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CAMERA TRAP STUDY ON MELANISTIC LEOPARD POPULATION IN KALI TIGER RESERVE

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ABSTRACT

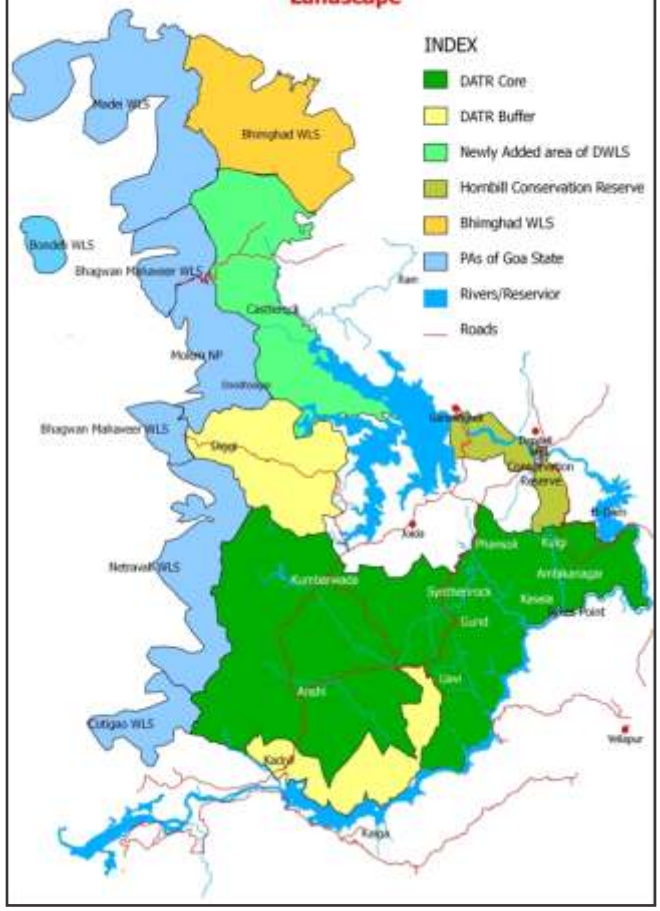
Animal monitoring is the key tool in the hands of park managers to effectively manage the forests and wildlife. Advances in the field of Wildlife science provide scope in this regard. Elusive Melanistic leopards or Black Panthers are more commonly found in the Dandeli-Anshi Tiger Reserve (Now renamed as Kali Tiger Reserve) as compared to other protected areas of Karnataka. Camera trap survey was conducted in the forest ranges of Kulgi, Phansoli, Gund and Anshi during January to June 2015. In this study an effort has been made to estimate the percentage of melanistic individuals in total leopard population. 94 pairs of Camera traps were placed covering 763 Km^2 area for 49 days in two blocks. Based on the image data the percentage of Melanistic animals in total leopard population has been derived.

Key words: Camera trap survey, Protected areas, Melanistic leopards, Sightings, Encounters.

Introduction

Kali tiger reserve is located in Western Ghats of Karnataka in Uttar Kannada district. The tiger reserve comprises of two important protected areas of the region *viz.,* Dandeli Wildlife Sanctuary and Anshi National Park covering an area of 1345 Km^2 (Map 1) Both protected areas are contiguous to each other and are a home for large carnivores like Tigers *(Panthera tigris)*, Leopards (*Panthera pardus*), Dhole *(Cuon alpinus)* and Sloth Bears *(Melursus ursinus)* and others. Leopards have highest distribution among all wild cats found. They show a great diversity in coat colour and rosette patterns. Individual Leopards can be distinctly identified based on their rosette pattern. Melanistic leopard commonly called *Black Panther* is found in these forests. *Melanism* is more common in denser and humid forests as compared to dry forests. It provides additional advantage of being camouflaged with darker environment. Melanism is a development of dark-coloured pigment "melanin" in the skin or its appendages and is the opposite of albinism. It is inherited as single recessive gene trait relative to its spotted form. The degree of melanism also varies between different melanistic individuals from jet black colour to light black where rosettes are also visible. The camera trap survey conducted to monitor large mammals inside the tiger reserve has showed the presence of both forms of leopards. Melanistic forms cannot be distinguished individually and hence based on photographs the percentage of melanistic forms as against total leopard population is calculated. Since normal leopards could be individually identified and their density can be calculated using different statistical methods melanistic leopard densities could also be derived relatively.

MAP-1 **Dandeli-Anshi-Khanapur-Goa Landscape**



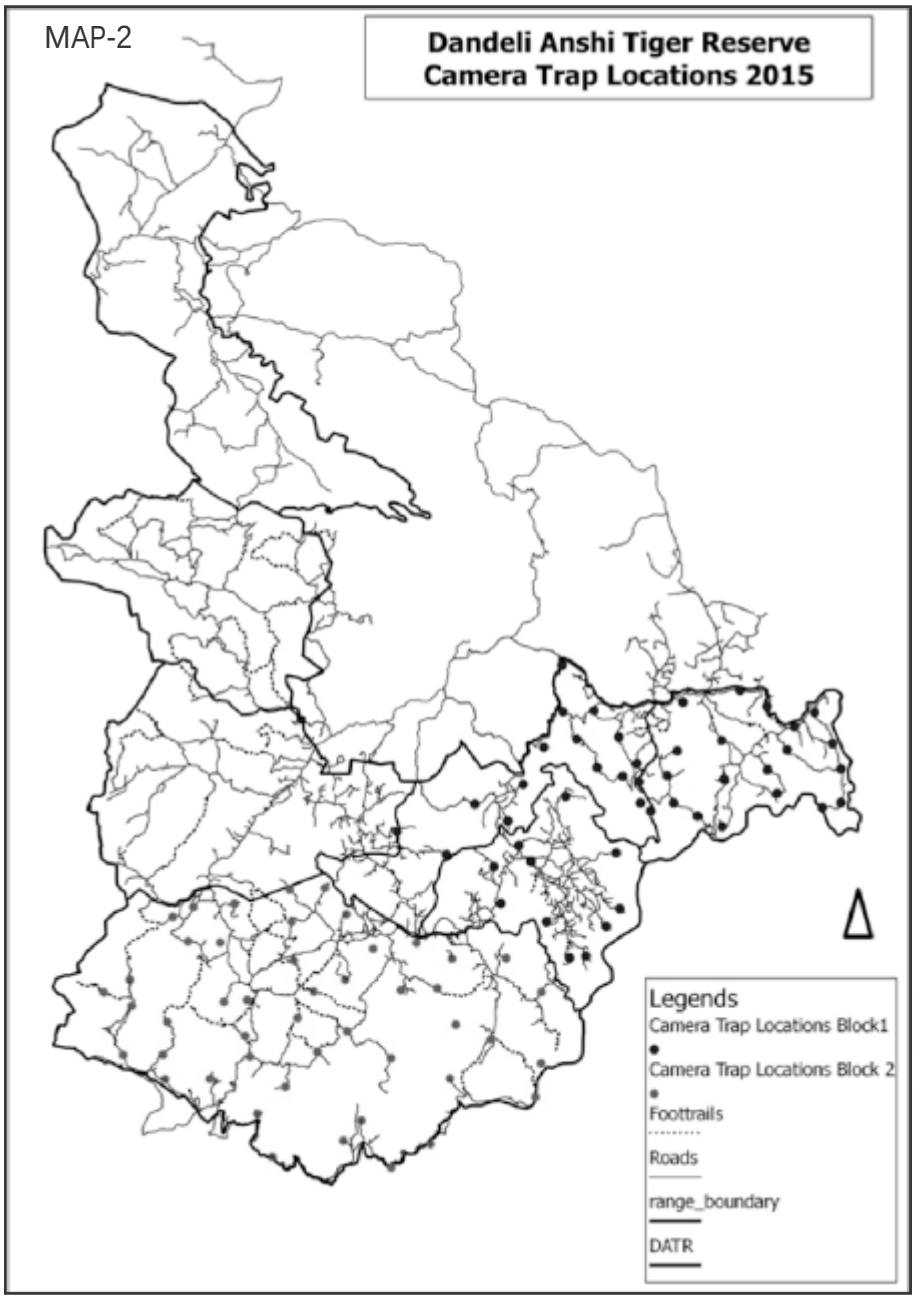
The present study, using modern tools of Camera Trapping, revealed statistical and quantitative estimation of melanism as 14 % of total leopard encounters in the study area.

Material and Methods

With the advancement of Wildlife Monitoring techniques camera trap survey is done to estimate densities of large carnivores using capture-recapture sampling and also to assess their relative abundance. Simple quantitative index consisting "camera trap encounters" (photographic captures) is used to derive results in this study. (Karanth and Nichols, 2002)

Due to the logistical constraint on availability of camera units the sampled area was divided into two blocks. Block one covered Kulgi, Phansoli and Gund forest ranges and Block two consisted Anshi forest range.

The camera trap survey conducted as per National Tiger Conservation Authority protocols (National Tiger Conservation Authority, *National Tiger Conservation Authority (2012) Protocols for the establishment of a National Repository of Camera Trap Photographs of Tigers.*, Government of India, New Delhi, India.) at 94 locations by placing two camera units at each location. These locations were selected based on inputs from field staff surveying forest roads, trails for carnivore signs like tracks, scats and scrape marks. Two camera units were placed such that both flanks of an animal could be photographed. The survey was carried out in two blocks with 47 locations in each block. (Map 2) The sampling was



carried out for 49 days in each block (Table 1). Forest type in the first block was mostly moist deciduous to dry deciduous type. Forest type in the second block of Anshi range was mostly semi-evergreen type. All camera trap locations were given a distinct ID and their GPS locations were noted down. Scout Guard motion sensor cameras were used in the study. Camera units and memory cards used for the survey were also marked with distinct numbers. The field staff monitored camera units regularly and data in the form of memory cards was submitted to the concerned range offices on weekly basis along with field datasheets. All photographic data was copied to individual camera location folders with details of field personnel submitting data. This photo data was segregated into different mammal species of interest. Data from two memory cards of a location were carefully examined and opposite flanks of the animal were tagged together by checking the date, time and position of the animal. Each photograph obtained was treated as an encounter. Every sighting of an animal will have two encounters when it's both opposite flanks were photographed and will have one encounter when single flank was photographed. The encounter data has been used to derive results in this study.

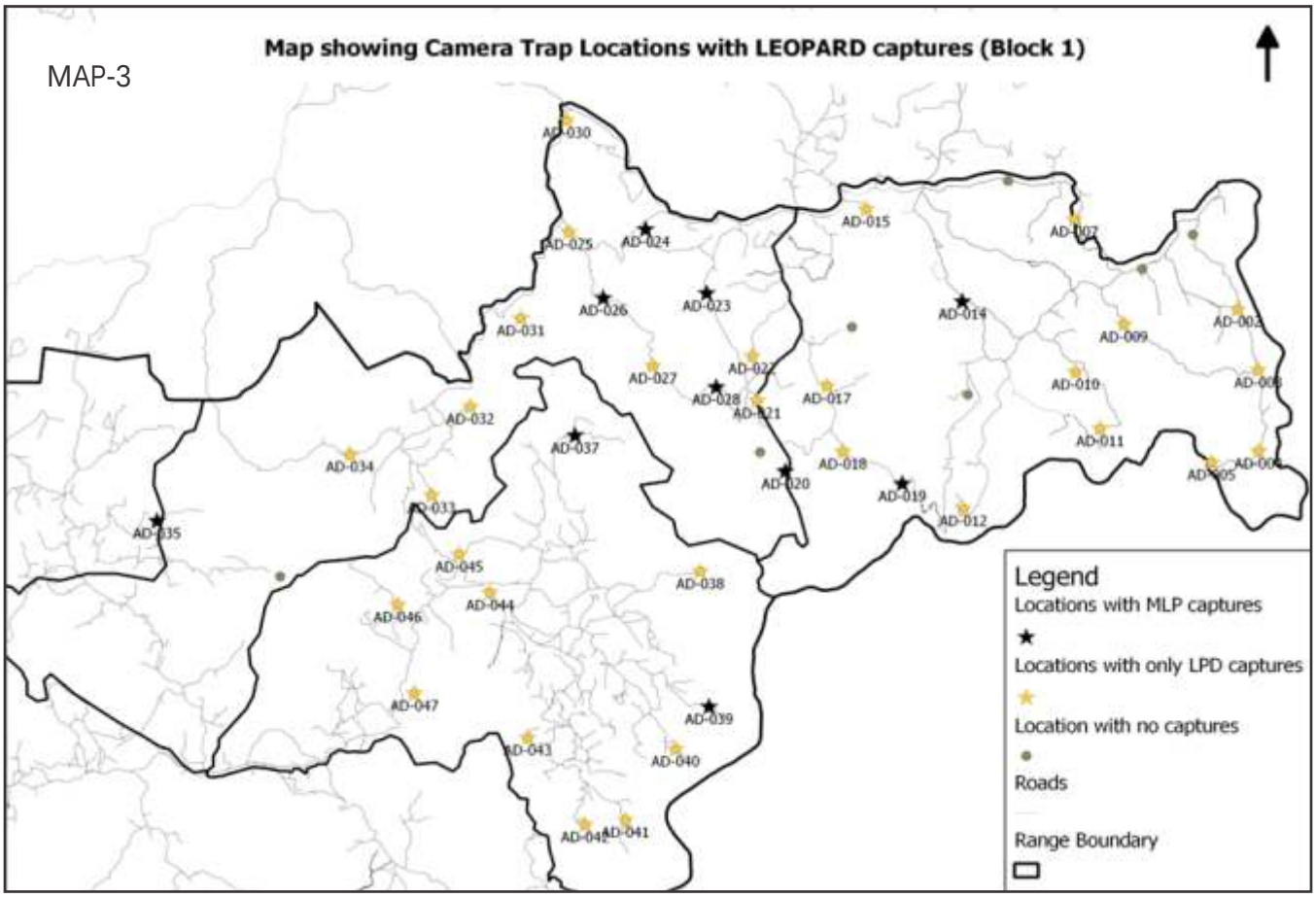
Results and Discussion

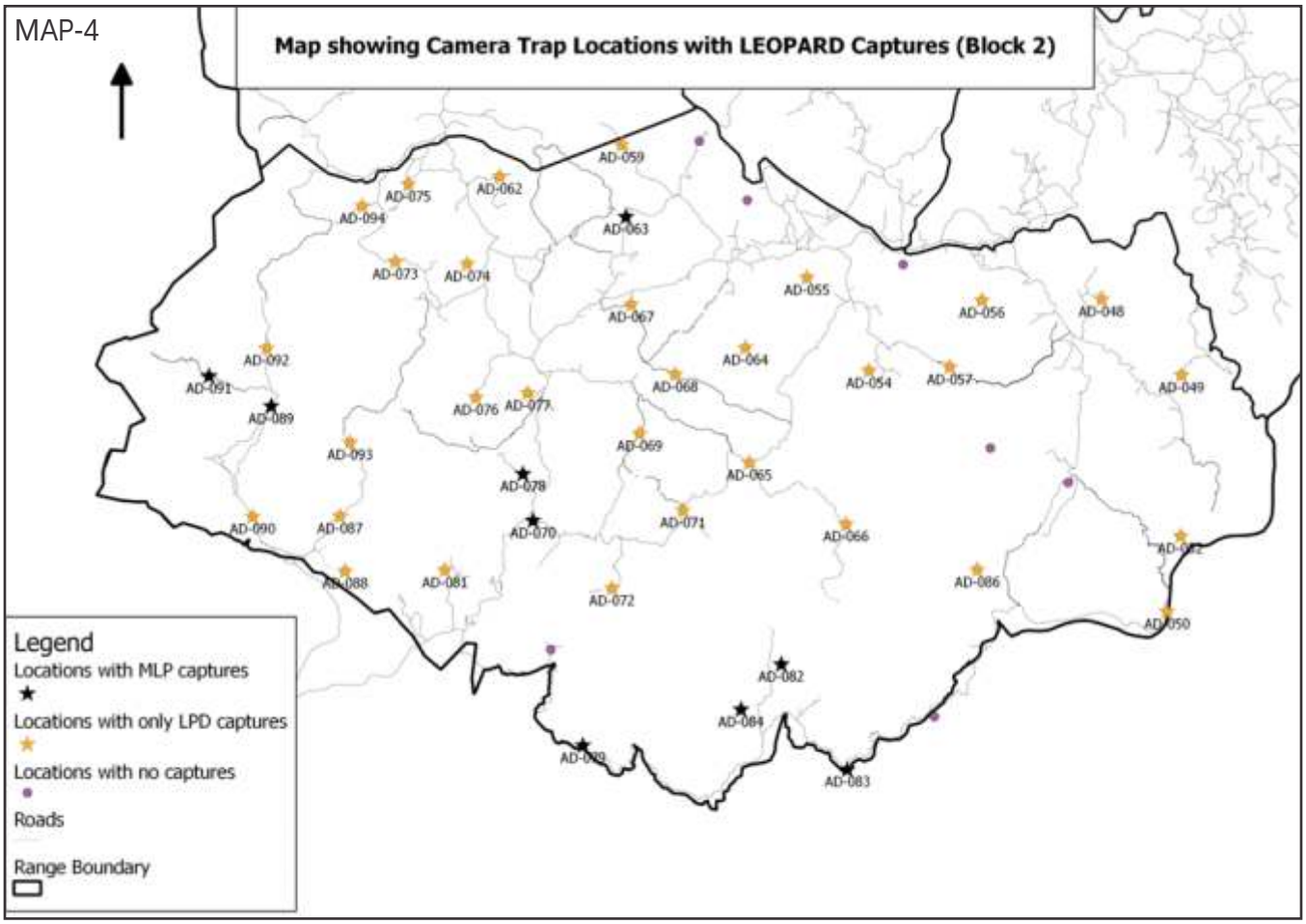
Results of camera trap survey shows distribution of Melanistic forms all over the sampled area. (Map 3 and 4) Variations in coat colour showing different degree of melanism were also seen. One photograph of adult Melanistic leopard along with normal cub was also recorded in Gund range. After completing the trap effort of 2303 days in each block following results were noted.

In the first block of Kulgi, Phansoli and Gund ranges with total sampling effort of 2303 days in 47 locations with 49 sampling occasions, 36 encounters of Melanistic leopards were recorded against 223 encounters of normal type revealing 13.89 per cent in total encounters. In the second

Table 1: Showing surveyed area, sampling period and trap efforts

Block	Forest ranges and area in km^2	Camera trap locations	Sampling period	Sampling occasions	Total sampling effort (days)
1	Kulgi, Phansoli, Gund (346 km^2)	47	17-Jan to 06-Mar 2015	49	2303
2	Anshi (417 km^2)	47	27-Apr to 15-June 2015	49	2303





block covering Anshi range with total sampling effort of 2303 days in 47 locations with 49 sampling occasions, 47 encounters of Melanistic leopards were photographed against 286 encounters of normal ones revealing 14.11 per cent in total encounters (Table 2, Fig. 1).

Conclusion

On the basis of various articles (Karnataka Forest Department (2014) *Tiger Conservation Plan, Dandeli-Anshi Tiger Reserve*. Karnataka Forest Department, Karnataka, India) and local knowledge it was known that Melanistic Leopards are found in good numbers in these forests. But there was no adequate data to as certain the exact number of Melanistic individuals in total leopard population. In this study after sampling in area of about 763.00 sq. kms with a sampling effort of 2303 days an attempt has been made to estimate this percentage. It is found that on average 14% of total leopard captures have shown the effect of melanism in these forests.

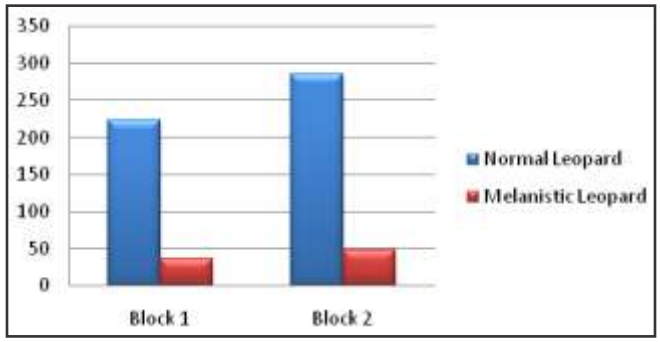


Fig. 1: Graphical representation of Melanistic leopard encounters as compared with normal leopards

Table 2:

Camera trap block	Sampling effort In days	Total number of encounters		Melanistic leopard percentage
		Normal leopard	Melanistic leopard	
Block 1	2303	223	36	13.89
Block 2	2303	286	47	14.11

काली टाइगर रिजर्व में अतिकृष्ण तेंदुआ आबादी पर कैमरा ट्रैप अध्ययन

श्रीनिवासूलू और एस.डी. कामत

सारांश

वनों और वन्यजीवों के प्रभावी प्रबंधन के लिए पार्क प्रबंधकों के हाथ में पशु अनुवीक्षण मुख्य साधन है। इस संबंध में वन्यजीव विज्ञान के क्षेत्र में उन्नतियां सुअवसर उपलब्ध कराती हैं। दुर्ग्राहय अतिकृष्ण तेंदुआ अथवा ब्लैक पैंथर कर्नाटक के अन्य संरक्षित क्षेत्रों की तुलना में डंडेली–आन्शी टाइगर रिजर्व (अब काली टाइगर रिजर्व के रूप में जाना जाता है) में आम तौर पर ज्यादा पाया जाता है। कुल्गी, फन्सोली, गुंड और आन्शी के वन रेंजों में जनवरी से जून, 2015 तक कैमरा ट्रैप सर्वेक्षण किया गया। इस अध्ययन में कुल तेंदुआ आबादी में अतिकृष्ण एकलों की प्रतिशतता का आकलन करने के लिए प्रयास किए गए। दो ब्लॉकों में 49 दिनों के लिए 763 वर्ग कि.मी. क्षेत्रफलन को कवर करके कैमरा ट्रैपों के 94 जोड़े रखे गए। इमेज ऑकड़ों के आधार पर कुल तेंदुआ आबादी में अतिकृष्ण पशुओं की प्रतिशतता निकाली गई।

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