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Distribution of leopard cats in Similipal Tiger Reserve, Mayurbhanj, Odisha

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ABSTRACT

In this study, the distribution patterns of leopard cats in Similipal Tiger Reserve using camera trap methods were studied. The leopard cat, *Prionailurus bengalensis,* is a common spread small cat in Asia which is mainly nocturnal and solitary in nature. A rapid camera trapping survey was conducted to study the distribution during 2016 in Similipal Tiger Reserve. During the survey, 156 nos of Leopard cats were captured covering both core and buffer division of Similipal Tiger Reserve. Maximum leopard cats were captured form Similipal core division (103) followed by Baripada division (36), Karanjia division(10) and Rairanagpur division(07). Similarly range wise maximum Leopard cats captured from Upper Barakamuda range(56%) followed by Jenabil range(17%), Pithabata range(10%), Chahala range(5%), Nawana South range(5%), National park range(4%) and Nawana north range(3%).

Key words: Camera trap, distribution, leopard cat, Similipal Tiger Reserve

INTRODUCTION

There is existing 28 species of lesser wild cats in the world among them 10 species are thriving in India (Nowell and Jackson, 1996). The increase in human population, spread of settlement and exploitation of natural resources of wild lands, together with persecution are threatening some species with extinction. For other cat species worldwide population decline was observed. Conservation initiatives were taken in every part of the world to ensure survival of threatened species. For effective species conservation and management, an understanding of species ecology with population trend constituent is vital, particularly if the species forms an important constituent of the lesser mammalian guild and that regulates small mammal populations. Only a few studies on their ecology including distribution and abundance were carried out in India (Das et al., 2019; Palei et al., 2021). Apart from the four big cats the small ones do not feature in any major research or conservation planning.

The estimation of abundance and density for cryptic and secretive species is extremely difficult in the field (Trolle and Kerry, 2003). Recently, camera trapping associated with capture recapture studies has proved effective for elusive and nocturnal species (Karanth, 1995; Trolle and Kerry, 2003; Palei et al., 2021). It has successfully been used for individual identifiable large carnivores such as tigers, leopards and hyenas, but there are comparatively few studies that have been carried out on smaller carnivores (Palei et al., 2021). The leopard cat is a wide spread common small cat in Asia, across the range of habitats from tropical rain forest to temperate broadleaf and marginally coniferous forest as well as shrub forest and successional grasslands (Sanderson et al., 2008). This species is considered as least concern (LC) by IUCN

and CITES listed in appendix 1. A radio collared study in Thailand revealed that the home range size of the leopard cat was 12.4 km^2 with daily movement of 1298 m (Grassman et al., 2005). The small Asian felids are poorly represented in felid studies (Grassman et al., 2005) and information on leopard cats was surprisingly scanty in Odisha. The general ecology of leopard cats (Grassman, 2000; Austin, 2002) and their diet and movement pattern was studied in Thailand (Grassman et al., 2005).

Lesser wild cat populations are threatened throughout their extant range in India by habitat loss, conflict and wildlife trade. The distribution pattern of the leopard cats is unknown in Similipal Tiger Reserve. Therefore, it is essential to study the distribution pattern of leopard cat through camera trap. This was the first kind of study through camera trap in Similipal Tiger Reserve (Mayurbhanj, Odisha, India) which is very important for conservation, management and scientific purpose.

Study area

Similipal Tiger Reserve located in the Mayurbhanj District of Odisha (Fig. 1) spreads over 2750 km^2 of the Chotanagpur plateau. The park is surrounded by high plateaus and hills, the highest peak being the twin peaks of Khairiburu and Meghashani (1515 m above mean sea level). At least twelve rivers cut across the plain area, all of which drain into the Bay of Bengal. The prominent among them are Budhabalanga, Palpal, Bandan, Salandi, Khairi, Khadkei, Budhabalanga, West Deo, East Deo. Earlier studies record 1254 species of vascular plants including 94 species of orchids in Biosphere Reserve (Sahoo et al., 2016). It hosts 55 species of mammals, 304 species of birds, 60 species of reptiles, 21 species of frogs, 60 species of fishes and 164 species of butterflies that have been recorded from the park (Mishra and Mohan, 2019). The core area comprises of ranges with an area of 1194.75 km^2.

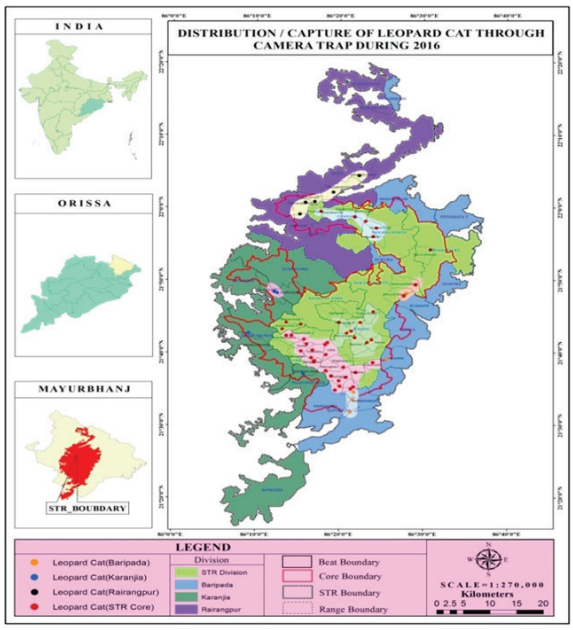

Fig. 1. Showing the study area and distribution of leopard cat in Similipal Tiger Reserve

Camera trapping

Camera-trapping has long been used to survey for and monitor the occurrence of wildlife species around the world (Karanth, 1995). Much attention has been focused on using camera-trapping to detect otherwise elusive species. Over the time, these efforts have been replaced by more systematic sampling approaches, often centered on identifying individual animals in a mark-recapture framework. Karanth (1995) used to estimate their population abundance from photographs and indices are often used to make inference about differences in abundance across time, space and species. The camera trap survey was carried out from February 2016 to May 2016 for the purpose of Tiger estimation survey inside Similipal Tiger Reserve.

MATERIALS AND METHODS

The success of camera-trapping depends on the selection of ideal locations to deploy the camera traps so as to maximize the number of captures. Prior to camera placement, survey is done along the forest paths, animal trails, dirt-trackers, dried stream bed to record carnivore

presence through indirect signs (pug marks, tracks, scat, scraps, rake marks, scent deposits and kills). Potential location of camera trap stations was then mapped using ArcGIS 9.3. During the exercise camera were deployed a sampling grid of 4.0 km^2 (2.0 × 2.0 km) in the core area and buffer area of Similipal Tiger Reserve. A pair of (Cuddy back 1) camera traps was placed opposite to each other so as to photograph of both flanks of animal can captured.

Camera trapping exercise was conducted from February-May 2016 for 119 days. The cameras were active 24 h period that accounted for one sampling occasion. 623 sites were selected for deployment of camera traps in the core area and buffer area of Similipal Tiger Reserve. Each camera was assigned a unique identification number. Date, time, and camera ID was recorded for every capture. The locations of each photo-capture of Leopard cat were recorded and mapped over Similipal Tiger reserve to understand their geographic distribution in the study area.

RESULTS AND DISCUSSION

Conservation of large felids is a major focus of many wildlife programmes. However, lesser cats have received limited academic as well as conservation attention. The current study establishes base line information on leopard cat in the region. Similipal is the richest watershed in Odisha giving rise to many perennial rivers. Four types of forest habitat such as semi evergreen, tropical moist deciduous, dry deciduous hill forests and high level sal forests found in Similipal Tiger Reserve. The major plant species include *Shorea robusta, Dillenia pentagyna, Syzygium cumini, Terminalia tomentosa, Syzygium cerasoides, Michelia champaca, Bombax ceiba, Schleichera oleosa*. Perennial river streams crosses all over the forest. Leopard cat photographs captured in main forest track as well as fitted in interior animal trails (foot path) and both areas covered with moist deciduous and semi evergreen forest and inhabited with perennial river stream (Fig. 2A/2B).

During the camera trap survey, total leopard cats (N=156) were captured at both the core and buffer division of Similipal Tiger Reserve. Maximum leopard cats were captured in Similipal core division (N=103) followed by Baripada division (N=36), Karanjia division (N=10) and Rairangpur division (N=07). Similarly in Similipal core division, maximum leopard cats were captured in upper Barakamuda range (N=58) followed by Jenabil (N=18), Pithabata (N=10), Chahala(N=05), Nawana-South(N=05), National Park (N=04) and Nawana-North(N=03) (Fig. 3A/3B).

Fig. 2A. Leopard cat captured through camera trap in Similipal Tiger Reserve

Fig. 2B. Leopard cat captured through camera trap in Similipal Tiger Reserve

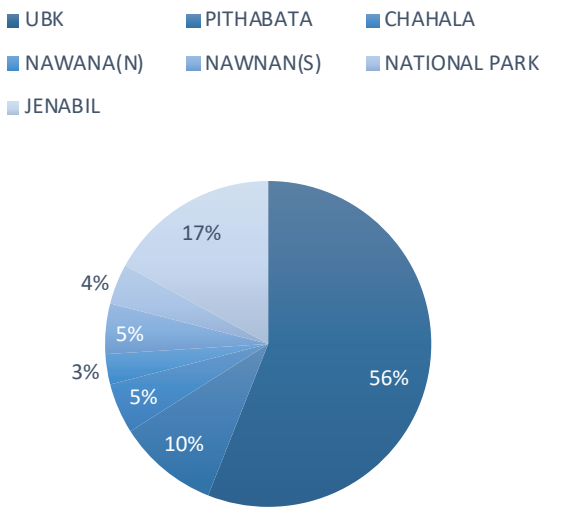

Fig. 3A. Range wise Leopard cat captured during the exercise in Similipal Tiger Reserve

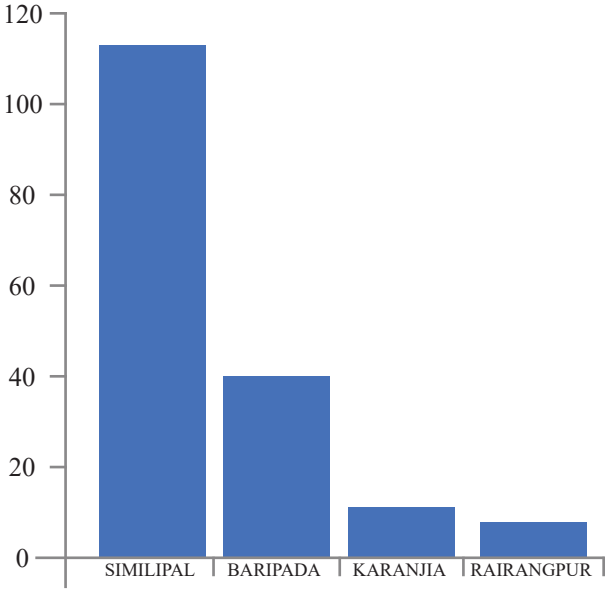

Fig. 3B. Range wise Leopard cat captured during the exercise in Similipal Tiger Reserve

CONCLUSION

The ecology and population status of the leopard cats are poorly known in India. In Similipal Tiger Reserve studies using methodology like camera trapping will be beneficial for the purpose to develop improved species conservation and management plan for leopard cat as well as lesser-known animals.

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