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Short Communication

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

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Scanning of the literature on the growth of the neonates of the spiny tailed lizard (*Uromastix hardwickii,* Gray) showed that they weigh 4-6 g and are about 5.1 cm from snout to vent, (Vernet *et al*., 1988) and grow rapidly during first few weeks after they hatch. They also reported that Moroccan spiny tailed lizards in Algeria add 5.1 cm of total growth each year until around the age of 8-9 years. Mayhew (1965) reported that in juveniles of *Dipsosaurus dorsalis* light is more important than heat in stimulating growth. Rath (1966) found that *Dipsosaurus dorsalis* exposed to blue light during summer and autumn grew more rapidly than those illuminated by incandescent light. Since not much information is available on growth behavior of *U. hardwickii* study was undertaken at Bikaner.

The growth of the hatchling of the *Uromastix hardwickii,* Gray was studied in Diatra village of Bikaner District during the year 2007-2008. The five hatchlings caught in the month of June 2007 were individually weighed. Morphometric measurements of different body parts (viz. tail, abdomen, vent and snout, total length) were recorded. Each of these juveniles was ringed with copper rings to give them identification mark and released in field to grow and develop. Each of them was captured every month to record weight and morphometrical measurements of their body parts. The field study was continued upto the period the individual entered into brumation and thereafter till April after breaking the brumation.

The meterological observations viz. sunshine hours, maximum, minimum temperatures, relative humidity and rainfall for the year 2007 were collected from the Meterological Observatory (Field Station for investigations on Locusts) of Bikaner. These meteorological parameters (Table 1) were correlated with the growth of the juveniles.

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The average weight of the hatchlings in the month of June was 13.03 g and it increased to 25.6, 38.2, 66.5, 82.4 and 99.8 g in the months of July, August, September, October and November, respectively. There were an average increases of 96.46, 49.22, 74.10, 23.90 and 21.1% in body weight over the weight in June, July, August, September and October months. The gain in average body weight of the juveniles when entered into brumation during November/December was about 87 g. On an average they lost 8% body weight during brumation period viz. December, January and February. On attaining the adulthood their average body weight was 123.8 g, registering an average increase of 850.11% over initial weight.

The average tail length of the juveniles when caught out of their burrows was 55.2 mm. It increased to 63.4 mm, 81.1 mm, 96.2 mm, 113.4 mm and 119.2 mm in the months of July, August, September, October and November, respectively, as compared to initial value. The average increase in tail length when individuals went into brumation was 116.1%. There was an average increase of 3.1% in the tail length when juveniles were under brumation. The average tail length became 134.7 mm when juveniles attained the adulthood.

The average length of the abdomen of the juveniles, when caught, was 54.0 mm, which increased by 5.7, 43.95, 12.65, 8.85 and 6.74% in July, August, September, October and November, respectively. The average increase in abdomen length, when the animals entered into brumation was 53.60 mm. The increase in abdomen length during the brumation period was 2.9 mm (2.69%). On attaining the adulthood the average abdomen length of the animals was 116.38 mm.

The vent and snout length of the juveniles when caught in June was 21.8 mm, which

Table 1. Uromastix hardwickii, Gray (Spiny tailed lizard): showing growth in body length in mm under field conditions under different sunshine hr and meterological conditions during 2007-2008

Months	Sunshine hours		Av. air temp. in °C		Relative humidity (%)		Growth in body length mm
	Hr.	Min.	Maximum	Minimum	Maximum	Minimum	
June 2007	416	30	37.7	25.3	53	41	11.90
July 2007	425	10	39.0	25.5	70	43	47.52
August 2007	406	37	38.3	26.0	70	39	30.73
September 2007	370	00	37.9	25.3	70	34	25.89
October 2007	355	55	36.6	17.5	44	41	15.03
November 2007	Started entering into brumation						
December 2007	Remained in brumation						
January 2008	Remained in brumation						
February 2008	Remained in brumation						

increased to 22.5 mm, 27.1 mm, 32.2 mm, 32.9 mm and 35.3 mm in the month of July, August, September, October and November, respectively. The average increase in vent + snout length of the juveniles when went into brumation during November/December was 13.5 mm. The increase in the vent + snout length during brumation was found to be 0.5 mm. The average length of the vent snout was 36.1 mm after becoming adult.

The length of the juveniles during the month of June was 131.0 mm and it increased to 262.1 mm when the individuals entered into brumation. There was, on an average, increase of 7.1 mm in total length during the brumation period. The average length of the individuals became 287.1 mm on attaining the adulthood during April.

The results revealed that the neonates appeared in the month of June, become adult and sexually matured by March i.e. after 9 months. There was a cumulative 6.66-fold increase in weight by the time lizard entered into brumation. The hatchlings lose weight during brumation/hibernation (December 2007 to February, 2008), which worked out to be 8.08 g (8.09%). They feed voraciously after coming out of brumation to increase their body weight. The cumulative increase in body weight was 850.25% in April 2008.

The total length of the neonates, when caught was 131 mm and increased to 287.13 mm in April, 2007 the following year. The percentage increase was 9.08, 33.25, 16.13, 11.70 and 6.08 mm during first, second, third, fourth and fifth months, respectively. There was only 2.72% increase in the total length during brumation. The post brumation increase in body length in April, 2008 was found to be 17.93 mm. It seemed that there was continuous increase in body length, even during brumation.

Perusal of Table 1 revealed that in June, 2007 the juveniles received a total of 416 hr and 30 min sunshine. The average maximum and minimum temperatures were 37.5°C and 25.3°C, respectively, in June, 2007. Average growth in total body length of the juveniles was found to be 11.90 mm in this month. The juveniles received on an average 425 hr and 10 min sunshine in July. The average maximum and minimum temperatures prevailed during July were 39°C and 25.5°C, respectively. They grew 47.52 mm in their total body length, which was 35.62 mm more as compared to their growth during June 2007. The sunshine which juvenile received in August 2007 was 406 hr and 37 min. The average maximum and minimum temperatures during August 2007 were 38.3°C and 26°C, respectively. The average total growth in length of the juveniles during this month was found to be 30.73 mm. It was 16.79 mm less in total length as compared to the growth in total length in July 2007. The sunshine hr in the month of September was 370. The average maximum and minimum temperatures which prevailed during September were 37.9°C and 25.3°C respectively. Under the above conditions the juveniles added 25.89 mm in their total body length. It was 4.84 mm less in total length as compared to the growth in the month of August 2007. The average growth in the total body length of the juveniles during the month

of October was 15.03 mm, which was 10.86 mm less as compared to the growth in total length during September 2007. In October 2007, the juveniles received 355 hr and 55 min sunshine hours and 36.6°C maximum and 17.5°C minimum temperatures.

The juveniles became sub-adult and entered into brumation in the month of November 2007 and broke it during the month of April 2008. There was a growth of 7.13 mm in the total body length of the sub-adults while in brumation. The field studies conducted on the growth of the total length of the neonates of the *Uromastix hardwickii,* Gray showed that there is a combined effect of the various meterological factors viz. sunshine hours, temperature and relative humidity on growth. The growth in total length increases with increase sunshine hours and air temperature etc. Single factor (eg., light) can not be taken as a sole factor for the growth of the lizard as stated by Mayhew (1965).

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