Conservation of otter species in India

Interim Field Report
Narora (Ramsar Site), Uttar Pradesh

by

Dr. Asghar Nawab

WWF – India
172 B, Lodhi Estate, New Delhi
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* Data and results presented in this report are preliminary and should not be cited except by prior consent of the Director, Freshwater & Wetlands Programme - WWF India; New Delhi.

Introduction: Project background

The otters, at the apex of food web, are good indicator species of health status of different aquatic ecosystems they inhabit (Foster-Turley et al. 1990). They form a well-marked group of species within the mammalian family Mustelidae. Adapted for a semi-aquatic life, otters are primarily piscivorous. Of the four species of otters found in Asia, India is home to three species viz; Common Otter *Lutra lutra*, Smooth-coated Otter *Lutrogale perspicillata* and the Small-clawed Otter *Aonyx cinereus* (Kruuk 2006). All the three species found in India have been given legal protection under the Wildlife (Protection) Act of 1972. The latest edition of the IUCN Red list of threatened animals (2008) designates the status of Common Otter and the Smooth-coated Otter as Vulnerable while that of the Small-clawed Otter as Nearly Threatened.

In recent years the decline of otter populations over much of their distribution range has generated an increasing interest in their conservation (Nawab 2007) necessitating studies which attempt to find out the factors that affect the sustained reproduction in these species. The current knowledge on these species particularly in India is limited such that our management decisions are often uncertain towards its benefits, or no decisions at all for want of empirical data. The basic premise of this study is to confirm the current status and distribution of all the three species throughout the country and to assess the quality of potential habitats for viable otter populations.

Objectives

The study has the following objectives:

i. To determine the status of Smooth-coated Otter along with the sympatric species *i.e.* Common Otter and the Small-clawed Otter in their present distribution range.

ii. To examine the resource use pattern of otters in relation to habitat availability.

iii. To assess the potential threats to otter populations and their habitats within the study stretch.

Study area: A brief description on the Upper Ganga Basin

The River Ganges, longest river of the Indian sub-continent originates in the Garhwal Himalaya at an altitude of 4100 m (30055° N Latitude and 70 0 7’ E Longitude), traverses a total length of about 2740 km, before eventually discharging into the Bay of Bengal. The Gangetic plain has been a hub of civilization since time immemorial due to fertile land and availability of water for irrigation and transportation. The basin sustains more than 300 million people in India, Nepal and Bangladesh (Gopal 2000). River Ganges and its tributaries form a drainage basin spanning 1.06 x 106 km2 of which the Indian component (8.6 x 105 km2) accounts for 26.2% of the geographical area of the country. The Ganges basin annually discharges 4,93,400 million cubic meters water into
the sea. On the basis of receiving volume of annual run-off, the river occupies tenth position in the world (Rao 1995). The river water in different stretches is diverted and extracted for irrigation and power generation. The total length of irrigation canal network in the Ganges basin is about 9500 km, which is to be extended to 13,680 km (Dasgupta 1984), irrigating about 7 million hectare land. The Upper Ganga Canal diverts more than 60% of the annual flow, and almost 100% of the dry seasons flow at Haridwar. The Lower Ganga Canal at Narora, about 264 km downstream of Haridwar, diverts even more water (Gopal 2000). There exists no major water storage dams, except for Tehri reservoir upstream between Narora and Rishikesh. In the upper parts of the reach, the aquatic habitats include riffle areas, rocky, sandy and muddy river banks, while the lower part is dominated by sandy and muddy banks and deep pools (Rao 1995). The shallow parts of the river turn into islands during low flows and thus - into good nesting grounds for turtles and island breeding birds. Protected areas include the Hastinapur Wildlife Sanctuary (2073 km²). Based on the anecdotal references on otter occurrence (Rao 1995), this stretch was prioritized for current field work to ascertain the objectives of the project.

Methodology

Field work was conducted in two phases. Phase I included a rapid assessment along the Upper Ganga between Narora and Bijnor during May 12-27, 2007; this covered a stretch of approximately 165 km. Phase II included an intensive survey between Narora and Anup Shahar during June 25-July 10, 2007; this covered a stretch of approximately 25 km. The surveys were conducted from 0500–1800 hr using a motor boat and wherever possible walks along the shore were also made. The study primarily aimed at confirming otter presence and as well as ascertaining possible habitat for viable otter populations. Occurrence of otters was confirmed by searching river banks (a width of 50 m from the shore) for presence of indirect signs such as spraints (otter scats), grooming and basking sites and den sites (Fig. 2a and 2b). As a part of the survey, interviews were conducted with locals (particularly fishermen) to seek information on otter occurrence, their population, location, activity and threats. Interviews consisted of (1) having people identify local aquatic mammals from pictures (2) asking for physical description of otters (3) questioning about the relative abundances of otters in the area (i.e. rare, common or abundant). Questioning was oral, informal and centered on coloured plates of authentic field guides on Indian mammals. If the respondents were found to be positive they were investigated further for supplementary data.

During the survey, at each site data on following parameters were collected:

(i). Habitat type (Disturbed/Undisturbed, Perennial/Seasonal, River/Reservoir)
(ii). Distance searched (m)
(iii). Shoreline substrate (Boulders/Sand/Mud/Clay/Alluvial)
(iv). Shoreline vegetation (Presence/Absence)
(v). River width (cm)
(vi). River depth (cm)
(vii). Water current (Fast/Slow)
Results and Discussion

Prior to any conservation efforts to protect an otter species, it is vital to establish its current distribution range and the probable relative population status (Macdonald 1990). Most otter species live naturally at low population densities largely because their food resources are widely dispersed and the environment is unable to support a high density of top predators within a restricted area. This natural system of regulating population densities causes problems for many species if they become over-exploited and as a result are threatened with extinction (Hussain 1998).

The status of otters from the Indian subcontinent is poorly documented but it is believed that their population is under severe threat (Nawab 2007). An extensive network of protected areas exists in India, however; very few of these have detailed habitat and species management plans particularly with reference to otter species, and fewer still make any effort to involve local people in the design or maintenance of these areas. One of the primary objectives of this study is to gather baseline information on the distribution and abundance of otters for monitoring future changes in population and to provide management recommendations for their conservation at the country level.

In spite of exhaustive attempts, no direct sightings or any indirect signs of otter presence were recorded. At Shahjahanbad ki thokar some 10 km from Narora barrage appeared to be a probable suitable otter site with presence of boulders and sandy stretches and shoreline vegetation; however there were signs of anthropogenic pressure.

Of the total interviewee (n=16), 43.75% (n=7) were fishermen and of these (42.86%, n=3) proved positive i.e. they made proper description of otters and also could identify otters from the photographs displayed to them (Table 1). All the respondents identified the species as Smooth-coated Otter and reported otter occurrence as common some ten years back. Otters used to be sighted in groups of 6-12 individuals. Fishermen criticized otters of stealing their fishes from their gill nets laid out in the river during the night. Human perturbations along the riverbanks were apparent through sand mining and developmental projects, illegal fishing and bathing at various ghats which is a major source of pollution.
Conservation implications

Although no signs of otter occurrence were recorded in the sampling stretch between Narora and Anup Shahar, this is an ideal habitat for several threatened and endemic aquatic fauna such as the Gangetic Dolphin *Platanista gangetica* and several species of water birds. Narora reservoir and a stretch of about 82 km on the River Ganga have been designated as the Ramsar site of wetland importance. Major threats identified include pollution, soil erosion and fishing. It is suggested that the State Government should take steps to ban leasing of commercial fishing in this area. The Forest Department should conduct plantation drives along river banks on regular basis to minimize the soil erosion. Villagers should be motivated to reduce the use of chemical fertilizers and pesticides in the fields to control agricultural pollution. Conservation education programmes should be run by various NGO’s to create awareness on environmental issues.

Acknowledgements

I express my gratitude to the Chief Wildlife Warden, Uttar Pradesh for granting permission to conduct field surveys. I am thankful to the DFO, Social Forestry (BulandShahar) and Mr. Satish Kumar Sharma, Range Officer (Narora) for extending support during field work. I am grateful to Mr. Ravi Singh (Secretary General & CEO, WWF-India) and Dr. Parikshit Gautam (Director, freshwater & Wetlands Programme, WWF-India) for encouragements to carry out this study. I appreciate the help from Viveksheel Sagar (Project Officer, Dolphin Conservation Programme) and the field staff (Shyam Mohan, Rajkumar, Gangasaran, Parmanand and Radhey Shyam).

Reference cited


Rao, R. J. 1995 Studies on Biological Restoration of Ganga River in Uttar Pradesh: An indicator species approach, School of Studies in Zoology, Jiwaji University, Gwalior.

Figure 1. Map of the Ganga River Basin.

Source: Smakhtin et. al. YEAR?.

Map not to scale
Figure 2. Schematic representation of the study design following the random sampling procedure.
Table 1. List of survey sites between Narora and Anup Shahar (Intensive sampling stretch) along the River Ganga.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Survey site (Right bank) c. 5 km</th>
<th>Direct sightings</th>
<th>Indirect signs</th>
<th>Local Information</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Narora</td>
<td>-</td>
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<tr>
<td>2.</td>
<td>Naudai</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Naudai ki Maddhaiyan</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>4.*</td>
<td>Viharghat</td>
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<td>5.</td>
<td>Rajghat</td>
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<td>6.</td>
<td>Naya Bans</td>
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<td>-</td>
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<tr>
<td>7.*</td>
<td>Bilona</td>
<td>-</td>
<td>-</td>
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<td>8.</td>
<td>Karanvas</td>
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<td>9.*</td>
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<td>10.</td>
<td>Bhopatpur</td>
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<td>11.*</td>
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<td>13.</td>
<td>Sherpur</td>
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<td>Anup Shahar</td>
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<thead>
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<th>S.No</th>
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<th>Indirect signs</th>
<th>Local Information</th>
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<td>2.</td>
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<td>3.*</td>
<td>Faridpur</td>
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<tr>
<td>4.</td>
<td>Faridpur Ki Maddhaiyan</td>
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<td>-</td>
<td>+ (n=1)</td>
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<td>5.</td>
<td>Dheemarpura</td>
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<td>6.*</td>
<td>Shahjahanbad</td>
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<td>-</td>
<td>+ (n=4)</td>
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<td>8.*</td>
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<td>9.</td>
<td>Serora</td>
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<td>10.*</td>
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</tbody>
</table>

Footnote: * = Sites demarcated as 5 km segments, + = Positive site, - = Negative site, n = Sample size of interviewee.
Panaromic view of River Ganga at Narora, Uttar Pradesh.

Locals being interviewed to collect information on otter occurrence.
MAJOR DISTURBANCES RECORDED

Sand extraction along river banks.

Development projects being carried out.

Illegal fishing.

Bathing Ghats.