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**CONSERVATION ASPECTS OF THE ECOLOGY OF ASIAN SMALL-
CLAWED AND SMOOTH OTTERS ON THE MALAY PENINSULA**

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Abstract: Between April 1989 and June 1990 I made four six-week study visits to Tanjong Piandang, Perak, Malaysia where I studied otters in collaboration with Mr Burhannudin ("Bond") Mohd of the Department of National parks and Wildlife of Peninsular Malaysia. We mostly studied field signs and collected scats of both smooth (*Lutra perspicillata*) and small clawed otters (*Aonyx cinerea*) inhabiting the rice fields and fringing mangroves of the study site. With experience, smooth and small-clawed otters signs can be easily discriminated in the field. Although previous natural historians have considered mangroves important to smooth otters, the results of this study indicate their importance to small-clawed otters as well. More than 25 % of the remaining mangroves in Malaysia are under threat of conversion to aquaculture projects: a particular problem for the survival of otters, as this brings them into even closer contact with humans who view them as pests. The Kerian rice fields of Perak, Malaysia are also an important habitat for small-clawed and smooth otters. Asian rivers seem to contain fewer otter signs and probably fewer otters than wetlands, marshes and mangroves, so preserving pristine Asian river habitats like Hauy Kha Khaeng and Sungai Tembeling may not be enough to ensure the survival of good populations of otters. I suggest that to be most effective in our Asian otter conservation efforts we need to increasingly link up with our colleagues who are working to protect these fragile habitats.

Between April 1989 and June 1990 I made four six-week study visits to Tanjong Piandang, Perak, Malaysia where I studied otters in collaboration with the Department of National parks and Wildlife of Peninsular Malaysia. My colleague Mr Burhannudin ("Bond") Mohd. Nor is still studying otters throughout Malaysia and has incorporated some of his findings in a draft Action Plan for Otters in Malaysia. He can be contacted through the Department of Wildlife and National Parks, km 10, Jalan Cheras, 56100 Kuala Lumpur, Malaysia.

In Tanjong Piandang, Bond and I occasionally got glimpses of otters but mostly studied field signs and collected scats of both smooth (*Lutra perspicillata*) and small clawed otters (*Aonyx cinerea*) inhabiting the rice fields and fringing mangroves of the study site. I analyzed the prey remains in 112 smooth and 328 small clawed otter scats and looked for species, seasonal, and site-specific differences in the diets. I also surveyed otters in other locations throughout Malaysia and Thailand between 1985 and 1990. My complete findings from this field work and also from gas chromatography work with captive otter scats are incorporated into my PhD dissertation and will be submitted to professional journals. In the meantime, those findings that can have immediate utility to our Asian otter survey and conservation efforts are summarised here.

Smooth Otters

Smooth otters are found in a number of Malay and Thai habitats, including mangroves, rice fields and rivers. These large otters are found singly, in pairs or in groups and their cubs are born year-round. Smooth otters are diurnal in most habitats and are often seen foraging, sprainting and grooming during daylight hours. In the rice fields of Tanjong Piandang smooth otters sometimes approach farmers working in the field. A group of these large otters can be quite intimidating.

Smooth otters are largely piscivorous, although they also eat rats, insects, snakes and a variety of other prey items. In the rice fields, their predation on the rice field pest rat (*Rattus argentiventer*) may serve a

useful function to the rice farmer. Although I heard reports of their predations upon chickens and ducks, evidence was never observed and no bird remains were found in any scats of either otter species.

Small-clawed Otters

Small-clawed otters coexist with smooth otters in a number of locations, including the Huay Kha Khaeng river system and the Tapi River floodplain in Thailand and the rice fields and mangroves of peninsular Malaysia. At our study site, small-clawed otters were attracted to the chirps of baby smooth otters temporarily held inside our house. Zoos in Bang Pra and Pattani, Thailand display mixed groups of smooth and small-clawed otters in the same enclosure and they seem to be compatible even under such close quarters.

Small-clawed otters are nocturnal and crepuscular where they live near people in northern Malaysia. At night their chirps can be heard in the rice fields and they are occasionally seen in the early morning or around dusk. These otters are found singly or in groups of up to fifteen or so animals.

Small-clawed otters, like most otters, are generally brown. Occasionally cream-coloured small-clawed otters are found (Lekagul and McNeely 1977). I have seen such light coloured otters at the supermarket zoo in Bangkok and the field station at Surat Thani. A light coloured small-clawed otter was also reported with a group of brown otters near the southern substation of Huay Kha Khaeng. Some small-clawed otters, including one at Marine World in California, and some at the Bangkok Zoo, have hairy rhinaria. These otters are sometimes called "hairy-nosed" otters, but they are not the true hairy-nosed otters (*Lutra sumatrana*) that have not been located recently on the Malay Peninsula.

Small-clawed otters in Tanjong Piandang eat a variety of prey items, including crabs, fish, snakes and insects. Mudflat crabs are a year-round staple in their diet. In Tanjong Piandang there was no evidence of rice field crabs, but these crabs are a threat to rice crops in Thailand, Burma, Indian and Sri Lanka. Where rice field crabs do occur, small-clawed otters may serve a valuable function to farmers by preying upon crabs.

Asian Otter Survey Techniques

The scats of smooth and small-clawed otters are easy to locate because, like other otters, they are very particular in their choice of toilet sites. Unlike the situation in Europe (Mason and Macdonald), in Southeast Asia surveys of otters can best be conducted by boat. Along forested rivers otter signs are often located on any open, grassy or sandy banks, which the otters use for sunning and grooming. In marshes like Nung Tung Tong, Thailand, and otters use interior high islands of dry land to groom, den and leave their scats. In mangrove areas, the otters also seek the high, dry ground inland to leave their scent marks and dry their coats. In general, the search for otter signs in large wet areas can easily concentrate on any dry ground nearby, as these areas are important resting, denning, grooming and toilet sites for all resident otters.

With experience, smooth and small-clawed otters signs can be easily discriminated in the field. About half of the small-clawed otter toilet sites show signs of scat-smearing, a behaviour often seen in captivity. Smooth otter toilet sites never showed signs of smearing in this study. The tracks of small-clawed otters are also very distinctive, with long middle digits on the front paws and the absence of claw marks. Small-clawed otter tracks are smaller than those of smooth otters. Smooth otter tracks also usually show distinct claw impressions, and sometimes even the heavy webbing is evident. Occasionally, mongoose or monkey tracks might be confused with those of otters. Mongoose tracks are similar in size to those of small-clawed otters, but invariably the claw impressions were present. Crab-eating macaques that shared the study site also had five-toed tracks that were similar in size to large smooth otter tracks. Monkey tracks did not have webbing, and the toe impressions were reminiscent of long fingers.

Unfortunately Eurasian or hairy-nosed otters were never seen or reported in this study. The tracks of these otters should be similar to those of smooth otters, but not as large. In areas where the four Asian otters are sympatric it may well be difficult to discriminate their tracks visually. More fieldwork is needed in habitats that are inhabited by Eurasian and hairy-nosed otters to find ways to discriminate their signs.

The Importance of Mangroves

The mangrove habitat is crucial to the survival of good otter populations in Southeast Asia. Although previous natural historians have considered mangroves important to smooth otters, the results of this study indicate their importance to small-clawed otters as well. In the study site, most of the prey of small-clawed otters came from the mangroves and associated mudflats. The smooth otters at the study site were more associated with the rice fields adjacent to the mangroves. In nearby Kuala Gula, however, a group of smooth otters lived in the mangrove fringe near the field station and smooth otters were observed swimming in canals through the mangroves during a pilot study in the area.

More than 25 % of the remaining mangroves in Malaysia are under threat of conversion to aquaculture projects (Malaysian Wetland Working Group, 1987). Aquaculture projects are a particular problem for the survival of otters, as this brings them into even closer contact with humans who view them as pests. Directly killing otters that are preying upon aquaculture stocks only leads to recolonization of the area by more otters, who will also eat the fish unless they, too, are destroyed. Killing otters due to perceived competition is a major threat for them throughout Asia (Foster-Turley and Santiapillai 1990). Few third World aquaculture projects can afford the chainlink fences necessary to keep otters from killing the fish or prawn stocks.

Rice Fields

The Kerian rice fields of Perak, Malaysia are an important habitat for small-clawed and smooth otters. The brushy cover along the dikes and between separate rice fields serves as denning grounds for both otter species. Both otters also use the piles of discarded, burnt rice hulls piled along the sides of the road as a drying medium for their coats. The smooth otter, especially, uses the irrigation ditches and canals as a hunting ground for their major fish prey species. The small-clawed otter in this study site relies mostly on the adjacent mudflats for their prey items.

Both small-clawed and smooth otters are adaptable to living in close association with people in rice fields and other rural areas. Their survival in these areas depends on the availability of suitable prey and islands of brushy cover where they can den and hide without human intervention. Eurasian and hairy-nosed otters may not be as tolerant of human activities, and this may account for their rarity throughout Southeast Asia. The uncontrolled use of persistent pesticides throughout the region may result in the disappearance of all rice field otters.

Rivers

Asian rivers seem to contain fewer otter signs and probably fewer otters than wetlands, marshes and mangroves. During this study relatively few otter signs were recorded during intensive many-day surveys along the Sungai Tembeling in Taman Negara, Malaysia and along the Huay Kha Khaeng, Thailand. In contrast, a single day in the marshes of Nung Tung Tong, Thailand or the rice fields and mangroves of Malaysia can reveal many signs of both small-clawed and smooth otters. Shariff (1984) also found that smooth otters were more abundant in the mangroves of Kuala Gula compared with the rainforest rivers of Taman Negara.

For this reason, preserving pristine Asian river habitats like Huay Kha Khaeng and Sungai Tembeling may not be enough to ensure the survival of good populations of otters. Mangroves, marshes, rice fields and other wetland habitats instead seem most crucial to the conservation of otters in Southeast Asia.

Asian Wetlands Bureau

In conclusion, I suggest that to be most effective in our Asian otter conservation efforts we need to increasingly link up with our colleagues who are working to protect these fragile habitats. One such organisation is the Asian Wetland Bureau (AWB), IPT, University Malaya, Lembah Pantai, 59100 Kuala Lumpur, Malaysia (fax: 60 3 757 1225). Also, for Asian nationals only, the AWB is accepting proposals for small grants. I strongly urge all interested Asian otter specialists to contact this organization to develop projects that can be mutually supported.

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