Journal of Bioresource Management

Volume 5 | Issue 2 Article 5

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Recommended Citation

Faiz, A. H., Bagaturov, M. F., Hassan, M. u., Malik, I. U., & Faiz, L. Z. (2018). Distribution of Reptiles in Tolipir National Park, Pakistan, *Journal of Bioresource Management, 5* (2).
DOI: https://doi.org/10.35691/JBM.8102.0089
ISSN: 2309-3854 online
(Received: Nov 7, 2019; Accepted: Nov 7, 2019; Published: May 10, 2018)

Distribution of Reptiles in Tolipir National Park, Pakistan

DISTRIBUTION OF REPTILES IN TOLIPIR NATIONAL PARK, PAKISTAN

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ABSTRACT

Reptiles are the most diverse group under the category of land vertebrates. The reptile population of Tolipir National Park was surveyed from February 2013 to September 2013. The topography of this area supports a diverse plethora of vegetation that provides an ideal habitat to a host of reptiles. Random sampling of 52 quadrates was carried out. Twelve species of reptiles were recorded. The recorded species included CITES listed (Appendix II) endangered species *Naja oxiana* and *Laudakia agrorensis*.

Key words: Reptile, Tolipir, National Park

INTRODUCTION

Reptiles contribute significantly to the world's biodiversity (Pinchiera-Donoso et al., 2013). This is the most diverse group under the category of land vertebrates. However, there is a lack of studies that focus solely on reptiles (Tingley et al., 2016). Malik et al. (2014) site the presence of approximately 177 reptile species in Pakistan that include turtles (14), lizards (90) and snakes (65). The topography of this area creates an interesting habitat for reptiles as 13 species are restricted only to Pakistan. It supports a diverse plethora of vegetation that provides an ideal habitat to a host of reptiles.

To conserve the biodiversity of reptiles in Pakistan it is essential to know what species may be found here and their current status. Pakistan is home to two families of freshwater turtles (Saeed et al., 2011); amongst them, five species of freshwater turtles are considered to be threatened globally (Ghalib and Hasnain, 2017); Faiz et al. 2014, 2015, 2016) Khan and Khan (2000) reported that species of snake *Coluber rhodorachis* are found in different parts of Pakistan but that the ones found in AJK differ from the ones found in other parts of the country. Khan (2003) cite the presence of 103 species of lizards belonging to eight families.

MATERIALS AND METHODS

The study was carried out in Tolipir National Park, Azad Jammu and Kashmir. Fifty-two quadrats of a 33.33m diameter were randomly placed and surveyed. Garmin Foretrex 401 was used to mark the quadrates. The location of the quadrates with their respective GPS reading is given in the appendix. The study was conducted from February 2013 to September 2013. Five people were employed to conduct a visual encounter survey (Heyer et al., 1994) to detect the Reptiles in each quadrat. The species found were photographed, their density was tabulated and the altitude was recorded. Some specimens were conserved in a 70% solution of formalin for better identification (Khan et al., 2006).

RESULTS AND DISCUSSION

There are 199 reptile species (Reptiles of Pakistan, n.d.) known from Pakistan. Twelve species of reptiles belonging to seven families were present at the park (Table 1). Each species of snakes represented 1% of the total species observed at the park. *Bungarus caeruleus, N. oxiana* and *B. trigonata* were previously reported, but without the detailed range descriptions in Azad Kashmir (Khan, 1996). On the global level, *Naja oxiana* is treated as an endangered species and is included into Appendix II of CITES and requires establishment of conservation actions. *Boiga trigonata* is listed as Least Concern according to IUCN Red List data but became rare on most of its range. *Bungarus caeruleus* and *Psammophis leithii leithii* have not yet been assessed for the International Red List but were also recorded as scarcely seen on most of their habitat range as they are also used in traditional Asian medicine. The data deficient species require significant status investigations to help establish their conservation status.

The Indian Flap Shell turtle (Moonji kuchwa is a local name), *Lissemys punctata andersoni* occurred in muddy ditches, lakes, marshes, ponds and streams. Moonji kuchwa has an association with aquatic environment, and exhibits a limited appearance associated with small water bodies. Although this species is at low risk, least concern (IUCN, 2010), this population may be a specific ecotype adapted for low water and lower temperatures, thus warranting special conservation measures.

The Kashmir Rock Agama (*Laudakia tuberculata*) was found to be the most common reptile of Tolipir National Park. The near-endangered (IUCN, 2010) Agrore Wadi Kirla (*Laudakia agrorensis*) was the second most commonly encountered species and requires immediate special conservation measures.

The special issue is the status of Leopard gecko or Korrh kirli (*Eublepharis* sp.) found in the studied area. The identification to the exact species level is not yet made because of lack of museum specimen and genetic-based studies, further studies may reveal the possibility of the new subspecies of either *Eublepharis macularius* reported for the area (Khan, 2006) or even to a new species by some morphological characters closer to *E. angramayniu*.

Brook's gecko or Barani chipkali (*Hemidactylus brookii*) is one of the often-found wall geckos inhabiting urban habitat in most countries of its range and has a high density (20 individuals) in the studied area as compared to population in a coniferous forest (2 individuals) of Dhirkot, Azad Jammu and Kashmir (Hussain et al, 2013).

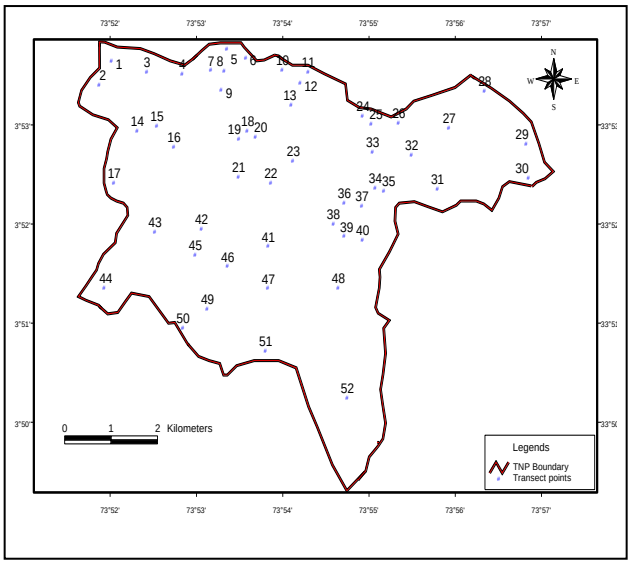

Figure 1: Map of TNP showing location of different quadrate stands established for the reptile sampling (for GPS coordinates of different points refer to Appendix) (source: Arc View 3.3 and Google Earth Pro 4.2)

Table 1. Density of reptiles in Tolipir National Park

	Scientific Names	**D=No. of individuals/area^2**	**Conservation status**
Family Scincide			
Common mole skink	*Eurylepis taeniolatus*	50	DD
Family Elapidae			
Common krait	*Bungarus caeruleus*	5	LC
Brown cobra	*Naja oxiana*	3	E
Family Colubridae			
Common cat snake	*Boiga trigonata*	3	LC
Kashmir koluber saamp	*Platyceps rhodorachis*	4	LC
Sindhi teer maar	*Psammophis leithii leithii*	5	LC
Family Gekkonidae			
Korrh kirli	*Eublepharis macularius*	30	LC
Barani chipkali	*Hemidactylus brookii*	20	LC
Family Agamidae			
Agrore wadi kirla	*Laudakia agrorensis*	104	E
Neela kirla	*Laudakia tuberculata*	165	LC
Family Typhlopidae			
	Typhlops porrectus	4	LC
Family Trionychidae			
Moonji kunchwa	*Lissemys punctata andersoni*	6	LC

Abbreviations:
*** LC = Least Concern, E = Endangered, DD = Data Deficient**

CONCLUSION

This study provides basic information of the reptile community in TNP. Twelve species of reptiles were recorded. The recorded species included CITES listed (Appendix II) endangered species *Naja oxiana* and *Laudakia agrorensis*.

ACKNOWLEDGEMENTS

I am very thankful to Professor of Biology Ann V. Paterson, who has step-wise, guided me in writing this manuscript.

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APPENDIX

GPS coordinates of different boundary points of TNR

Boundaries points Reference Nos. Coordinates			
	Latitude (Nº)	**Longitude (Eº)**	**Elevation (m)**
1.	33°53'49.80"	73°51'52.54"	2238
2.	33°53'46.14"	73°52'21.68"	2312
3.	33°53'35.53"	73°52'52.03"	2206
4.	33°53'48.26"	73°53'8.72"	2617
5.	33°53'49.39"	73°53'31.04"	2239
6.	33°53'38.53"	73°53'42.21"	2538
7.	33°53'42.09"	73°53'54.39"	2331
8.	33°53'35.91"	73°54'7.47"	2320
9.	33°53'36.10"	73°54'17.62"	2500
10.	33°53'24.86"	73°54'44.00"	2292
11.	33°53'14.38"	73°54'45.35"	2535
12.	33°53'10.07"	73°54'54.37"	2551
13.	33°53'4.64"	73°55'16.24"	2468
14.	33°53'14.18"	73°55'31.35"	2516
15.	33°53'22.41"	73°55'59.87"	2386
16.	33°53'29.71"	73°56'10.70"	2326
17.	33°53'14.84"	73°56'37.04"	2066
18.	33°53'1.71"	73°56'53.30"	2069
19.	33°52'31.84"	73°57'8.23"	1750
20.	33°52'22.67"	73°56'53.65"	1867
21.	33°52'25.61"	73°56'38.00"	1855
22.	33°52'22.49"	73°56'32.94"	1814
23.	33°52'8.19"	73°56'25.66"	1800
24.	33°52'13.86"	73°56'14.70"	1760
25.	33°52'13.86"	73°56'4.02"	2291
26.	33°52'7.29"	73°55'51.40"	2162
27.	33°52'13.41"	73°55'31.78"	2386
28.	33°52'12.50"	73°55'21.16"	2329
29.	33°52'9.91"	73°55'18.63"	2308
30.	33°52'1.78"	73°55'18.17"	2282
31.	33°51'53.91"	73°55'20.34"	2336
32.	33°51'32.52"	73°55'7.19"	2334
33.	33°51'21.70"	73°55'7.36"	2162
34.	33°51'9.57"	73°55'4.67"	2226
35.	33°51'1.38"	73°55'14.08"	2228
36.	33°50'56.71"	73°55'10.22"	1981
37.	33°50'41.48"	73°55'11.68"	1888
38.	33°50'20.07"	73°55'8.16"	1640

39.	33°49'59.54"	73°55'11.57"	1812
40.	33°49'49.84"	73°55'9.91"	1585
41.	33°49'38.83"	73°55'0.17"	1586
42.	33°49'30.41"	73°54'57.73"	1503
43.	33°49'18.51"	73°54'44.66"	1415
44.	33°49'46.13"	73°54'29.33"	1832
45.	33°50'12.46"	73°54'16.99"	1706
46.	33°50'32.79"	73°54'9.80"	1856
47.	33°50'37.24"	73°53'57.24"	2125
48.	33°50'37.25"	73°53'40.12"	1970
49.	33°50'34.20"	73°53'28.06"	2059
50.	33°50'28.37"	73°53'18.98"	2054
51.	33°50'35.48"	73°53'16.35"	1996
52.	33°51'15.93"	73°51'37.97"	1367