REPTILIAN DIVERSITY IN KOLHAPUR DISTRICT, MAHARASHTRA: A FOCUS ON GADHINGLAJ, AJARA AND CHANDGAD TALUKAS

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ABSTRACT

For the past three years, a comprehensive study of reptile diversity has been conducted in Gadhinglaj, Ajara and Chandgad tehsils of Kolhapur District, Maharashtra, India. This region encompasses part of the Western Ghats, a biodiversity hotspot known for its unique reptile fauna. Data on reptile sightings was gathered through various methods: rescue operations where snakes were safely released back into their natural habitat, collaboration with local snake-friendly NGOs and observations of accidental road kill. This study documented a remarkable diversity of reptiles, with 31 species of snakes, 16 species of lizards and 2 species of turtles identified within the studied area.

KEYWORDS: Reptilian diversity, Snakes, Lizards, Turtle, Gadhinglaj, Ajara, Chandgad

INTRODUCTION

Emerging from the primordial oceans, reptiles were the first vertebrates to conquer dry land, a feat that laid the foundation for all terrestrial life. For over 300 million years, they ruled Earth, their reign culminating in the magnificent diversity of the Mesozoic era, aptly named the "golden age of reptiles."Evolved for life on land, reptiles boast a unique reptilian costume: dry, non-glandular skin adorned with scales, scutes, or even bony plates, all helping them regulate temperature and ward off external threats. India boasts two of the world's biodiversity hotspots: the majestic Western Ghats and the vibrant North-Eastern region. These hotspots, teeming with diverse life, hold the title of Asia's richest vertebrate fauna. Stretching for 1,600 km along India's western coast, the Western Ghats is a mountain range that covers a vast 160,000 km^2. Its journey traverses five states - Gujarat, Maharashtra, Karnataka, Kerala and Tamil Nadu and harbours an exceptional number of reptile species, many of which are found only within its boundaries.

Kolhapur district, a jewel in Maharashtra's crown, boasts a geographical tapestry woven from three distinct threads. The Western Ghats, a biodiversity hotspot and UNESCO World Heritage Site, offer a haven for nature lovers and thrill-seekers alike. The Panhala Hills, steeped in history and crowned by the iconic Panhala Fort, cater to those seeking historical treasures and breathtaking vistas. Finally, the eastern plateau, with its fertile plains and vibrant markets, celebrates Kolhapur's agricultural bounty and rich cultural heritage.

Throughout history, humans have interacted with reptiles and their attitudes toward these creatures have been shaped by their culture, environment and personal experiences. Alves *et. al.(2012)* India's reptile kingdom reigns supreme with 518 species, including 279 diverse snakes alone. This impressive snake count makes India a global hotspot for these captivating creatures. Janani *et al.*, (2016) of these 518 species. Ganesh *et al*. (2014) unearthed a hidden snake paradise in the mist-shrouded High Wavys of India, documenting a staggering 62 species and subspecies in the Theni district of Tamil Nadu. Their work has brought to light the incredible reptile richness of this Western Ghats, nestled amidst lush rainforests and cascading waterfalls.Peeking out from lush forests and rocky hillsides, Bansode and More (2018) revealed a vibrant tapestry of serpents in Palghar district. Their study documented an impressive 35 species across 7 families, showcasing the region's rich snake biodiversity. Bansal, (2010) Reported that the genus Hemidactylus, comprising 85 species, exhibits significant diversity and endemism in the Indian subcontinent. Genetic analysis reveals a distinct Indian clade, with some species originating in India and dispersing to Southeast Asia and West Asia. Upadhye *et al*. (2012) documented a surprising diversity of reptiles within the urban confines of Mumbai

University's Vidyanagari campus, identifying 12 snake species, 2 geckos, 3 skinks and a single Calotes. This finding is particularly noteworthy given the campus's lack of natural habitat compared to the Amravati University campus, which boasts hilly forests and should theoretically harbour a richer reptile assemblage. Notably, the Bengal Monitor (Varanusbengalensis), reported as common in Amravati, was entirely absent in Mumbai.

Over a ten-year period (2007-2016), Vibhute's (2018) study documented the presence of 14 snake species in the study area. Notably, the majority of these snakes (10 species) were found living in and around human settlements, with only one semi-venomous species and three venomous species identified. A significant finding was the sharp increase in the population of Russell's Vipers near human habitats. This rise is likely linked to the loss of their natural habitats, forcing them to seek refuge and resources in human-dominated areas. Vibhute' study highlights the potential impact of human development on snake populations, particularly for vulnerable species like the Russell's Viper. Understanding these interactions is crucial for informing conservation efforts and mitigating human-snake conflict. According to Sardello *et al.* the impacts of anthropogenic noise on certain taxonomic groups and types of noise and outcomes, indicating a need for further attention to certain species, types of noise, and impacts, with the potential to inform operational decisions to reduce noise pollution and protect biodiversity.

Giri and Bauer (2008) made an exciting discovery in the Western Ghats of Maharashtra, India - a new species of ground-dwelling gecko belonging to the genus Hemidactylus. This gecko, found on the plateaus of the region, adds to the diversity of India's reptile fauna and highlights the importance of ongoing research in these ecologically rich areas. The discovery of this new gecko species is a testament to the ongoing exploration of India's rich biodiversity. By continuing to study and protect these unique animals, we can gain a deeper understanding of the natural world and ensure its continued existence for future generations. This valuable resource allows researchers and enthusiasts to accurately distinguish different members of this diverse group.

Yadav *et al*. (2014) documented a remarkable diversity of 34 herpetofauna species in Shivaji University, Campus. This rich tapestry of life, encompassing 14 amphibian and 20 reptilian species, belongs to a staggering 30 genera and 16 families. They also stated that, this vibrant community faces a stark reality: habitat loss due to human disturbances. Activities like cutting grass for cattle feed, setting fire to grasslands and felling large trees threaten the delicate balance of the ecosystem. These disturbances have led to a decline in the relative

abundance of these fascinating creatures. They also proposed specific measures to restore open areas with fast-growing plants and control the rampant burning of grasslands. By implementing these measures, we can create a haven for these remarkable creatures and ensure their continued presence within the university grounds.

A study by Pawar *et al*. (2020) found a diverse snake community in the area around Panvel, Navi Mumbai, with 19 non-venomous and 6 venomous species identified. This suggests that the area's ecological conditions support a moderate snake population. However, the ongoing construction of Navi Mumbai International Airport (NMIA) and over-exploitation of natural resources are posing significant threats to snake diversity and distribution. Additionally, a lack of awareness about the ecological importance of snakes and fear of snake bites contribute to snake mortality in residential areas.

STUDY AREA

Ajara, Gadhinglaj and Chandgad nestled in Maharashtra's southern embrace are not just three talukas within the Kolhapur district; they are a canvas where nature paints with vibrancy and diversity. Sharing a geographical footprint (roughly between 16.5° to 17.5° N and 74° to 75° E) and bathed in the influence of the majestic Western Ghats, these regions weave a breath taking tapestry of hills, plains and agricultural expanses.

Ajara leads the dance with its verdant plains and rolling hills, each stroke accentuated by the Western Ghats' artistry. Deciduous forests, vibrant grasslands and cultivated fields whisper tales of the talukas' rich biodiversity, a haven for diverse flora and fauna.

Gadhinglaj echoes the symphony of nature, sharing Ajara's geographical rhythm. Its hills and plains harmonize with the Western Ghats' melody, creating a landscape brimming with ecological treasures. Lush deciduous forests, sprawling grasslands and cultivated areas paint a vibrant portrait of biodiversity.

Chandgad completes the trio, captivating with its own unique verse. Hills, plains, and agricultural expanses intertwine in a captivating topographical poem. Its proximity to the Western Ghats elevates its ecological significance, possibly harbouring endemic species that define this biodiversity hotspot.

United by their geographical coordinates and the Western Ghats' guiding hand, these three talukas stand as exemplars of Maharashtra's diverse landscapes. Their hills, plains and unique ecosystems weave a vibrant tapestry of biodiversity, transforming them from mere locations into thriving hubs of nature's artistry. It is here, in this corner of Maharashtra, that

we witness not just the beauty of nature but also the delicate balance between human activities and the preservation of this precious tapestry.

MATERIALS AND METHODS

Over the past three years, dedicated explorations of Gadhinglaj, Ajara and Chandgad Talukas have yielded a rich tapestry of reptilian sightings. These surveys weren't confined to planned expeditions. We embraced chance encounters during field observations, responding to calls from local residents who discovered snakes requiring rescue. Each rescued serpent received a thorough scientific examination before being released back into its natural haven, ensuring minimal disruption to its life.

Throughout these surveys, the Canon EOS 1300D camera with its 55-250 mm zoom lens became an invaluable tool. Capturing detailed photographs allowed for precise identification and documentation, minimizing disturbance to the observed animals. Observed specimens were identified with the help of number of publications and keys of identification. Such as Smith, M.A. (1935), Daniel, J. C. (2002), Whitaker, R. and Captain, A. (2004) and Khaire, N. (2008)

RESULTS AND DISCUSSION

TABLE NO: 1 CHECKLIST OF REPTILIAN DIVERSITY

SR. NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY
		SNAKES	
1	Brahminy blind snake	*Indotyphlopsbraminus*	Typhlopidae
2	Beaked worm snake	*Grypotyphlopsacutus*	Typhlopidae
3	Phipson's shield tail	*Uropeltisphipsonii*	Uropeltidae
4	Indian Rock python	*Python molurus*	Boidae
5	Common Sand boa	*Gongylophisconicus*	Boidae
6	Red sand boa	*Eryxjohnii*	Boidae
7	Common Trinket snake	*Coelognathushelenahelena*	Colubridae
8	Mountain Trinket snake	*Coelognathus Helena monticollaris*	Colubridae
9	Indian rat snake	*Ptyas mucosa*	Colubridae
10	Banded Racer	*Argyrogenafasciolata*	Colubridae
11	Banded Kukri snake	*Oligodonarnensis*	Colubridae
12	Russell's Kukri snake	*Oligodontaeniolatus*	Colubridae
13	Bronze back Tree snake	*Dendrelaphistristis*	Colubridae
14	Common wolf snake	*Lycodonaulicus*	Colubridae
15	Barred wolf snake	*Lycodonstriatus*	Colubridae
16	Checkerd keel back	*Fowleapiscator*	Colubridae
17	Buff Striped keel back	*Amphiesmastolatum*	Colubridae
18	Green keel back	*Rhabdophisplumbicolor*	Colubridae
19	Beddome'skeel back	*Hebiusbeddomei*	Colubridae
20	Ornate flying snake	*Chrysopeleaornata*	Colubridae
21	Beddome's Cat snake	*Boigabeddomei*	Colubridae
22	Vine snake	*Ahaetulla borealis*	Colubridae
23	Common Krait	*Bungaruscaeruleus*	Elapidae
24	Wall's Sindh Krait	*Bungarussindanus*	Elapidae
25	Spectacled Cobra	*Najanaja*	Elapidae
26	Russell's Viper	*Daboiarusselii*	Viperidae

27	Saw-scaled Viper	*Echiscarinatus*	Viperidae
28	Bamboo Pit Viper	*Trimeresurusgramineus*	Viperidae
29	Malabar pit viper	*Trimeresurusmalabaricus*	Viperidae
30	Slender coral snake	*Calliophismelanurus*	Elapidae
31	Castoe's coral snake	Calliophiscastoe	Elapidae
LIZARDS			
1	Oriental garden lizard.	*Calotesversicolor*	Agamidae
2	Roux's forest lizard	*Calotesrouxii*	Agamidae
3	Indian Chameleon	*Chamaeleozeylanicus*	Chamaeleonidae
4	Bengal monitor lizard	*Varanusbengalensis*	Varanidae
5	Keeled Indian skink	*Eutropiscarinata*	Scincidae
6	Bronze grass skink	*Eutropismacularia*	Scincidae
7	Red tailed skink	*Sphenomorphusdussumieri*	Scincidae
8	Common dotted garden skink	*Riopapunctata*	Scincidae
9	Jerdon's snake-eye skink	*Ophisopsjerdonii*	Scincidae
10	Common house gecko	*Hemidactylusfrenatus*	Gekkonidae
11	Yellow-belly gecko	*Hemidactylusflaviviridis*	Gekkonidae
12	Spotted house gecko	*Hemidactylusparvimaculatus*	Gekkonidae
13	Sahgal's termite hill gecko	*Hemidactylussahgali*	Gekkonidae
14	Rupicolous gecko	*Hemidactylusbrookii complex*	Gekkonidae
15	Deccan ground gecko	*Cyrtodactylusdeccanensis*	Gekkonidae
16	Prashad's gecko	*Hemidactylusprashadi*	Gekkonidae
TURTLES			
1	Indian black turtle	*Melanochelystrijuga*	Geoemydidae
2	Black soft-shell turtle	*Nilssonianigricans*	Trionychidae

Common cobra	***Green keel back***
	
Buff striped keelback	***Checkered keelback***
	
Banded kukri	***Russell's viper***
	
Banded racer	***Common sand Boa***
	

Indian Rat Snake 	***Beddome's cat snake*** 
Malabar pit viper 	***Ornate flying snake*** 
Saw scalled viper 	***Common Bronzeback tree*** 
Phipson's Shieldtail 	***Common Wolf snake*** 

Wall's sindh krait 	*Castoe's coral snake* 
Common krait 	*Indian rock python* 
Mountain trinkate 	*Russel's Kukari* 
Beddoms keelback 	*Green vine snake* 

Black Headed Snake 	***Bamboo pit viper*** 
Brahminy blind snake 	***Beaked worm snake*** 
Calotesrouxii 	***Hemidactylus brookii*** 
Varanusbengalnsis 	***Indian garden lizzard*** 

Banded Ground Gecko

Chamaeleon

Hemidactylus prashadi

Indian softshell turtle

Indian black turtle

FIGURE NO: 1 PHOTOGRAPHS OF REPTILIAN DIVERSITY

CONCLUSION

This study sheds light on the remarkable reptilian diversity of the Western Ghats, with 31 documented snake species, 16 lizard species and 2 turtle species, it merely scratches the surface. We stand at the precipice of a far grander understanding. Unveiling the ecological roles these reptiles play, their intricate distribution and the multitude of threats they face demands further exploration. Only then can we craft comprehensive conservation strategies to secure their future.

This study has identified several immediate concerns: road kill impacting snake populations, human persecution driven by misunderstanding and habitat fragmentation due to development, construction and agricultural expansion. These threats act as stark reminders of the need for immediate action.

However, amidst these challenges, hope persists. This study serves as a springboard, inviting further investigation into the hidden wonders of the reptilian world. By delving deeper into their ecological tapestry, we can build bridges of understanding, foster respect and pave the way for harmonious coexistence between humans and these fascinating creatures. The future of the Western Ghats' reptilian diversity and the vibrant ecosystem they are integral to, hinges on our willingness to embark on this journey of discovery and protection.

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