

Serpentes Of India: A Review on Ophiofaunal Diversity

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Abstract—These review research has aimed a comprehensive study of ophiofaunal diversity, taxonomy, distribution, and ecological roles. Snake are the most diverse and ecologically significant organism. They are distributed in wide range of habitats. Globally, 3900 recognized species, snakes display remarkable variation in morphology, habitats, etc., India is agriculturally based country. Snakes are the most important organism of food chain in ecosystem. They also help farmer by their predatory activities. India has venomous and non- venomous snakes. Many researchers have collected the data of diversity of snakes in India. The objective of this paper is to comply the available knowledge of snake diversity, and support future studies in ophiofaunal conservation.

Index Terms—Ophiofaunal, Snakes, venomous, non-venomous.

I. INTRODUCTION

India is a country of great biodiversity for flora and fauna. India with its complex geography, seasonal variation, and evolutionary history have recognizable contribution in biodiversity richness. Among them, snakes form a particularly important and ecologically significant group. Snakes belong from the Class Reptilia. They are cold-blooded animal inhabits in wide range of the temperatures except in extreme cold areas of Antarctica. Their habitat ranges from aquatic to dense forest, wetlands to urban areas, deserts to cold regions of Himalayas. Globally there are 3600 species of snake's species, belonging to 24 families and 528 genera (Integrated Taxonomic Information System, 2018; Uetz and Hoser, 2018). India has 518 species of reptiles, which includes 279 species of snakes belonging to 28 families (Aengals RVM, et al., 2011). Snake have elongated, cylindrical, and scaled body. Snakes play a crucial regulatory role in both aquatic

and terrestrial ecosystem. They contribute significantly to ecosystem stability, biodiversity maintenance, and energy flow. Their sensitivity to habitat disturbance, pollution, and climate change also makes them valuable indicators of ecosystem health.

II. REVIEW OF LITERATURE

Pawar P. R, et al. (2020) observed that there are 25 species of snakes representing 10 families and 23 genera, out of which 10 species belong to family Colubridae, 3 species each to Elapidae and Viperidae, 2 species each to Erycidae and Natricidae and 1 species each to Homalopsidae, Lamprophiidae, Pythonidae, Sibynophiidae and Typhlopidae.

According to Sulabh, et al. (2017), it is noted that about 13 known species among them are poisonous, and species such as common cobra (*Naja naja*), common krait (*Bungarus caeruleus*) Russell's viper (*Daboia russelii*) and saw-scaled viper (*Echiscarinatus*) are highly venomous and are responsible for most of the poisonous bites in India. The diversity of snake calculated by Mohapatra, P. P, et al. (2024) are 354 species and subspecies of snakes (one Acrochordidae, three Boidae, three Pythonidae, one Xenopeltidae, five Gerrhopilidae, two Leptotyphlopidae, 12 Typhlopidae, 48 species and subspecies in Uropeltidae, 177 species and subspecies in Colubridae, 8 Homalopsidae, 10 Pareidae, 4 Psammophiidae, 1 Pseudaspidae, 2 Xenodermidae, 43 species and subspecies in Elapidae and 34 in Viperidae). Whitaker, R. (2014) said that, India has four species of cobras named as Spectacled cobra (*Naja naja*), Monocled cobra (*Naja kaouthia*) Central Asian cobra (*Naja oxiana*), Andaman cobra (*Naja sagittifera*); Kraits of India have 8 species i.e.

Common krait (*Bungarus caeruleus*), Bandedkrait (*Bungarus fasciatus*), Wal l'skrait (*Bungarus sindanus walli*), Black krait (*Bungarus niger*), Lesser black krait (*Bungarus li vidus*), Himalayan krait (*Bungarus bungaroides*), Andaman krait (*Bungarus andamanensis*); Vipers includes Russell's viper (*Daboia russelii*), Saw-scaled viper (*Echis carinatus carinatus*), Sochurek' ssaw-scaled viper (*Echis carinatum ssochureki*), Levanti ne viper (*Macrovipera lebetina*) and 21 species of pit viper Snakes are not merely terrestrial creatures, many species are exquisitely adapted to aquatic environments, where they play vital and often overlooked ecological roles. According to Rasmussen et al. (2011) and Murphy (2012), sea snakes venture into tidal river creeks far from the tide line, and similarly brackish water snakes can swim into the seal. Heatwole (1999) noticed that true sea snakes (Elapidae: Hydrophiinae) are all venomous with front fangs, and are distinguished by their laterally compressed paddle-like or oar-shaped tail. Two tribes, Hydrophiini (true sea snakes) and Laticaudini (sea kraits) which are also highly venomous and have paddle-shaped tail is present, was studied by Heatwole et al. (2012, 2016); Sanders et al. (2012). There are total 26 marine snake species a recognized by Whitaker and Captain, (2004). According to Aengals et al. (2018) and Adimallaiah (2014), five species of brackish water snakes and 20 species of venomous sea snakes, including two species of sea kraits.

Snake have ecological significance. But day by day the population of snake are in danger due to intentional poaching, blind beliefs, misconceptions, and myths. In the study of Mohapatra, P. P, et al. (2024) , it is said that IUCN has categorized the snakes in the critically endangered category which comprises 3 species of snake (2 species in Uropeltidae and 1 species in Viperidae); the endangered category includes 11 species of snakes (3 species in Colubridae, 4 in Uropeltidae, 2 in Elapidae, and 2 in Viperidae); vulnerable category have 12 species of snakes (1 species in oythonidae, 7 in Colubridae, 3 in Uropeltidae, and 1 in Elapidae). Various protection acts are made to protect snakes.

III. DISCUSSION

India has rich diversity of snakes, due vast geographical areas, variations in climate, and wide

range of habitats. This paper remarks herpetofaunal wealth of India. The richness of snakes is not only in numbers of species but also in the taxonomic and ecological diversity. The snakes are not limited to terrestrial ecosystems, they are also occupying aquatic and semi-aquatic ecosystems. Ecologically, snake play crucial role in terrestrial and aquatic food chains. In terrestrial ecosystem, the prey on rats, rodents and small creatures. In aquatic ecosystem the play role of predators of fishes, amphibians, and invertebrates. In spite of being ecologically important species, this species have threats. Habitat destruction, poaching, misconceptions, and mythological beliefs are creating threats.

IV. CONCLUSION

India's ophiofauna represent not only biodiversity but also species richness across the wide range of habitat. Terrestrial snake usually dominates in terms of numbers and visibility, occupying floors, grasslands, agricultural fields, and urban settlements. While aquatic remain understudied. To conserve and protect species diversity of snakes in India, there should be necessary steps taken. This may include ecological surveys, and conservation strategies. Public awareness and inclusion of local communities can be promising factors of this process.

REFERENCES

- [1] Adimallaiah, D. (2014). Report of Kerala mud snake *Dieurostus dussumierii* from a beach in Kochi, Kerala. *Reptile Rap* 16(3): 49–50.
- [2] Aengals, R., V.S. Kumar, M.J. Palot & S.R.Ganesh (2018). Checklist of reptiles of India. Zoological Survey of India. zsi.gov.in/checklist/Reptiles. (Accessed in July 2018).
- [3] Cundall, D., and H. W. Greene (2000). Feeding in snakes. In *Feeding, form, function, and evolution in tetrapod vertebrates*, ed. K. Schwenk, 293–333. San Diego: Academic Press. DOI: <https://doi.org/10.26515/Fauna/1/2023/Chordata:Reptilia> DOI 10.1007/978-94-007-6288-6_16-1 2014.
- [4] Ganesh, S.R., T. Nandhini, V.D. Samuel, C.R. Sreeraj, K.R. Abhilash, R. Purvaja & R. Ramesh (2019). Marine snakes of Indian coasts: historical resume, systematic checklist, toxinology, status,

- and identification key. *Journal of Threatened Taxa* 11(1): 13132–13150; <https://doi.org/10.11609/jott.3981.11.1.13132-13150>.
- [5] Heatwole, H., A. Grech, J.F. Monahan, S. King & H. Marsh (2012). Thermal biology of sea snakes and sea kraits. *Integrative and Comparative Biology* 52(2): 257–273.
- [6] Heatwole, H., H. Lillywhite & A. Grech (2016). Physiological, ecological, and behavioural correlates of the size of the geographic ranges of sea kraits (Laticauda; Elapidae, Serpentes): A critique. *Journal of Sea Research* 115: 18–25.
- [7] Mohapatra, P.P., Ray S., Sarkar, S., Deuti, K., Palot, M. J., Sethy, P.G.S. and Bahuguna, A. (2024). Checklist of Fauna of India: Chordata: Reptilia.
- [8] Murphy, J.C. (2012). Marine invasions by non-sea snakes, with thoughts on terrestrial-aquatic-marine transitions. *Integrative and Comparative Biology* 52(2): 217–226.
- [9] Pawar, P. R., Rokade, A. G., Supnekar, S. P., Meshram, L. N., Pawar, N B., and Gavhane, U.V., (2020). Diversity and distribution of snakes in adjoining areas of Panvel, Navi Mumbai, and West Coast of India. *International Journal of Zoology Investigation*,6(2), 289-300.
- [10] Rasmussen, A.R., J.C. Murphy, M. Ompi, J.W. Gibbons & P. Uetz. (2011). Marine reptiles. *PLOS one* 6(11): e27373.
- [11] Sanders, K.L., A.R. Rasmussen & J. Elmberg. (2012). Independent Innovation in the Evolution of Paddle-Shaped Tails in Viviparous Sea Snakes (Elapidae: Hydrophiinae). *Integrative and Comparative Biology* 52(2): 311–320.
- [12] Serpentes (2018). Integrated Taxonomic Information System (ITIS). Retrieved on 30 March 2018
- [13] Sulabh, S., and Shivahre, P.R., (2017). Common Poisonous Snakes of India - A Review. *World Journal of Pharmaceutical Research* 7(1), 431-442.
- [14] Uetz, P. and Hosek (2018), The Reptile Database, <http://www.reptile-database.org>, accessed, 30 March 2018.
- [15] Whitaker R., and Martin G., (2014). Diversity and Distribution of the Medically Important Snakes of India. *Clinical Toxinology*