Status of tiger and Prey Species

In Panna Tiger Reserve, Madhya Pradesh

Phase IV Monitoring

2012/13 – 2015/16

[A component of ongoing WII-MPFD collaborative project and inputs in Phase IV of All India Tiger Population Monitoring Programme]

Wildlife Institute of India

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Panna Tiger Reserve, Madhya Pradesh

Submitted to:

National Tiger Conservation Authority, New Delhi
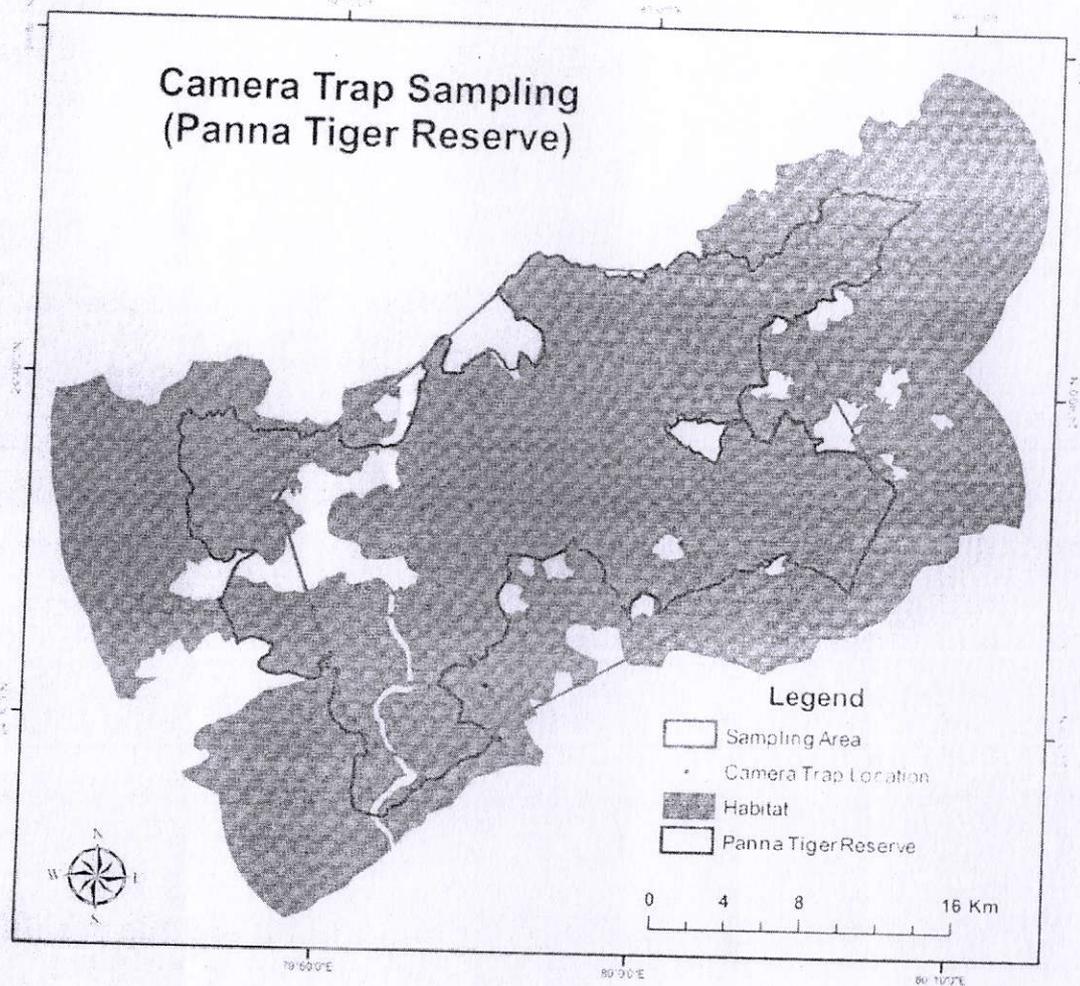
June 2016

Background:

Tiger population in Panna Tiger Reserve (PTR) was down to almost zero in 2009 and had to be restored by reinforcement/reintroduction effort. During the initial stage of reintroduction project, tiger population size remained very low and radio telemetry based intensive monitoring was implemented as the best choice with focus on each individual in the small population. This method was also helpful for managers and veterinarians to intervene at crisis period. But, after certain period of time as the population grew, understanding population status and abundance became difficult owing to their large ranges, low densities and cryptic nature. Thus, Phase IV Monitoring (as per NTCA protocol) was introduced in PTR only in the year 2012/13. WII team was primarily involved in technical support and implementation of the IV Monitoring as a part project of Tiger Reintroduction and Recover Project. However, during the year when WII the project (Phase I) ended in July 2014 and Phase II project began only in June 2015, Phase IV activity for the year 2014-2015 was not carried out. Accordingly, in this note, information on Phase IV monitoring for the year, 2012/13, 2013/14 and 2015/16 are provided.

Field Methods

Camera Trapping: Camera trap sampling design closely followed the Phase IV protocol of All India Tiger Population Estimation and Monitoring Project. The area was been gridded into 4 km² area (2 * 2 km cell) and deployment of camera traps were done in three blocks during winters of 2012/2013, 2013/2014 and 2015/2016. In first year (winter 2012/2013), 40 pair of camera traps were used to sample entire area of PannaTR in three different block. In each block camera traps were installed for 30 days each. Here we considered each day (24hr) as a single occasion. In this process 120 grids were covered and 480 km² area of tiger habitats were covered (Figure 1). In last two years (winters 2013/2014 and 2015/2016) irrespective of block design, entire gridded 480 km² area were sampled for 60 days each with using 120 pair of camera traps.

Figure 1: Distribution of camera trap locations in Panna TR core

Camera Trap Sampling (Panna Tiger Reserve)

Legend
- Sampling Area
- Camera Trap Location
- Habitat
- Panna Tiger Reserve

0   4   8   16 Km

Line-transect Sampling: Distance sampling technique was used for major prey species population estimation. A total of 42 transects each transect up to 2 km in length were surveyed in PTR during these years (Figure 2), although sampling has been done buffer in 2015/2016. The transects were surveyed during early morning hours and prey species were recorded along with their cluster size, sighting angle and angular distance, as well as the terrain type and vegetation type of the location where they were sited. All the line transects were walked in a replicate of three.

Figure 1: Distribution of line transects in Panna TR core
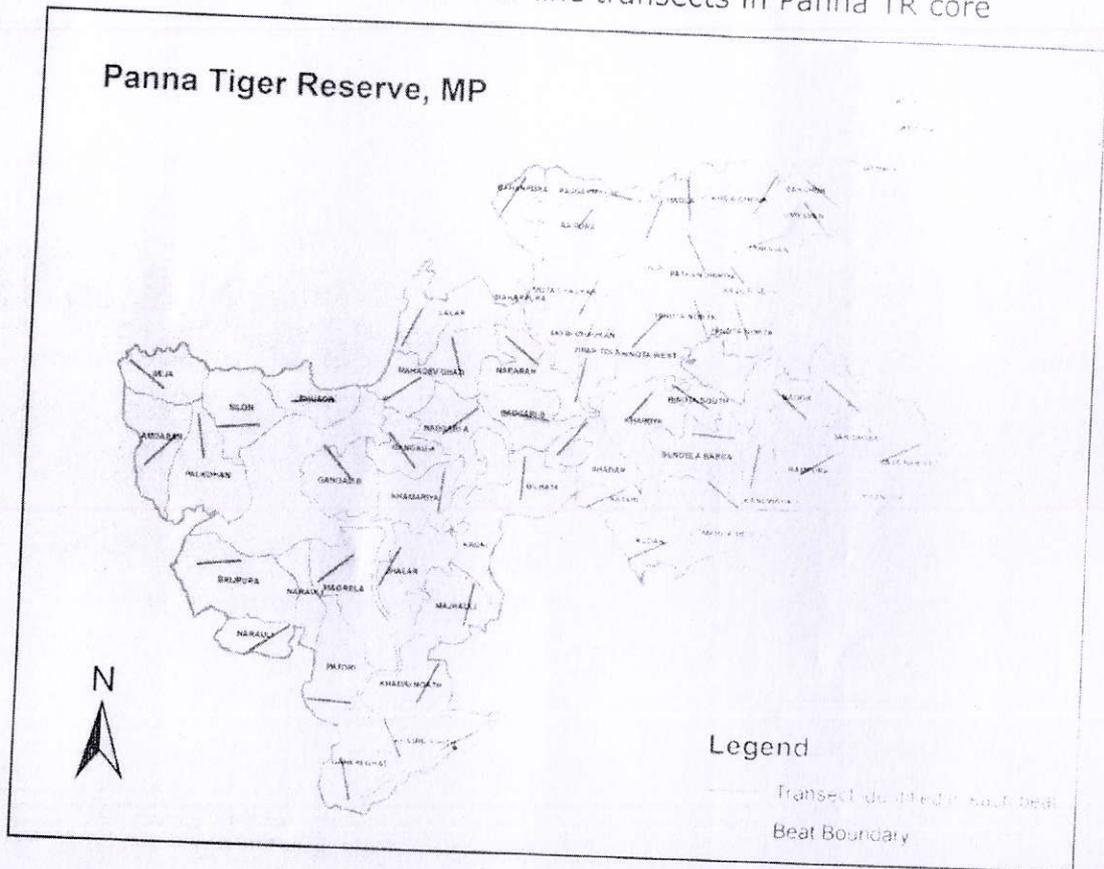
Results:

Summary of population estimates for tiger during 2012/13-2015/16

Year	Model	Individual Tiger	Capture Probability	Population Size*
2012/13	Mh-Jacknife	13	0.25	15
2013/14	Mh-Jacknife	15	0.15	18
2014/15	Not Carried Out (due to absence of WII team)			
2015/16	Mh-Jacknife	23	0.35	19

* Adult and sub-adult tigers

Summary of population estimates for prey species during 2012/13-2015/16

Table 1: Estimated prey density in PTR, during winter 2012-13

Species	Sightings on Line	Estimated Density (N/Km^2)	CV %
Langur	31	17.1	23.1
Sambar	73	13.1	16.4
Wild pig	16	4.5	31.6
Chital	22	12.5	37.2
Nilgai	73	13.4	18.4
Chinkara	12	1.1	38.2
Cattle	41	39.1	34.6

Table 2: Estimated prey density in PTR, during winter 2013-14

Species	Sightings on Line	Estimated Individual Density (N/Km^2)	CV %
Langur	124	13.5	16.5
Sambar	183	6.2	18.1
Wild pig	51	2.8	25.3
Chital	64	8.7	31.8
Nilgai	198	8.8	12.7
Chinkara	44	1.7	25.8
Cattle	128	39.8	29.8

Table 3: Estimated prey density in PTR, during winter 2015-14

Species	Sightings on Line	Estimated Individual Density (N/Km^2)	CV %
Langur	50	20.6	29.3
Sambar	103	12.5	17.6
Wild pig	20	3.7	38.6
Chital	53	5.0	29.3
Nilgai	76	9.3	17.4
Cattle	46	21.1	34.7

* Not enough sighting for chinkara on line to compute estimate