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Studies of Basking Activity in Monitor Lizard (*Varanus bengalensis*) From Thatta of Sindh

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ABSTRACT
Monitor Lizard *Varanus bengalensis* belong to the diurnal and ectothermic group of animals. Sun- bath activity is a evidence of ectotherm. Sun-bath activity in *Varanus bengalensis* was noted between 1-15 June 2013 at Thatta District of sindh inside halyjee road. A stony type habitat were observed for *Varanus bengalensis.* The *Varanus bengalensis* exhibits sun bath at the morning to the after-noon and some time show twice a day in the morning and the afternoon. Morning sunbath (Thermoregulation) observed begins around 0815 h and continued until 0940 h, afternoon sunbath begins near about 1300 h-1400 h, and continues until 1500 h. After sunbath *V.bengalensis* observed fast movement and capture their preys very quickly.

Keywords: Basking activity, *Varanus bengalensis*, Thatta, Sindh.

1. Introduction
Monitor lizard *Varanus bengalensis* adult found on the ground mostly. Three monitor species are found in Pakistan, two of these are wide spread;The Bengal monitor *V.bengalensis* is widely distributed in Pakistan, being found in all parts of sindh province. *V.bengalensis* are very common in Thatta district of sindh. Although the study of thermoregulation in *Varanids* has been much attention [3, 27, 24, 23, 1] were study the utilization of monitor lizard in pakistan and [15] provide information about status and distribution of *V.bengalensis* in Thatta; [9] provide a checklist of reptiles of Pakistan [12] were provide information on Reptilian fauna of Karachi coasts. Here this report of basking activity of *V.bengalensis* in thatta of sindh which should helpful in the current knowledge of basking activity of the species of *V.bengalensis* from Thatta, Sind.

2. Methods
Field studies (observation) of the sun bath activity (Basking) of *V.bengalensis* were observed over 14 consectives days from 1-15-June-2013.with the help of using binoculars (10x40),Continues observation were made from 0600-1900 h. Early morning to late evening, at near the stony type habitat located at 24.82547.N- 067.774503. E. Coordinate determined using a Garmin GPS device. Climatic data rain fall measurement and temperature measurement were obtained from Department of Geography university of Karachi. Two man were observed continuous with using binocular and other two man observed with nacked eyes for all activities of *V.bengalensis*. There were two shifted of consectives duties of field staff members for observation of basking behavior, first shift start early morning to afternoon (0600-1200 h) and Second shift were start afternoon to late evening (1200-1900 h) for save side because of any human error in this continued observation of basking activity of Monitor lizard (*Varanus bengalensis*) at Thatta district of Sindh.

3. Results
This report on the sunbath activity (Basking) were observed to the stony type habitat was located in semi dry area of near Halyjee road; structurally this stony type habitat having a long hollow canals with an opening (mouth) size near about 75 cm wide big stony (mouth) opening (fig#01). *V.bengalensis* show out its head from the stony (mouth) hollow opening between 0817-0845 h, and some time near about 0903-0935 h, as it wait for maximum sun light, when the sun light radiate to the base of stony (mouth) opening habitat around 0817-0940;

The V.bengalensis move very slowly and run out from the (mouth) opening of the stony type habitat (fig#02) and then move straight forward direction for gain maximum sunlight for thermoregulation (sunbath). When monitor lizard *V.bengalensis* basking its body remains unmoved for one hour mostly. After that around (0915-1021 h) slowly up its head or turns head left and right side or direction of stimulus. Sometime appear its head from mouth of stony type habitat around 0740-0810 h, and start sun bath around 0815 to 0930 h, and after that start normal activity. The *V.bengalensis* comes back to its stony type habitat in the afternoon between 1300-1400 h, and some time 1500-1600 h.

The *V.bengalensis* faces up and begains its afternoon sunbath activity continuing until (1600-1730 h), fig# 04. When it returns to its refuge inside the stony type habitat. During field study and observation rain started on 5, 6 and 12- June, when rained during the early morning of 5- june the *V.bengalensis* come out from its stony type habitat (mouth) opening and begins basking around half hour, when it raind during the afternoon of 6- june, the monitor lizard returned to its stony type habitat very early and there is no any activity of basking around 1400-1600h. Basking activity was delayed during 12-June due to heavy rained Table# 01.

4. Discussion

Monitor lizard *Varanus bengalensis* basking activity (Thermoregulation) for taking of sunlight as well documented for other reptiles, Johnson 1973 [11] Heatwole and Taylor 1987 [10]; Vitt and Caldwell 2009 [28]; Christian and Bedford 1996 [3] Seebacher and Grigg 2001 [25]. The present investigations are in accordance with Traeholt 1997 [27], in which the monitor lizard followed sunlight to receive solar radiation and to increase its body temperature before daily activities. There are further similarities to *Varanus salvator* from central Sri Lanka in which basking was seen in late morning and during the afternoon Rathnayake et al 2003 [23], if rained in the morning the *Varanus bengalensis* emerged later and sunbath before commencing its daily movement.

Present investigation, is proved that many reptiles regulate their thermoregulation by basking (sunbath) in the sun until the temperature rises to the best require level for their normal activity Heatwole and Tylor 1987 [10], Vitt and Caldwell 2009 [28], sunbath before returning to its refuge should be required in order to maintain physiological activity Christine and Bedford 1996 [3] *Varanus bengalensis* was seen in microhabitats such as stones and dry ground. Heat absorbed by the stones during the day remains throughout the night and into the morning. Dryden & Wikramanayaka 1991 [5].

Dry ground heat up more rapidly than other substrates. By basking in such microhabitats when the ambient temperature is low, the monitors absorb heat both from the substrate and from solar radiation as observed by Pandav and Choudhury 1996 [20]. The fact that the lizards were not observed basking in the wet grounds and damp dump sites, Therefore, the stony type habitat act as good shelter for Monotor lizard *Varanus bengalensis* in Thatta district of Sindh Pakistan.

Fig 1: At the morning (0800 h), first out of head,stony type habitat V.bengalensis

Fig 2: Start Basking at the morning (0817 h), V.bengalensis

Fig 3: During Basking at (0833-1039 h),V.bengalensis

Fig 4: After Basking, Movement of V.bengalensis

Fig 5: Back to home (1800 h), Stony type habitat, after whole day activity of V.bengalensis

Table# 01.Climatic Analysis of Daily Temperature (^{0}C), Rainfall(mm) and Basking activity of V.bengalensis,at Thatta of Sindh .

S. No.	Day/Months/Year	Basking/sun bath hourse/minutes at the morning.	Basking/sun bath hourse/minutes at the afternoon.	Rain- fall (mm)	Temperature ^{0}C
1	01-06-2013	0150	0040	x	45^{0}C
2	02-06-2013	0115	0038	x	46^{0}C
3	03-06-2013	0203	0057	x	40^{0}C
4	04-06-2013	0219	0103	x	39^{0}C
5	05-06-2013	0104	-	29 mm	38^{0}C
6	06-06-2013	0048	-	36 mm	37^{0}C
7	07-06-2013	0221	0106	x	39^{0}C
8	08-06-2013	0109	0037	x	42^{0}C
9	09-06-2013	0140	0050	x	44^{0}C
10	10-06-2013	0110	0027	x	45^{0}C
11	11-06-2013	0059	0039	x	47^{0}C
12	12-06-2013	0012	-	63 mm	43^{0}C
13	13-06-2013	0205	0102	x	42^{0}C
14	14-06-2013	0213	0055	x	40^{0}C

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