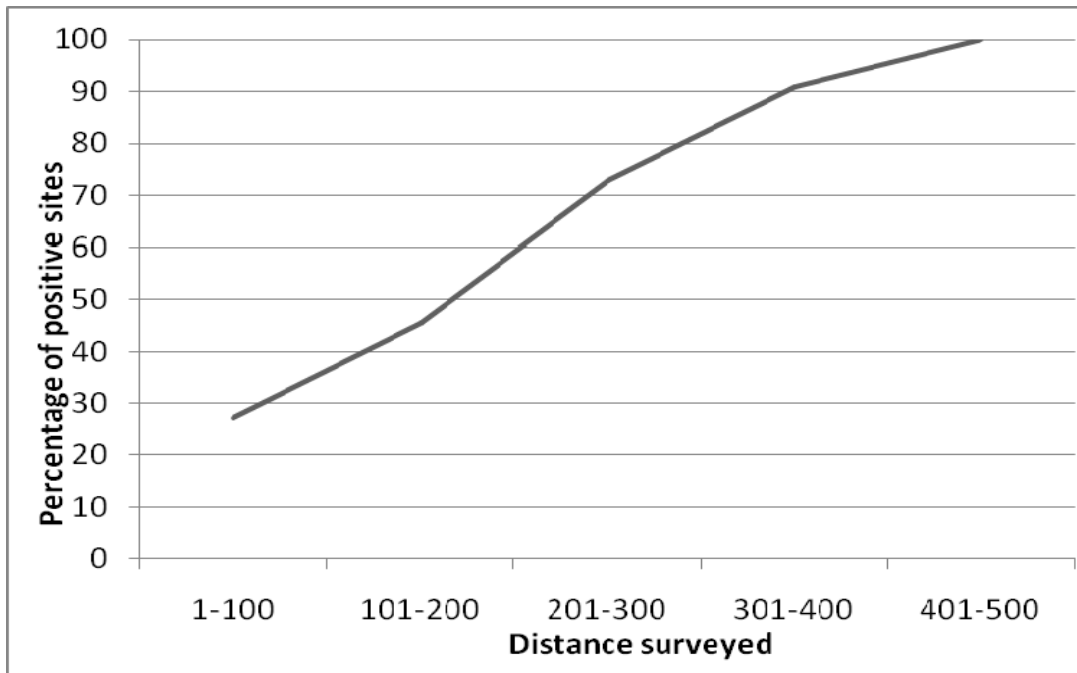


Fig. 3. Changes in the percentage of sites positive sites for the presence of Neotropical otters at the Taquari River Basin, central Rio Grande do Sul state, Brazil, 2002-2003.

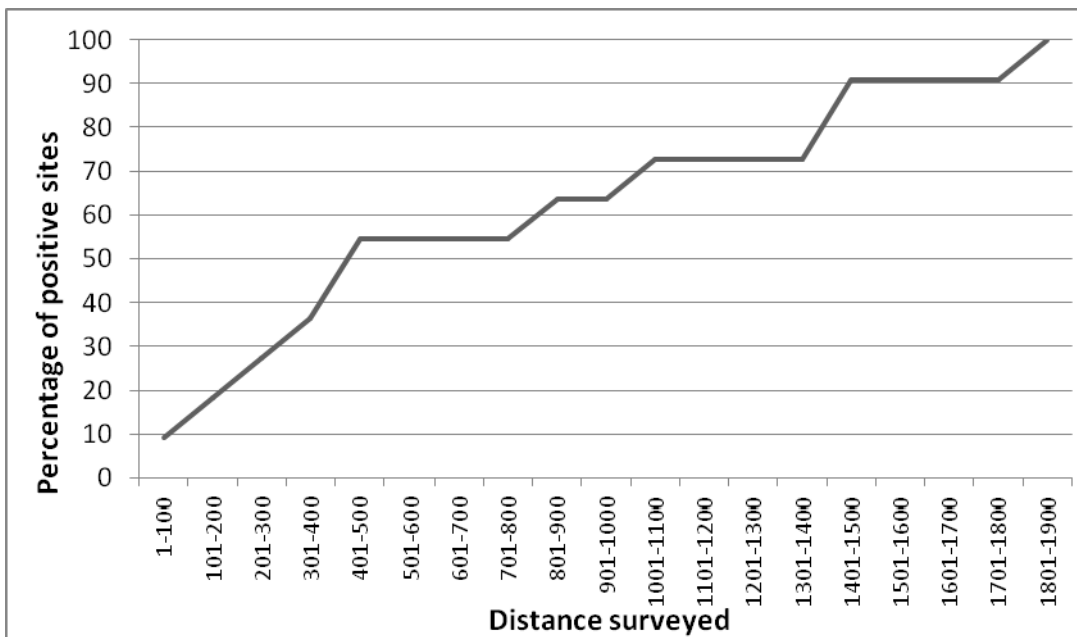


Fig. 4. Changes in the percentage of of sites positive sites for the presence of Neotropical otters in rivers of the southern Rio de Janeiro coast, Brazil, 2002-2003.

DISCUSSION

Accumulating information on the distribution of the Neotropical otter is essential to properly update its status on the IUCN Red List. Establishing proper conservation status is especially important for species such as the Neotropical otter, which cannot respond quickly to populations declines because of its low reproductive potential and dependence on aquatic habitats (Huerta 1992). Thus, efforts to increase knowledge and enhance the protection of this species are essential for developing proper management strategies (Cezare et al. 2002).

Sign-based surveys represent an obvious, initial approach to quickly gather conservation information about the Neotropical otter. Although surveys of this type have limitations (e.g., sign may be difficult to detect in thick vegetation or may be removed during rainfall) (Ruiz-Olmo and Gonsálbez 1997, Quadros and Monteiro-Filho 2002), the approach nonetheless can provide valuable information about the presence or absence of the Neotropical otter within and among aquatic systems.

Our study provides valuable preliminary information about the probability of detecting Neotropical otters at 2 rivers in Brazil. Previous studies demonstrate that sign surveys can provide a fairly accurate portrayal of the presence and distribution of Eurasian otters (Mason and Macdonald 1987, Reuther et al. 2000, Ruiz-Olmo et al. 2001). We likewise were successful in detecting the presence of Neotropical otters through sign surveys, but the preferred distance for surveys to detect the presence of Neotropical otters may differ from that of the Eurasian otter. Results of our study suggest that surveying at least 1500 m of shoreline is necessary for appropriately ascertaining the presence of Neotropical otters in riverine systems. However, additional studies are necessary to validate this suspicion, and those studies should include a variety of riverine and riparian habitat conditions (e.g., among regions, flow characteristics, and vegetative cover) to determine if a single survey distance is appropriate for all riverine systems. Assessment also should be conducted in a manner that enables comparison of detection rates among seasons (Reuther et al. 2000). Future studies also should evaluate the influence of disturbance in riparian and surrounding areas on detection rates. We recommend that these comparisons be conducted in a standardized (i.e., consistent) manner, with the goal of refining standardized methodologies for application in ongoing surveys. The contribution of additional research and the subsequent establishment of a reliable standard methodology for assessing the distribution of Neotropical otters are important for the successful conservation and management of the species.

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ENQUETE SUR LA LOUTRE A LONGUE QUEUE: ESSAIS DE METHODES POUR PRESENTER UNE DISTRIBUTION

L'utilisation de méthodes normalisées pour évaluer la distribution des espèces est importante pour comparer les données recueillies dans différentes régions et à différents moments. Durant l'exercice 2002-2003, nous avons évalué la distribution de la Loutre à longue queue (*Lontra longicaudis*) dans 2 états du Brésil à savoir le bassin de la rivière Taquari dans le centre du Rio Grande du Sud (RS), et la côte sud de Rio de Janeiro (RJ). Nous avons enquêté sur 12 sites dont 9 systèmes fluviaux en RS et 9 sites à RJ qui n'étaient que des rivières. Nous y avons recherché des indices (principalement les pistes et les épreintes) le long de 2 km de berges sur chaque site, en particulier sur 1 rive en RS et sur les deux rives à RJ. Respectivement en RS et à RJ, 11 des 12 sites (92%) et 7 des 9 sites (89%) étaient positifs. Parmi ces sites positifs, le premier signe a été découvert dans les 400 m pour 90% des sites en RS et dans les premiers 1500 m pour 90% des sites à RJ. Sur les 9 sites étudiés à RJ, 5 étaient positifs en indices sur les deux rives, 2 étaient négatifs sur les deux rives, 1 était positif sur la rive choisie, et 1 était positif sur la rive non choisie. Pour développer une méthodologie standardisée pour la Loutre à longue queue, nous recommandons que les études futures portent sur l'influence des paramètres environnementaux (le débit, la couverture végétale et les perturbations humaines) et les conditions saisonnières sur les taux de détection des pistes, des épreintes et autres signes.

ESTUDIO DE NUTRIA NEOTROPICAL: MÉTODOS DE ENSAYO DE ACCESO A LA DISTRIBUCIÓN

El uso de metodologías estandarizadas para evaluar la distribución de las especies es importante para la comparación de los datos recogidos en diferentes áreas y en diferentes momentos. Se evaluó la distribución de la nutria neotropical (*Lontra longicaudis*) en 2 Estados de Brasil, la cuenca del Río Taquari, en el centro del Estado de Rio Grande do Sul (RS) y la costa sur de Río de Janeiro (RJ) durante 2002-2003. Nosotros estudiamos 12 sitios en 9 sistemas fluviales (en lo sucesivo ríos) en RS y 9 ríos en RJ 9 sitios para buscar signos (principalmente las huellas y fecas) a lo largo de 2 km de la orilla del río en cada sitio, con 1 orilla estudiada en RS y ambas orillas en RJ. En RS y RJ, respectivamente, 11 de los 12 (92) y 7 de 9 sitios (89) fueron positivos para nutrias neotropicales. Entre sitios positivos, la primera señal fue detectada dentro de los primeros 400 m en 90 de los sitios en RS y dentro de los primeros 1500 m 90 sitios en RJ. De los 9 sitios muestreados en RJ, 5 fueron positivas para signos en ambas orillas, 2 fueron negativas para signos en ambas orillas, 1 fue positivo para signos en el banco elegido, y 1 fue positivo para signos en la orilla que no fue elegida. Para desarrollar una metodología estandarizada para la nutria Neotropical recomendamos que futuros estudios se centren en la influencia de las condiciones de hábitat ripario (por ejemplo, las características de flujo, cobertura vegetal y perturbación humana) y estacionales en las tasas de detección para las huellas, fecas y otros signos.