Monitoring Otter Populations and Combating Poaching through Stakeholder Participation – A Status Report

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Executive Summary

Otters are ambassadors of wetland ecosystems. In India, species such as the smooth-coated otter and small-clawed otter often occur along rivers and water bodies in human-dominated landscapes, particularly near protected areas. Being top predators in the aquatic environment, they have been severely affected by loss of riparian habitats to agriculture and other anthropogenic activities like sand mining, construction of hydroelectric projects and dynamite fishing. The 780 km long Cauvery is one of the major rivers of peninsular India, flowing from the Western Ghats to the Bay of Bengal, important for otters and for millions of people dependent on it for agriculture, fishing, water supply, and industries.

To document and monitor otter populations within and outside protected areas along the River Cauvery, we carried out raft-based surveys along 125 km of the river, and social perception and otter – fisher conflict interviews surveys among 160 respondents in over 85 villages along 250 km of the river. Preliminary results include the detection of otter signs in 100 locations (in 125 km covered during raft-based survey), nearly 10 otter sightings and multiple camera trap photographs, including those of small-clawed otters at a location far lower than previously reported, and spatial mapping of occurrence of various threats along the river. We are also working with local stakeholders to develop monitoring methods and resources (including mobile phone software), and are continuing to engage with the Fisheries Department and angling clubs to sensitise them on the role otters play in the ecosystem.

Introduction Otters are apex predators in river ecosystems, but their role is often not understood. In addition, otters are heavily poached for their prized pelt. Otters were found in most major river systems across India until they were systematically poached by specialised tribes. The River Cauvery is a major south Indian River and could probably be one of the last strongholds of the smooth-coated otter.

Figure 1. Study area - The above image shows the entire length (white line) of the Cauvery River in Karnataka. The areas in white are Protected Areas (PAs).

In the light of this, and the fact that most Indian protected areas protect a very small percentage of riverine stretches, this project was specifically designed to identify stretches outside conventional PA network which still host populations of otters. In addition, we plan to identify threats to otters, incidents of otter poaching in the entire landscape, and conflict with fisher folk and their perceptions towards otters.

Objectives

The main objectives of the study were:

1. To identify otter populations (occupancy) along the entire stretch of the Cauvery river, using a combination of questionnaires & visual sign-based surveys
2. To identify and map potential threats to otters along the entire stretch
3. To verify the effectiveness of protected areas in conserving a riverine specialist like the smooth-coated otter

In this report, we present preliminary results of surveys and an overview of data collected so far. Further results and conclusions will be available once surveys and data collection and analyses are completed.

Study area and River Sections

The River Cauvery (Figure 1) is one of the major rivers in the Indian subcontinent, sustaining millions of people in the states of Karnataka and Tamil Nadu. It originates in the highly bio-diverse Western Ghats and flows nearly 780 km eastwards through a completely human-dominated landscape to the Bay of Bengal.

The river also flows through various protection regimes like traditional protected areas where fishing and other extractive activities are strictly banned, semi-protected stretches where fishing is controlled and open stretches which sees all forms of extraction and disturbance. The length of the river within the protected area is nearly 70 km out of the total length of 330 km in the state of Karnataka. The semi-protected stretch is 30 km in Kodagu district. More than 200 km of the river is outside any form of protection and this stretch witness's extraction on massive scales.

Work carried out to address each objective

1. *To identify otter populations (occupancy) along the entire stretch of the Cauvery river, using a combination of questionnaires & visual sign-based surveys*

   Our team has completed otter distribution survey, and social perception and conflict assessments along nearly 250 kms of the river outside protected areas through semi-structured interviews (Figure 2). The main respondents to, questionnaires and in meetings were local fishermen, farmers, and planters (provide a break-up, how many of each?). We have covered 85 villages, along the river and have interviewed nearly 160 stakeholders. The social survey threw up some very interesting insights pertaining to the river, both historical and current, such as traditional fishing practices and the decline in fish catch over the years, as well as the occurrence of otters, conflict with fishers and instances of poaching and retaliatory killing. In addition, we have some preliminary information of how locals perceive damaging activities like dynamite fishing, sand mining, and construction of mini-hydels which directly affect their livelihoods.

Figure 2. Interview locations along the 250 km stretch of river, outside protected areas

We started our raft-based sign surveys in April 2013 after unavoidable delays due to logistics. Severe rainfall deficit over the last 2 years had led to a drastic fall in water levels in the river. We covered nearly 125 kms along the river, from Bhagamandala near the source in Kodagu district till Chunchanakatte in Mysore district (Figure 3). We sighted otters on five occasions, a solitary small-clawed otter once and packs of smooth-coated otters on the other four occasions. Smooth-coated otters seen outside the protected area were mostly restricted to river stretches with the last remaining deep pools (in summer) but these stretches also witnessed high levels of sand mining and fishing, including dynamite fishing. We recorded indirect signs of otters (both footprints and spraint) in 100 locations outside Protected Areas (PAs) and though the survey is still far from complete, we can conclude that populations of otters, both species are present outside PAs based on camera trap evidence and indirect signs, in human-use areas This strongly suggests the need to initiate steps to safeguard these vulnerable populations.

We had to finally call off the survey owing to a lack of water in the river, and heavy monsoonal rains following the summer. The survey will resume as soon as river conditions return to normal post-monsoon.

Figure 3. River stretch covered during the river survey (125 kms)

2. *To identify and map potential threats to otters along the entire stretch*

Our social surveys and interviews collected village level data on potential threats such as occurrence of sand mining, dynamite fishing, past poaching incidents, construction of mini-

hydel projects and diversions etc. This is in the process of being verified and updated (finer scale) with our raft-based surveys. We were alerted to incidents of otter poaching in the past during our interviews, and now have a better understanding of the vulnerability of different stretches.

A list of the threats surveyed for include –

1. Sand mining
2. Dynamite fishing
3. Construction and presence of mini-hydels
4. Poaching incidents
5. Tourism
6. Angling and intensive fishing
7. Presence of water pumps along the river

Figure 4. River stretch (white line) covered during interviews

Specifically for the Cauvery Otter Project, we collaborated with a research team from the Department of Electronic Systems Engineering at the Indian Institute of Science (IISc) and developed a free and open-source android application that works on most smart phones. This application will eventually be used by people working along rivers to collect data on a few key species and also map threats along the river. This can be further fine-tuned to suit a specific project. Using this, data collected are geo-tagged and transferred in real time to a secure server. All data collected using this application can be mapped on Google Maps and viewed on a password-protected interface (Figure 5). Besides its use for our work, the application can be used to educate officials of various departments on threats like sand mining and other illegal activities like dynamite fishing and poaching. Apart from this, field data collection is simplified and all data entered is backed-up immediately in readily workable formats. The application is still being field-tested by our team and is continuously undergoing development and bug fixes. We hope to release a more general, fine-tuned version for anybody working along river basins, mostly to collect ecological and threat data. This will feed into a common database that interested biologists will have access to.

The link for the online portal is - http://otter-app.appspot.com/ (Presently password-protected as the data are of a sensitive nature. Access details can be sent on request.)

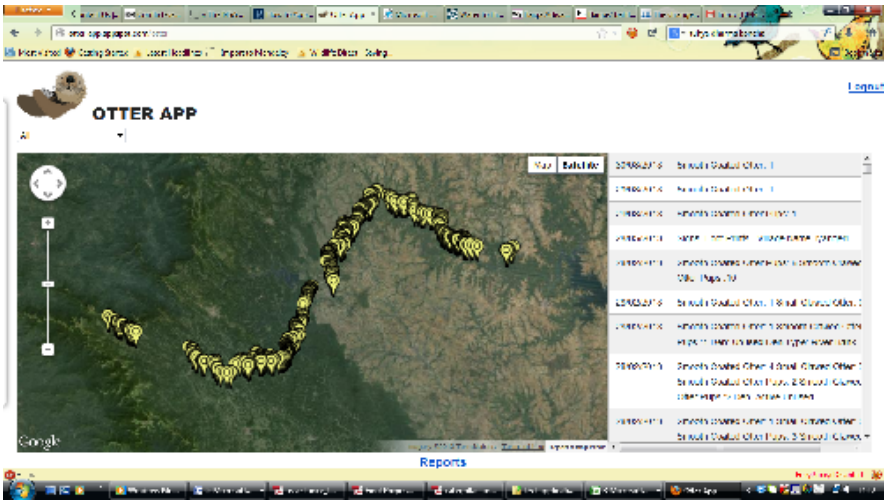

Figure 5 - A view of the survey data collected using android app “Neernayi”

Most of the otter sightings during our river survey were in sections with relatively deep pools. These are also the same pools which witness intensive fishing using gill nets and illegal dynamite fishing. Conflict with otters is relatively high in these river stretches, and otter dens are often burnt to drive the animals away.

3. **<u>To verify the effectiveness of protected areas in conserving a riverine specialist like the smooth-coated otter</u>**

   We have not made any headway under this objective, being hampered by low water level in the river and the delay in securing of research permits to enter Protected Areas (PA). We intend to follow-up to secure our permits in the coming weeks and plan to survey the two sanctuaries and one reserved forest once the monsoon withdraws. We also hope to secure a supporting grant to continue and extend this work.

   Our major focus remains the river stretches outside protected areas, where both threats and otters exist.

Outcomes

1. Otter sign survey completed in 125 km out of the 250 km unprotected stretch of river. All threats in the 125 km stretch identified and mapped. Have also identified a number of otter holts (dens) and otter “hotspots” where conservation measures need to be urgently implemented.
2. Social perception and conflict surveys completed throughout the unprotected stretch (250 km). More than 70% of the villages visited reported incidents of otter poaching. Recorded on camera traps, for the first time, the presence of elusive small-clawed otters (*Aonyx cinerea*) much lower down the river than previously established. As this is a Schedule I species in India's Wild Life Protection Act of 1972, the occurrence of the species may help secure the river stretch from ecologically damaging activities.
3. Pilot version of an android application for collecting otter-related data (ecology, conflict and threats) being tested in field, along with an internet interface (developed in collaboration with Indian Institute of Science http://otter-app.appspot.com/). Identified a network of stakeholders (mostly fishermen, but also anglers and angling clubs), who encounter otters regularly and are willing to work on a conservation program.
4. A team from Dusty Foot Films spent time with us during the field survey and are in the process of making a short film on rivers, otters and threats. This will be released shortly.

Secured a small grant from Critical Ecosystem Partnership Fund (CEPF) to extend work with riverside communities, schools and fishermen to highlight the role otters play in rivers, and also use otters as a flagship species to increase awareness on other freshwater biodiversity.

5. Initiated talks with Fisheries Department officials on joint monitoring of conflict, fish catch, and measures needed to curb dynamite fishing.
6. In collaboration with National Centre for Biological Sciences, we are hosting the IUCN Otter Specialist Group workshop on "Otter Field Techniques & Conservation Planning" in the month of November, 2013. Our work along the River Cauvery will form an important component of this workshop.

Setbacks during the survey

1. Only 125 km completed so far because of low rainfall in the last 2 years, drought-like conditions and low water levels.
2. The river is a much more complicated issue than we initially realised. The plight of otters is a metaphor of all that is going wrong with rivers in India.
3. Threats to otters are very complex and multi-layered. Cannot be answered by one single conservation program but needs engagement at different levels and with different stakeholders, from the grass-roots to government departments. It is important to continue working with local fishermen as well as the state inland fisheries department and forest department.
4. Survey of the river stretch within the wildlife sanctuary yet to be initiated due to lack of research permits.

Camera trap images –

Photograph of small-clawed otter (*Aonyx cinerea*) from a camera-trap in riparian-deciduous habitat, outside protected area. The species is protected under India's Wild Life Protection Act, 1972 in Schedule I

Smooth-coated otter (*Lutrogale perspicillata*) camera trapped in an agricultural landscape Protected under Indian Wildlife Protection Act, 1972 – Schedule 2 Part 2

Peak Summer River, upstream of a major dam

Coda / Endnote

The otters seen during this study have not only given us immense joy watching them survive in a seemingly hostile riverscape, but also hope that they will continue to co-exist if we can make small amends in the way we use the river. Not as a resource that needs to be over-harvested, but as a living, flowing and thriving ecosystem that should be allowed to run its course like it always has. They've served as metaphors of everything that is going wrong with Indian rivers but also at the same time showing their resilient nature to hang on despite the odds.

To quote T. S. Eliot on the Mississippi,
“The river itself has no beginning or end. In its beginning, it is not yet the river; in the end it is no longer the river. What we call the headwaters is only a selection from among the innumerable sources which flow together to compose it. At what point in its course does the Mississippi become what the Mississippi means? “