

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

SPEED POST

No. WII/RTI/CPIO/2017-18 (Qtr-III)/26

Dated 08.12.2017

To,

MANNA MR IVAN
602, Pavilion Court-17,
Jaypee Greens Wishtown,
Noida Sector 128, Pin – 201 301

Sub.: Information sought under Right to Information Act, 2005- reg.

**Ref.: (1) Your RTI Request dated 15/09/2017, received in this office on 18.10.2017.
(2) CPIO letter No. WII/RTI/CPIO/2017-18(Qtr.-III)/26 dated 27.10.2017.**

Sir,

Please refer to your RTI Request cited above under RTI Act, 2005. Since the information was contained in 32 pages, you were requested to deposit an additional amount of Rs. 64/- as per Rule 5 of the RTI Act, 2005 vide reference (2) cited above.

In this context, the required amount of Rs. 64/- has been received by this Institute on 06.12.2017 in the form of a SBI Cheque no 537134 dated 02.12.2017. Hence, the required information is being enclosed herewith in the form of a report (32 pages), duly certified by CPIO.

If you are not satisfied with the aforesaid reply, you may file an appeal before the First Appellate Authority i.e. “*Dr. V.B.Mathur, Director, Wildlife Institute of India, P.B.18, Chandrabani, Dehradun – 248 001, Ph. 0135-2646102, 2640910*” within a period of one month.

Thanking you,

Yours faithfully,

(Dr. Anju Baroth)
CPIO & NO. RTI

Encl: A report (32 pages)

**Copy by post for information to – Public Information Officer, Corbett Tiger Reserve,
Ramnagar P.O., Nainital District, Uttarakhand.**

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PHASE-IV SAMPLING IN CORBETT TIGER RESERVE, 2015 (APRIL-JUNE)

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Researchers: Shikha Bisht and Sudip Banerjee

Funding agency: National Tiger Conservation Authority, Corbett Forest Department



Wildlife Institute of India



ATTESTED

CPIO, Wild Life Institute of India, Dehradun

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1. Introduction

Having an estimate of abundance of a species is very important for monitoring and evaluating any conservation program which is aimed at protecting that specific species. But mere evaluation of a population will not serve in its conservation. The country-wide tiger monitoring exercise has identified Corbett Tiger Reserve (CTR) as a high tiger density area (19 ± 0.54 100km² in 2006-07, Jhala *et al.* 2011a). Tiger occupied area in the extended landscape (CTR and Lansdowne, Kashipur, Ramnagar, west Haldwani, north-west Nainital and lower Ranikhet) has increased from 1,524 km² to 2,287 km² from 2006-07 to 2010-11 (Jhala *et al.* 2011b). Estimated tiger numbers have also increased from 161-195 (Jhala *et al.* 2008) to 190-239 (Jhala *et al.* 2011b) and according to the recently concluded All India Tiger Monitoring, 169-261 (Jhala *et al.* 2015). But these studies based on snapshots of the population at discrete times do not allow to keep a pulse of the health of the population for the species long term persistence. Intensive monitoring of population is what will bring forth dynamics of a species in a given area and hence, help in developing meaningful and effective management practices. Under the current Tiger Monitoring Protocols population status of tiger is assessed once in every four years. Implementation of a continuous annual monitoring program is needed to aid in detecting trends in important high tiger density areas (source population) (Narain 2005, The Report of the Tiger Task Force, Joining the Dots, 2005). This led to addition of Phase IV under the Tiger Monitoring Protocols, involving intensive monitoring of the important source population of tigers for a given landscape. Therefore, to assess the tiger status in the globally important Terai Arc Landscape, source population for this landscape, CTR has been monitored under the purview of the Phase IV protocols since 2011-12.

In 2015-16, a total of 348 camera locations were sampled in the area identified based



on our reconnaissance survey. An effort of 9540 trap nights yielded 3200 photographs of 163 individual tiger. Closed population estimators selected Mbh as the best-fit model, thereby accounting for inherent heterogeneity in capture rates of individual tigers. Population estimate for the Tiger Reserve (# (S.E)) computed using the Mbh estimator was 171(5.47). Under the spatial likelihood model the density for the Tiger Reserve was 11.43(1.94) tigers/100km².

2. Activities

Training of ground staff to carry out and assist in executing the Phase IV protocols

Phase IV sampling exercise is a collaborative enterprise of forest department staff and researchers from academic institutions. As a part of this initiative WII has imparted training to ground level staff since its implementation in CTR since 2011-2012. During the training for the summer sampling session of 2015-16, rangers and beat guards from 11 ranges were efficiently trained in handling of different digital camera traps and their deployment (Fig 1 a&b). Training was also provided on line transect data collection followed by handling of equipment such as GPS, compass and range finders along with human disturbance and ungulate dung survey (Fig 2 a&b). Training included both theory lectures and field practical. Following the training a schedule was fixed to carry out the data collection exercise across the entire Tiger Reserve in a systematic manner and camera traps were also deployed subsequently by the forest staff and WII team.

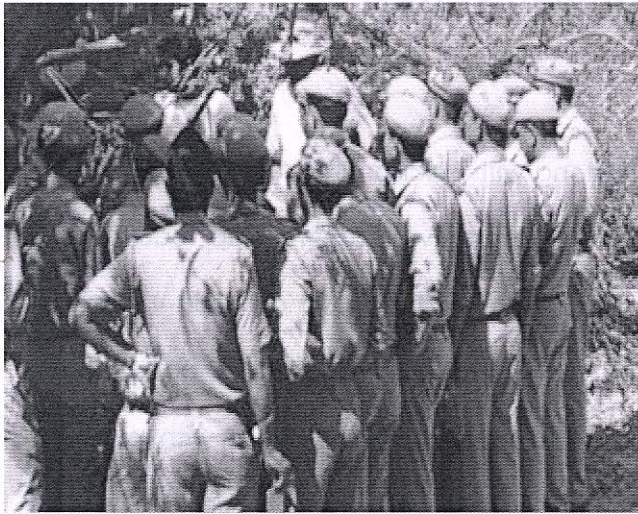


Fig 1 a & b: Training of staff on field practical and theory of camera trap exercise

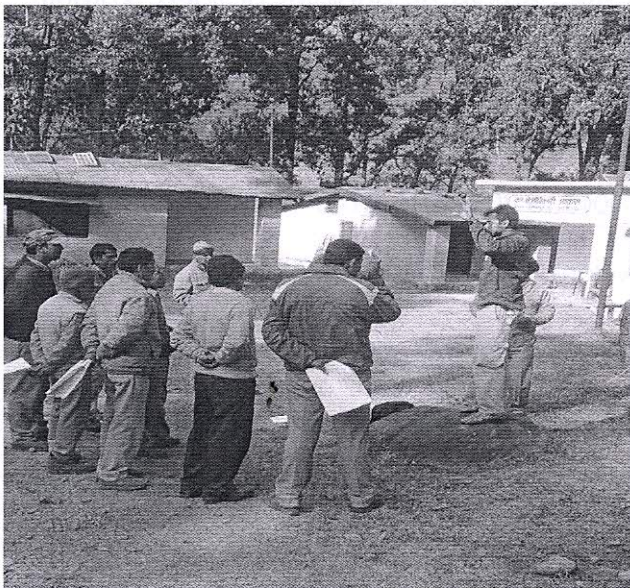


Fig 2 a & b: Training of staff on theory and data collection procedure of line transect sampling

3. Population and Density Estimation of Tiger

Sampling Method

The carnivore sign surveys in previous years along with ancillary information from Forest Department ground staff aided in identifying prospective camera trap locations to maximize capture rates. Camera trapping was conducted for a period of 30-45 days to ensure population closure. A handheld GPS unit was used to record their coordinates, which were then plotted in a GIS domain to reach a good trapping design with minimum "sampling holes". Each beat was taken as the unit of sampling where, depending on the size of the beat, 3-4 camera trap stations were identified and sampled. A total of 348 camera-trapping stations were identified in the entire tiger reserve (Fig. 4). These trapping stations were selected so as to maximise the capture probabilities of tigers (Karanth, 1995). The camera trapping was done in two blocks where Kalagarh, Jhirna, Dhela, Sarpdhuli, Bijrani, Dhikala, Mandal, Maidavan and Adnala Ranges of the Tiger Reserve were sampled in the first block from 22-4-2015 to 30-5-2015 while Palain and Sonanadi Ranges were sampled in the second block from 23-5-2015 to 23-6-2015.

We used Cuddeback Attack, Cuddeback Ambush, Reconyx IR and Panthera Digital cameras, which are passive infrared cameras, for the present camera trapping session. All tigers have unique stripe pattern and thus individual tigers can be identified based on their stripe patterns. Therefore, at each trap station two cameras were setup i.e. one on either side of the trail/road so as to photograph both the flanks of the tiger for future identification of the individual. Each camera station was given a unique identity (based on the name of the place or beat) so as to correctly note the date, time and location of the captures. Each camera was placed at a distance of 6-7 meters from the middle



of the trail (i.e. more than 12 meters distance between two cameras) to obtain good quality full frame pictures of tigers.

Tiger Identification through Extract Compare database

Every tiger captured was given a unique identification number (eg:- T-1, T-2) after examining the stripe pattern on the flanks, limbs and forequarters. For small populations new images can be compared by eye with existing ones to identify new individuals and record where and when each was photographed. But the photo-id catalogue grows with annual camera trapping and Corbett being a high tiger density area the effort required to search the entire catalogue for matches to each new image becomes excessive. Therefore, tiger individual identification was done using the software EXTRACTCOMPARE (Hiby et al. 2009) which is a database that provides automated photo-id for tiger individuals. This is done by fitting a 3D surface model to the tiger image and the program captures a pattern that is unaffected by the camera angle or the tiger's posture. The new pattern can be then compared with previous patterns stored in a library and display the most likely matches. The number of visual comparisons required is thus reduced substantially by calculating similarity scores between each new image and the images by which existing individuals are represented in the catalogue. Visual comparisons are then restricted to those individuals that obtained maximum scores during the process of batch comparison. Hence, the data is stored for each year and then compared between years. EXTRACTCOMPARE provides a comprehensive database for tiger individuals over the years and data can be fed directly into the software and the new photographs can be then compared using existing database of tiger individuals from previous years.



Sampling Effort

A total of 348 camera trap stations were deployed in the entire ~1400 Km² of CTR in April-June 2015-16. Details of the effort are tabulated in Table 1.

Table 1: Details of camera trapping session in Corbett Tiger Reserve, April-June 2015-16

# of Camera traps	Trap Nights	# of photographs	Mt+1
348	9540	3200	163

Results

Tiger density was estimated under likelihood based spatial capture-recapture (SECR) framework using package secr (2.10.2) in R (3.2.1) platform. Population estimates were derived using closed population estimators in program MARK. The overall density for the Tiger Reserve is 11 tiger per 100 km² (Table 2) while the density of the National Park alone is 16 tigers per 100 km².

Table 2: Details of population estimates and density of tigers in Corbett Tiger Reserve April-June 2015-16

Total area (sq.km)	Area after masking (sq.km)	Tiger individuals photographed (Mt+1)	Density (S.E)/100 sq.km	Population Estimate (S.E) (Mbh model)
1257.2	1174.8	163	11.43 (1.94)	171 (5.47)



4. Density Estimation of Prey species

Sampling Method

Besides emphasizing on monitoring of tigers, Phase IV monitoring also mandates estimation of prey across the reserve twice a year. The protocol follows the robust and most preferred technique of line transect based DISTANCE sampling approach to estimate ungulate population in the reserve. Population estimation in this case is based on visual detection of animals in line transects of length 1 to 2 km. Under the monitoring protocol beat is the sampling unit where each beat has a minimum of one transect which can be increased to two or three depending on size and habitat array in the beat. Each transect was walked between 6:30 am to 8:30 am when the animals are most active. At the beginning of the walk transect bearing was recorded along with other variables such as terrain and habitat type. Subsequently with each cluster of prey animals encountered on transects, the following variables were recorded: (1) Species (2) Cluster size (3) Angular sighting distance (4) Animal bearing and (5) Walk bearing. Bearing is recorded using SUNNTO compass and distance is based on ocular estimate owing to unavailability of range finders in all the beats. Apart from these density estimating parameters, habitat and terrain was also recorded for each sighting (Appendix 2).

Sampling effort

A total of 68 line transects were sampled across 11 ranges in 68 beats in May-June 2015. Each transect was replicated thrice amounting to an effort of 390 km of total walk (Fig 3). Due to incomplete data collected from Amdanda and Gaujpani South beats, they were not used in the analysis



Results

Density was estimated using Program DISTANCE 7 (Buckland *et.al*, 1993, 2001; Thomas *et.al*, 2004). The best fit model was selected based on the Akaike Information Criteria (AIC). Using the selected model, estimates of group density and animal density were derived (Table 3).

Table 3: Density of Chital, Sambar, Wild Pig, Barking Deer and Langur for 68 transects (total replicates=204) walked (total of 390 km) using program DISTANCE 7.0 in Corbett Tiger Reserve 2015

Species	Observation (# of Clusters detected)	Best Fit Model	Chi.sq value	Effective strip width (SE)	Mean Group size (SE)	Detection probability (SE)	Group density per sq.km(SE)	Individual Density per sq.km (SE)
Chital	166	Hazard/Hermite	0.92	43.95(3.32)	14.64(0.9)	0.24(0.02)	4.84(0.6)	70.9(10.2)
Sambar	119	Uniform/Cosine	0.86	43.36(3.15)	2.84(0.1)	0.42(0.03)	3.52(0.4)	10.7(1.4)
Wild pig	46	Hazrad/Hermite	0.78	38.51(6.83)	7.9(1.1)	0.35(0.06)	1.53(0.3)	12.2(3.4)
Barking deer	69	Uniform/Cosine	0.65	47.30(3.6)	1.4(0.06)	0.59(0.04)	1.87(0.2)	2.8(0.4)
Langur	32	Uniform/Cosine	0.92	37.69(5.6)	15.43(1.8)	0.68(0.1)	1.08(0.2)	22.3(7.1)

Sampling for vegetation, ungulate pellet and human disturbance:

To quantify the habitat parameters and determine levels of human disturbance, sampling was done along the same line transects at every 400 meters. Dominant trees and shrub species along with grass and herbs were recorded. Ungulate abundance was also indexed by enumerating their fecal pellets. At every 400 m along the transect, an area of 2m x 20m perpendicular to the transect was sampled for quantifying ungulate pellets. Disturbance



parameters such as wood cutting and lopping and presence of human/domestic animal trails were also recorded in each of these plots. GPS locations of all these plots were recorded to spatially model these co-variables with ungulate density across the area.



5. Maps

Figure 3

Map showing distribution of transects (n=68) in 11 ranges of Corbett Tiger Reserve during Phase IV sampling, April-June 2015-16

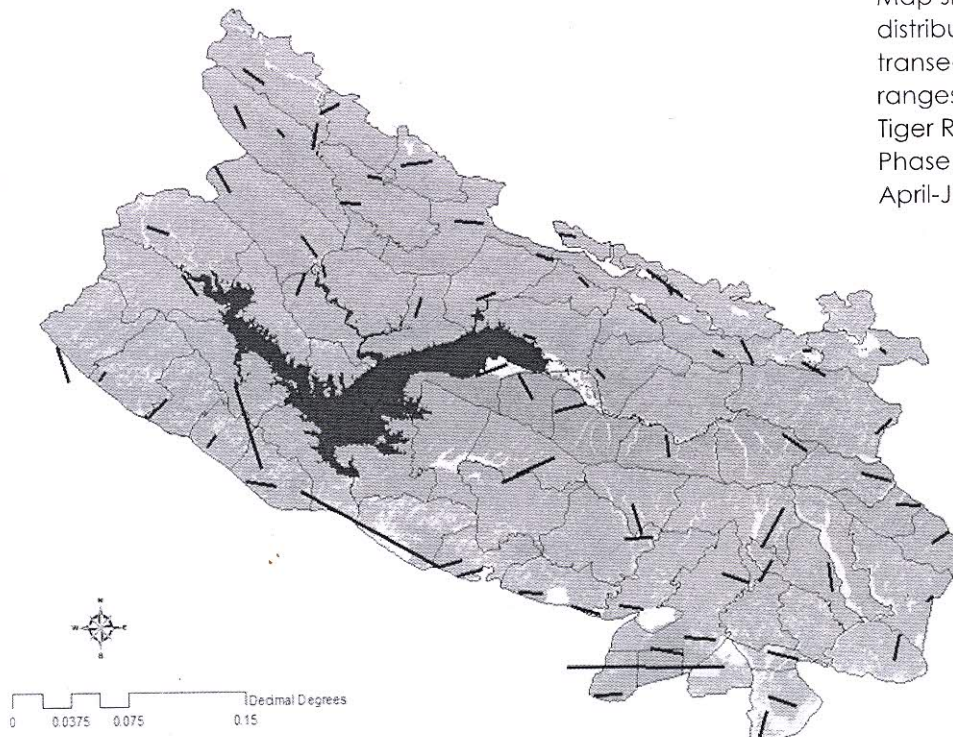
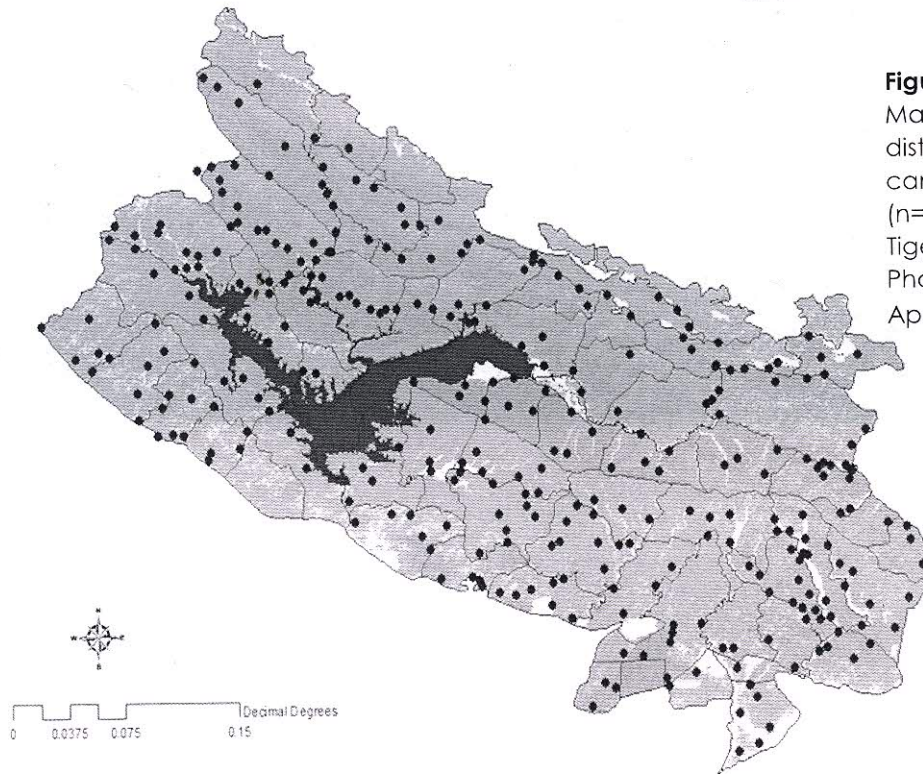


Figure 4

Map showing spatial distribution of camera traps (n=348) in Corbett Tiger Reserve during Phase IV sampling April-June 2015-16



1. Ungulate encounter data sheet in Hindi

ट्रांजेक्ट लाईन पर वन्यजीवों एवं मवेशियों की गणना

रेंज:.....

ट्रान्जेक्ट प्रारंभका कोण.....

अंत जी.पी.एस.: अक्षांतर: देशांतर :

[illegible]

2: List of camera trap locations in Corbett Tiger Reserve April-June 2015-16

CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
1	15kanala	29.383250	79.020833	27-04-2015	30-05-2015
2	50footi_PE	29.418083	78.956889	27-04-2015	30-05-2015
3	50footifireline	29.571056	78.835333	27-04-2015	30-05-2015
4	580	29.406083	78.971167	26-04-2015	30-05-2015
5	AmgadiRd	29.528056	79.082472	27-04-2015	30-05-2015
6	Amsot	29.464278	79.035000	29-04-2015	30-05-2015
7	Andheria	29.470000	78.976000	26-04-2015	30-05-2015
8	Babanala sot	29.465861	79.096139	29-04-2015	30-05-2015
9	babanalard	29.457639	79.090972	29-04-2015	30-05-2015
10	Bada Pathroba	29.435694	78.977167	27-04-2015	30-05-2015
11	Bada Sot	29.481861	78.815389	27-04-2015	30-05-2015
12	Bada panout far	29.500306	79.088278	28-04-2015	30-05-2015
13	badhai chaur	29.473056	79.061417	29-04-2015	30-05-2015
14	badi fireline	29.448056	79.056250	29-04-2015	30-05-2015
15	bagia sot	29.422000	79.016944	27-04-2015	30-05-2015
16	bajri rd	29.418972	78.943528	26-04-2015	30-05-2015
17	behra ghatta	29.399722	78.974028	27-04-2015	30-05-2015
18	bela nala	29.532417	78.815833	24-04-2015	30-05-2015
19	bhumakiya	29.549306	78.924417	27-04-2015	30-05-2015
20	bichhubhoji	29.578861	78.858611	27-04-2015	30-05-2015
21	boxgadi	29.572139	78.917444	27-04-2015	30-05-2015
22	budda pathar	29.458972	78.965750	26-04-2015	30-05-2015
23	bunkpani	29.503972	78.943917	27-04-2015	30-05-2015
24	champion rd	29.547722	78.956722	27-04-2015	30-05-2015
25	chinal	29.484278	79.133778	27-04-2015	30-05-2015
26	chirchoti	29.522250	78.832000	27-04-2015	30-05-2015
27	chirpani rd	29.487444	79.000861	28-04-2015	30-05-2015
28	chirpani wh	29.498306	79.001778	28-04-2015	30-05-2015
29	chital rd	29.481222	79.079611	29-04-2015	30-05-2015
30	chuapani	29.564472	78.868444	27-04-2015	30-05-2015
31	chui sot	29.529361	78.770917	22-04-2015	30-05-2015
32	chunakhani	29.492167	79.132056	27-04-2015	30-05-2015
33	comp 15	29.487944	79.073861	29-04-2015	30-05-2015
34	dhanghari waterhole	29.525361	79.096361	27-04-2015	30-05-2015
35	dhara 50footi	29.459417	78.849889	25-04-2015	30-05-2015
36	Dhara sot batiya	29.485056	78.867083	26-04-2015	30-05-2015
37	dharaguleria	29.501722	78.861250	26-04-2015	30-05-2015
38	dhaudadevi	29.503972	78.943917	27-04-2015	30-05-2015



CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
39	dhaura sot	29.523694	78.874944	24-04-2015	30-05-2015
40	garjia sot	29.430028	79.086000	29-04-2015	30-05-2015
41	gau rd	29.513083	78.879556	24-04-2015	30-05-2015
42	gaujpani sot	29.527972	78.890167	25-04-2015	30-05-2015
43	gethiya rao	29.588306	78.892750	27-04-2015	30-05-2015
44	ghilmoria	29.523472	79.038806	27-04-2015	30-05-2015
45	godama1	29.484750	78.927389	25-04-2015	30-05-2015
46	godama2	29.469056	78.931194	25-04-2015	30-05-2015
47	gorkha	29.537611	78.975528	27-04-2015	30-05-2015
48	gosadan	29.433786	79.101372	27-04-2015	30-05-2015
49	gujar batiya_Phanto east	29.401861	78.931111	26-04-2015	30-05-2015
50	gujar batiya_Pathroba east	29.408028	78.992194	27-04-2015	30-05-2015
51	guleria	29.492111	78.866389	26-04-2015	30-05-2015
52	haldukhera 1	29.436722	78.995833	27-04-2015	30-05-2015
53	hilltop	29.551806	78.816472	27-04-2015	30-05-2015
54	jalebi bend	29.605250	78.891944	27-04-2015	30-05-2015
55	jamun sot on rd_gauj	29.526944	78.850250	24-04-2015	30-05-2015
56	jamun sot rd_jam	29.500556	78.924417	25-04-2015	30-05-2015
57	jamunagwad rd	29.498083	78.961750	27-04-2015	30-05-2015
58	jhabar sot	29.444972	79.062361	29-04-2015	30-05-2015
59	jhirna atak	29.482833	78.896167	25-04-2015	30-05-2015
60	jhirna sot_jam	29.496778	78.906222	25-04-2015	30-05-2015
61	jhirnajali	29.506528	78.913056	25-04-2015	30-05-2015
62	jhirna sot_new	29.463944	78.904194	27-04-2015	30-05-2015
63	kamarpatta	29.561444	78.884861	27-04-2015	30-05-2015
64	kaniya	29.414333	79.095833	29-04-2015	30-05-2015
65	karvarghatti	29.525833	78.968917	27-04-2015	30-05-2015
66	kasurva	29.453917	79.041222	29-04-2015	30-05-2015
67	khinamalani	29.469611	79.027917	28-04-2015	30-05-2015
68	khinanaulibypass	29.573167	78.893056	27-04-2015	30-05-2015
69	kichar	29.448944	79.078250	29-04-2015	30-05-2015
70	km ki dhang	29.483583	78.948111	25-04-2015	30-05-2015
71	kothidunga	29.530972	78.958972	27-04-2015	30-05-2015
72	kothirao	29.440306	78.909194	25-04-2015	30-05-2015
73	khishna nala	29.527667	78.816000	27-04-2015	30-05-2015
74	kua	29.501389	78.802583	24-04-2015	30-05-2015
75	machiakhal	29.457083	78.937417	25-04-2015	30-05-2015
76	magazine sot	29.497500	78.765750	22-04-2015	30-05-2015
77	malanighat	29.479222	78.848500	27-04-2015	30-05-2015
78	mandir	29.439667	79.081694	29-04-2015	30-05-2015



CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
79	meera sot	29.510500	78.762167	22-04-2015	30-05-2015
80	mohanpani	29.509167	78.925472	25-04-2015	30-05-2015
81	mohanpani-bunkpani	29.483139	78.941444	25-04-2015	30-05-2015
82	murti sot	29.485667	78.901833	25-04-2015	30-05-2015
83	nagaroli	29.421956	79.079200	30-04-2015	30-05-2015
84	nagaroli batiya	29.419067	79.073742	30-04-2015	30-05-2015
85	nagin sot	29.506417	78.880278	25-04-2015	30-05-2015
86	nathusidh	29.498083	78.961750	25-04-2015	30-05-2015
87	nayajaub	29.489667	79.046417	29-04-2015	30-05-2015
88	neargate_dhikala	29.568000	78.853139	27-04-2015	30-05-2015
89	noongarh	29.495333	78.826556	27-04-2015	30-05-2015
90	paniagwad	29.443500	79.071111	29-04-2015	30-05-2015
91	pater sot	29.521611	78.777056	22-04-2015	30-05-2015
92	pathroba sot_up	29.431083	78.976417	27-04-2015	30-05-2015
93	phooltal	29.423319	79.106608	28-04-2015	30-05-2015
94	phulai sot	29.599583	78.877917	27-04-2015	30-05-2015
95	pipal sot rd	29.519250	78.857667	24-04-2015	30-05-2015
96	plot 5	29.361000	79.019972	27-04-2015	30-05-2015
97	pratap khatta	29.375389	79.039889	27-04-2015	30-05-2015
98	ranibag	29.532750	79.020833	27-04-2015	30-05-2015
99	rasiaroli	29.448361	78.896722	26-04-2015	30-05-2015
100	ratapani	29.499444	79.063433	29-04-2015	30-05-2015
101	riapani	29.450056	79.132278	30-04-2015	30-05-2015
102	ringoda nala	29.614000	78.842750	27-04-2015	30-05-2015
103	saajgadi	29.526667	79.073472	27-04-2015	30-05-2015
104	sagwaan khola rd	29.410083	79.057361	30-04-2015	30-05-2015
105	sain plot	29.399722	79.027639	27-04-2015	30-05-2015
106	sambar rd	29.581083	78.872167	27-04-2015	30-05-2015
107	shikari batiya	29.537694	79.047139	27-04-2015	30-05-2015
108	shikari kuan	29.404778	78.972667	26-04-2015	30-05-2015
109	sodakhal	29.538472	78.846833	24-04-2015	30-05-2015
110	sukha sot	29.502611	78.789639	27-04-2015	30-05-2015
111	sukha sot wh	29.502278	78.988806	28-04-2015	30-05-2015
112	sultan rd	29.490111	79.054694	29-04-2015	30-05-2015
113	tauliya	29.585028	78.911528	27-04-2015	30-05-2015
114	teenpani	29.470056	79.141833	27-04-2015	30-05-2015
115	telephone phanto east	29.401917	78.940806	26-04-2015	30-05-2015
116	thanda batiya	29.541472	78.795500	24-04-2015	30-05-2015
117	toon rokhad sot	29.536972	78.907528	24-04-2015	30-05-2015
118	toon rokhad	29.514222	78.887583	24-04-2015	30-05-2015



CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
119	toon sot	29.500111	78.885083	25-04-2015	30-05-2015
120	toota pakhan	29.579639	78.805611	27-04-2015	30-05-2015
121	transect_phanto west	29.388583	78.923000	26-04-2015	30-05-2015
122	waterhole1	29.476944	79.063528	29-04-2015	30-05-2015
123	waterhole2	29.475750	79.066778	29-04-2015	30-05-2015
124	wh3_dhikala	29.577028	78.839750	27-04-2015	30-05-2015
125	zeropoint	29.479139	79.055333	29-04-2015	30-05-2015
3_2	Amgadi sot	29.521639	79.077417	28-04-2015	30-05-2015
6_2	Arjun nala rd	29.531639	78.836889	24-04-2015	30-05-2015
13_2	bagia nala	29.409972	79.018806	27-04-2015	30-05-2015
17_2	bhalu sot	29.454306	78.872472	28-04-2015	30-05-2015
18_2	bhaluroli	29.421417	79.009472	27-04-2015	30-05-2015
26_2	chirchotifar	29.526750	78.835972	27-04-2015	30-05-2015
34_2	comp19	29.470528	79.087833	29-04-2015	30-05-2015
40_2	dhulva	29.528722	79.012389	27-04-2015	30-05-2015
53_2	haldukhera chowki	29.451750	79.010389	27-04-2015	30-05-2015
58_2	jamun sot_machan	29.455667	78.861361	27-04-2015	30-05-2015
61_2	jhirna1	29.461389	78.896944	26-04-2015	30-05-2015
64_2	kalushaheed	29.556611	78.852528	27-04-2015	30-05-2015
66_2	Kanaujia	29.494778	79.119694	27-04-2015	30-05-2015
70_2	kharagate	29.442389	78.943778	25-04-2015	30-05-2015
72_2	khinanauli sot	29.538250	78.898472	27-04-2015	30-05-2015
73_2	khrar sot	29.457278	78.882611	26-04-2015	30-05-2015
81_2	malani sot far	29.500444	79.015139	27-04-2015	30-05-2015
82_2	maldhang sot	29.560750	78.941333	27-04-2015	30-05-2015
83_2	maulya 1	29.470056	79.141833	27-04-2015	30-05-2015
84_2	maulya 2	29.541472	78.795500	27-04-2015	30-05-2015
94_2	paniagwad sot	29.437667	79.065083	29-04-2015	30-05-2015
97_2	pathroba sot_down	29.425833	78.974972	27-04-2015	30-05-2015
99_2	Phanto tiraha	29.398944	78.938444	26-04-2015	30-05-2015
104_2	plot7n8	29.366083	79.032778	27-04-2015	30-05-2015
105_2	pukkipulia	29.461472	79.060472	29-04-2015	30-05-2015
106_2	ramsingh	29.561111	78.910194	27-04-2015	30-05-2015
109_2	ratapani rd	29.485556	79.065222	29-04-2015	30-05-2015
111_2	ring rd	29.462556	78.848500	27-04-2015	30-05-2015
113_2	ringoda batiya	29.432389	79.123389	28-04-2015	30-05-2015
117_2	salbani	29.446250	79.107000	29-04-2015	30-05-2015
123_2	sultan sot	29.497417	79.044989	29-04-2015	30-05-2015
126	Waterhole 6	29.453000	79.067250	29-04-2015	30-05-2015
127	Comp 42 (PLOT NO.43)	29.392806	79.032111	27-04-2015	30-05-2015

(18)



CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
128	Jamun Sot up	29.437667	79.065083	27-04-2015	30-05-2015
129	Khatpani (school batia, comp-7)	29.464139	78.822333	26-04-2015	30-05-2015
130	Kohli sot	29.489500	78.809833	24-04-2015	30-05-2015
131	New Point(semul tree tower)	29.464806	78.843833	27-04-2015	30-05-2015
132	18_Ka_Nala	29.383250	79.020833	27-04-2015	30-05-2015
133	Bada Panout Near	29.502278	79.094778	28-04-2015	30-05-2015
134	Haathikhal Far	29.520111	79.094194	28-04-2015	30-05-2015
135	Kasurva Sot	29.471417	79.041250	27-04-2015	30-05-2015
136	Nakatal	29.426222	79.039778	28-04-2015	30-05-2015
ML01	Bhotiya Padav	29.592400	79.100450	26-04-2015	21-05-2015
ML02	Banghat Batiya	29.591060	79.076750	26-04-2015	21-05-2015
ML03	Dugalgad Batiya	29.575370	79.082300	26-04-2015	21-05-2015
ML04	Near banghat	29.603540	79.068780	26-04-2015	21-05-2015
ML05	Nera Mohan Range office	29.549420	79.105340	26-04-2015	21-05-2015
ML06	Bhootgadi Sot	29.540110	79.096320	26-04-2015	21-05-2015
ML07	Gairal-Dumunda Batiya	29.572170	79.009120	26-04-2015	21-05-2015
ML08	Dabriya Chud	29.567150	79.004380	26-04-2015	21-05-2015
ML09	Sangudi sot	29.558270	79.009160	26-04-2015	21-05-2015
ML10	Dhangaddi Sot	29.532120	79.066420	26-04-2015	21-05-2015
ML11	Amgadi sot	29.529490	79.077390	26-04-2015	21-05-2015
ML12	Dhangaddi Sagun Chud	29.528410	79.092550	26-04-2015	21-05-2015
ML13	Bechalni Antipoaching Chowki	29.580680	79.078990	26-04-2015	21-05-2015
ML14	Nigam Road	29.584020	79.016620	26-04-2015	21-05-2015
ML15	Jamun Tiraha	29.578800	79.066990	26-04-2015	21-05-2015
ML16	Manki Rao	29.576990	79.045960	26-04-2015	21-05-2015
ML17	Dadni Chud	29.584500	79.026490	26-04-2015	21-05-2015
ML18	Fireline Batiya	29.587310	79.007160	26-04-2015	21-05-2015
ML19	Nagro Sot	29.596320	78.991260	26-04-2015	21-05-2015
ML20	Kalakhan Road	29.585080	79.042110	27-04-2015	21-05-2015
ML21	Jamun Road	29.587710	79.047870	27-04-2015	21-05-2015
ML22	Fireline Batiya	29.586370	79.006880	01-05-2015	21-05-2015
MN01	Ghugli Chud	29.603780	78.985700	27-04-2015	22-05-2015
MN02	Khamlta Sot	29.600620	79.008880	27-04-2015	21-05-2015
MN03	Tadiya Mandir	29.629360	78.935070	27-04-2015	22-05-2015
MN04	Tadiya Pan Batiya	29.616570	78.950860	27-04-2015	22-05-2015
MN05	Sidh Ke Dhar	29.649360	78.885280	27-04-2015	22-05-2015
MN06	Kunda Road	29.632720	78.916870	27-04-2015	22-05-2015
MN07	Bans Road Koligaon	29.640470	78.902730	27-04-2015	22-05-2015
MN08	Magnukhal waterhole	29.648370	78.891560	27-04-2015	22-05-2015
MN09	Banja Devi, Magnu Road	29.652990	78.886310	27-04-2015	22-05-2015



CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
MN10	Choduyun	29.627630	78.969220	27-04-2015	22-05-2015
MN11	Bhukwa	29.620040	78.981670	27-04-2015	22-05-2015
MN12	Fireline	29.609560	78.989330	27-04-2015	22-05-2015
MN13	Next to Simal padav	29.623550	78.854620	29-04-2015	23-05-2015
MN14	Bailanala	29.614400	78.846610	29-04-2015	23-05-2015
MN15	Tigere Sot	29.617180	78.830380	29-04-2015	23-05-2015
MN16	Fireline	29.621940	78.818350	29-04-2015	23-05-2015
MN17	Near Gojda Chowki	29.624180	78.836060	29-04-2015	23-05-2015
MN18	Putinkhal	29.621670	78.915500	09-05-2015	22-05-2015
MN19	Kilani Sot	29.611860	78.918830	09-05-2015	22-05-2015
A01	Near Sidh Mandir Batiya	29.662570	78.850850	28-04-2015	23-05-2015
A02	Noninala Sot	29.673900	78.823300	28-04-2015	23-05-2015
A03	Adnala Waterhole	29.670870	78.811020	28-04-2015	23-05-2015
A04	Adnala Watchtower	29.671850	78.800570	28-04-2015	23-05-2015
A05	MundiyaPani	29.693790	78.780380	28-04-2015	23-05-2015
A06	Fireline	29.698150	78.769000	28-04-2015	23-05-2015
A07	Bodli Sot	29.717190	78.764540	28-04-2015	23-05-2015
A08	Fireline	29.705840	78.747170	28-04-2015	23-05-2015
A09	Malai Khan	29.682160	78.798030	28-04-2015	23-05-2015
A10	Bhitriadnala Track 1	29.660600	78.841870	29-04-2015	23-05-2015
A11	Bhitriadnala Track 2	29.654500	78.837720	29-04-2015	23-05-2015
A12	Bhitriadnala Track 3	29.651590	78.818210	29-04-2015	23-05-2015
A13	Bhitriadnala Track 4	29.651910	78.798630	29-04-2015	23-05-2015
A14	Bhitriadnala Track 5	29.658570	78.788310	29-04-2015	23-05-2015
A15	Bhitriadnala Track 6	29.663360	78.776790	29-04-2015	23-05-2015
A16	Kakdidhang	29.642600	78.738430	29-04-2015	23-05-2015
A17	Kakdidhang dam	29.628430	78.742060	29-04-2015	23-05-2015
A18	Bailanala	29.641480	78.745640	29-04-2015	23-05-2015
A19	Bailanala 4-6 ka Milan	29.622730	78.921890	29-04-2015	23-05-2015
A20	Bailanala bad ka Ped	29.630290	78.757390	29-04-2015	23-05-2015
A21	Fireline	29.625080	78.808590	29-04-2015	23-05-2015
A22	Citanala Sot	29.622330	78.794150	29-04-2015	23-05-2015
A23	Bailanala Dhar	29.619760	78.783960	29-04-2015	23-05-2015
A24	Bailanala sot 2	29.622470	78.777340	29-04-2015	23-05-2015
A25	bailanala 3	29.625680	78.767910	29-04-2015	23-05-2015
A26	Malani Sot	29.630690	78.763630	29-04-2015	23-05-2015
A27	Bailanala sot	29.622470	78.787200	29-04-2015	23-05-2015
A28	Garhwal Tiraha	29.651850	78.741460	30-04-2015	23-05-2015
A29	Lalbhad	29.656130	78.752120	30-04-2015	23-05-2015
A30	Sanan Sot	29.668190	78.755230	30-04-2015	23-05-2015



CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
A31	Bitariya adnala Road	29.683500	78.753400	30-04-2015	23-05-2015
A32	Filangi Chud	29.690580	78.749210	30-04-2015	23-05-2015
A33	Batanbasha Gate	29.696190	78.746190	30-04-2015	23-05-2015
P01	Mandalti Sot	29.658990	78.723370	23-05-2015	20-06-2015
P02	Chokham-Mandalti batiya-2	29.665050	78.717340	23-05-2015	20-06-2015
P03	Chokham-Mandalti batiya-3	29.669370	78.709480	23-05-2015	20-06-2015
P04	Mandalti-Haldupadav batiya	29.650550	78.731910	23-05-2015	20-06-2015
P05	Lalbhad	29.656300	78.749880	24-05-2015	20-06-2015
P06	Sindhu Sot	29.661610	78.740520	24-05-2015	20-06-2015
P07	Lalbhad-Kandikhal Van Motor Marg 1	29.659040	78.735540	24-05-2015	20-06-2015
P08	Lalbhad-Kandikhal Van Motor Marg 2	29.653320	78.732820	24-05-2015	20-06-2015
P09	Bailanala 5 Batiya	29.645060	78.733180	24-05-2015	20-06-2015
P10	C2-3 Ka Milan	29.633630	78.731590	24-05-2015	18-06-2015
P11	Kandakhal Chachapani Batiya	29.631510	78.737320	24-05-2015	18-06-2015
P12	Kandikhal to C7 Fireline 1	29.620150	78.714820	25-05-2015	19-06-2015
P13	Kandikhal to C7 Fireline 2	29.613120	78.720690	25-05-2015	19-06-2015
P14	Kandikhal to C7 Fireline 3	29.632900	78.711330	25-05-2015	19-06-2015
P15	Kandikhal Watch Tower	29.639570	78.709010	27-05-2015	18-06-2015
P16	Amsoti Batiya	29.633650	78.717700	27-05-2015	18-06-2015
P17	Haldupadav - Kandikhal Fireline	29.638620	78.719920	25-05-2015	18-06-2015
P18	Kandikhal Fireline 2	29.650940	78.702560	25-05-2015	19-06-2015
P19	Kansoor Gujjar Dera	29.718710	78.721190	25-05-2015	18-06-2015
P20	Khansoor Road 1	29.732910	78.701880	25-05-2015	18-06-2015
P21	Khansoor Road 2	29.744000	78.691730	25-05-2015	18-06-2015
P22	Khansoor Road-3	29.753230	78.678840	25-05-2015	18-06-2015
P23	Basai Khan Khansoor	29.754760	78.663430	25-05-2015	18-06-2015
P24	Chokham DandaPani Track 1	29.708830	78.676640	26-05-2015	21-06-2015
P25	Chokham DandaPani Track 2	29.707140	78.688470	26-05-2015	21-06-2015
P26	Chokham DandaPani Track 3	29.705000	78.694310	26-05-2015	21-06-2015
P27	Chokham DandaPani Track 4	29.702220	78.706110	26-05-2015	21-06-2015
P28	Chokham Haldupadav Track 1	29.704190	78.675490	26-05-2015	20-06-2015
P29	Chokham Haldupadav Track 2	29.692000	78.678960	26-05-2015	20-06-2015
P30	Chokham Haldupadav Track 3	29.682050	78.693020	26-05-2015	20-06-2015
P31	Chokham Haldupadav Track 4	29.674700	78.700720	26-05-2015	20-06-2015
P32	Bharat Pani	29.755860	78.677780	26-05-2015	19-06-2015
P33	Talab pakka	29.739190	78.704830	26-05-2015	18-06-2015
P34	Khansoor haldupadav Batiya	29.709650	78.736480	27-05-2015	19-06-2015
P35	Waterhole Kugadda	29.723690	78.743110	27-05-2015	19-06-2015

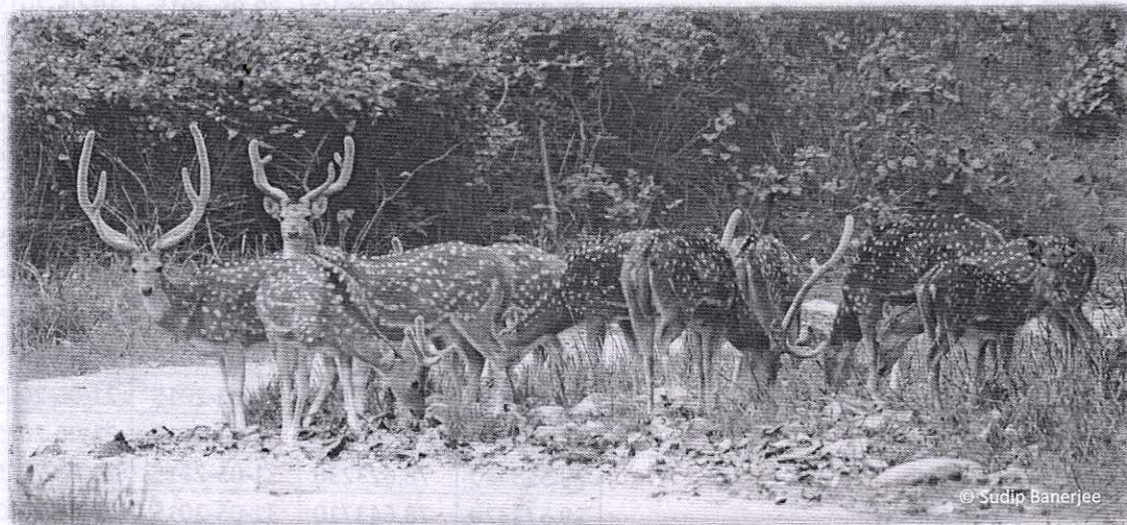


CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
P36	Kugadda Chowki	29.759570	78.709570	27-05-2015	19-06-2015
P37	Khansoor	29.696140	78.738890	27-05-2015	19-06-2015
P38	Haldupadav-Kandikhal Van Motor Narg	29.644650	78.726740	27-05-2015	19-06-2015
S1	Sonanadi Laldarwaja	29.672400	78.609190	27-05-2015	19-06-2015
S2	Pathri Sot	29.669140	78.619280	27-05-2015	19-06-2015
S3	Sonanadi Batiya	29.660260	78.620950	27-05-2015	19-06-2015
S4	Antipoaching Chowki	29.663860	78.612440	27-05-2015	19-06-2015
S5	Tiger Spray Point	29.654000	78.636210	27-05-2015	19-06-2015
S6	Andheri Sot	29.646320	78.645450	27-05-2015	19-06-2015
S7	Gadatu Sot	29.641710	78.647710	27-05-2015	19-06-2015
S8	gater Sot	29.653580	78.662280	28-05-2015	19-06-2015
S9	Sua Sot	29.655530	78.675560	28-05-2015	19-06-2015
S10	Van Motor Marg	29.648500	78.673860	28-05-2015	19-06-2015
S11	Jamun Sot	29.641060	78.676440	28-05-2015	19-06-2015
S12	Van Motor Marg	29.646610	78.678810	28-05-2015	19-06-2015
S13	Kharara Baheda Batiya	29.665310	78.627720	27-05-2015	19-06-2015
S14	Kaluwali Batiya	29.621490	78.693970	28-05-2015	23-06-2015
S15	Kandikhal Batiya	29.634120	78.696640	28-05-2015	23-06-2015
S16	Beri Chuad	29.638430	78.691230	28-05-2015	06-06-2015
S17	Baheda Sot	29.628480	78.661410	28-05-2015	19-06-2015
S18	Kaniya Sot	29.656640	78.656030	28-05-2015	19-06-2015
S19	Baheda Khara Batiya	29.668190	78.638280	28-05-2015	19-06-2015
S20	Amsoti	29.673390	78.638890	28-05-2015	19-06-2015
S21	Van Motor Marg	29.647720	78.656530	28-05-2015	19-06-2015
S22	Chapda Sot	29.595020	78.604190	29-05-2015	19-06-2015
S23	Chapda Fireline	29.587450	78.592610	29-05-2015	19-06-2015
S24	Gujjar Sot	29.613360	78.558840	29-05-2015	20-06-2015
S25	Pakhro	29.617620	78.591260	29-05-2015	20-06-2015
S26	Pankhro Gujjare Sot Batiya	29.601100	78.577330	29-05-2015	20-06-2015
S27	Pankhro Fireline	29.593860	78.581490	29-05-2015	20-06-2015
S28	Morghati bangla Batiya	29.549420	78.652710	01-06-2015	21-06-2015
S29	Puliya K Pass	29.550420	78.645290	31-05-2015	21-06-2015
S30	surajgadi sot	29.617530	78.667180	28-05-2015	24-06-2015
S32	Kalusaeed Dargah	29.571170	78.658140	31-05-2015	21-06-2015
S33	Hathikhadda bad k Pass	29.571250	78.658150	31-05-2015	21-06-2015
S34	Hathikhadda	29.597860	78.657110	31-05-2015	21-06-2015
S35	KoilaDhar	29.594280	78.649690	31-05-2015	21-06-2015
S36	Mogadi	29.558430	78.623230	31-05-2015	21-06-2015
S37	Mogadi Sot	29.573320	78.643710	31-05-2015	21-06-2015

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CameraID	Trap Location	Latitude	Longitude	Deployment date	Removal date
S39	Kirawali 50 ft.	29.538300	78.673180	01-06-2015	21-06-2015
S40	Khiaragad Hattikhadda	29.551850	78.694500	01-06-2015	22-06-2015
S41	Khiaragad 14	29.541410	78.690390	01-06-2015	22-06-2015
S42	kalu Sot	29.547940	78.661690	01-06-2015	22-06-2015
S43	Kangda Ghati	29.565920	78.670200	01-06-2015	22-06-2015
S44	Motasal	29.580110	78.690360	31-05-2015	22-06-2015
S45	Dholkhand Gujar Dera Road	29.569330	78.620800	31-05-2015	22-06-2015
S46	Dhulkhand Amrud Ka Ped	29.590220	78.630140	31-05-2015	22-06-2015
S47	BandarKuti	29.597090	78.636440	31-05-2015	22-06-2015
S48	Gulariya	29.576010	78.621960	31-05-2015	22-06-2015
S49	Gulariya Fireline	29.573760	78.612790	31-05-2015	22-06-2015
S50	Dhualkhand Goral Ridge	29.583660	78.626040	31-05-2015	22-06-2015
S51	Nalkatta Fireline	29.519170	78.713330	04-06-2015	23-06-2015
S52	Shernala	29.512280	78.751990	04-06-2015	23-06-2015
S53	Neem Sot	29.550890	78.723830	04-06-2015	23-06-2015
S54	Nalkatta 50 Ft	29.518060	78.707990	04-06-2015	23-06-2015
S55	Hathi Sot	29.507500	78.731090	04-06-2015	23-06-2015
S56	Shishamkhatta	29.586330	78.732220	01-06-2015	23-06-2015
S57	Kulangi Sot	29.582280	78.692470	31-05-2015	23-06-2015
S58	Velamwali Sot	29.563390	78.709500	31-05-2015	23-06-2015
S59	Chippalghati	29.603830	78.709970	31-05-2015	23-06-2015
S60	Dindawali	29.570860	78.703110	31-05-2015	23-06-2015
S64	Ghodawali Sot	29.594250	78.679190	31-05-2015	24-06-2015
S65	Koila Sot	29.575940	78.630730	31-05-2015	21-06-2015



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Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



SWS-1

SWS-2

SWS-3L

SWS-3R

SWS-4L



SWS-4R

SWS-5L

SWS-5R

SWS-6

SWS-7



SWS-8L

SWS-8R

SWS-9

SWS-10L

SWS-10R



SWS-11L

SWS-11R

SWS-12L

SWS-12R

SWS-13L



SWS-13R

SWS-14L

SWS-14R

SWS-15L

SWS-15R



SWS-16L

SWS-16R

SWS-17L

SWS-17R

SWS-18L



SWS-18R

SWS-19L

SWS-19R

SWS-20L

SWS-20R

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Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



SWS-21

SWS-22L

SWS-22R

SWS-23

SWS-24L



SWS-24R

SWS-25L

SWS-25R

SWS-26

SWS-27L



SWS-27R

SWS-28L

SWS-28R

SWS-29

SWS-30L



SWS-30R

SWS-31L

SWS-31R

SWS-32L

SWS-32R



SWS-33L

SWS-33R

SWS-34L

SWS-34R

SWS-35L



SWS-35R

SWS-36

SWS-37L

SWS-37R

SWS-38L



SWS-38R

SWS-39L

SWS-39R

SWS-40L

SWS-40R

Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



SWS-41L

SWS-41R

SWS-42L

SWS-42R

SWS-43L



SWS-43R

SWS-44L

SWS-44R

SWS-45L

SWS-45R



SWS-46

SWS-47L

SWS-47R

SWS-48L

SWS-48R



SWS-49L

SWS-49R

SWS-50L

SWS-50R

SWS-51L



SWS-51R

SWS-52L

SWS-52R

SWS-53L

SWS-52R

Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



CNP-19R

CNP-20L

CNP-20R

CNP-21L

CNP-21R



CNP-22R

CNP-22L

CNP-23L

CNP-23R

CNP-24L



CNP-24R

CNP-25L

CNP-25R

CNP-26L

CNP-26R



CNP-27R

CNP-27L

CNP-28L

CNP-28R

CNP-29



CNP-30R

CNP-30L

CNP-31L

CNP-31R

CNP-32L



CNP-32R

CNP-33R

CNP-33L

CNP-34L

CNP-34R



CNP-35R

CNP-35L

CNP-36R

CNP-36L

CNP-37

Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



CNP-38L

CNP-38R

CNP-39L

CNP-39R

CNP-40L



CNP-40R

CNP-41L

CNP-41R

CNP-42R

CNP-42L



CNP-43L

CNP-43R

CNP-44L

CNP-44R

CNP-45L



CNP-45R

CNP-46R

CNP-46L

CNP-47L

CNP-47R



CNP-48L

CNP-48R

CNP-49L

CNP-49R

CNP-50L



CNP-50R

CNP-51L

CNP-51R

CNP-52R

CNP-52L



CNP-53

CNP-54R

CNP-54L

CNP-55L

CNP-55R

Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



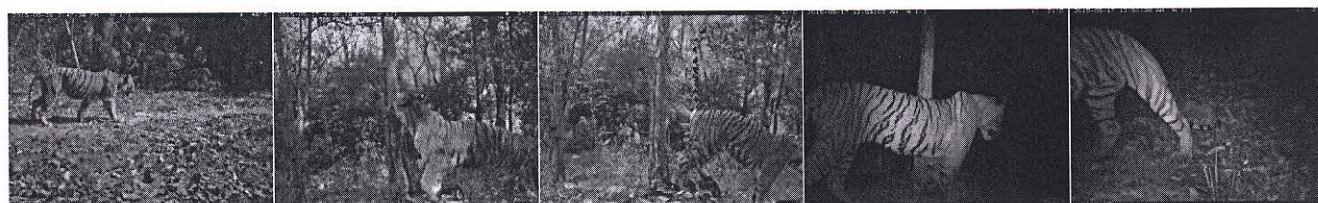
CNP-56L

CNP-56R

CNP-57L

CNP-57R

CNP-58L



CNP-58R

CNP-59L

CNP-59R

CNP-60R

CNP-60L



CNP-61L

CNP-61R

CNP-62L

CNP-62R

CNP-63L



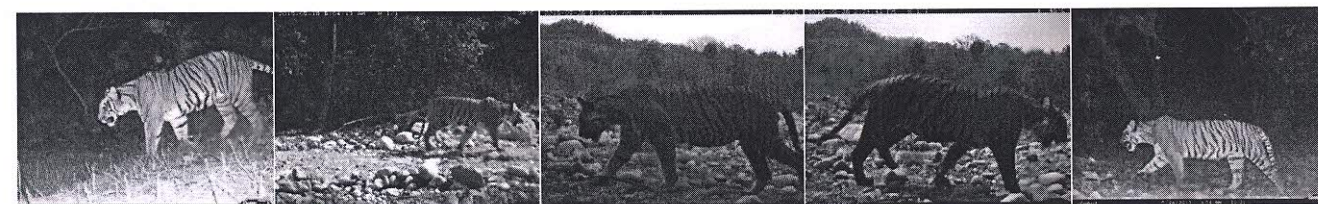
CNP-63R

CNP-64L

CNP-64R

CNP-65

CNP-66



CNP-67L

CNP-67R

CNP-68L

CNP-68R

CNP-69L



CNP-69R

CNP-70L

CNP-70R

CNP-71R

CNP-71L



CNP-72L

CNP-72R

CNP-73L

CNP-73R

CNP-74L



Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



CNP-74R

CNP-75L

CNP-75R

CNP-76R

CNP-76L



CNP-77L

CNP-77R

CNP-78L

CNP-78R

CNP-79L



CNP-79R

CNP-80

CNP-81R

CNP-81L

CNP-82L



CNP-82R

CNP-83R

CNP-83L

CNP-84R

CNP-84L



CNP-85

CNP-86R

CNP-86L

CNP-87R

CNP-87L



CNP-88R

CNP-88L

CNP-89L

CNP-89R

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CNP-90R

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CNP-97L

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CNP-98

CNP-99L

CNP-99R

CNP-100R

CNP-100L



CNP-101L

CNP-101R

CNP-102R

CNP-102L

CNP-103L



CNP-103R

CNP-104R

CNP-104L

CNP-105R

CNP-105L



CNP-106L

CNP-106R

CNP-107L

CNP-107R

CNP-108L

Tiger Individuals-2015

SWS-Sonanadi Wildlife Sanctuary, CNP-Corbett National Park



CNP-108R

CNP-109L

CNP-109R

CNP-110L

CNP-110R



CNP-111

CNP-112L

CNP-112R

CNP-113L

CNP-113R



CNP-114R

CNP-114L

CNP-115L

CNP-115R

CNP-116L



CNP-116R

CNP-117L

CNP-117R

CNP-118R

CNP-118L



CNP-119R

CNP-119L