

Study of Ophidian Faunal Diversity in Amravati Region of Maharashtra, India

Hemlata P. Nandurkar¹, Fayaz Ahmed²

Department of Zoology, Sant Gadge Baba Amravati University, Amravati

DOI : <https://doi.org/10.51583/IJLTEMAS.2025.1411000115>

Received: 29 November 2025; Accepted: 06 December 2025; Published: 24 December 2025

ABSTRACT:

India is also known as the 'Land of Snakes'. as there are about 300 snakes located in different habitats which includes more than 60 venomous, more than 40 semi-venomous, , and approximately 180 non-venomous species. Out of venomous species main are Cobra, Russell's Viper, Saw Scaled Viper , and Krait, the remaining species are either semi-venomous or non-venomous. But still most people are afraid of snakes as they don't know much about them, is the prime reason for decline of this fascinating creature. Vidarbha has an arid topography with high temperatures, and other climatic conditions that favour the reptilian fauna. Very few researcher studied snakes diversity in Vidarbha, and hence there is a need to study ophidian fauna.

The specimens were observed during the visit of the probable habitats or the rescuers associated with different NGOs, photographed, and identified with the help of keys, and methods suggested by Daniel (2002) Whitaker, and Captain (2004) , and Khaire (2010).

In the present study, diversity of this ophidian fauna is identified, and found six families of snakes namely Typhlopidae, Pythonidae, Boidae, Colubridae, Elapidae, , and Viperidae , and represent 19 species. Out of the total identified species four venomous snakes, thirteen non-venomous, and two semi- venomous are reported during the month from August 2018 to March 2019. The habitats, and other ecological parameters along with the existence of ophidian form we can correlate in the future part of the study.

Key words: Ophidian fauna, Venomous, Semivenomous, Nonvenomous, Amravati.

INTRODUCTION:

Generally, snakes are supposed to be venomous , and most people fear even to having a glance at them when they appear in closed areas or when brought by snake-charmers. The snake probably originated well before the Cretaceous period still the oldest fossil record of snakes dates to the early Cretaceous (130 million years ago) , and this group became abundant in the late Cretaceous period (Rage, 1987).

Snakes are the most mesmerizing, and intriguing animals in the world. Particularly in India the knowledge about Snakes are more fabled than factual. Various superstitions create fear in people's mind. On the whole, snakes are undoubtedly the most misunderstood , and most likely suffered animal, primarily based on myth, and superstitions (Baruah, and Sengupta, 1996). There are 18 ophidian families through out the world, comprising 456 genera, and over 2,900 species. In India, 278 species, while in Maharashtra, approximately 59 species (Khaire 2010). In India, snakes are worshiped, and because of abundance it, is also called the Land of Snakes (Deane, 1833, <https://en.wikipedia.org>).

Snakes vary in length from 15 cm to 11 m , and in weight from a few grams to several kilograms. They can survive at high altitudes of more than 5000m, and in several kilometer deep water. Snakes occupied deserts, forests, marshy, swampy places, lakes, streams, and rivers of rugged terrains (Dhamankar, 2006). They always try to shelter on the ground. There are popular places to hide, including log, and leaf piles, cracks, and crevices in foundations, rock walls, narrow spaces beneath decks , and outbuildings, dense patches of vegetation,

which also provide their food sources for rodents. (Whitaker , and Captain 2008; Khaire 2010). Variation in their sizes, shapes are due to adaptive radiation in mode of life (N, ande , and Deshmukh, 2007).

To maintain the ecosystem, snakes play an essential role, significantly important prey for other predator species in many ecosystems. Snakes are also excellent ecological indicators because they are sensitive to temperature , and climate change (Beaupre , and Douglas, 2009). Unfortunately, snake species have received less ecological attention than other.

In India, 80% of the species are harmless, , and only 20 % are venomous. Thirteen known species are venomous, and out of these, four, namely *Naja naja*, *Daboia russelii*, *Echis carinatus*, and *Bungarus caeruleus*, are highly venomous, and believed to be responsible for most of the poisonous bites in India (Warrell, 2010). Venomous snakes with medical importance are predominantly front-fanged , and belong to Atractaspididae, Elapidae, , and Viperidae (Tasoulis , and Isbister, 2017). Due to the unique features snakes exhibit in their crawling locomotion, biting defense fascinate, and made them important group of predators to maintain a natural balance in the forest, agriculture ecosystem (Harney, 2011).

In India, an estimated 35,000–50,000 lives are lost per year due to snake bite (Warrell, 2010), of which every year about 2000 deaths occur due to snake bite in Maharashtra, the majority remain unreported as the record of the victim going to traditional healers is unavailable (Bawaskar , and Bawaskar, 1992). Mortality rate also increased due to delayed medical aid or ignorance towards the correct treatment of snakebite (Bawaskar , and Bawaskar, 2002).

In India among 60 ovoviviparous snake species which includes the shield tail, s, and boas, vine snakes, estuarine snake, most sea snake, vipers , and pit vipers while Cobras, Pythons, Checkered Keelback , and the King Cobras etc are egg layers without showing parental care. The young ones have to search for their own food , and escape from predators on their own (Whitaker , and Captain, 2004).

Snakes, being an integral part of the ecosystem, play a vital role in pest control. In a food chain, an organism acts as either a prey or a predator. In India, several anthropogenic pressures, including hunting, poaching, habitat loss , and illegal agricultural encroachment etc are the reasons by which snakes are on the verge of extinction. The killing of the snakes is for the commercial exploitation of their skin , and venom. Snake skins are in high demand in the leather industry for the preparation of wallets, bags, purses, belts, and other fashion articles which are greatly demanded by the high-profile society, and fetch high prices. In India in 1968, about 10 million snakes were slaughtered only for trade (Inskipp, 1981). Similarly, a tannery in South India was reported to h, andle 9000 snakes per day (Daniel 1970). Apart from the skin trade, there is an illegal market for snake venom across the country (Dubey *et al.*, 2009). Human activities significantly affect snake population through due to over harvesting, habitat destruction, and also direct killing by humans due to fear of envenomation etc. (Dodd 1987).

Reptile's decline, across the globe is not justified due to habitat destruction by Alford , and Richards (1999); Gibbons *et al.*, (2000). Habitat fragmentation due to house building , and road construction (Bennet , and Saunders, 2002) , and commercial forestry operations negatively affect the species, (Ash 1996, Gibbs 1998a, Martin , and McComb 2003).

Under India's Wildlife (Protection) Act, 1972, snakes are protected as Schedule, I, II, , and IV species. Schedule I includes the Indian Rock Python, *Python morulus*, Schedule II includes King Cobra, *Ophiophagus hannah*, Cobra, *Naja naja*, Monocled Cobra, *Naja kaouthia* , and Russell's Viper (*Daboia russelii*). Schedule IV lists other, but still need protection.

The present study is an attempt to document the diversity of snakes in Amravati district Maharashtra, since there is an acute paucity of established work, and data on this subject to date

MATERIAL AND METHODS

The study was conducted from August 2018 to March 2019, as Snakes are the most active during monsoon, and post monsoon. The study areas selected were Wadali, Mahadeo-Khori, M.I.D.C., Uttamsara, Akoli, Navasari, Rahatgaon, Sant Gadge Baba Amravati University, Amravati , and the Amravati region campus, farmland, and forest areas.

During study, after detection, specimens were photographed, and identified using keys , and methods described, by Daniel (2002), Whitaker , and Captain (2004), and Khaire (2010). The camera used for photography was a Nikon-L 810 (24X zoom), and sometimes due to unavailability of DSLR camera photographs were taken by a mobile camera.

Observation, and Results:

During the study period, the captured snakes were identified , and classified under 06 families, namely Typhlopidae, Pythonidae, Boidae, Colubridae, Elapidae, , and Viperidae represent 19 species. Out of the total identified species four venomous snakes, thirteen non-venomous , and two semi-venomous were reported. Overall, studies confirm that anthropogenic act resulted into habitat fragmentation through irrigation, road construction industrialization etc are the main reasons to frequent encounter of snakes with human residential areas (Urfi 1999; Joshi, (2011).

The present study reveals that the study area includes a rich diversity of snakes. Local people are found to kill both the venomous, and non-venomous snakes due to a lack of knowledge , and fear of being bitten (Chetty, 2010). Some tribes use different snakes as traditional medicines as seen in other parts of India (Jamir , and Lal, 2005; Negi *et al.*, 2007).

Table No. 1. Checklist of Snake species from Amravati District

S N	Family	Species Name*	Common Name*	Local Name	Typ e	Length Max # (inches)	WPA
1.	Typhlopidae	<i>Ramphotyphlops braminus</i>	Common worm snake	Waala	NV	006	IV
2.	Pythonidae	<i>Python molurus</i>	Indian rock python	Ajgar	NV	124	I
3.	Boidae	<i>Eryx johnii</i>	Red s, and boa	M, andool	NV	036	IV
		<i>Gongylophis conicus</i>	Common s, and boa	Durkya ghonas	NV	038	IV
4.	Colubridae	<i>Lycodon aulicus</i>	Common wolf snake	Kavadya	NV	018	IV
		<i>Macropisthodon plumbicolour</i>	Green Keelback	Gavatya	NV	024	IV

		<i>Oligodon arnesis</i>	Common kukri snake	Kukri saap	NV	018	IV
		<i>Ptyas mucosa</i>	Indian rat snake	Dhaman	NV	090	II
		<i>Amphiesma stolatum</i>	Striped Keelback	Naneti	NV	018	IV
		<i>Argyrogena fasciolata</i>	B, anded racer	Dhool Nagin	NV	040	IV
		<i>Coelognathus helena helena</i>	Common trinket snake	Taskar	NV	048	IV
		<i>Sibynophis subpunctatus</i>	Black headed snake	Krisna-shesh	NV	018	IV
		<i>Xenochrophis piscator</i>	Checked Keelback	Pan-divad	NV	048	II
		<i>Boiga trigonata</i>	Indian cat snake	Manjrya	SV	030	IV
		<i>Psammophis longifrons</i>	Stout s, and snake	Jada reti sarp	SV	048	IV
5.	Elapidae	<i>Bungarus caeruleus</i>	Common krait	Manyar	V	060	IV
		<i>Naja naja</i>	India spectacled cobra	Naag	V	075	II
6.	Viperidae	<i>Daboia russelii</i>	Russell’s viper	Ghonas	V	048	II
		<i>Echis carinatus</i>	Saw-scaled viper	Phurse Ghonas	V	024	IV

Abbreviations: V=Venomous, NV= Non-Venomous, SV-Semi-Venomous,

***According to Captain and Whitaker (2008) #: Visual encounter**

Non-Venomous snakes:



Fig 1: *Ramphotyphlops braminus* (Daudin, 1803)

/Brahmini Worm Snake



Fig 2: *Python molurus molurus* (Linnaeus, 1758)

/ Indian Rock Python



Fig 3: *Gongylophis conicus* (Schneider, 1801)

Common Sand Boa



Fig 4: *Eryx johnii* (Russell, 1801) / Red Sand Boa



Fig 5: *Lycodon aulicus* (Linnaeus, 1758)

/ Common Wolf Snake



Fig 6: *Macropisthodon plumbicoulour* (Cantor, 1839)

/ Green Keelback



Fig 7: *Oligodon arnensis* (Shaw, 1802)/

Common Kukri



Fig 8 : *Ptyas mucosa* (Linnaeus, 1758)/ Rat Snake



Fig 9: *Amphiesma stolatum*

/ Striped Keel-back Snake



Fig 10: *Argyrogena fasciolata* (Shaw, 1802)

/ Banded Racer



Fig 11: *Coelognathus helena helena* (Daudin 1803) Fig 12: *Sibynophis subpunctatus* (Dumeril 1854)

/ Common Trinket Snake

/ Black headed snake



Fig 13: *Xenochrophis piscator* (Schneider, 1799)/ Checkered Keelback

Semivenomous Snake:



Fig 14: *Boiga trigonata* (Bechstein, 1802)

Fig 15: *Psammophis longifrons* (Boulenger, 1897)

/ Common Cat Snake

/ Stout Sand Snake

Venomous Snake:



Fig16: *Bungarus caeruleus* (Schneider, 1801)
/ Common Krait

Fig 17: *Naja naja* (Linnaeus, 1758)
/ Indian Spectacled Cobra



Fig 18: *Daboia russelii* (Shaw and Nodder 1797)

Fig19: *Echis carinatus* (Schneider 1801)

/ Russell's viper

/ Saw Scaled Viper

DISCUSSION:

For the ophidian diversity study, the main contributions are of Whitaker (2002), Whitaker , and Captain (2004), and Khaire (2010). According to Whittaker, and Captain (2008), and Khaire (2010) there are 278 snake species belonging to 11 families in India. Families , and number of representatives belong to the families are Typhlopidae (18), Leptotyphlopidae (01), Uropeltidae (34), Xenopeltidae (01), Pythonidae (02), Boidae (03), Acrochordidae (01), Colubridae (157), Elapidae (17), Hydrophidae (20), Viperidae (24).

As well, many researchers have also given their valuable contributions in the enrichment of knowledge about snakes in the Indian context like Murthy (1985) who classified, and distributed of the Reptiles in India, as well as he studied the rare snakes of India. Vyas (1998, 1999, and 2000) documented the reptiles of Gujarat state, and studied the captive breeding, development, , and moulting of snakes. Das (1997) published a checklist of the Reptiles of India with English common names.

Very few researchers have studied the ecology of snakes especially in the environmental conditions of Maharashtra. The first significant study was conducted by D'Abreu (1928). He had made a comprehensive collection of snakes for the Central Museum, Nagpur, which provides information on reptiles of Vidarbha in general, and Amravati in particular. After his work, Khaire and Khaire (1985) published a checklist of snakes of the adjoining region of Poona, Maharashtra. In the Amravati division, Wadkar (2003) documented the Herpetofauna (Amphibians, and Reptiles) of Amravati University Campus, which stated the presence of 12 snake species belonging to Typhlopidae (01), Pythonidae (01), Boidae (01), Colubridae (05), Elapidae (02), and Viperidae (02). Nande and Deshmukh (2007) recorded 32 snake species belonging to six families from Amravati district Typhlopidae (02), Pythonidae (01), Boidae (02), Colubridae (20), Elapidae (04), and Viperidae (03).

Upadhye *et al.*, (2012) studied the herpetofauna of the Mumbai University Campus, in Maharashtra. The investigator reported 12 snake species, two gecko species, three skink species , and one species of *Calotes* in his study. Vyas (2013) evaluated Snake diversity, and voluntary rescue practices in cities in Gujarat State , and reported 22 snake species belonged to 6 families.

Bansod , and More (2018) evaluated the diversity of ophidian fauna in Palghar district (M.S.) with respect to occurrence, abundance, and species richness, and further assist in the knowledge, awareness, and conservation of snake fauna in this region.

However, the above literature suggests that numerous ophidian species are present in the Vidarbha region of Maharashtra, which mainly belong to the families Typhlopidae, Pythonidae, Boidae, Colubridae, Elapidae , and Viperidae; hence there is a need for extensive survey for the addition of more species. Thus, the work done by

the researchers on ophidian diversity in Vidarbha in general, and Amravati in particular, is scanty, more to be made especially in Amravati region.

REFERENCES:

1. Alford, R. A. & Richards, S. J. (1999), Global amphibian declines: a problem in applied ecology, *Annual Review in Ecology and Systematics* 30: 133-165.
2. Ash A.N. (1996) Disappearance , and return of plethodontid salamanders to clearcut plots in the southern Blue Ridge Mountains Conserv. Biol., 11: pp. 983-989
3. Baruh M. , and Sengupta S. (1996 a) Food , and feeding habits of *Amphiesma stolatum* (Linn). Annual Tech Session. Assam Sci. Soc. Jorhat, pp: 54.
4. Bawaskar H. S. , and Bawaskar P. H. (1992) Treatment of envenoming by *Mesobuthus tamulus* (Indian Red Scorpion) *Transaction of the Royal Society of Tropical Medicine and Hygiene*, Vol 86: 459.
5. Bawaskar H. S. , and Bawaskar P. H. (2002) Profile of snakebite envenoming in Western Maharashtra, India. *Transaction of the Royal Society of Tropical Medicine and Hygiene*, Vol 96(1): 79-84. DOI: 10.1016/50035-9203(02)90250.
6. Beaupre SJ, Douglas LE. (2009) Snakes as indicators , and monitors of ecosystem properties. In: Mullin SJ, Seigel RA, editors. *Snakes: ecology and conservation*. New York , and London: Comstock Publishing Associates, a Division of Cornell University Press, 244–61.
7. Bennett A. F., and Saunders D. (2002) Habitat fragmentation, and Landscape change, *Conservation Biology* for all PP: 88-99.
8. Chetty D. T. (2010) Diversity of Herpetofauna in , and around the Koshi Tappu Wildlife Reserve, *Bibechana* 6:15-17
9. D'Abreu E. A. (1928) Records of Nagpur Museum No VI A list of the Reptiles of the Central Provinces, Govt. Press Nagpur: 1-13.
10. Das, I. (1997) Rediscovery of *Lipiniamacrotympanum* (Stoliczka, 1873) from the Nicobar islands, India. *Asiatic Herpetological Research*, 7: 23-26.
11. Dhamankar, A. (2006) *Aranya Vachan*, Shri Vidya Prakashan, Pune.
12. Dodd, C. K., Jr., (1987), Status, conservation, , and management, in R. A. Seigel, J. t. in Collins, and S. S. Novak, eds., *Snakes: Ecology , and Evolutionary Biology*, McGraw- Hill, New York, pp. 478-513.
13. Gibbons, J. W., Scott, D.E., Ryan, T. R., Buhlmann, K. A., Tuberville, T.D., Metts, B.S., Greene, J.L., Mills, T., Leiden, Y., Poppy, S., and Winne, C. T. (2000). The global decline of reptiles, deja vu amphibians, *Bioscience* 50: 653-666.
14. Harney, N.V. (2011) Studies on snakes of Bhadravati, District Chandrapur (M.S.) India, *Intern. Interd. Res. J. I* (1): 12-17.
15. Inskipp Tim (1981) *Indian Trade in Reptile skin*, International Union For Conservation Of Nature, and Natural Resources Conservation Monitoring Centre.
16. J.P. Gibbs (1998a) Distribution of woodland amphibians along a forest fragmentation gradient *Landsc. Ecol.*, 13: 263-268
17. Jamir, N.S. , and Lal, P., (2005), *Ethnozoological Practices among Naga Tribes*. *Indian J. Traditional Knowledge*, 4(1): 100-104.
18. Joshi Prasanna (2011) A Preliminary Survey on the Snakes of Buldhana district, Maharashtra, *Golden Research Thoughts*, Vol.1(2):1-4
19. K.J. Martin, W.C. McComb (2002) Small Mammal Habitat Associations at Patch and Landscape Scales in Oregon *Forest Science*, 48: 255-264.
20. Khaire A. , and Khaire N. (1985) A list of snakes in neighbourhood of Poona, Maharashtra with some observations, *Geobios News Reports* 4: 112-114.
21. Khaire N. (2010) *Snakes*, Indian Herpetological Society, Pune.
22. Murthy, T. S.N. (1985) Classification and distribution of reptiles of India. *The snake*, 17(1): 48-71.
23. N, ande Raghvendra , and Deshmukh Sawan (2007) Snakes of Amravati disctrict including Melghat, Maharashtra with important records of the Indian egg eater, Montane trinket snake and Indian smooth snake, *Zoos' Print Journal* Vol. 22 (12) pp: 2920-2924. DOI:10.11609/JoTT.ZPJ.1653.2920-4

24. Negi, C.S. , and Palyal, V., (2007). Traditional Uses of Animal, and Animal Products . Indian J. Traditional Knowledge, 7(2): 326-329.
25. Petranka, J.W., Eldridge, M.E., Haley K.E., (1993) Effects of timber harvest on southern Appalachian salamanders Conserv. Biol., 7, 363-370
26. Rage, J.C. (1987) Fossil History, In “Snakes Ecology and Evolutionary, v. Biology” (eds. Seigel, R.A- Collins, J.T. , and Novak S.S.), Macmillan publishing company, New York, 51- 76.
27. Steven J. Beaupre , and Lara E. Douglas (2009) Snakes as Indicators and Monitors of Ecosystem Properties, Snakes: ecology , and conservation, 244-261.
28. Tasoulis T., Isbister K.G, (2017) A review and database of snake venom proteomes. Toxins, 9:290. doi: 10.3390/toxins9090290.
29. Ufri, A. J. (1999). The snake conservation programme of Sundarvan Nature Discovery Centre, Ahmedabad (Gujarat, India): en evaluation. Zoos’ Print Jr 14: 7-10.
30. Vyas Raju (2013) Snake diversity , and voluntary rescue practice in the cities of Gujarat state, India: an evaluation Reptile RAP 15: 27-39.
31. Vyas, R. 1998. Notes on growth and maturity in Python molurus molurus, Hamadryad (23): 69-71.
32. Wadatkar, J. (2004) Herpetofauna of the Amravati University campus, District Amravati, Maharashtra. Zoos’ Print Journal 19(2): 1381-1382.
33. Warrell David A. (2010) Snake bite, The Lancet, 375(9708), 77-88. doi: 10.1016/S0140-6736(09)61754-2.
34. Whitakar, R., Captain, A. (2004): Snakes of India. The field guide, Chennai, India: Draco Books, 500.
35. Whitaker, and Captain (2008) Snakes of India, The Field Guide, Zoos’ Print Journal, Chennai: 385. <https://mahabal.com/deforestation- and-its-impact-on-biodiversity-in-India>