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M. Usman Ali Hashmi

Dept. of Zoology, Dehli Govt.
Science College, Hussain
Abad, 75950, Karachi,
PAKISTAN.

Email:

hashmiusman39@gmail.com

Tel: 0092-3002101966.**M. Zaheer Khan**

Dept. of Zoology, University of
Karachi, 75270,
PAKISTAN

Amtiyaz

Dept. of Zoology, Sir Syed
Govt. Girls College
NazimAbad, Karachi-74600

Email:

imtiazsafi76@gmail.com

Nawaz Ul Huda

Department of Geography
University of Karachi, 75270

Correspondence:**M. Usman Ali Hashmi**

Dept. of Zoology, Dehli
Govt. Science College,
Hussain Abad, 75950,
Karachi, PAKISTAN.

Email:

hashmiusman39@gmail.com

Tel: 0092-3002101966

Current Status, Distribution and Threats of Varanus Species (*Varanus bengalensis* & *Varanus griseus*) in Karachi & Thatta of Sindh

M. Usman Ali Hashmi, M. Zaheer Khan, Amtiyaz, Nawaz Ul Huda

ABSTRACT

Field studies for status, distribution and threats of *Varanus species*, in study areas of Sindh (Karachi and Thatta) were carried out from January 2012 to July 2013. Two species (*Varanus bengalensis* and *Varanus griseus*) were found during the field survey in both these two districts of Sindh. Some areas were found disturbed and some were undisturbed. Little undisturbed areas mostly found in Thatta and disturbed areas lie in Karachi. *Varanus bengalensis* has rich distribution in all over these two districts of Sindh, while *Varanus griseus* were found only in undisturbed areas of Thatta. However, both the species are being threatened by human activities. During survey a total of 204, specimen of *Varanus bengalensis* and only 11 of *Varanus griseus* were captured and released for research. Average (SVL) snout vent length of population at Thatta were 52.751 cm and average weight were 43.097g. In Karachi average (SVL) length were 49.507 cm and average weight were 47.991g. (Eleven) 11 main habitats were identified in overall field survey and observed that main threats were degradation of natural habitats, disturbances from villagers and hunters. Mortality of *Varanus bengalensis* was observed during road crossing, therefore, both the species need special conservation interest.

Keywords: Status, Distribution, Threats, *Varanus species*, Sindh

1. Introduction

Bengal Monitor (*Varanus bengalensis*) are usually solitary and found on the ground, the young are often seen on trees. *V. bengalensis* has a greater propensity for tree climbing. It measures up to 70 cm in body length and along with tail the total body length is about 100 cm. Large adults may ascend vertically on tree trunks and sometimes stalk and capture roosting bats. It mostly feeds on small terrestrial vertebrates like birds and their eggs, fishes, frogs, rodents, lizards & snakes etc. Their normal invertebrate prey consists of beetles, grubs, scorpions, snails, ants, termites and other invertebrates. Vertebrate prey is comparatively rare. Bengal Monitor (*Varanus bengalensis*) shelter in burrows or crevices in rocks and buildings. Monitor lizard, *Varanus bengalensis* are killed for their meat and skin and are threatened in many places.

Varanus griseus, Desert Monitor subspecies (Indian Desert Monitor) has 3-5 bands on its back, 13-19 bands on the tail, a plain tail tip, 108-139 rows of scales on their midsection, and a broader and flatter head when compared to the other subspecies. They are mainly found in Pakistan (Sindh desert areas). According to IUCN [1], 1,677 reptile species have been included in the Red list. In which, 469 are threatened with extinction. The main objective of present study is to investigate current status, distribution, conservation, natural habitat and threats for *Varanus spp.* in Sindh. Pakistan has 179 species of reptilian fauna consisting of turtles, tortoises, crocodile, gaviates, lizards and snakes [2]. Six families of lizards are found in Pakistan, viz. *Geconidae*, *Agamidae*, *Chameleontidae*, *Scincidae*, *Lacertidae* and *Varanidae*. Some workers like [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13] have been contributed some work in the field of Herpeto-Fauna of Pakistan.

2. Materials and Methods

Field surveys for the species of *Varanus bengalensis* and *Varanus griseus* for population estimation, observed natural habitat, distribution and threats in Sindh selected study areas were conducted. Weekly field surveys have been done between January 2012 – July 2013. Over 157 visits have been made and data collected on the general features of the selected study areas along with information on the habit and habitat preferences of the subject species.

Collection of information about Indian Monitor lizard (*Varanus bengalensis*) and Desert Monitor (*Varanus griseus*) has been studied by capture release and recapture method and every time (SVL) snout vent length and weight were noted. Sex has been observed properly for population estimation and length weight were recorded. *Varanus spp.* are diurnal in activity and seen very active during mid-morning. They mostly active for searching of food and for mating etc. The following methods were used for data regarding the occurrence and distribution of *Varanus spp.* in selected studies areas of Karachi and Thatta.

Counting Methods:- Following methods were applied for captured *Varanus species*

A. Direct Methods.

- Habitat Searching :-** At each site several hours search were carried out to detect *Varanus spp.*, this searching consists of approximately 20 ha (with in 250 meter radius of the observation or sampling points). this method is very suitable for counting the number of reptiles (*Varanus spp.*).
- Incidental Sightings :-** Incidental sightings are also help ful to determine the presence and population status of species, date, time, location and habitat type was recorded on data sheet. One hour to find the *Varanus spp.* All species were counted and identified in the field this methods also helped to determine the distribution and occurrence of species.
- Hand Capturing:** - Hand capturing was used for terrestrial animals. The simple's method used to capture small *Varanids* to search intensively in herbs, shrubs or may be in the water for feeding on fishes or on the tree to feed on birds, they are known to frequent and catch them by hand. Many *Varanids* were counted or captured during this study period. *Varanus spp.*
- Noosing:** - Noosing is used to catch most of the reptiles or lizards. Many lizards are most visible when they are active, However they are wary when approached and evade hand-captured by running away, Also some lizards, such as *Varanus spp.*, may sleep or bask in the places that are difficult to reach, such as in the canopy and large stone or in the burrows or tunnels. In these situation, a noose may be used to capture *Varanus spp.*, without having to approach the *Varanids* too closely. Nooses consists of a long pole, with a loop of string at the tip, which can be tightened around the neck of *Varanus* and pulled tight in order to capture the *Varanus spp.*
- Trapping:** - Trapping was used to capture many reptiles. The most commonly used trap is a pit fall trap, consisting of iron cage (the cage is 30x30x120 cm) sunk in to the ground so that the door flush with the surface. Small layer of leaf litter or grass cover should provide for animal that fall in the iron cage. This also has the benefit of attracting fresh meat, dead fish, Arthropods to the trap, which can act as a bait for *Varanus spp.* The trap were set in Mostly studies sites in Karachi and Thatta for the captured of monitor lizards.

The *Varanus spp.* were seen moving or resting just near shelters and become alert to see the observers, mostly *Varanus* run-away very fast and were hide in the burrows or tunnels, but finally were caught with the help of digging with sickle with care of with help of two or three persons. This practice was done at least for one hour to find *Varanus species*.

B. Indirect Counting Methods

1. Information from Different Sources: - Informations were collected from field staff of colleges. Members of local community/ villagers of different villages.

2. Presence of Signs, Foot Prints etc: - Impression of finger claws, foot prints or tails, were observed for finding the existence range and rough population of the species and range of the species (Fig. 2). The study was based mainly on direct observation and result calculated by the following formula.

AZ

P = _____

2Y

P= population

A= total area

Z= number observed

Y= average distance

3. Results and Discussion

Three Monitor Species are found in Pakistan. Two of these are wide spread, the range of the third is geographically restricted. Unfortunately, this is the Species which is the most ardently sought after by the leather dealers. The Bengal Monitor *Varanus bengalensis* (Fig. 3) is the most widely distributed Monitor in the Pakistan, being found in all parts of Sindh where water is permanent. The form in Sindh is *V. bengalensis* and is particularly very common in Karachi and Thatta. Their large Size, The use of open Habitat and Shallow Conspicuous Burrows, have together served to render them particularly vulnerable to persecution. As a result of both Hunting and Urbanization, some population of various species have been significantly reduced. those Species with small geographical range and most specialized Habitat requirement are giving the greatest cause of concern. Monitor lizards are threatened due to their large scale exploitation for skin trade leather of considerable utility and value is produced from Monitor lizards.

The Desert Monitor *Varanus griseus* (Fig. 4) represented by the Sub-Species, *V. g. konieczny* and *V. g. caspius* are more or less restricted to arid areas with sandy soil. The third Species is the Yellow-Headed Monitor, *Varanus flavescens*. Its geographic range is the most restricted of the three Species, being found only in seasonally flooded forests and marshes in the floodplains of Indus^[8]. The skin of Indian Monitors are in great demand. As the skin of Desert Monitor is thin relatively easily torn, hence it is not liked by the tanners and manufacturers for export. Monitor lizards are little use in Sindh. A few tribals eat the flesh such as Kohli, Bheels, Bahri, Thani and Jogis etc and for Medicinal purpose for relief of rheumatic pain. Reproductive organs are used in Black Magic; skin also used in making drum heads; abdominal fat use as salve for skin infections; Oil from the fat use as remedy for Hemorrhoids; Oil is also used as an aphrodisiac lubricant. The most common use is for the leathery industry. Increase human population need much place and destroy wild life and nature. Several peoples killed *Varanus spp.*, for their Morphological shape and Huge (long body) size, bi-fercated Tongue as like snakes, villagers and hunters killed varanus for Oil, skin use as leathers, mostly use fats as Oil for remedy of chronic pains. A small number is used for Colleges and Universities as museum specimens and for scientific research. Several Monitors are killed by vehicles while crossing roads (Fig. 5).

Table 1: Some important sites for *Varanus spp.* in Karachi and Thatta (Sindh).

S.No	Study Area	No of species captured/name of species	Co- ordinates	Total
A	KARACHI			
1	Malair Cantt	07(<i>V.bengalensis</i>)	N 24.92541 E 067.17989	07
2	Karachi University	09 //	N 24.94284 E 067.12708	09
3	Safari Park	05 //	N 24.92382 E 067.10875	05
4	Near Sandspit	17 //	N 24.50723 E 066.54104	17
5	Howksbay	10 //	N 24.51288 E 066.52762	10
6	Capemonze	18 //	N 24.50091 E 066.39393	18
7	Manora	21 //	N 24.477547 E066.58592	21
	Total no. in Thatta	<i>V. bengalensis</i>		87
B	THATTA			
1	Dargahh Shaikh Aali Makli.	05(<i>V.bengalensis</i>)	N 24.72758 E 067.89098	05
2	Dargahh, Shah Hussain, Goath Siddique Shoroo.	29 //	N 24.73942 E 067.83416	29
3	Away From Siddique Shoroo Goath One K.M.	35 //	N 24.74222 E 067.83917	35
4	Goga Booti/Jogi Booty.	09 //	N 24.74196 E 067.81345	09
5	Gajju/Gajja	29 //	N 24.72888 E 067.76830	29
6	Halyjee Road/Dargah S.Ameer Shah Sherazi.	11(<i>V.griseus</i>)	N 24.82547 E 067.74503	11
7	Halyjee Road.	10(<i>V. bengalensis</i>)	N 24.82547 E 067.74503	10
	Total no. in Thatta	<i>V. bengalensis</i>		117
	Total no. in Thatta	<i>V. graceus</i>		11

3. Distribution and Habitat

The overall *Varanus spp.* were classified in to the following habitat types:

1. Near to water courses/ near to permanent water habitat.
2. Near to Agricultural area habitat/near to village habitat.
3. Water and severage,main hole and open pipe habitat.
4. Building Gaps habitat.
5. Near to wel planted areas habitat.
6. Tunnels/Burrows habitat.
7. Big stony habitat.
8. Empty water canals habitat.
9. on the tree habitat.
10. Wood lands/garbage habitat.
11. Dry areas/Desert habitat/Sandy/Stony habitat.

In the present field studies of Karachi & Thatta, it was found that *V. bengalensis* has very rich distribution in the various

areas (Tab. 01) and show different types of habitat. It is observed that very much variation in habitat types. During field studies it is observed that mostly natural habitat destroyed by human activity, mostly distrubbed areas are lie in Karachi and little bit in Thatta. By increasing human population there is need to more and more places for build colonies. Due to this *Varanus* species may killed day by day Natural habitat minimize in wel populated areas. Increasing village size, urbanization hunting, killing for meat, for oil, for skin are main threats for *Varanus spp.* in Karachi and Thatta. The average (SVL) snout vent length of *V. bengalensis* in Karachi were 49.507, in the range of 30-65. And average male (SVL) length of *V. bengalensis* were 55.996. and average female (SVL) length were 50.462 the average weight of male were 42.033 and average weight of female were 21.877, during the observation un-sex number were 15 with weight of 36.06. Tab. # 02 in the

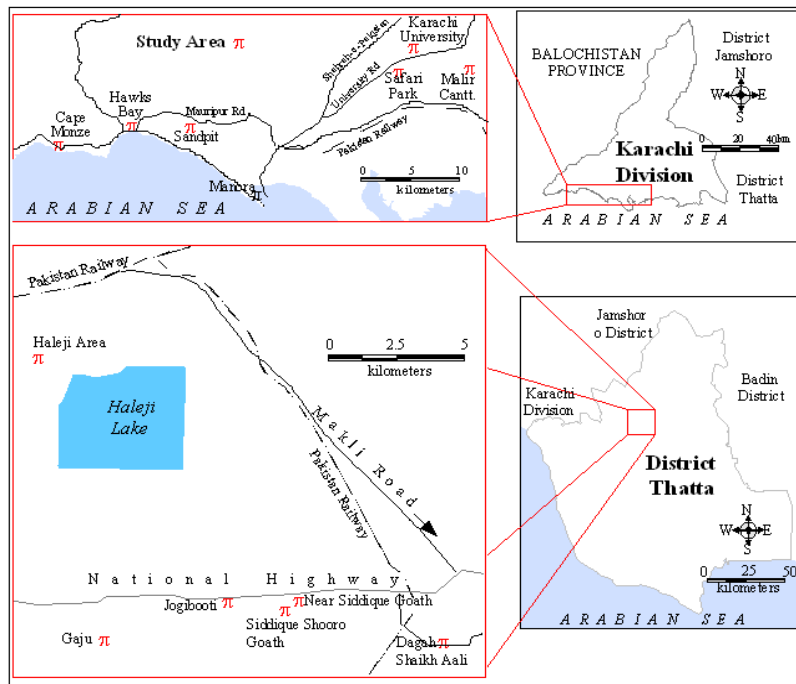


Fig 1: Distribution of Population of *Varanus spp* in Karachi and Thatta (Sindh).

study areas of Karachi. The average (SVL) length of Thatta population were 52.751, average male (SVL) length were 56.2 and average female (SVL) length were 51.280. Average male weight were 66.653 and average female weight were 27.55 and the un-sex number were 19 with weight of 48.28. in the species of *V. bengalensis* of Thatta, but in the species of *V. griseus* in Thatta, average (SVL) length of male were 27.555 and average

(SVL) length of female were 21.5 and the average weight of male were 2.231 and average weight of female were 2.05 in Thatta study area. Tab. # 03. It is observed that male were large in size and more weight as compared to female in Karachi and Thatta population (Tab. 02 and 03)

Table 2: Current Population and (SVL) Snout Vent Length and Weight of *Varanus spp* in Karachi. (Sindh).

S.no	Length Range.(Cm)	n	Species	Male	Female	Un-sex.	Male. Weight.	Female. Weight.	Un-sex. Weight.
1	30-35	06	<i>V.bengalensis</i>	-	-	06	-	-	14.15
2	36-40	09	//	-	-	09	-	-	21.91
3	41-45	06	//	02	04	-	9.48	14.45	-
4	46-50	15	//	05	10	-	21.68	25.82	-
5	51-55	25	//	13	12	-	62.59	41.14	-
6	56-60	11	//	10	01	-	61.98	6.10	-
7	61-65	15	//	15	-	-	101.27	-	-

Table 3: Current Population and (SVL) Snout Vent Length and Weight of *Varanus spp* in Thatta (Sindh).

S.no	Length Range.(Cm)	n	Species	Male	Female	Un-sex.	Male. Weight.	Female. Weight.	Un-sex. Weight.
1	21-25	02	<i>V.griseus</i>	-	02	-	-	2.05	-
2	26-30	09	//	09	-	-	2.231	-	-
3	30-35	10	<i>V.bengalensis</i>	-	-	10	-	-	25.25
4	36-40	09	//	-	-	09	-	-	23.02
5	41-45	17	//	13	04	-	51.7	41.45	-
6	46-50	21	//	12	09	-	49.9	49.7	-
7	51-55	14	//	12	02	-	49.35	7.37	-
8	56-60	27	//	22	05	-	112.9	22.8	-
9	61-65	19	//	15	04	-	78.72	22.1	-

4. Conclusion

In present studies, it was found that two species of *Varanids* are present in Karachi and Thatta districts of Sindh, in which *Varanus bengalensis* is most commonly occurring in study selected areas (Karachi and Thatta). *Varanus bengalensis* show much variation and distribution in their natural habitats and rich in numbers, mostly found in natural habitats in Thatta area, but in Karachi several new types of (un-natural) habitats were observed. While *Varanus griseus* is only occurring in their natural habitat in Thatta only. All *Varanus species* are threatening by human activities and need special conservational management & research in to the natural history.



Fig 2: Presence of Sign of *Varanus* spp. (Foot Claws Print, Tail Signs etc.)



Fig 3: *Varanus bengalensis* (During Sun Bath)



Fig 4: *Varanus griseus* (Desert Monitor) Burrows, Natural Habitat



Fig 5: *Varanus bengalensis* (Mortality during road crossing)

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