

Snake varieties and status in different localities of Karnataka, India: An Overview

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Abstract

In this review study, various researchers have studied the diversity and distribution of snakes in various areas of Karnataka. The auxiliary information on snake assortment was gathered by referring monographs and journals. Additionally, a lack of awareness of the ecological role that snakes play and a fear of snake bites contributed to the mortality of snakes in residential areas. It is recommended to raise public awareness about the role that snakes play in the ecological food chain and the sustainable use of natural resources. The data presented here can be used as a baseline for determining the status of snakes in the adjacent Karnataka region because there are no previous reports available and only few data is available on snakes. Environmental change and quick natural surroundings corruption have prompted a fast decrease in the number of population in snakes. Subsequently, constant observing of their variety and prosperity is fundamental.

Key words : Snake variety, Venomous and Non-venomous snakes, Reptilia, Karnataka.

India has roughly 270 snakes, 9% of the world's 3000 odd types of snakes²². To comprehend the local species richness and the distributions of species in the environment, it is crucial to catalog the diversity of snakes and other wildlife within distinct geographic regions. These sorts of inventories can be done at different spatial scales: in the country as a whole¹⁹; state level¹³; the level of the province or district²³; or even extremely localized¹⁷.

Together with lizards, crocodiles, turtles, and tuataras, snakes represent the group of reptiles in the class Reptilia that is both the most fascinating and the most terrifying. Curiously, the snake never bites or attacks humans unless there is a risk to their life. In addition, despite the fact that the majority of people view them as enemies, they are an essential part of the ecosystem and play a significant role in crop protection by devouring field rats¹².

According to Smith²⁰ and Pauwels *et al.*¹⁵ snakes are reptiles and are regarded as a successful group of predatory vertebrates that live in both tropical and temperate environments. According to Indian snakes. organization There are approximately 3273 known species of snakes worldwide, of which 302 have been identified in India. There are around 153 types of new water snakes making around 5% of every single known snake¹⁵. According to Chandra and Gajbe³, 52 venomous species have been identified in India, of which 20 are sea snakes and 32 are terrestrial (Pythons, Vipers, coral snakes, Cobras, King cobras, and Kraits). The enormous four risky and major venomous snakes are the Indian Cobra, Krait, Russel's snake and Saw scaled snake. Hemotoxic venom, which affects the heart and cardiovascular system, neurotoxic venom, which affects the nervous system and brain, and cytotoxic venom, which has a localized effect on the bite area, are the three main types of snake venom. Those all venomous snakes have a place with the family Elapids, Snakes and Colubrids. Some snakes are arboreal and burrowing, and they have adapted well to the climate by morphologically changing their size, shape, and color (camouflage). Snakes do not have external ears; instead, they sense through their eyes and smell with their bifid tongues. Some snakes, like pit vipers and pythons, also have heat-sensitive pits between their eyes and nostrils, allowing them to sense heat to catch prey and escape predators. Carnivorous in nature, all snakes primarily consume reptiles, amphibians, mammals, birds, and eggs.

Due to their high venom levels, some snakes, like cobras and vipers, can paralyze their prey. Others, like the python, squeeze their

prey before swallowing it whole. Because they are cold-blooded, snakes keep track of their own body temperature and bask in the sun to warm themselves. They seek food and hiding places in forests, deserts, undergrounds, rocky terrain, wetlands, agricultural fields, and even densely populated urban areas like villages and city fringes. People used to kill snakes, especially in areas populated by humans, because they were afraid of being bitten and didn't know they might bite. As a result, the number of snakes has decreased. The Indian Wildlife Protection Act of 1972 now provides protection for pythons, cobras, and vipers.

Study area :

Karnataka, also known as Karunadu and formerly known as Mysore State, is a state in India's southwest. With the passage of the States Reorganization Act on November 1, 1956, it became Mysore State and was renamed Karnataka in 1973. The state was essential for the Carnatic area in British wording. Bengaluru is the nation's largest and capital. Karnataka is bounded on the west by the Lakshadweep Sea, on the northwest by Goa, on the north by Maharashtra, on the northeast by Telangana, on the east by Andhra Pradesh, on the southeast by Tamil Nadu, and on the southwest by Kerala. It is the only southern state with land borders with all four Indian sister states in the south. The state covers an area of 191,791 km² (74,051 sq mi), or 5.83 percent of the absolute topographical area of India. It is the 6th biggest Indian state by region²¹ With 61,130,704 occupants at the 2011 registration, Karnataka is the eighth-biggest state by populace, involving 31 locale (Figure 1). The state's most spoken and official

fewest. The study areas were reused with rare snakes like *Eryx johnii* and *Argyrogena fasciolata*. Because of anthropogenic tensions, the quantity of snakes is diminishing pointedly. Public awareness of the significance of snakes to maintaining an equilibrium in the ecosystem is crucial to the conservation of snakes in Shivamogga.

Herpetofauna are abundant in the Agumbe rainforests. These forests, renowned as the home of King Cobras, have become a naturalist's inspiration for spotting, photographing, and learning about snakes. There are 71 species of snakes in over 20 genera in Agumbe, which is in the Central Western Ghats. A data set of the list of snakes tracked down in the central Western Ghats with an extraordinary spotlight on Agumbe, was gathered at Kālinga centre for Rainforest Ecology, ecological schooling association. This compilation resulted in the creation of a poster that is now used as a reference for students, photographers, and trekkers exploring these forests²⁵.

Jagadeesh *et al.*,⁸ have listed snakes in and around Kuvempu University, Shankaraghatta, Shimoga district of Karnataka, India and rescued them. A total of 22 species belonging to 06 families and 20 genera were recorded by them (Table-1, Figure 3). More number of non-venomous snakes were rescued by them than venomous snakes. While, rescuing the snakes, They also motivated people not to kill snakes instead to inform the concerned authorities, which seemed to create awareness in the public.

A check list of snakes in Chincholi forests of Kalaburagi region was concentrated

by Pasar and Paul¹². Evaluation of the species composition, relative abundance, and distribution of snake fauna were the objectives of their study. There were a total of 14 species in 5 families, 10 of which were non-venomous and 4 of which were venomous. One species belongs to the Typhlopidae family, 02 to the Boidae family, one to the Pythonidae family, seven to the Colubridae family, and three to the Elapidae family. The conservation of the fauna in Chincholi forest, Kalaburagi district, will benefit from this information.

In the foothills of the Western Ghats, Belagavi is home to four major venomous snakes: Common krait, saw-scaled viper, Russell's viper, and spectacled cobra. According to Pathak and Metgud¹⁴, approximately half of snake bite-related deaths occur in India and are largely preventable and treatable. They were surveyed the information, disposition and work on in regards to Snakes and Snake chomp among grown-up in a country area of Belagavi, Karnataka.: This people group based cross-sectional review was directed among 400 grown-ups who were long-lasting occupants of Kinaye town situated in the field practice area of JN Clinical School, Belagavi. Spectacled Cobra was the most frequently identified venomous snake (72%), while Common Krait was the least frequently identified (24%). The majority of participants in their study were familiar with basic information regarding snake identification and snakebite. Most accurately recognized venomous and non-venomous Snakes was Spectacled Cobra and Green Plant Snake individually, while most inaccurately distinguished venomous Snake was normal Krait. All of the participants were aware that snakebite can be treated medically, and the

Table-1. Total number of Snakes, families, venomous, Non-venomous and Mildly Venomous snakes distribution in different areas of Karnataka as worked out by various researchers in Karnataka

Sl no.	Total Species	Families	Area	Venomous	Non-Venomous	Mildly Venomous	References
1	25	07	Shankaraghatta	03	18	04	Deepak & Vijaya kumara, 2021
2	33	09	Bengaluru urban	05	-	-	Yatin Kalki <i>et al.</i> , 2021
3	21	08	Shivamogga	04	15	02	Sayeswara <i>et al.</i> , 2015
4	24	07	Mysore	04	18	02	Arnab Sarkar <i>et al.</i> , 2022
5	01	01	Bengaluru Upland	-	-	-	Ganesh <i>et al.</i> , 2021
6	14	05	Kalburgi district	4	10	-	Vinay Pasar & Ravindra Paul, 2016
7	01	01	Jogimatti forest, Chitradurga	-	01	-	Mahesh Bilaskar
8	09	05	Gulbarga campus	02	07	-	Murali Jadesh <i>et al.</i> , 2014
9	43	-	Agumbe plateau	03	-	-	Ganesh <i>et al.</i> , 2013
10	22	06	Mid Western ghats, Shimoga	05	14	03	Jagadeesh <i>et al.</i> , 2015

majority of them supported not killing snakes Deepak and Vijaya Kumara⁵ investigated the status and diversity of snakes in and around Shankaraghatta and discovered that 25 species belonged to 7 families. From the complete recognized species, 18 were non-venomous, 3 were venomous and 4 were somewhat venomous. Among the interesting species, Earthy colored plant snake (*Ahaetulla pulverulenta*), Elaborate flying snake (*Chrysopeleo fancy*) and Green keelback (*Macropisthodon plumbicolor*) were accounted for. The family Colubridae overwhelms different families and Indian exhibition cobra is the most saved snake.

Yatin Kalki *et al.*²³ recorded a total of 33 snake species with 9 families and 25 genera in Bengaluru Urban District. 15 of these species were not mentioned in Nicholson's 1874 report, making them brand-new Bengaluru

records. Most of the 33 species occupying Bengaluru are recorded as 'Not Assessed' or 'Least Worry' by the International Union for conservation of Nature; notwithstanding, two species are considered 'near threatened'. The Indian Wildlife Protection Act of 1972 covers all of the species, with one listed in Schedule I, five listed in Schedule II, and the remaining 27 listed in Schedule IV.

Ganesh *et al.*,⁷ used 08 specimens from the under studied hills near Bengaluru in Southern India's Devarayana and Nandi Durga to describe a new shield tail snake species called *Uropeltis jerdoni*. The following distinguishes the new species from related taxa in the *Uropeltis ceylanica* group: a caudal shield that is truncated, flattened, and has a concave disc that is centered; part of the rostral that is visible from above is smaller than

its distance from the frontal; nasal scales are partially separated in the rostra; 17: 17: 17 rows of dorsal scales; 140-148 ventral scales; 7 to 9 subcaudal pairs; above, a dark blackish-grey with tiny yellow spots and yellow lateral stripes on the neck and tail; yellow mottling on the ventro lateral portion; ventral dark. This new species is right now known exclusively from two territories Devarayana Durga and Nandi Durga yet deciding by the presence of comparable, adjoining massifs, is guessed to be available in neighboring hillocks encompassing Bengaluru city.

Arnab Sarkar *et al.*,¹ study under Sarpa Sathi project, They surveyed for snake diversity using time-constrained search, incidental encounters in and around the Mysore city, Karnataka, India, for the first time. During the study period of three years, they have identified 24 species of snakes, belongs to 7 families, among which 18 are non-venomous, 2 mild venomous and 4 are venomous. Mahesh Bilaskar⁹ has record the *Calamaria reed* snake, *Liopeltis calamaria* in the Jogimatti forest reserve of Karnataka, India.

Snakes in and around human habitation which initiates human-snake conflict quite often. *Naja naja* were more likely to create human-snake conflict in Karnataka. In most cases, non-poisonous snakes were the sufferers in human-snake conflict and the peoples not able to differentiate among venomous and non-venomous snakes. Lack of consciousness was the main reason for the killing of snakes¹¹. Snake bite management is another issue which is to be taken up more seriously, although people were seen to reach hospitals immediately after the snake bit¹⁰. Therefore it's necessary to

aware the people regarding the importance of the area in herpetofaunal research.

The Russell's Viper, Common Wolf Snake, Banded Kukari, Rat Snake, and Indian Rock Python all died according to Pawar Prabhakar *et al.*,¹⁶. The attraction of snakes to roads for thermoregulation and warmth in the early morning, when the air temperature is cool, is to blame for the high rate of snake mortality. According to Baskaran and Boominathan², it is also linked to the sluggish nature of pythons and sand boas, which increases their mortality risk.

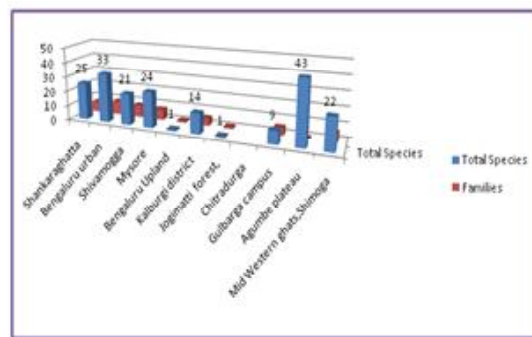


Figure 3: Total number of species and families of snakes distribution in different areas of Karnataka

People believe that every snake is poisonous and fail to distinguish between poisonous and non-poisonous snakes, which is why they kill some but not all venomous and non-venomous snakes. The majority of the land is agricultural, which draws frogs, rodents, and snakes, respectively; Home provides the appropriate climate for snakes to harbor, providing both food and shelter. The month to month/occasional variety is because of harvest rising and furrowing. The majority of the land that farmers cultivate includes paddy, maize, and sugar cane. These crops provide snakes

with a favorable habitat, which may account for the highest number of snakes. They plough and clean the land after harvesting, which reduces the number of snakes due to a lack of suitable habitat, which may account for the summer's lowest snake population. Because of human settlements and human overwhelmed region these numbers are diminishing. While safeguarding the snakes, we additionally gave mindfulness about the snakes that how it keeps an eye on the rat populace and how it is environmentally useful. To safeguard the snake populace estimates like, the natural surroundings protection, instruction and effort programs are significant and furthermore to keep away from the human-snake struggle. Because of presence of snake companion in this space individuals show more worry to save the snake as opposed to killing and that demonstrate individuals performance towards the protection of snake.

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