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Burrowing Behavior of Spiny Tailed Lizard (*Uromastix Hardwickii* Gray) in South-Western Rajasthan, India

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Abstract: The burrowing behavior of the spiny tailed lizard *(Uromastix hardwickii* Gray) was studied in its natural haunts in north-western part of Rajasthan, India during the year 2007. This animal prefer, excavating its burrow in the vicinity of its preferred food plants. The male and female burrows are almost alike externally and internally in shapes and size. Each burrow has one exit hole. There are two chambers in each burrow. The first one is at a distance of 8 to 10 cms. (Av. 8.63 cms) in case of males and in case offearnles it was 8 to 9 cms (Av. 8.1 cms) from the burrow openings. This chamber is known as observation chamber. The animal spend most of its day time in this chamber watching for their predators. They go out for grazing when it is safe outside. The second chamber is located at a distance of 60 to 230 cms (Av. 142.68 cms) from burrow opening in males. In case of females, this chamber is located at a distance of 80 to 241 cms (Av. 154.37 cms). This chamber is known as roosting chamber. The animals rest in this chamber during night and also in the day when it is hot outside. The females lay eggs in this chamber. Many species of the lizards live in burrows dig by other animals. There are however, few which live in the burrows dug by them. Cogger (1965) reported that *Eugernia kintorei* (Skink) construct family burrows up to two meter deep and more than six meter long with multiple enterences. The *Eumeces schneideri* dig burrows 45-60 cms long which contain right angle bend at few centimeters beneath the surface. These burrows also occasionally contain a second right angle bend (Blanford, 1876; Ingoldby and Proctor, 1923).

Key words: Spiny tail lizard, behavior, burrow characteristics.

A few species of *Uromastix aegyptius and Uromastix loricatus* dig burrows a meter long (Anderson, 1963; Hussain, 1965). The spiny tailed lizard *(Uromastix hardwickii* Gray) tunnel for 3 meters and go as deep as 1.5 meters (Purves, 1915; Schmidt and Inger, 1957; Pope, 1960). According to Dave (1960) the length and depth of the burrow of this reptile in Rajasthan are 2 meters and 1 meter respectively. Bhargava (1968) reported that the end of the burrow tunnel terminate in a second chamber and this chamber may be close to the main chamber or may be in a diverticulate portion starting from the upper part of the tunnel close to the opening of the burrow (Bhatnagar and Bhanotar, 1974). According to Bhatnagar and Shrivastava, 1982, the *Uromastix hardwickii* Gray never construct additional brood chamber.

Material and Methods

The burrows of this lizard were located in their natural haunts. The details of their surroundings and the external structures of the burrows were recorded. Before opting for excavations of the burrows, in order to understand their internal structures, a soft iron wire used to be inserted inside the burrow to ensure that the burrow tunnel is not missed while excavations. The observations on the number of burrow openings their internal structures were recorded in detail (Table 1). The depths of the burrows from the top soil surface and up to the bottom were recorded. The number of animals present in the burrow were caught and their sex examined to understand the structural differences between the male and female burrows.

Results and Discussions

This lizard make its burrow in the vicinity of its preferred food plants in nature in such manner that on emergence from its burrow it may reach to the grazing point quickly without any danger from its predators. The external and internal structures of the male and female burrow are similar in their shapes and size. The dimension of male mouth burrow may varry from 13.5 to 4l.25 sq cms (Av. 26.19 sq. cms). It varried from 15.75 to 3l.72 sq. cms (Av. 2l.10 sq. cms) in females. The burrow tunnel

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Table 1. Burrow characteristics of spiny tailed lizard (Uromastix hardwickii Gray)

S.No.	Male						Female					
	Burrow characteristics						Burrow characteristics					
	Burrow dimensions (cm^2)	Distance from burrow mouth to anterior chamber (cm)	Anterior chamber dimensions (cm^2)	Length of burrow passage (cm)	Posterior chamber dimensions (cm^2)	Burrow depth from soil surface (cm)	Burrow dimensions (cm^2)	Distance from burrow mouth to anterior chamber (cm)	Anterior chamber dimensions (cm^2)	Length of burrow passage (cm)	Posterior chamber dimensions (cm^2)	Burrow depth from soil surface (cm)
1	16.00	8.00	150.00	124.00	506.25	46.00	22.00	8.00	180.00	193.00	176.00	60.00
2	24.80	9.00	216.00	110.00	506.25	53.00	31.72	9.00	210.00	185.00	213.90	60.00
3	19.60	9.00	160.00	170.00	306.25	65.00	20040	8.00	180.00	136.00	161.00	55.00
4	55.20	9.00	240.00	180.00	306.25	50.00	17.10	8.00	140.00	115.00	143.00	53.00
5	14.72	8.00	140.00	130.00	306.25	52.00	26.12	8.00	180.00	190.00	195.00	76.00
6	31.00	9.00	192.00	110.00	306.25	55.00	24.38	8.00	150.00	145.00	146.94	60.00
7	21.60	8.00	180.00	116.00	306.25	75.00	24.64	9.00	192.00	175.00	189.80	80.00
8	30.00	9.00	180.00	170.00	506.25	40.00	21.15	8.00	165.00	114.00	154.00	50.00
9	40.00	10.00	300.00	230.00	506.25	90.00	20.00	8.00	180.00	100.00	179.00	60.00
10	15.00	8.00	150.00	60.00	306.25	35.00	15.75	8.00	140.00	88.00	126.00	70.00
11	20.00	8.00	150.00	150.00	306.25	60.00	20.00	8.00	150.00	99.00	152.00	50.00
12	30.00	8.00	192.00	213.00	400.00	80.00	20.00	8.00	150.00	241.00	161.00	80.00
13	24.00	9.00	192.00	146.00	400.00	60.00	20.00	8.00	180.00	188.00	185.90	70.00
14	13.50	8.00	140.00	70.00	400.00	40.00	15.75	8.00	140.00	141.00	172.50	60.00
15	22.40	9.00	150.00	114.00	400.00	70.00	18.02	9.00	150.00	170.00	128.70	80.00
16	41.25	10.00	216.00	190.00	400.00	80.00	20.00	8.00	180.00	190.00	201.50	80.00
Total	419.07	139.00	2948.00	2283.00	6168.75	951.00	337.03	131.00	2667.00	2470.00	2687.30	1044.00
Av.	26.19	8.63	184.25	142.68	385.54	59.43	21.10	8.18	166.68	154.37	167.95	65.25
Range	13.50 to 41. 25	8.00 to 10.00	140.00 to 300	60.00 to 230.00	306.25 to 506.25	35.00 to 90.00	15.75 to 31.72	8.00 to 9.00	140.00 to 210.00	88.00 to 241.00	126.00 to 213.00	53.00 to 80.00

length from the anterior to posterior end varry from 60 to 230 cms (Av. 142.68 cms) and 88 to 241 cms (Av. 154. 37 cms) in males and females respectively. The burrow opening dimensions and tunnel lengths are dependent on the age of this reptile.

There are two chambers in the burrow tunnel, first one is located at a distance of 8 to 10 cms (Av. 8.63 cms) from the exit hole in case of males, while this distance in females varied from 8 to 9 cms (Av. 8.18 cms). This chamber is known as observation chamber. There are nib like structures on the floor of the male burrow in between the burrow openings and the observation chambers, while the roof of the burrows are smooth. On the other hand, such type of structure is not found in female burrows. This difference in male and female burrows may be due to the fact that the male while going out and coming into the burrow keeps its abdomen and tail raised, while females do not do such type of movements.

The second chamber, which is known as brood chamber is located at the tail end of the burrow at a distance from 60 to 230 cms (Av. 142.68 cms) in males and 88 to 241 cms (Av. 154.37 cms) in females from the burrow openings.

The depths of brood chamber from ground surface were found to be 35 to 90 cms (Av. 59.43 cms) and 53 to 80 cms, (Av. 65.25 cms) in males and females respectively. The males and females rest in this chamber during night and the hottest part of the day. The females lay their eggs in this chamber.

The studies conducted revealed that there is no spectacular difference in the external and internal structures of male and female burrows. Dave (1960) found that the burrow tunnel length of this lizard in Rajasthan is 200 cms. The author on the other hand found it to be 60 to 230 cms (Av. 142.68 cms) in males and 88 to 241 cms (Av. 154.37 cms). The difference in burrow lengths may be on account of soil structures in the study area. According to Bhanotor and Bhatnagar, 1974, the brood chamber close to main chamber or may be in a divochculate position starting from the upper part of the tunnel close to opening of the burrow. This author did not observe such structure in the burrows of the *Uromastix hardwickii* Gray.

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