

## Distribution and Current Status of the Reptiles of Khirthar Protected Area Complex (KPAC) and Adjoining Areas in Districts Karachi, Jamshoro and Thatta, Sindh, Pakistan

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### ABSTRACT

In this study, surveys were undertaken during 2008 – 2013, to record the distribution and status of Reptiles of the area during the study 41 species of reptiles were recorded from the area. Twenty two important habitats for reptiles in the area were identified and listed. Indian Spiny-tailed Lizard (*Saara hardwickii*) was found to be under threat in its localized habitat in Jhimpir Wind Corridor block in Thatta district and Indian Fat-tail Gecko (*Eublepharis macularius*) was noted to have been almost disappeared from most of the area due to large scale capture of the species for sale in the local markets.

**Key words:** Reptilian fauna, Protected Areas, key Sites, potential threats.

### INTRODUCTION

The present studies were undertaken in some important areas for reptiles in Sindh viz. Khirthar Protected Area Complex (KPAC) and in Jhimpir area (Thatta District). The Khirthar Protected Areas Complex (KPAC) stretches over 4,350 km<sup>2</sup>, encompassing the Protected Areas (PAs) that lie in Kohistanarea in the southwest of Sindh and it comprises of Khirthar National Park (KNP), the MahalKohistan (MKWS) and Hab Dam Wildlife Sanctuaries (HDWS), and the Surjan, Sumbak, Eri, and Hothiano Game Reserves (SGR). The KNP, MKWS, and HDWS were notified on January 31, 1974. The Park stretches over 3,087 km<sup>2</sup>, while the MKWS and the HDWS cover 705.7 km<sup>2</sup> and 272 km<sup>2</sup>, respectively. The SGR was established in June 1976

over an area of 285.3 km<sup>2</sup>. The KPAC is significant for its sizeable indigenous settlements, rugged terrain, valuable flora and mineral resources, and a number of important wildlife species such as the Sindh Ibex, Urial, and Chinkara, Houbara Bustard, Gray Partridge, See-see Partridge and Birds of Prey. Archeologically significant sites include the tombs in Taung, the fort of Rannikot, and the fossils and petrified forests of the Khirthar Range.

In addition to these sites, field surveys were also made in some selected potentially important localities in Darawat Dam Area (district Jamshoro) and Jhimpir Wind Corridor area (District Thatta) and data were collected in respect of reptiles of the area, particularly the Indian Spiny-tail Lizard, and the Monitor Lizards.

Previous studies made on the reptilian fauna of the area include: Minton (1966), University of Melbourne (2000), Mirza (2002), Khan (2006), Khan *et al.* (2012, 2012a), Environmental Management Consultants (2012), Begum *et al.* (2013, 2013a) and Hashmi *et al.* (2013).

## MATERIALS AND METHODS

### Study Areas

The main study areas for the present study which form most of the main components of entire Protected Area Complex include Khirthar National Park (Karchat Area and Khar Centre Area), Mahal Kohistan Wildlife Sanctuary, Surjan, Sumbak, Eri, and Huthiano Game Reserves

These areas comprised of cliffs, peaks, canyons, stony foothills, rocky slopes; mountain streams/nullahs; stony shrub lands; riparian areas; plains; villages; agricultural areas; tombs and graveyards; and wetlands.

Surveys were also undertaken in selected localities in Jhampir area and in Darawat Dam Area. Inland Jhampir is located north to the Indus Delta on the right bank of River Indus and close to Keenjhar Lake. The area mainly constitutes an environment with undulating stony plain and scattered vegetation. Few patches of seasonal barani agriculture may also be seen which is cultivated during the rainy season. The stony plains are wintering habitat for many migratory birds including Sandgrouses, Houbara Bustard and some raptor species. A number of reptile species are found in the area which include Indian Spiny tailed Lizard, Indian Monitor, Desert Monitor, Indian Cobra, Saw-scaled Viper, Cheekered Keelback, Cliff Racer, Glossy bellied Racer and Pakistan Ribbon Snake.

**Table 1: Number of species of different groups of Reptiles recorded**

1.	Freshwater Turtles	02 spp
2.	Marsh Crocodile	01 spp
3.	Lizards	27 spp
4.	Snakes	11 spp

Darawat Dam is located near village Jhangri, 20km west of super Highway at about 135 km NW of Karachi. It is quite close to the Game Reserves areas in KPAC. 08 species of reptiles have been recorded from the area, the important ones being the Monitor Lizards (Begum *et al.* 2013).

The following survey techniques were applied for collection of data regarding the occurrence and distribution of reptiles in the study areas.

### Plot Searching

At each site, search was carried out to detect as many reptile species as possible within a circular central zone. This consisted of searching approximately 20 ha for a reasonable time and recording the species observed.

### Night Observations

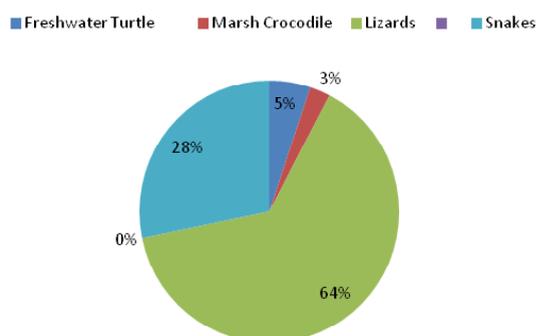
Transect Method was applied to record lizards and snakes with portable spotlight within transects of suitable length.

### Turning of Stones and Rocks

Reptiles take shelter or hide themselves under the stones or rocks. In the day time surveys, stones or rotten fallen were turned over to record the presence of reptiles, if any.

### Indirect Evidences

Evidences of finger or footprints, fecal pellets, tracks, burrows and tunnels were also collected to record the presence of various species. Information was also collected from the local wildlife staff and from the local communities of the study area.



**Fig. 1: Species composition of the different groups of reptiles of the area**

Table 2: Checklist of Reptiles of KPAC and allied areas

S.No	Order/ Family	Family	Scientific Name	Common Name
1	Chelonia	Emydidae	<i>Geoclemys hamiltonii</i>	Yellow Spotted Mud Turtle
2	Chelonia	Emydidae	<i>Hardella thurjii</i>	Common River Turtle
3	Crocodylia	Crocodylidae	<i>Crocodylus palustris</i>	Marsh Crocodile
4	Squamata	Agamidae	<i>Calotes versicolor</i>	Indian Garden Lizard/ common Tree Lizard
5	Squamata	Agamidae	<i>Laudakia lirata</i>	Yellow-headed Spotted Rock Agama
6	Squamata	Agamidae	<i>Laudakia melanura</i>	Black Rock Agama
7	Squamata	Agamidae	<i>Laudakia nupta</i>	Rock Agama
8	Squamata	Agamidae	<i>Trapelus agilis</i>	Brilliant Agama / Common Field Agama
9	Squamata	Agamidae	<i>Trapelus megalonyx</i>	Afghan Agama/ Ocellate Ground Agama
10	Squamata	Agamidae	<i>Trapelus rubrigularis</i>	Red- throated Agama
11	Squamata	Eublepharidae	<i>Eublepharis macularius</i>	Indian Fat-tailed Gecko
12	Squamata	Gekkonidae	<i>Agamura persica</i>	Persian Spider Gecko
13	Squamata	Gekkonidae	<i>Cyrtopodion kachhensis</i>	Warty Rock Gecko / Kutch Spotted Ground Gecko
14	Squamata	Gekkonidae	<i>Cyrtopodion scabrum</i>	Keeled Rock Gecko/ Common Tuberculate Ground Gecko
15	Squamata	Gekkonidae	<i>Crossobamon orientalis</i>	Sind or Yellow tailed Sand Gecko
16	Squamata	Gekkonidae	<i>Hemidactylus brookii</i>	Spotted Indian House Gecko / Spotted Barn Gecko
17	Squamata	Gekkonidae	<i>Hemidactylus flaviviridis</i>	Yellow bellied House Gecko
18	Squamata	Gekkonidae	<i>Hemidactylus leschenaultia</i>	Tree Bark Gecko
19	Squamata	Gekkonidae	<i>Hemidactylus persicus</i>	Persian House Gecko
20	Squamata	Gekkonidae	<i>Hemidactylus triedrus</i>	Blotched House Gecko
21	Squamata	Gekkonidae	<i>Teratolepis facia</i>	Flat-tail Gecko
22	Squamata	Gekkonidae	<i>Tropicolotes persicus</i>	Persian Banded or Sind Dwarf Gecko
23	Squamata	Lacertidae	<i>Acanthodactylus cantoris</i>	Indian Fringe-toed Lizard or Bartailed Sand Lizard
24	Squamata	Lacertidae	<i>Mesalina watsonana</i>	Long tailed Desert Lacerta / Spotted Lacerta
25	Squamata	Lacertidae	<i>Ophisops jordonii</i>	Punjab Snake –eyed Lizard / Rogose Spectacled Lacerta
26	Squamata	Scincidae	<i>Eurylepis taeniolatus</i>	Yellow – bellied Mole Skink/ Common Mole Skink
21	Squamata	Scincidae	<i>Novoeumeces blythianus</i>	Orange tail Skink
27	Squamata	Scincidae	<i>Ophiomorus tridactylus</i>	Indian Sand Swimmer
28	Squamata	Uromastycidae	<i>Saara hardwickii</i>	Indian Spiny tailed Lizard
29	Squamata	Varanidae	<i>Varanus bengalensis</i>	Indian Monitor
30	Squamata	Varanidae	<i>Varanus griseus</i>	Desert Monitor
31	Squamata	Typhlopidae	<i>Ramphotyphlops braminus</i>	Brahminy Blind Snake
32	Squamata	Typhlopidae	<i>Typhlops ductuliformes</i>	Slender Blind Snake
33	Squamata	Boidae	<i>Eryx johnii</i>	Common Sand Boa
34	Squamata	Colubridae	<i>Platyceps rhodorachis</i>	Cliff Racer
35	Squamata	Colubridae	<i>Platyceps ventromaculatus</i>	Glossy bellied Racer/ Plains Racer
36	Squamata	Colubridae	<i>Psammophis candanura</i>	Indian Sand Snake
37	Squamata	Colubridae	<i>Psammophis leithii</i>	Sindh Ribbon Snake
38	Squamata	Colubridae	<i>Spalerosophis diadema</i>	Blotched Diadem Snake/ Royal Snake
39	Squamata	Elapidae	<i>Bungarus caeruleus</i>	Common Krait
40	Squamata	Elapidae	<i>Naja naja</i>	Black Cobra
41	Squamata	Viperidae	<i>Echis carinatus</i>	Saw scaled Viper

**Table 3: Important Areas for Reptiles**

<b>S.No</b>	<b>Important Areas</b>	<b>Co-ordinates</b>
1	Area near Dargah Fakir Muhammad Ali (Sandy, Grassy Plain), KPAC	25 43 07.7 N 67 50 34.0 E
2	Area near Goth Rahu Chang, Jhampir	25 08 01.0 N 67 59 55.1 E
3.	Area near Goth Waryaam Palari, Jhampir	25 06 56.9 N 67 47 12.6 E
4	Darawat Dam Area	25 24 38.0 N 67 56 37.4 E
5	Goran/ Garr, Thano Ahmed Khan (Sandy Area)	25 24 41.6 N 67 39 06.1 E
6	Gambokh Water Point, KPAC	25 26 51.0 N 67 34 07.0 E
7	Hub Dam (Crocodile Point)	25 19 57.7 N 67 10 34.4 E
8	Halalo Pachraan (Sandy, Rocky Plain Area) , KPAC	25 14 23.0 N 67 26 10.7 E
9	Khar Centre	25 19 59.3 N 67 10 32.6 E
10	Kallogoth Naddi, Malir District	25 07 54.9 N 67 47 52.6 E
11	Lailaanwari Boothi, near Rano Jabal, KPAC	25 42 38.0 N 67 42 55.0 E
12	Mole Shareef (Flat Plain Area) , KPAC	25 27 42.3 N 67 25 54.1 E
13	Mithrhi Area (Vegetation Area) , KPAC	25 24 55.8 N 67 42 15.4 E
14	Moidan, Plain Area, Khar Center	25 25 26.5 N 67 13 30.8 E
15	Near Dargah Usman Shah, on road to Dureji (Flat Plain Area)-	25 22 53.2 N 67 12 35.9 E
16	Indian Spiny-tailed Lizard habitat Jhampir area Near Haji Lakhano Goth / Shailee Chang Goth (Sandy Plain Area)	25 09 21.7 N 67 57 24.1 E
17	Near Bachani Sub- Centre , KPAC	25 32 00.2 N 67 50 08.7 E
18	Near Eri Game Reserve	25 33 18.9 N 67 52 20.5 E
19	Near Mohd. Siddiq Sehtani Village (Water Point/ Rocky Area), KPAC	25 55 03.0 N 67 39 43.0 E
20	Sumbak Game Reserve	25 24 42.0 N 67 52 56.4 E
21	Thano Bula Khan	25 20 49.5 N 67 50 48.0 E
22	Uth Palaan Area (Nullah, Rocky sides, Sandy Flood Plain), KPAC	25 11 58.5 N 67 30 01.1 E

## RESULTS AND DISCUSSION

Earlier data about the biodiversity of the area had been collected during the Environmental Study of KPAC in 2000 and 2012. Moreover, some data have also been collected through EIA studies undertaken in the Protected Areas included in the KPAC during the period 2008 – 2013. Based on both studies, 36 species of reptiles were recorded from KNP (UoM, 2000). While, 38 species were reported from the KPAC during 2012 (EMC, 2012).

During the present study, 41 species of reptiles comprising of 3 orders, 14 families and 04 groups have been recorded from the area (Tables 1, 2 and fig.1).

### Key Sites

22 sites in the study area have been identified as sites of potential importance for the reptiles (Table 3). Out of these, the most important ones are the Khar Centre, Mahal Kohistan Wildlife Sanctuary, Darawat Dam Area and the sites earmarked for installation of Wind Power Plants in the Jhimpir Wind Corridor (District Thatta).

### Status of Reptiles

Most of the Protected Area provides suitable habitat for the reptiles. Five species of reptiles were found to be quite common in the area. These include: Common Tree Lizard, Sind Sand Gecko, Indian Spiny tailed Lizard, Desert Monitor and Saw- scaled Viper.

As regards the threats to the reptiles in the area, only recently the Indian Fat-tailed Gecko has been found to be nearly wiped out of the area due to its commercial value and its large scale capture

for trade. Moreover, there are potential threats to the Monitor Lizards and Indian Spiny-tailed Lizard due to developmental activities in Darawat Dam Area (District Jamshoro) and also in Jhimpir Wind Corridor Area (District Thatta) on account of Wind Power Projects being launched in the area.

Marsh Crocodile and the Crowned River Turtle are the Vulnerable Species of the area and these were recorded from Hub Dam Reservoir (District Karachi).

Marsh Crocodile and the Monitor Lizards have been declared totally protected species against hunting and shooting etc under the Sind Wildlife Protection Ordinance 1972.

Five species of reptiles have been identified as Species of Special Conservation Interest which include Marsh Crocodile, Indian Spiny-tailed Lizard, Indian Monitor, Desert Monitor and Indian Fat-tailed Gecko

### Priority Actions

The following conservation measures have been suggested for saving the reptiles of the area against potential threats:

1. Monitoring of the populations of Fat-tailed Gecko, Indian Monitor, Desert Monitor and Indian Spiny tailed Lizard.
2. Encouraging and supporting the private sector for captive breeding of monitor Lizards and Fat-tailed Gecko due to their commercial value.
3. Safeguarding the key habitats of Indian Spiny-tailed Lizards particularly in Thatta District.

### Photographs of Key Reptilian Species of the Area



Spiny tailed Lizard



Indian Monitor Lizard



Fat-tailed Gecko

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