

IUCN

OTTER SPECIALIST GROUP BULLETIN

Volume 17 (1) October 2000



PRO LUTRA

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IUCN OTTER SPECIALIST GROUP BULLETIN

The IUCN Otter Specialist Group Bulletin appears biannually. Articles, reports, symposium announcements and information on recent publications are welcome. All submissions should be typed double-spaced. The submission of an electronic manuscript on diskette or by e-mail is strongly recommended. Reports should not exceed 2000 words in length, i.e. not to exceed four printed pages, including diagrams and tables. Articles may be longer. Diagrams, maps and tables should be included as a photocopy ready for reprint! A short abstract for translation into Spanish and French has to be included!

Articles will be fully reviewed. Authors are requested to add a notice as to whether they submit an article or a report.

Submit material for publication and requests for copies to:

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NOTE FROM THE EDITOR

For this issue I received so many manuscripts and additional information, on books, congress, call for information: etc., that I had to shorten the section on new publications to those which are either 'grey' or were sent to me by the authors. Additionally, I had to place some of these notices on the empty spaces on the last pages of articles, as this was the only possibility of not exceeding the critical page number of 56 pages, above which the postage becomes extremely expensive.

Thanks go to the few people who contributed to the printing and postage costs of issues 17/1 and 17/2. I had hoped that all that can afford it would contribute again this year but, unfortunately, many did not, although the leaflet to use a VISA-credit card was enclosed with the last issue.

Please send me any change of address in advance as, from every issue, 2-3 envelopes come back after weeks, or even months, due to changed addresses. This is a waste of money and to track the people costs a lot of time!

The printing of this issue was sponsored by 'Pro Lutra', an NGO from Switzerland which is presently preparing a reintroduction programme for *Lutra lutra* in Switzerland.

I would like to ask all of you to contribute photos for the title pages or coming issues as I have used all the photos I had.

Kevin Roche (Trebou) functions again as a reader for those contributions which have not been reviewed by at least one native speaker. Alvaro Soutullo (Uruguay) translated some of the abstracts into Spanish. I have to thank the 'Otter Bulletin Team' - Barbara Gutleb-Rainer (Oosterbeek), Hans van den Berg (Wageningen), Els Hoogsteede-Veens and Erwin Hellegering (GRAFISCH SERVICE CENTRUM VAN GILS, Wageningen) - for their continuing help. Tobias and Helena once again did all the work with the envelopes.

CONGRESS ANNOUNCEMENTS

VIII Otter Colloquium

For the moment I can tell you that for early registration cost is US\$ 350. For those coming from Asia, Africa, Central and South America, Eastern Europe and Russia the registration cost is US\$ 100.

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IUCN/SSC OSG GROUP

FROM THE CHAIRMAN'S DESK

Using a metaphorical expression from last years Nobel Prize winner Gunter Grass, I would describe developments over the last few months as "progress is a snail". Most projects described in the last issue of our Bulletin are still in progress. Unfortunately the least progress so far has been achieved in the revision of the Otter Action Plan (OAP). Though I wrote in the last issue that I was not panicking about the numerous manuscripts which were announced but had not yet arrived, I now have to state that a mixture of frustration and panic is setting in when I count the very few manuscripts that I have received since then.

One positive aspect of this matter is the fact that the experience resulting from this process will make the decision easier as to who will become a member of the Otter Specialist Group (OSG) for the next four year period. As you all may know, after the World Conservation Congress to be held in Amman in October of this year, Specialist Group Chairs will be asked by the IUCN/SSC to nominate the members of their groups. As is laid out in the SSC guidelines, the main responsibilities of Specialist Group members are:

- To maintain contact with the Specialist Group Chair, responding as promptly as possible to specific requests. **SSC cannot afford to carry non-active members.**
- To work with the Specialist Group to gather and manage species data and information.
- To assess the conservation status of species against the IUCN Red List Categories: this activity is the essential component in compiling the IUCN Red Lists of Threatened Animals and Plants.
- To promote understanding and use of the IUCN Red List Categories as appropriate.
- To contribute towards the compilation of Action Plans; and/or promotion of their implementation, monitoring, and evaluation; and/or the compilation of revised Action Plans that record progress since the first edition.

These criteria will form the basis for the decision on membership of the OSG and the opportunity to join the information resources and the policy making processes of IUCN/SSC for the next four years. There are three main reasons why I insist on keeping the schedule for the revision of the OAP:

1. it was a decision of the OSG, made at the last International Otter Colloquium in Trebon, to finish this revision process by the year 2000;
2. it is unfair to those authors of sub-chapters of the OAP who have completed their jobs in time to ask them to update and revise their contributions because other authors did not keep the deadlines;
3. according to the agreed deadlines, a workshop has been prepared for November of this year to ensure the efficient implementation of the OAP.

This workshop, entitled 'How to Implement the Otter Action Plan?', will be held at the German Otter Centre on November 4-7, 2000. The program contains the following six workshops:

1. Expectations from the different continents.
2. How to implement the OAP on the international level?
3. How to implement the OAP on the national level?
4. How to implement the OAP on the scientific level?
5. How to introduce the OAP to the public?
6. Results and recommendations.

All leading otter experts from around the world have already agreed to join this workshop and some external experts have agreed to share their experiences with the otter people. The complete program and registration forms for people who are interested in participating are available by fax (+49-5832-980851) or by e-mail (Aktion.Fischotterschutz@t-online.de).

Another meeting (for invited delegates only!) is planned for September 21-25, 2000 on the Isle of Skye, Scotland. The aim of this conference, entitled 'Toxicology in Otters', is to bring together experts in the field of toxicology and to create a protocol for post mortem work in order to standardise methods and provide meaningful data for comparative purposes. More information is available from the International Otter Survival Fund (IOSF@aol.com).

Detailed information is now also available for the next International Otter Colloquium to be held on January 20-25, 2001 in Valdivia (Chile) on the website <http://www.ottercolloquium.cl>, prepared by Gonzalo Medina. We all are aware that it will be very difficult to ensure a high number of participants in a place as expensive to travel to as Chile. During the past months, Gonzalo and I have made great efforts to find sponsors to allow people from 'poorer' countries to join this most important otter meeting, which takes place only every fourth year. However, it looks like responsibility for finding sponsorship for travel expenses will have to stay with the participants as most of our applications for funds were not successful. On the other hand, it would be very important, as one of the main goals of this conference, to have as high a number of participants from as many countries as possible. This could support otter conservation and increase possibilities for otter research in Latin America as a whole. Keeping in mind that four of the thirteen otter species belong to this region, this target should encourage everyone interested in otters to try to join this colloquium.

A good example of the progress which can arise from international meetings is given by our Asian colleagues. As reported in the last issue, they organised a workshop on 'conservation and public awareness of otters' at Taichung (Taiwan), in December last year. The proceedings of this conference have now been published by Charles Santiapillai and Hiroshi Sasaki. This 146 page book gives, in its 22 chapters, a remarkable overview of public awareness and conservation activities from Asia, Europe, North and Latin America. For more information, please contact The Otter Research Group in Japan, c/o Hiroshi Sasaki (i79677g@wisdom.cc.kyushu-u.ac.jp).

I would be glad if I should also be able to announce the publication of the proceedings of the last International Otter Colloquium. However, unfortunately, Robert Dulfer is still missing funds for their printing. Any support or ideas on how to overcome this dilemma are welcome.

Another important publication will be available soon as volume 12 of the journal HABITAT. Entitled 'Surveying and Monitoring Distribution and Population Trends of the Eurasian Otter (*Lutra lutra*)', the authors (Claus Reuther, Dietrich Dolch, Rosemary Green, Jutta Jahrl, Don Jefferies, Anna Krekemeyer, Marcela Kucerova, Aksel Bo Madsen, Kevin Roche, Jerzy Romanowski, Jordi Ruiz-Olmo, Jens Teubner and Anabela Trindade) have evaluated all available survey reports from Europe carried out using the so-called 'Standard Method' and have prepared new guidelines for the use of this method. The book will be published in August. More information is available from the German Otter Station (Aktion.Fischotterschutz@t-online.de).

Last, but not least, it needs to be announced that the SSC has urged all Specialist Groups to establish 'Red List Authorities'. These authorities will evaluate the species under their jurisdiction against the new Red List Categories and Criteria adopted in 1994. In the future, no species will be included on the IUCN Red List unless it has been evaluated by an appointed Red List Authority. I am very happy to announce that Dr. Syed Ainul Hussain, of the Wildlife Institute of India, has agreed to act as the Red List Authority for all otter species. Since there are strict regulations and schedules for these authorities I ask all members of OSG to support his work wherever possible.

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ARTICLE

FEEDING OF THE NEOTROPICAL RIVER OTTER (*Lontra longicaudis*) IN THE COASTAL REGION OF THE RIO GRANDE DO SUL STATE, SOUTHERN BRAZIL

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Abstract: In the coastal region of the Rio Grande do Sul State, in southern Brazil, three areas were monitored to study the feeding habits of the neotropical river otter (*Lontra longicaudis*) using spraint analysis. The National Park of the Peixe Lagoon was monitored seasonally between August 1995 and July 1996, in the Senandes Creek five samplings were done between June and December 1995 and in the Estiva Creek monthly samplings were done between May 1995 and July 1996. In each of these areas spraints were collected and stored. In the laboratory they were washed, separated and identified. The only area where it was possible to do a seasonal analysis of the feeding habits was the Estiva Creek. In all areas fish was the item found in the great number of spraints and crustaceans also had a considerable importance in areas with salt-water influence. The other items found were present in few samples, being them mollusks, insect, reptiles, birds and mammals. The differences observed in the feeding habits of the species between seasons and areas probably reflects the availability of different preys, agreeing the species opportunism.

keywords: Neotropical River otter, *Lontra longicaudis*, diet

INTRODUCTION

Studies on the feeding habits of different otter species have shown that they are mainly opportunists and feed on prey that are more abundant and/or species less active (ERLINGE, 1968; ADRIAN and DELIBES, 1987; OLIMPIO, 1992). Although there are large numbers of studies on the diets of *Lutra lutra* and *Lutra canadensis*, almost nothing is known about *Lontra longicaudis*. This despite its wide distribution, occurring from Mexico to the north of Argentina, studies on the feeding habits of this species in Brazil were made in the states of Sao Paulo and Espirito Santo, both in the central region of the country (PARDINI, 1998; HELDER-JOSÉ and DE ANDRADE, 1997).

The present work aimed at the determination of the diet of the neotropical river otter, *Lontra longicaudis*, in the coastal region of the Rio Grande do Sul state, in the south of Brazil.

MATERIAL AND METHODS

The three study areas are in the coastal region of the Rio Grande do Sul state (Figure 1). This is Brazil's southernmost state, and exhibits a sub-tropical climate, markedly cold and rainy in winter, and hot and drier in summer. The coastal plain originated from successive progressions and retractions of the sea-level, which cut off large areas of the Atlantic Ocean, resulting in the largest lagoon complex in South America, being made up of the large lagoons of Patos, Mirim and Mangueira. There are also many wetland areas and a complex of smaller lagoons.

National Park of the Peixe Lagoon

The National Park of the Peixe Lagoon, approximately 34.000 hectares, contains lagoons, wetlands and creeks, as well as an area of marine habitat. Within the Park there are some fresh water lakes and a Lagoon Complex (called Peixe Lagoon), which is connected to the sea by a barra, which is opened annually by local fishermen. The North and South Areas of the Park are differentiated by basic characteristics. The North Area contains fresh-water bodies with depths that can exceed three metres, and is largely made up of shores with five to ten metre high banks. The bankside tends to be covered

with arboreal vegetation. The water bodies of the South Area (Peixe Lagoon), are much shallower, approximately 0.5 metres deep and having low banks (0.5 m) or beaches and low vegetation. The area is more saline, the salinity can vary throughout the year due to its connection with the ocean.

The Pai João and the "Véia" Ana Lakes were monitored on the North Area. The "Véia" Terra and Ponta Sul lagoons, the Ponta Sul Channel and the channel connecting the "Véia" Terra Lagoon with the Ruivo Lagoon were monitored in the South Area (National Park of the Peixe Lagoon). Fieldwork was done seasonally, between August 1995 and July 1996, totalling 4 samples.

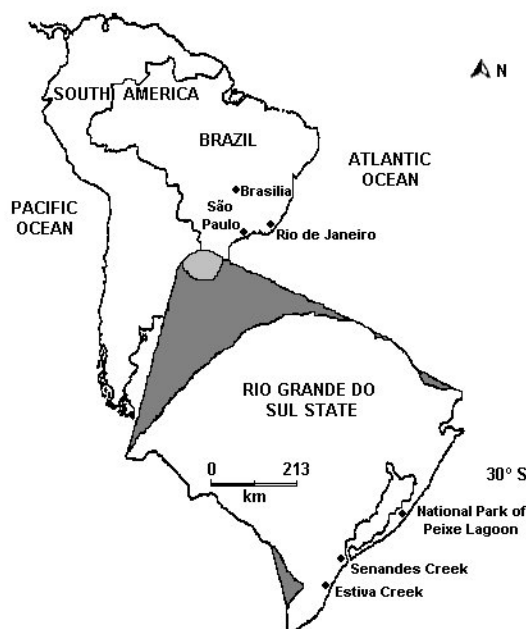


Figure 1: Study Area

Senandes Creek

The Senandes Creek, part of the Bolaxa Lake-Creek complex, is in the Rio Grande county. It is fed by water from the Senandes, Bolaxa and Vieira creeks, and empties into the Saco da Mangueira, an estuarine bay, which is connected to the Patos Lagoon. During winter the Bolaxa Lagoon receives salt water, conferring to it special characteristics on the species which are present. During summer the water is completely fresh and, since this is the dry season, the water levels fall.

The Senandes Creek is approximately two kilometres long, 1 to 4 metres wide and 0.5 to 2 metres deep. It is slow flowing with a great number of bends. The creek margin is banks approximately 0.5 metres high, with graminaceous vegetation or ciliar woods. Five samples were collected in this area between June and December of 1995.

Estiva Creek

The Creek is a fresh water body, one to five metres wide, and approximately one and a half kilometres long, originating and terminating in wetlands. It is formed by many bends and has low water flow, except during times of high rain fall. The margins are banks approximately 0.5 metres high, covered by grass or ciliar woods. Depth varies from one to four metres, with large amounts of floating vegetation. In this area the work was done between May 1995 and June 1996, with monthly samplings.

METHODS

Spraints from neotropical river otters, were collected, packaged in plastic bags and individually labelled. In the laboratory they were washed with abundant water over a small mesh (1 mm) sieve. The parts retained were separated at the level higher taxa and identified by specialists.

The data were presented by frequency of occurrence, which consists in the percentage of the total number of spraints analyzed in which a specific food item was present. All statistical analysis were performed using STATISTIKA 5.1. for WINDOWS.

RESULTS

Only in the Estiva Creek was it possible to study the seasonality of the feeding habits, since in the Senandes Creek no samplings were done in one year and in the National Park of the Peixe Lagoon the number of samples found was too small, to allow any seasonal analysis.

In the North Area of the National Park of the Peixe Lagoon 33 spraints were collected and analyzed, and in the South Area nine. In the North Area, fish had the highest frequency of occurrence, being present in 97% of the analysed spraints, birds and reptiles were each present in 12% of the spraints, mammals in 9%, while insects, crustaceans and molluscs were each present in 3%. In the South Area fish were again the item with the highest frequency of occurrence (66% of the samples), followed by crustaceans (33%) and mammals and birds (11% each) (Figure 2).

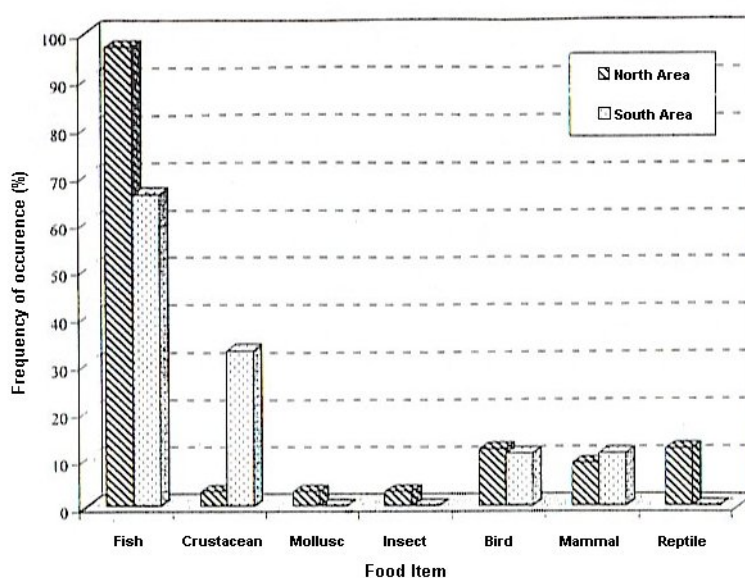


Figure 2. Feeding habits of the otter in the Lagoa do Peixe National Park

It can also be seen in this figure that there was a highly significant difference between the frequency of occurrence of fishes in spraints of the North and South Areas ($P=0.0040$) and frequency of occurrence of crustaceans ($P=0.0043$). Did not occur highly significant difference between the frequency of occurrence of the other food items ($P_{birds} = 0.4673$; $P_{mammals} = 0.4283$; $P_{molluscs}$ and $P_{insect} = 0.3009$ and $P_{reptile} = 0.1407$).

Only spraints from the North Area contained insects, the "water cockroaches" (Family Belostomatidae). Crustaceans, Family Trichodactilidae, fresh water crustaceans were found in only one sample collected in the North Area. In the South Area remains of *Parastacus* sp., a crustacean that dwells in galleries close to the water table, as well as remains of the Grapsidae and Xantidae families, which are estuarine, and a hermit-crab (either Paguridae or Diogenidae families). Molluscs, *Pomacea* sp. were found only in samples of the North Area. Reptile remains were only found in the North Area, and belonged to snakes of the Colubridae family, and in three spraints that exhibited this item this family was represented by *Helicops infrataeniatus* and in another they couldn't be identified below the family level. Some spraints exhibited small mammal hair, which, largely could not be identified and in two spraints, hairs belonged to *Myocastor coipus*. Bird parts comprised only of small fragments and were not identified.

In the Senandes Creek 48 spraints were analyzed, with fishes present in 96% of the samples, crustaceans in 23%, birds in 17%, mammals in 8% and reptiles and molluscs in 2% (Figure 3). Crustaceans were identified as *Callinectes sapidus*, a marine species that enters estuaries during some parts of its life cycle and occurs in fresh water bodies which are connected to the sea. Mammals

consisted of young capybaras (*Hydrochaeris hydrochaeris*), while there was only one sample with a reptile from Family Colubridae. The single mollusc remain was an operculum of a specimen from the *Pomacea* group. Birds were not identified also due to the small quantity of material present.

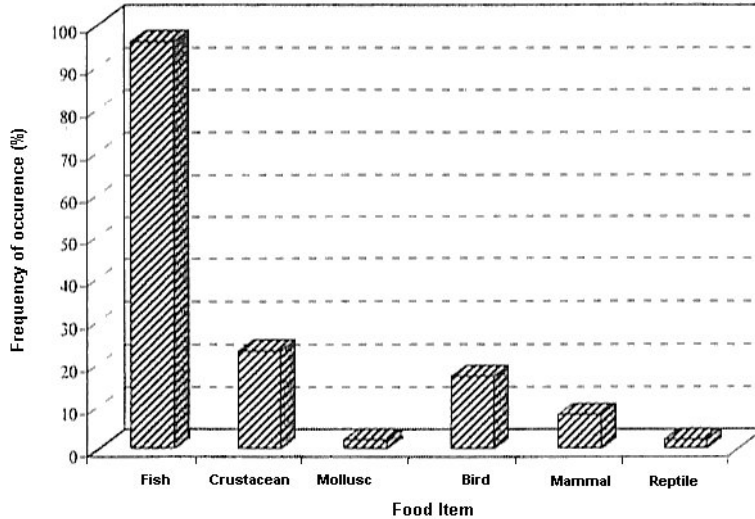


Figure 3. Feeding habits of the otter in the Senandes Creek

In the Vargas Creek, 64 spraints were analysed, nine in spring (September - November), 14 in summer (December - February), 34 in autumn (March - May) and 7 in winter (June - August). From the total, fish were present in 92% of the samples, molluscs in 23%, crustaceans in 20%, mammals in 8%, insects in 7% and birds in 2%. Fish were present in more than 90% of the samples in all seasons, mammals only during summer and autumn months, molluscs were also present in all seasons but with a higher percentage during autumn. Crustaceans were present in lower percentages in the summer samples, insects did not occur in winter, while birds were absent in summer and winter (Figure 4). The insect remains were "water cockroaches", mammals were *Myocastor coipus* and young of *Hydrochaeris hydrochaeris*, and other unidentified small mammals. The remains of molluscs belonged to specimens from the *Pomacea* group (Gastropoda), the crustaceans were *Parastacus* sp. Birds could not be identified.

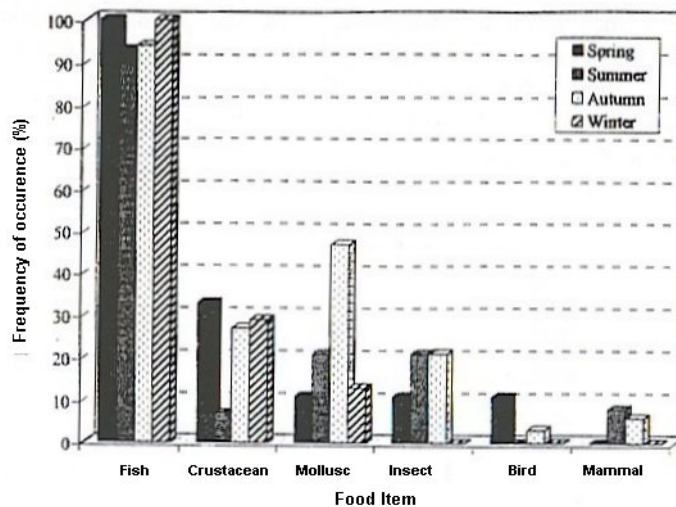


Figure 4. Feeding habits of the otter in the Estiva Creek

DISCUSSION

Fish are an important item in the diet of *L. longicaudis*. PARDINI (1998) found fishes in 93% of the spraints from *L. longicaudis* collected in the Betari River in the São Paulo state while HELDER-JOSÉ and DE ANDRADE (1997) found this item in 97.2% of the samples in a Espírito Santo State reservoir. To other otter species fish were also found to be of great importance in their diets (CHANIN, 1985; MASON and MACDONALD, 1986). This work has shown that in all areas fish are of great importance to otters in the Rio Grande do Sul state. It was not possible to identify the fish species, since the number of species present in the region is fairly large and there is no identification key.

It has been already shown in some studies that crustaceans can be of great importance in the diet of some otter species. ADRIAN and DELIBES (1987) studied the feeding habits of *Lutra lutra* in two water bodies, the Rocina Creek into which crustaceans (*Procambarus clarkii* and *P. acutus*) were introduced before the study and the Lucio Bolin, which did not have introduced crustaceans. Their study found that 80.3% of the spraints collected in the Rocina Creek had crustaceans and 96.5% had fishes. In the Lucio Bolin, however, crustaceans were not found and fish occurred in 94.3% of spraints. In this work a higher predation on crustaceans was found in some areas, which can be related to a greater abundance of these organisms in that areas. In the studied area the fresh water crustacean families are composed of species of smaller size, while the estuarine and marine species are usually larger. Therefore another hypothesis that can be considered is that the neotropical river otters are preying crustaceans only in areas where larger species exist. In the Estiva Creek crustaceans were highly important during parts of the year due to the greater availability of *Parastacus* sp.

The opportunism of the otters has been reported by many authors. OLIMPIO (1992) while studying *L. longicaudis* in the Peri Lake, Brazil, concluded that as this species is opportunist, it can feed on species which are less appreciated but which occurs in a greater amount. JENKINS and HARPER (1980) in a study of *L. lutra* found that the studied otters were opportunist predators, capturing what was available. In the work of TUMLISON and KARNES (1987), the hypothesis that *Lontra canadensis* is opportunist was substantiated, since it was found a seasonal substitution between fishes and crustaceans, probably due to the availability of these items in the study area.

In this work, reptiles, mammals and insects identified were from aquatic animals or which have a strong relationship with this environment. There are some indication despite the small sample size, that *Lontra longicaudis* may be an opportunistic feeder' as has been found for other otter species, preying organisms of easier access. The variation in the percentage of species along the year in the Vargas Creek is probably related to the seasonal presence of the preyed items.

ACKNOWLEDGEMENTS - We would like to thank the "Fundação O Boticário de Proteção à Natureza", the "Clube de Seguros - Abrace o Taim" and the Fundação Universidade do Rio Grande for the logistic and financial support and to Dr. Paulo Rieger, Dr. Fernando D'Incao, Dr. Lauro Jantash, Dr. Márcio Borges Martins, Dr. Ana Maria T. Merck and Msc. Eduardo Eizirich for the identification of the items found in the spraints.

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Tumlison, R. & Karnes, M. (1987). Seasonal changes in food habits of river otters in southwestern Arkansas beaver swamps. *Mammalia* **51**: 225-232.

Resúmen: Alimentación de la nutria neotropical (*Lontra longicaudis*) en la región costera del estado de Rio Grande do Sul, Sur de Brasil

Se monitorearon tres áreas en la región costera del estado de Rio Grande do Sul, sur de Brasil, para estudiar los hábitos alimentarios de la nutria neotropical (*Lontra longicaudis*) a través del análisis de heces. El Parque Nacional de Lagoa do Peixe fue monitoreado en forma estacional, entre agosto de 1995 y julio de 1996. En el arroyo Senandes fueron realizados cinco muestreos entre junio y diciembre de 1995, y en el arroyo da Estiva fueron efectuados muestreos mensuales entre mayo de 1995 y julio de 1996. En cada una de las áreas de estudio, las heces fueron recolectadas y almacenadas. En laboratorio se procedió a lavarlas, separarlas e identificarlas. La única área en la que fue posible realizar un análisis estacional del hábito alimentario fue en el arroyo da Estiva. En todas las áreas, el ítem alimentario encontrado en mayor número de heces fueron peces, en tanto que los crustáceos tuvieron importancia considerable en algunas áreas. Los demás ítems encontrados estuvieron presentes en pocas muestras, siendo estos: moluscos, insectos, reptiles, aves y mamíferos. Probablemente la diferencia encontrada en el hábito alimentario de esta especie, entre diferentes áreas y épocas del año, refleja la disponibilidad de las presas, lo que concuerda con el oportunismo que presentaría *L. longicaudis*.

ARTICLE

UTILISATION OF RESTING SITES AND DENS BY THE NEOTROPICAL RIVER OTTER (*Lutra longicaudis*) IN THE SOUTH OF RIO GRANDE DO SUL STATE, SOUTHERN BRAZIL

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Abstract: This work was undertaken between March 1997 and February 1998 and aimed at verifying the frequency of utilisation of resting sites by the neotropical river otter (*Lutra longicaudis*). The banks of a creek located at the northern limit of the Taim Ecological Station (RS) were searched eight times, looking for places with signs of use (footprints, scratches, spraints, etc.). On the first field trip, sites found were marked and named according to some basic characteristic that allowed its re-identification on future field trips. During this work, thirteen resting-places were found to be used only once, whilst eight were used on more than one occasion. Of these, only one was used by the species on all field trips. No otter den was found in the area during the study. Otter spraints were found at 90% of the resting sites, footprints at 12%, and scratches at 16%. All the resting sites used more than once were above water during the whole study period and only one of them was located outside the woods, being found on a grass-covered bank. Based upon the results obtained, we could hypothesise that, even though the species uses this creek for resting activities during all year, it is probable that it is not used for reproduction.

Keywords: Neotropical River otter, *Lontra longicaudis*, dens

INTRODUCTION

The Neotropical River Otter (*Lutra longicaudis* Offers 1818) occurs from Mexico to the north of Argentina and is present over the whole of the Brazilian territory. It can be found in lakes, rivers, wetlands, marine shores associated with coastal lagoons, as well as a great variety of habitats associated with water bodies, such as forests and ciliar woods (BLACHER, 1987; EMMONS, 1990; MASON, 1990; ROSAS et al., 1991).

Despite all the adaptations that they exhibit to the aquatic environment otters are still largely connected to the terrestrial environment, being dependent on it for some activities such as rest, raising of young, etc. In areas that do not have great perturbations caused by human activities they are not too critical in their choice of resting sites and can use areas on the ground without any protection (MILES, 1984). In areas where disturbance is moderate they start to use protected areas, such as burrows under the ground, rocks, trees and other objects (CHANIN, 1985).. Even when they are not too critical in their choice of resting sites, places used to raise their young must be protected from the weather and other risks, and therefore they usually utilise dens (CHANIN, 1985).

The aim of this study was to analyse the characteristics of resting sites and dens used by the neotropical river otter in the area studied, as well as verifying the frequency of their use throughout the year.

STUDY AREA, MATERIAL AND METHODS

The Estiva Creek is located at the northern limit of the Taim Ecological Station, inside its buffer area (a 10km area at its perimeter). The Taim Ecological Station (ESEC Taim) has an area of 33 935 hectares and occupies part of the coastal plain of the Rio Grande and Santa Vitória do Palmar counties at the southern extreme of Rio Grande do Sul in a narrow stretch between the Mirim Lagoon and the Atlantic Ocean (32°33'S, 52°52'W)

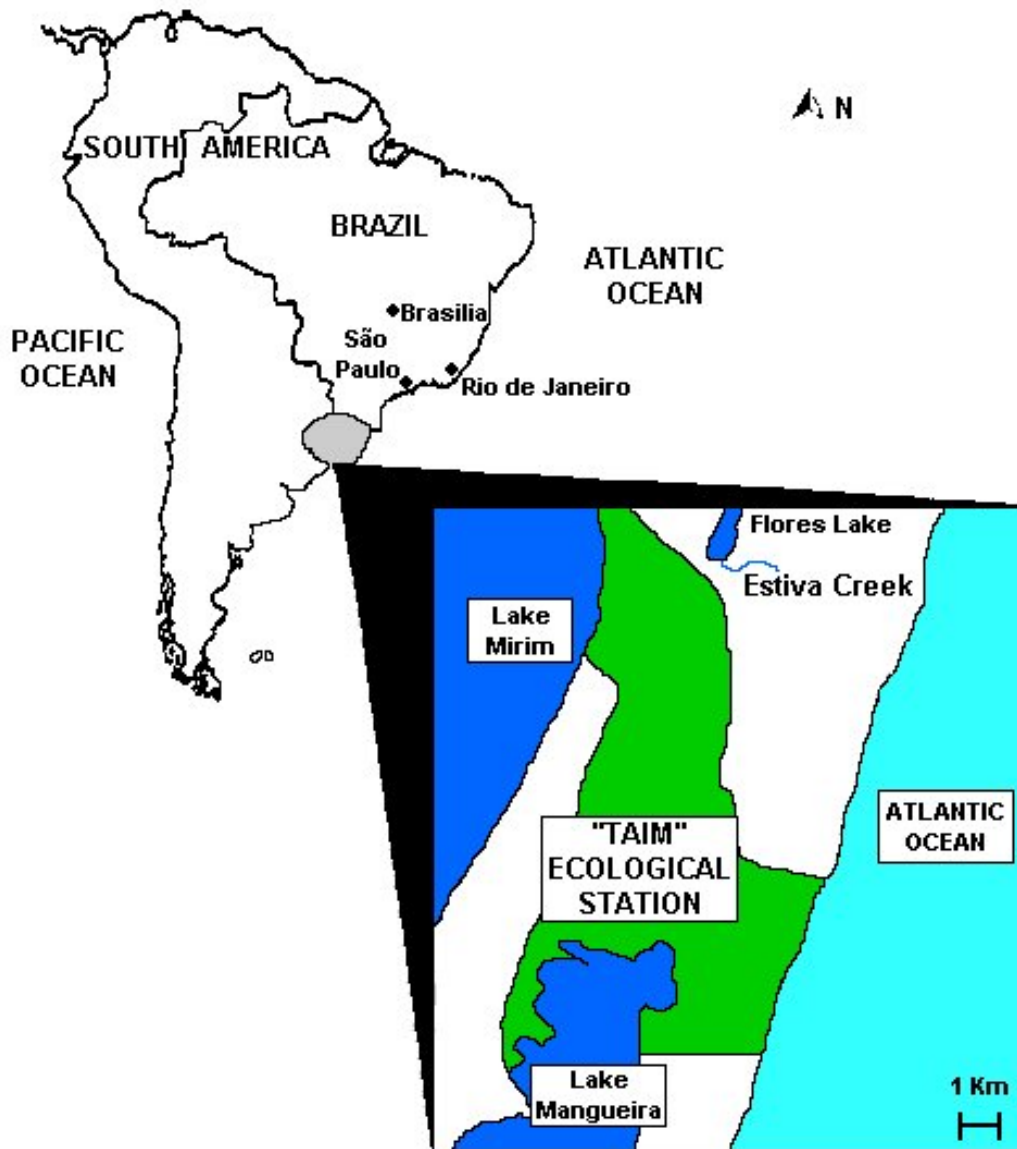


Figure 1: Study Area.

The Creek is a body of water, approximately one and a half kilometers long, which originates and terminates in wetlands. Its width varies between 1 and 5 meters and the depth varies from 1 to 4 meters. It is characterised by meanders and exhibits low hydro-dynamics, except during times of high pluviosity. The margins are characterised by banks of approximately 0.5 meters high, covered by grass or ciliar woods. Great amounts of floating vegetation are found in the water body itself.

Between March 1997 and February 1998, the banks of the Estiva Creek were walked on eight occasions. A single experienced researcher examined the banks for up to 4 meters inland, looking for evidence of otters (spraints, footprints, resting sites and dens). Resting sites were considered as places used above the ground, whilst dens were those sites found underground. Resting sites and dens found on each of the field trips were mapped and classified as either in use or not.

RESULTS

A total of 21 resting sites were found during the study period. No sites were found that could be classified as dens. Thirteen were in use on only one occasion and the other eight were in use for at least two of the field trips. Only one site was in use during all the field trips.

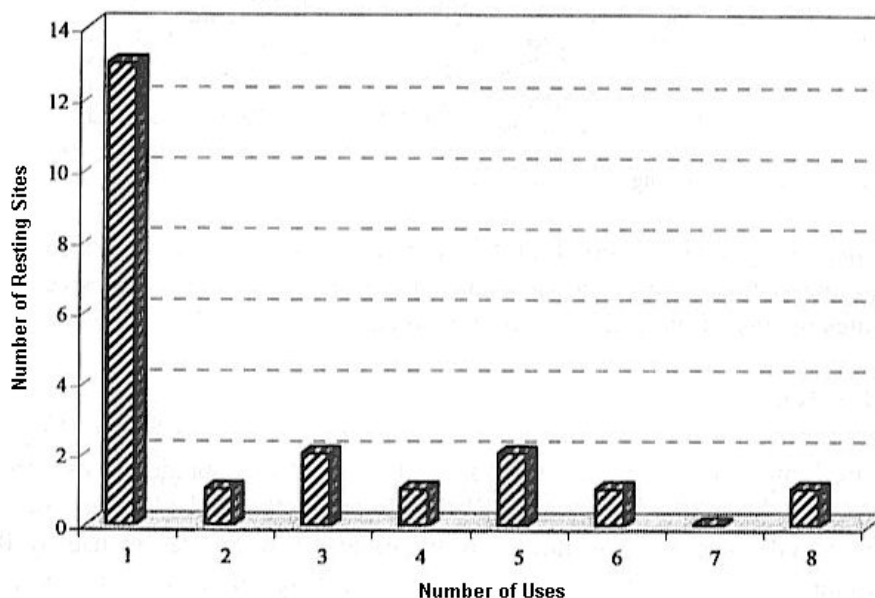


Figure 2: Frequency of the use of resting sites.

Otter spraints were found at 90% of the rest sites. Only three of these sites also displayed scraping behaviour (12% of total sites) and footprints (16% of sites), these being resting sites which were used on four, five, and eight occasions. At all other sites only spraints were found. All resting sites were located within two meters of the river bank and all were above the high water mark.

Even though approximately half the length of the creek is covered with grasses (the rest being typified by arboreal vegetation), only one of the resting sites was located outside the wooded area. This site was located in a grass-covered region, protected by high banks, which hindered the access of people and animals. The location of the resting sites utilised more than once is shown in Figure 3.

Three further sites were found in the study area that could have been used as dens by the species. However, no signs of use by the species were ever observed at these sites on any of the field trips to the Creek.

DISCUSSION

Most resting sites identified in the Estiva Creek were temporary. Only seven sites were used more than twice, and could therefore be considered as 'regular use', according to the methodology of NEWMAN and GRIFFIN (1994). However, some sites appeared to be used on many occasions and resting sites in use by the species were found on every visit, indicating that the neotropical river otter was permanently utilising the area.

JENKINS and BURROWS (1980) and MASON and MACDONALD (1986) found a greater number of otter signs on banks with well developed vegetation, whilst SERFASS (1984) and NEWMAN and GRIFFIN (1994) found that the presence of large conifers favored the existence of resting sites. In the present work there was a clear preference by the species for river banks covered by larger vegetation (such as trees), in detriment to those grass-lined banks. This probably occurs as the presence of vegetation gives better protection from rain, disturbance, and other animals.

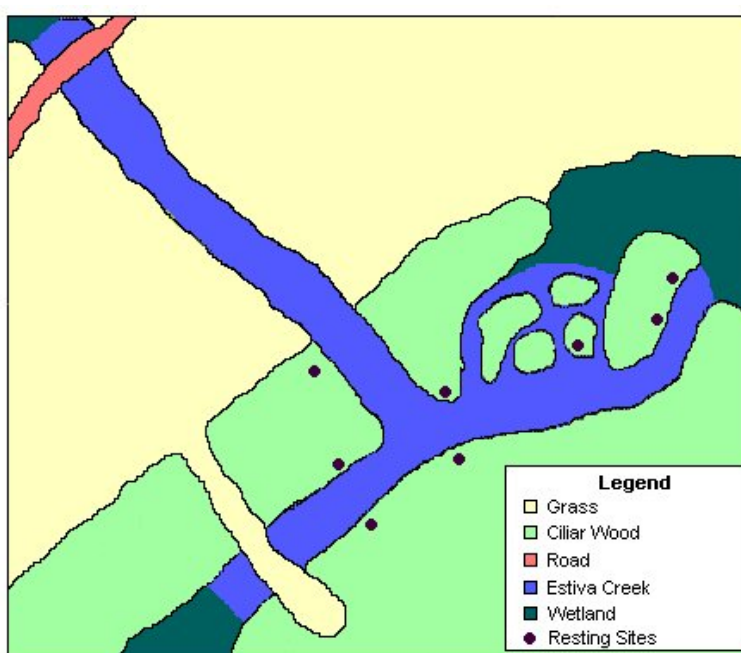


Figure 3: Location of the resting sites used more than once.

The area studied has very low levels of human activity, being mainly concentrated in summer when there is some fishing activity. The only activity that occurs throughout the year is the raising of cattle and sheep. Further, though there is a road close to the creek, the traffic density is low. CHANIN (1985) reports that otters can use resting sites above or below ground, according to the degree of disturbance in the area. All resting sites found in this area were located above ground, which may therefore be related to the low incidence of disturbance.

Most resting sites exhibited only spraints as evidence of river otter use, footprints and claw marks being observed only at some of the sites used more often. Observations of *Lutra longicaudis* couples in captivity (COLARES, 1987) revealed an increase in digging, scratching, and out-of-water activities during the copulation period, however, in the present work, the presence of scratches and footprints was not concentrated in a specific time of the year, and in the same season there were sites with these marks and others only with spraints.

Permanent use of the area, and the lack of signs of reproduction, led us to believe that the species uses this area for feeding and/or as a transit area to other regions used for feeding and/or reproduction. This is a very important area for the study of this species as it is one of the few water bodies that has banks, allowing studies of this nature. Future work is required aiming at the definition of how the species uses

the Estiva Creek, as well as locating those areas used by the otters for reproduction, in order to allow the development of a Conservation and Management Plan for the species in the area.

ACKNOWLEDGEMENTS - We would like to thank the Fundação Universidade do Rio Grande, the Fundação de Amparo a Pesquisa do Rio Grande do Sul, and the Clube de Seguros - ABRACE O TAIM, for logistical and financial support which allowed this work to take place.

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RESUMEN: Utilization de sitios de descanso y madrigueras por la nutria neotropical (*Lutra longicaudis*) en el sur del estado de Rio Grande do Sul, Sur de Brasil

Este trabajo fue realizado entre marzo de 1997 y febrero de 1998 con el objetivo de verificar la frecuencia de utilización de lugares de descanso por la nutria neotropical (*Lutra longicaudis*). A tal efecto, fueron recorridas durante 8 veces, las márgenes de un arroyo situado en el límite norte de la Estación Ecológica del Taim (RS), en busca de sitios con marcas de utilización del mismo por parte de la especie en estudio (huellas, arañazos, heces, etc). En la primera salida de campo, los lugares encontrados fueron marcados y denominados en relación con alguna característica que permitiese su reidentificación en las otras salidas. Durante el trabajo, trece sitios de descanso no fueron reutilizados y ocho lo fueron al menos una vez. Entre estos, sólo uno fue usado por la especie en todas las salidas. Fueron encontradas heces de nutria en el 90 % de los sitios de descanso, huellas de la especie en un 12 % y arañazos en un 16 %. Todos los sitios reutilizados permanecieron fuera del agua durante todo el transcurso del estudio y sólo uno de ellos se encontraba fuera de la vegetación, habiendo sido construido en un barranco cubierto de pasto. No fue observada ninguna cueva de nutria en el área durante el periodo estudiado. En base a los resultados obtenidos se puede verificar que a pesar de que la especie utiliza este arroyo para actividades de descanso durante todo el año, es posible que no lo utilice para la reproducción.

ARTICLE

SEXUAL DIFFERENCES IN THE BEHAVIOUR OF YOUNG OTTERS (*Lutra lutra*)

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Abstract: Differences in the behaviour of young animals, which it was supposed were gender based, had been noted over 15 years of caring for otters. When the opportunity of studying two same sex pairs arose, detailed observations were made to compare and quantify behaviour. Two male and two female otters were observed, housed in identical indoor pens, side by side, with a gutter for sprainting and cleaning, two beds at the end opposite the door and a grille which allowed the pairs to see and touch each other. There were both quantitative and qualitative differences in the activity of young male and female otters. Both sexes spent much of their time inactive, but the males were less active overall, sleeping or resting more often and longer, playing less vigorously, not grooming at all and spending much time standing quietly watching the females. Playfulness, popularly considered characteristic of young otters, was shown only by the females. Males fought frequently over food, displaying dominance by the older animal even when the younger was larger whereas females seldom fought and never over food - they would sometimes share a large fish without dispute. Males regarded carers aggressively, but females behaved in a friendly fashion and were interested in the world outside the pen. Males always sprainted on a single heap where the females could see and smell it, and renewed their heap within 5 minutes of it being removed during cleaning; females sprainted all over their pen. Many of the behaviour patterns of wild otters were seen in these young otters but there were significant differences between males and females. As all of these otters had been abandoned before the usual age at which cubs leave the natal holt and had had no chance to observe or experience such behaviour, it is suggested that these differences are innate.

INTRODUCTION

Differences in the behaviour of young animals, which it was supposed were gender based, had been noted over 15 years of caring for otters. When the opportunity of studying two same sex pairs arose, detailed observations were made to compare and quantify behaviour. These observations are presented, despite the small sample and unsystematic nature of the data, in the hope that they will stimulate more work by organisations with captive otters.

ANIMALS, MATERIALS AND METHODS

Animals observed were a male from Northern Ireland, (estimated birth date 14.6.98) and three siblings from Unst, Shetland (estimated birth date 23.7.98). The siblings were reared together until comfort sucking of the male necessitated his removal to more congenial company. The two pairs, males of different ages and backgrounds and the two sisters of the Unst male were observed for 105 days from 15.10.98, when they were aged 4 -5 months, to 28.2.99. Days were divided into 30 min. slots from 06:00 to 24:00 and behavioural observations made each day. Differences in the position of bedding and feeding bowls noted led to recording the location of these objects for part of the period. The animals were housed in identical indoor pens, side by side, with a gutter for sprainting and cleaning, two beds at the end opposite the door and a grille which allowed the pairs to see and touch each other. The grille did not quite reach the floor, allowing some objects to be pulled under it. Each pair had an empty pen on the other side. Pens were cleaned in early morning and otters fed then and in late afternoon. Other work commitments made regular, systematic observation impossible so some time periods, particularly feeding and pen cleaning times, were better covered than others. Pen walls were 1.5m high, allowing observation from the corridor without disturbance. Each observation lasted five minutes and each 30

minute slot had at least 40 observations. The position of spraint in the pens was noted at cleaning time and on 50 occasions the spraint was weighed.

RESULTS

As observations were not systematic it was only possible to show frequencies of activity, not percentage of time spent on each. Table 1 shows numbers and percentages of each activity recorded for each pair.

Table 1: Number and Percentage of each Activity recorded for each Pair of Otters

Activity	Males			Female		
	N	%	Rank	N	%	Rank
Sleeping / Resting	1212	47.5	1	788	30.5	2
Watching Neighbours	518	20.3	2	18	0.7	6
Eating	414	16.2	3	336	13	4
Sprainting	166	6.5	4	24	0.9	5
Calling for Food	104	4.1	5	16	0.6	7
Fighting	78	3.1	6	4	0.2	8
Playing	62	2.4	7	924	35.8	1
Grooming	0	0	8	472	18.3	3
Totals	2554			2582		

1) Spraints and sprainting

Sprainting accounted for only 3.7% (n=190/5136) of activity, but was observed over 7 times more frequently by males than by females (166:24). Some of this difference was because the males deliberately positioned themselves over their spraint site, lifted their tails high and deposited spraint, but the females usually sprainted while performing other activities. In addition to differences in frequency of sprainting there were differences in timing and position of spraint in the pens. The males had one spraint site in the gutter adjoining the grille giving onto the females' pen, where almost all spraint was deposited; the only exceptions were objects introduced into the pen which were marked with spraint on arrival. The single spraint heap was kept tidy by careful positioning before sprainting and the males avoided walking over it. In contrast, the females sprainted anywhere in their pen, even in beds, food or water bowls. They sprainted while walking about, trailing spraint over the floor, and spread it by walking or dragging bedding through it. After cleaning time the males promptly renewed their sign heap, never taking more than 5 minutes to produce the first spraints and sometimes snapping at the cleaner's feet in order to do so. The females did not respond to pen cleaning, taking 30 -120 minutes before sprainting was observed, always after eating their first meal.

As the volume of the males' spraint heap remained constant, despite differences in the solid matter in the food provided, the wet weight of spraint was recorded on 50 occasions. It proved impossible to collect all female spraint most days, so their results are fewer and less reliable.

	n	mean weight gram	range	standard deviation
males	50	299.9	250-325	19.23
females	23	293.5	200-400	65.37

2) Sleeping/resting

Sleeping or resting was the most frequently observed occupation (2000/5136 = 38.9%), but was observed over 50% more by males (1212/2554 = 47.5%) than by females (788/2582 =30.5%). There were also differences in the location and timing of the activity. The males always slept together in the same bed and rarely moved their bedding from it, while the females moved their bedding frequently, slept in either bed or elsewhere, with or without bedding, alone or together. In all time slots except 7:00-8:30, 17:30-18:30 the percentage of times at which the males were recorded sleeping or resting

exceeded that of the females; significantly these periods were the usual feeding times. Apart from feeding times, the males lay in bed for 41-74% of total activity recorded in each time slot. The females were more active than the males in all time slots, except those covering feeding times, with sleeping accounting for 19- 68% of recorded activity . Besides the greater activity shown around feeding times, the females showed a pattern of rest and activity throughout the day, with rests after breakfast, between 13:00 and 15:30 and again after supper. Females slept for the highest percentage of recorded activity late at night and early in the morning. In the few observations between midnight and 06:00 all otters slept. These results are shown in Fig. 1.

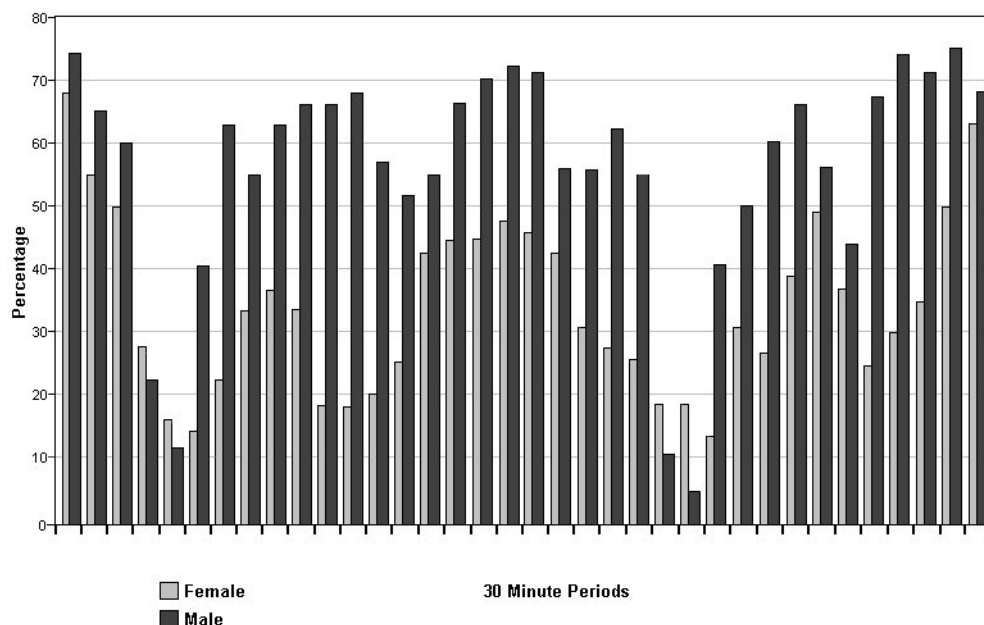


Figure 1: Percentage of sleeping or resting in each 30 minute time slot.

3) Playing

Playing was the second most frequently observed activity (986/5136 =19.2%). However there were marked differences between the sexes, with playing being the most often recorded female activity (924/2582 =35.8%), but second least frequent for males (62/2554 =2.4%). Male play was difficult to record as it was either rough, shading into fighting, or gentle nuzzling and wrestling while lying in bed. Female play was active, vocal and prolonged, using bedding, water, bowls and food in games. The females interacted playfully with the carer at cleaning or feeding times, standing on their hind legs in the stream of water, trying to catch it with paws and teeth, or running off with brushes and cleaning materials.

4) Calling for Food, Eating, Grooming and Fighting

These activities are grouped as they were related. Calls for food were addressed to the observer, consisting of whistles, chitters and moans, while standing or jumping at the pen door. Males called for food on 104 occasions (4.1% of their total recorded activity). As feeding time approached entreaties became more insistent, but the arrival of the observer was greeted by hopeful calls in all time slots. The females called less often (16/2582 =0.6%) and only immediately before feeding time.

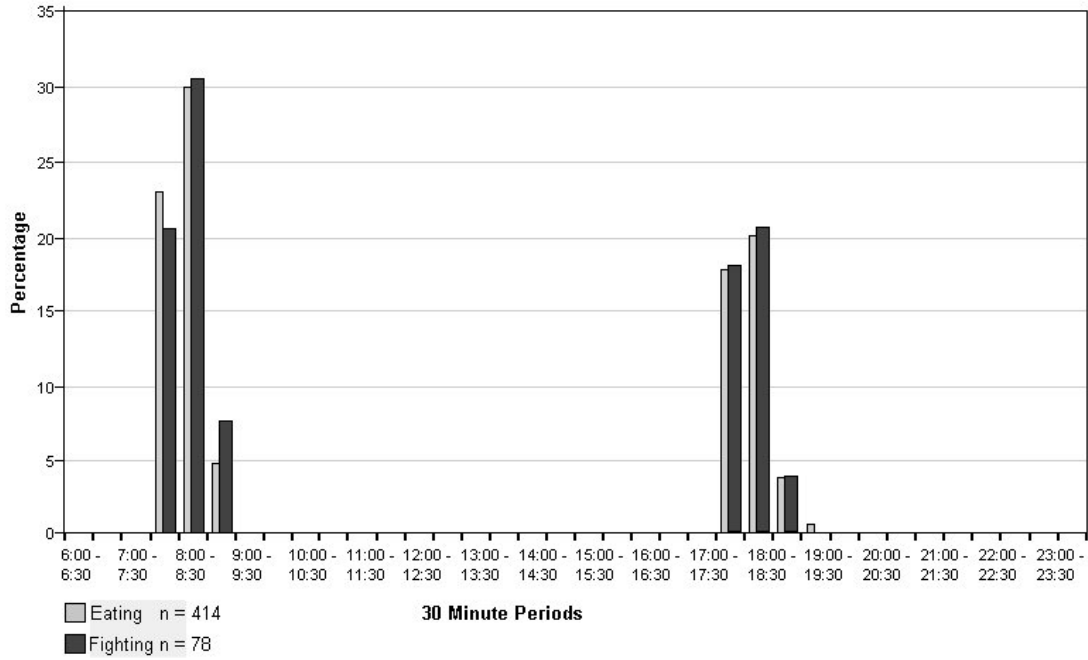


Figure 2: Relationship between eating and fighting in males.

Eating was the third most frequently recorded activity ($750/5136 = 14.6\%$) with similar percentages recorded for both sexes (males - $414/2554 = 16.2\%$; females - $336/2582 = 13\%$). Differences in the timing and manner of eating were shown by the two pairs. Males were recorded eating only in time slots covering feeding times, with all food, including most fish heads, eaten quickly; see Fig. 2. The females did not eat so avidly, making their food last longer, although most eating was recorded immediately after feeding time, see Fig.3. They often left the heads, which were eagerly seized by the males if within reach. The males became agitated when food arrived, sometimes fighting or biting the carer, so they were thrown food before entering the pen. The Irish male never let his companion keep the first fish, if he happened to catch it. Fighting between the males occurred on 78 occasions (3.1% of total activity), but was recorded only in the time slots covering feeding time and always associated with squabbles over food. Fig. 2 shows the association of feeding and fighting among the males. To minimise fighting the males were given equal numbers and sizes of fish at each meal. In contrast the females showed as much interest in the carer bringing the food as in the food itself. They fought on only four occasions, not linked to food. The females would sometimes share a large fish between them without dispute.

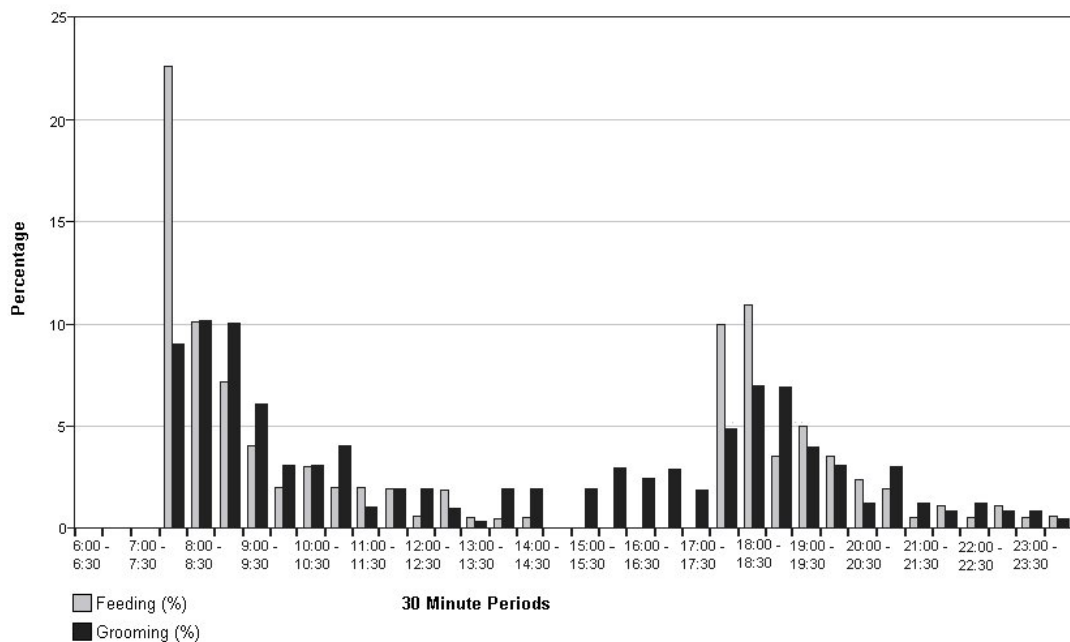


Figure 3: Percentage of sleeping or resting in each 30 minute time slot.

Grooming showing marked sexual differences; it was the third most frequently observed female activity (472/2582 = 18.3%), but was not seen at all by the males. The only time slot in which female grooming was not observed was 14:30-15:00, but although some grooming took place throughout the day the activity peaked after meal times: see Fig. 3.

5) Watching the Neighbours

This was the second most often recorded activity of the males (518/2554 = 20.3%); most of the time they were out of bed they were stationed at the grille between the pens watching the females, and whenever possible, taking objects from them. Positions of bedding and feeding bowls of both pairs were recorded on 198 occasions, see Table 2. The males managed to acquire the females' feeding bowl and bedding on many occasions, helped by the females' habit of dragging their bedding about and rolling their bowl around in play. In one incident they broke the females' water bowl trying to pull too large an object under the grille and on several noisy occasions they managed to catch hold of a female's tail or leg and tried to pull her into their pen. The females largely ignored their neighbours, showing interest only if something noisy or unusual was happening, being recorded watching them on only 18 (0.7% of total activity) occasions.

Table 2: Number of Records of Positions of Bedding and Bowls of both Pairs of Otters

position	male				female			
	n bedding	%	n bowl	%	n bedding	%	n bowl	%
in bed	196	98.9	6	3	58	29.3	8	4
in pen	2	1	154	77.8	63	31.8	63	31.8
in gutter	0	0	38	19.2	37	18.7	30	15.2
next door	0	0	0	0	39	19.7	71	37.8
empty pen	0	0	0	0	1	0.5	23	11.6
totals	198		198		198		198	

DISCUSSION

a) Activity patterns

There were both quantitative and qualitative differences in the activity of young male and female otters. Both sexes spent much of their time inactive, but the males were less active overall, sleeping or resting more often and longer, playing less vigorously, not grooming at all and spending much time standing quietly watching the females. ROSOUX (1995) found that an adult male otter, radio tracked for 66 days, spent only 30% of its time active. Available evidence suggests that these young otters all slept between midnight and 06:00 reducing further their daily activity. Most studies of wild animals indicate a predominantly nocturnal activity pattern (GREEN et al., 1984; JEFFERIES et al., 1986; ROSOUX, 1995; KRANZ, 1995; SJOASEN, 1997; VOGEL, 1997, 1998), but some studies in Scotland and Norway (WATSON, 1978; LIGHTFOOT, 1985; KRUK, 1995; TWELVES, unpubl.data; own unpubl. data) report a partially or wholly diurnal pattern of activity.

A diurnal activity pattern maybe the norm for Shetland otters, as described by KRUK (1995) and have been established very early in the life of the siblings from Unst, or it may have been simply a response to the diurnal rhythm of their care. Radio tracking studies of wild otters all show a cycle of activity interspersed by periods of rest. This behaviour seems to be established early in life, as the female pair showed a pattern of rests after meals and in early afternoon from 4 months. Overall the females were active together more often, but the males were together more as they always slept together.

Playfulness, popularly considered characteristic of young otters, was shown, in this study, only by the females. With their habit of playing with food and water, either from their drinking bowl or during pen cleaning, and their messy sprinting behaviour, the females' pen was frequently wet and dirty. Because they dragged it around the pen, their bedding also got wet and dirty as soon as it was changed. This was

in contrast to the dry, clean pen and bedding of the males; they sprinted in one place, ate their food quickly and completely and did not play with their bedding, bowls, or water. With their messy pen, habit of playing with food and their boisterous play, the females got their fur dirtier than the males. Grooming was more necessary for the females than for the males, but it was also a joint activity, with some mutual grooming. NOLET and KRUUK (1989) found that radio tracked otters in Shetland spent 6% of their time grooming and that grooming was directly related to diving, especially in deep water, but not to the length of time in the water. In this study grooming was related to the water games played when the water bowls were refilled at feeding times for the females.

b) Relationships and Dominance.

Relations between the females were friendly and equable, both during the study and afterwards, but the males had a more competitive relationship. The older Irish male dominated the younger, but bigger, Shetland male. His dominance was shown at feeding time, when he always had the first fish, taking it from his companion if he happened to get it. On other occasions the Irish male stayed in bed and took fish which the Shetland male brought to him. Feeding time was tense, each male ate as much as he could as quickly as possible, in contrast to the females which played with and shared their food over a longer time period. Access to food was one of the few opportunities for establishing the balance of the relationship within the confines of the pen. The Shetland male did not always acquiesce readily to the situation as 78 squabbles over food were observed, but in almost every case the Irish male was able to reinforce his status. This may have been because he was older, had a more dominant personality or because he was the original occupant of the shared pen. He remained dominant until release, although the size difference increased as they grew (5.05: 6.55kg) and the animals were moved into a large outdoor pen. Even male siblings reared showed a dominant/ subordinate relationship; in one case the larger was dominant and in the other both brothers were dominant to an unrelated, larger male of similar age. Studies of wild otters all show that some males have access to the best habitat and breeding opportunities, while others are excluded, being forced to lead a transient life in marginal habitat. KRUUK (1995) witnessed a majority of meetings between male otters ending in fights and SIMPSON (1997) and GREEN and GREEN (in press) both report males with severe injuries or deaths resulting from fights. This study suggests that such male behaviour begins early in life and is not based only on size or strength. The situation for females is less clear cut, some authors (GREEN et al. 1984; KRUUK, 1995) record mutual avoidance between adult females, or friendly interaction (KRUUK, 1995), but SJOASEN (1997) found aggressive female relationships. The females in this study were sisters so their behaviour as juveniles may not be indicative of their relationship as adults.

The males were intensely interested in the females, spending much of their time watching them, but were interested in the carer only as a supplier of food, reacting in an aggressive/defensive manner when their pen was entered and defending their dirty bowls and bedding. In contrast the females showed little interest in the males, but were very curious about the world outside their pen and in the carer, who was subject to close examination with nose and paws while in their pen. Care had to be taken when opening either pen door as the males were likely to bite anything entering and the females were likely to rush outside.

c) Sprinting.

Marked differences between the pairs were shown in sprinting behaviour. The frequency of male sprinting was higher than that of the females, even allowing for under recording of female sprinting because of their less obvious sprinting behaviour. The males sprinted at a single site, the only point in their pen where the females could see and smell their sign heap. The sign heap was renewed as soon as it had been cleared away during pen cleaning and its integrity maintained, whereas the females sprinted wherever they happened to be, often during other activities, disregarding the sprint thereafter. Radio isotope studies (JENKINS 1980; GREEN et al., 1984; TWELVES unpubl.) suggest that males sprint mark more frequently than females. This is borne out by HILLEGAART et al. (1985) who recorded male captives sprinting 7 times per active hour compared with 3 times for females. However KRUUK (1995) found no differences in the frequencies of sprinting, regardless of sex or age. There is debate about the significance of sprinting for wild otters. Some authors follow ERLINGE (1967, 1968, 1985) in assuming that sprints are used to mark territory, but KRUUK (1995) links sprint marking to use of food resources and found no increase in frequency of marking near known range boundaries. Some sprint is clearly left where other otters will find it, as otters go out of their way to examine sprint on traditional sprint sites and to leave their own. Many traditional sites

are sheltered and spraint may persist there for up to a year (MASON and MACDONALD, 1986). Captive studies (GORMAN and TROWBRIDGE, 1989; ROZHNOV and ROGOSCHIK, 1994; HEINS, 1996) show that otters can recognise the spraint of known individuals over long time periods. TSCHIRCH et al. (1996) found it possible to determine chemically sex and breeding status of otters depositing spraint, information which is presumably also available to otters.

These otters showed similarities with the behaviour of wild otters and other captive studies. The males renewed their sign heap when it was washed away, as wild otters renew signs after a spate (KRANZ, 1995; pers.obs.). The site chosen was their interface with neighbouring otters and new objects entering the pen were marked with spraint, as wild otters mark new territory visited. The males kept the volume and wet weight of spraint produced fairly constant, regardless of the amount of indigestible material in their food. Deposition of gut mucus when a larger number of spraints, than can be produced from the food remains in the gut, is needed is well known from the wild. However, it is more difficult to understand why the males should have produced less spraint than the females when food with a high proportion of indigestible matter was fed., especially as they usually ate more of it.

These results suggest that spraint marking has territorial and social significance for male otters from an early age. However the young females appeared to be simply defaecating in the course of their periods of activity, which be a precursor of the temporary spraint marking of resources in use seen by Kruuk in Shetland. The males were unable to expand their territory as the size of the pen was finite, so they sought to increase their sphere of influence by taking items from other otters, but did not take brushes, etc. from the carer, as the females did in play.

In conclusion, many of the behaviour patterns of wild otters were seen in these young otters but there were significant differences between males and females. As all of these otters had been abandoned before the usual age at which cubs leave the natal holt and had had no chance to observe or experience such behaviour, it is suggested that these differences are innate.

ACKNOWLEDGEMENTS - Grateful thanks to Sandy, Shirley, Sean and Alastair for bearing with my strange behaviour outside their pens for so long.

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RESÚMEN: Diferencias sexuales en el comportamiento de nutrias (*Lutra lutra*) jóvenes

Para estudiar diferencias vinculadas al sexo en el comportamiento de nutrias jóvenes se observó el comportamiento en cautiverio de cuatro nutrias, 2 machos con distintas edades y antecedentes y 2 hermanas de la misma edad y origen. Los animales de cada sexo fueron colocados juntos en 2 recintos iguales separados por una reja que permitía que los animales se vieran y tocaran. El marcaje representó sólo el 3.7% de la actividad de las nutrias, pero fue 7 veces más frecuente en los machos que en las hembras. Los machos depositaban deliberadamente las fecas en un único sitio fijo de marcaje (y en los objetos que se introducían al recinto), mientras que las hembras las depositaban en cualquier lado mientras realizaban otras actividades. Los machos renovaban el sitio de marcaje inmediatamente después (en un tiempo no mayor a los 5 minutos) que este era limpiado por el cuidador, mientras que las hembras no lo hacían hasta después de la comida. El descanso fue la actividad más frecuentemente observada (38.9%), pero fue observada más frecuentemente en machos (47.5%) que en hembras (30.5%).

Los machos siempre durmieron juntos en el mismo lecho, y raramente movieron el mismo, mientras que las hembras cambiaron frecuentemente el sitio de descanso, durmiendo juntas o separadas en cualquiera de los 2 lechos de su encierro, o en algún otro lado. Durante las pocas observaciones realizadas entre la medianoche y las 6 AM, todas las nutrias dormían. El juego fue la segunda actividad más frecuente observada (19.2%), siendo la actividad más común en las hembras (35.8%), y la segunda menos frecuente en machos (2.4%). Comer fue la tercer actividad más común registrada (14.6%), con porcentajes similares en los 2 sexos (machos 16.2%, hembras 13%). Los machos sólo fueron registrados comiendo durante el periodo inmediatamente posterior a que se les entregaba la comida, ingiriéndola rápidamente, incluyendo la cabeza de los pescados. Las hembras hacían durar más la comida, aunque la mayoría de la de los registros de alimentación se realizaron inmediatamente después de que se les entregaba la misma. Comúnmente dejaban las cabezas, que eran ávidamente consumidas por los machos si eran capaces de alcanzarlas. El macho más adulto nunca dejó a su compañero quedarse con el primer pescado, aún cuando este lo agarrara. Se registraron peleas 78 veces entre los machos (3.1% de la actividad total), y sólo durante periodos de alimentación y vinculadas con la comida. El mayor dominaba al más joven aún cuando este último era de mayor tamaño. Durante el acceso a la comida era uno de los pocos momentos en los que se podía establecer este balance en la relación. Sólo se registraron 4 peleas entre las hembras, ninguna vinculada a la comida. Las hembras compartían en algunos casos un pescado grande entre las 2 sin ninguna disputa. El grooming fue la tercera actividad más frecuente en hembras (18.3%), y no se registró en machos. Dado el comportamiento desprolijo de marcado en las hembras y sus hábitos de jugar con la comida y el agua, éstas conseguían ensuciar más su pelaje que los machos, por lo que el grooming era más necesario en éstas que en aquellos. Observar a los vecinos fue la segunda actividad más frecuente en machos (20.3%). Observaban a las hembras mayormente junto a la reja que separaba los encierros, y cuando era posible tomaban objetos de las mismas. Las hembras ignoraban mayormente a sus vecinos, mostrando interés sólo si ocurría algo inusual. Sólo se las registró observando a los machos en 18

ocasiones (0.7%). Estos animales mostraron similitudes en el comportamiento con el registrado en animales en libertad y en otros estudios en cautiverio. Los machos renovaron sus marcas cuando estas fueron lavadas, y el sitio de marcaje elegido fue su interfase con otras nutrias y nuevos objetos. Esto sugiere que el marcaje tiene significado territorial y social desde temprano en la vida de las nutrias machos. Las hembras, sin embargo, parecen defecar en el curso de sus períodos de actividad, lo que puede ser un precursor del marcaje temporal de recursos en uso como ha sido observado en Shetland.

REPORT

PRESENCE OF THE GIANT OTTER, *Pteronura brasiliensis*, IN THE CORRIENTES PROVINCE, ARGENTINA

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Abstract: The skull of a giant otter (*Pteronura brasiliensis*) recovered in the Corrientes Province from Argentina is described. The skull, which lacks one upper canine and the lower mandible, is believed to be several decades old. This is the first collection of biological material confirming the existence of this species in the province.

On April 19th, 1999, ranger Domingo R. Cabrera collected a giant otter (*Pteronura brasiliensis*) skull half-submerged in the little "Biombo" island, situated at Fernández lake, Iberá Natural Provincial Reserve, Mercedes Department, Corrientes (28° 37' LS - 57° 32' LW). The skull lacks the lower jaw but it is well preserved with only one upper canine tooth missing. Although it was not dated it looks several decades old. The specimen has been deposited at the mammalian collection of the Museo de Ciencias Naturales de La Plata, Buenos Aires (MLP1811993).

Measurements were made on the skull as follows (in mm):

Total length:	158.5
Condylbasal length:	150.7
Palatal length:	85.8
Length of cheektooth row:	43.7
Length of the molar row:	25.8
Length of the premolar row:	17
Greatest diameter of the auditory bulla:	36
Greatest breadth of the occipital condyles:	40.3
Greatest breadth of the braincase:	76.9
Least breadth of skull:	16.4
Frontal breadth:	24.3
Breadth at the canine alveoli:	37.3
Height of the occipital triangle:	55.2

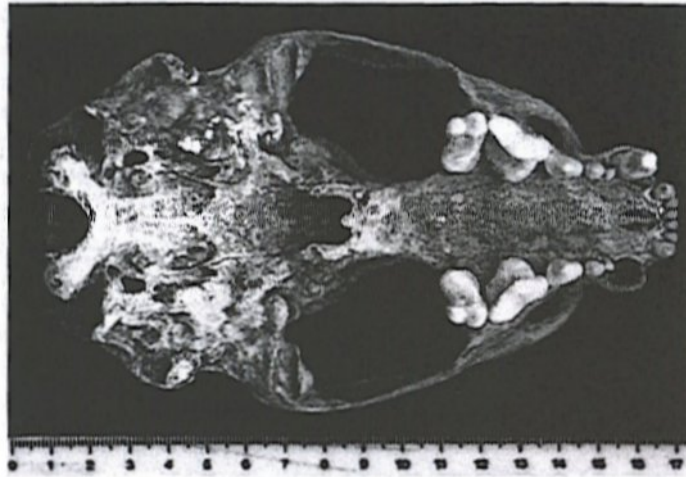


Figure 1: Ventral view of skull

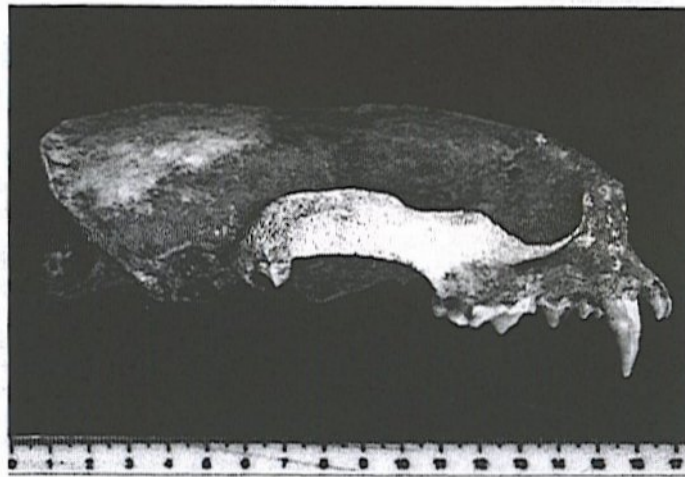


Figure 2: Lateral view of skull

The former distribution of the species in Argentina was the Uruguay and Paraná river catchments, with populations in the Mesopotamia region, the Eastern Humid Chaco, and the subtropical rainforests of Misiones province (FOSTER-TURLEY et al., 1990). The last known references for Corrientes province came from foreign travellers and they are over a hundred years old. However, the presence of the species in the area was mentioned until 1993 by fishermen and hunters along the Paraná river (BECCACECI and GARCÍA RAMS, 1995). Regarding the Iberá Marshes, largest wetland in Argentina with 1,300.000 ha, data from the local people mentioned the existence of some few giant otters by the end of 1930's (BECCACECI and GARCÍA RAMS, 1995). Until this finding, there was no biological material collected as an evidence of the former distribution of the species in this province.

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RESÚMEN: Presencia de la Nutria Gigante, *Pteronura brasiliensis*, en la provincia de Corrientes, Argentina

El 19 de Abril de 1999, el guardafauna Domingo R. Cabrera colectó un cráneo de nutria gigante (*Pteronura brasiliensis*) semisumergido en la pequeña isla Biombo, situada en la laguna Fernández, Reserva Natural Provincial del Iberá, Departamento Mercedes, Corrientes (28° 37' LS - 57° 32' LW). El cráneo, del cual falta la mandíbula inferior, se encuentra bien conservado, habiendo perdido sólo uno de los caninos superiores. A pesar de que no fue datado, aparenta varias décadas de antigüedad. El espécimen ha sido depositado en la colección de mamíferos del Museo de Ciencias Naturales "Florentine Ameghino" de La Plata, Buenos Aires (MLP1811993).

La distribución pasada de la especie en la Argentina comprendía las cuencas del río Uruguay y del Paraná, con poblaciones en la región de la Mesopotamia, el Chaco Húmedo Oriental y las selvas subtropicales de la provincia de Misiones (FOSTER-TURLEY et al., 1990). Las últimas referencias para la provincia de Corrientes provienen de viajeros extranjeros y tienen más de cien años de antigüedad. Sin embargo, la presencia de esta especie en la zona fue mencionada hasta 1993 por Pescadores y cazadores a lo largo del río Paraná (BECCACECI Y GARCÍA RAMS, 1995). Con respecto a los esteros del Iberá, el mayor humedal de la Argentina con 1.300.000 has, informaciones de los pobladores locales mencionan la presencia de algunas nutrias gigantes hacia fines de la década del '30 (BECCACECI Y GARCÍA RAMS, 1995). Hasta este hallazgo, no existía material biológico colectado que evidenciara la pasada distribución de la especie en la provincia.

REPORT

GIANT OTTER PROJECT IN PERU: FIELD TRIP AND ACTIVITY REPORT 1999

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Abstract: In 1999, the Giant Otter Conservation Project of the Frankfurt Zoological Society - Help for Threatened Wildlife (FZS) was given new impetus with the full-time presence of staff in Peru, both within the field as well as in Lima. The four main objectives of the Project were pushed forward: (1) capacitation, promotion and networking initiatives were furthered; (2) government institutions were advised with respect to habitat and Giant Otter management; (3) scientific research was carried out in order to complement existing results; and (4) contributions were made towards the development of a national distribution map for the species. Following, a more detailed account of each of these key activities is given.

INTRODUCTION

The Giant Otter (*Pteronura brasiliensis*) is the largest of the world's 13 otter species and is endemic to the rainforests and wetlands of South America. In 1999, it was classified as 'endangered' by the IUCN Otter Specialist Group as well as by Peruvian Supreme Decree 013-99-AG, and has been listed since 1973 under Appendix I (species threatened with extinction) of CITES. Although recognition of the Giant Otter as a bioindicator, flagship and umbrella species for the Amazon rainforest has increased in recent years, much remains to be done in the fields of research and conservation.

In 1999, the Giant Otter Conservation Project of the Frankfurt Zoological Society - Help for Threatened Wildlife (FZS) was given new impetus with the full-time presence of staff in Peru, both within the field as well as in Lima. The four main objectives of the Project were pushed forward: (1) capacitation, promotion and networking initiatives were furthered; (2) government institutions were advised with respect to habitat and Giant Otter management; (3) scientific research was carried out in order to complement existing results; and (4) contributions were made towards the development of a

national distribution map for the species. Following, a more detailed account of each of these key activities is given.

Field Work in South-eastern Peru

In 1999, two Giant Otter censuses were conducted and a gamewarden course held in the Manu Biosphere Reserve; new, long-term research has been initiated in the Palma Real and Patuyacu small river systems in order to evaluate the importance of such habitats for Giant Otters, as compared to oxbow lakes; a first investigation of the status of the Giant Otter in the Malinousqui river was carried out; the management plan for Lake Sandoval, commenced end-1998, was updated using data collected during two additional visits; and Lake Valencia was again surveyed.

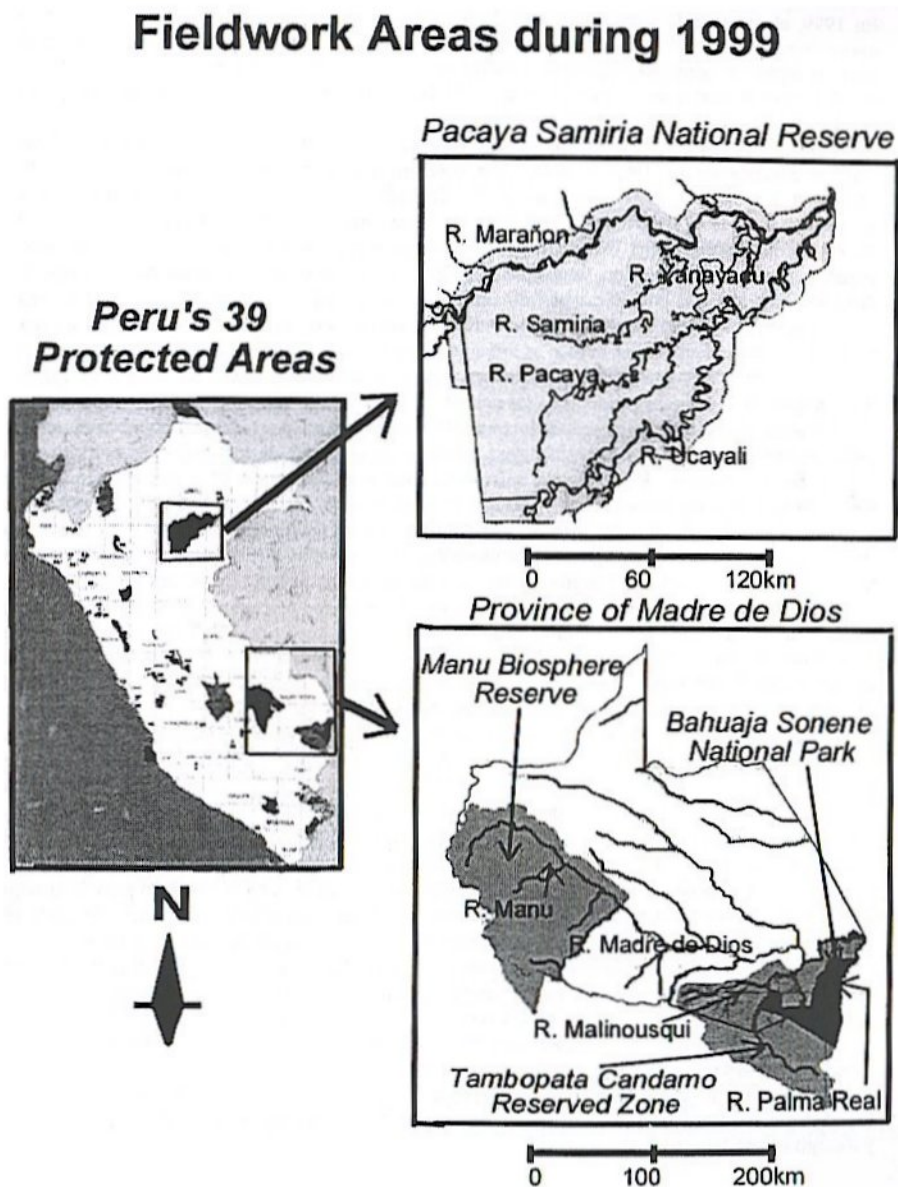


Figure 1: Field work areas in 1999

Manu Biosphere Reserve population censuses

The Project has carried out a Giant Otter census annually in Manu Biosphere Reserve (MBR) since 1990, with the exceptions of 1997 and 1998. In order to compensate for the resulting information gap, it was decided to conduct 2 censuses in 1999, in April/May and October/November, before and after the dry season respectively, to fully update the Giant Otter throat pattern database for Manu's population. A total of 7 oxbow lakes, or 'cochas', had never before been censused.

In the first census, we observed a total of 47 different Giant Otter individuals, two of which were solitaires, the remainder members of 11 different groups. The largest group numbered 6 animals; average group size was 4.1. Total direct Giant Otter observation time was approximately 10 hours. The second census was carried at the end of the dry season, when juveniles born during July, August and September are no longer confined to the den but may be observed interacting with the remaining members of the family. We counted 55 different Giant Otter individuals (9 different groups plus 3 solitaires) of which at least 14 were juveniles born during 1999. The largest group numbered 10 animals. Average group size was 5.8. Total direct Giant Otter observation time was roughly 36 hours.

Of the total of at least 62 different Giant Otter individuals¹ encountered during 1999 in Manu, the Project has managed to obtain 53 throat patterns. At least 13 Giant Otters are known from the first 6 census years. Of the 13, Hanni, Salvadora and Isla represent three of the most intriguing and scientifically exciting life histories, reaffirming the stable nature of Giant Otter group structure as well as the important roles that females play in three of Manu's most touristed oxbow lakes. Hanni, the Project's oldest known otter, born in Cocha Otorongo in 1989, still inhabits the Juarez/Garza area. Isla, born in Otorongo in 1990, is now 9 years old. And Salvadora, after establishing herself as the reproductive female in 1991, appears to occupy the same position in Cocha Salvador 8 years later. Comparatively little is known of Manu's male Giant Otters. Of current interest is Doppel, born in Otorongo in 1994, now believed to be the reproductive male in Cocha Cashu.

A greater emphasis has been placed on the potential impacts of tourism. The design of the management plan for Sandoval, a single oxbow lake in the Tambopata Candamo Reserved Zone (TCRZ), has led to an official request from the Head of MBR to develop an overall Giant Otter tourism management plan for oxbow lakes as well as rivers in this important protected area. A gamewarden capacitation course, held in Manu in November and at which Tambopata-Candamo Reserved Zone and Bahuaja Sonene National Park (BSNP) staff were also present, highlighted the necessity for such management plans and the considerable enthusiasm, ability, and support of gamewardens in this respect.

Small river research: Raima Real and Patuyacu

In the past, the Project has focused on oxbow lake and large river systems (SCHENCK and STAIB, 1992, 1994, 1995, 1996; SCHENCK et al., 1997). To complement this research, a new, long-term study was initiated in 1999, examining Giant Otter group dynamics and habitat use in smaller rivers in order to establish the significance of the latter for survival, and hence conservation, of the species in regions where cochas are few and far between.

The Palma Real and Patuyacu rivers were first visited by the Project in September 1998 (SCHENCK et al., 1999). The presence of Giant Otters was then confirmed by observations of tracks, campsites and dens, as well as a group of at least 5 adult individuals. The new research phase of 1999 was initiated between June and August, the primary objectives of which were to expand upon the preliminary observations obtained during September 1998, and to make a first assessment of the possible impacts on local Giant Otter distribution of a.) human presence, b.) changes in water level, c.) changes in water turbidity, and d.) fish density and seasonal variation.

The upper reaches of the Palma Real are located entirely within the recently created BSNP, the middle section forms a border between the BSNP and the TCRZ, and the lower stretch, up to its confluence with the Madre de Dios, does not enjoy any form of protected status. Quebrada Patuyacu, the majority of which has national park protected status, runs more or less parallel to the Palma Real before joining it roughly 30 kilometres before the point at which the latter flows into the Madre de Dios river. Both the Palma Real and the Patuyacu are meandering rivers with relatively few associated cochas; those which are present are very small (most are less than 100m in length and 30m in width).

No Giant Otters were observed on the Patuyacu. A total of 12 old campsites were recorded, as well as one old den and one fresh den². Of the 12 campsites, 8 were closely distributed along a 4km-stretch of the upper Patuyacu. One campsite was located in the middle reaches of the Patuyacu itself, and 3 campsites were found along its lower length.

Two separate Giant Otter sightings were made on the Palma Real river, spaced just over a week apart. The first was of a single individual, named 'Cuatro', who was later identified as having been a member of the group observed in September 1998. The '98 and '99 sighting locations are approximately 10km distant. It is unlikely that Cuatro is now solitary since we clearly heard contact calls indicating the presence of at least one other otter. Upriver of the July 99 sighting, a total of 8 campsites were recorded of which 6 appeared to be fresh. Two dens were also found, one old and one fresh. Eight days later, two Giant Otters were observed running up the bank of the Palma Real, roughly 8km upstream of the confluence with the Patuyacu. This sighting did not permit us to record throat markings and the pair was not seen again. Five dens were observed in the vicinity of this second sighting, of which 2 were considered fresh. In addition, 4 campsites were seen, one of which was fresh. In view of the temporal spacing of the two '99 Palma Real sightings, one could also hypothesise that both were of members of the same group.

Although such a small data set renders conclusive analysis impossible, it is tempting to postulate that the two clusters of campsites at the upper and lower ends of the Patuyacu, and the long, comparatively empty stretch of river in between, may indicate either the presence of two different groups of Giant Otters with strongly defined home ranges or the (seasonal) movements of one group only. The fact that all Giant Otter signs on the lower Patuyacu were identified as being old, with the exception of one fresh den, which, when we visited it again 3 weeks later was clearly no longer in use, may indicate that the two Giant Otters observed on the lower Palma Real had previously occupied the lower Patuyacu and that these two areas together form (part of) the home range of this particular pair.

In summary, we believe it possible, at least during the dry season, that up to 3 Giant Otter groups inhabit the Palma Real / Patuyacu river system; one in the upper reaches of the Palma Real (we suggest, albeit tentatively, that Cuatro's group has (part of) a home range here, at least during the dry season), one in the lower stretches of the Palma Real and the Patuyacu, and possibly one in the upper Patuyacu.

It is interesting to note that of the total of 9 cochas that were identified on both rivers, a Giant Otter den or campsite was located near 7. This suggests that, though the cochas are small, they still play an important role in den/campsite selection, and hence the definition of home ranges, perhaps especially so in the rainy season when cochas may provide a more stable habitat. The next step will be to visit the Patuyacu and Palma Real during the wet season when human disturbance will be greater (particularly due to the presence of brazil nut collectors) and when water levels and turbidity are more variable.

Malinousqui Survey

Continued development of a national distribution map, the first of its kind for the Giant Otter in South America, will not only facilitate the introduction of Giant Otter conservation and management principles into the 5-year Master plans for protected areas in Peru, but also highlight other rainforest regions where the species should be protected. Towards this end, a cross-section of water body systems in southern, central and northern Peru will be investigated as to the status of the Giant Otter; in November 1999, the Malinousqui river was surveyed for the first time by the Project.

The Malinousqui is the largest tributary of the Tambopata river, draining an area of rainforest of approximately 300,000 hectares. The watershed lies entirely within the north-western flank of the TCRZ. Access to the river is either by boat from Puerto Maldonado or on foot, via paths that begin on the main road from Puerto Maldonado to Cusco.

The Malinousqui was investigated up to and including the Azul river, past its confluence with the Chocolatillo. In addition, 14 of the larger cochas were explored, those which were considered most likely to be habitable by Giant Otters. Of these only 7 had water, the remainder were dry. None of the cochas are very large (no more than 800m in length and 100m in width) and none are named on the map.

On the rivers Malinousqui and Azul themselves, no evidence indicating Giant Otter presence was observed. With respect to lakes, in one (Cocha 'Azulita'), not far from the confluence with Azul, two old den sites were found. An old Giant Otter den was found on Cocha 'Miseria', with 3 entrances, set well back from the shore and located high up on the bank (at least 7.5m above water level). During the entire trip only two individuals were observed, on a lake which is informally known as Loboyoc, located roughly 17km from the confluence of the Malinousqui with the Tambopata river. They were very nervous and it was not possible to record their throat patterns satisfactorily. In three other cochas, no evidence of Giant Otter presence was seen.

Small-scale gold mining is the main economic activity in the area. It is estimated that between 300 and 400 people are involved in mining in the Malinousqui basin and that the activity contributes between 1 and 2.5 million US\$ per annum to the local economy (MacLellan 1996). Tourism is non-existent, although several miners said they would like to encourage it, especially if conditions for gold mining deteriorate. The latter could result from strict enforcement of a mining prohibition in the area, falling production yields or a lower gold price.

In total, 18 operations were seen on the lower Malinousqui, compared to 36 in 1995 (MacLellan 1996), and 16 in 1998 (Ramirez 1998). It therefore seems that mining intensity in the lower Malinousqui has shown a tendency to decrease in recent years. Fish tissue samples were collected during the Malinousqui field period as part of a wider study into the potential risks posed by mercury accumulation to Giant Otters. No otter faeces were collected as no fresh scats were found.

Miners visit fishing sites at several cochas; in Cocha Miseria this was located next to an old otter den. They also fish and hunt at Cocha Loboyoc where we found macaw feathers on the shore, next to shotgun cartridges. It was difficult to ascertain to what extent the miners hunt and if they are likely to shoot Giant Otters or keep them as pets. It seems that most people go hunting in order to supplement their diet and do so when conditions (rain, water level, broken equipment) are not suitable for mining. Motorised boat traffic and the noise from mining operations on the Malinousqui river is continuous, rendering this as a virtual 'no go' area for otters.

Most miners are recent immigrants from the Andes and so have virtually no knowledge of local fauna and conservation, let alone the status of the Giant Otter. They expressed interest in an environmental education programme, addressing the impacts of, and alternatives to, mining, in which the Giant Otter, as a bio-indicator and umbrella species, could play a significant role.

In conclusion, the density of cochas containing water on the river is low (at least during the dry season) and so it is improbable that the natural Giant Otter density in the area, independent of human influence, will ever have been high. However, current Giant Otter numbers are such that it seems likely that habitat quality deterioration and direct harassment resulting from current gold mining activities in the river are affecting the local population.

Lake Sandoval: Management Plan and Survey

Lake Sandoval, half an hour by boat from the town of Puerto Maldonado, is one of the largest oxbow lakes in south-east Peru with a surface area of approximately 125 hectares. In June and August 1999, the lake was visited twice by the Project. Within the first period, we observed a group of 9 Giant Otters on the lake, including one already well advanced juvenile. The juvenile was estimated to be several months old and we conjecture that it was born during the rainy season. During the second visit, we counted only 8 individuals one of which was the juvenile. Quebrada Sandoval and the aguajal area north of the lake were also investigated and, as in 1998, fresh and old campsites were found. One old campsite was found along Quebrada Sandoval, confirming use of this area by Giant Otters for the first time.

The tourism potential of Lake Sandoval has long been recognised and exploited. In 1998, due to the negative impacts of increasing human pressure, and following a request from the National Institute for Natural Resources (INRENA), the Project wrote a draft management plan for the lake (Schenck, Groenendijk, Hajek 1999). This was revised to include more detailed maps and observations made during the 1999 survey visits. In order to stimulate a participative approach while gaining insights from the experience of others, the reviewed copy was sent to seven NGOs and institutions active in Puerto Maldonado, as well as INRENA in Lima, for their comments. In September, all suggestions received

were incorporated into the document and the latter sent to eight tourism companies that operate in the Sandoval area for their contributions.

Although we are still awaiting comments from most tourism companies, the management plan has now been accepted by INRENA. The Head of TCRZ has asked the Project to help with positive and participative implementation of the plan recommendations during the coming year. The latter should be pushed forward before human activities and ecosystem degradation in this important Giant Otter habitat have grown to an extent at which they become more difficult to combat.

Lake Valencia Survey

Lake Valencia is roughly 50km downriver from Puerto Maldonado, on the north bank of the Madre de Dios river. With an approximate length of 13 kilometres, it is the largest oxbow lake in the province. During the 1998 field trip in the lower Madre de Dios, a Giant Otter group of two adults and 3 juveniles (born during the 1998 dry season) was seen on the lake. As Giant Otters had not inhabited Lake Valencia for at least 10 years prior, this was perceived as a very positive development for the survival of the species in the area. Establishing the continued presence of the otter family, as well as obtaining further data with respect to fisheries and other human activities, were the two main reasons for visiting Lake Valencia in 1999, in July and in August.

During the survey no Giant Otters were seen and no fresh campsites or dens were found. A local fisherman showed us the location of two old dens, used by the otters in 1998. He and his family told us that the Giant Otter family had not been seen for several months.

Fishing is the main commercial activity carried out on the lake and is the staple income earner for five families of the Valencia community. Sales in Puerto Maldonado of fresh fish originating from Lake Valencia amounted to a total of 8,957kg in 1997 (Cañas 1998). The main concern the fishermen expressed was regarding the negative impact that netting by the native Palma Real community is having on fish stocks. Apparently, the Palma Real villagers place their nets on the mouth of the caño, during the annual migrations of certain fish species, thereby affecting the natural repopulation dynamics of the lake. The same fishermen also expressed their concern with respect to the amount of fish a Giant Otter family consumes to survive.

Tourism activity on the lake is increasing but, to date, remains low-budget and small-scale. Both the Valencia community and certain tourism agencies are, however, looking at the possibilities of building a lodge in the more uninhabited southern area of the oxbow lake. Human habitation of the lakeshore is increasing as people are moving in with the hope of gaining land titles to plots which they can then sell to tourism companies. The problem is made more immediate due to the fact that Lake Valencia has no Protected Area status. Settlement of the lakeshores will undoubtedly reduce the quality of the lake as Giant Otter habitat.

Throat markings

A minimum total of 79 different Giant Otter individuals were observed in MBR, the Palma Real/Patuyacu river system, the Malinousqui river, and the Capiripa and Sandoval oxbow lakes. Of these, it was possible to personally record a total of 68 distinctive 'manchas' or throat markings. A further 8 throat markings were obtained from 1998 film and photographic footage. The throat pattern catalogue is one of the keystones of the Project; the population dynamics data that may then be derived is essential towards the development of sound management principles and guidelines for the conservation of the species.

Mercury study

Small-scale gold mining is an important activity on the lower Madre de Dios, along the stretch below the settlement of Boca Manu, on the border of MBR, down to Puerto Maldonado. Mercury is used to separate gold particles from river sediments by a process of gravitational concentration and amalgamation. The amalgam is then heated to evaporate the mercury, and gold remains. Around 55% of the mercury that is lost during these processes is released into the atmosphere in the form of elemental mercury, while approximately 45% enters the rivers as metallic mercury (in GUTLEB et al., 1997).

It has been previously demonstrated by the Project that fish with levels higher than 0.1 mg of total mercury/kg fresh weight (the proposed tolerable level for *Lutra lutra*, the Eurasian otter) were present not only in the river Manu and its tributaries but also in many oxbow lakes; this despite the fact that gold mining does not occur within the Reserve itself (GUTLEB et al., 1997). It was decided to further investigate on a long-term basis, the presence and levels of inorganic, methyl and total mercury in fish muscle tissue of fish species which feature prominently in the Giant Otter's diet.

The four fish species targeted were the Bujurki (*Satanoperca* sp.), the Boca Chico (*Prochilodus caudifasciatus*), *Steindachnerina* sp. (for which there does not appear to be a local name), and the Huasaco (*Hoplias malabaricus*), representing 44%, 28%, 7% and 6% respectively of the Giant Otter's diet (KHANMORADI, 1994). Moreover, since oxbow lakes play an important role in Giant Otter habitat choice, we decided to focus on four cochas, those which we considered would best reflect the spectrum, if any, of levels of mercury contamination in the area. Samples of fish muscle tissue were collected in Cochas Cashu, Salvador, Limonal and Capiripa, that is, at locations indicating recent evidence of Giant Otter presence, with decreasing distance from the gold mining zone. Cocha Cashu is situated well within the National Park, Cocha Salvador is in the Reserved Zone, Cocha Limonal lies at the mouth of the Manu river near the border of the Reserved Zone, and Cocha Capiripa, is located on the Madre de Dios river, entirely outside the Manu Biosphere reserve but close to the gold mining area. Each of these cochas will be sampled in every future census, thereby establishing research continuity. Within the two 1999 Manu censuses and as part of the ongoing mercury study, samples of fresh otter scat were collected in four cochas, whenever the possibility arose of doing so without disturbing the otter groups. All samples are currently being analysed for mercury content.

Pacaya Samiria National Reserve Giant Otter Project

During recent years, there have been sighting reports of Giant Otter groups in the Pacaya Samiria National Reserve (PSNR) in central Peru. In order to confirm this data, the project "Determination of the Distribution and Abundance of the Giant Otter (*Pteronura brasiliensis*) in the Pacaya Samiria National Reserve" was initiated in June 1999, financed by FZS and carried out by a Peruvian researcher, Sandra Isola. The key objective was to contribute towards the conservation of this species, by gaining knowledge of the actual population characteristics, habitat conditions and availability, and current threats.

The first fieldwork period, from June to December 1999, has been completed and preliminary results may be advanced. In the Yanayacu river basin, 46 sightings were made and at least 18 different individuals were identified. Sightings were largely of solitary individuals, but 2 groups of 7 animals each were also encountered, the largest in the basin. This watershed is the most important in terms of Giant Otter abundance.

In the Pacaya river basin, sightings were principally concentrated on Tipishca Cahuana ('tipishca' signifies a slow-moving branch of the river) and Cocha Yarina (middle Pacaya). On Cocha Yarina, we encountered one group of 8 individuals, the only family which included a cub. One adult and the cub were clearly identified by their throat markings. The remaining 3 sightings of groups were on Cahuana. In the first, we encountered 9 specimens, 3 of which were identified. The second group numbered 4 specimens, 2 identified, and the last group comprised 7 individuals, 6 identified. The concentration of sightings on the middle Pacaya, a total of 28 with 13 specimens identified, makes this area important for future investigations.

The pressure exerted by people who enter the Reserve illegally, the limited control and tourism infrastructure, the lack of a comprehensive environmental education programme as well as of gamewarden capacitation together result in an inappropriate management of Giant Otter habitat. A sensitization programme was initiated with children, fishermen and gamewarden of the Reserve, addressing the importance of species conservation. It was and will be very useful to continue with the diffusion of 'Quedan Muy Pocos' Giant Otter posters.

Publications and Promotion

The September 1998 International Symposium for the Conservation of the Giant Otter, organised by FZS and INRENA, provided an excellent opportunity to share and learn from the work experiences of those involved with Giant Otter investigation and conservation. The publication (in Spanish) of the symposium summary report, although delayed due to organizational problems within INRENA, represents a significant step towards a formulation of the national conservation strategy for this flagship species (copies may be ordered via e-mail at 4 US\$ apiece, excluding postage and packing).

Christof Schenck's doctorate thesis, first published in German, has been translated into Spanish, and is entitled "Lobo de Rio (*Pteronura brasiliensis*) - Presencia, uso del hábitat y protección en el Perú" (copies may be ordered via e-mail at 10 US\$ apiece excluding postage and packing). Continued demand led to the repeated production of 1000 "Quedan Muy Pocos" Project awareness posters.

Education

During 1999 the foundations were laid to carry out the "Pepe, el Lobo de Rio" colouring book activity in the course of 2000. Approximately 4000 children living in and around three protected areas, Manu, Tambopata-Candamo and Pacaya-Samiria, and in 4 regionally important cities, Lima, Cuzco, Puerto Maldonado and Iquitos, should take part. Proper follow-up of the material distribution, book colouring and drawing competition process, as exemplified during the execution of this activity in 1998 in Pacaya Samiria, will be strongly encouraged.

Note 1: This is a minimum estimate based on known different throat markings from both censuses, plus a number of juveniles born in 1999 for which no throat markings were obtained.

Note 2: The terms 'old' and 'fresh' are relative and reflect a balance of estimates (based on personal experience) of factors such as smell, insect activity, soil dampness, clarity of tracks, weather conditions, etc. 'Fresh' refers to a den or campsite estimated to have been used by Giant Otters within the previous week. 'Old' refers to dens/campsites which have not been visited by Giant Otters for at least a week. Once a campsite or den is estimated to be more than one week old, it becomes increasingly difficult to 'calculate' even an approximate age.

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RESÚMEN: Reporte de actividades y campañas del proyecto Nutria Gigante en Perú

En 1999, el proyecto Conservación de la Nutria Gigante de la Sociedad Zoológica de Frankfurt tomó nuevo ímpetu con la presencia a tiempo completo de personal en Perú. Dos censos fueron realizados en la Reserva Manu, se comenzaron nuevos estudios en los ríos Palma Real y Patuyacu, se realizó un primer estudio sobre el estatus de las nutrias en el río Malinosqui, se actualizó el plan de manejo para el Lago Sandoval, y se relevó nuevamente el Lago Valencia.

El proyecto ha llevado adelante anualmente censos de nutrias gigantes en la Reserva Manu desde 1990, con las excepciones de 1997 y 1998. Para compensar el vacío de información correspondiente, se realizaron 2 censos en 1999, uno antes y otro después de la estación húmeda. En el primer censo se observó un total de 47 individuos, 2 solitarios y el resto formando parte de 11 grupos diferentes, el mayor de estos conformado por 6 individuos. El tamaño promedio de los grupos fue 4.1 individuos. En el segundo censo se contaron un total de 55 individuos, 3 solitarios, y el resto conformando 9 grupos distintos. El grupo más grande estaba formado por 10 individuos y el tamaño promedio de los grupos fue de 5.8 individuos. Per lo menos 13 de los individuos registrados durante estos censos se conocían de los primeros 6 censos. Durante los censos se tomaron muestras de fecas para estudiar el contenido de mercurio de las mismas, como parte de los estudios que se están realizando sobre el efecto del mercurio (proveniente de la actividad minera) en las nutrias.

En el pasado el proyecto se ha enfocado en grandes ríos y lagunones (cochas). Para complementar estos estudios, comenzó uno nuevo en 1999 para examinar la dinámica de los grupos de nutrias y el uso de hábitat en ríos menores. El objeto del mismo es conocer significancia de estos ríos pequeños para la supervivencia de la especie en zonas en las que las cochas son pocas y están distantes. Los ríos Palma Real y Patayucu fueron visitados por primera vez en 1998. La presencia de nutrias fue confirmada mediante observación de animales, madrigueras y otros rastros de los mismos. Creemos que es posible que al menos durante la estación seca hasta 3 grupos de nutrias habiten el sistema conformado por estos ríos.

In 1999 se relevo el río Malinosqui por primera vez. La cantidad de cochas con agua en el río es baja (al menos durante al estación seca), por lo que es poco probable que la densidad natural de la especie en el área, independientemente de la actividad humana, haya sido alta alguna vez. Sin embargo, la cantidad actual de nutrias es tal que parece probable que el deterioro de la calidad del hábitat y el impacto directo de las actividades mineras en el río, están afectando la población local.

En 1998, debido al impacto negativo debido al incremento de la presión humana en Lago Sandoval, y siguiendo una petición del Institute Nacional de Recursos Naturales, el proyecto preparó una propuesta de manejo para el lago. Este manuscrito fue revisado para incluir mapas más detallados y las observaciones realizadas durante las visitas realizadas en 1999. La nueva versión fue enviada al INRENA, ONGs y otras instituciones para que hicieran sus comentarios. Luego de incorporar las sugerencias realizadas, el documento fue enviado a 8 empresas que hacen turismo en la zona para recibir sus comentarios. Aunque aún faltan los comentarios de la mayoría de las empresas, el INRENA ha aprobado el plan de manejo.

En 1998 se observaron nutrias en el Lago Valencia tras 10 años sin registros en la zona. Durante 1999 no se observaron ni nutrias ni rastros, sólo 2 madrigueras viejas, usadas por las nutrias en 1998.

Un mínimo de 79 nutrias gigantes diferentes fueron observadas en la Reserva Manu, los ríos Palma Real y Patuyacu, el río Malinosqui, y los lagos Capiripa y Sandoval. De estos, fue posible registrar 68 manchas gulares distintivas. Estas son la base del proyecto, la información sobre la dinámica poblacional que puede derivarse de las mismas es esencial para el desarrollo de principios de manejo y lineamientos de conservación de la especie.

Finalmente, en junio de 1999 se comenzó el proyecto "Determinación de la distribución y abundancia de la nutria gigante (*Pteronura brasiliensis*) en la Reserva Nacional Pacaya Samiria", financiado por la FZS, y a cargo de una investigadora peruana

REPORT

RECORDS OF THE GIANT OTTER, *Pteronura brasiliensis*, FROM GUYANA

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Abstract: The results of interviews and surveys of status of the giant otter are presented. These include information on *Pteronura brasiliensis* on the upper Potaro River and other rivers in Guyana. Suggestions are made for future work on giant otters on the Potaro Plateau. These include monitoring the effects of mining, studies of mercury poisoning, ecotourism feasibility studies and autecological studies.

An incomplete draft of this paper was published here by accident. Please see Volume 17, Issue 2, pages 65 – 74 for the full and correct version of this paper.

REPORT

OTTERS *Lutra lutra* KILLING MOUNTAIN HARES *Lepus timidus*

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Abstract: During the winter, otter *Lutra lutra* were found to be kill mountain hares *Lepus timidus* in the Scottish highlands. The possible method of killing is discussed. Hares and other mammals are an important part of otter diet during winter.

During the 1989-90 winter, dead mountain hares *Lepus timidus* were regularly found along the banks of the Water of Nocht, Ernan Water, Spearach Burn and Folly Loch in Aberdeenshire, north-east Scotland. These burns are fast flowing mountain streams which mostly flow through open heather moorland, with grass and rush/sedge along their banks before entering the River Don near the village of Strathdon (Grid Reference NJ 346124). The Burn of Nocht also has extensive areas of mature coniferous woodland along its bankside. The Folly Loch is near the headwaters of the Spearach Burn. All the carcasses were found between 300 and 500 metres above sea level. On one visit, nine of 11 dead hares, were found within two metres of the water's edge or on islets/rocks in the burns, near places where otters *Lutra lutra* regularly defaecated (spraint sites).

In January and February 1990, 14 carcasses were examined along a 2.5km length of the Spearach Burn and the Burn of Nocht. Extensive areas of fresh blood in the snow near most of the bodies, suggested that at least 12 of the hares had been killed, rather than having died there, and been eaten as carrion. Of 25 faeces (spraints) examined from the area, 21 (84%) included hare remains (hair), while of 15 spraints from the larger River Don nearby, 10 (67%) contained mammal remains, including hare. Fish remains were found in all the spraints analysed from the River Don, but in only 17 from the study area, the remaining eight had only hare remains.

Carcasses were found along a section of riverbank over a period of two to three weeks, then on other parts of the burns, either upstream or downstream, suggesting that the predator was systematically using the watercourses. No bodies were found between March and October. During this period, the riverbanks were covered with snow, making the examination of animal tracks in the area relatively easy to follow and identify.

Otters were considered being responsible for the deaths because:

- i. all bodies were near the waters' edge; searches of the adjacent hillside found no hare carcasses;
- ii. most of the sites with bodies
 - a. were used on more than one occasion - for example on Folly Loch, at least 15 carcasses were found at the same place during the winter;
 - b. coincided with areas of sedge/ visited by hares at night where they fed near the waters edge, or, in some instances on vegetation growing in the water;
 - c. had evidence of otter presence, prints in the snow/mud of fresh spraint.
- iii. although foxes *Vulpes vulpes* and mink *Mustela vison* live in the area, no signs of these predators were found in the snow near the dead bodies;
- iv. there was no evidence of birds of prey, which also occur in the valley, visiting the carcasses;
- v. there is therefore no evidence that any other predator killed these animals;
- vi. during an early afternoon in March 1990, a keeper watched an otter feeding on a freshly killed hare near Folly Loch. The event was observed for about ten minutes, after which the otter disappeared.

How did the otters manage to kill the hares - the latter being a relatively alert and swift animal, the former more cumbersome and slower on land? In fact, CHANIN (1985) wrote *Otter are not sufficiently agile to catch many species of mammals, which do not, therefore, feature prominently in the diet.*

We would argue that it would not be too difficult for otters to catch hares. Although swift, and at times timid animals, they can also be naive, relying on keeping perfectly still rather than taking flight at the approach of a predator. DC has watched foxes prey on hares. On the appearance of the predator, most hares run, however, a few sit tight and the kills, with one exception, were achieved by the fox pouncing from a few feet away. If the hares were resting and sheltering in the vegetation at the water's edge, and were up wind, otters could thus catch them by emerging quietly from the burn.

We have no idea of how many otters are involved, but footprints in the snow in January 1990 suggested at least two individuals. The upper reaches of the two burns where most of the carcasses were found are separated by only a few hundred metres of relatively flat ground, so it is possible that the same animals used both burns.

An examination of literature shows that in most studies of otter diet, mammal remains are found at low frequencies, to about 10%, more usually around 5% (see MASON and MACDONALD, 1986 for details). The most common species recorded is rabbit *Oryctolagus cuniculus* - nearly 50% of the mammalian prey caught in Scotland, and about 75% in Devon - and most are caught near the water edge (REY et al., 1979; WISE et al., 1981; MASON and MACDONALD 1986).

There are a few references to otters eating hares, but none list them as an important component of diet. STEPHENS (1957) reported the remains of brown hare *L. capensis* in spraints, and that in November. BATTEN (1953) refers to leverets being eaten, while ST. JOHN (1893) reported that *in severe frosts, etc., the otter..... catches and eats rabbits, hares and any animals it can surprise...*

Our observations suggest that during the winter months, when fish prey might be difficult to find, mountain hares can form an important part of the diet of otters, and catching them is not necessarily restricted to period of cold weather. This is further supported by results from a more detailed survey of otter in north-east Scotland. On three rivers, including the River Don, which flow through the upper parts of the Grampian mountains, there is an increase in the number of mammal remains recorded in spraints collected during the winter months (JC pers. obs.)

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RESÚMEN: NUTRIAS *Lutra lutra* MATANDO LIEBRES DE MONTAÑA *Lepus timidus*

Se encontró que durante el invierno nutrias *Lutra lutra* mataban liebres de montaña *Lepus timidus* en las tierras alias de Escocia. Durante el invierno de 1989-1990, se encontraron liebres de montaña a lo largo de los bancos de Water of Nocht, Ernan Water, Spearach Burn y Folly Loch en Aberdeenshire, al NE de Escocia. Todas se encontraron entre los 300 y 500 m sobre el nivel del mar. En una visita 9 de 11 carcasas fueron encontradas a menos de 2 metros del agua o en rocas o islotes en el agua, cerca de los lugares donde las nutrias defecaban regularmente. Catorce carcasas fueron examinadas en Enero-Febrero de 1990 en Spearach Burn y Burn of Nocht. Rastros de sangre fresca en la nieve cerca de la mayoría de los cuerpos sugieren que al menos 12 de las liebres fueron matadas y que estas no fueron consumidas como carroña. De 25 fecas examinadas en el área, 21 (84%) tenían restos de liebres, mientras que 10 de 15 (67%) colectadas en un do cercano contenían restos de mamíferos, incluyendo liebres. Se encontraron restos de peces en todas las fecas colectadas en el río, pero sólo en 17 de las colectadas en la zona de estudio, las otras 8 sólo tenían restos de liebres. Las carcasas se encontraron a lo largo de una sección del banco del río por un período de 2 a 3 semanas, y luego en otras partes del mismo, lo que sugiere que el predador usaba sistemáticamente los cursos de agua. No se encontraron cuerpos entre Marzo y Octubre. Se considera a las nutrias responsables de las muertes debido a que: i) todos los cuerpos se encontraron cerca de la orilla; ii) la mayoría de los sitios con cuerpos fueron usados en más de una ocasión, coinciden con áreas visitadas por las liebres durante la noche, donde se alimentan cerca de la orilla o dentro del agua, y en la mayoría se encontró evidencia de la presencia de nutrias (aunque la zona está habitada por zorros y visones, no se encontraron signos de estos predadores cerca de los cuerpos; tampoco se encontraron signos de las aves de rapiña que también habitan la zona); y iii) en Marzo de 1990 se observó a una nutria comiendo una liebre recién muerta en Folly Loch. Las nutrias pueden haberse arreglado para cazar a las liebres emergiendo cuidadosamente del agua cerca de estas mientras descansaban refugiadas en la vegetación de la orilla. No está claro cuantas nutrias estaban involucradas, pero huellas encontradas en Enero de 1990 sugiere que al menos 2 individuos. En la mayoría de los estudios de dieta de nutrias, los restos de mamíferos se encuentran en bajas frecuencias (alcanza el 10%, pero es mas frecuente alrededor del 5%). La especie más común es el conejo *Oryctolagus cuniculus*, que representa alrededor del 50% de los mamíferos consumidos en Escocia, y el 75% en Devon, y es mayormente cazada cerca de la orilla. Hay unas pocas referencias de nutrias comiendo liebres, pero ningún estudio las lista como componente importante de la dieta de las nutrias. Nuestras observaciones sugieren que durante los meses de invierno, cuando los peces pueden ser difíciles de encontrar, las liebres de montaña pueden volverse un componente importante de la dieta de las nutrias, aunque su caza no está restringida necesariatmente a los períodos de clima frio.

CALL FOR INFORMATION

WHITE OTTERS

We live in Houston County, which is located in Tennessee west of Nashville. We found two otters run over in the road. One of them was a dark brown color and the other one was solid white with two black dots on its head. It has a pink nose and pink feet. The only information we can find on otters states that the colors are dark, brown, or cinnamon. So we was wondering about this white one. Is it common or not? If you would please give us some kind of response. We got you address off the WEB and it stated if that if there were any questions, comments, or suggestions to e-mail here. If you don't have any information please let us know where we can try other places.

Thank you,

Dwayne & Crystal Dew

dews@teleclipse.net

OTTER VET GROUP

Dear colleagues,

Sorry for not answering any sooner.

I am very pleased we are now a little group of vets interested in otters. I have to collect the emails addresses of 10 more vets of whom I have only their normal addresses.

In a near future I think it would be nice to know what literature each of us has got about otters. If you have any other ideas of what we can do together, please tell me.

For now we have to answer two questions coming from two vets :

- How many lobes there are in the liver of *Aonyx cinerea* (Asian Small Clawed Otter) (Eva Petit)?
- Is there a cartilage boneplate in the third eyelid of *Lutra lutra* (Eurasian Otter) and is it possible there is a procidence of the third lid for a while like it is the case for cats (Alfred Melissen)?

Thanks in advance

Best wishes

Hélène Jacques

NEW BOOKS

CONSERVATION AND PUBLIC AWARENESS OF OTTERS

Proceedings of the workshop: 9.-12.12.1999
Charles SANTIAPILLAI, Hiroshi SASAKI (eds.)

For further information please contact:

The Otter Research Group Japan, c/o/Chikushi Jogakuen Junior College, 2-12-1, Ishizaka, Dazaifu,
Fukuoka 818-0192, Japan.

BIOLOGY OF MARINE MAMMALS

John E. REYNOLDS III, Sentiel A. ROMMEL (eds.)

For further information please contact:

Smithsonian Institution Press, Washington, DC, 1999. 578 pages
ISBN 1-560983752 (hbk), \$ 44.94 (\$75.00)

WILDLIFE OF LAO PDR

1999 Status Review

J. W DUCKWORTH, R. E. SALTER and K. KHOUNBOLINE

For further information please contact:

Will Duckworth, IUCN Lao PDR, email address wwflao@laonet.net

BEHAVIOUR AND ECOLOGY OF RIPARIAN MAMMALS

Dunstone, N., Gorman, M.L. (eds.).

Symposia of the Zoological Society of London 21. 1998.407pp. ISBN 0 521 63101 7 Cambridge
University Press.

OTTER CALENDAR

We do sell a 2000 Otter Calendar by Glenn Chambers(#GS0136) for \$7.00 per copy, plus shipping.

Two copies would cost \$14, plus \$5 shipping for a total of \$19.

You may place an order by calling our Nature Shop at: 573-751-4115 ext. 325.

Via mail by sending payment to: Missouri Dept. Conservation, Attn: Nature Shop, P.O. Box 180,
Jefferson City MO 65102.

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V I R T U A L O T T E R S

We just finished this amazing SITE! Please, have a look and enjoy it.

Dr. Vladimir Sevostianov

<http://www.az.com/~katrinat/isalnd/>

OTTERNET.COM

I thought it would be helpful to give a brief update on Otternet.com. Our site was created to educate people around the world on otters, and link to key other sites such as IOSF (International Otter Survival Fund), FSO (Friends of the Sea Otter) and ROA (River Otter Alliance). We began about 20 months ago and have grown to over 60 web pages accessed by about 200 people a day (about 70,000 per year). Most visitors appear to be children doing a report on otters or angry/curious hosts who have seen a local otter (some wanting wisdom on how to get rid of otters eating "their" fish from "their" pond).

If you looked around our site you would see facts from the IUCN 1990 Otter Action Plan, galleries of photos, movies, sounds and several otter games such as otter pong, otter mad libs, otter tile game and "test your otter knowledge" interactive tools. We also have a bulletin board where people can post otter questions. Visitors would especially appreciate feedback from this illustrious group should you have time to visit it and answer a few questions every once in a while.

If anyone has suggestions to improve the site, or additional content we should post, please let me know.

Thank you ! Bob Fetterman

<http://www.otternet.com/wwwboard/wwwboard.html>

OTTERCAM

Just wanted to let you know about the new "Ottercam" feature at nationalgeographic.com that lets visitors take an inside look at the lives of two river otters as they frolic about the pools and slide of their adoptive home. Please see the media advisory below for more information on this unique feature and feel free to add a link.

Thanks for your time, Mark Nardelli

National Geographic Online Relations at nationalgeographic.com/ottercam

LAST MINUTE NOTES

OTTER STOLEN FROM OAKLAND ZOO

June 8th, 2000

Hello everyone

On Monday night, someone broke into the Oakland Zoo and took one of our otters, Harriet. We house three otters at Oakland; Ozzie, age 13, Harriet, age 13 and their one offspring, Willow, 16 months. Ozzie and Harriet have lived together at Oakland for over 12 years. As of yet, to my knowledge, we do not have any substantial leads in the case. We have gotten an enormous amount of press coverage in the Bay Area, and are hoping someone somewhere has seen or heard something that will lead us to Harriet. Thanks to several donors, we currently have a \$12,000 reward for information leading to her safe return. We are hopeful that someone thought she would be a unique pet, realize that she is in fact not, and return her. I will update you as we find out new info. Ozzie does not seem excessively disturbed by Harriet's absence or the encounter, however Willow was absolutely terrified on Tuesday, and hid most of the day. She was a little better today.

If by some chance anyone hears anything about Harriet, please let me or the Oakland Zoo know asap.

Thank you.

Brenda Oswald
Otter Keeper, Oakland Zoo
510-632-9525

A NIGHTMARE FOR OTTERPARK AQUALUTRA

Otterpark AQUALUTRA is a beautiful 10 ha centre for natural and environmental education near the city of Leeuwarden in the Netherlands. The Eurasian otter (*Lutra lutra*) takes a leading role in the park, though many other animals that live in typical otter habitats can also be seen such as beavers, mink, polecat, roe deer, storks, waterfowl, sand martins, amphibians, water bound reptiles, and fresh water fish. In the exhibition building there are several audio-visual presentations. In a very short time, the park has become the biggest attraction in the city of Leeuwarden, and one of the major attractions in the province of Friesland.

In one part of the park visitors are not allowed. This is the breeding centre for otters. Otterpark AQUALUTRA has been quite successful in breeding Eurasian otters. During the EAZA/EEP conference in Saumur in 1996 the Otterpark was chosen as the new studbook keeper for *Lutra lutra*.

Behind the scenes, the Otterpark and its founder, the Dutch Otter station Foundation (Stichting Otterstation Nederland), have been very successful in undertaking research on otters and promoting and undertaking recovery work on existing wetlands, as well as the development of new wetlands. This has led to a situation in which the otter can be re-introduced again in the northern part of the Netherlands. Here, a wetland area of more than 12,000 ha has been restored and built. This area has been designated as the first re-introduction site. Next year, it is likely that the first otters will be released in this area.

Although there has been, and still is, a lot of success a lot of bad luck has also dogged the Otterpark. In 1992, the tender for building the park completely failed. The contractor with the lowest bid had a price 30% above the estimated price. It was obvious that all contractors had sat together and arranged their prices in a way convenient for themselves. They hoped that our government would bridge the gap between their price and the estimated building costs. The government would not do so and we decided not to go on with these contractors. A lot of hassle came out of this. The end of the story was that, half a year later, we found a new contractor with a good price, however, it resulted in the loss of our first year of income (i.e. 1993). One year later than planned, we opened our gates to visitors. During this period we lost more than 1 million guilders (approximately \$485,000). In all the years following, we did not manage to get rid of this extra financial burden and it crippled our possibilities to grow and attract more visitors. Though there were also years of profit, these were too few to remove the extra burden.

At the beginning of this year (2000) we had the possibility to change all this with the help of a new financier. The perspective was fine, but behind the scenes some dark forces were awakened and frustrated this process. The City Council of Leeuwarden and the Province of Friesland want a big theme park on our location, and want the Otterpark to become a part of this. We have said that we are interested in co-operating, but only with the preservation of our identity. Beginning this year, it appeared that this would not be possible; we had to give up our identity. This was the prelude to something I still cannot believe really happened! Two of the then board members, and one that resigned as a member at the beginning of this year, called for a board meeting behind the backs of three other board members and myself. In this meeting they decided to ask the court to declare both the Otterpark and our Foundation bankrupt. With falsified papers they convinced the court that a bankruptcy for both organisations was necessary. They misused the weak financial position of the Otterpark. I had to hear about these bankruptcies from a journalist! Soon it became clear to me that these three people made mistakes in the procedures. Our lawyer advised us to go to court to challenge these unlawful bankruptcies, and this we duly did. In court, it very soon became apparent that we would win this case. Almost three weeks after the bankruptcies they were annulled by the judge. This, of course, was an enormous relief for us all! During all these weeks there was a lot of news about the case in the media. In part as one of the former board members is still a member of the Dutch Parliament! It seems that the reason for asking for these bankruptcies was all to do with the completion of the new theme park, as it would have been very easy and cheap to incorporate the Otterpark in this new theme park following bankruptcy.

Nevertheless, the damage has been done. There was a lot of bad publicity and in the minds of a lot of potential visitors to the Otterpark there is still the idea that the Otterpark is not open anymore, yet it has been open all the time. It is much more difficult to have good news published in the media than bad news! Financially, these bankruptcies have given us an extra loss. Going to court cost quite a lot of

money. Besides that, we notice a decrease now in our visitor numbers of more than 10%! All these troubles have urged us to make a new business plan and to look at new opportunities.

In the short run, we are in desperate need of all kinds of financial contributions. Sponsors are very welcome to help us back on our feet again. If this request appeals to you, you can help us by making a financial contribution to our giro bank account (Postbank; account number 34.12.176) in the name of the Stichting Otterstation Nederland, in Leeuwarden, the Netherlands. All contributions, big or small, are very welcome! By helping us you help us go on with our important work!

Addy de Jongh,
Director, Otterpark AQUALUTRA

RESÚMEN: UNA PESADILLA PARA EL PARQUE DE NUTRIAS AQUALUTRA

El parque AQUALUTRA para nutrias es un centro para la educación natural y ambiental cercano a la ciudad de Leeuwarden en Holanda. La nutria euroasiática (*Lutra lutra*) es el actor principal, pero pueden observarse otros animales. Rápidamente el parque se ha vuelto la mayor atracción de la ciudad de Leeuwarden, y una de las mayores de la provincia de Friesland. En un sector del parque, el centro de cría de nutrias, no está permitida la presencia de visitantes. El parque ha sido muy exitoso en la cría de nutrias euroasiáticas. A pesar del éxito del parque, el mismo ha corrido con mucha mala suerte. En 1992 la licitación para su construcción falló por completo. El contratista con la oferta más económica presentó un precio un 30% por encima de lo previsto, evidentemente debido a un acuerdo entre los contratistas. Se tardó medio año en encontrar uno nuevo que solicitara un precio adecuado, pero se perdieron las ganancias correspondientes al primer año de ingresos (1993). Las puertas se abrieron para los visitantes un año después de lo previsto. La consecuente pérdida económica no ha sido posible revertirla aún. A principios de este año, tuvimos una buena oportunidad para que un nuevo financiador nos permitiera cambiar esta situación, pero el proceso se vio frustrado. El concejo de la ciudad y la provincia querían un gran parque temático en nuestro lugar, y que el parque de nutrias se volviera una parte del mismo. Nosotros estuvimos dispuestos a colaborar, en la medida en que se preservara nuestra identidad, lo que a principios de este año no parecía posible. Dos de los miembros en ese entonces del equipo directivo de parque, y uno que había renunciado, llamaron a una reunión a espaldas mías y de los otros 3 miembros del equipo, y decidieron pedir ante la corte que se diera al parque y a nuestra fundación en bancarrota. Utilizando papeles falsos y la débil posición económica del parque, convencieron a la corte de que esto era lo adecuado. Yo me enteré por la prensa y finalmente logramos anular la decisión judicial, pero durante el proceso hubo mucha prensa al respecto, entre otras cosas debido a uno de los miembros del equipo, también lo es del parlamento. Aparentemente todo este movimiento estuvo ligado a la creación del nuevo parque temático. Sin embargo, el daño ha sido hecho, dada la prensa en contra, muchos visitantes potenciales consideran que AQUALUTRA permanece cerrado (a pesar de que ha estado abierto todo el tiempo). Todo esto (sumado a los costos del proceso judicial) ha empeorado aún más nuestra situación económica, por lo que estamos en búsqueda desesperada de contribuciones financieras. Se pueden hacer contribuciones (giros) a nuestra cuenta bancaria 34.12.176 (Postbank) a favor de Stichting Otterstation Nederland en Leeuwarden, Holanda. Todas las contribuciones, grandes o pequeñas, serán muy bienvenidas.