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Features of the Cave of Desert Fox (*Vulpes vulpes pushila*) in Desert Region of Pithana Village, Tehsil Taranagar, Churu (Rajasthan)

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ABSTRACT: The paper present the feature of the cave of desert fox in Pithana village of Churu district in Thar Desert of Rajasthan state. The study provides the general information about cave of desert fox belonging to study area. The study is conducted in Pithana village and its surrounding fields. Many small, medium and large sized caves are observed in study areas. The study brings to the fore the good construction skill of the desert fox. It observed that it helps the fox to establish its adaptations with the environment.

KEYWORDS: Desert fox, Pithana, Cave, fields, Desert, Taranagar, Rajasthan.

INTRODUCTION: Different organisms have different type of habitat such as areal, terrestrial and aquatic. In terrestrial habitat organisms lived on and under the surface of ground. Organisms which are live under the surface of ground make their habitat as a bill, tunnel, hole, cave (deep burrow), pit and burrow etc.

Cave is a residential structure for an animal. Many animals make their own cave for residential purpose like- Anteater, bear, lion, fox etc. Desert fox is an animal among of them which make its own cave for residence and many other purpose of daily routine. The cave helps the fox to live in desert during adverse condition like hottest and coolest of the seasons.

Desert fox is known for its cleverness and hunting. It is a xerocole which lived with other reptiles and mammals in field areas. A species of Desert fox which is commonly found in study area is *Vulpes vulpes pusilla*. It is an omnivores and nocturnal animal. Its body looks like a dog and a size of mature member is also not much bigger than a dog. Its tail is longer and flatter than a dog's tail. It has long and thick hair on both sides of its tail. Desert fox is a exothermal mammal. The hairs trap ear in it near the body wall which help to maintain internal body temperature. Tail is helpful to clean body and sitting place. During running the tail plays an important role to maintain body balance. Large earpina are found in fox that show an adaptation to live in the Thar Desert. The desert foxes are not physiologically well adapted to tolerate heat load and avoid heat stress behaviorally. All species spend the hot hours of the day in deep burrows (cave) and delay activity to the cooler hours of the night. Desert fox makes its own caves as its habitat on sand dunes.
The Author studies its cave in this area which is used by fox for multipurpose in this region.

OBJECTIVES:

1. To study about the cave structure.
2. To know about good construction skill of the desert fox in desert areas.
3. To collecting information for scientific knowledge, public awareness about Desert fox etc.
4. To know about habitat of fox in this desert region.
5. To study different types of behavior of Desert fox.
6. To gather information about uses of cave by desert fox in its daily routine.
7. To know the location of the caves and search the ways to secure them.
8. To know about factors that can increase or decrease their population in desert region.

STUDY AREA: Rajasthan is a largest state of India. It situated in north-west of India. Its geographical location is 23.3 to 30.12 North latitude and 69.30 to 78.17 East longitudes. It covers 3, 42,239 sq.km.of India's total geographical area. It shares a border with Pakistan to the west. It is bordered with five other Indian states. It major features include the ruins of the Indus vally civilization at kalibangan and Balathal. It comprises most of the wide and inhospitable Thar Desert. The Thar Desert is known as Great Indian Desert. Rajasthan covers 60% portion of the Thar Desert. This Desert is spread over many districts in Rajasthan. Such as Barmer, Bikaner, Churu, Jaisalmer, Jalore, etc. Churu district cover a part of Great Indian Desert. Churu is Northeast in Rajasthan and sharing a boarder with Haryana state. It believes that it was a village of Jats known as Khalera ka Bas. Churu covers 13,858 square km of India's area. A blackbuck sanctuary known as Tal chhapar sanctuary are situated here. The region boasts record temperatures ranging from below freezing point in the winters to over 50 degrees in the summer afternoon. There are 8 tehsils in the district such as Churu, Taranagar, Sujangarh, Ratangarh, Saradarshar, Rajgarh, Bidarsar, and Sidhmukh.

Taranagar is a city and a block in Churu district. It situated at 28.41'N to 75.3'E. Taranagar was earlier known as Reni named for the lady Rankali. It renamed by maharaja Ganga Singh for in honor of the king Tara Singh. The town Taranagar is surrounded by large numbers of villages on all side. There are 124 villages currently that are populated by mostly small to medium sized land holders and farmers. The farmer grows here two main crops Rabi and Kharip.

The study was done in Pithana region which are 24km away from Taranagar and 55km away from headquarter of Churu district. It was an arid region of Thar Desert where live around 120 houses. A part of Desert it experiences extremities of climate both in summer and winter, that are however considered good for build up immunities for general health. The study site is characterized by small and large sand dunes. There people dependent on farming for food and income. And annual precipitation is 8-12 mm. This area received water from IGNP canal for agriculture purpose. Since few years farmer grow peanut in Kharip crop. The crop production in this area is very good due to the proper irrigation system.

MATERIALS AND METHOD: The study was conducted in the month of July- October in 2022 year at desert region of Pithana village in Churu district of Rajasthan state. Author visit cultivated field areas after the sunrise, mid day and before the sunset. 8-9 fox caves are founded by author in areas. The study of cave was done by direct observation, photography and tape measurement and method.

By direct observation cave's position, location sites, shape, claw mark and internal structure are studied. Photographs of cave are clicked by a camera. By quadrate method measured the seating place of desert fox in front of the large cave.

To estimate the length of small cave used a tape. A wooden stick was used to measuring the length of the cave. A flexible metal stick used by author to measured length of the oval shaped tunnel like cave. Distances between two caves are measured by tape.

RESULT AND DISCUSSION: The present study was done in Pithana village of Taranagar Tehsil of Churu district. In this study researcher has founded 8-9 caves in the field areas. In over all study reported that Fox use their cave for multipurpose such as- parental care, resting, hidden from predator and also collect the food. And use to avoid adverse conditions of climate like extreme and lowest temperature in summer and winter. Author found that caves are differing from each other in shape and size.

On the basis of size cave can divided in following types-

- **Small size caves-**

Figure 1&2: Showing earlier formed small cave (pit trap) for hunting of surface dwellers prey species.

Normally small cave are makes on plane surface by fox. Length of gate is 9-10 inch (23-26cm), 5-7 inch (13-18cm) broad and depth is 1-1.5 feet. Mainly it is constructed for hunting or food collection purpose. The small caves are used by fox as traps to collect their food like beetles and surface dweller insects. Small cave show cleverness of fox behind trap formation. In its internal structure claw mark can be seen. Mark remains in intact form at present since it was dug. Small cave are found more in number than other types of cave in field. In this type of cave fox does not do repair. New small cave are formed on new sites.

- **Medium size caves-**

Figure 3 & 4: Medium size caves with their interior claw marks.

This type of cave is makes at slope of sand dunes or on the top of small dunes which are scattered on plane ground. Length of its opening is 15-17 inch (38-43cm), 8-10inch (20-26cm) is broad and 2-2.5 feet is depth. Earlier claw mark can be seen at internal side but later marks are gradually disappeared due to friction with the body wall of the fox. A single fox makes 3-4 medium size caves for investigation purpose of their habitat. Fox do some repair work in these caves for limited time.

- **Large size caves-**

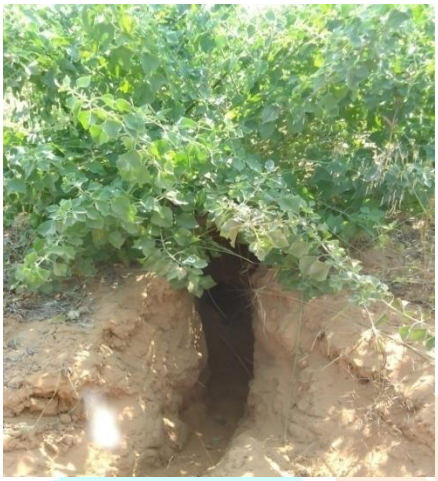

Figure 5: A large size cave under shrub.

Large cave are constricted at slope of sand dunes or on ground under the shrubs. For making these types of cave fox select an area which is surrounded by shrubs. The reason behind this selection is that the fox gets its food easily here like small birds, francolin and insects etc. A group of shrubs provide a place where it gets sheltered, hidden from predator and help to keep temperature of cave lower than environment. It is differ in shape and size from other types of fox cave. Their size increases day by day until it not enough for fox's use. The claw mark can be seen on opening gate and interior part of roof but mark on rest of cave are disappear due to coming and going of fox.

Figure 6 & 7 showing interior part and opening gate of a large size cave.

Figure 8: An oval shaped cave having two tunnels in it structure.

The author found two types of large cave in study area. One of them is strait triangular shaped tunnel and another is oval shaped tunnel.

In oval shaped cave two opening gate are present in one large pit at one side. In making process fox make earlier a large pit and later dug it in two branches which fused at internal side on a point to make it oval shaped structure. The cleverness of the fox lies behind making it so. In this cave fox protect their child from predator. It may be that

when fox inside the cave and predator enters in cave from one gate the fox can save their Childs and out from another gate. If fox is outside the cave than it can enter from another gate and can save its child. These cave are used for parental care and feeding purpose. Sometimes in front of large size cave fox make a shallow pit by removing sand which used to rest and guarding purpose of cave.

CONCLUSION: The author has found in this study that desert fox having a unique construction skill with its cleverness. It found that how many ways in which cave are useful in fox daily routine and protect her progenies. The cave can be protected or get safe by local farmers during field cultivation. By awareness destruction of cave can be stop by local peoples. Protection of their cave plays an important role to in-situ conservation of fox population in desert areas. Desert fox is an omnivore mammal so it having more than one tropic levels in ecosystem and play an important role to maintain sustainable an ecosystem. The study provides basic information about Desert fox's cave it makes by *Vulpes vulpes pusilla* which is local species of desert fox in this study site.

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