

Research Report

Otter Research and Conservation Project in Wetlands of High Hills, Nepal

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## Abstract

Otters were surveyed in Pyaudikhola watershed and Kapringkhola watershed of Gorkha district using direct observation, spraint and footprint analysis, camera trapping and key informant interviews with farmers living in these watersheds. Sparse spraints of otters were found. Presence of Eurasian Otter (*Lutra lutra*) has been confirmed in both watersheds. The study revealed that the distribution of otters along the watersheds has diminished compared to last 20-25 years. Fish and crab remain major prey remains in the spraints of otters in these sites. The adverse factors affecting otters in these areas include habitat destruction, water pollution, intentional killing and low level of public awareness. Gradual sensitization and motivation of local people in the watersheds towards otter conservation, and expansion of otter surveys in additional watersheds are recommended for long term benefit of otters in Gorkha district of Nepal.

Key words: Otters, otter potential sites, prey remains, threats

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## **A. INTRODUCTION**

A total of 187 mammal species have been recorded in Nepal (Shrestha, 1997). Among these, 27 mammal species have been formally protected under the National Parks and Wildlife Conservation Act 1973. Since then, the list of protected mammals has not been revised. Thirteen otter species lives in the world, five of them inhabiting Asia.

Nepal holds three species, the Eurasian otter (*Lutra lutra*), the Smooth-coated otter (*Lutrogale perspicillata*) and the Asian small-clawed otter (*Aonyx cinerea*) (Hodgson 1839), representing 1.6% of the mammals cited in the country. Nepal holds three out of the four species of Asian otters. There is an important lack of information on the status and ecology of otters in Nepal, and only a few preliminary studies have been conducted (Houghton, 1987; Acharya and Gurung, 1994; Thapa, 2002; de Silva 2006; Kafle, 2007; Bhandari and GC, 2008; Bhandari, 2008; Kafle, 2008; Joshi, 2009; Kafle 2009). The information on the wetland sites in which otters are present is not available in many districts of Nepal. In this context, this study was conducted for identification of potential wetland sites in which otters are present in selected watersheds of Gorkha district; identification of otter species presented in these watersheds; analysis of prey remains in otter spraints; and documentation of threats to otters.

This report covers only the research component of the RSG funded project.

## **B. MATERIAL AND METHODS**

### **B.1. Research Sites**

B.1.1. The study was carried out in twenty three streams & streamlets of two hilly watersheds: Pyaudikhola watershed of Chyangling hills of Gorkha district and Kapringkhola watershed of Gaikhur hills of Gorkha district of Nepal.

B.1.2. These watersheds were selected because they have high hills with many perennial streams & streamlets; otter survey was not conducted ever before in these areas; and the watersheds drain to large Marsyangdi river with good aquatic connectivity.

B.1.3. Both watersheds consist of perennial streams and streamlets to Marsyangdi River. The climate is of subtropical type. Pyaudikhola watershed consists of mainly Chilaune-Katus (*Schima-Castanopsis*) forest and Kapringkhola watershed consists of Sal (*Shorea robusta*) forest. The major agricultural lands in both watersheds include irrigated rice fields and rain fed Bari land.

### **B.2. Data Collection and Analysis Methods**

B.2.1. The major tools used for data collection were key informant interview, direct observation (spraint and footprint survey), spraint analysis and camera trapping.

B.2.2. Key informant interview (n=84) was administered with the farmers living in the watershed nearby the streams with a predesigned checklist consisting of information on the historical and current distribution of the otters; and threats to the otters. The interviewees were selected based on their proximity to water courses, their experience, and those who spent most of their time in the forest, irrigated land management or fishing. Digital prints of otter images were shown to local people as a means for raising awareness and getting information on historical information on presence/absence of otters, identification of otter species and associated threats.

B.2.3. Spraint and footprint survey was carried out along each 600m stretch of the streams (n=23) following the standard guidelines provided by Reuther et al. (2000). When a sign of otter was recorded in 600m stretch, this section was left tagging it 'positive' and then survey began in next 600m continuously. Spraints and footprints were searched by foot within five meters from water edge.

B.2.4. Spraints were collected for analysis of otter prey categories. One to two samples of spraint were collected at each spraint spot. The characteristics of the spraints were recorded to identify the otter species. All spraints which were collected were washed under tap water in a locally made steel sieve with mesh size about 1mm. Then the washed spraints were dried to analyze prey categories.

B.2.5. Camera trap was installed in selected spots of positive sites, 4 nights in each spot on rotational basis. It was installed in the distance about 1.5-2.5 meters away from the otter sign/spraint. The otter potential/positive sites were later mapped using GoogleEarth satellite maps.

The data were analysed and presented both qualitatively and quantitatively where possible using MS Excel.

## C. FINDINGS

### C.1. Otter Potential Sites

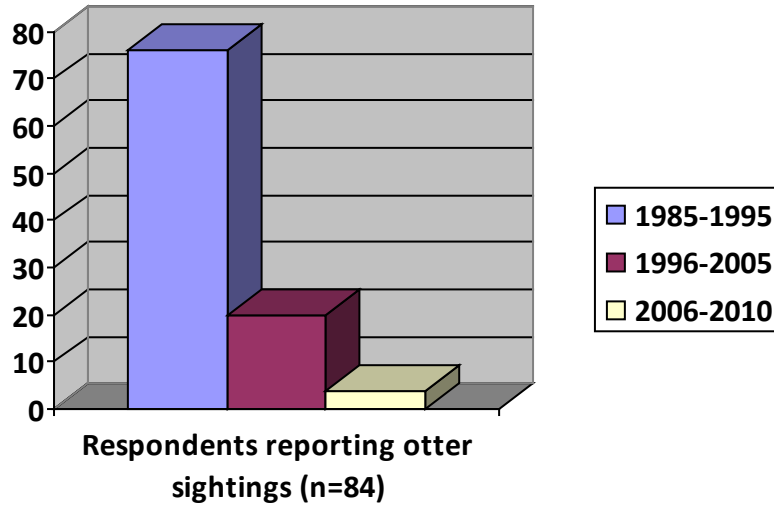
C.1.1. In Pyaudikhola watershed of Chyangling hills of Gorkha district, Aarukharka stream - a streamlet to Pyaudi stream and Pandel stream - a streamlet heading to Kamaltar Bazaar could possibly be used by Eurasian otters (Fig. 1, 2). In Kapringkhola watershed of Gaikhur hills of Gorkha district, Kapring streamside joining the Marsyangdi river nearby Dhikure Bagaar and inlet of Kapring stream near Tiwaritaar village amidst the Thulapakha community forest could possibly be used by Eurasian otters (Fig. 3, 4).

C.1.2. Four out of 23 sites studied in two watersheds were found positive for otter spraints indicating a low frequency of occurrence of the otter in these sites. Total percentage of positive and negative sites was 17% and 83 % respectively. Total seven spraints were recorded in these sites.

C.1.3. The interviewees' responses showed that 76 percent respondents used to see otters in the watershed before 20-25 years. Only 4 percent respondents opportunistically saw otter in the last five years. The interviewees could not identify otter species; but when photographs of three otter species were shown, they identified the species *Lutra lutra*. This result was also compatible with the results obtained from spraint characterization found in these watersheds.

*Table 1: Percentage of respondents reporting otter sightings in different time periods in the research sites*

Period	Respondents reporting otter sightings (n=84)
1985-1995	76
1996-2005	20
2006-2010	4



The four maps of otter potential sites are presented below:



Figure 1. Aarukharka stream, Chyangling VDC of Gorkha district

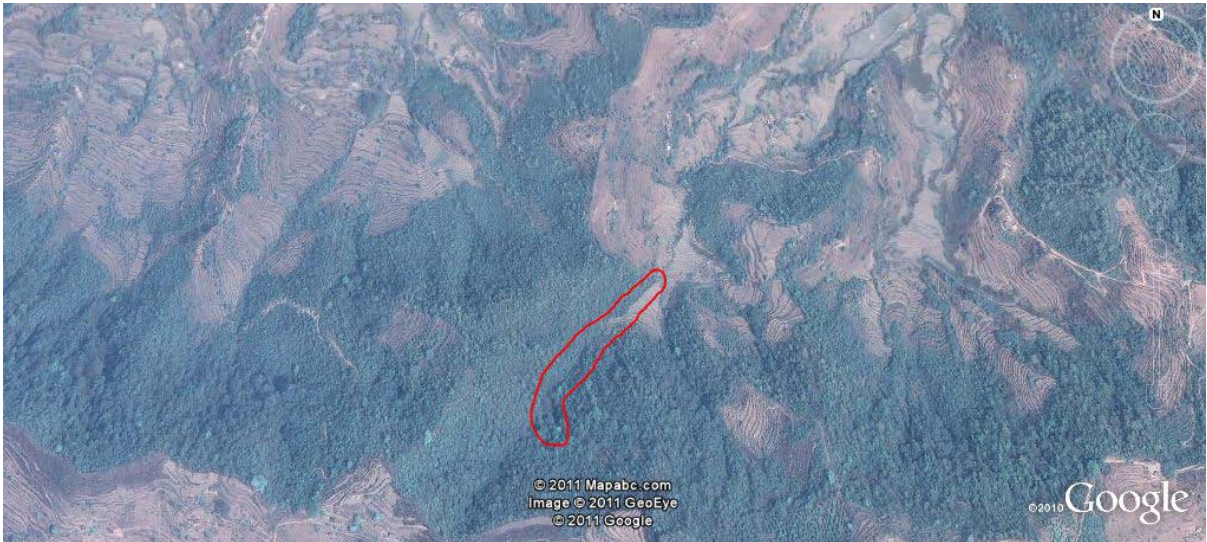


Figure 2. Pandel stream, Chyangling VDC of Gorkha district

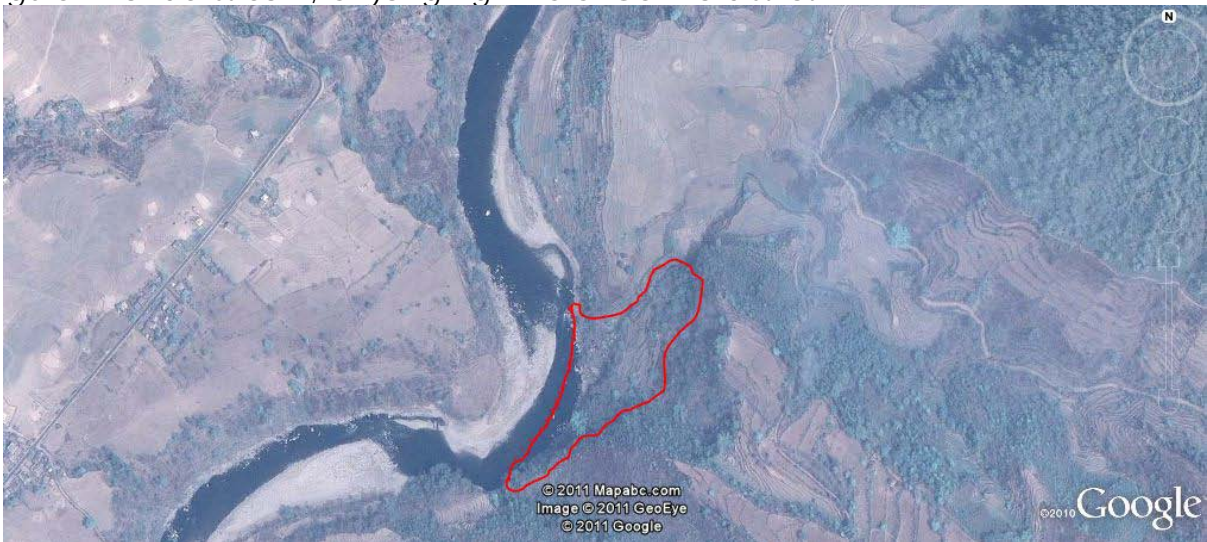


Figure 3. Kapring stream section joining Marsyangdi river, Gaikhur VDC of Gorkha district



Figure 4. Tiwaritar stream joining Kapring stream, Gaikhur VDC of Gorkha district

## C.2. The Otter Species Present in the Study Watersheds

C.2.1. The otter species was identified based on the local people's opinion and the spraint characteristics.

C.1.2. The observed spraint was dark grey, with fragments of fish, frog and crab remnants, and fragile with smell of fish scales. It confirms the presence of Eurasian Otter (*Lutra lutra*) in the research sites.

C.1.3. The opinion of the local people (the elder persons) who sighted otters around 20-25 years before hinted towards Eurasian otter when the photographs of different species of otters were shown to them.

These two facts show that Eurasian otter is positively identified from this. It was unfortunate not occurrence of otter images during camera trapping.

## C.3. Prey Remains in Otter Spraints

Spraint analysis showed that the most abundant prey remains were fish bones and scales followed by crab, frog and unidentified remains.

Table: Percentage of otters' prey remains found in 7 spraints in the research sites

Prey remains in spraint	Percentage
Fish bone and scales	71
Crab	9
Frog	6
Unidentified	14

## C.4. Threats to Otters

C.4.1. Human-otter conflict and threats to otters were documented using a questionnaire form and key informant survey. In both watersheds, 95% elder people (n=80) informed that otters were commonly seen in the local streams amidst the deciduous forests around 20-25 years before but nowadays one can hardly and opportunistically see otters. According to them, some persons (n=6) of local ethnic communities used to kill otters for meat and skin but not for commercial purpose. Opportunistically seen otters were chased and, if possible, killed.

C.4.2. Loss of habitat, particularly from human disturbance and drying up of water sources are the major causes of otter decline in these watersheds. The drying up of water sources, in the context of a changing climate, has affected fish population and their migration due to lowering water level and availability, subsequently affecting otter habitat and diet.

C.4.3. Change of vegetation along stream banks was reported. This has contributed to habitat alteration and succession affecting survival of frog, snails and other small amphibians.

C.4.4. The leakage of chemicals and nutrients from the farming lands to water bodies has contributed to water pollution in the water bodies, affecting otter habitat and dietary diversity.



C.4.5. Older people and those engaging in water resources for subsistence are somewhat familiar with otters but younger individuals are completely ignorant of the existence of otters. Some older people mistakenly confused marten with otters, as the external physical outline of these species are somewhat similar, and poor knowledge of these people of the morphological features of otters contributed to this.

#### **D. CONCLUSION AND RECOMMENDATIONS**

##### **E.**

The following conclusion and recommendations have been made based on the results:

- Presence of Eurasian Otter (*Lutra lutra*) has been confirmed in Pyaudikhola watershed and Kapringkhola watershed of Gorkha district. But the trend of sightings of the otters by local people is heavily reverse/negative, indicating rapid decline of otter population in these watersheds over the last 25 years.
- Fish and crabs remain the major prey species of *Lutra lutra* in the research sites.
- The adverse factors affecting otter survival in the research sites include habitat destruction, intentional killing, water pollution, low level of public awareness and less conservation priority in forestry and watershed management programmes in these watersheds.
- It is recommended to extend similar surveys in additional watersheds. The confirmation of otters in the research sites which drain to Marsyangdi River indicated that a systematic survey of otters in Marsyangdi River and its tributaries is essential in near future. Knowledge of importance of otters and their conservation should be transferred to local people using participatory outreach tools simultaneously with ongoing research. It will help to reduce threats to otters.

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