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PRESENT STATUS AND ECONOMIC IMPORTANCE OF DESERT FOX *Vulpes vulpes pusilla* IN THE THAR DESERT OF RAJASTHAN

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Abstract

Desert fox *Vulpes vulpes pusilla* is endemic to the Thar desert, inhabits in sandy areas with open scrubs. Up to the last decade its presence was very common in Barmer district but at present they are seen very fewer in numbers in each areas. The study was carried out in the year 2010-2013 and during this time period, various intensive surveys were conducted in Barmer district, covering all the eight panchayat samities; for knowing its recent status. In this study, its dietary composition was also detected for knowing economic benefits of this medium sized canid. In this study it was found that Desert fox is a friend for economy of our country and also a nature saver. Its population is seemed to be very lesser as found during the study period in the road surveys.

Key-words: Desert fox, Thar desert, Barmer district, Economic importance.

Introduction

Nearly 45 sub species of Red fox are distributed throughout the world. Three races of the red fox are recognized from India; a mountain form, the Hill Fox (*montana*) of the Himalayas, a northern desert form (*griffithi*), and a western desert form, the White-footed Fox (*pusilla*) (Prater, 1980). Desert fox (*Vulpes vulpes pusilla*) is endemic to the Thar desert and ranging from Rajputana, Cutch and Sindh westwards into South Baluchistan, Persia and Mesopotamia (Prater, 1980).

Desert fox is generally of slender build, with a long bushy tail, sharp and long muzzle, relatively longer body, short limbs and large ears. Desert fox is an active and alert animal though nocturnal but also active during day time in winter and cloudy days. In summer it remains active from dusk to dawn. It lives singly (solitary) or in pair in burrow system with 4-5 openings (Prakash, 1975). They usually hunt alone or in pairs. Food varies with habitats and seasons (Prater, 1980). When there is a serious shortage of food availability, it begin to take insects which are comparatively easily available they also take carcasses of wild and

domesticated animals. The fruits of *Zizyphus* and *Cucurbita* are also used as food by carnivores e.g. the wolf, jackal, fox and mongoose etc. These carnivores, have been observed taking dung of cattle too (Sharma, 1978). Their food is much varied, from small vertebrates and invertebrates to different plant parts. They feed on field rodents, hare, lizards, a variety of insects, scorpions, large spiders, seeds and fruits of watermelon, ber (Prakash, 1994). They also prefer to feed on Groundnut (*Arachis hypogaea*), Dhalu (ripen fruits of *Capparis decidua*), neonates of sheep, goat and wild mammals, carcasses of animals and umbilical cord of mammals (Jakher *et. al*., 2011). In fact, an important aspect about food of desert consumers is that they use those dietary items which are more abundantly available in the environment (Reichman *et. al*., 1978).

Foxes are important fur bearers and more are raised on farms than any other wild fur bearing mammal. They also help to control populations of small rodents and rabbits and may disperse seeds (MacDonald and Renolds, 2005). Red foxes are widely regarded as a pest and unprotected. The sub-species *Vulpes vulpes pusilla* is listed in CITES-Appendix III.

The paper is showing the present status of Desert fox in Barmer area, probable reasons for decline their numbers and the ways by which they are helpful for human being.

Material and Methods

The study was carried out in Dharasar Ka Tala, Doli Kallan and Dhok Ka Oran in Barmer district in the year 2010-2013 through surveys, direct observations and questionnaire. The food composition of the Desert fox's diet was studied through analyzing the scats in the laboratory using the standard methods of Korschgen (1980), with some modifications. All the scats were washed and the indigestible components such as fruit seeds, hairs, claws, scales, feathers, bones and insect chitin were separated. The abundance of prey (by direct sighting) in the study areas was also studied. Scat analysis and prey abundance study was carried out in Dharasar Ka Tala, Doli Kalan and Dhok Ka Oran (the selected study sites for research work) in Barmer district.

Help was also taken by Forest Department, Patwari in different panchayat samities and also from district headquarter. In the field help was taken by interviewing old villagers,

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shepherds and hunting castes for known their present distribution and about its dietary habits.

Observations and Result

Plate-1. Desert fox *Vulpes vulpes pusilla* in its habitat.

Prey abundance in the study areas- Prey species such as amphibians, reptiles, ground birds, rodents and lagomorphs were observed in the area by direct sighting as the presence of preys indirectly shows the presence of animal.. Prey species of desert fox in the area found was as follows-

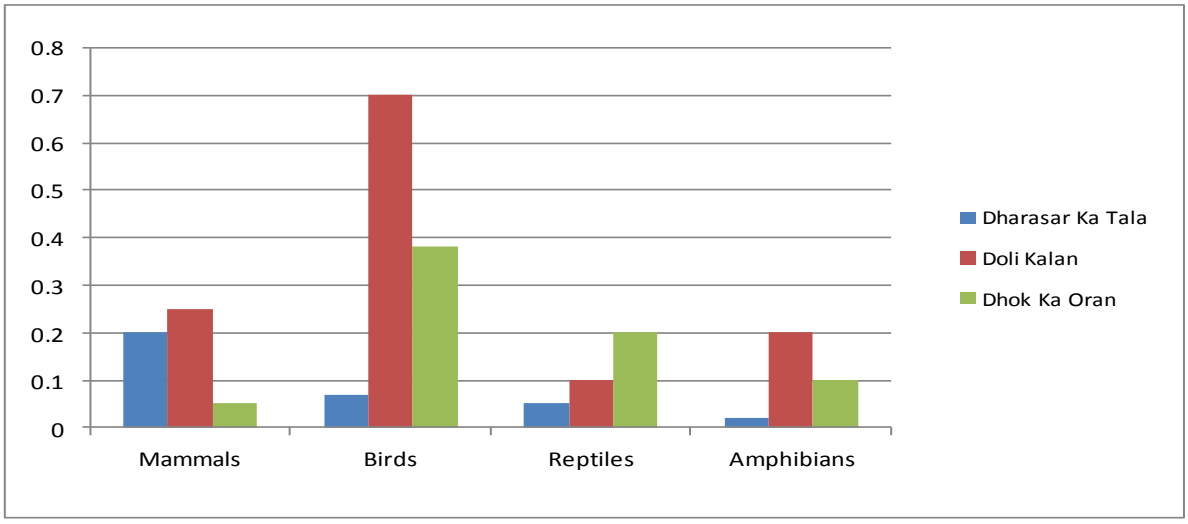

Fig. -1. Abundance of prey species of Desert fox in selected sites of Barmer region.

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In Dharasar ka Tala, one of the study area, mammals were observed comparatively more in numbers while in Doli Kalan, the second study area, mammals, birds and amphibians were in plenty and in Dhok ka Oran, various types of Reptiles and Birds were available in plenty while small mammals in lesser numbers; arthropods were also present in plenty but their numbers were not counted. Fruits of Ber (*Zizyphus nummularia*), Pilu (*Salvadora persica*), Kachar (*Cucumis callosus*), Matira (*Citrullus lanatus*) and Dhalu (ripen fruits of *Capparis decidua*) were also present during the study period, on which the fox feeds.

Scat analysis-

Scats not only provide data on diet but also on some behavioral aspects, habitat use, marking of territories, relative abundance and den site location. For scat analysis, total 20 identifiable scats were collected in different seasons in the study areas.

Table -I. Scat analysis of Desert fox in different seasons in selected sites of Barmer region.

Study Site	Season	Hair	Bone	Feather	Egg Shell	Insects	Vegetable Material	Others
Dharasar Ka Tala	Monsoon	25%	18%	8%	5%	8%	34%	2%
	Winter	32%	19%	8%	1%	1%	36%	3%
	Summer	43%	26%	12%	0%	2%	8%	9%
Doli Kalan	Monsoon	26%	18%	8%	7%	10%	30%	3%
	Winter	29%	20%	5%	1%	2%	41%	2%
	Summer	40%	21%	6%	0%	11%	14%	8%
Dhok Ka Oran	Monsoon	20%	9%	16%	8%	10%	35%	2%
	Winter	28%	18%	14%	2%	4%	32%	2%
	Summer	37%	23%	13%	1%	6%	12%	8%

(Results of 20 identifiable scat-analysis)

The table-1 it is clearly shown that in Summer Desert rat and Desert gerbil forms main part of its diet while in monsoon and winter seeds and other parts of vegetable material were found very common in the scats.

Scat analysis and information collected from local people shows that Desert fox feeds on rodents, desert hare, insects, eggs and flesh of reptiles and birds, neonates of wild and domestic mammals and carcasses of animals along with fruits of Ber (*Zizyphus nummularia*), Pilu (*Salvadora persica*), Kachar (*Cucumis callosus*), Matira (*Citrullus lanatus*) and Dhalu (ripen fruits of *Capparis decidua*).

Discussion

Red foxes or foxes, as they are commonly known, are currently the most common and widely distributed of all wild carnivores. Foxes are very adaptable animals and live in habitats as different as tundra, mountain regions, deserts and urban and suburban areas (Baker *et.al*. 1990). The Desert fox is extensively poached by traditional trappers for its pelt which is sold at a very high price in Kashmir and Nepal fur shops (Rahmani, 1997). Fox eat locusts and other insects, lizards, birds, rodents and at times even plants parts. They also feed neonates of mammals and carcasses of animals too.

They are very useful for keeping rodents under control so they are good friend for our agriculture. They keep insect population under control and thus prevents from diseases spreading by them. They feed on reptiles and birds and controlling their population. They feed on harmful snake and scorpions by this they lowing the harmful effect of these animals. By eating carcasses of animals they work like cleaning agent in the nature. They also help in dispersal of seeds as they consume pulp and seeds of fruits. Their fur is very precious. Thus by controlling population of various types of rodents, birds and mammals they indirectly save our agricultural crops along with stored grains and fruits destroying by these animals.

Unfortunately these very graceful little animals are becoming increasingly rare due to the way they are hunted, although they are harmless to man (Colombo and Barnabe,1983).

According to Prakash (1994); he had watched the desert fox, around every bush during fifties, but after that their numbers had drastically declined. The similar result was

found during these surveys, their total mean population density in Barmer district in this study was found to be very low (0.04 Desert fox/ km²).

Recommendations

Although Desert fox is widespread and inhabits away from human interference yet increase in human population (According to the Indian census in Barmer district human population increasing growth rate over the decade 2001-2011 was 32.55%), development of roads and urbanization, their habitat is shrinking quickly. Feral dogs (Chaudhary *et.al.* 2011) and poaching are other reasons for decline of their numbers.

All the three subspecies of Red fox occurs in India are listed in CITES appendix III and least concern in IUCN Red list (MacDonald and Reynolds, 2005). There is no conservation efforts targeted especially for the species. A status survey should be carried out to identify areas of its distribution and ranging pattern for studying its population dynamics, territoriality and behaviour.

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