ISSN NO: 2249-3034

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

Volume XIV, Issue I, JANUARY/2025

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#### 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 km². 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)

ISSN NO: 2249-3034

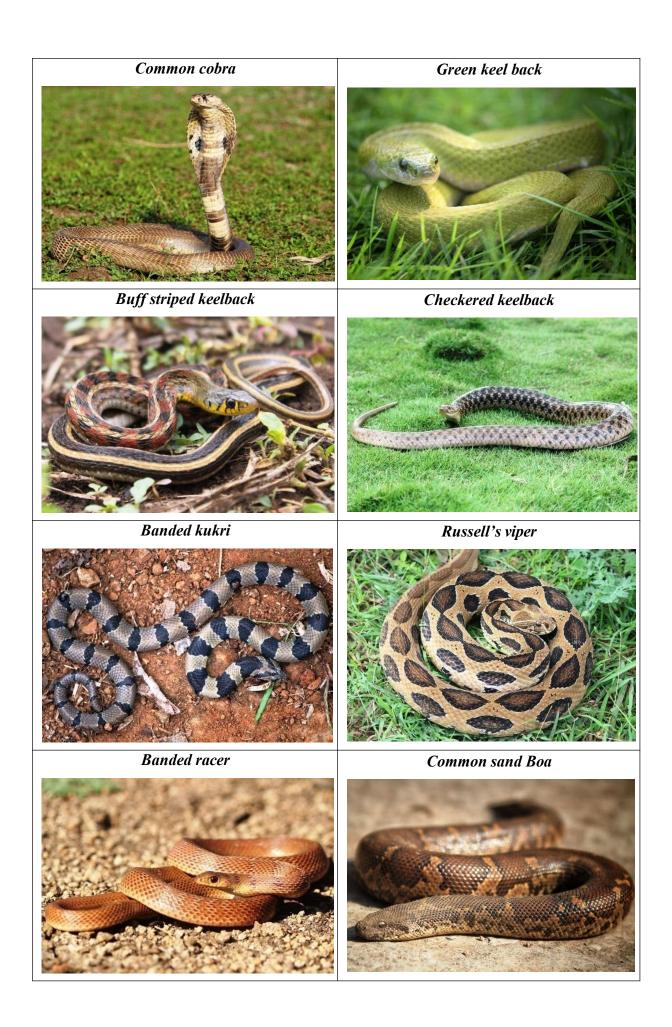
# **RESULTS AND DISCUSSION**

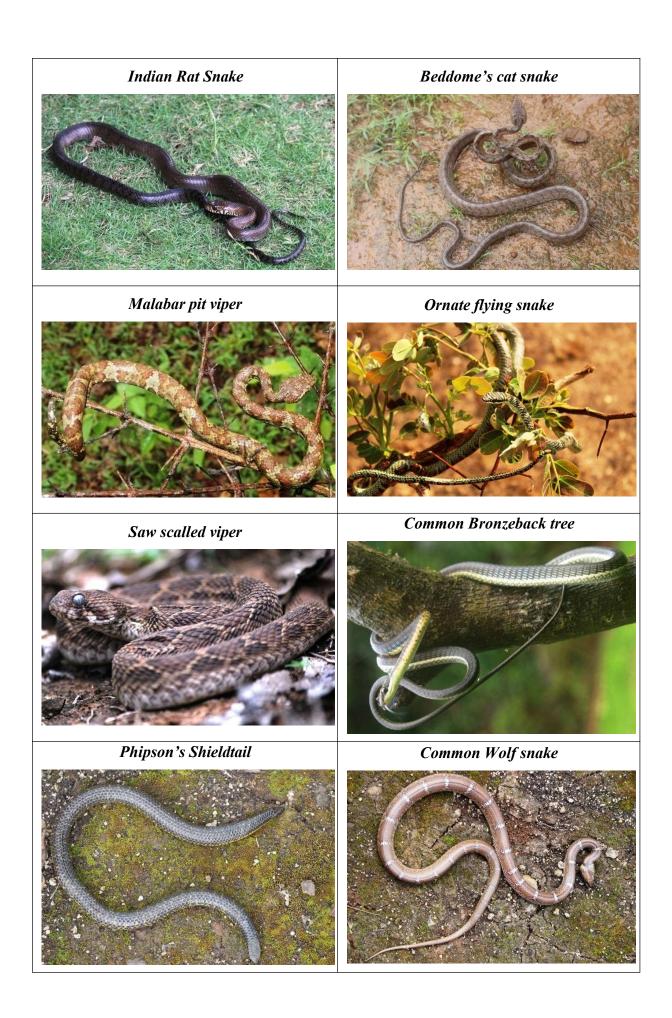
# TABLE NO: 1 CHECKLIST OF REPTILIAN DIVERSITY

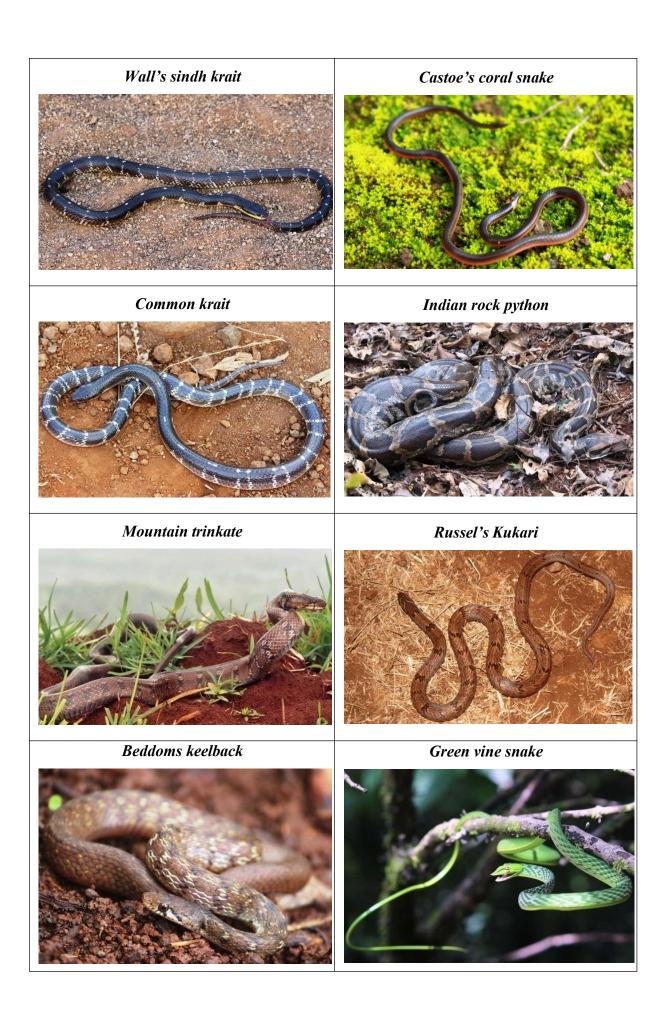
SR.	COMMON NAME	SCIENTIFIC NAME	FAMILY	
NO.	COMMON NAME	SCIENTIFIC NAME	FAMILY	
SNAKES				
1	Brahminy blind snake	Indotyphlopsbraminus	Typhlopidae	
2	Beaked worm snake	Grypotyphlopsacutus	Typhlopidae	
3	Phipson's shield tail	Uropeltisphipsonii	Uropeltidae	
4	Indian Rock python	Python molurus	Boidae	
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	

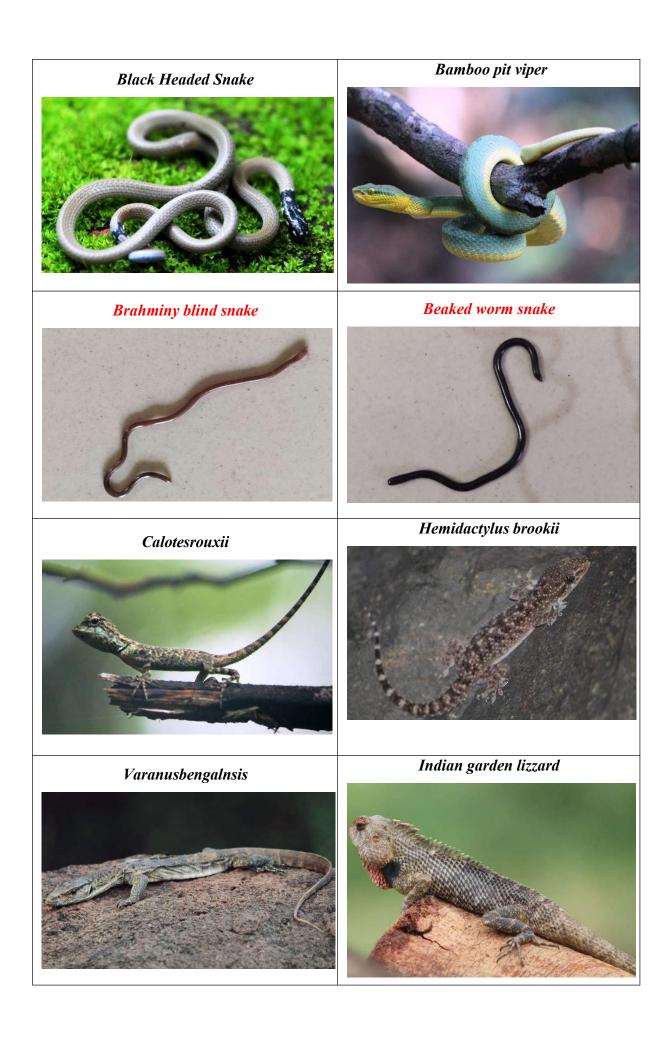
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27	Saw-scaled Viper	Echiscarinatus	Viperidae	
28	Bamboo Pit Viper	Trimeresurusgramineus	Viperidae	
29	Malabar pit viper	Trimeresurusmalabaricus	Viperidae	
30	Slender coral snake	Calliophismelanurus	Elapidae	
31	Castoe's coral snake	Calliophiscastoe	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	









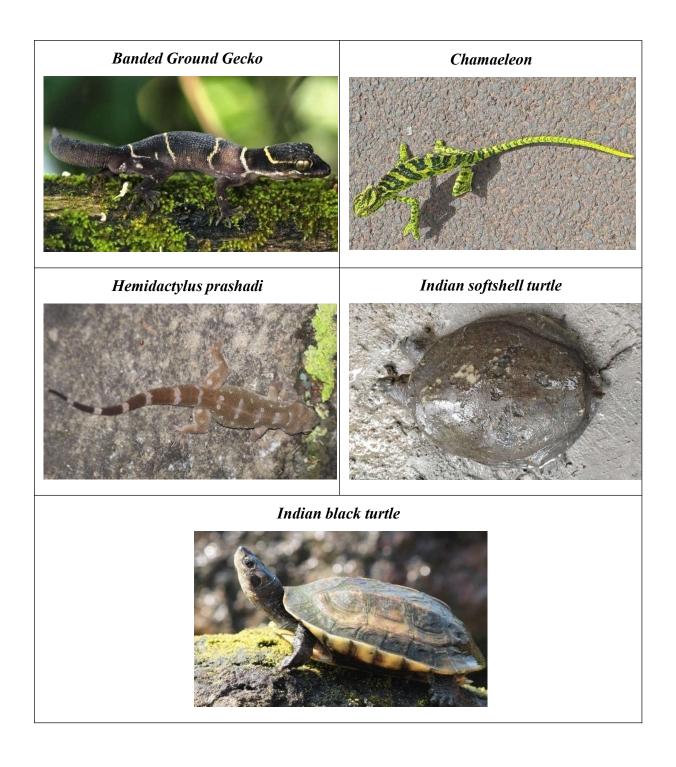


FIGURE NO: 1 PHOTOGRAPHS OF REPTILIAN DIVERSITY

## **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.

### **ACKNOWLEDGEMENTS**

This research wouldn't have been possible without the unwavering support of the esteemed leadership at Shivraj College of Arts, Commerce and D. S. Kadam Science, Gadhinglaj: President Prof. K. V. Kurade, Secretary Dr. A. V. Kurade, Adv. Digvijay Kurade and Principal Prof. (Dr.) S. M. Kadam. Their continuous encouragement and belief in our work were invaluable. We also express our deepest gratitude to the dedicated NGOs and the kind people of Gadhinglaj, Ajara and Chandgad. Their willingness to help at every turn, from sharing their knowledge to offering logistical support, made this research a truly enriching experience.

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