NOTE FROM THE EDITOR

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At first I would like to thank Aksel Bo Madsen who organised the contact with the Ministry of Environment and Energy - National Environment Research Institute, Denmark, the sponsor of this issue. Additional funds were contributed by Deutsches Tierhilfswerk, Frank Giese, Ronald Pichler, Gabriel Pretus, Donald Reid, Christy Vanfraechem, and Anja Zogall.

In this issue you will find a viewpoint of Chris Mason on the problem of PCBs and declining otter populations. He held this lecture a view days ago in Switzerland at a local otter workshop. Once again the problem of PCBs and otters was subject of long and controversial discussions.

We have now a first circular for the VII. International Otter Symposium which will be held in the Czech Republic from 13.-20.3.1998. As the chairpersons have to finish the programme by the end of October no presentations can and will be accepted after that date. Authors will receive a notice on the acceptance not later than 15.1.1998. As you all will probably remember the theme of the last meeting in South Africa was „Otter Conservation is not just about Otters“. Keeping this in mind the organisers and the chairpersons greatly encourages you to invite „Non-Otter-People“ to give contributions on topics of general interest as this might add fruitful information for our otter-work.

I would like to express my sincere thanks to the „Otter Bulletin Team“ Barbara Gutleb-Rainer (Vienna), Hans van den Berg (Wageningen) and Els Hoogsteede-Veens (Grafisch Service Centrum Van Gils, Wageningen) for all their invaluable help. Tobias, thank you for your help with the envelopes.

V I E W P O I N T

THE SIGNIFICANCE OF PCBs IN OTTERS AT NATIONAL AND REGIONAL SCALES*

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Abstract: Lecture held at the International Workshop: The Otter - Back in Switzerland again? 18.-19.6.1997, Möschberg, Switzerland. It summarises the effect of industrialization, typified by plastics production and subsequent levels of PCBs in the environment, and clearly shows the corelation with reduction in otter numbers. Across Europe, this relationship is found. The results for Wales and the Clydesdale area of Scotland are examined in detail and then related to national trends in the United Kingdom.

We can begin by looking at the current distribution of otters in Europe (Fig. 1). Populations and range are severely depleted over much of north-west and central Europe. Populations thrive around the western seaboard and in parts of the east.

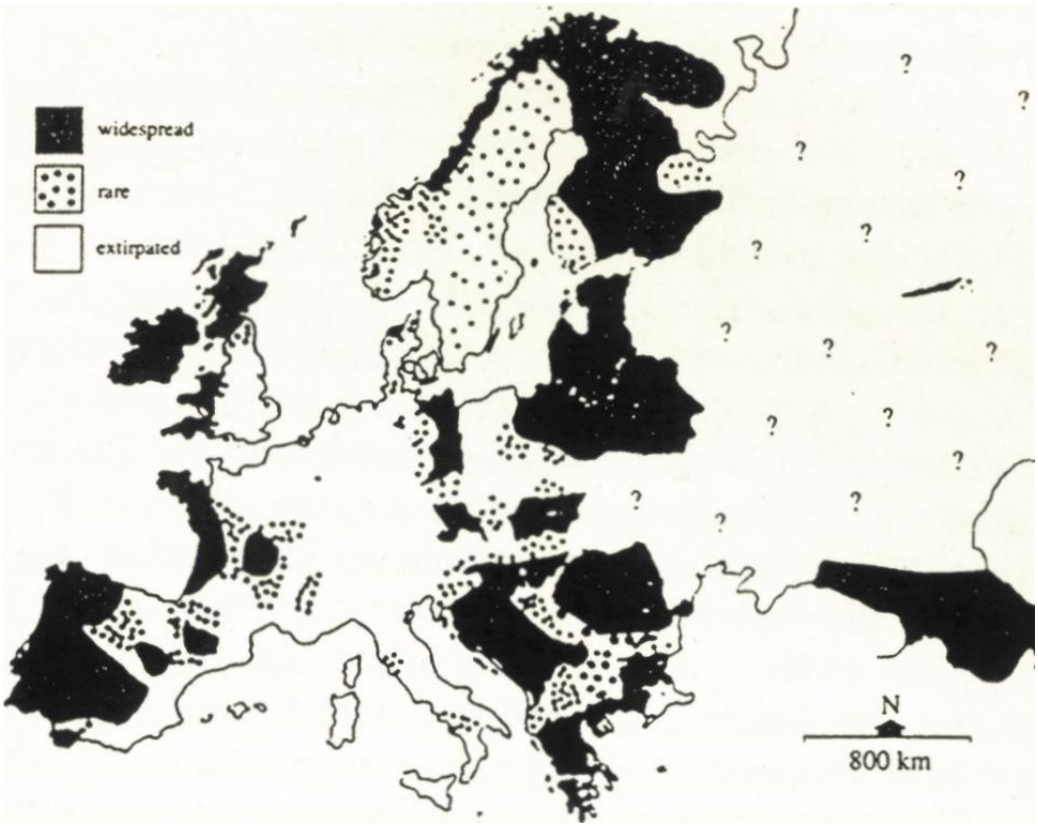

Figure 1: Distribution of the otter (*Lutra lutra*) in Europe

Figure 2 shows an index of industrial output in Europe and the direction of prevailing winds. Otters are extinct or threatened in those countries with high industrial output and in areas downwind of such countries. This suggests that the decline was caused by a contaminant that both entered watercourses locally but was also widely dispersed by wind. Because the decline was rapid and over a large area during the late 1950s and

1960s it indicates a contaminant which reached critical levels during that time. The widespread industrialisation in Britain and in much of Western Europe in the 1950s would have led to increased contamination with compounds such as PCBs. Studies of lake sediments and of fish in museums have shown an exponential increase in PCBs during the 1950s and 60s.

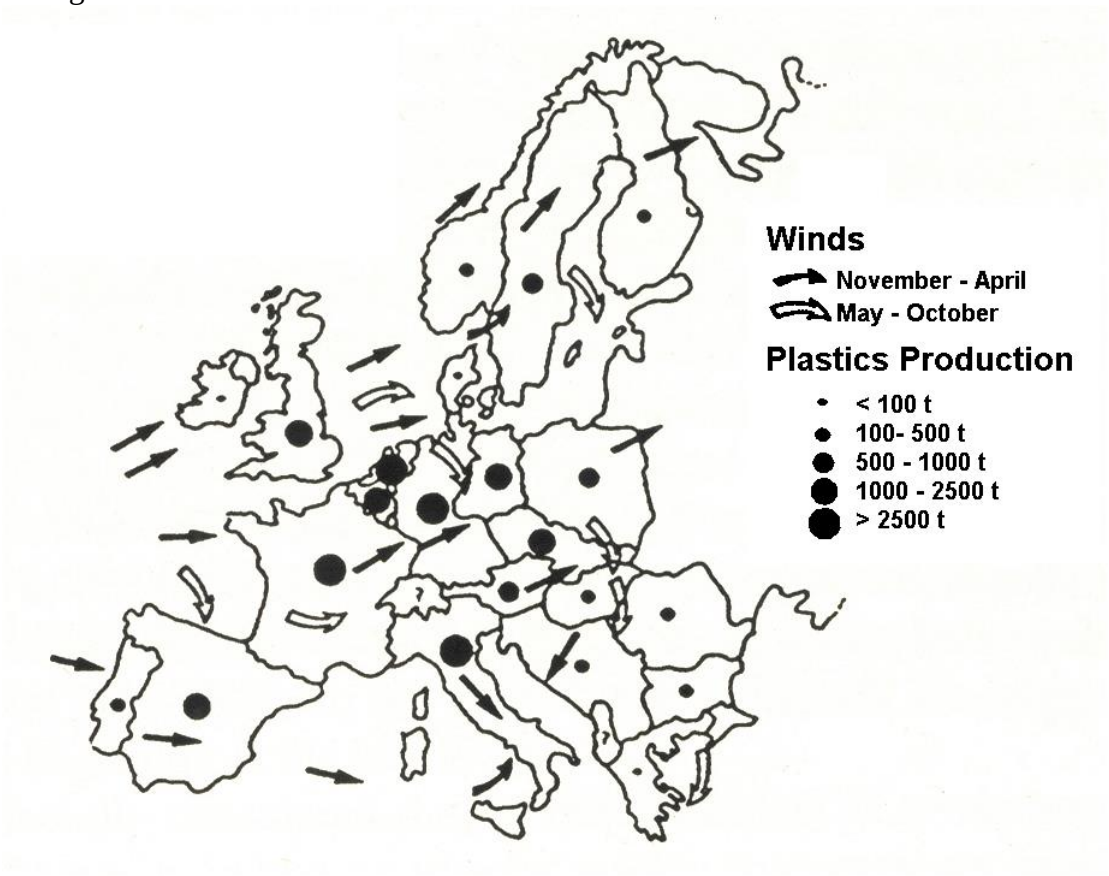

Figure 2: Plastics production in Europe and prevailing winds

PCBs are known to have a wide range of effects on mammals. They are endocrine disrupters. They can have marked effects on the endocrine system, on reproduction and on the immune system.

Figure 3 shows the concentrations of PCBs in otter tissues from various regions of Britain and Europe. The horizontal line at 50 ppm is the tissue concentration associated with reproductive failure in PCB-dosed laboratory mink. It can be used as a rough standard for likely effects on wild otters. In general, in those countries with a mean PCB level much greater than 50 ppm, otter populations have been in decline or are very rare. In those countries where mean levels are below 50 ppm, the otter population is widely distributed or expanding. Figure 3 is based on total PCBs and of course, PCBs vary widely in their toxicity. There are differences in the PCB congener patterns from different regions and countries but we have found that 58-78% of the summed PCBs in a sample consist of those which are likely to cause physiological damage (mixed-function oxidase inducers). Dutch studies have found that PCBs 126 and 169, the most toxic congeners, are preferentially accumulated in otters.

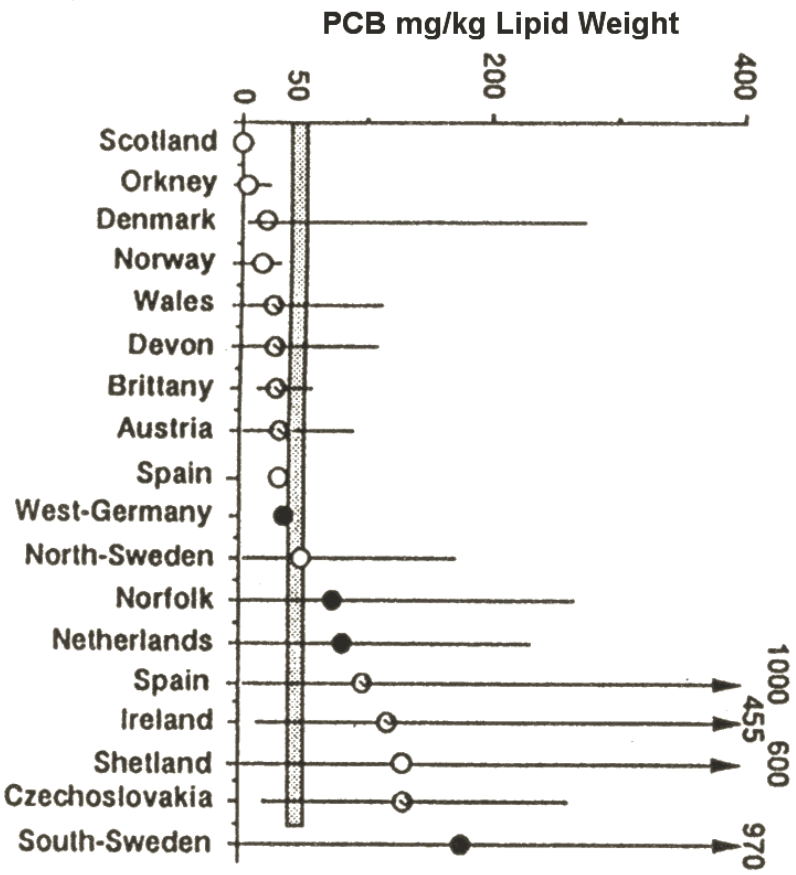

Figure 3: Mean and ranges (mg kg^{-1} fat) of PCBs in otter tissues

The two otters in our study with the highest PCB levels, from south-east England, showed pathological symptoms similar to those of Baltic seals, which were considered to be suffering from PCB-induced adrenocortical hyperplasia, resulting in reproductive failure and a breakdown in the immune system These symptoms in otters included bleeding feet, deformed toes and claws, uterine tumours and skin lesions. One otter was showing disorientation behaviour prior to death, walking round in circles. A few days earlier it was seen regularly during the day, but in this region otters are nocturnal. Similarly, several of the highly contaminated Irish otters which we analysed showed disorientation behaviour; two of them were found after wandering into shops. Several were blind. Such behaviour patterns are consistent with organochlorine poisoning.
Overall, then, evidence in Figure 3 suggests an inverse relationship between mean PCB levels in tissues and the status of an otter population.

Otter samples for analysis are obtained infrequently both in space and time and there may be biases in that many may come from thriving populations or alternatively from areas of high human activity. To overcome this we examined PCB levels in spraints, which can be collected systematically.

Figure 4 shows data from a river where we have measurements of PCBs in fish tissues and in otter spraints from the same sites. Note the direct relationship.

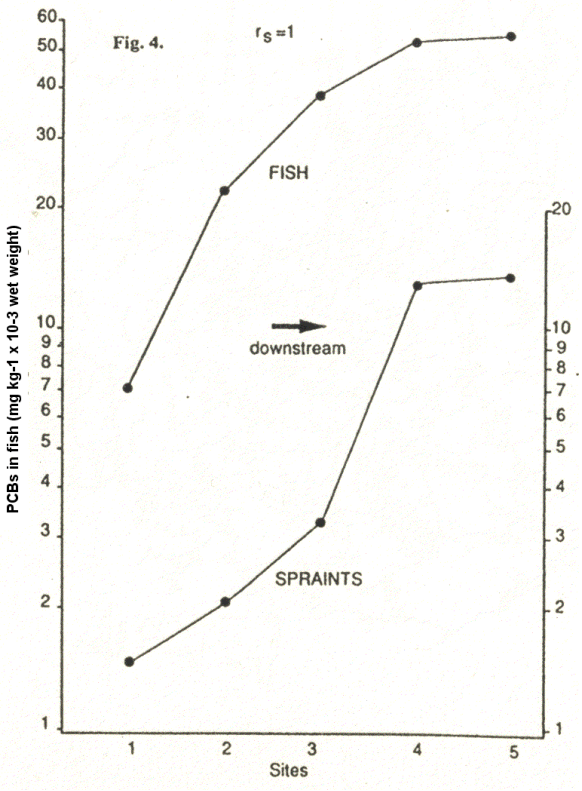

Figure 4: PCBs in fish and spraints at the same river

Figure 5 illustrates the concentrations of PCBs in spraints in a catchment in the Welsh borders. The size of the dot indicates the amount of PCB in the sample. Otters in the upper part of the river were thriving and PCBs were low, as they were in a tributary. Note how much higher the levels of PCBs were in the lower part of the river. Otter signs were much scarcer here. However PCB levels dropped sharply in the last year of our study - we believe it may have been due to improved effluent treatment installed in a large dairy. Otter signs are now abundant on the lower part of the river.

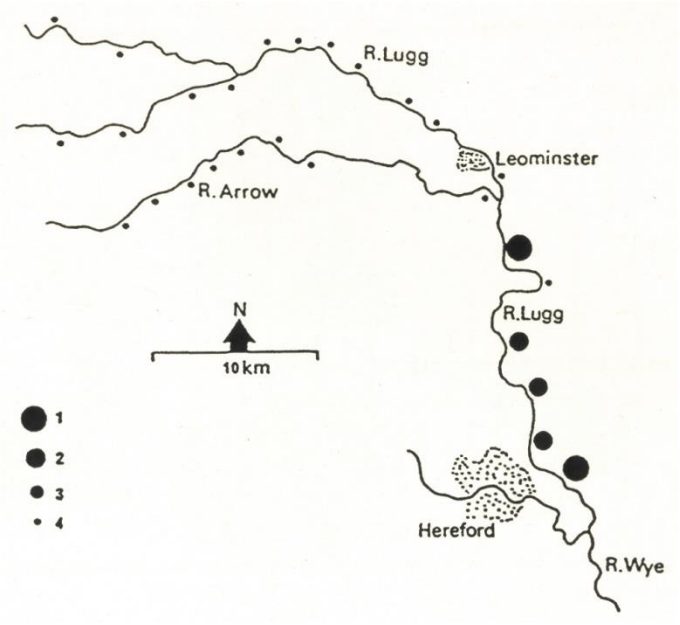

Figure 5: PCBs in spraints in a catchment in Wales

We have also carried out a number of regional surveys of PCBs in otter spraints. Figure 6 shows the results of our study in Wales. There is a general increase in PCBs from west to east (as we have found also in Ireland and western France). The industrial south has been a major source of contamination. There is a significant negative correlation between overall sprainting intensity and the level of PCBs, i.e. the higher the mean PCB level in spraints from a catchment, the lower the mean number of spraints per sprainting site (Fig. 7).

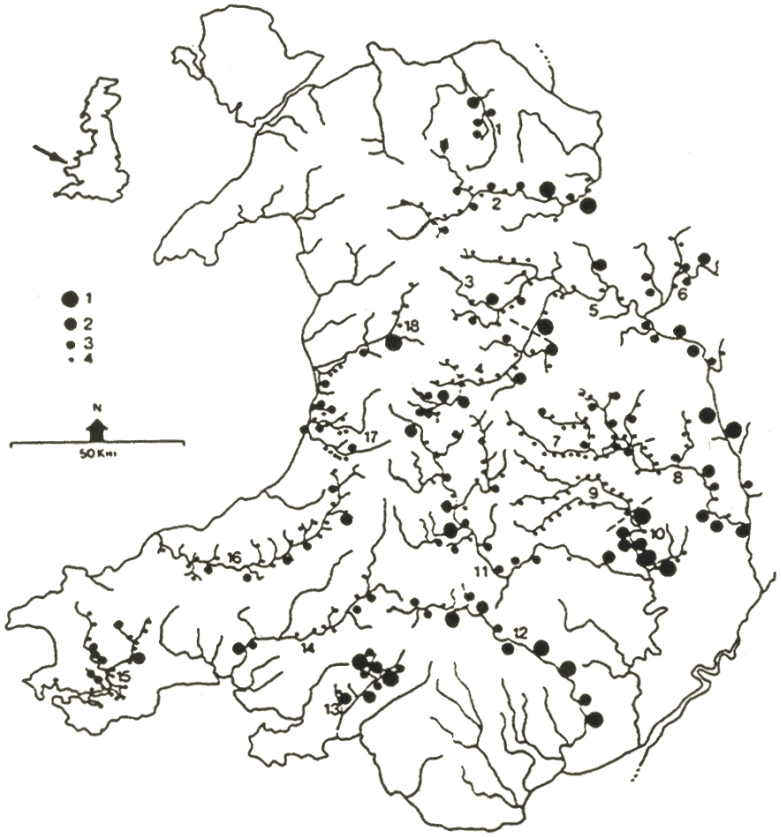

Figure 6: PCBs in spraints from Wales

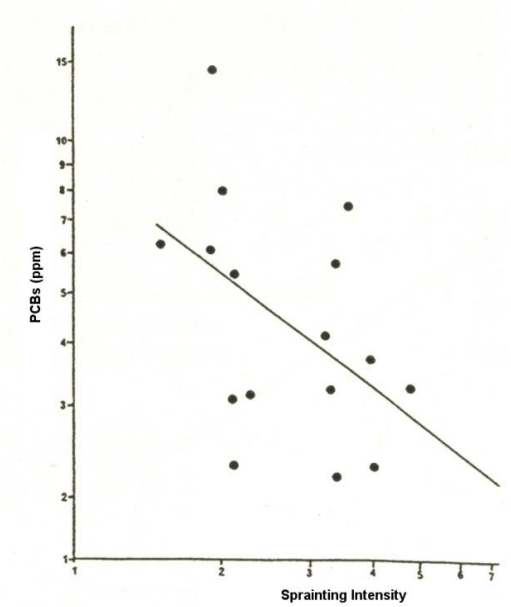

Figure 7: Sprainting intensity and PCB concentrations in spraints

The River Clyde in Scotland (Fig. 8) rises in unpopulated uplands and flows down through increasingly industrialised towns into the city of Glasgow. Immediately we reach urbanised areas, there is a marked increase in PCB loads in spraints. In the Clyde estuary, we found high levels around nuclear submarine bases, there are elevated levels related to sewage sludge dumping and currents disperse the contaminants away from the dumping site. There are also hot-spots related to ferry terminals and areas of high boat activity. A recent study of PCBs in the livers of fish from the north of the Clyde estuary, where we found only a few but highly contaminated spraints, has demonstrated PCB levels similar to those in the Baltic and Wadden Seas. We believe that the inner Clyde estuary is probably too polluted to support a long-term viable otter population. However, because most of the surrounding area has very low levels of pollution and thriving otter populations, there will be regular immigration into the estuary.

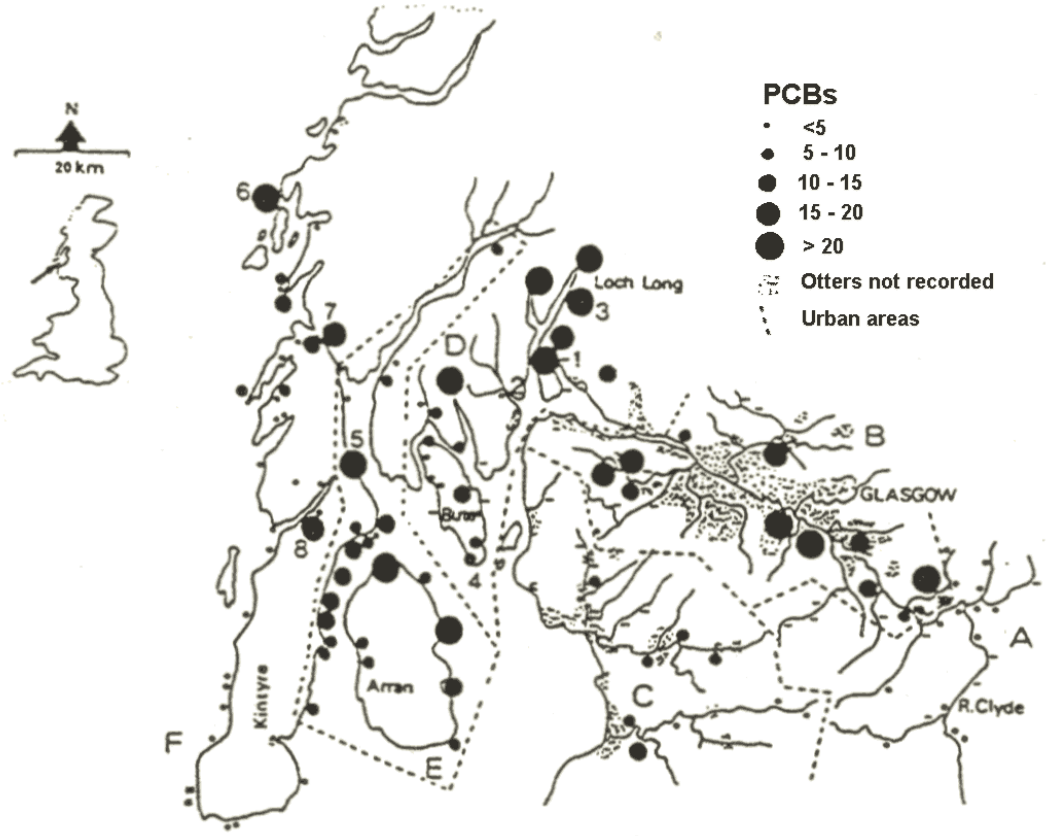

Figure 8: PCB concentrations in spraints from River Clyde, Scotland

On a regional scale we can look at the relationship between mean PCB concentration in spraints and the percentage of positive sites for otters taken from the national surveys (Fig. 9). In areas with few signs of otters there are high mean PCB levels. PCB levels are low in regions where otters are widespread.

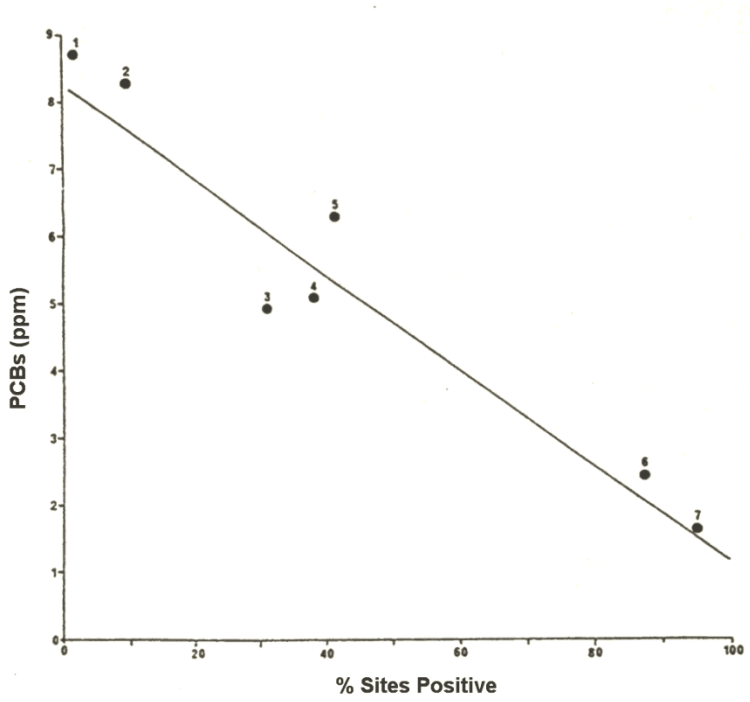

Figure 9: PCB concentrations in spraints and positive recordings from national surveys

As with the data on PCBs in otters, the spraint data also show good correlative evidence for a PCB effect on populations.

There are, however, anomalies that must be addressed. In particular, high mean levels of PCBs have been found in otters in Shetland, where a thriving population exists. This led Hans Kruuk to conclude that toxicity of PCBs to otters is *nowhere near as high as for mink*, which are known, through experiments, to be sensitive. Hans Kruuk states that "*one should not indulge in the common practice of using the effects on one species as a yardstick for another*". Though caution is certainly necessary, for very obvious reasons this *has* to be common practice in medical and veterinary toxicology.

But otters ***are*** as sensitive to PCBs as mink. Dutch workers have shown a strong negative relationship between vitamin A levels in liver expressed as dioxin equivalents and PCB concentrations. Similarly, incidence of disease in Danish otters increases with PCB burden. The concentrations at which effects can be measured are similar to effects levels in mink. These data provide strong support for the role of PCBs in the decline of the otter.

The question we need to ask is why the Shetland data seem so different in an environment which is said to be pristine. I would suggest that this is because of Shetland's oil industry and its infrastructure. PCB contamination may be very localised, producing hot-spots of PCB contamination. These are also the areas with the highest human activity, resulting in both greater mortality, e.g. due to traffic and a higher probability of finding dead otters. The situation may be very similar to the Clyde, described above. Most of Shetland is unaffected by this pollution, allowing thriving otter populations to recolonize areas of high contamination.

Almost all of the information we have then points to a central role of PCBs in the decline of the otter. This does not of course mean that other factors are not important -

habitat, food supply, other contaminants, mortality caused by man's activities. But PCBs are most likely to have been responsible for the wide-scale and synchronised decline beginning in the late 1950s.

It is generally considered that environmental PCB levels have not yet reached their peak. This may indeed be true for marine environments, which are the eventual sink for PCBs. But we have evidence that they are declining in otters and such declines have been reported by other workers in the terrestrial environment. In the sample of Danish otters we analysed, there was an overall annual decline of 7% per year between 1980 and 1990, and in our samples of otters from England and Wales, collected between 1984 and 1992, the decline was 8% per year. There was no such trend with DDT, while levels of Dieldrin, considered by some UK workers to be the main cause of the decline, have been low since these analyses first began.

During the 1980s there was a slow expansion of otters in England, Wales, and in Denmark. Since the early 1990s this increase has accelerated considerably in Britain - I believe it has also in Denmark. This would indicate that PCB levels have now fallen ***below*** that critical level which could significantly affect populations.

Figure 10 illustrates, for several rivers, changes in an index of population of otters with time. The index is a combination of the % of positive sites in a survey and the mean number of spraints per positive site. We cannot relate this index ***directly*** to numbers of otters but we do believe it represents population trends. The upper Severn, in mid-Wales retained a thriving otter population during the period of decline and the index has remained relatively constant, with perhaps a slight trend of increase in this decade. Further east, on the Welsh borders, the otter population on the River Lugg disappeared in the late 1970s. Note how the index shows an almost classical population growth curve to equilibrium. Slightly further east the Clun shows a later but similar trend. The same trend is apparent, but much later in the West Norfolk catchments in eastern England, where the native population fell to a very low level, isolated from the western strong-holds, but where it has been reinforced by restocking since 1983. Colonisation of north Essex catchments, from which otters disappeared 35 - 40 years ago, began in 1996 and appears to be proceeding apace.

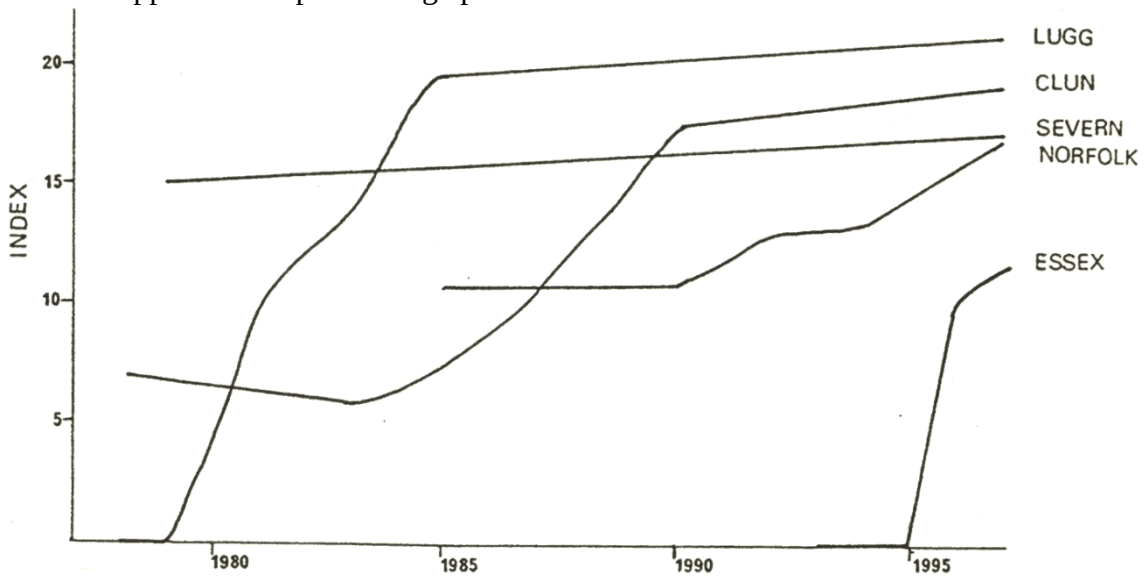

Figure 10: Index of otter populations

Can we derive environmental standards to protect otters? We have developed some preliminary standards for total PCBs based on the mink model. We are adopting a precautionary approach to protect otter populations. The Dutch have proposed quality objectives based on the dose-effect relationship between PCBs and liver vitamin A deficiency using dioxin-toxic equivalents (TEQs) and on the sums of 7 indicator PCB congeners (Table 1). The Dutch quality objectives are rather more stringent than those that we have derived. The TEQs levels are in good agreement with dietary effects levels from recent mink studies in the American Great Lakes area. They are much more stringent than most guidelines to protect the environment against PCBs because of the now known sensitivity of otters.

Table 1: Quality objectives for PCBs

	safe	critical
Based on mink model, total PCB		
otter ppm (lipid weight)	10	30
fish ppm (fresh weight)	0.026	0.05
Expressed as TEQs - Dutch data		
otter ppm (lipid weight)	0.002	0.005
fish ng/kg (fresh weight)	0.7	1.8
Expressed as sum of 7 PCBs - Dutch data		
otter ppm (lipid weight)	4	11
fish ng/kg (fresh weight)	0.006	0.014

Before a re-introduction study is planned it is essential to ensure that PCBs are at safe levels over a wide area because a large area is required to support a viable population of otters in the long-term. Only then should we begin to investigate other important factors such as food supply and habitat.

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REPORT

1996 NEWS FROM THE GIANT OTTER PROJECT IN PERU

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Little was known about the ethology and ecology of the Giant Otter *Pteronura brasiliensis*, one of the most endangered inhabitants of the Amazon rain forest, when in 1990, we began our project "STATUS, HABITAT, AND CONSERVATION OF GIANT OTTERS IN PERU", with financial support from Frankfurt Zoological Society. After an initial intensive period of fieldwork in Peru from 1990 to 1992, the project has been continued by annual, two-months follow-ups in the field, while much of the project management, data analysis and public awareness activities is coordinated from our home-base in Germany. Here, we give a short progress report from 1996. We continued and further developed our giant otter conservation program. Major activities were to implement environmental education and public awareness measures, to conduct the annual otter census in Manu National Park, to evaluate various otter protection measures, and to improve cooperation with Peruvian nature protection authorities. In the following, we give short descriptions of the major project activities in 1996.

Leaflet: Giant Otter - Neotropical River Otter

When working at Rio Samiria, Departement Loreto, in the North of Peru in 1995, we found that the local population were poorly informed about the two sympatric otter species *Pteronura brasiliensis* and *Lutra longicaudis*. Even many park rangers were not able to tell the species apart. Due to this lack of information, it is hardly possible to obtain reliable reports on remnant populations. Furthermore, as a result of their unawareness of the species´ protection status, local people illegally kill otters or keep them as pets. To improve the situation, a leaflet was produced in cooperation with the Peruvian NGO ProNaturaleza, and our German partner Munich Wildlife Society. 2000 leaflets were distributed in the Departement Loreto in April 1996.

Information Board for Quisto Cocha Zoo

A young giant otter female is kept at the Quisto Cocha Zoo outside Iquitos, the largest city in the lowland rainforest of Peru. We donated an information board on ecology, status, and conservation needs of giant otters.

Drawing Book for Peruvian Children

To address Peruvian children by the Giant Otter Project´s environmental education program, we are producing a drawing book, through which children shall discover and experience the tropical rainforest and its inhabitants. As an attractive and endangered species the giant otter is used as a flagship species: the booklet´s central character, a young otter named Pepe, is designed to deepen rural and urban children´s appreciation of their natural surroundings. The concept and layout were finished in 1996, production and distribution of the drawing book together with colour pencils are planned for the first half of 1997. The action is financially supported by a grant from the German Federal Ministry of the Environment via the German Technical aid agency, GTZ.

Products in Cooperation with Other Organizations

The Dutch-British NGO "Upper Manu Expedition" in cooperation with the Manu National Park authorities produced a series of postcards on Manu in order to help financing park ranger salaries. We provided a giant otter photograph.

Media.Com / Lima produced a CD-Rom on flora and fauna of the Manu National Park and the Tambopata-Candamo Reserve. The CD will be distributed for free among urban youngsters. We provided photographs on giant otters and other wildlife.

Our 1994 TV-production in cooperation with Marco Polo Film, NDR, and Transtel/Deutsche Welle "The giant otters of Madre de Dios" is now available in serveral languages. Transtel provided a Spanish version for environmental education purposes in Peru, that we donated to several Peruvian NGOs.

Public Awareness Activities

Our activities to improve public awareness on rainforest issues in the developed countries included repeated broadcasting of our TV-production "The Giant Otters of Madre de Dios", TV and print interviews, articles in magazines, a book production (Reader´s Digest), public lectures, poster presentations, etc.

Field work in Peru

We continued our giant otter monitoring program in Manu National Park during a work phase in Peru from September to November 1996. Our team consisted of project leader Christof Schenck, visiting scientist Dr. Ilse Storch of Munich Wildlife Society, and three Peruvian assistants. For the seventh year, we censused the 200 km of the Rio Manu upstream from its mouth (Fig. 1). The 1996 count resulted in 43 otters, indicating stable otter numbers since 1990 (Fig. 2). For the first time, we also censused the Manu 50 km further upstream, and found several den-sites and saw an otter group of three. Unlike further downstream, where otter groups are limited to the oxbow- lakes, in this remote part of the upper Manu otters live in the river permanently. A possible explanation is the absence of disturbing boat-traffic.

Also for the first time, we censused the lower 50 km of Rio Pinquen (see Fig. 1). The area is not used or visited by settlers or tourists, and belongs to the territory of uncontacted indian tribes. We were not able to find any signs of giant otters, but saw an individual of *Lutra longicaudis*. Due to greatly varying water-levels, low water in the dry season, great sediment load, and small size and number of oxbow-lakes, the Pinquen may not be an ideal giant otter habitat. We concluded that if at all, giant otters occur in very low numbers only.

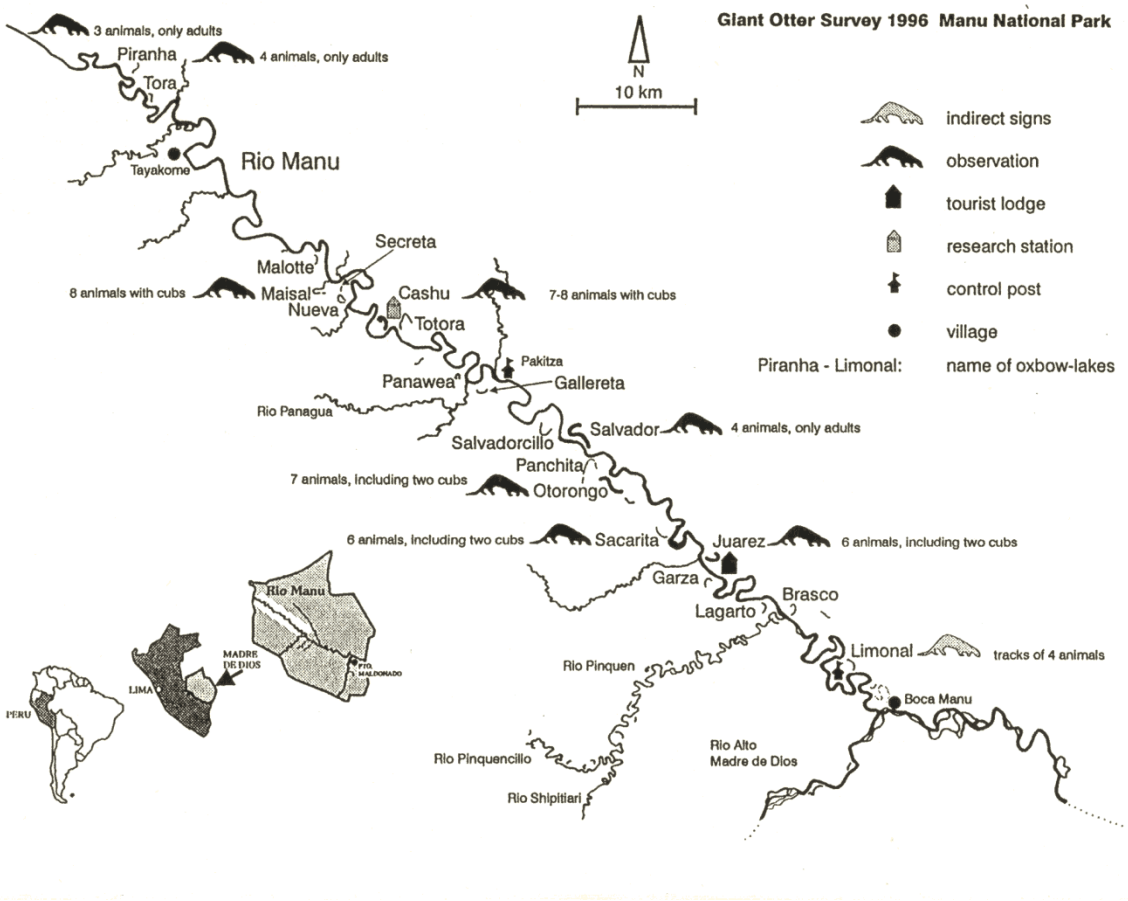

Figure 1: Giant Otter population of Manu National Park, results of the survey 1996

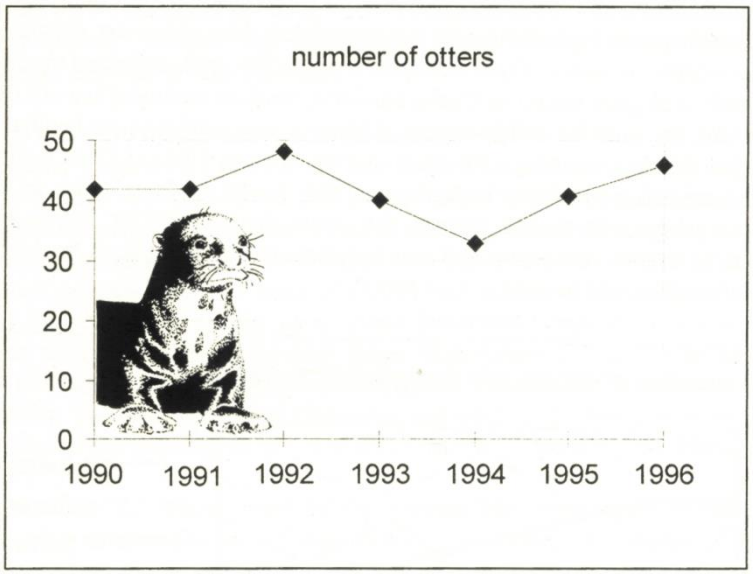

Figure 2: Number of otters observed in Manu National Park

The census data contribute important details on the giant otter´s social structure, territoriality and range use behaviour, dispersal, and population dynamics. Using photography and video we documented the individual throat-patterns of 35 otters, 19 of which were already known from previous years. Several animals we have been

following for 7 years by now, and are able to reconstruct their histories from cub age through dispersal and breeding. An example: "Punto", a female born at Cocha Otorongo in 1989, stayed with her native group until 1992, when she dispersed 13 km downstream to Cocha Sacarita. Here, she mated with "Pez", a native of Cocha Cashu, 66 km upstream of Cocha Sacarita. Since then the pair has inhabited Cocha Sacarita and produced a litter every year. The story of "Punto" and "Pez" is typical: Reproductive pairs keep their territories over several years. In contrast to dispersing young adult "solitarios", survival is high among territorial otter pairs. In 1996 we confirmed 10 parents aged six and older. In five of eight observed otter groups we found a total of at least 12 young of the year, i.e. a mean of 1.5 or more cubs per group.

Group size and thus reproductive success differed among the study groups and over the years (Fig. 3). We suspect that tourism may have a negative influence on juvenile survival. Three lakes within Manu National Park are regularly visited by tourists. At two of them, Cocha Otorongo and Cocha Juarez, the otters successfully reared young in 1996. At Otorongo, we achieved that boat travel has been prohibited since1992. Juarez is still visited by tourist boats, but the resident otter group also uses undisturbed lakes in vicinity of Juarez. These examples indicate that well-organized tourism can be compatible with giant otters. At Cocha Salvador, the third and most heavily frequented tourist lake, the situation still is critical. Although they inhabit prime habitat, the otter group has failed to reproduce for three successive years (Fig. 3). This is most likely due to disturbance by tourist boats. In case that it will not be possible to limit boat travel to selected areas and prevent the otters from following tourist boats, we recommend to park authorities and tour operators to ban boats from the lake and use observation platforms instead.

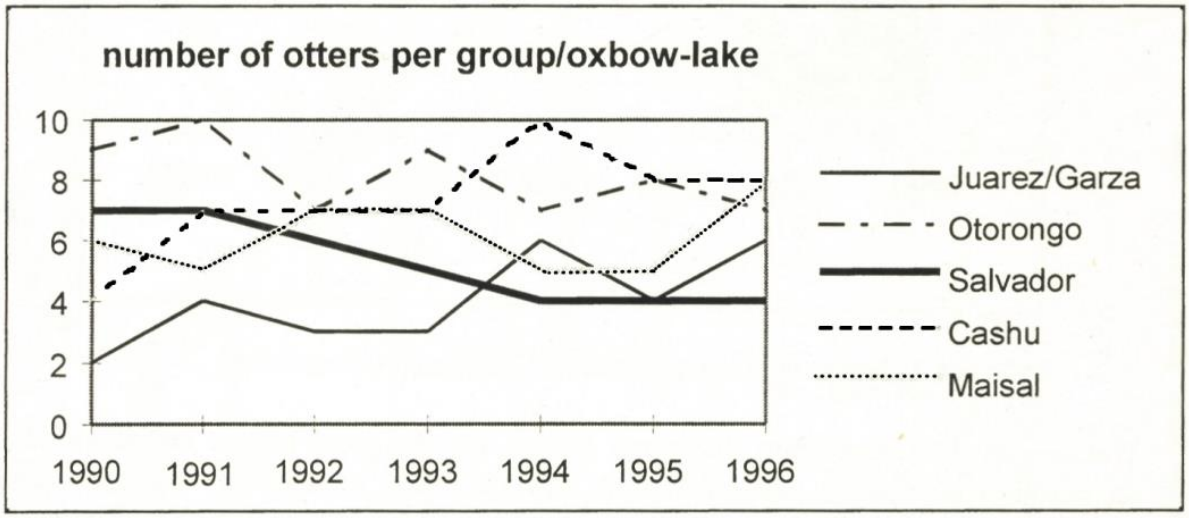

Figure 3: Developement of giant otter groups in some selected oxbow-lakes of Manu National Park

The extreme shyness of the otters of Cocha Maisal indicated that this group is still being disturbed and possibly persecuted by the local Machiguenga settlers. Reasons for the persecution are not obvious and appearently our repeated and extended

discussions with these settlers have remained without effect. We have no evidence for direct problems for giant otters caused by the indian village Tayakome, however, increasing contact to the outside world has started rapid development that is likely to lead to increasing conflicts with National Park policies.

Observation Tower at Cocha Otorongo

Canoe-trips on oxbow-lakes have been a major tourist attraction in order to observe giant otters and other fauna, and they cause significant disturbance and threats to giant otter groups, particularly during reproduction. As a less disturbing alternative we have suggested to erect obervation towers and platforms. In 1996, a 15 m high tower at Cocha Otorongo was completed. The tower was financed by Frankfurt Zoological Society and by the editors of the book "Peru´s Amazon Eden: Manu National Park and Biosphere Reserve", and has been well received by tourists and tour operators. Canoes are no longer allowed on lake Otorongo.

MOBIL in Search of Oil in Madre de Dios Department

The company´s search for mineral oil has entered its second, intensive exploration phase, with major activities in the Rio de las Piedras and Rio Tambopata drainages. Oil exploitation perspectives played a role in the demarkation of the planned National Park in the Tambopata area. According to the latest revisions of the plans, major uninhabited primary rainforest areas of 14,000 km² in size will be excluded from the National Park and will remain as a "Zona Reservada" instead, a relatively poor protection status that does not exclude future exploitation. In the Rio de las Piedras area the last large virgin rainforests of southeastern Peru are the home of uncontacted indian tribes. The area lacks legal protection and borders the Manu National Park in the east, so that development in this area will most likely also affect the Manu area.

Among Peruvian and international NGOs opinions vary with regard to how to face environmental threats due to oil exploitation. At present, the results of MOBIL´s exploration phase should be awaited. We will remain in close contact with NGOs in Peru in order to coordinate further steps.

Acknowlegdements: *The project is financed by the Frankfurt Zoological Society, Help for threatened Wildlife and is carried out in cooperation with the Munich Wildlife Society. We like to Thank the Peruvian authorities INRENA and the administration of the Manu National Park for the possibility to realise the field work. Special thanks also to ProNaturaleza and ALITALIA for cooperation and support.*

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N3, Schauplatz Natur: "Die Riesenotter vom Madre de Dios" ein Film von Christof Schenck und Elke Staib (43 Minuten), 5.5.1996
HR3, "Die Riesenotter vom Madre de Dios" ein Film von Christof Schenck und Elke Staib (43 Minuten), 29.12.1996
MDR, "Die Riesenotter vom Madre de Dios" ein Film von Christof Schenck und Elke Staib (43 Minuten), 12.01.1997

R E P O R T

THE GIANT OTTER IN ECUADOR

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STUDY ON THE ECOLOGY AND ETHOLOGICAL ASPECTS OF THE GIANT OTTER, *Pteronura brasiliensis* (Carnivora: Mustelidae) IN THE PARQUE NACIONAL YASUNÍ, ECUADOR (Start: April 1997)

The Giant Otter was once widespread throughout the rainforest region of South America, but - due to irrational hunting and destruction of its habitat - its populations have drastically been reduced and now they are segregated to small secluded areas in their former home range. The status of the species is classified by IUCN as seriously endangered (Appendix 1 of CITES)

The Parque Nacional Yasuní covers an area of 982.000 ha. It is situated in the Province of Napo and is the largest protected area in Ecuador. Its boundary in the north is formed by the river Napo and in the south by the river Curaray rising in the Anden mountain chain. The rivers Yasuní, Cononaco, Nashino and Tiputini flow through the Parque Nacional Yasuní.

To date, very few investigations on the abundance and ecology of the Giant Otter have been carried out in the wild, and no study of this kind has been done in Ecuador. There are only occasional records of solitary animals or small groups, most of which have been registered in the Parque Nacional Yasuní. Considering that this species might soon be at the edge of extinction (or already is!), an investigation of the population size, its distribution and ecology is a matter of urgent necessity.

The objectives of this project are:

- to collect information on the biology of the Giant Otter
- to determine the distribution in the Parque Nacional Yasuní
- to study the social structure and behaviour of the animals
- to define some of its ecological requirements
- to collect information about population size, abundance and distribution of the Giant Otter in the rainforest region of Ecuador

The project will be carried out for a 12-month-period in order to get comparable data for the rainy (April to June) and for the dry season (December to March). Each month, 21 days will be spent for field work at the Parque Nacional Yasuní.

METHODS

1. Determination Of The Distribution

- Direct observations will be made from platforms in trees, situated at each of the oxbow lakes and at the river Tiputini. Two observers, connected via walkie-talkie, will start their daily observations early in the morning before the animals leave their dens.
- Indirect observations of the Giant Otter will be achieved by searching for their tracks, latrines and dens at the banks. This will be done by travelling along the river and the oxbow lakes by boat, focusing on those parts which show characteristic features of the preferred habitats of Giant Otters.
- Interviews with the indigenous population and with park rangers to get information about sightings
- Estimation of the population size and abundance

All direct and indirect observations will be noted with a GPS, with the help of which it will be possible to give a topographically exact picture of the distribution. The number of observations will give an idea about the population size in this area.

2. Social Structure And Behaviour

Data on the behaviour of the animals will be collected througout the day using binoculars, video and sound equipment to record the behaviour and calls.
With the help of photo and video material, the animals will be identified according to the distinct patterns of their throat markings. This photo-identification will make it possible to recognize individuals, to determine the accurate number of animals in a group, and - eventually - to identify individual behaviours.

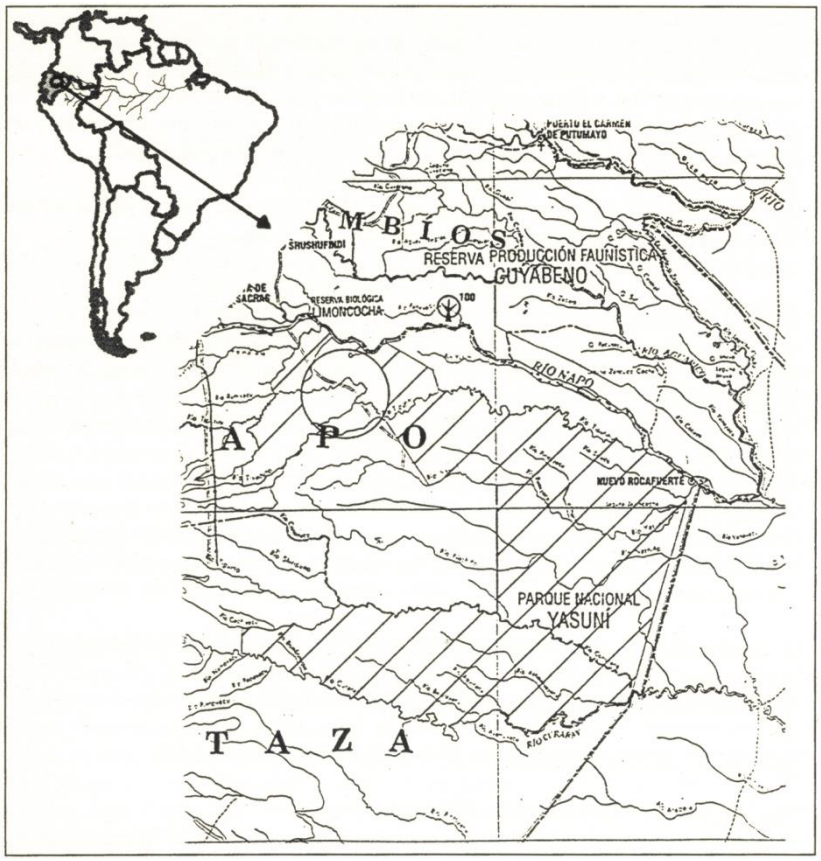

Figure 1: Study area

3. Analysis Of The Habitat

The following water measurements will be taken every month at the beginning and end of each stay in the Park, in the rivers as well as in the oxbow lakes:

- size, water depth and transparency
- temperature, pH, nitrites and nitrates containt, dissolved oxygen
- conductivity to check the influence of the petrol-industry through discharged formation waters
- ambient temperature and rainfall

4. Diet Analysis

Scats will be collected from all the latrines and analysized in detail at the laboratory in order to determine the diet composition and to detect toxic substances such as heavy metal pollution. Fish will be caught in the river for a later identificaton which will be done by specialists. The scales of the riverine fish will then be compared to the ones found in the scat to give an accurate account of the fish species in their diet.

At the first trip in April 1997, a group of 5 Giant Otters was sighted and observed. First results of the project may be published in the next issue.

Many thanks to Elke Staib and Christof Schenck for their support.

SOUTH AMERICAN NETWORK FOR GIANT OTTERS

The start of the Giant Otter project in Ecuador was connected with the proposal to establish a network for the conservation and protection of Giant Otters for whole South America.

The aim of the network lies in the cooperation between organisations and scientists working on the protection of Giant Otter,

- to exchange and collect information, know-how and contacts
- to work together on protective measures for Giant Otters
- to cooperate in advertising campaigns to increase the popularity of the Giant Otter
- to encourage organisations to take up working on the conservation of these threatened animals

A cooperation in protection and conservation of Giant Otters might be the only way to prevent them from extinction.

Organisations or scientists, interested in cooperation at the SOUTH AMERICAN NETWORK FOR GIANT OTTERS – SANGO may contact and send information about their work to:

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SANGO is a co-operative idea of Christof Schenk/Elke Staib and yaqu pacha.

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R E P O R T

THE RECOVERING OTTER POPULATION OF CENTRAL POLAND

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The national survey of the early 1990`s proved that otters were prevalent throughout Poland, with their presence identified at 79.5% of investigated sites (Brzezinski et al., 1996). However despite this relatively high density, only a few positive sights were recorded in two large areas: Silesia and Central Poland. Within the latter region, otters were absent in almost the entire catchment of the River Bzura. The only positive sites recorded within this area were at the confluence of the Rivers Bzura and Vistula, and along the River Rawka. The absence of otters in the rest of the catchment has been associated with exceptionally high municipal and industrial sewage disposal to Bzura, which by the late 1980s was totally inadequate.

In the autumn of 1995, the first otter presence was recorded on the lower River Bzura. This discovery prompted a comprehensive survey of the catchment in order to document recent changes in otter distribution within this area. Also included in the survey was Warsaw and its environs, an area that had previously recorded only few positive sites. The study area was relatively well populated, with many towns, villages and agricultural land. The method used was the standard field survey based on a UTM 10 km square grid (see Macdonald, 1983). In each square 2 - 4 sites were investigated. In addition, spot checks were conducted at the majority of road bridges within the region to complement the surveys.

Initial results of the spring 1996 surveys have been promising. Out of 46 full surveys undertaken, 54% were positive as were 37% of 95 additional spot checks, indicating that otters are present in the majority of tributaries within the lower catchment and further upstream on the River Bzura itself. Whereas the otter was absent during the national survey, today, the Rivers Utrata, Pisia and Lasica have all recorded positive sites. It was very satisfying to find that otters are now present in the rivers and channels of the Kampinos National Park (part of the lower Bzura catchment) where the species was previously extirpated in the early seventies (Bieniek, 1992). The recolonisation of the park by otters since the national survey of 1993 (when it recorded no positive evidence of otters) coincided with the increase of the beaver population. Today the beavers appear to be thriving, and we have repeatedly found otter signs on one canal where there is much evidence of beaver activity.

The surveying of Warsaw city and its surrounding district has also shown positive results. Here, otters have been found to be present on small channels and fishponds in the south side of the city within heavily developed areas. Signs of otters have also been found over several waterways in the eastern suburban districts. This area is well linked not only to the River Vistula, but also to the Rivers Bug and Narew by several canals

and it is apparent that otters have taken this opportunity to colonise suboptimal habitats, where high levels of human interference do not apparently bother them.

Although some authors suggested increase in otter numbers in Poland in late 1980's (Wlodek et al., 1989), the results reported for Central Poland represent first well documented evidence of recovery of the species. The marked increase of otter presence can probably be attributed to a recent reduction of effluent entering the waters due to better treatment techniques. The recovery of the otter population in Central Poland is an ongoing process, and otter presence in the Bzura catchment is a good illustration of this. Closer to the main source of pollution (upper Bzura), very few positive sites were recorded in the survey and several tributaries completely lacked otters. This shows that recolonisation of the catchment is incomplete. We believe that after the new sewage treatment stations for industries in Lódz area (currently under construction) are brought into service, the subsequent improvement of water quality will enable otters to eventually recolonise the upper Bzura and all of its tributaries.

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R E P O R T

SOCIAL ORGANISATION OF MARINE COASTAL OTTERS: OVERVIEW OF A WORK IN PROGRESS

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INTRODUCTION

Since 1983, I have observed a marine coastal population of the North American otter, *Lontra canadensis*, at Trinidad Bay, California. My research has two primary purposes: to chronicle the lives of wild otters, and to understand the social organisation of this population. The following is a brief summary of my observations concerning the social behaviour of the otters of Trinidad Bay.

METHOD

Trinidad Bay is a shallow marine bight perimetered by densely vegetated shorecliffs, located on the far-northern seacoast of California (41°3´N, 124°8´W). The resident otters are totally marine in their habitat suits the otter well. From 6 to 18 individuals (4-11 adults) have occupied a 4km section of coastline during the period of my observations.

I study the otters naturalistically, observing them at very close distances (<100m). Because of this proximity, I do not require telemetry, nor do I use any instrumentation other than 10x28 binoculars, a tape recorder, a photographic camera, and a video camera. From May 1986, when my formal study began, to November, 1996, I conducted 2778 sessions, and saw otters at trinidad Bay 2411 times (86% success).

My field notes are entirely descriptive, and I use no numeration to analyse the otters´ behaviour. I simply observe the otters, describe their behaviours, and interpret what I see in the context of all I have observed previously. I am not testing any theories or models of science; there are no null hypotheses to disprove, and no levels of statistical significance to achieve. It is simply my goal to observe and understand the behaviour of the otters directly and completely as possible, and to do so wholly within the context of the otter´s immediate world.

Essential to any examination of social organisation is the ability to identify individuals reliably. Because I can observe these otters so closely ad so often, no artificial means of marking is required, as each otters has recognizable facial, physical, and behavioural charcateristics which mark them as individuals. Identification is also facilitated as the otters form social groups of stable membership. I´ve observed almost all of these otters virtually daily since they left their natal nest, and I know of their faces, features, and behavioural singularities ta a high levels of accuracy and reliability.

RESULTS

The otters at Trinidad Bay form two distinct, cohesive social groups: a maternal "Family", and a male "Clan". The Family comprises the mothers(s), pup(s), and usually, at least 1 elder daughter as a full time cohabitant (who may have pups of her own). The Clan comprises the population father´s, sons, matrilineal brothers and immigrant males. From 1986-1996, the sex ratio of adults ranged from a high of 7m:1f

(1986, 1987), to no lower than 5m:3f (1991). In 1997, however, for the first time during my study, adult females outnumbered adult males (2m:3f).

The most consistent pattern in the social organisation of these otters is that adults of the opposite sex lead largely separate lives. Adult otters at Trinidad Bay typically practise a behavioural segregation of the sexes. The adult males are the primary determiners of sexual segregation, except during the females´ period of natality, when adult females actively repelled adult males.

From 1988-1992, this sexual segregation was remarkably rigid. For example, a period of 70 months (1481 sessions) elapsed between instances when I saw an adult male and an adult female forage together, and 58 months (1282 sessions) elapsed between observed episodes of reciprocal play between opposite-sex adults.

Yearlings may interact freely with adults of both sexes, but after a female has her first oestrus, she is thereafter shunned, and may be attacked, if she attempts to interact with the adult males. Most males stop aggressing against an adult female after she bears her first litter, however, as maternity confers an elevated social status upon a female.

The closer the maternal relationship between a male and a female, the freer they interact socially. The closer the maternal relationship between a male and another male, the closer they are bonded socially.

In July 1992, within a period of 3 weeks, all three mothers in the population died. Only one female remained - a yearling - who subsequently spent the second year of her life as a fully co-equalmember of the male Clan. After her first mating season, however her fellow Clan-mates became highly intolerant of her mere presence, and she was expelled aggressively from the Clan. Following her social ostracism, the young ault female spent the third year of her life sharing the same home range as her former Clan-mates, but living a completely involuntary solitary existence. The Clan did not stop avoiding her untill well after she bore her first litter. In her second year as a mother, however, the frequency of amicable interactions between the males and the new matriarch increased gradually, to the extent that, by mid 1995, I was forced to conclude that the rigid regime of sexual segregation I witnessed from 1988-1992 was no longer in effect. The Familiy and Clan still lead separate and independent lives, but today, when the adult members of the Familiy and Clan encounter each other, they interact freely (with some individual exceptions on the part of some adult males).

The gregarious males display no intrasexual territoriality whatsoever, except for transitory episodes during the females´oestrus. Adult females, however, are aggressively territorial against any other female over a year old who is not their daughter, mother or littermate sister.

An adult female never forces her own yearling daughters to disperse, but she will almost always attempt to expel a yearling female relative who is not her daughter. When a juvenile female reaches 14 months of age, she may thenceforth be preceived as an interloper - and be attacked on sight - by any adult female who is not her mother. An elder sister may thereby force her younger sister to disperse from her home territory. Similarly, a grandmother may also attack and expel a granddaughter. territorial expulsion attacks by resident females against interloping females are astonishing fierce.

In the severest territorial attack, the eldest daughter of the matriarch killed the yearling daughter of the matriarch, in the matriarch´s presence. The matriarch subsequently killed her eldest daughter, and thereafter starved herself to death.

DISCUSSION

Stable social groups of adult male *Lutra canadensis* were first described by SOLF (1972). The male Clan at Trinidad Bay has essentially the same characteristics as SOLF´s "group of bachelor males", which he observed in marine coastal habitats in Alaska. The tendency for adult males of this species to form communal social assemblages is apparently not a local phenomenon.

Although elder cohabitating daughters are companions to their mother´s dependent pups, the elder daughters are not alloparents, because they do not provision their mothers´s pup with food, nor will they assume parental care in the mother´s absence.

The consistently male-biased sex ratio among adults is the result of, and a reflection of the differing forms of sociality and territoriality expressed by males and females in this population. Males are non-territorial, gregarious with other males regardless of family relatedness, and didn´t voluntarily disperse as adults, whereas females are highly territorial, did not bond with any other females except thier own immediate matrilineal relatives, and actively forced their younger female kin to disperse. Under such a social regime, assuming equal birth and mortality rates between males and females, adult males should always outnumber adult females in this population. The female-biased sex ratio observed in 1997 resulted from an absence of male births from 1992-1995.

I currently speculate that the rigid sexual segregation I witnessed at Trinidad Bay from 1988-1992 may have been due principally to the presence of one particular female - the favoured eldest daughter of the old matriarch - for whom some males possessed an observable enmity. The relaxation in sexual segregation and the corresponding increase in free interaction between the sexes took place when a female who had grown to adulthood as a social co-equal with the males assumed the status of matriarch. This spring however, the two females born in 1995 had their first oestrus, and preliminary observations indicate that the social order of this dynamic population is changed yet again. Thus far, the adult males are not shunning or behaving aggressively toward their neo-adult nieces.

Although, after over a decade of study, I have achieved my goal of understanding the social behaviour of these otters, I cannot yet explain many aspects of it in terms which are consistent with the principles of selectionsism and behavioural ecology. Several observed phenomena are particularly difficult to explain in terms of current biological theory.

1) Males bonding socially with other males to the exclusion of adult females, and actively avoiding and sometimes attacking the only breeding female(s) in their population.
2) The closer a male and a female are related, the more likely they are to consort with one another.
3) Males and females occupy the same habitat concurrently, and share the same life requirements, yet their expressions of sociality and territoriality differ from the other´s as completely as night and day.

4) An adult female may mortally attack her own younger female kin.
5) A mother otter terminating her own life following the death of her companion daughters.

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R E P O R T

A PRELIMINARY SURVEY OF OTTERS ON THE MALABAR COAST AND THE ADJOINING HILL RESERVOIRS AND STREAMS

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INTRODUCTION

The status of otters on the Malabar coast and the adjacent hill reservoirs and streams of Western Ghats in Kerala is still unknown due to negligible scientific investigations carried out in this region and meagre data are available. Whatever is known on otters from this region is basically from observations in the past (JERDON, 1867) and personal communications from the present day wildlife researchers in Kerala (NAGULU, 1996). The report on the status of otters in southern India presented by one of us (first author) at the recently held IUCN/SSC Otter Specialist Group Meeting in Bangkok points out the present status of otters in southern Indian highlighting the fact that the habitats of Kerala are important because of high probability of the occurrence of all three otter species (*Lutra lutra*, *Lutra perspicillata*, *Aonyx cinerea*).

Keeping in view the unavailability of data on the status of otters on the Malabar Coast and the adjacent hilly reservoirs of the Western Ghats, unreliability of the past records and need to assess the present day status, a short-term survey has been conducted in the months of May and June, 1996. The present paper deals with the results of the survey.

STUDY AREA

One of the smallest (1.3% of the total area of India) and most beautiful states in southern India, the state of Kerala is sandwiched between the Western Ghats on the east and the Arabian Sea on the west. Vegetation includes wavy palms throughout the coastline and lush green moist deciduous forests on the Ghats. The Ghats act as barriers to the monsoon, which ensure steady and heavy rainfall twice a year. The valleys of the Ghats and heavy downpour results in springing up of about forty rivers, which in turn contributes to the vast number of reservoirs of the state and extensive backwaters.

METHODOLOGY and RESULTS

The survey was divided in two parts. In the first part the coastal stretch was covered while in the second part the streams and reservoirs of the hills were covered. All areas with past records and those which were reported to be inhabited by otter species were visited and observations as well as interviews were conducted. Otter presence was recorded by direct and indirect evidences.

A mail survey carried out before the present survey started revealed that all three species of otters can be found in Kerala although in restricted patches unlike presumed earlier as widespread (Fig. 1). Unlike in the past, otters were not reported from Tellicherry and Calicut as has been presumed by CHERIAN (in NAGULU, 1996).

Table 1 depicts the status of otters and the habitat features of sites covered during the present survey.

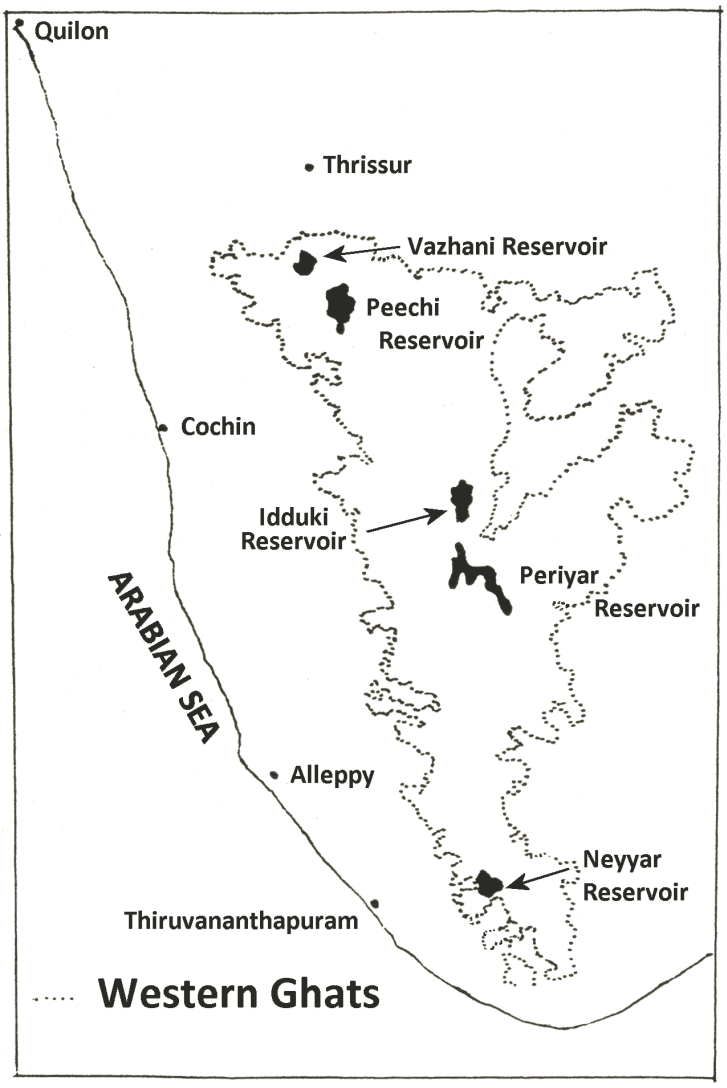

Figure 1. Map showing the study area in Kerala, India.

Table 1: Status of otters and habitat features of the study area

Study site	Status	Habitat features
Ernakulam Lagoon	present*	backwaters and the islands have profuse but patchy growth of mangrove vegetation
Neyyar Reservoir	absent	rocky terrain with numerous brooks, adjacent area meadow like
Peechi reservoir	present	undulating terrain with dense forest cover on the adjacent hills
Vazhani Reservoir	absent	undulating terrain, the adjacent hills and lack sufficient forest cover
Periyar Reservoir	present	hilly terrain with dense forest cover interrupted by grassy patches
Idduki Reservoir	absent	undulating and rocky terrain

* Sightings have become rarer

On the west coast of Kerala otter were reported but only from a few localities compared to past records. Positive sighting reports from the coastal area comes from one locality - Ernakulam Lagoon. At this site the Vembanad Lake opens into the Arabian Sea near Kochi. The backwaters of Ernakulam Lagoon is ideal for *Lutra lutra*. Our talks with local fisherman revealed that otters have been seen in the past regularly, but that sightings have become rarer in recent times. Sis. Margaret Mary of St. Theresa´s College, Ernakulam, supports the probability of the occurrence in this region. Central Marine Fisheries Research Institute (CMFRI), Ernakulam, has specimens of this species in their collection. Otters were reported to follow fishing boats and trawlers coming from the sea frequently during dawn and dusk. However, our survey spanning three days covering the entire backwater stretch of Ernakulam Lagoon yielded not a single piece of evidence for the occurrence of this species. Still, we feel that the mangrove vegetation of the islands in this lagoon are suitable otter habitats.

Among the numerous mountain reservoirs and hill streams otter presence was reported from Peechi-Vazhani and Periyar-Idukki complexes which form a contiguous stretch of dense forests which cover almost one third of the total geographical area of the state.

The team visited Neyyar, Peechi, Vazhani, Periyar and Idduki Reservoirs during the present survey. Neyyar Reservoir is located about 36 km east of Tiruvananthapuram, the capital of Kerala on Neyyar River. The area of the reservoir is 14.32 km^2 and the adjoining wilderness forms the Neyyar Wildlife Sanctuary (8°17´ - 8°52´N and 76°40`-77°17E) which is about 1 km west of Neyyar dam. The terrain is rugged with rushing brooks, flat meadows and gentle to steep slopes ranging from 90 m- 1868m. The temperature varies from 16° - 35°, with an average rainfall of 3,000mm. Although the terrain and the reservoir showed promising habitat for otters, not a single piece of evidence was found in this region.

Peechi Reservoir, formed due to a dam built on Manali River, has a waterspread area of 14 km^2. The terrain is undulating and the elevation varies from 45 - 850m. The annual rainfall is about 300 mm. The boat drivers and guards of Forest Departments surveillance team reported otters (*Aonyx cinerea*) being found in groups of 2-24 individuals in the vicinity of the reservoir. A single individual of *Lutra perspicillata* was sighted while boating in the reservoir.

Vazhani Reservoir, a small reservoir with a mean area of 4 km^2 formed due to accumulation of runoff water in the valleys damned at Vazhani is situated near the Peechi Reservoir, but the terrain and environment do not show promising otter habitat.

Periyar Reservoir was created in 1895 by building a dam across the River Periyar. The topography is hilly with dense evergreen, semi-evergreen and mostly deciduous forests with extensive stretches of savannah grasslands on the upper slopes of the hills. *Lutra perspicillata* is reported to occur in this reservoir in good numbers and are seen occasionally in groups of 2-38 individuals. The team recorded only a single individual in the reservoir while surveying in the boat. The staff at the Periyar Tiger Reserve mentioned that the animals are seen in good numbers only after dusk, when local fishermen complete the laying of their fishing nets.

Idukki Reservoir is a resultant of the Idukki arch dam on the Periyar which resulted together with two dams at the Kulamavu and Cheruthony in a reservoir of 33 km^2. The topography of the surrounding areas is undulating with lofty peaks and precipitous slopes and the elevation varies from 450m - 746 m. Although the habitat promises presence of otters, no sightings were reported in the last few years, and the survey too yielded negative results.

Officials of the Forest Department agreed with the statement regarding the occurrence of clawless otters (*Aonyx cinerea*) on the high hill ranges in Kerala adjoining the Indira Gandhi National Park (Annamalai Wildlife Sanctuary), of Tamil Nadu, where the clawless otter commonly occurs.

Based on the finding of the preliminary survey, the authors state that all three species of otters (*Lutra lutra*, *Lutra perspicillata*, *Aonyx cinerea*) are definitely found in Kerala, but their distribution is sparse and patchy. An intensive survey is required to categorise the status of the otters on the Malabar Coast and the adjoining hill reservoirs and streams.

Acknowledgements: *The authors express their gratitude to Jaganmohan Rao, IFS, Chief Conservator of Forests (Wildlife) of Andhra Pradesh and T. Mralidharan, IFS, Chief Conservator of Forests (Wildlife) of Kerala for their concern and cooperation shown during the survey. We thank P.T. Cherian, Zoological Survey of India, Madras and all those innumerable who responded to our queries regarding the status of otters in Kerala. We are thankful to the Ministry of environment and Forests, Government of India for the financial support rendered.*

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REPORT

RADIOTELEMETRY ON THE EUROPEAN OTTER (*LUTRA LUTRA*) IN THE WARNOW RIVER SYSTEM, GERMANY

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From January 1992 until August 1995 the research project "Occurrence and prevalence of the Eurasian Otter (*Lutra lutra*) in Mecklenburg-Western Pomerania (M-WP)" was carried out in the upper region of the River Warnow system. This study was funded by the Karl-Kaus-Memorial-Fund, Hamburg and happened by order of the Ministry of Environment of Mecklenburg-Western Pomerania by the German Campaign for the Protection of Otters, Hankensbüttel.

The Warnow rises 15 km east of Schwerin, the capital of M-WP. The Warnow first runs west, then north beneath the Lake of Schwerin and then in north-eastern direction towards the Baltic Sea. Near Rostock-Warnemünde it flows into the Baltic Sea.

The study region was a 400 km^2 area east of Schwerin between the places of Bülow and Sternberg, which covers a river length of nearly 60 km.

The aims of this study were to gather facts about the habitat use and home-range of otters in a system of small streams, creeks and ditches, connected with lakes and ponds, which is the typical landscape in the western part of the Mecklenburgische Seenplatte (Mecklenburg Lake Area).

Between the Lake of Barnin and the town of Sternberg, where the Warnow confluents with the river Mildenitz, as well as at the Mildenitz itself, 30 bridges and weirs were checked in summer 1992, in order to determine the river segments with consistent traces of otters.

In December 1992, a stretch of 35 km was surveyed as regards otter tracks (spraints and footprints). The greatest amount of otter spraints was found between the villages of Gädebehn and Augustenhof, but the estuary of the Warnow into Lake Mickow was the area most heavily frequented by the otter.

From March 1, 1993 through July 7, 1995, 6 wooden traps and 4 wire traps as well as 2 wooden trap-boxes and one wire tubular trap were set up at varying trapsites in the vicinity of the research station in Demen/County of Parchim. The traps were located under bridges near the river or in small ditches. The traps weren`t baited.

During this time, 17 unintended captures resulted (15 minks, 1 polecat, 1 badger). Two otters were captured at December 30, 1992 and at May 8, 1993. Most of all captures succeeded in the winter half-year.

* for a full report contact the author

More references to the occurrence of otters were obtained by snowtracking and search for holts.

Between August 2, 1994 and May 16, 1995, 28 respectively 24 check-points for otter tracks and spraints at the Warnow river system were controlled weekly. There was an accumulation of signs in the winter half-year between October and March. The number of signs not older than one week showed a slight increase in autumn.

Further surveys as regards current land use, within a strip of 1 km beneath the bank of the Warnow and the Lake of Barnin from the place of Bülow to Kritzow were done in summer 1994. Most of the area was conifer forest (35 %), grassland (28 %) and arable land (21 %). Settlements (5 %) and fallow land (11 %) were less frequent.

From July 1994 through July 1995, human disturbances at the Warnow and the surrounding lakes were registrated weekly at 14 check-points. Angler and their cars respectively motorcyles were the most frequent and during the whole year, the most constant source of disturbance along the waterbanks. In summer, there were increases in campers and visitors at swimming-places. The lakes closest to local communities (Lake of Barnin, Deep Lake and Village Lake in Demen) were most frequented. Anglers were found most frequently at the estuary of the Warnow into the Lake of Barnin. Most stretches of the river as well as the smaller lakes were obviously without any disturbance.

At two points, at a bridge and a crossing, the volume of traffic was recorded. No main time of disturbance by traffic was found. During the night, there was only a low volume of traffic and only a little disturbance by anglers, bathers and boats at the waterbanks could be found.

Two otters were captured and fitted with implanted radio transmitters, as well as neck-fitted transmitters. Locations were done with H-antenna and an omni-directional whip antenna. The radio contact with the male otter, which was captured in a wooden trap in a ditch in May 1993, was lost within two nights. No useful data were obtained from this otter.

The female otter, which was captured under a bridge at the end of December 1992, could be monitored nearly continuously for a period of two month. Within the first few nights after release, the otter shifted from its capture place at the river into a small ditch. Dueing the next eight weeks, the female otter used habitat in two disconnected areas. The first home-range area was a system of a bigger lake, ditches, wetlands, fallow lands, fens and elder swamps about 85 ha. The second one contents several smaller lakes, ditches and fens and elder swamps as well. Its size was about 59 ha. In both home ranges, there were several hunting-areas, where the otter mostly was fishing.

Between both home-range areas, there was a watershed. The distance between the two home range areas was 1000 - 1600 m. In 15 nights during 55 nights of observation, the otter crossed this watershed or changed between two hunting-areas.

During the day, the otter rested near the bank of a lake. Nine distinct resting sites were found; most were used for several days in a row. Resting sites, where the otter paused at night, were clustered around the waterbank.

The distribution of times of activity during the night didn´t show a clear pattern. Dependent on the weather, there was a first period of activity after sunset, and a second, longer lasting/more continuous one during the second part of the night. At March 2, 1993, during the observation by telemetry, the radio contact broke off and did not resume again.

In 1993 and 1994 the types of biotopes within the home-range of the female otter were monitored according to the "Index of types of biotopes in Mecklenburg-Western Pomerania". Special emphasis was placed on the "§ 2 biotopes", which means special protected biotopes like wetlands, waters, hedges, woods etc.

The declaration of the territory, in which the female otter was living, as a protected area was recommended.

A survey of the density of vegetation in the habitat of the monitored otter showed that reeds offer the best visual protection Near the ground, shrubs and willow thickets also offer good protection.

The results of this study were condensed and published in a report for the German Campaign for the Protection of Otters (Aktion Fischotterschutz e.V., Hankensbüttel/Germany). In this report. technical and logistical problems of livetrapping as well as problems with telemetry are also discussed. The methodology used for population estimation and ottertracking are considered.

The report is summed up by referring to conservation measures, research strategies and habitat improvement for the otter in Mecklenburg-Western Pomerania.

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PROCEEDINGS 14th MUSTELID COLLOQUIUM

Kouty - Ledec nad Sazavou, Czech Republic
14.-17.9.1995
Toman, A., Hlavac, V. (eds.)

The proceedings cover various aspects of European mustelids including the European otter (*Lutra lutra*).

For further information please contact:

Dr. Ales Toman
Czech Institute for Nature Conservation
Otterstation Pavlov
58401 Ledec n. S.
Czech republic

PROCEEDINGS 15th MUSTELID COLLOQUIUM

Kollm - Oberlausitz, Germany
12.-15.9.1996
Dunger, W., Sander, B. Ansorge, H. (eds.)

The proceedings cover various aspects of European mustelids including the European otter (*Lutra lutra*).

For further information please contact:

Staatliches Museum für Naturkunde Görlitz
Postfach 300154
D-02806 Görlitz
GERMANY

Abstracts of an International Meeting:

Rare Mammal Species of Russia and adjoining territories

Moscow, Russia
9.-11.4.1997

Several aspects on sea otter (*Enhydra lutris*) and river otter (*Lutra lutra*) biology including conservation problems, allozym variability, foraging, energy metabolism, status and distribution are covered.

For further information please contact:

J. Shergalin
Merktrans
Vaike Ameerika 8
EE 0001 Tallinn
Estonia

Actes du XVII^{e} Colloque International de Mammalogie:
La Loutre et le Vison d´Europe
Niort, Belgium
23.-25.19.1993

Several aspects on the European mink (*Mustela lutreola*) and river otter (*Lutra lutra*) biology including status, ecology, behaviour, and conservation problems are covered. All contributions are in French with an English abstract.

For further information please contact:

Institute for Zoology
University of Liege
Quai Van beneden, 22
B-4020 Liege
Belgium

C O N G R E S S A N N O U N C E M E N T S

IIIrd SPANISH CONGRESS OF MAMMALS
1st Congress on Iberian Otters

December 5th-7th 1997
Castelló dÉmpuries, Girona

The Spanish Society for the Conservation and Research of Mammals organizes the 3rd Spanish Congress of Mammals. During this event the 1st Congress on Iberian Otters will be held on December 6th, 1997 in the Aiguamolls de l´Empordá Natural Park. This area is close to the area where two years ago a reintroduction project started (18 translocated otters were released). The meeting is organized by SECEM (Spanish Society for the Conservation and research on Otters) and APNAE (Friends of the Aiguamolls de l´Empordá Natural Park).

Oral presentations and posters on the distribution, biology, ecology, behaviour, genetics, demography, toxicology, veterinary, management, conservation, etc. on the Spanish, Portuguese or Andorran otters will be accepted after a Scientific Committee revision of importance and signification of the submitted topics.

For further information please contact:

Jordi Ruiz-Olmo
Josep Pla, 41,7,2
08019 Barcelona
SPAIN
Fax.: ++34-3-307 96 11
e-mail:ajruiol@correu.gencat.es

16th MUSTELID COLLOQUIUM

October 9th-12th, 1997
Fuglsø Centre, Jutland, Denmark

At this meeting presentations on all aspects of the biology of European mustelids will be welcome.

For further information please contact:

Aksel B. Madsen
National Environmental Research Institute
Department of Landscape Ecology
Grenåvej 12, Kalø, 8410 Rønde, Denmark
Tel.: ++45-89-201700/ Fax.: ++45-89-201515
e-mail: abm@dmu.dk

71 JAHRESTAGUNG
Deutsche Gesellschaft für säugetierkunde
September 21th-25th in Jena, Germany.

- Locomotion in Mammals
- Methods in mammal studies
- ;Biology of mustelids

For further information please contact:

Prof. Dr. M.S. Fischer
Institut für Spezielle Zoologie und Evolutionsbiologie
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Fax.: +49-3641-630392
e-mail: b5fima@rz.uni-jena.de

Euro American Mammal Congress

July 20th-24th, 1998 in Santiago de Compostela, SPAIN

For further information please contact:

Miguel Delibes
Fax.: ++34-54-621125
e-mail: decastro@cica.es

Has the Panda had its Day?

Future Priorities for the Conservation of Mammalian Biodiversity

November 14th-15th, 1997 in London, UK

For further information please contact:

Dr. Abigail Entwistle, FFI,
Great Eastern House
Tenison Road
Cambridge CB1 2DT
e-mail: info@ffint.org

3rd International Conference
on Wildlife Management in Amazonia

December 3rd-7th, 1997 in Santa Cruz, BOLIVIA

This event will be a forum to evaluate, discuss and exchange ideas and knowledge about wildlife & fisheries, conservation and management, biodiversity, the

environment, and sustainable development, along with other themes intimately linked with Amazonian wildlife.

For further information please contact:

International Congress Coordinator
Tropical Conservation and Development Program
University of Florida
POB 115531
Gainesville
FL 32611-5531, USA
Fax.: ++1-352-3920085
http://www.tcd.ufl.edu./tcd/congres3

"*Mammal Trapping Symposium*"

17th - 20th August 1997 in Alberta, Canada

Presentation topics may include (but are not limited to):

I. Mammal trapping: importance and concerns
   - historical
   - economical
   - socio-cultural
   - animal welfare
   - and biological aspects

II. Trapping technology: scientific facts and future direction
   - world trap inventory
   - humaneness
   - efficiency and selectivity

III. Trapline management and data analysis
   - trapline designs
   - management practices
   - data analysis

For further information please contact:

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LAST MINUTE NOTES

"*VIIth INTERNATIONAL OTTER COLLOQUIUM*"

IUCN Otter Specialist Group Bulletin, ENVI Trebon, Aktion Fischotterschutz

The VII International Otter Colloquium has to be rescheduled and now will be held in Trebon, Czech Republic (Central Europe), on March 13-20, 1998. The organsation of the Colloquium will be a joint effort of the IUCN Otter Specialist Group, The Czech environmental organisation ENVI and the German Aktion Fischotterschutz.

As to the region where the conference will take place, the Trebon Biosphere Reserve harbours a strong Eurasian otter population which survives due to the presence of 500 fish ponds (7000 ha) in the Reserve, with an average annual harvest of fish (mainly carp) of 2800 tonnes. Most of the fish ponds of Trebon originate from the 14-16 century and the complex of ponds is now listed as a Ramsar Site.

The Colloquium will be organised as a series of lecture sessions during the day and workshops on some of the evenings, covering as wide as possible an array of items concerning the different otter species. Registration fee will be US$ 150,-- (students 100,--). Accommodation will be provided in the conference building, with prices ranging from 27.50 - 47.50 US$ per day, all meals included. The deadline for submissions of contributions, papers and registration is October 31, 1997. Contributions received after the deadline cannot be accepted. Fees for registration after October 31 will be US$ 200,--.

For more information concerning the program or registration forms, please contact the Organising Committee, preferably using e-mail or Fax.

On behalf of the Organising Committee

Robert Dulfer
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CZ-37901 Trebon
Czech Republic
For information: Phone/Fax.: ++420-333-4297
e-mail: dulfer@envi.cz

EUROPEAN VOLUNTARY SERVICE
ECOGUIDE INTERNATIONAL PROJECT

The international NGO Europe Conservation offers a project named European Voluntary Service - Ecoguide International Project to all members of the Otter Specialist Group.

Europe Conservation was founded in 1989 in Italy. it now acts for the protection of our natural heritage all over Europe. The basis for this non-profit organisation refers to the world strategy of conservation stated by IUCN.

The aims of the project European Voluntary Service are as follows:

- to sift through the knowledge necessary for action for conservation of endangered species
- to develop actions (research, information, habitat management)
- to provide human and financial means for the researchers to develop programmes of research applied to the conservation of nature.

For this project, Europe Conservation recruits volunteers to participate to a specific research or conservation program (e.g. collect data, radio-telemetry,...) during a short period (generally between two and four weeks, it depends on the needs of the researchers). It is possible to organise several periods in order to have a volunteers succession during the summer for example (it is easier to recruit during the holidays, but it is possible to have volunteer programmes on other periods of the year, too). The number of volunteers per period is variable but it is better to manage a small team (Between 2 and 8 volunteers).

In former projects 70% of the volunteers were women aged from 18 to 40. Most of them are students or professional workers, 16 % are manual workers, technicians or supervisors. The volunteers take part in the programmes in order to act for the conservation of the living world. It is therefore important for them to perceive the usefulness of their personal action and the interest of the program undertaken. They wish to know the peculiarities of the species or habitats on which they are working. Their interest is focused on the biology of the species, the dangers which threaten it, the programme of research or conservation as a whole and understanding of the work to be carried out. They are generally high motivated and there is no limit to the knowledge that they seek.

The volunteers physically support the research or conservation programme. They take part and contribute financially to it. The total participation has to be discussed between the researcher and Europe Conservation. It always includes the accommodation, the contribution to the project and sometimes the food. All volunteers are insured by Europe Conservation.

The ecovolunteers programmes are open to every people, from all countries but they have to speak English (or the language of the country where they work) and to be 18 years old at the minimum. Their recruitment is realised by Europe Conservation. The candidates have to send a Curriculum Vitae and a letter of motivation. No specific formation is required to participate but people have to be very motivated.

Members of the Otter Specialist Group who are interested in this programme and want to offer otter research or conservation projects to volunteers should contact for detailed information:

Europe Conservation
BP 44

F-41260 La Chausse Saint Victor
Tel.: ++33-2-545822-22
Fax.: ++33-2-545822-20
e-mail: eco@europeconservation.org

The editor thanks Claus Reuther for submission of this information.

Date: Sat, 21 Jun 1997 10:15:13 +1200
From: GONZALO MEDINA-VOGEL <MEDINAG@tui.lincoln.ac.nz>
Subject: Help for marine otters
To: Arno Gutleb <Arno.Gutleb@vu-wien.ac.at>
Organization: Lincoln University
Priority: normal

Dear Arno

I had receive an urgency fax from Valdivia, Chile.

The owners of a land that have been the only stop between

industrial development and a healthy population of the endangered

marine otter (*Lutra felina*), have decide definitively to sell their

land. If CODEFF, an NGO environmental organization does no get the

US$19.000 to buy the land, an other person most probably with ideas

to exploit their forest and marine resources will do, and this will

be the end of the otters. Do you know any person or organization that

could be interested in donate money or be owner or co-owner of the

land with real compromise to protect the land, forest and otters.

Please send me an Email, I will contact them with more information.

Sincerely

Gonzalo Medina

Pages 51 – 52 now blank due to format changes