

## Short Communication

# Ecobehaviour study and status of striped hyaena (*Hyaena hyaena* Linnaeus, 1758) in South Western Rajasthan, India

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Accepted 10 May, 2011

The South-western Region of Rajasthan, (India) is known for its rich biodiversity including many endemic species. This study focuses on ecobehaviour and the status of the striped hyaena (*Hyaena hyaena* Linnaeus) in two wild life sanctuaries (Kumbalgarh Wildlife Sanctuary viz. KWS and Mount Abu Sanctuary) which are located in south western Rajasthan. In our survey of winter 2009 to 2010 (November to December 2009 and January to February 2010) in the Kumbhalgarh Wildlife Sanctuary (KWS), we have observed thirty eight hyenas on twenty seven incidences (eighteen times solitary animals, seven pairs and two packs of 3 animals). In the Mount Abu Sanctuary there were 46 hyenas on thirty six incident (twenty-eight of solitary animals, six pairs and two packs of 3 animals). All sightings were either at foothills or in the valley between two hills.

**Key words:** Kumbalgarh Wildlife Sanctuary (KWS), Mount Abu Sanctuary, hyaena, sightings.

## INTRODUCTION

The striped hyaena is one of the largest carnivores in India. No accurate numbers of the hyaena population are available in this region. The striped hyaena (*Hyaena hyaena* Linnaeus) is regarded rare and kept under schedule I of the Wildlife (Protection) Act-1972. The numbers of this predator have been declining steadily due to habitat destruction and consequently, the distributional ranges of this species are shrinking. They are in need of complete protection. The striped hyena (*H. hyaena*) is classified as near threatened by the IUCN.

The study area is also known for its rich contents of biodiversity including many endemic species. The arid zone ecosystems in India are of great conservation interest because of their unique faunal assemblages, which are under serious threat of habitat degradation due to a variety of anthropogenic pressures (Kumar and Shahabuddin, 2005; Hocking and Mattick, 1993; Khan and Frost, 2004). However, such ecosystems occupy 11.8% of the Indian subcontinent (Shankararayan et al., 1987) and extend into western Asia. Despite tremendous anthropogenic pressures, these regions still support a

rich and varied large mammalian fauna. The order 'Carnivora' has attracted scientific attention due to its unique inter-specific diversity with respect to variations in behavioral and ecological adaptations. They have a tendency to come into conflict with humans, because of large home range requirements and a diet of meat which often includes livestock. There are several studies of large predatory carnivores in the Indian subcontinent. The diverse topography of the area and the precambrian remnant in the form of the Aravalli hill range harbor a dry deciduous forest dominated by *Anogeissus pendula*, *Anogeissus latifolia*, *Boswellia serratta*, *Butea monosperma* and *Acacia senegal*.

Large carnivores are generally most threatened by human impacts. Densities of striped hyenas appear to vary greatly across their range and factors driving this variation are poorly understood because of the paucity of rigorous studies. Measuring densities of hyenas under ecologically different conditions would thus help to assess the factors that determine hyena distribution and abundance as well as their ability to survive in human dominated landscapes under severe anthropogenic pressures. This comparative study will be conducted across two landscapes in this region of India that varies in terms of basic ecology, human impacts as well as

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management status.

The *a priori* hypotheses were: Hyena densities were likely to be (1) positively correlated to livestock densities because of their value as a food source, (2) positively correlated to the proportion of steeper terrain that provided hiding and breeding refugia and (3) positively correlated to land use regimes that regulated excessive human pressures under protected area status. These hypotheses were tested by estimating hyena densities at the site, photographic capture-recapture sampling methodology was applied to estimate abundances and densities of hyenas in the study area, based on the ability to distinguish individual hyenas from their unique stripe patterns from camera trap images. Secondary data on livestock numbers and the presence of livestock in hyena diet derived from scat studies was used to elucidate the impact of livestock on hyena abundance.

Hyena densities were high in both sanctuaries supporting the hypotheses that these densities were high in this area because of greater availability of hilly terrain and a greater degree of protection offered by the protected area status that prevailed at both sanctuaries. From a wildlife management perspective, this study proved that striped hyena numbers and densities could be rigorously monitored for conservation purposes using photographic capture-recapture sampling.

This animal is on the list of Red Data Book of IUCN. Hyena does not only feed on carrion, but it also preys on sheep, goats and calves. It also eats vegetables and fruits (Sharma and Ram, 2010). There has been an intense human hunting on the hyena in recent years. The wildlife in general and the carnivores in particular have suffered greatly with the introduction of motor vehicles and firearms in the last century as well as from habitat destruction. Rajpurohit (1988) have reported an attack on humans being by a rabid hyena which was later killed by local people in the same area.

## METHODS

One of the selected study areas has 165 km<sup>2</sup> and is located within the Kumbhalgarh Wildlife Sanctuary (KWS) which covers a total area of 610 km<sup>2</sup> extending from 73° 15' E on the west, to 73° 45' E on the east. It is bounded by the 25° 00' N and 25° 30' N latitudes in the north and south. The average annual rainfall received by the region is 73 cm mainly from the South Western monsoon. Annual temperatures can vary from 2°C in January to 46°C in June. The second area is the Mount Abu Sanctuary which comprises the oldest mountain ranges, (The Aravali). It was declared as a Wildlife Sanctuary in 1960. Apart from having several sightseeing places this sanctuary draws nature lovers and has great potential for Eco-tourism. This sanctuary is long and narrow but the top spreads out into a picturesque plateau which is about 19 km long and 5 to 8 km in breadth. The rocks are igneous and weathering by wind and water created many large cavities in the rocks. This feature is typical of Aravali and particularly of Mount Abu. Mount Abu has a very rich floral biodiversity starting with a xenomorphic subtropical thorn forest at the foot hills to subtropical evergreen forest along water courses and valleys at higher altitudes.

Numbers of individual hyena were recorded at distance, using a

10 × 50 mm prismatic field binocular for direct observation of the animals in the field. Scanning and *ad Libitum* methods (Altmann, 1974) were used. Dens of hyena and wolves were identified with the help of local people especially the shepherds being victims as their goats and sheep are killed/dragged by hyena and or wolves.

## RESULTS AND DISCUSSION

The diverse topography of the area and the precambrian remnant in the form of the Aravalli hill range harbor a dry deciduous forest dominated by *A. pendula*, *A. latifolia*, *B. serratta*, *B. monosperma* and *A. senegal*. The area hosts two felid species namely: *Panthera pardus* and *Felis chaus*; two canid species comprising *Canis aureus* and *Canis lupus*, one primate species viz. *Semnopithecus entellus* (Mohnot, 1974; Roonwal and Mohnot, 1977; Rajpurohit, 1987; Sharma, 2007) four ungulate species namely: *Boselaphus tragocamelus*, *Gazella bennetti*, *Tetracerus quadricornis* and *Cervus unicolor* (Jerdon, 1874; Prakash, 1974; Prater, 2005. Rahamani, 1997). *Melursus ursinus* is also found in the region (Chhangani, 2002). Legally Kumbhalgarh and Mount Abu are Wildlife Sanctuary, where theoretically the habitat is protected from human pressures except for regulated and managed grazing. These are administered by the Rajasthan Forest Department as a wildlife reserve for conservation and wildlife tourism purposes. Both wildlife sanctuaries are surrounded by several human settlements, highly dependent upon the forest for grazing livestock and to collect forest products like fodder, firewood, honey and *Diospyros melonoxylon* and *Madhuca longifolia* fruits. Quite often such multiple use of the reserve exceeds legal limits or restrictions.

In our survey of winter 2009 to 2010 (November to December 2009 and January to February 2010) in the Kumbhalgarh Wildlife Sanctuary (KWS), we have observed thirty eight hyenas on twenty seven incidences (eighteen times solitary animals, seven pairs and two packs of 3 animals). In the Mount Abu Sanctuary there were 46 hyenas on thirty six incidents (twenty-eight of solitary animals, six pairs and two packs of 3 animals). Hyenas do kill and eat sheep and goats, killing sometimes more than they can eat. Not uncommonly, they attack shepherds or their families. The sightings of hyenas are either at foothills or in the valley between two hills. We also heard night crying of hyenas during late evenings. The striped hyena is one of the largest carnivores in India. No accurate number of the hyena population is available in this region.

## ACKNOWLEDGEMENT

The authors are grateful to Prof. S.M. Mohnot, Executive Director, The School of Desert Sciences, Jodhpur for regular encouragements. Thanks to Head, Department of Zoology, J.N.V. University, Jodhpur for providing the logistic support.

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