



SYSTEMATIC STUDY ON TERRESTRIAL SNAKES OF DISTRICT GHOTKI, SINDH, PAKISTAN

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Author's contribution

NL & S designed the study, JA collected the samples, MA surveys the sites and indicate snake presence & GB compiled the results.

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ABSTRACT

During the present survey from district Ghotki a total of about 28 species of terrestrial snakes were found their systematic details along with complete description was given. We hope, this finding enrich the snake wealth of this region. Further, this research was conducted to identify the species to conserve and rescue the snakes by providing awareness to local community and the research scientists.

1. INTRODUCTION

About 3500 known species of snakes found in this world and out of these about 84 species of snakes are found in Pakistan, this data has been collected from the major work on herpetology of the subcontinent, the area now included in Pakistan. [1-4] and now we have identified the terrestrial species of snakes found in the district Ghotki, Sindh, Pakistan. This research is conducted to identify the species to conserve and rescue the snakes by providing awareness to local community and the research scientists.

2. MATERIALS AND METHODS

We have followed the traditional method to collect the data and identify the species found in district Ghotki, Sindh. Firstly we have started literature survey to collect the information of about snakes species present in the Pakistan and we have found about 84 species of snakes are present in Pakistan, including aquatic and terrestrial snakes both.

Then we collected the pictures of all tresses trial snakes of Pakistan with their name pasted on each picture. After that we started visiting village to village and each Taluka/City of district Ghotki (Ghotki, Mirpur Mathelo, Khanghar, Daharki, and Ubauro) to find out the snakes of this region and conducted live interview from the local residents of that area to confirm the presence of each species by the help of pictures that we have collected during literature survey.

3. RESULTS AND DISCUSSION

In this study, we have resulted that district Ghotki has 28 species of terrestrial snakes. Details of these are;

Family Leptotyphlopidae

Genus Leptotyphlops

Leptotyphlops macrorhynchis

Leptotyphlops blanfordii

Family Tryphlopidae

Genus ramphotyphlops

Ramphotyphlops braminus

Genus Typhlops

Typhlops diardi

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- Family Boidae
 Genus Eryx
Eryx conicus
Eryx johnii
 Genus Python
Python mollurus
- Family Colubridae
 Genus Amphiesma
Amphiesma stolatus
 Genus Argyrogena
Argyrogena fasciolatus
 Genus Boiga
Boiga trigonata
 Genus Enhydris
Enhydris pakistanica
 Genus Lycodons
Lycodon aulicus
Lycodon striatus
Lycodon striatus striatus
 Genus Lytorhyncus
Lytorhyncus paradones
 Genus Oligodon
Oligodon arnesis
 Genus Ptyas
Ptyas mucosus
 Genus Psammophis
Psammophis leithii
Psammophis schokari
 Genus Spalerosophis
Spalerosophis arenarius
Spalerosophis diadema
- Family Elapidae
 Genus Bangarus
Bangarus caeruleus
Bangarus sindanus
Bangarus sindanus razai
 Genus Naja
Naja naja
- Family Viperidae
 Genus Daboia
Daboia russeli
 Genus Echis
Echis carinatus
Echis carinatus multisquamatus

BIODIVERSITY

1- Family Typhlopidae:

The typhlopidae is a family of Blind snakes. [10] They are mostly found in tropical regions of Africa, Asia and Americans and all mainland Australia and Various islands. [4-10] They live underground in burrows, and since they have no use for vision, their eyes are mostly vestigial. They have light-detecting

black eye spots, and teeth occur in the upper jaw. The tail ends with a horn-like scale. Most of these species are oviparous. Currently, 18 genera are recognized containing over 200 species all over the world. [5-6] and in district Ghotki we have 2 genera with only two species; 1-Genus Ramphotyphopes with species *Ramphotyphlops braminus*, and 2-Genus Typhlops with species *Typhlops diardi*.

2- Family Colubridae:

Colubridae commonly known as Colubrids, is a family of snakes. It is the largest snake family. Most colubrids are not venomous (or have venom that is not known to be harmful to humans) and are mostly harmless, a few groups, such as genus Boiga, can produce medically significant bites. [6-10] Some colubrids are described as Opisthoglyphous, meaning they have elongated, groove teeth located in the back of their upper jaws, often called rear fanged. [11] currently, 249 genera are known in all over the world. [12] and in district Ghotki we have 10 genera with 14 species; 1-Genus Amphiesma with species *Amphiesma stolatus*, 2-Genus Argyrogena with species *Argyrogena fasciolatus*, 3- Genus Boiga with species *Boiga trigonata*, 4-Genus Enhydris with species *Enhydris pakistanica*, 5-Genus Lycodons with species *Lycodon aulicus*, *Lycodon striatus*, and *Lycodon striatus striatus*, 6-Genus Lytorhyncus with species *Lytorhyncus paradones*, 7-Genus Oligodon with species *Oligodon arnesis*, 8-Genus Ptyas with species *Ptyas mucosus*, 9-Genus Psammophis with species *Psammophis leithii* and *Psammophis schokari*, 10-Genus Spalerosophis with species *Spalerosophis arenarius* and *Spalerosophis diadema*.

3- Family Viperidae:

The Viperidae (Vipers) are a family of venomous snakes found in most parts of world, with the exception of Antarctica, Australia, Hawaii, Madagascar, various other isolated islands, and North of the Arctic circle. All have relatively long, hinged fangs that permit deep penetration and injection of snake venom. These snakes can decide how much venom to inject depending on the circumstances. The most important determinant of venom expenditure is generally the size of the snake; larger specimens can deliver much more venom. The species is also important, since some are likely to inject more venom than others, may have more venom available, strike more accurately, or deliver a number of bites in a

short time. [12]currently, there are 40 genera throughout the world. [8]and in district Ghotki we have 2 genera with 3 species; 1-Genus *Daboia* with species *Daboia russelii*, 2-Genus *Echis* with species *Echis carinatus*, and *Echis carinatus multisquamatus*.

4- Family Leptotyphlops:

Leptotyphlops is a genus of Non-venomous snakes, commonly called Slender blind snakes and thread snakes.⁵² They are believed to be the world's smallest snakes.⁵³ Most species of leptotyphlops look much like shiny earthworms. They are pink, brown and black in color their scales give them a segmented appearance but have the same general body structure. Their eyes are greatly reduced almost to the point of uselessness and hidden behind a protective head scale. They are burrowing snakes spending most of their time deep in loose soil, typically only emerging when it rains, and they get flooded out. Their primary diet is ants and termites' larvae. They produce a pheromone which protects them from attack of termites.⁵⁴ They found in North America, South America, Africa, and Asia. Currently there are 2 genera with 90 species are present throughout the world.⁵⁵ and in district Ghotki we have 1 genus with 2 species; 1-Genus *Leptotyphlops* with species *Leptotyphlops macrorhynchus* and *Leptotyphlops blanfordii*.

5- Family Elapidae:

Elapidae is a family of venomous snakes, characterized by hollow, permanently erect, relatively short fangs in the front of the mouth that channel venom into the prey [6]. Most Elapids are terrestrial, while some are strongly arboreal, many species are more or less specialized burrowers in either humid or arid environments. Elapids are endemic to tropical and subtropical regions around the world, with terrestrial forms in Asia, Australia, Africa, and America. Currently there are 15 known genera found in the world. [6-12] and in district Ghotki we have 2 genera with 4 species; 1-Genus *Bungarus* with species *Bungarus caeruleus*, *Bungarus sindanus* and *Bungarus sindanus razai*. 2-Genus *Naja* with species *Naja naja*.

6- Family Boidae:

Boidae is a family of Nonvenomous snakes primarily found in America, although also existing in Africa,

Madagascar, Europe, Asia, and some Pacific islands [9]. Boas include some of the world's largest snakes, with the Green Anaconda of south America being the heaviest and second longest snake known. Boas have supratemporal bones. The quadrate bones are also elongated. The distance between the hinge of lower jaw is greatly increased [7-6]. Prey is killed by constriction after an animal has been grasped to restrain it, a number of coils are hastily warped around it. Then, by applying and maintaining sufficient pressure, the snake prevents its prey from inhaling so that it eventually succumbs to asphyxiation. Their most species are ovoviviparous, with female giving birth to live young. And some are oviparous also. Currently there are 19 known genera present in the world. [5-10] and in district Ghotki we have 2 genera with 3 species; 1-Genus *Eryx* with species *Eryx conicus* and *Eryx johnii*. 2-Genus *Python* with species *Python mollurus*

4. CONCLUSION

As we have tried to investigated and identify the terrestrial diversity of snakes of Ghotki and by using traditional methods, interviewing people and survey we have found that district Ghotki has 6 families with 19 genera and 28 species of snakes. Further studies need to be done on snake bite pattern in Ghotki, such anthropogenic activities those leads to loss of diversity of snakes, and mortality rate of district Ghotki due to snakebite.

CONFLICT OF INTEREST

All authors have declared that there is no conflict of interest regarding publication of this article.

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