



## Short Communication

## Occurrence and Distribution of Snake Species in Balochistan Province, Pakistan

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## ABSTRACT

The current study was conducted in Zhob, Quetta, Sibi, Kalat, Naseer Abad and Makran Divisions of Balochistan Province. A total of 619 snake specimens representing 6 families, 20 genera and 37 species were collected. The family wise representation among collected specimens has been Boidae (4.6%), Leptotyphlopidae (7.5%), Typhlopidae (10.3%), Elapidae (11.7%), Viperidae (13.4%) and Colubridae (52.5%). The percentage of family Boidae, Typhlopidae, Elapidae and Leptotyphlopidae were high in Sibi Division while family Viperidae and Colubridae were dominant in Quetta Division. The family Colubridae has been the most dominant in the Province, having ten genera viz., Boiga (6.8%) Coluber (10.1%), Eirenis (2.5%), Lycodon (3.5%), Lytorhynchus (6.1%), Oligodon (4.7%), Natrix (1.7%), (7.5%), Ptyas (2.9 %) Spalerosophis (6.3%) and Psammophis. The Viperidae family has been on the second in occurrence with four genera viz., Echis (4.5%), Eristocophis (2.4%), Psudocerastes (2.9%) and Vipera (3.5%). The Typhlopidae (Ramphotyplops 5.8%, Typlops 4.6%) and Elapidae (Bungarus 6.3%, Naja 5.3%) families were represented with two genera each. While Boidae (Eryx 4.48%) and Leptotyphlopidae (Leptotyphlops 7.5%) families had only one genus each. The highest diversity was recorded in Sibi Division and the lowest diversity in Kalat Division. Seven snake species, *Eryx tataricus*, *Typhlops ductuliformes*, *Bungarus sindanus*, *Lycodon travancoricus*, *Spalerosophis arenarius*, *Psammophis condanars* and *Lytorhynchus paradoxus* were recorded for the first time from Balochistan Province.

## Article Information

Received 11 November 2018

Revised 11 October 2020

Accepted 10 December 2020

Available online 28 April 2021

## Authors' Contribution

SAE carried the research with the help of other authors and wrote the manuscript. AI, MKT and IT helped in the experimental work. AK and SDK classified the species and proofread the article. IA helped in arranging contents of the article.

## Key words

Balochistan, Zones, Snake, Species, Family, Identification

In Geographical assessment Balochistan is the largest Province of Pakistan covering an area of 347,190 square kilometers (Javaid, 2012). The latitude of the province is 28°29'26.64"N and Longitude 65°5'44.81"E and an Elevation of 674.74 meters (2213.73 Feet). The Province comprises vast desert, barren mountains and rocky fields with climates subject to severe hot, cool, scanty and uncertain rainfall in winter and infrequently in summer months respectively (Safi *et al.*, 2014). Among reptiles, there are 3,500 snake species worldwide, occupying moderate to tropical environments (Wallach *et al.*, 2014; Uetz and Hosek, 2016). As for most reptiles, distribution data for snake species are rare, and therefore, they are excluded from most large-scale trainings of biodiversity and

distribution designs (Jenkins *et al.*, 2015; Moura *et al.*, 2016). Although consistent evaluations of snake diversity would help in framing global and local policies for biological conservation; no detailed data have yet been accumulated for the Neotropics, despite it covering one of the world's richest herpetofaunas (Bohm *et al.*, 2013; Meiri and Chapple, 2016).

Snakes (Serpentes) are carnivorous Squamate reptiles known for their elongated, limbless physique and bifurcated tongues; they exhibit phenotypically diverse radiation (Secor and Diamond, 1998; Castoe *et al.*, 2008, 2009). In Pakistan 67 species are found (Baig *et al.*, 2012) making them one of the most effective groups of reptiles. Their hesitant color differences and overlapping scale counts have always been a taxonomic challenge to the herpetologists working in the Middle East and Southeast Asia (Leviton *et al.*, 2003).

Snakes are cold-blooded animals and distributed worldwide except poles. They are nearly one-fourth of all

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0030-9923/2021/0001-0001 \$ 9.00/0  
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known vertebrate species and require esthetic, economic, and cultural values (Zug *et al.*, 2001). Snakes are of extreme importance in the food chain and ecological balance of nature (Malkani, 2006). The present work was undertaken to evaluate the validity, existence and distribution of snake

fauna in Balochistan Province.

#### Materials and methods

The current study was conducted in Zhob, Quetta, Sibi, Kalat, Naseer Abad and Makran Divisions of Balochistan

**Table I. Distribution of snake's species (%) in all six divisions of Balochistan province.**

Species	Divisions of Balochistan (%)						Total (%)
	Zhobe	Quetta	Sibi	Kalat	Naseer Abad	Makran	
<b>Family Boidae</b>							
<i>Eryx johnei</i>	0	0.16	0.96	0.32	0.64	0.48	2.56
<i>Eryx tetaricus</i>	0.32	0.48	0.48	0.16	0.32	0.16	1.92
<b>Family Vipridae</b>							
<i>Echis carinatus</i>	0.64	0.80	0.80	0.64	0.48	0.48	3.36
<i>Vipra labeatina</i>	1.29	0.48	0	1.13	0	0.80	3.7
<i>Pseudocerastes persicus</i>	0	1.93	0.96	0	0	0	2.89
<i>Eristocphis macmahoni</i>	0.48	1.93	0	0	0	0	2.41
<b>Family Typhlopidae</b>							
<i>Ramphotyphlops braminus</i>	0.48	0.80	0.80	0.48	0.64	0.64	3.84
<i>Typhlops porrectus</i>	0.64	0.64	0.96	0.48	0.80	0.96	4.48
<i>Typhlops ductuliformes</i>	0	0.16	0.16	0	0	0	0.32
<b>Family Leptotyphlopidae</b>							
<i>Leptotyphlops macrohynchus</i>	0	1.77	2.26	0	0.48	0	4.51
<i>Leptotyphlops blanfordii</i>	0.64	0.80	1.13	0.48	0	0	3.05
<b>Family Elapidae</b>							
<i>Bangarus caeruleus</i>	0.96	0.32	0.64	0.32	0.64	0.64	3.52
<i>Bangarus sindanus</i>	0	0.48	0.32	0	0	1.93	2.73
<i>Naja naja</i>	0.64	0.48	1.29	0	0	0.64	3.05
<i>Naja oxiana</i>	0.32	0.64	0.48	0.16	0.16	0.48	2.24
<b>Family Colubridae</b>							
<i>Coluber karelini</i>	0.80	0.48	0.64	0.32	0.16	0.32	2.72
<i>Coluber rhodorachis</i>	0	0.32	0.32	0.80	0.16	0.32	1.92
<i>Coluber vertrimaculatus</i>	0.16	0.64	0.32	0.16	0.32	0.16	1.76
<i>Coluber ravergieri</i>	0.32	0.48	0.32	0.48	0.16	0.32	2.08
<i>Coluber fasciolatus</i>	0	0.80	0	0.48	0.32	0.80	2.4
<i>Lytorhynchus maynardi</i>	0	0.32	1.29	0	0.48	0.48	2.57
<i>Lytorhynchus ridgewayi</i>	0.32	0.64	0.64	0	0	0	1.6
<i>Lytorhynchus paradoxus</i>	0	0.80	0.64	0	0.48	0	1.92
<i>Lycodon striatus striatus</i>	0	0.48	0.32	0.48	0.48	0.32	2.08
<i>Lycodon aulicus aulicus</i>	0	0.80	0.64	0	0	0	1.44
<i>Lycodon travancoricus</i>	0.36	0	0.16	0.80	0	0	1.12
<i>Spalerosophis schirazianus</i>	0.48	0.64	0.48	0	0.80	0.48	2.88
<i>Spalerosophis diadema diadema</i>	0.64	0.80	0.32	0	0.16	0	1.92
<i>Spalerosophis articeps</i>	0.32	0.48	0.64	0	0	0	1.44
<i>Spalerosophis arenarius</i>	0	0.64	0	0	0.64	0	1.28
<i>Eirenis persica</i>	0.16	0.48	0	0.64	0.48	0.80	2.56
<i>Oligodon taeniolatus</i>	0.48	0.80	0.48	0	0.32	0.48	2.56
<i>Oligodon arnensis</i>	0.80	0.64	0.48	0	0.16	0	2.08
<i>Psammophis leithi</i>	0.64	0	0	0.80	0.64	0.48	2.56
<i>Psammophis leineolatus</i>	0	1.13	0	0	0.48	0.32	1.93
<i>Psammophis condanars</i>	0.32	0	0.32	0	0	0.16	0.80
<i>Boiga trigonata trigonata</i>	0.48	0.80	0.32	0.48	0.80	0.96	3.84
<i>Boiga trigonata melanocephalus</i>	0.32	0.16	0.48	0.48	0.64	0.80	2.88
<i>Ptyas mucosus</i>	0.32	0.32	0.80	0.64	0.48	0.32	2.88

Province. Field surveys were conducted in summer seasons particularly during dawn and twilight hours in 2015-2017. Data on snakes were collected both by collecting snakes live employing different methods and in situ condition (recording observations only). Methods of collection that depended on the habitat type included: hand nets, drag nets, snake sticks and pit fall traps with drift fences were used to capture snakes observing all the ethical requirements (Baig and Masroor, 2008). Each specimen was measured and identified using identification keys developed by Leviton *et al.* (2003) and Nasrullah *et al.* (2008).

#### Results and discussion

A total of 619 snake specimens belonging to six families including Boidae (4.6%), Leptotyphlopidae (7.5%), Typhlopidae (10.3%), Elapidae (11.7%), Viperidae (13.4%) and Colubridae (52.5%) were collected and studied for their morphological characteristics (Table I). The family wise distribution shows that the prevalence of family Elapidae and Leptotyphlopidae were higher in Sibi Division while the family Colubridae and Viperidae were higher in Quetta Division. Similarly the prevalence of family viperidae were higher in Quetta Division, while the family Typhlopidae were dominant in Sibi Division. The family Colubridae was the most dominant in the province, having ten genera and 23 species. Four snake species, *Lycodon travancoricus*, *Psammophis condanars*, *Spalerosophis arenarius*, and *Lytorhynchus paradoxus* were recorded for the first time from family Colubridae of Balochistan Province. The family Boidae had one genus and two species. *Eryx tataricus* was for the first time recorded from all the six zones. Family Viperidae included four genera and one species in each genus. Family Typhlopidae comprised of two genera and two species with one species in each of the genera. *Typhlops ductuliformes* is the first record from Balochistan province, reported from all six divisions of the province. Family Leptotyphlopidae comprised of one genus having two species. Family Elapidae consisted of two genera and two species in each of the genera. *Bungarus sindanus* was reported for the first time from Quetta, Sibi and Kalat Division.

Out of six identified families the ratio of family Colubridae was the highest (52.5%) in the province, having ten genera viz., *Boiga* (6.8%), *Coluber* (10.1%), *Eirenis* (2.5%), *Lycodon* (3.5%), *Lytorhynchus* (6.1%), *Oligodon* (4.7%), *Natrix* (1.7%), (7.5%), *Ptyas* (2.9 %) *Spalerosophis* (6.3%) and *Psammophis*. Leptotyphlopidae family had been the lowest (7.5%) in the province. The findings of the present study were approximately comparable to those of (Minton and Sherman, 1962; Ali *et al.*, 2012). The percentage of family Boidae, Typhlopidae,

Elapidae and Leptotyphlopidae were high in Sibi Division while family Viperidae and Colubridae were dominant in Quetta Division.

Seven snake species, *Eryx tataricus*, *Typhlops ductuliformes*, *Bungarus sindanus*, *Lycodon travancoricus*, *Spalerosophis arenarius*, *Psammophis condanars* and *Lytorhynchus paradoxus* were recorded for the first time from Balochistan Province.

#### Conclusion

The sampling region was based on random sampling from northern rocky Balochistan to southern desert and semi-desert areas. Throughout the study era, native people have been found to kill snakes out of fear without understanding their conservation value. Knowledge in an instructive programme is therefore a vital need of time.

#### Acknowledgments

The authors wish to express their deep appreciation to Prof. Dr. Tariq Kiyani, Director of the CASVAB Laboratory Research Centre, and to the residents of District Musa Khel and the surrounding districts for their continued support, assistance and timely information during the research work.

#### Statement of conflict of interest

The authors have declared no conflict of interest.

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