

## Final Project Evaluation Report

---

Your Details	
<b>Full Name</b>	Jyoti Bhandari
<b>Project Title</b>	Conservation Status Survey and Awareness of Smooth-Coated Otters in Babai River of Bardia National Park, Nepal
<b>Application ID</b>	23210-1
<b>Grant Amount</b>	£4750
<b>Email Address</b>	jbhandari@iofpc.edu.np
<b>Date of this Report</b>	2019-04-15

**1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.**

Objective	Not achieved	Partially achieved	Fully achieved	Comments
To identify and map the distribution of smooth-coated otters ( <i>Lutrogale perspicillata</i> ) in the riparian habitats of Babai River through on the ground surveys.				During our survey we recorded the habitat characteristics and identified denning sites of otter. We also generated a distribution map of smooth-coated otter in the Babai River based on scats, tracks and sighting records. (Annex 1)
To collect qualitative data on socio-economic status of local communities to gauge public opinion about otters and to characterize the level of conflict with otters.				Social surveys were conducted with assistance from volunteers/students from Tribhuvan University, Institute of Forestry, Pokhara Campus). To collect qualitative data we conducted questionnaire surveys with 250 respondents to better understand the conservation status of otters in our study area. (Annex II)
To prepare a potential habitat map for Smooth-coated otters with an overlay of anthropogenic threats and potential for conservation actions.				A habitat suitability map for smooth-coated otters along the Babai River was prepared. Habitat suitability was higher in areas near the river banks and forest and lower in areas with access to roads and human settlements (Annex III)
To conduct an awareness and education program for schools and local communities				We conducted otter conservation education and outreach programmes for 10 different community groups and 10 different schools. Audio-visual methods including PowerPoint slides and multimedia projectors were used to deliver the message to the community and school children. An otter conservation awareness course was developed in the local language for community and school children separately. A leaflet was developed in the local language, about otters and their habitat. The leaflets were distributed during the awareness programmes; approximately 1000 copies were

<p>To develop long-term otter conservation programs for the Babai River Valley</p>			<p>distributed. (Annex IV)</p> <p>We involved 10 local people including park staff (army, forest guards, game scouts) in the otter sign survey with the objective of motivating them for long-term monitoring and conservation of otters in the Babai River.</p> <p>Interactive meetings were conducted with national park staff and local NGOs, representatives describing to them the status of otter conservation and major steps to be taken by different stakeholders to conserve the species in long term. In order to make the local people aware for the long term -- even after the completion of the project -- three hoarding boards related to otter conservation were placed in each program area.</p> <p>(Annex V)</p>
--	--	--	--

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.**

There were no such significant difficulties in conducting the project activities during our study period. But due to unexpected early monsoon rain, field data collection work was delayed for 6 months.

**3. Briefly describe the three most important outcomes of your project.**

- a) Baseline information on otter presence in the Babai River was documented. Based on the presence of tracks and scats of otters, positive and negative sites were identified. A distribution map based on the sighting record was generated. Habitat characteristics such as bank side condition, water current and depth, bank slope, river depth, escape cover distance, basking and grooming sites, vegetation, dead logs, sandy islands, braided channels etc., were recorded. Our study will serve as a baseline data set and will help in future monitoring of the species.
- b) The sources of human-induced threats to smooth-coated otters, and the extent of severity of those threats, were identified and appropriate actions needed to improve the situation were recommended.
- c) From the awareness programmes conducted in 10 different communities and 10 different schools almost 2000 people came to know about presence and conservation status of otters in their locality. Making people aware of potential threats to otter and their habitat in their locality and motivating them to conserve the habitat of otters we considered a success for us. Interactive meeting with the officials from the national park and the

Department of National Park and Wildlife Reserve was another achievement as this will make the relevant authorities consider otters in their management plan. Educating park staff and local people to identify otter sign by including them in otter survey will also result in long-term monitoring and conservation of otter in project site.

**4. Briefly describe the involvement of local communities and how they have benefited from the project.**

10 local youths including park staff, student, and guides directly benefited from the project as they were involved in otter habitat and sign surveys. In the otter survey process they were trained to identify otter signs, which will further help them in monitoring of otters and their habitat in long term. Moreover, questionnaire surveys were conducted with 250 respondents from villages near the project sites, which provided the opportunity for them to understand the importance of otters in the health of the wetland ecosystems of their locality. Our conservation and awareness programme conducted in schools and community has helped more than 2000 people to understand the need of otter conservation in their locality to create healthy wetland ecosystem.

**5. Are there any plans to continue this work?**

Yes, we plan to continue our study on conservation status of otters in Nepal. Very little information is available on the smooth-coated otter, and there is a scarcity of ecological studies on this species. The present study generated fundamental information on conservation and habitat status of otters in Babai River. We are planning to conduct more detailed ecological studies on habitat and resource use of otters in the project area. From the household survey we found that otter habitats are mostly affected by human activities, so water quality testing of this river is very important to conduct in future. The activities such as illegal fishing and illegal extraction of resources will affect the otters negatively. Therefore, such activities should be discouraged through awareness and education programmes among local community leaders as well as national park officials. During our study, we discovered that there is little awareness of the conservation status and importance of this species among the local communities. In the future we plan to target more people for outreach programmes which will help in long-term conservation of the species. Based on our project results, we would like to develop conservation strategies for the species jointly with local community leaders and park and wildlife reserve authorities.

**6. How do you plan to share the results of your work with others?**

The major findings of our study will be shared with different stakeholders in form of reports, audio-visual presentation and publications. The initial study results were already shared during the Rufford conference held in Kathmandu, Nepal from 29 to 30 January, 2018. Midterm survey results were presented at the Himalayan Otter Network Workshop held in Pokhara, Nepal from 15th and 16th February, 2019 and final results were presented in poster form in IUCN Otter Specialist Group Congress held in China from 8th to 12th April 2019. Furthermore, the results will also be

presented in research seminars to larger audience of wildlife researchers, conservationists and managers. We are also preparing a manuscript to publish our results in both national and international peer reviewed journals.

**7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?**

The Rufford Small Grant project was begun in September, 2017 and was fully utilised by mid-February 2019. Due to unexpected early monsoon during the study period, the field data collection exercise was delayed. The team had taken an extension from the Rufford Foundation to submit the final report.

**8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.**

Item	Budgeted Amount	Actual Amount	Difference	Comments
Travel (2 persons )	720	666	-54	
Local travel	280	325	+45	
Lodging and food	2025	1990	-35	
Equipment and field survey expenses	200	234	+34	
Awareness education material	300	315	+15	
School/youth club/community teaching	250	250		
Training for local people and park staff for otter sign survey	350	410	+60	
Stationary materials	275	270	-5	
Communication / telephone	100	100		
Report writing	250	200	-50	
<b>Total</b>	<b>4750</b>	<b>4760</b>	<b>+10</b>	

**9. Looking ahead, what do you feel are the important next steps?**

It is very important to understand the current population status of otter and to link that information with detailed habitat parameters in Babai River. Long-term study on otter status and distribution is essential to identify the behavior ecology of otter in this river corridor. Extensive outreach programmes involving different stakeholders are necessary to raise awareness on the species which will eventually help in its conservation. Human activities such as fishing and polluting the water sources in river should be controlled.

**10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?**

Yes, Rufford Foundation logo was used in all poster presentations at conferences such as Rufford conference in Nepal, IUCN Otter Specialist Group Congress in China and Himalayan Otter Network workshop in Nepal. Rufford Foundation logo was also use in all oral presentation at awareness programmes and it was also used in all reports, banners, and hoarding boards, and posters and leaflets that were printed and distributed among community members and schoolchildren.

**11. Please provide a full list of all the members of your team and briefly what was their role in the project.**

**Jyoti Bhandari** was the principal investigator of the project. She was responsible for the overall project activities including data collection, data compilation and analyses, report writing, conducting meetings with the officials, and organizing the awareness programs in the project area.

**Dhruba Bijaya G.C. and Deepak Gautam** volunteered with the project and assisted in all the project activities.

**Raju Shah, Bikas Rijal and Salikram kadhel**, are B.Sc. students of Institute of Forestry, Pokhara Campus, Pokhara and also the local youth of the project site who helped in data collection and organizing various activities such as otter survey training and awareness programs in the schools and communities.

**Prabin Poudel** is young wildlife researcher who assisted in data collection in the field and prepared the GIS-based otter distribution and habitat quality map of otter sign in project area.

**12. Any other comments?**

I am very grateful to the Rufford Foundation for this grant. The study helped us to understand the present conservation status of otter in a very important site for Smooth-coated otters in Nepal, I plan to continue my research work and public awareness programmes, and I hope to receive similar support for my future endeavours.

**Annexes below**



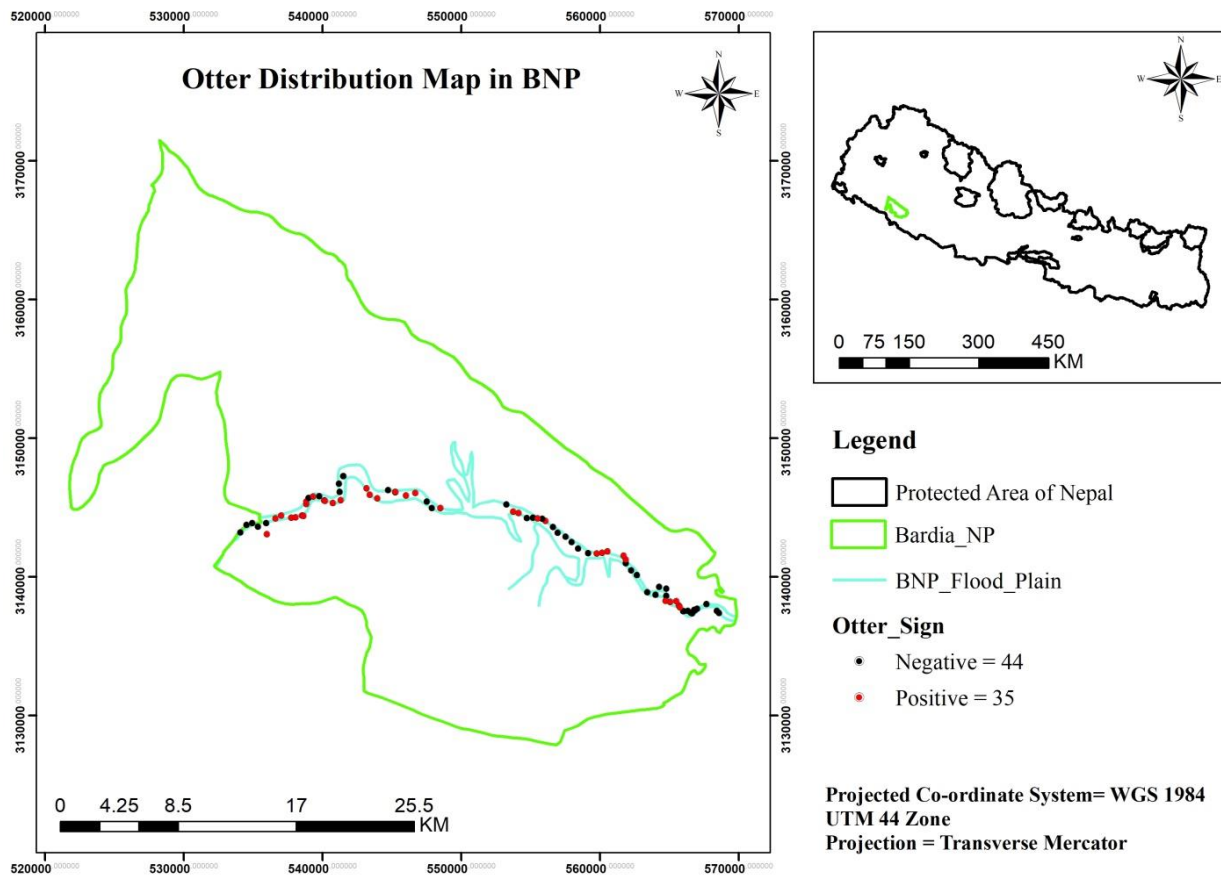
# Annex I

## Objective 1

To identify and map the distribution of smooth-coated otters (*Lutrogale perspicillata*) in the riparian habitats of Babai River through on the ground surveys

### Distribution of otters

On the basis of otter signs recorded during transect survey; the distribution map of otter in the study area was prepared. Different otter signs like dens, tracks, scat, and food remains were observed along transect. From the study, the places such as Parewaodaar, Guthi, Sothkhola and Thuloshree in the riparian corridor were found to have positive sign of otter presence.





## Annex II

### Objective 2

To collect qualitative data on socio-economic status of local communities to gauge public opinion about otters and to characterize the level of conflict with otters

# Report on Conservation Status of Smooth-Coated Otters in Babai River of Bardia National Park, Nepal

## Background information

Research was carried out along Babai River and nearby villages within the project area. As a part of the research, a questionnaire survey was conducted with 250 respondents in communities nearby Babai River. Respondents were mainly members of the general public and local fishermen. The places where the questionnaire was conducted were Rammapur Sector Office of BNP, Rammapur Ward No. 07, BaraBardiya, Harnauwa, Shjunia, Ghushra, Janata High School area, Shree BhanuBhakta Secondary School, Magaragadi, Seuinya Ward No. 07 of Bara Bardiya, BaraBardiya Ward No. 07 Office area, Shree Bhagwati Primary School, Harnawa, BaraBardiya, Shree Saraswoti Secondary School, Jyodhipur Ward No. 01, BaraBardiya, Shiva Temple, BaraBardiya, Babai-River-Irrigation Channel near Babai bridge, Bardada, and Sainawar. Other locations were surveyed towards the north side of the Babai River: Babai bridge at Chepang, Bardiya, Laxmi Secondary School, Chepang Ward No. 01, Bardiya, Basgadi Municipality Ward No. 01 of Babai Chepang, Babai Diversion area and Gerwani Ward No. 05 Bheriganga of Surkhet District.

## Acronyms and abbreviations

DNPWC-	Department of National Parks and Wildlife Conservation
CFUG –	Community Forest User Group
FGD –	Focus Group Discussion
NTNC-	National Trust for Nature Conservation
NP-	National Park

### 1. Otter species information

Smooth-coated otters (*Lutrogale perspicillata*) play a vital role in balancing the freshwater ecosystems as a top carnivore species, and may therefore significantly influence the overall spatiotemporal dynamics of a river system over a long period of time. Otters are the least studied small mammals in developing countries like Nepal. They are rare, semi-aquatic animals for which we have little information in Nepal, due to lack of research and conservation programs. In fresh water ecosystems, otters play an important role in structuring food webs, but species such as crocodile, dolphin and turtle are given more conservation priority compared to otters. Three species of otters namely Eurasian, Smooth-coated and Asian small-clawed are found in Nepal. The Smooth-coated otter (*Lutrogale perspicillata*) is included in Vulnerable (VU) category by IUCN Red List and on Appendix II of CITES.

## 2. Objectives

The overall objective of the questionnaire information collection is to assess the present conservation status of the Smooth-coated otter, its threats and conservative measures. Moreover, the objective of the questionnaire survey is to create a benchmark for assessing the conservation status and community perceptions of Smooth-coated otter.

## 3. Methodology

The methodology includes:

- Site visits in local communities
- Information collected from 250 households
- Data analysis using MS Excel

## 4. Results:

### 4.1 Socio-economic characteristics of the respondent:

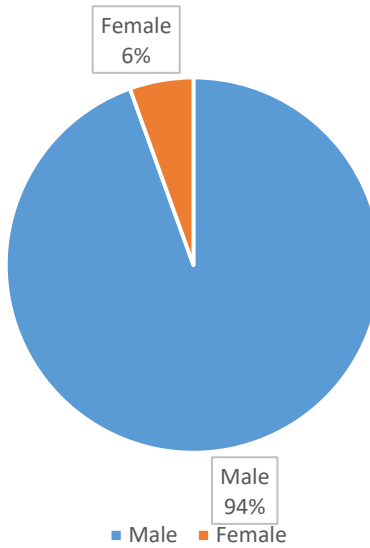
#### 4.1.1 Gender, Occupation:

##### **Selection of respondents:**

We collected the questionnaire responses from 250 respondents, among which 25% were female and 75% were male. Of the original 250 respondents, 50 were not aware of otters. Therefore we considered only 200 respondents for the questionnaire survey.

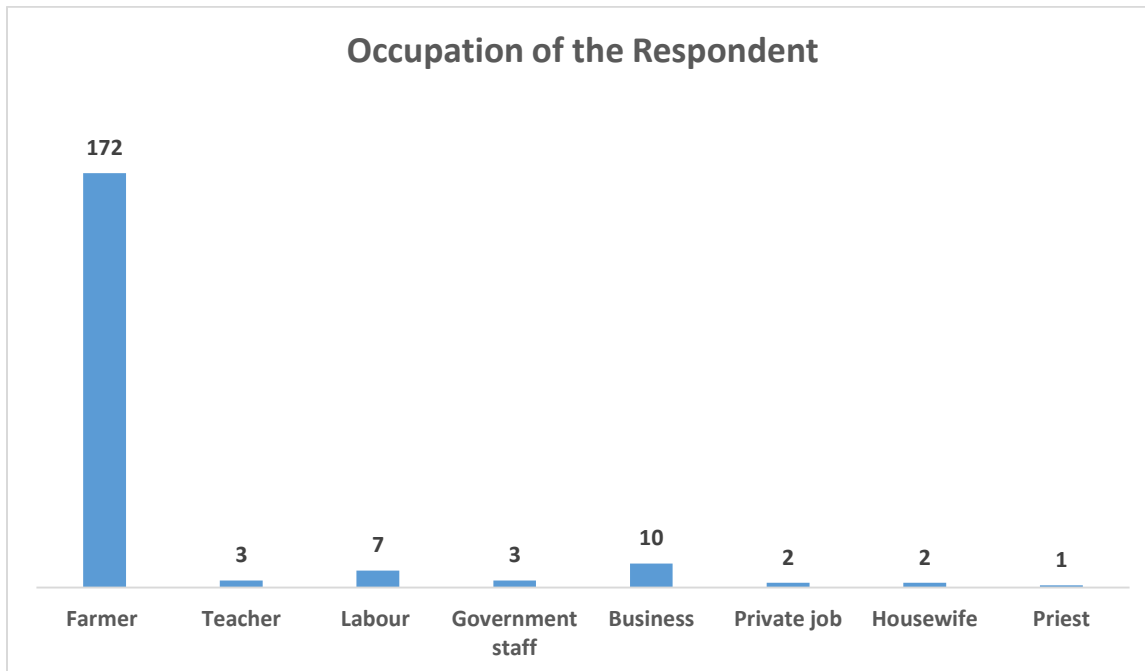
Out of 200 respondents, 94% were male and 6% were female (by getting rid of 50 respondents, the percent of females dropped to 6 %). As a result we concluded that males are more aware about the presence of otters in their locality than females. The majority of females appear to be unaware of otters due to their nature of work, as they mostly busy in their household work. Moreover, there is a lack of awareness program about otters in that locality.

## Gender of the Respondent



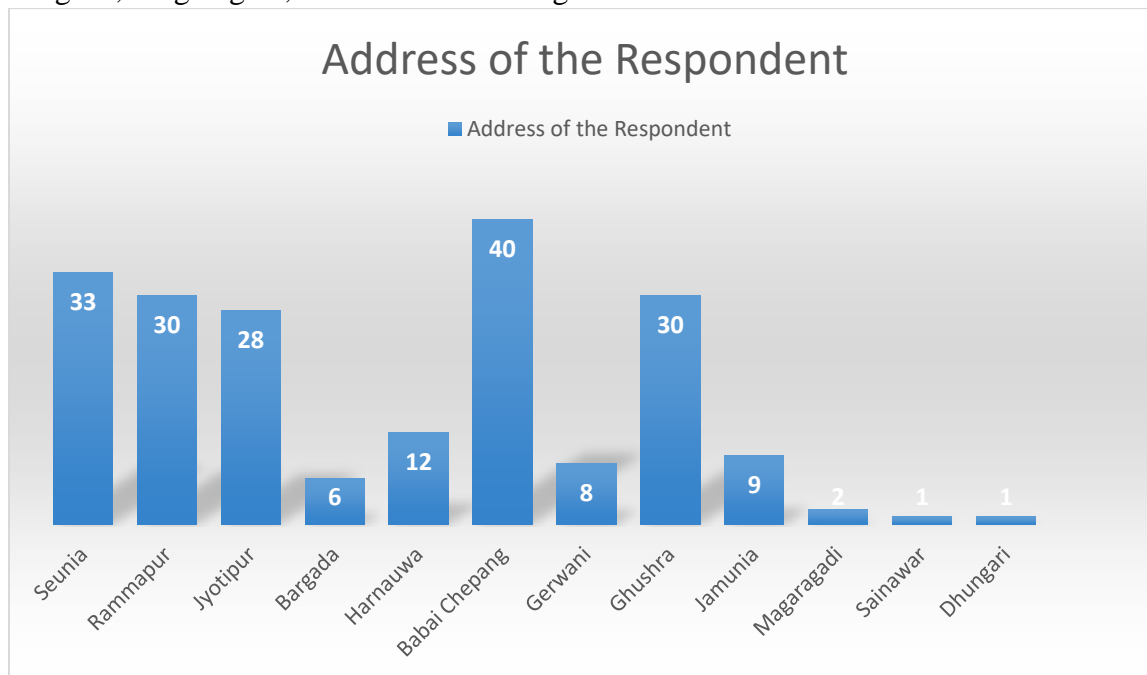
## Occupation:

Out of 200 respondents, 172 were farmers, involved in agriculture and raising livestock. Remaining respondents were involved in business, service and labor.



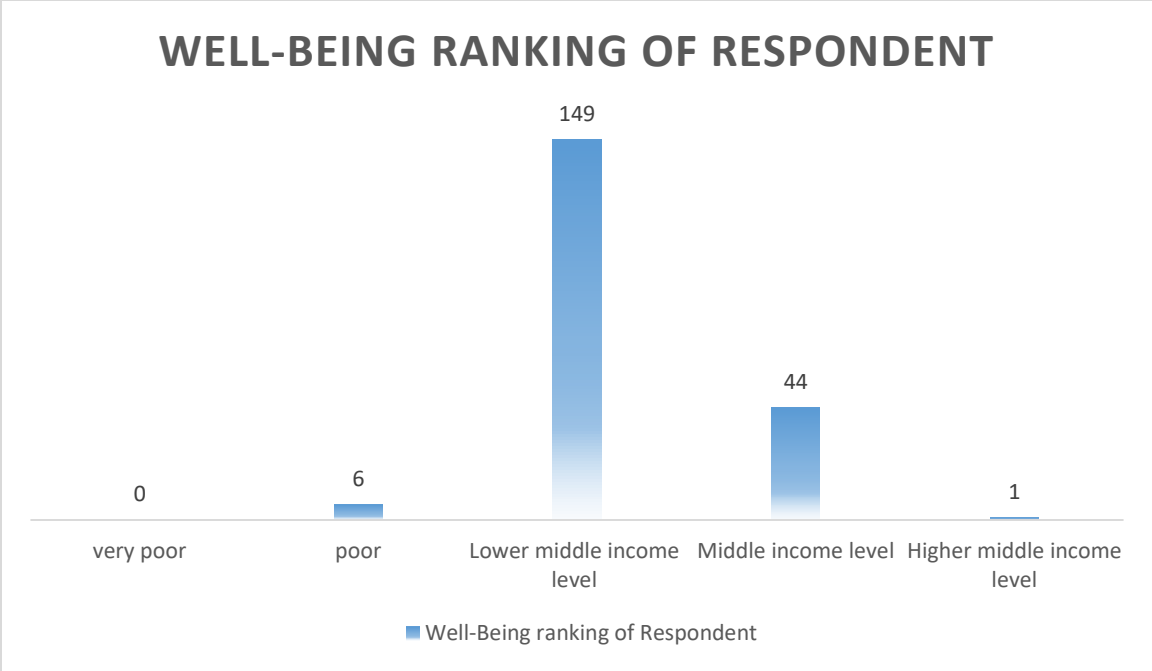
### **Communities:**

Out of total 200 respondent, the majority (n=40) were from Basgadi-1, Babai, and Chepang, followed by Barabardia-7 Seunia , Rammapur, Ghushra, Jyotipur, Harnauwa, Jamunia, Gerwani, Bargada, Magaragadi, Sainawar and Dhungari.

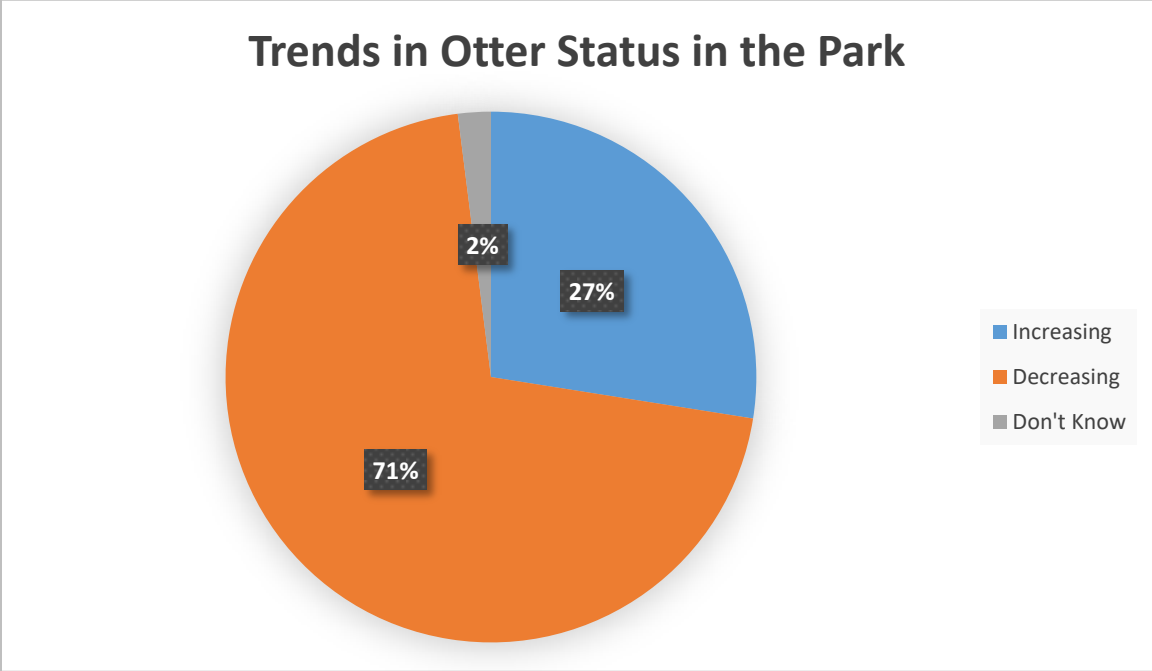


### **4.1.2 Well-Being Ranking:**

A majority of the respondents fall under lower middle income level category, followed by middle income level, poor and higher middle income level. None of the respondents are very poor.



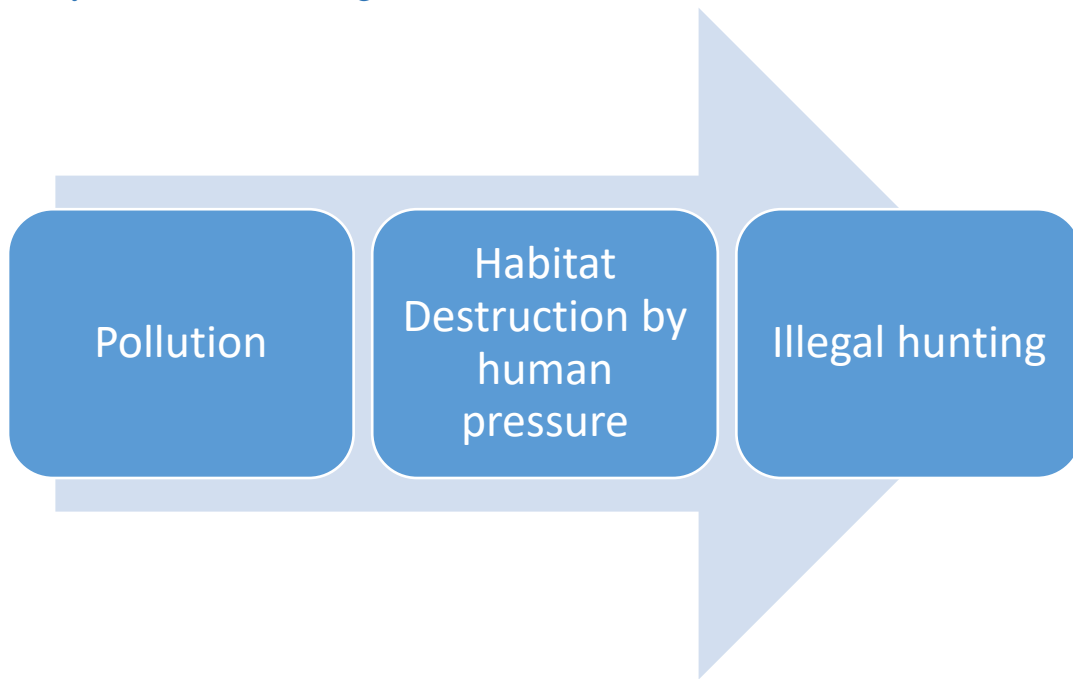
4.2 Trends in otter status:



According to respondent response Smooth-coated otter populations in the park appear to be decreasing. A majority of the respondents, i.e. 71%, reported observing that the number of otters is decreasing, 27% of the respondents reported it as increasing, and 2% did not notice either an increasing or decreasing trend. Recent massive flooding in the Babai River may be one of the

reasons for decreasing otter populations. Many infants and adult otters appeared to be lost due to flooding. Destruction of habitat may also have resulted in decreasing the number of otters. Similarly, hunting of otters for skin and medicinal use in the past has impacted the population of otters. And the abundance of fish has been decreasing in recent years and pollution increasing in the Babai River, challenging otter survival.

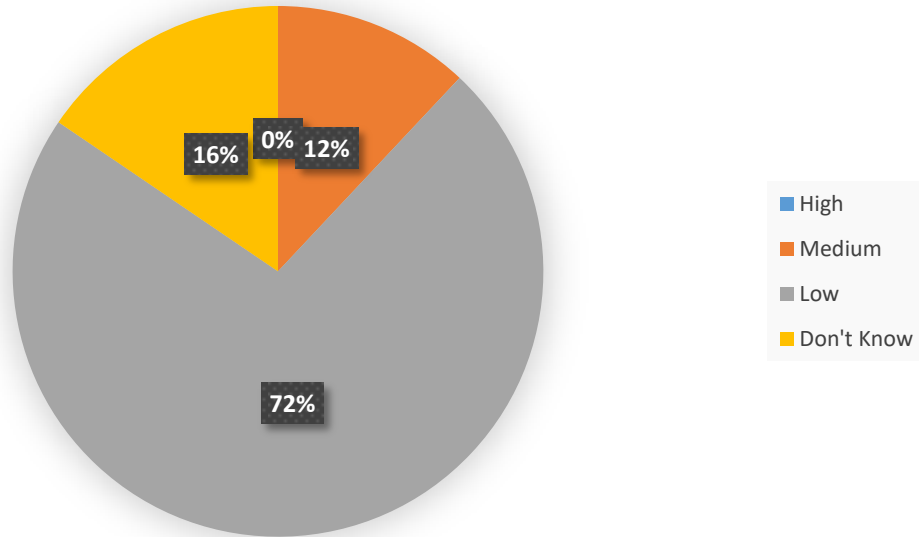
#### 4.3 Key activities affecting the otters:



#### 4.4 Perceived Status of Otters:

##### 4.4.1 Present Status of Otters:

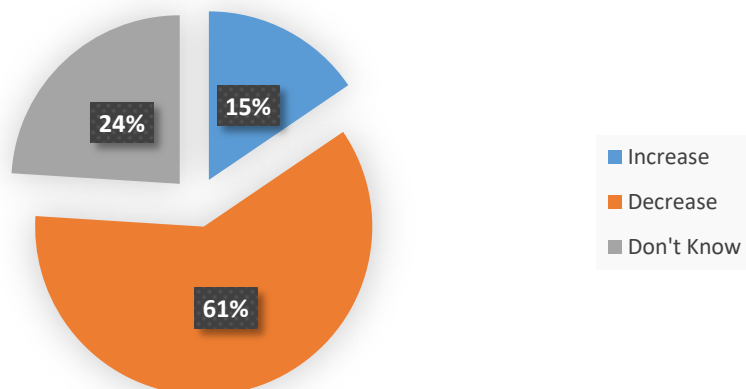
### Perceived status of otter



In total 200 respondents, 72% of the respondents believe that the population of Smooth-coated otter is low in the area, and 12% of the respondents believe populations are medium. 16% of the respondent stated that they did not know the present status of the Smooth-coated otter. Overall, we infer that there is serious decrease in abundance of Smooth-coated otters in the study area.

##### 4.4.2 Projected status of otters in another 5-10 years:

### Projected status of Otter in 5-10 years





Of the 200 respondents; 15% believed that the population of Smooth-coated otters will increase whereas 61% believed as the population will decrease and 24% of the respondent did not know whether it will increase or decrease over time.

BNP authorities have mainly focused on increasing the numbers of keystone and mega-species and management of the habitat for those species. But in recent times, they have also been concerned with the conservation of other key species, like otters, found in the Park. It may be that otter populations will increase in the future due to conservation practices aimed at otters adopted by BNP and due to otter awareness program conducted in communities near the Babai River.

## **5. Issues/Challenges:**

Although, restriction of fishing in the Babai River has contributed to increasing otter prey, human disturbance is also continuous in the area. In the buffer zone area, there is still conflict between fishermen and otters. Direct conflict with humans, such as shootings and entrapment in fishing traps and nets pose a major threat to otter populations. Though poaching of otter appears to have decreased for the moment, lack of suitable habitat, reduced prey base, and other factors, mean that otters are displaced to core area of the Babai River. Disposal of garbage in the river is still prevalent in Basgadi-1 Babai Chepang. Pollution in the river can also jeopardize the food sources of otters as well as causing direct harm.

## **6. Conclusion and Recommendations:**

The responses from questionnaires from community members appears to support the case that human activities have contributed to a decrease in the abundance of otters in the Babai River study area. Besides natural causes, anthropogenic activities have played a significant role.

Based on the results and above discussion, we recommend the following:

- Public awareness programs in local communities about the conservation of otters, using media, school programs, and community programs
- Awards to local conservation leaders
- Increased pressure on local authorities to end illegal poaching of otters
- Encouraging Bardia National Park authorities to develop strategies to increase otter populations and better management of otter habitat
- Encouraging local authorities to restrict pollution and human disturbances in the Babai River corridor

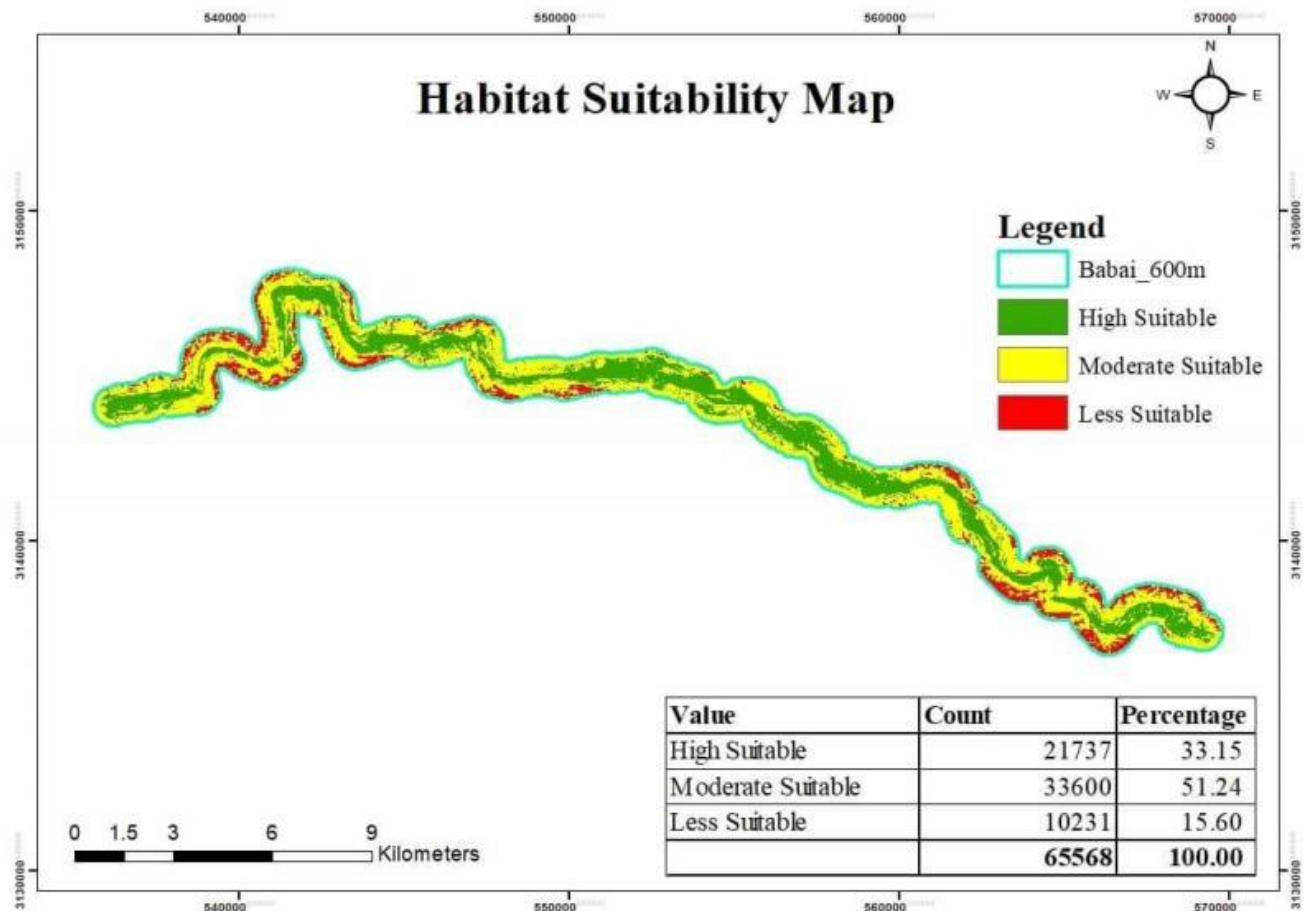
## Annex III

### Objective 3

- To prepare a potential habitat map for smooth-coated otters with an overlay of anthropogenic threats and potential for conservation actions.

### Results

From our study along the Babai River, 33.15% of the corridor was found to be highly suitable as otter habitat, while 51.24 % was moderately suitable and 15.60 % was less suitable as given by geospatial analysis. In the figure, the green color represents the highly suitable area, yellow color represents moderately suitable and red color represents least suitable habitat for otter.



## Annex IV

### Awareness program in schools near Babai river:

I. **Schools:** We conducted awareness program in 10 schools from primary level up to higher secondary level.

#### 1. Shree Jana Jyoti Lower Secondary School Magaragadi-9Aauri, Bardiya

We conducted program to class7 and 8 students jointly.





2. Shree Yubak Secondary School Dudhdha Bardiya  
GPS Location: 28°19 55.79 N 81°25 35.08 E

We conducted awareness program in assembly and succeed to deliver to all students.



3. Shree Dhama Bhakta Secondary School Barabardiya-9 Katarniya, Bardiya:  
GPS location: 28°184 5.04 N 81°26 01.08 E

We conducted program to class 11 and 12 students jointly.



4. Shree Bhanu Bhakta Secondary School Barabardiya-7 Seuniya, Bardiya:  
GPS Location: 28°21 0 3.09 N 81°24 3 8.78 E

We conducted awareness program to class ten students.



5. Shree Vagawoti Primary School Harnawa, Bardiya:  
GPS Location: 28°21 06.02 N 81°24 40.93 E

We conducted awareness program to class 5 and class 4 students.





6. Shree Janata Higher Secondary School Magaragadi, Rammapur, Bardiya  
GPS Location: 28°21'43.32" N 81°25'23.27" E"

We conducted our program to class nine and ten students.





7. Babai Sisumandir Lower Secondary School Thakurbaba-3Bargadaha, Bardiya:  
GPS Location: 28°25 4 5.5 N 81°20 0 4.14 E

Our team successfully conducted awareness program to class eight students.



8. Shree Chure Secondary School Thakurbaba-3 Bagnaha, Baridya:  
GPS Location: 28°25'02.18N 81°19'12.55E

We conducted awareness program to both sections of class ten students jointly. We also awarded a team of five students who were winners in a quiz competition with a diary and pen.





9. K.R.P Memorial Academy Chepang-1 Bardiya:  
GPS Location: 28°21 12.41 N 81°42 57.42 E

We conducted our program to class 4 and 5 students. We distributed prize to top five selected students with drawing copy and pencil in drawing competition.





10. Laxmi Secondary School Chepang-1 Bardiya:  
GPS Location: 28°21 18.58 N 81°42 53.21 E

We conducted awareness program to class 9 and class 10 students jointly. And we also awarded a team of five students who were winner in quiz competition with diary and pen.



**Awareness program in user groups nearby Babai river:**

Table 1: Name and categories of communities

<b>S.N</b>	<b>Community</b>	<b>Community categories</b>
<b>1</b>	Pragatisil Aayearjan Mahila Samuha	Women's group
<b>2</b>	Janachetana Mahila Samuha	Women group
<b>3</b>	Sainwar Female User Group	Women group
<b>4</b>	Rammapur (BCFUC )( Buffer Community Forest User Committee	Buffer Community Forest User Committee
<b>5</b>	Sainawar BCFCU	Buffer Community Forest User Committee
<b>6</b>	Haranawa BCFCU	Buffer Community Forest User Committee
<b>7</b>	Chepang User Committee Bardiya	Indegenous and fishermen
<b>8</b>	Tharu User Committee	Indegenous and fishermen
<b>9</b>	Community Based Anti-Poaching Unit:	Youth club
<b>10</b>	Chure conservation youth club	Youth club











## Annex V

Objective 5: To develop long-term species conservation programs for the Babai River Valley

### Placement of Hoarding Boards

1. One of the signs placed near the Babai bridge, about 20m from the bridge and facing towards the road close to the hoarding board of Rhino, so that everyone will keep an eye on it.

GPS Location: 28°2522.72N 81°2248.65E





2. Another board is placed in front of Rammapur Sector Office. It is placed next to the board of office.

GPS Location: 28° 2157.37N 81°2539.06E



नेपाल सरकार  
वन तथा वातावरण मन्त्रालय  
राष्ट्रिय निकुञ्ज तथा वन्यजन्तु संरक्षण विभाग  
बाँदिया राष्ट्रिय निकुञ्ज

# रम्जापुर सेक्टर

## पर्यटक प्रवेशद्वार

सैद्यो जैत (Saidyo Jait)

सैद्यो जैत (Saidyo Jait) क्षेत्रमा वन्यजन्तु संरक्षणका लागि राखिएको छ। यहाँ वन्यजन्तुहरूको संरक्षण गर्न र पर्यटकहरूलाई जानकारी दिनुका लागि यो क्षेत्र राखिएको छ।

सैद्यो जैत (Saidyo Jait) क्षेत्रमा वन्यजन्तु संरक्षणका लागि राखिएको छ। यहाँ वन्यजन्तुहरूको संरक्षण गर्न र पर्यटकहरूलाई जानकारी दिनुका लागि यो क्षेत्र राखिएको छ।

सैद्यो जैत (Saidyo Jait) क्षेत्रमा वन्यजन्तु संरक्षणका लागि राखिएको छ। यहाँ वन्यजन्तुहरूको संरक्षण गर्न र पर्यटकहरूलाई जानकारी दिनुका लागि यो क्षेत्र राखिएको छ।



3. The last sign is placed in Chepang Babai in front of the entrance gate of Chepang Range Post. The board is about 7m from highway and is easily visible to the public.

GPS Location: 28°21'14.93N 81°42'41.01E





Involvement of local people and park staff (Army, forest guards, game scouts) in the offer sign survey



