Notes on Natural History

Evidences Dependent Population Distribution Patterns of Tiger and Leopard in Similipal Tiger Reserve, Odisha, India

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Study Area: Similipal Tiger Reserve, Odisha, India

Coordinates: 21°10' to 22°12' N latitude and 85°58' to 86°42' E longitude

Key words: *Panthera tigris*, *Panthera pardus*, Tiger, Leopard

Introduction:

The Tiger (*Panthera tigris*) is an endangered carnivore with uncertain demographic status spanning 13 Asian countries. Due to its larger body size and carnivorous diet in nature it always occurs at low population densities. Further prey depletion due to overhunting (Karanth & Stith, 1998), poaching, habitat shrinkage (Kenny *et al.*, 1995, Wcs, 1995) and direct killing altogether have also become a major factor for depletion of wild tiger populations tiger. Monitoring the abundance and its alteration is always important for the effective management of endangered species. Tiger is categorized as “Endangered” on the IUCN Red List (IUCN, 2008) and listed under Schedule-I of Wildlife (Protection) Act, 1972 in India and Appendix-I of the CITES. Leopard (*Panthera pardus*) is also included in the Schedule- I of the Indian Wildlife Protection Act, 1972 and is placed under “Least Concern” category of 2002 IUCN Red List of threatened animals. Similipal Tiger Reserve is one of the largest Tiger Reserves of India with an area of 2750 km². Therefore we have to depend mainly on the direct sightings and evidence records of the animals to analysis the status and distribution pattern of these two big cats in the core area of this Tiger Reserve.

Population estimation of carnivores is extremely difficult owing to an extensive spatio-temporal distribution, secretive life, wide ranging behaviour, low detectability and low densities. Accurate information on copious and gradual alterations in copiousness is highly important for the effective management of endangered species (Gibbs *et al.*, 1999). Assessment of copiousness for any sly species having low density and wide ranging is highly required in terms and resources (Jhala *et al.*, 2011). Today, though the whole world is concerning towards conservation of big carnivores with respect to their ambient ecosystem, but yet no concrete success we have got to check their continual declinations.

Area Surveyed and Methodology:

Similipal Biosphere Reserve is located in the Central part of Mayurbhanj district of Odisha, close to the boundary of west Bengal in the North-East and Jharkhand in the North-West direction. It is the sixth largest biosphere reserve, one of the oldest tiger reserve in the country and a major biodiversity hotspot in Eastern India. Besides the reserve, it is also been considered as a part of the World Network of Biosphere Reserves by UNESCO in 2009. This Unique Biosphere Reserve is a hilly undulating

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terrain having lofty peaks, compact mass of natural forests with very rich biodiversity. Its ecosystem comes under Mahanadian bio-geographic region of tropical eastern India. Similipal contributes ~38% of the total area of the Protected Area network in Odisha.

Direct sighting incidents/evidences of Tiger and leopard were recorded separately by the forest staffs inhabiting in the in Similipal Tiger Reserve following the method proposed by (Seidensticker *et al.*, 1999; Jhala *et al.*, 2009). Further, we have tried to identify sensitive areas which needs special attention for their conservation.

Observations and Discussion :

The evidences dependent data on existences of tiger and leopard were collected during the year 2011-12 from six different core ranges of the park; Upper Barakamuda, Jenabil, Chahala, National Park, Nawana South and Pithabata. The evidences were tabulated in the form of direct sightings, pugmarks, scats, body remain of prey animals (killing evidence), roaring sound and.

In the year 2011 total 149 evidences of tiger and leopard were observed which included 62 numbers (41.61%) of evidences for tiger and 87 numbers (58.38%) of leopard. Out of such evidences pug mark evidence were maximum (57 numbers) followed by direct sightings (54), scat (13), killing evidence (12), scrape mark (11) and roaring sound (2). Maximum evidences for tiger were observed in Upper Barakamuda Range (44 numbers) followed by National Park Range (7), Jenabil Range (6), Nawana south Range (4) and Chahala Range (1) whereas highest evidences for leopard were observed in Upper Barakamuda Range (81 numbers) followed by equal (2) number of evidences from Jenabil, Chahala and National Park Ranges. For both the animals no such evidences were observed from Pithabata Range.

During the following year (2012) total 91 evidences of tiger and leopard were observed consisting of 61 numbers (67.03%) of tiger evidences and 30 numbers (32.96%) of leopard evidences. Out of such evidences direct sighting was highest (30 numbers) followed by pug mark (28), scat (16), killing evidence (13) and scrap mark (4). In this year highest number of tiger evidences were observed in Upper Barakamuda Range (46 numbers) followed by Jenabil Range (7), Nawana south Range (4), National Park Range (3) and Chahala Range (1). Highest number of leopard evidences was observed in Upper Barakamuda Range (14) followed by

Map indicating Study area

Figure-1: Range wise overall tabulated evidences of tiger and leopard

Figure-2: Evidence wise estimation of existence of tiger and leopard

Chahala Range (8), Jenabil Range (4), National Park Range (2) and equal 1 number of evidences from Nawna south and Pithabata Range. Detailed Observation of tiger and leopard evidences for the year 2012 are given in Fig.- 1&2.

Season-wise observations revealed highest number of direct sightings during winter (November-January) and spring (February-April) seasons. Spring and winter could be suggested as the best seasons for monitoring the population dynamics of these cats. Though the Similipal tiger reserve is hilly terrain some of the potential areas remain inaccessible during the rain. Moreover, most of the evidences in rainy season get damage due to water. Nevertheless, in summer during walking shedding of dry leaves become major factor of disturbances for animals. Evidence remain hidden under the dry leaves thus becomes difficult to access them.

Discussion:

In the present study we found maximum evidences for the existences of both the cats in the Upper Barhakamuda region which is in the southern part of the tiger reserve where anthropogenic activity is strictly prohibited. All types of habitat like grassland, meadow, dense forest along with availability of perennial water sources are some of the reason due to which the chances of availability of more prey species increases in this Range which leads to observation of more tiger and leopard evidences in this Range. Interestingly, except in Chahala and Nawna South zones, the evidences occurring patterns for both the cats were almost same (figure-2) in other studied areas. Tiger activity was comparatively more than leopard in the Chahala whereas the reverse was evidenced for Nawna South zone. Human population inside Similipal Tiger Reserve has increases since 1961 particularly in the northern part of the Similipal. Up to the year 2004, tigers were distributed throughout the tiger reserve, but our recent records plead gradually the tigers are moving towards south Similipal. More or less the Leopards are also following the same trend.

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