

Securing the future of Nepal's tigers



Strengthening tiger protection and monitoring in Parsa National Park

Final Project Report

30th April 2019

Zoological Society of London, Nepal Office

Kathmandu



ZSL | **LET'S WORK
FOR WILDLIFE**

Project Title: Strengthening tiger protection and monitoring in Parsa National Park

Project Start Date: 1 February 2018

Project End Date: 31 January 2019

Reporting Period: 1 November 2017 – 31 January 2019

(By prior agreement the project has supported the Parsa National Park extension area component of the National Tiger and Prey Base Survey, which began in November 2017. This report therefore covers this period of the survey although it falls outside the formal project dates.)



Report Preparation Team

REDACTED

DNPWC and ZSL teams.

Table of Contents

Project Summary.....	5
I. Project Background	6
II. Project Objectives	8
III. Project activities	8
1. Annual monitoring of tiger and prey base	8
1.1 Coordination meetings.....	8
1.2 Orientation training	9
1.3 Camera trap inauguration.....	9
1.4 Field Survey	10
1.5 Camera Deployment	11
1.6 Database management, analyses and result	11
2. Conduct tiger presence survey along tiger corridor east of the extension area of PNP.....	13
3. Conduct refresher SMART training.....	14
4. Support SMART patrolling	17
5. Trial android-based hand-held devices to record SMART data.....	18
6. Results of SMART including CyberTracker data to record SMART	20
6.1 No. of Patrol, distance and time spent.....	20
6.2 Patrol effort and coverage	20
6.3 Human Activity Summary	20
6.3 Wildlife Observation Summary.....	20
IV. Project outcomes and achievements	21
V. Project challenges and opportunities.....	21
Annexes	0

List of Tables

Table 1: Results of camera trap deployment from PNP and adjoining forests	11
Table 2: Prey density estimates in tiger bearing protected areas and adjoining forests.	12
Table 3: Prey density estimates and survey effort in PNP and adjoining forests.	12
Table 4: No. of participants.....	14
Table 5: No. of participants.....	18
Table 6: Patrol conducted by guard posts	Error! Bookmark not defined.
Table 7: Detail of human observations	Error! Bookmark not defined.

List of Maps

Map 1: Map showing Protected areas of Nepal including Parsa National Park	7
Map 2: Map showing Parsa National Park	7
Map 3: Camp locations and area covered in first deployment.....	10
Map 4: Occupancy survey grids towards east of PNP.....	13
Map 5: Map showing patrol efforts	Error! Bookmark not defined.
Map 6: Map showing illegal human activity location	Error! Bookmark not defined.
Map 7: Map showing wildlife observation locations	Error! Bookmark not defined.

List of Figures

Figure 1: Orientation training at NTNC- BCC Sauraha, Chitwan	9
Figure 2: Secretary for MoFE signifying the importance of tiger surveys.....	9
Figure 3: Inauguration of the camera trapping survey	10
Figure 4: Graph showing tiger population at PNP and adjoining forests in 2018.....	11
Figure 5: Presentation by Chief Conservation Officer	15
Figure 6: Presentation by Battalion Commander	15
Figure 7: Presentations, GPS handling sessions, field practices and group photos.....	16
Figure 8: Presentations on CyberTracker, field practices and group photos of trainings	19
Figure 10: Graph showing month wise trend on total patrols carried	20
Figure 11: Monthly number of patrols from three posts	Error! Bookmark not defined.

List of Abbreviations

<i>BCC</i>	<i>Biodiversity Conservation Centre</i>
<i>CBAPU</i>	<i>Community Based Anti-Poaching Unit</i>
<i>CNP</i>	<i>Chitwan National Park</i>
<i>DNPWC</i>	<i>Department of National Parks and Wildlife Conservation</i>
<i>DFSC</i>	<i>Department of Forests and Soil Conservation</i>
<i>GoN</i>	<i>Government of Nepal</i>
<i>GPS</i>	<i>Global Positioning System</i>
<i>MoFE</i>	<i>Ministry of Forests and Environment</i>
<i>NP</i>	<i>National Park</i>
<i>NTNC</i>	<i>National Trust for Nature Conservation</i>
<i>PA</i>	<i>Protected Area</i>
<i>PNP</i>	<i>Parsa National Park</i>
<i>SECR</i>	<i>Spatially Explicit Capture Recapture</i>
<i>SMART</i>	<i>Spatial Monitoring and Reporting Tool</i>
<i>TAL</i>	<i>Terai Arc Landscape</i>
<i>TCL</i>	<i>Tiger Conservation Landscape</i>
<i>WWF</i>	<i>World Wide Fund for Nature</i>
<i>ZSL</i>	<i>Zoological Society of London</i>

Project Summary

Building on the success of ZSL's previous project funded by Wildcats Conservation Alliance, this project was implemented to strengthen the monitoring and protection of tigers within some of the most vulnerable parts of the extension area in Parsa National Park (PNP). This project aimed to address an urgent need highlighted by the Government of Nepal's Department of National Parks and Wildlife Conservation (DNPWC) and has been jointly developed in partnership with PNP management. PNP is a key tiger recovery site identified by the Government of Nepal and is ZSL's flagship tiger conservation site.

PNP, together with Chitwan National Park, forms an important landscape for biodiversity conservation, and supports the largest population of threatened megafauna such as tigers, rhinos and elephants in Nepal. On 3 June 2017, the Department of National Parks and Wildlife Conservation (DNPWC) upgraded Parsa Wildlife Reserve to the status of a National Park on account of its significantly improved habitat, stringent law enforcement and annual biological monitoring efforts which have contributed to the recovery of tigers as well as other wildlife.

This project set out to support PNP with conducting camera trapping surveys as part of monitoring the status of tigers and their prey in the extension area in a systematic way; helping to reduce poaching threats through effective implementation of patrol-based monitoring using the SMART approach. These surveys were designed to tie up with the Government of Nepal's national tiger census in 2018, with a focus on the extension area, and further east, where tiger presence has been reported. The results from the camera trapping survey will enable the identification of additional suitable habitats for tigers in the region and help management authorities design appropriate interventions.

Following the National Tiger and Prey Base Monitoring Protocol (DNPWC, 2017), the camera trapping survey led by DNPWC was conducted from December 2017 to April 2018. The survey covered all tiger-bearing protected areas (PAs) including the extension area of PNP, our current project site, as well as corridors and tiger habitats outside the PA. As a result, an estimated population of 18 tigers – along with 22.02 per km prey density in PNP and adjoining forests – was recorded. Likewise, an occupancy survey was completed east of the extension area to the Bagmati River to monitor potential dispersal of tigers; tigers signs were detected in 2 out of 11 grid cells (size 15 X 15 km) with 0.18 naïve tiger occupancy. Similarly, two SMART refresher training courses were provided to 107 people, including staff from the Nepal army (93) and national park (14). Two training sessions – including one refresher session on the use of hand-held devices – were provided to 65 people from the Nepal army (50) and National Park (15) deployed in the extension area. Both sessions were given to increase effective implementation of patrol-based site level monitoring. Regular coordination with the park was maintained for effective implementation and ownership of project activities. Also, implementation of hand-held, android-based devices to document data from SMART patrols, enabling a more efficient way to record and process patrol data has been piloted through this project. Additionally, this project has strengthened the capacity of frontline staff within national parks, to continue to effectively protect tigers across one of the most promising tiger recovery sites in the Terai Arc Landscape.

I. Project Background

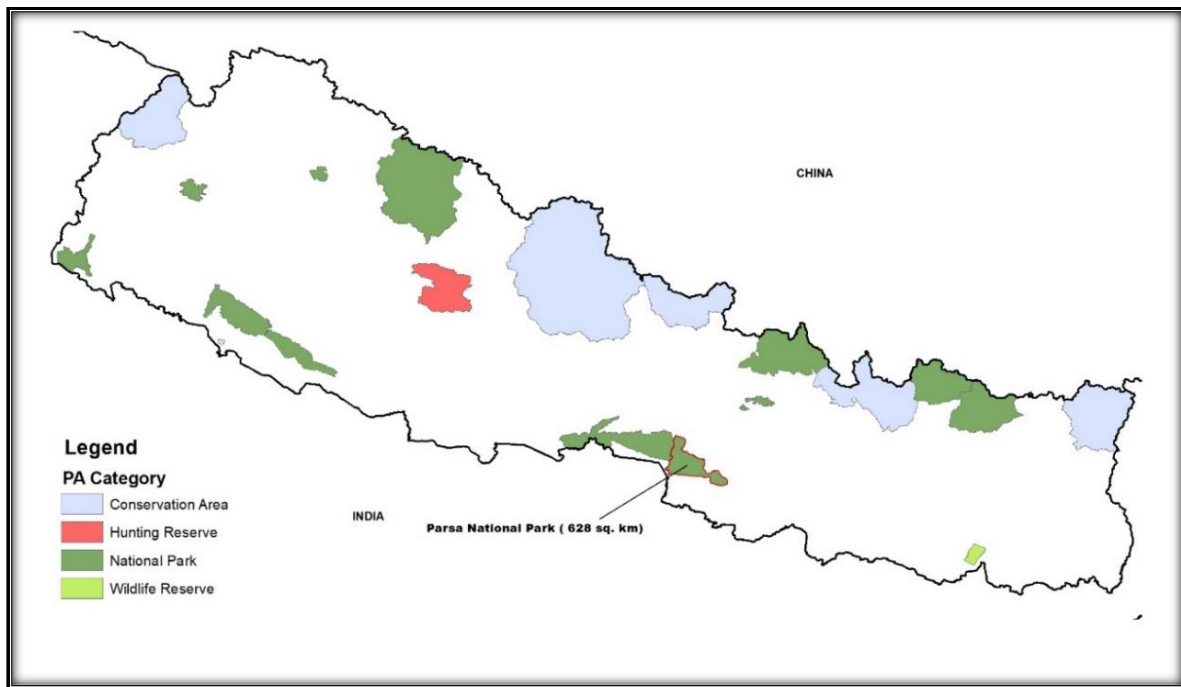
Globally, tiger numbers have declined by 95% when compared to the beginning of the 20th century, and their habitat is restricted to only 7% of its original extent. To ensure that tigers continue to thrive in the wild there is a strong need for a global conservation effort. As part of ZSL's tiger conservation programme, we are supporting the Government of Nepal (GoN) in its commitment to double tiger numbers by 2022 (i.e. to reach 250 tigers, based on 2010 national estimates of 125 tigers). Nepal is currently on track to meet this goal, with a high level of commitment and focus put on tiger conservation by GoN – and increasing support from local communities living close to tiger-bearing protected areas (PAs).

PNP is a key tiger recovery site identified by GoN and ZSL's flagship tiger conservation site. PNP, together with Chitwan National Park (CNP), forms an important landscape for biodiversity conservation – supporting the largest population of threatened megafauna such as tigers, rhinos and elephants in Nepal. On 3 June 2017, the Department of National Parks and Wildlife Conservation (DNPWC) upgraded Parsa Wildlife Reserve to the status of a National Park on account of its significantly improved habitat, stringent law enforcement and annual biological monitoring efforts, which have contributed to the recovery of tigers as well as other wildlife.

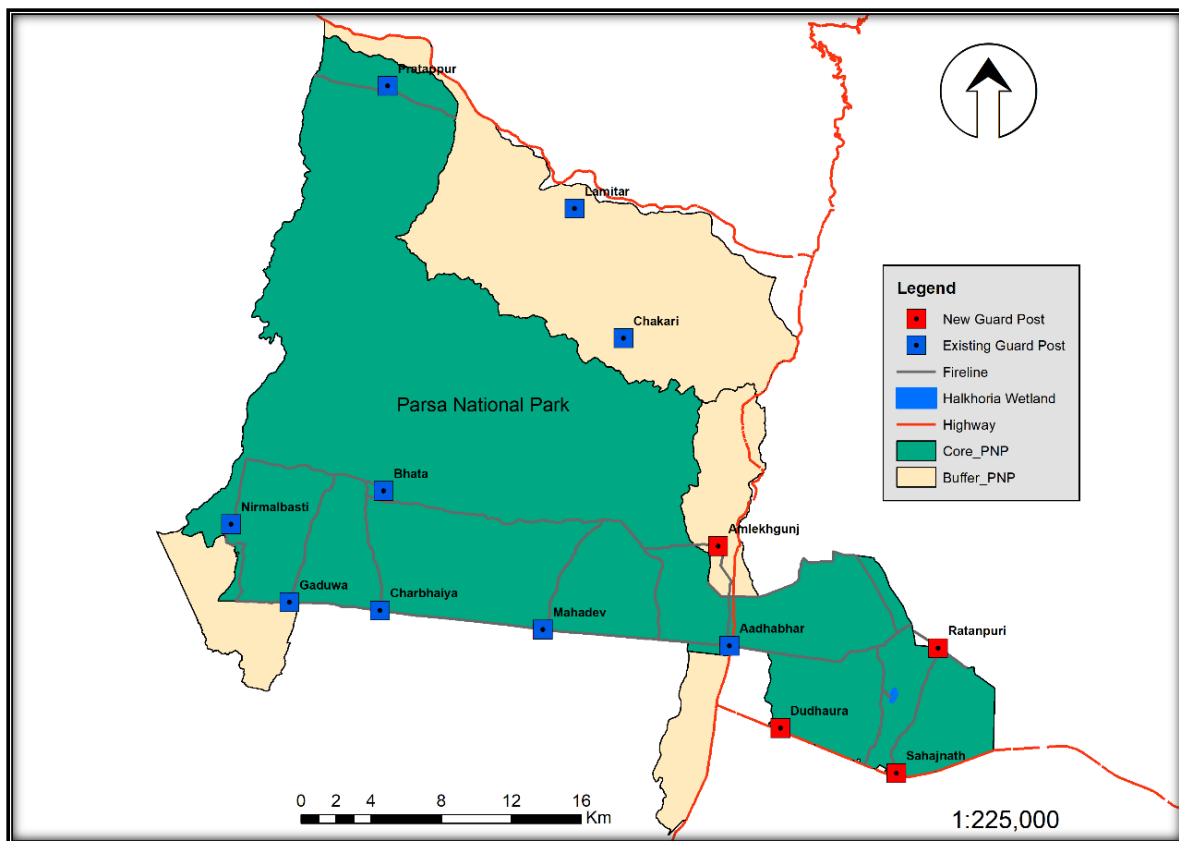
ZSL facilitated the extension of Parsa, with the national government adding an additional 129 km² of tiger habitat in 2015. Two successive Wildcats Conservation Alliance grants have supported this. The projects were extremely successful, providing baseline data on the tiger population in the extension area and mobilising Community-Based Anti-Poaching Units (CBAPUs). In 2016/17, an annual camera trapping survey revealed a dramatic increase in the tiger population and the increased use of the extension area by tigers. Law enforcement was strengthened by supporting PNP in its implementation of patrol-based monitoring, using the Spatial Monitoring and Reporting Tool (SMART) approach in the extension area. Continuing to monitor the movement of tigers beyond PNP was identified as critical to ensure effective management interventions and protection for tigers dispersing east of the extension area.

Biological monitoring was proposed in this project to support the government's national tiger census, planned for 2018 in PNP to contribute towards GoN's efforts to estimate the tiger population across its tiger-bearing PAs – and provide crucial information on progress toward achieving Nepal's national target. Additionally, this project included investigation into possible tiger dispersal eastwards from Parsa, enabling the GoN to design effective conservation measures to protect dispersing tigers and allow the population to continue to thrive and expand its range.

Another major component of the project was to implement and strengthen SMART data collection by providing training and resources to the patrol teams. Additionally, introducing hand-held, android-based SMART data collection – replacing manual data entry – enables an efficient way to record and process patrol data; this provides prompt information to the PA manager, facilitating rapid responses.



Map 1: Map showing Protected areas of Nepal including Parsa National Park



Map 2: Map showing Parsa National Park

II. Project Objectives

The project was developed to build on the success achieved with previous grants from Wildcats Conservation Alliance in supporting PNP, to secure the extended core as a key tiger habitat by reinforcing the existing measures for biological monitoring and law enforcement. Specifically, the project aims to achieve the following two objectives:

- 1) Continued monitoring of the status of tigers and their prey in the extension area of PNP through systematic camera trapping and transect surveys as part of the national tiger census.
- 2) Reduce poaching threats to tigers by strengthening anti-poaching measures in PNP through refresher SMART training, supporting patrolling and trialling android-based SMART patrolling.

III. Project activities

1. Annual monitoring of tiger and prey base

One of the specific objectives of this grant was to support the national tiger survey led by GoN to establish the nation-wide tiger population. The field survey to estimate the tiger population in Nepal was carried out from December 2017 to April 2018 in all tiger-bearing PAs and potential tiger habitats in Terai (the lowlands that stretches in southern belt of Nepal). This followed an inauguration on camera trapping by the Secretary of Ministry of Forests and Environment (MoFE), Dr. Yubak Dhoj GC at Parsa National Park on November 30, 2017. The survey covered five tiger-bearing protected areas of Nepal: Parsa, Chitwan, Banke, Bardia and Shuklaphanta National Parks, their buffer zones and other potential areas outside PAs within Terai Arc Landscape (TAL), based on Tiger and Prey base Monitoring Protocol, 2017 (DNPWC, 2017). This project specifically contributed to the tiger monitoring work within Parsa National Park.

For this, various activities were conducted within Parsa NP and its surrounding buffer areas.

1.1 Coordination meetings

Several coordination meetings were held to prepare for the national tiger and prey base survey 2018, involving camera trapping in Parsa-Chitwan Complex, Bardia-Banke Complex and Shuklaphanta Laljhadi-Jogbuda Complex. The Ecology Section of DNPWC, GoN led the national tiger survey with support from Department of Forests and Soil Conservation (DFSC) and other conservation partners like the National Trust for Nature Conservation (NTNC), Zoological Society of London (ZSL) and World Wildlife Fund (WWF).

Site-level and district-level coordination meetings among the stakeholders have been conducted multiple times in the Parsa-Chitwan Complex.

1.2 Orientation training

On 28 and 29 November 2017, prior to the deployment, two-day long orientation training was conducted for field technicians on camera trap operation, placement, field crafts, navigation etc. at Sauraha, Chitwan to train the field survey team on the survey protocols. More than 100 people participated in the training before going into the field. Deputy Director Generals of DNPWC, Mr. Gopal Prakash Bhattarai and Mr. Sher Singh Thagunna (including ecology section head of DNPWC Mr. Laxman Prasad Poudyal) were the focal persons from GoN supervising the training.



Figure 1: Orientation training at NTNC- BCC Sauraha, Chitwan

1.3 Camera trap inauguration

The camera trap field survey was inaugurated by the Secretary of Ministry of Forests and Environment (MoFE) Dr. Yubak Dhoj GC at PNP Park, by turning on a pair of camera traps after an event organized at the park's headquarter, Aadhabhar. Distinguished personalities including the Director Generals of DNPWC and DFSC, Head of Environment and Biodiversity Division of MoFE, District Forest Officers, Chief Conservation Officers, head and/or representatives of the NTNC, WWF Nepal, ZSL Nepal, USAID-Hariyo Ban Program joined the inauguration program. This inauguration of camera trapping from the delegates signifies the importance of tiger monitoring to understand the ecosystem standard throughout the country.



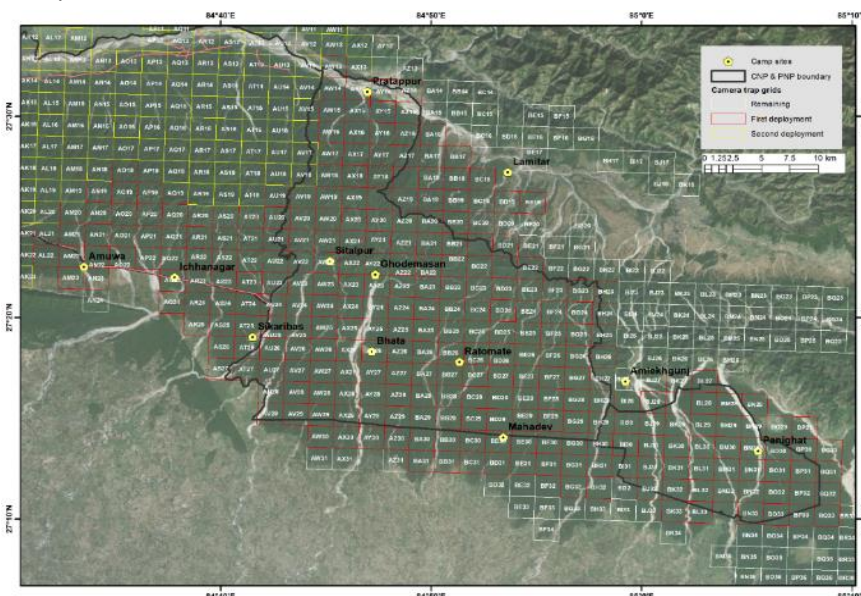
Figure 2: Secretary for MoFE signifying the importance of tiger surveys



Figure 3: Inauguration of the camera trapping survey

1.4 Field Survey

The field survey started on 1 December 2017 after inauguration at PNP headquarters. The entire Parsa-Chitwan complex was surveyed in three deployments. Out of 942 camera trap grids (2Km X 2Km) planned for the Parsa-Chitwan complex, a total of 863 grids (2Km X 2Km) were surveyed in this landscape unit. Some grids which were inaccessible or very close to the settlements were not surveyed. The field survey was completed in three deployments starting from Parsa National Park and moving westward for subsequent deployments. The first deployment)Dec 01 – 22, 2017(covered the entire Parsa NP, buffer zone, collaborative forest and some of)~ 60 grids(Chitwan (total grids covered = 274). The second deployment)Dec 24 – Jan 09, 2018, total grids covered = 281) and the third deployment)Jan 13 – 30, 2018, total grids covered = 308) covered the remaining grids of Parsa Chitwan Complex, including some parts of buffer areas of PNP and TAL areas, towards the east of PNP.



Map 3: Camp locations and area covered in first deployment

1.5 Camera Deployment

The first deployment began on 1st December 2017. A total of 14 teams with more than 110 people were deployed from 12 camp locations to cover 274 grids in Parsa, its surrounding areas and some of CNP, which included 49 grids of the extended core area of PNP. Remaining grids of adjoining forests in PNP were surveyed in the third deployment.

The list of teams deployed in different camp sites, including extension areas, during the first deployment is presented in Annex 1. Teams based at Panighat and Amlekhgunj deployed cameras in the grids of the extension area.

1.6 Database management, analyses and result

The field data obtained as data forms, as well as camera trap data (photos), were at first compiled at NTNC - Biodiversity Conservation Centre, Chitwan. All the data was then collected by DNPWC for analysis. Data analysis was led by the ecology section of DNPWC with technical support from ZSL and other partners. For this, tiger images were sorted out for individual identification and population estimation.

1.6.1 Tiger Abundance

Altogether 305 grids were surveyed in PNP and adjoining forests, out of which tigers were captured in 49 (16%) grid cells. Camera trapping efforts of 4810 days across PNP and adjoining forests in 3634.50 km² captured 294 tiger images and 102 independent tiger detections. Individual tigers were identified using stripe patterns. The survey results showed 15 tiger individuals from PNP and adjoining forests, out of which 5 were males and 10 were female tigers. Though cubs (N=3) were captured during survey, they were not included in the analysis. The estimated population of tiger in PNP and adjoining forests is 18 (16 – 24) in 2018 (P=0.03) and the mean posterior density of tigers per 100 km² was 0.92 (SD 0.15) in 95% confidence interval. Tiger population estimates were derived using SECR - ML while density estimates were derived using SECR-B.

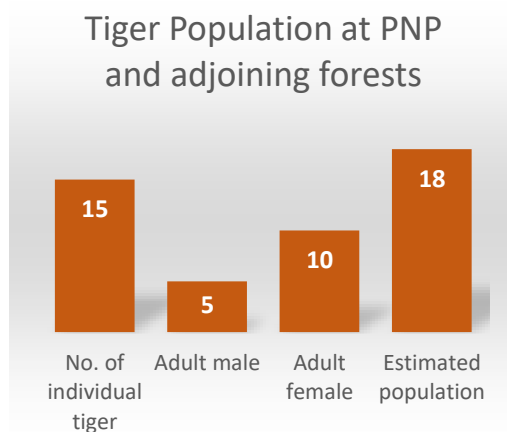


Figure 4: Graph showing tiger population at PNP and adjoining forests in 2018

Table 1: Results of camera trap deployment from PNP and adjoining forests

Site	No. of surveyed camera trap grid cells	Survey effort (trap days)	Effective sampling area (km ²)	Number of tiger photos	Number of independent detections	Number of individual tigers captured	Adults males	Adult females	Cubs	Estimated Population
PNP and adjoining forests	305	4,810	3,634.50	294	102	15	5	10	3	18

1.6.2 Prey density estimates

Tiger prey species recorded at PNP and adjoining forests during the survey also included spotted deer, sambar and wild boar. The combined prey density per km² in PNP and adjoining forests is 22.03 (SE 3.8). The sampling effort, number of observations and prey density estimates along with species-wise details are shown in table 2 and 3 below.

Table 2: Prey density estimates in tiger-bearing protected areas and adjoining forests.

Site	Effort (km)	Number of transects	No. of obs.	Density (per km ²)	SE	CV (%)	95% CI
PNP and adjoining forests	482	248	194	22.02	3.8	17.48	15.66 - 30.96

SE: Standard Error of Mean, CI: Confidence Interval, CV: Coefficient of Variation (SD/Mean)

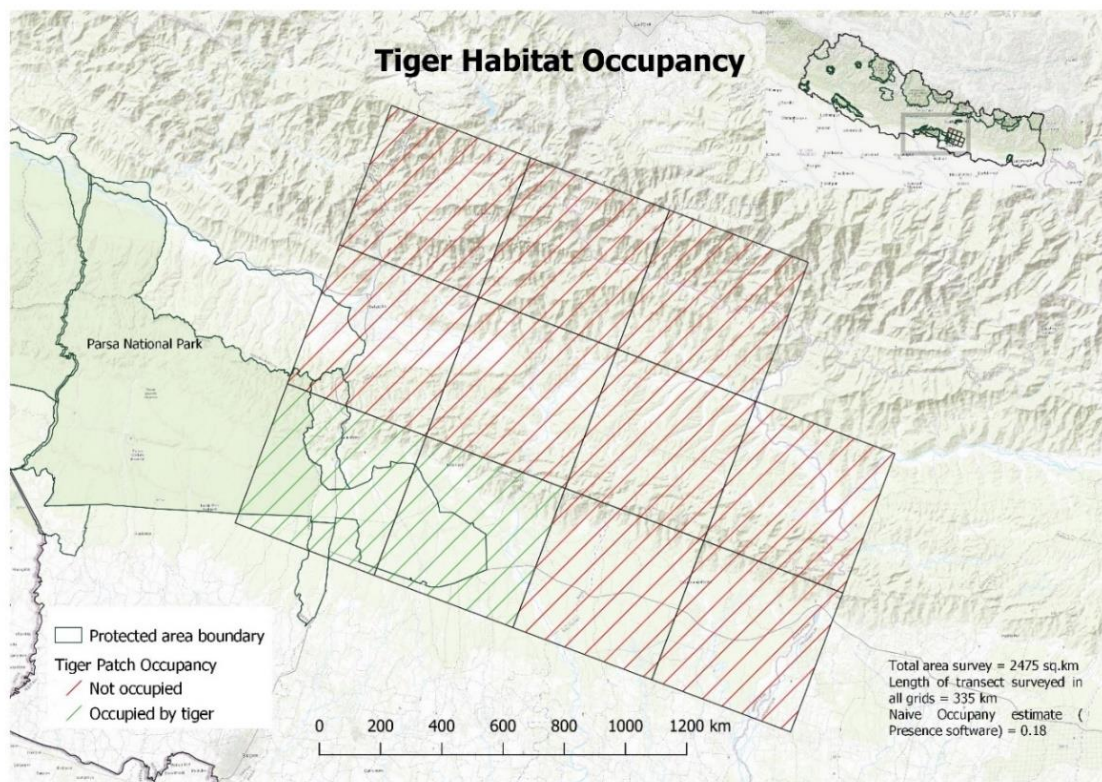
Table 3: Prey density estimates and survey effort in PNP and adjoining forests.

Protected area	Effort (km)	Spatial Replicates	Species	No. of obs.	Density (per km ²)	SE	% of CV	95% CI
PNP and adjoining forests	482	248	All prey	194	22.02	3.8	17.48	15.66 - 30.96
			Spotted deer	30	8.82	3.6	40.83	4.06 - 19.17
			Sambar	40	2.2	0.6	27.67	1.29 - 3.76
			Wild boar	47	4.89	1.2	24.36	3.05 - 7.86

2. Conduct tiger presence survey along tiger corridor east of the extension area of PNP

As part of the national tiger and prey base survey, an occupancy survey was conducted east of PNP to Bagmati River to investigate potential movement of tigers. For this, the “Tiger and Prey base Monitoring Protocol, 2017” (DNPWC, 2017) was followed to conduct the occupancy survey. The survey was carried out by the teams deployed for camera trapping. Data on tiger and prey signs, threats and human disturbance has been collected for each grid. Presence software has been used to identify the occupancy of tiger habitat.

The team surveyed 11 grids (grid size = 15km X 15km), covering an area of 2475 sq.km with a sampling effort of 335km to identify the presence of tiger eastwards of the extension area of PNP, as shown in map below.



Map 4: Occupancy survey grids towards east of PNP

There are 3 districts towards the east of PNP, up to the Bagmati River and across TAL area. Out of 3 districts (Bara, Makawanpur and Rautahat) surveyed, tiger signs were detected only from the Bara district: the district that shares a boundary with the extension area of PNP. This survey resulted in the detection of tiger signs in 2 out of 11 grid cells and the naïve tiger occupancy found was 0.18. This indicates that 450 km² of the area, including the extension area, has been used by tigers.

This shows the possibility of tiger movement across the TAL area outside PAs. However, wider movement of tigers requires strong protection, habitat management and minimizing key threats like habitat fragmentation and human-tiger conflict throughout this area. Also, food and water availability across this area must be ensured to serve for increased tiger and prey numbers.

3. Conduct refresher SMART training

SMART was implemented in Parsa from 2014 as an effective approach to deliver effective conservation efforts, while conserving park resources and minimizing wildlife threats. However, frequent change in protection unit personnel and park staff in guard posts has required repeat training at regular intervals. ZSL has been supporting PNP to train new staff and protection unit personnel, as well as provide refresher training and technical support as needed. After January 2018 SMART patrolling to monitor the law enforcement activities was implemented from three guard posts in the extension area, which is the focused site for this project. This serves as valuable habitat and is home to different faunal species including tigers and their prey.

Through this project, two refresher training sessions on were conducted at three guard posts in the extension area. Training was conducted from 13 – 18 June 2018, and 21 – 26 November 2018. A total of 107 patrol members including both army and park staff were trained.

Table 4: No. of participants

Training Date	Guard Post	Army Staff	Park Staff	Total
13- 18 June	Sahajnath	22	4	26
	Dudhaura	11	0	11
	Ratanpuri	18	3	21
21 – 26 November	Sahajnath	11	2	13
	Dudhaura	10	0	10
	Ratanpuri	21	5	26
Total		93	14	107

The major objective of this training was to train and refresh the frontline staff (new and some previously engaged) in the use of SMART for law enforcement monitoring and make them able to apply SMART efficiently. The training was principally focused on the basics of SMART, a tool to record patrol activities and site-level law enforcement monitoring following the legal aspects and values of national parks and wildlife conservation. The training sessions were facilitated by Chief and Assistant Conservation Officers of PNP, the Battalion Commander of *Tara Dal* Battalion-PNP, the Monitoring and Surveillance Officer of ZSL, Nepal, and the Post Commander of each guard post. The training included the following sessions: pre-training assessment; an introduction presentation on PNP and legal provisions on wildlife conservation and wildlife crime; the vital role of the protection unit in law enforcement patrolling and anti-poaching operations; conservation laws, rules and regulations within park jurisdictions; tracking wildlife; an introduction to safety measures against some aggressive animals; legal procedures for arrest, seizures, charges, lawsuits, etc.; an introduction to SMART data recording in the patrol log book; basic field craft i.e., navigation, sign identification, GPS handling practices, field exercises and post-training assessment. Participants were thoroughly trained with examples on observations such as species type, group size, human signs, records of arrest, direct/indirect observation, weapons confiscation, which are required in SMART implementation. Along with interactions, motivation to

frontline staff was provided for their active participation in site-based anti-poaching and surveillance activities through the SMART approach.

Finally, the training ended with interactions among the participants about different conservation issues – especially focusing on the extension area, which further helps to identify challenges and possible threats in conservation. A post-training assessment was held to assess the level of knowledge gained after training. Post-training assessment results showed an increased level of understanding about SMART and law enforcement monitoring.

The schedule for the training is presented in annex 2 & 3.



Figure 5: Presentation by Chief Conservation Officer



Figure 6: Presentation by Battalion Commander



Figure 7: Presentations, GPS handling sessions, field practices and group photos

4. Support SMART patrolling

SMART patrolling in the extension area of PNP was supported through this project. At present, this area requires optimal security enhancement and numerous law enforcement monitoring efforts to keep the new habitat intact and suitable for different wildlife.

Effective implementation of SMART patrolling needs equipment and field gear. For this, through this project, ZSL has supplied field gear to frontline staff through PNP. This includes GPS devices and batteries, patrol log books, field trousers, hats, backpacks, t-shirts, field boots, etc. All of this equipment and gear was distributed to those who were responsible for day-to-day SMART operation and site-based conservation activities. All of this helps the frontline staff and boosts their morale for patrolling activities.

5. Trial android-based hand-held devices to record SMART data

To increase the efficiency of field data collection to record any type of observation, CyberTracker was introduced and trialled in PNP. Two training sessions (one full and one refresher), on its use for data collection using hand-held devices, were conducted through this project.

First, a two-day training session was completed for 16 park and protection unit staff members on July 27 and 28, 2018. Then for the second time, three-days of refresher training, a day in each guard post (Dudhaura, Ratanpuri and Sahajnath), for 49 members of park and protection unit staff, was conducted between 21 – 26 November. The number of participants from protection units and national parks are shown in table below:

Table 5: No. of participants

Training Date	Army Staffs	Park Staffs	Total
27-28 July	8	8	16
21-26 November	42	7	49
Total	50	15	65

This training was primarily focused on using the CyberTracker application in a hand-held device, a tool that simply records patrol and site level law enforcement monitoring activities in an efficient way. It was targeted to frontline staff (Nepal army and PNP staffs) who patrol daily in the extension area of PNP, and who are responsible for day-to-day site-based conservation activities. Classroom sessions on SMART and use of android-based, handheld devices for recording data were followed by practical exercises in the field after being divided into groups. Participants were taught to use CyberTracker on a smartphone to gather observations while ensuring compatibility with SMART. They learnt the basics of CyberTracker, what it does, how to use it, why to use it, etc. Its importance and effectiveness in wildlife monitoring and law enforcement activities was also mentioned. Every entity that was incorporated in the application was clearly mentioned and any entities that must be added or removed were discussed based upon their field experience. Regarding field exercises, they were asked to take short patrols inside the forest and record some fictitious observations, as directed by facilitators. Later, the gathered data were observed and discussed to clarify the difficulties.

Training was delivered by ZSL Nepal's law enforcement specialists. Six smartphones loaded with the Cybertracker application were handed over to the park for SMART data collection after the completion of the first training session. The schedule and list of participants in the first training is shown in annexes 4 & 5 respectively.

Below are some photographs of training.



Figure 8: Presentations on CyberTracker, field practices and group photos of trainings

IV. Project outcomes and achievements

1. Results of SMART including CyberTracker data to record SMART

Based on the observations recorded by the patrol teams in the extension area of PNP, the following results were obtained. The results of SMART shown here are from the beginning of 2018 and the data was gathered using the CyberTracker application in android phones, which after August 2018 was made compatible with the existing SMART protocol, all SMART data is therefore presented together.

1.1 Number of patrols, distance and time spent

REDACTED

This project aimed to increase the ground coverage in comparison to previous years and focus more on the extension area of PNP. After 2015, an additional 128 km² of habitat was extended eastwards of PNP by the national government. Previously there were no guard posts in that extended habitat and the frequency of patrols to that area from other guard posts was less. Later, ZSL has supported the establishment of three guard posts in that area, this was completed in mid-2017. Then after the deployment of protection units in those guard posts, SMART was implemented. The numbers presented in the above table and graph shows the increment of patrols, except in monsoon season and at the time of internal changes in protection units in guard posts. So, after refresher training, they were able to absorb the idea of SMART implementation, which plays a significant role in law enforcement monitoring while contributing towards the increase of tiger populations.

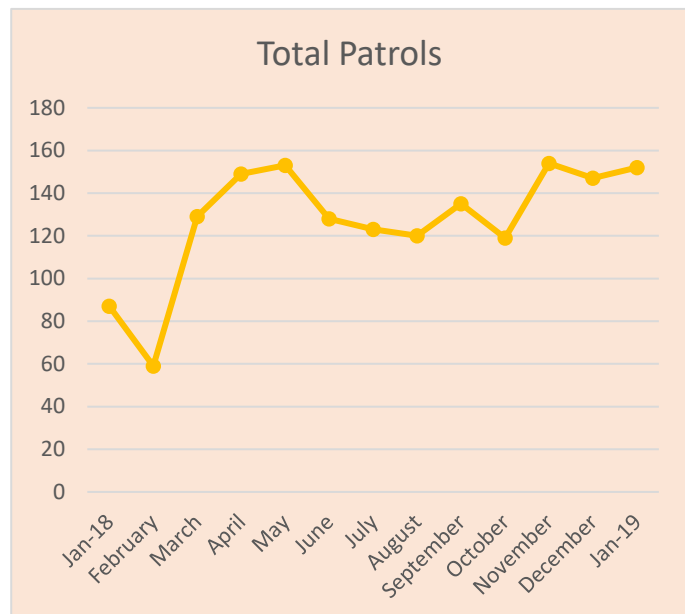


Figure 9: Graph showing month wise trend on total patrols carried

REDACTED

1.2 Patrol effort and coverage

REDACTED

1.3 Human Activity Summary

REDACTED

1.4 Wildlife Observation Summary

REDACTED

2. Project outcomes and achievements

The key achievements of the project are listed below:

- Tiger and prey-based monitoring in the extension area of PNP, completed as part of a national tiger and prey-based survey. Both financial and technical support was provided to GoN to conduct the survey. This resulted in an estimated tiger population of 18 in PNP and adjoining forests.
- An occupancy survey east of the extension area up to Bagmati river, across the TAL area was completed to monitor potential tiger movement as part of a national tiger and prey-based survey and tiger signs were detected in 2 out of 11 grids towards the east of the extension area of PNP, up to Bagmati River across TAL area. This indicates the potential of this area to facilitate tiger movement, and the importance of working with communities in this area to ensure high habitat quality and protect wildlife from hunting.
- Two refresher training sessions planned under this project were completed. In total, 107 staff members including from both the park and Nepal army, of 3 guard posts, were trained in paper-based SMART techniques; 65 army and park staff members were trained on the use of CyberTracker for SMART data collection. Also, for its effective implementation, equipment and logistical support was provided to the park to continue law enforcement patrols in the extension area.
- There was more than a 4-fold increase in patrol numbers carried out by 3 guard posts, compared to that of previous years in the extension area. Massive increases in patrol efforts compared to previous years, and the number of wildlife observations (including tiger and prey-based species) have been recorded.

3. Project challenges and opportunities

REDACTED

4. Reporting against logframe

Project summary	Measurable indicators	Indicator Achievement	Means of verification	Risk/assumptions
Conservation outcome: Improved understanding of tigers and their prey in Parsa National Park's extension area, enabling targeted conservation intervention to protect the population and enable it to continue growing and expanding east, and improved SMART patrolling to strengthen protection				
Objectives				
1) Continue monitoring the status of tigers and their prey in the extension area of Parsa National Park through yearly systematic camera trapping and transect surveys as part of national tiger census.	1.1 Data for Parsa National Park included in 2017 National Tiger Census	Included in Status of Tigers and prey in Nepal 2018 published by DNPWC. Estimated population of 18 tigers in PNP and adjoining forests.	DNPWC report, project report	Improved knowledge of tigers and their prey enables more effective conservation intervention to protect the existing population and support its expansion east
	1.2 Presence/absence survey report for area east of extension area published by end of project	Presence Absence Survey report published	Presence/absence survey report	
2) Reduce poaching threats to tigers by strengthening anti-poaching measures in PNP through refresher SMART training supporting patrolling and trialling android-based SMART patrolling.	2.1 100 front line staff successfully trained or retrained in SMART during project year	107	Post-training skills assessments	Strengthened SMART patrolling reduces the threat of poaching through increasing the chances of intercepting poachers, thereby decreasing the number

	2.2 2,400 SMART patrols in Parsa National Park during the project year	1,655 in PNP extension area (as noted above other guard posts in PNP are now using real-time SMART rather than SMART).	SMART reports	of those attempting to poach, and decreasing the proportion of successful poachers.
	2.3 20% decrease in human observations in the extension area by project end	ca. 45% reduction in observations of threatening human activities REDACTED	SMART reports	
	2.4 Android-based SMART trialled on 360 (30 per month) patrols during project year	200 patrols conducted during the year. More than 30 patrols were being conducted per month by the project end, however fewer patrols than planned were conducted as the android-based trial started later than planned due to delayed training resulting from a change to the government timetable.	SMART reports	Android-based SMART patrols increase the efficiency and accuracy of patrol-based monitoring data entry and use, by enabling direct data entry while in the field.
				Familiarisation with android devices before start of trial is sufficient to enable their effective use

	<p>2.5 SMART patrolling covers 75% of extension area detecting illegal activities such as firewood and fodder collection, illegal grazing, snares, camps, etc.</p>	<p>160km² of the extension area and adjoining forests were patrolled. 125% of the 128km² targetted.</p>	<p>SMART reports</p>	
--	--	---	----------------------	--

Annexes

REDACTED

