



## “STUDIES ON MAMMALIAN ANIMAL OF INDIAN FOX *VULPES BENGALENSIS* IN THE SIDHI DISTRICT”

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### ABSTRACT:

The Bengal Fox, also known as the Indian Fox, is a small fox species native to the Indian subcontinent. They are primarily found in grasslands, scrublands, and agricultural areas. Bengal Foxes are omnivores, feeding on a variety of food items such as rodents, insects, fruits, and carrion. They are generally solitary animals but may form small family groups. Studies on the ecology and behavior of wildlife, including foxes, typically involve field observations, tracking, camera traps, and sometimes radio-collar studies. Study aim to understand various aspects of their life history, habitat preferences, feeding habits, social structure, and interactions with other species.



**KEY WORDS:** Bengal Fox, wildlife, Ecology and Behavior.

### INTRODUCTION

In the evolution of the social organization of canids, various environmental pressures have contributed significantly. This pressure ranges from the unique hunting strategies of small prey species like the red fox (*Vulpes vulpes*) to the complicated social gathering of larger animal species like grey wolves (*Canis lupus*) and African wild dogs (*Lycoon pictus*) accompanied by the hierarchical formation and pack-hunting of larger prey (Macdonald, 1983; Bekoff *et al.*, 1984; Rogers and Kaplan, 2003). The *Vulpes* genus contains eleven species that spread throughout the world except for Antarctica and South America. In the huge majority, the species of the *Vulpes* genus are a member of the mesocarnivore tropic level in their ecosystem (Sillero-Zubiri *et al.*, 2004).

The fox species are the smallest member of the canids, which are distinguished by their solitary nature (they behave like social units only in the reproductive period) and flexibility in strategies for successful survival. The maximum literature related to foxes comes from the red foxes, which has been studied extensively. Factors influencing the home range, activities and habitat used by the red foxes has been studied in heterogeneous circumstances ranging from Mediterranean scenario (Lucherini *et al.*, 1995; Cavallini and Lovari, 1991; Lovari *et al.*, 1994; Ricci *et al.*, 1998) to urban and suburban forests (Harris, 1977, 1980). In the study of animals, related to the carnivore ecosystem, food utilization is the main feature, as nutrient resources dominate over many aspects of their life modes (Macdonald, 1983, Bekoff *et al.*, 1984).

The various diets of red fox permit it to sustain in different habitats and are considered as an omnivorous, generalized predator behaviour by different authors (Doncaster *et al.*, 1990; Lanszki, 2005; Dellarte *et al.*, 2007). In Pakistan Blanford's foxes are mostly frugivorous, they feed on melons,

grapes and olives (Roberts, 1977). Cavallini and Lovari, (1991) reported in the Mediterranean landscape. The main diet of the fox contains different types of seasonal fruits. Geffen *et al.*, (1992) described that *Vulpes cana* (Blanford's fox) diet consists of a frugivorous and an insectivorous in Ein Gedi in Israel. The denning behaviourism in foxes is an essential part of resource utilisation concerning the surroundings in which it resides. Den use was held responsible for several factors like the accessibility of food, water, the existence of con-specifics and disturbance factors. The dens of the foxes can be easily recognized on the presence of the holes of the foxes in their habitat. The foxes have also been reported to maintain many dens within their territory. More than one den is also used for offspring rearing. Dens are situated in relatively open areas but the dens of grey foxes are found in hollow logs, old sawmill slab piles and cavities under rocks. Which is indicated that the dens were more densely covered (Nicholson *et al.*, 1985).

#### Classification of Indian Fox:

Kingdom	:	Animalia
Phylum	:	Chordata
Class	:	Mammalia
Order	:	Carnivora
Family	:	Canidae
Genus	:	<i>Vulpes</i>
Species	:	<i>V. bengalensis</i>

#### MATERIAL AND METHODS:

Sidhi is a part of Madhya Pradesh. It forms the northeastern boundary of the state. Sidhi is known for its natural environment, historical importance and cultural roots. Sidhi has a number of natural resources with the river Son draining the district, and with coal deposits which feed major industries across the country. Sidhi district comprises seven tehsils : Bahari, Churhat, Gopad Banas, Rampur Naikin, Majhauri, Kusmi and Sihawal. There are four Madhya Pradesh Vidhan Sabha constituencies in this district, namely, Churhat, Sidhi, Sihawal and Dhauhani, all of which are part of Sidhi Lok Sabha constituency.

Indian foxes were directly observed at dens or flushed out from day resting spots following Johnsingh (1978). This method worked best in grasslands or open scrub forest where visibility was good, especially during the summer months when grass and bush cover were sparse. In other areas, the help of farmers, shepherds and hunters was requested to locate possible den sites, which were subsequently inspected to ascertain whether they belonged to Indian foxes. Their dens, especially where they occur as underground burrows, are easily identifiable by their size and characteristic burrow holes and tunnels. A vigil was kept at these areas during dusk for sighting opportunities. Droppings were often encountered near active dens and sometimes on trails and collected for dietary analysis (Vanak 2003). Trails, dirt roads and waterholes were searched for pugmarks likely to be those of the Indian fox, and measurements, photographs and plaster of Paris casts were taken wherever possible. Indian fox pugmarks were reliably identified from those of other canids such as the golden jackal *Canis aureus* and domestic dog, based on size and shape. Measurements of voucher specimens were obtained from pugmarks of foxes sighted at dens (mean length=41mm (SE=0.18, n=11), mean width=35mm (SE=0.14, n=11).

#### RESULTS AND DISCUSSIONS:

Our results indicate that the Indian fox occurs sparsely in most areas of Sidhi District. Manakadan and Rahmani (2000) estimated the population of Indian foxes in Rollapadu Wildlife Sanctuary at 40-50 individuals in 1993 and 1994, and observed an apparent crash in the population in 1995, down to ten individuals. Based on the number of direct sightings during this survey it is likely that the population of Indian foxes in Rollapadu has recovered to pre-1993 levels. Karanth and Singh (1981) noted that the Indian fox was the most common carnivore in Ranebennur Wildlife Sanctuary,

and direct sightings were a daily occurrence. During this survey, however, we did not sight a single fox, although other evidence was recorded. Possible reasons for this disparity in sightings may be due to the fact that in 1981 this area had been recently planted with Eucalyptus. The plantations are well established now, with a dense canopy and under-storey and this increase in cover might explain the lower detection rates.

The Indian fox is opportunistic and has an omnivorous diet consisting of small mammals, reptiles, birds, insects and fruit (Johnsingh 1978; Manakadan and Rahmani 2000; Johnsingh and Jhala 2004). Studies of its behaviour and ecology are only preliminary to date, and basic knowledge is lacking. Detailed information on current distribution and population status is not available (Johnsingh and Jhala 2004). Further studies are therefore required to better understand the ecology of this species, which although not necessarily threatened, is under considerable pressure from human activities in parts of its range. A pilot survey was therefore undertaken of its distribution in parts of southern India, to identify regions where additional research is required.

The Indian fox (*Vulpes bengalensis*) like the other species of foxes have been reported as an omnivorous opportunistic canid. They are mostly crepuscular and nocturnal in habits, foraging usually in the dark hours. Their diet has been known to comprise of insects (grasshoppers, termites, beetles, scorpions, ants, and spiders), crustaceans, rodents including gerbils, field rats and mice, hares (*Lepus nigricollis*), birds and their eggs, ground lizards and rat snakes (*Ptyas mucosus*). Fruits consumed by the foxes included ber (*Zizyphus spp.*), neem (*Azadirachta indica*), mango (*Mangifera indica*), jamun (*Syzigium cumini*), banyan (*Ficus bengalensis*) and pods of Cicer arietum and Cassia fistula. They have also been reported to consume fruits of Capparis, Acacia, Prosopis and Salvadora. Densities of breeding pairs range to about 0.15-0.1/ sq km during periods of rodent abundance (Johnsingh & Jhala, 2004). Denning in the Indian fox (studied in the Rollapadu grasslands) is restricted to the pup rearing period (February to June). The Indian fox breeds from December to January in Kutch average litter size being two. The breeding season is heralded by re excavation of old dens or digging of new dens (Manakadan & Rahmani, 2000). Indian foxes have also been known to appropriate gerbil burrows and show great site fidelity with the natal dens being used for breeding year after year (Johnsingh, 1978).

#### REFERENCE:

- Bekoff, M., Daniels, T.J. and Gittleman J.L. (1984). Life history patterns and the comparative social ecology of carnivores. *Annual Review of Ecology and Systematics*, **15**: 191-232.
- Cavallini, P. and Lovari, S. (1991). Environmental factors influencing the use of habitat in the red fox. *J. Zool. (London)*, **223**: 323-339.
- Cavallini, P. and Lovari, S. (1991). Environmental factors influencing the use of habitat in the red fox. *J. Zool. (London)*, **223**: 323-339.
- Dell'Arte, G.L., Laaksonen, T., Norrdahl, K., Korpimaki, E. (2007). Variation in the diet composition of a generalist predator, the red fox, in relation to season and density of main prey. *Acta Oecol.* **31**, 276-281.
- Doncaster, C.P., Dickman, C.R., and Mac Donald, D.W. (1990). Feeding ecology of red foxes in the city of Oxford. *England. J. Mammal.* **71**: 188-194.
- Geffen, E. and Macdonald, D.W. (1992). Small size and monogamy: spatial organization of the Blanford's fox, *Vulpes cana*. *Animal Behaviour* **44**:1123-1130.
- Harris, S. (1980). Home ranges and patterns of distribution of foxes *Vulpes vulpes*, in an Urban area, as revealed by radio tracking. In: A handbook on biotelemetry and radio tracking. (Eds.) Amlaner, C.J. and Macdonald, D.W., Oxford : *Permagon press London*, pp. 685-690.
- Johnsingh, A.J.T. (1978). Some aspects of the ecology and behaviour of the Indian fox *Vulpes bengalensis*. Shaw. *Journal of Bombay Natural History Society* **75**: 397-405.
- Johnsingh, A.J.T. and Jhala, Y.V. ( 2004). *Vulpes bengalensis* (Shaw 1800). In *Canids: Foxes, Wolves, Jackals and Dogs. Status Survey and Conservation Action Plan*, IUCN/SSC Canid Specialist Group: 219-222. Sillero-Zubiri, C., Hoffmann, M., & Macdonald, D.W. (Eds). IUCN, Gland.

- Lanszki, J. (2005). Diet composition of red fox during rearing in a moor: a case study. *Folia Zoologica*. **54 (1-2)**, 213-216.
- Lovari, S., Valier, P. and Ricci Lucchi, M. (1994). Ranging behaviour and activity of Red foxes in relation to environmental variables, in a Mediterranean mixed pinewood. *J. Zool., Lond.* **232**: 323-339.
- Lucherini, M., Lovari, S. and Crema, G. (1995). Habitat use and ranging behavior of the red fox (*Vulpes vulpes*) in a Mediterranean rural area: is shelter availability a key factor? *J. Zool (Lond)* **237**: 570-591.
- Macdonald, D.W. (1983). The ecology of carnivore social behavior. *Nature* **301**: 379-384.
- Manakadan, R. & Rahmani, A.R. (2000). Population and ecology of the Indian fox *Vulpes bengalensis* at the Rollapadu Wildlife Sanctuary, Andhra Pradesh, India. *Journal of Bombay Natural History Society* **97**: 3-14.
- Nicholson, W.S., Hill, E.P. and Briggs, D. (1985). Denning, pup-rearing, and dispersal in the gray fox in east-central Alabama. *Journal of Wildlife Management* **49**:33-37.
- Ricci, S., Colombini, I., Fallaci, M., Scocciant, C. and Chelazzi, L. (1998). Arthropods as bio-indicators of the red fox foraging activity in a Mediterranean beach-dune system. *J. Arid Environ* **38**: 335-348.
- Roberts, T.J. (1977). The mammals of Pakistan. Earnest Benn Ltd. London and Tonbridge.
- Rogers, L.J. and Kaplan, G. (2003). Spirit of the wild dog: the world of wolves, coyotes, foxes, jackals and dingoes. Crows Nest, New South Wales, Australia: *Allen and Unwin*. 235.
- Sillero-Zubiri, C., Hoffmann M. and Macdonald, D.W. (2004). Canids: foxes, wolves, jackals and dogs. Status survey and conservation action plan. IUCN/SSC Canid Specialist Group. Gland, Switzerland and Cambridge, UK.