

Sloth Bear Sightings as a Population Index in Chitwan National Park, Nepal

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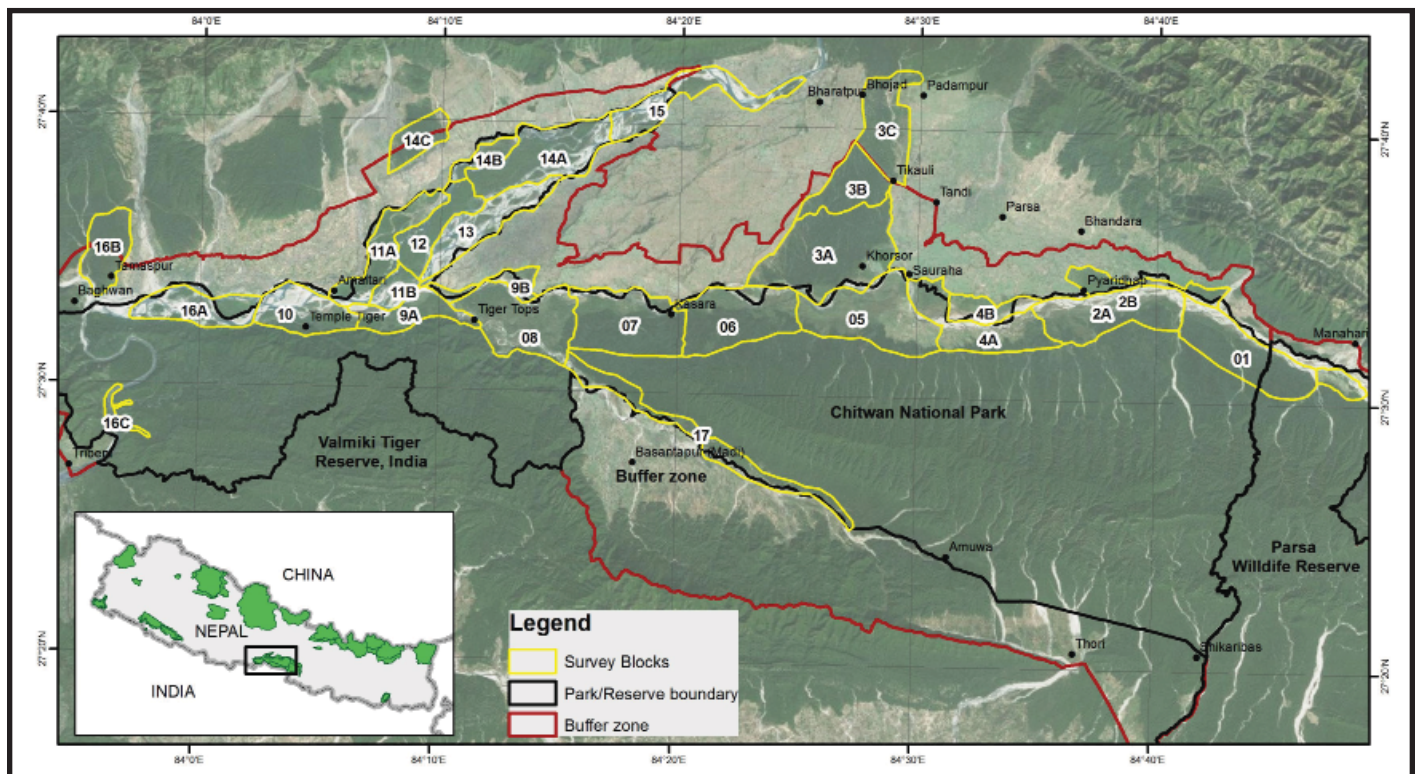
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Sloth bears are an iconic species of Chitwan National Park, Nepal. They are known to make seasonal movements between the Churia Hills and floodplains of the Rapti and Narayani Rivers (Joshi et al. 1995). They were well studied in Chitwan during 1990s but their status in recent years is unknown. It is believed that the population of sloth bears is increasing in Chitwan based on frequent sightings and bear attacks on humans (Bishnu Lama, NTNC chief wildlife technician, pers. comm.). Sloth bears are also captured frequently in camera traps, which are deployed to study tigers (Dhakal et al. 2014).

Density and abundance estimates of sloth bears is a challenging task due to their elusive nature and difficulty in identifying individually. Population trend can be assessed through their signs (scats, tracks, feeding sign, markings on trees) (Garshelis et al. 1999). Likewise, opportunistic sightings may also provide an indication of population trend. Here we present opportunistic sightings of sloth bears recorded during rhinoceros (*Rhinoceros unicornis*) surveys in 2015 (DNPWC 2015).



Rhino survey blocks in lowlands of Chitwan National Park, Nepal, buffer zone and surrounding forest area.

Biological Research

Methods

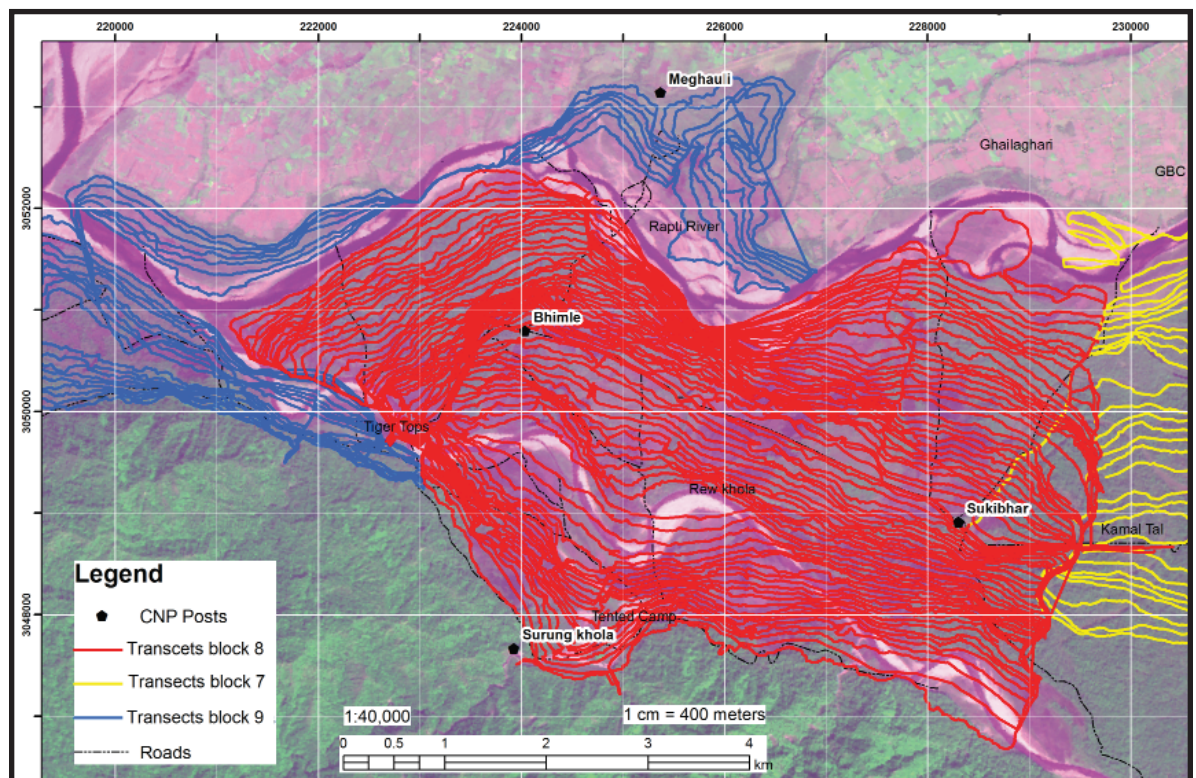
Surveys were conducted in potential rhino habitats (562-km² area in the floodplains of Rapti, Reu and Narayani Rivers) in Chitwan National Park, buffer zone forests including Barandabhar protected forest and community forests under District Forest Office, Chitwan. The survey area was divided into 17 blocks and each block was swept in a day using parallel strip transects from elephant-back. A group of 34 elephants was lined up at the beginning of the block, and traversed 10–15 km across the block at 1–2 km/hour at a spacing of 50 m in forest and 100–200 m in grasslands. This yielded complete coverage of each block (more detailed methodology in DNPWC [2009] and Subedi et al. [2013]). The survey was conducted during April 11 – May 2, 2015. A trained observer sat on each elephant's back to count and record rhinos and other animals. During such intensive sweeping many other animals were also observed. This year, we recorded the sightings of sloth bears, along with GPS locations. Communication (by radio) with adjacent transects was done immediately after recording a sloth bear sighting to avoid double counting.

Results and Discussion

Sloth bears were found widely distributed in Chitwan: they were observed in 9 of 17 survey blocks (table, above). Most sightings (20 of 28) were of single animals, but 5 were of 2 animals together and 3 were of 3 animals (most groups were females with offspring). A total of 39 animals were recorded in the 562-km² search area. Survey blocks had 184–754 km (mean ~400 km) of transects, and

Block-wise sighting record and encounter rate of sloth bears during rhino survey in Chitwan National Park, Nepal, 2015.

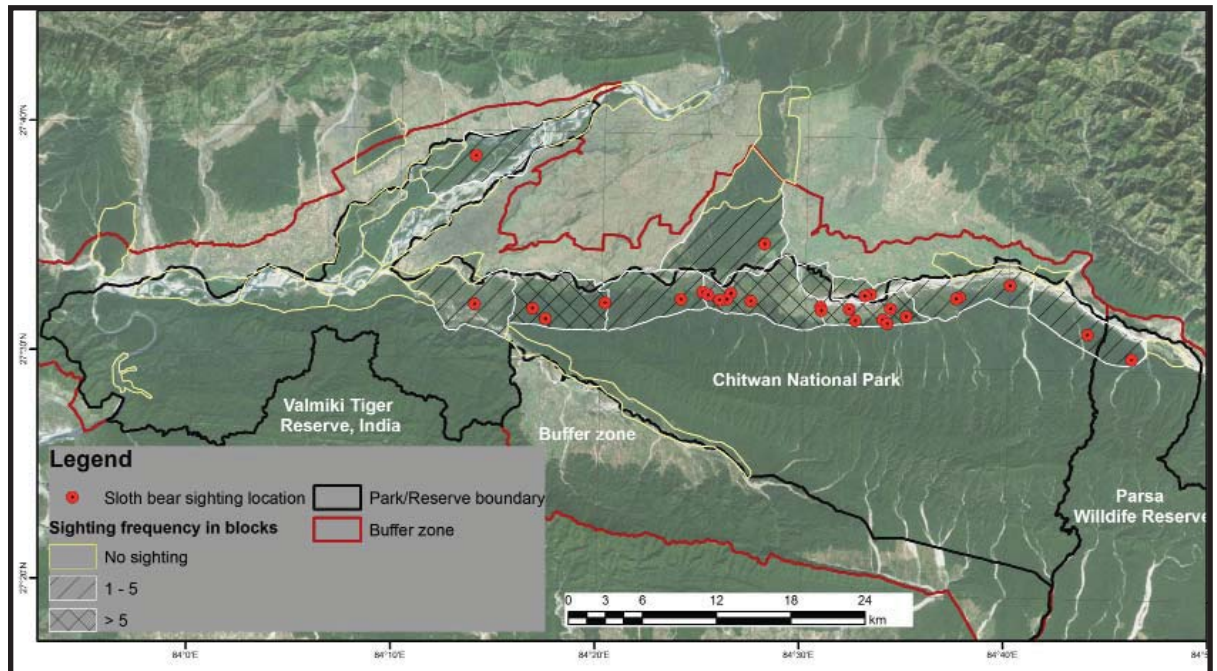
Survey block	Area (km ²)	Total length of transect (km)	Sightings	Individuals	Encounter rate per 100-km transect
1	29.2	374.5	2	2	0.51
2	37.3	412.6	3	5	1.21
3	81.5	754.6	1	1	0.13
4	58.2	462.3	8	12	2.60
5	34.6	439.0	7	9	2.05
6	29.9	313.5	2	2	0.64
7	31.9	330.8	3	6	1.81
8	30.7	687.6	1	1	0.14
9	19.7	212.3	0	0	0
10	17.2	473.7	0	0	0
11	35.9	746.3	0	0	0
12	14.4	497.8	0	0	0
13	19.7	284.1	0	0	0
14	40.0	407.8	1	1	0.25
15	20.0	275.1	0	0	0
16	37.0	250.6	0	0	0
17	20.8	184.4	0	0	0
Total	562	7107	28	39	0.55



Parallel tracks of elephants, each with a driver and observer, moving across survey block to count rhinos and bears (note: 2 sweeps were done of block 8 due to a high density of rhinos).

encounter rates varied from 0.13–2.6 sloth bears per 100 km.

Sloth bear sightings were highest in the Central and Eastern sectors: the highest was in block 4 (58 km²), where 8 sightings of 12 animals were recorded. Joshi et al. (1995), who conducted a radio telemetry study of sloth bears in Chitwan NP, also described this area as having a high density of sloth bears.



Sloth bear sighting locations in Chitwan NP during rhino survey, 2015.

Whereas the block count method yielded very similar estimates of rhinos as mark–resight estimates and tallies of individually-identified animals (Subedi et al. 2013), we assume that we undercounted sloth bears because it was a secondary task during the rhino count and there was a lot of noise from elephants and observers during count (DNPWC 2009), so some sloth bears likely fled before detection. Certainly the number of sloth bears seen does not represent the entire sloth bear population in this area, but it represents a baseline index that can be used to assess population trend in the future.



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Sloth bears (mother and offspring) sighted during the rhino survey.

Acknowledgements

National rhino count 2015 was a collaborative effort of the Government of Nepal, Department of National Parks & Wildlife Conservation, Department of Forests, National Trust for Nature Conservation and WWF Nepal. We would like to acknowledge entire 2015 rhino count team.

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