

Predators of the Spiny Tailed Lizard (*Uromastix hardwickii*, Gray)

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Abstract: Spiny tailed lizard is an important fauna of hot arid ecosystem. But it is fast getting extinct because of poaching and predators. Tribal people trap it for eating and supply these for laboratory use. Number of other mammals, reptiles and birds are predators. Behavior of these spiny tailed lizards and their predators is discussed.

Key words: Spiny tail lizard, predators, behavior, trapping lizard, hunting.

The enemies of lizards include certain species of their own genera, snakes, mammals like human being, dogs, mongoose and hedgehog and some species of birds (Powell, 1913; Purves, 1915; Burt-Charles, 1933; Fitzsimons, 1935; Hibbert-Ware, 1938; Shaw, 1948; Klauber, 1956). The search of literature showed that the enemies of the spiny tailed lizard have not yet been enlisted. Therefore major predators of spiny tailed lizard and their nodus operandi were studied in the Indian desert.

Materials and Methods

Mammals

Diurnal surveys to enlist various enemies of the spiny tailed lizard were conducted during the years, 2006 and 2007 from 08 to 11 and 16 to 19 hours during summer months and 10 to 15 hours in winter, as recommended by Rao (1960) for desert locust in the north-western part of Rajasthan. Informations were also collected from the nomads, tribals and villagers during the course of the surveys. The mode of predation of various predators were also observed. To record the ecto-parasites, the animals collected from the field were examined externally with the help of magnifying glass. As regards endoparasites, the reptiles were dissected and their digestive systems were examined for the presence of parasites.

Results and Discussion

Human beings are the major predators of the spiny tailed lizard. The tribals believe that the meat and oil of this lizard are sex stimulants and increase the sexual potency in men. The oil is known to be a pain killer. The tribals hunt for these reptiles to earn their livelihood

and to eat their meat. They also sell them for their use in laboratories in teaching institutes.

The tribals are well-versed with the behavior of this reptile. They know that these lizards come to their observation chamber at a distance of 30 to 35 cm from the burrow openings and stay in it for some time before they come out of their burrows for diurnal activities. The tribals make use of this behavior and thrust a sharp edged lance (10 cm wide and 20 cm long iron blade fitted with 45 cm long bamboo handle) at 40 to 50 cm from the burrow opening and block the passage of the reptile towards its brood chamber. This forces the reptile to stay in the observation chamber the reptile so trapped is dug out by the tribals.

The tribals also make funda (trap) with the help of two pieces of ropes each measuring 30 cm and four wooden sticks, 10 cm long and 1.5 cm in diameter. The sticks are tied at each end of the rope. The flexible/adjustable knot is placed at the mouth of the burrow of the lizard. The lizard when comes out is trapped in the knot and is unable to re-enter into the burrow.

Burrow is often flooded with water to trap the lizard. The burrow mouth is widened and water poured in it. This forces the animal to come out of burrow. This practice is used in rainy season or the burrows that are near to water pond.

The tribals hunt for this reptile with the help of their pet dogs. The dogs are so trained that they obey the orders of their masters and catch the animal for them.

Dogs: The street dogs of village Diatra, Bikaner, were observed visiting the habitats of the reptile during April to July to hunt for this animal. They used to dig the burrows of this

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reptile with the help of their front paws when the soil is wet to catch them *in situ*. The dogs were also observed sitting/standing calmly at a distance of 4-5 meters from the burrow watching the emergence of the reptile from its burrow. As soon as the reptile is out of its burrow the dogs, pounced and caught it. The small population of this reptile in the campus of Govt. Dungar College, Bikaner, was wiped out by the street dogs during the year 2007.

Cats: A cat was observed carefully watching a lizard in Diatra village in the month of May, 2007, which was at a 5 m distance from its burrow. It pounced over spiny tailed lizard spiny tailed lizard and caught it. Cat ran away from the site holding the prey in its mouth.

Mongoose: A mongoose was observed crossing the road near Ramdeora village holding a sub-adult of the spiny tailed lizard in its mouth in the month of July, 2007. This animal was followed to record its mode of predation. Suspecting that someone is following, the mongoose entered into a big burrow of another animal.

Hedgehog: Five hedgehogs collected from the habitat of the *Uromastix hardwickii*, Gray (Diatra, Khari pro, Deshnoke and Kodemdesar) in the month of July, 2007 were dissected after anaesthetizing them. On examination of their gut contents, undigested parts and bones of the spiny tailed lizards were found.

Reptiles

Snake: The presence of snake in the burrow of *Uromastix hardwickii*, Gray could easily be understood by the presence of its distinct marks around the burrow. Suspecting the presence of a snake in the burrow of the *Uromastix* sp. in S.P. Medical College field on 20.05.2007, a bottomless cage was placed over it and a snake came out of the burrow, on 09.06.2007 i.e. after 20 days. The burrow was dug open and free from the lizard and the snake. It was felt that the snake which lived in the burrow for such a long period might have eaten the lizard.

Another burrow of the *Uromastix hardwickii*, Gray in the S.P. Medical College field which had distinct marks around it was dug on 07.08.2007. The snake recovered from it was anaesthetized and dissected to study the gut contents of the animal. Partly digested, fully

digested body parts of the *Uromastix hardwickii*, Gray and the bones were recovered. Yet in another similar case, a complete *Uromastix hardwickii*, Gray, the snout of which faced towards the posterior region of the snake was recovered. This indicate that the snake might have swallowed the lizard a short while ago.

A burrow of the *Uromastix hardwickii*, Gray was dug open on in Diatra village, and a snake was recovered. On pressing the posterior region of the snake with a wooden stick the snake omitted a number of eggs of the *Uromastix hardwickii*, Gray. The snakes studied in the field were identified were *Eryx* sp.; *Bungarus sindanus*; *Naja nag*

Lizard Desert monitor (*Varanus griseus*): Two desert monitors, one from Kodemdesar and other from Khari Pio area were captured, anaesthetized and dissected during the month of August 2007. A complete *Uromastix* and some digested parts were recovered from their guts. In one of the habitats of the *Uromastix hardwickii*, Gray of Kodemdesar area a desert monitor was observed chasing the spiny tailed lizard and caught hold of it. The half of the anterior body of the *Uromastix* sp. was towards right of the monitor and the posterior portion was toward its left in horizontal position. The monitor gave few jerks to bring its prey head in the mouth. It swallowed the spiny tailed lizard by to and fro movements of its head.

Birds

The observations on the avifauna which predated upon this reptile are as under.

Falcon (*Falco biarinicus* Gray): This bird was found predated on an adult *Uromastix hardwickii*, Gray on 5th July 2007, in Kodemdesar area of Bikaner District.

Shikra (*Accipiter badhis* Gmelin): This bird locates the reptile while perching on the bushes/trees or flying over the habitat of the spiny tailed lizard. On locating the reptile, it aligns its flight over the reptile and drops down over it making loud noise with wings. The reptile becomes nervous and motionless. This bird then holds it in its claw and flies away to a nearby tree/bush to predate upon it.

Kile (*Milvus imgrans* Boddaert): These birds are often seen flying over or perching on trees in the habitat of this reptile. These birds swoop

Table 1. Spiny Tailed Lizard (*Uromastix hardwickii*, Gray): Showing percentage of damage caused by mammals, reptiles and birds during 2006-2007

Predators	No. of observations	% damage	Rank
Birds			
Crow	17	14.41	I
Jungle Crow	8	6.78	
Kite	39	33.05	
Falcon	6	5.08	
Shikra	23	19.49	
Shrike	1	0.85	
Peacock	1	0.85	
Total	95	80.51	
Mammals			
Human beings (Nomads & Tribals)	6	5.08	II
Dog	9	7.63	
Cat	1	0.85	
Hedgehog	1	0.85	
Mongoose	1	0.85	
Total	18	15.26	
Reptiles			
Snakes	2	1.69	III
Lizards	3	2.54	
Total	5	4.23	
Grand Total	118	100.00	

over the reptile and catch it in their claws and fly away. These birds were observed predating on this lizard from March to November 2007.

Peacock (Pavo cristaffis L.): A peacock was observed chasing and catching an. *Uromastix hardwickii*, Gray in the play ground of Govt. Dungan College, Bikaner in July 2007.

The Roller (Coracias bengalensis L.): This bird was observed predating on a juvenile of the *Uromastix hardwickii*, Gray in the play ground of Govt. Dungan College, Bikaner in July 2007.

The Grey Shrike (Lanius excubitor L.): A grey shrike was observed. sitting on a Kair (*Capparis aphylla*) bush in Diatra area during July 2007 holding a juvenile *Uromastix hardwickii*, Gray in its beak.

Crow and Jungle Crow (Corvus splendens Viellot and Corvus macrorhyncus Wagler): These birds were observed predating on the juveniles of the *Uromastix hardwickii*, Gray in the months of June and July 2007.

The extent of damage caused by different predators to the population of the *Uromastix hardwickii*, Gray during the year 2006-2007 was worked out (Table 1) of the 118 observations recorded; 18 were on mammals (viz. human beings, dogs, cats, hedgehogs and mongoose); 5 on reptiles (viz. snakes and lizards); and 95 on birds viz. crow, jungle crow, kite falcon, shikra, shrike and peacock). The birds ranked first, while mammals and reptiles stood second and third, respectively. Kite, shikra and crows were the effective predators amongst the birds. The human beings were found to be the main destroyers of the population of this reptile.

The season-wise damage done to the population of the *Uromastix hardwickii*, Gray in Bikaner during the year 2007 by the predators is presented in Table 2. The damage done to this reptile population by human beings was maximum in all the seasons, and was followed by snakes and wild animals.

A number of species of this genera have developed one or the other mechanism to defend themselves from their enemies. These include release of sticky substance, discharge of secretions from their tubercles, beating their adversaries with tails (Mertens, 1960; Worrel, 1963; Bustard, 1964; Chandra, 1987). The *Uromastix hardwickii*, Gray has no such defensive mechanism except to speed away and seal its burrow in the evening after its entry

Table 2. Spiny tailed lizard (*Uromastix hardwickii*, Gray): Showing percentage of damage and range by different predators during different seasons of 2006-2007

Location	Seasons	Average and range of damage		
		Human beings	Wild animals	Snakes
Bikaner	Spring (Feb., March and April)	30.76 23.00-37.29	1.33 00.00-3.95	6.47 5.10-9.05
	Summer (May, June and July)	32.75 28.34-39.42	1.62 00.00-5.11	7.23 5.50-9.35
	Autumn (Aug., Sept. and October)	13.40 8.50-19.25	1.23 00.00-3.10	5.65 2.16-8.5

for night roost to protect itself from enemies. This reptile is therefore prone to the attacks of a number of predators.

Birds occupy a very significant position in the predatory complex in nature. Salim ali (1961) has termed falcon, shikra, kite, peacock, the fuller, grey shrike, crow and jungle crow as insectivorous. He has however, given a casual reference that the diet of the birds also include lizards. Prakash (1964) reported that eagle (*Acquila rapex*) and shikra (*Autur badius*) feed on gerbils (*M. liurrianae*). A kite nest at Haffkins Institute, Bombay, when demolished yielded 32 dead rats. According to Hibbertware (1938) the owl (*Carine tioctua*) proved to be useful predator of rodents in Great Britain in 1890. In the present study, the birds have emerged as most important predators of the spiny tailed lizard.

Mammals (viz. human beings, dogs, cats, hedgehogs and mongoose) are reported to be carnivorous in nature. Some of the reptiles like *Uromastix hardwickii*, Gray and *Varanus* sp. etc. are under serious threat because of poaching either for skin or meat (Purves, 1915). According to Prakash (1956), the foxes; cats and hedge hogs also feed on lizards. Powell (1913) reported that the small Indian Mongoose (*Mongos auropunctatu*) also feed on lizards. The above workers have not identified the species of the lizard which form the menu of the diets of dogs, cats, hedgehogs and the mongoose. The author during his field studies in North-Western part of Rajasthan in 2006-2007 found that the dogs, cats, hedgehogs and mongoose feed on the spiny tailed lizards also. The mammals stood 2nd in rank as predators of the spiny tiled lizards.

The major diets of the snakes are lizards (Klauber, 1956; Funk, 1965). According to Sharma and Vazirani (1977) the lizards also form the diet of the serpents. The vertebrate diet of *Varanus* sp. also include lizards (Minton, 1966; Chandra, 1987). However, no mention has been made by any of the works about the species of the lizards in which these predators feed. These workers who conducted the field studies on the predators of the *Uromastix hardwickii*, Gray during 2006-2007 found that the snakes and the *Varanus* species feed on spiny tailed lizards (*Uromastix hardwickii*, Gray). Their rank stood third as predators of the spiny tailed lizard.

The spiny tailed lizards collected from Diatra area of Bikaner District were found infested with mites an ecto parasite, which belonged to family Lecuwenhockiidae, order Prostigmata. The mites were found in between the furrows of its spiny tails, which varied from 2 to 11 (Av. 4) per lizard. This confirm the findings of Coborn and Lawrence (1987) that the reptiles are prone to the attack of mites.

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