

DIVERSITY, MICROHABITAT UTILIZATION AND CONSERVATION STATUS OF SAURIAN FAUNA IN YAVATMAL DISTRICT, MAHARASHTRA

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Abstract

Saurian fauna (Order: Squamata, Suborder: Sauria) represent a crucial component of terrestrial biodiversity, serving integral ecological functions as meso-predators and biological indicators of ecosystem health. Yavatmal district, situated in the semi-arid Vidarbha region of Maharashtra, India, features a mosaic of tropical dry deciduous forests, scrublands, rocky outcrops and agricultural matrixes that provide suitable niches for reptile diversity. Despite its ecological potential, comprehensive field-based documentation of saurian fauna within the district remains limited compared to adjacent landscapes. Synthesizing regional literature and observational data from the broader Vidarbha region, this review evaluates the documented and predicted composition of saurian families (Gekkonidae, Scincidae, Agamidae, Varanidae and Chamaeleonidae) within Yavatmal. We highlight key ecological roles, evaluate anthropogenic threats including agricultural intensification, habitat fragmentation and vehicular mortality and identify critical research gaps. Finally, strategic framework recommendations are proposed for long-term conservation and targeted field inventories.

Keywords: *Sauria, Squamata, Biodiversity, Yavatmal, Vidarbha, Conservation, Eco-indicators*

1. Introduction

Reptiles, particularly lizards (Suborder: Sauria), constitute a vital link in terrestrial food webs, acting simultaneously as direct regulators of invertebrate populations and primary prey for higher trophic levels, including raptors and ophiidians (Daniel, 2002; Venugopal, 2010). Due to their ectothermic physiology and microhabitat specificity, saurian species are exceptionally sensitive to environmental perturbations, making them effective bioindicators for monitoring ecosystem integrity and the impacts of climate change.

Located in the eastern segment of Maharashtra state, Yavatmal district encompasses a landscape dominated by tropical dry deciduous vegetation, agro-ecosystems, aquatic margins, and rugged, rocky topography. Protected areas such as the Tipeshwar Wildlife Sanctuary enhance landscape connectivity and offer refuge for diverse wildlife. However, while adjacent administrative divisions like Buldhana and Amravati have received systematic herpetofaunal attention (Joshi & Tantarapale, 2016), Yavatmal's saurian diversity remains under documented in academic literature. This paper synthesizes existing regional records, establishes a baseline taxonomic expectations framework for Yavatmal, and outlines key conservation priorities.

2. Study Area Description

Yavatmal district lies within the tropical climate zone of Central India, characterized by three distinct seasons: a hot, dry summer, a monsoon period and a mild winter. The geographic character of the region comprises a diverse mosaic of land use types:

- **Natural Ecosystems:** Tropical dry deciduous forest pockets, open scrublands, and natural grasslands.
- **Geomorphological Features:** Exposed rocky outcrops, riverbeds, and plateau margins that offer thermal basking sites and shelter crevices.
- **Anthropogenic Landscapes:** Rain-fed agricultural fields, lake bunds, rural settlements, and linear infrastructure.

These diverse features supply essential micro-ecological requirements, including thermal gradients, foraging sites, and nesting substrate for reptile assemblages.

3. Taxonomic Composition and Regional Diversity

Comparative analyses of herpetofaunal surveys in contiguous Vidarbha landscapes indicate that saurian assemblages in Central Maharashtra typically encompass 14 to 16 documented species spanning five primary families (Joshi & Tantarapale, 2016). Table 1 summarizes the documented and predicted saurian diversity within the district along with their associated microhabitats.

Table 1: Predicted and Documented Saurian Diversity in Yavatmal District

Family	Common Name	Key Representative Species	Habitat Association	Status / Regional Record
Gekkonidae	Geckos	<i>Hemidactylus brookii</i> , <i>Hemidactylus flaviviridis</i> , <i>Hemidactylus gracilis</i>	Human settlements, rocky outcrops, tree trunks	Common / Documented in Yavatmal
Agamidae	Agamas / Garden Lizards	<i>Calotes versicolor</i>	Scrublands, garden hedges, agricultural margins	Abundant across region
Scincidae	Skinks	<i>Eutropis spp.</i>	Leaf litter, loose agricultural soil, lake bunds	Common in semi-arid zones
Varanidae	Monitor Lizards	<i>Varanus bengalensis</i>	Forest edges, river beds, agricultural peripheries	Reported / Protected landscape
Chamaeleonidae	Chameleons	<i>Chamaeleo zeylanicus</i>	Dense shrublands, dry deciduous canopy	Moderate / Suitable habitat present

4. Ecological Roles

Saurian fauna provides essential ecosystem services across both natural and human-dominated landscapes:

- **Pest Control:** By consuming vast quantities of agricultural pests and insect vectors (e.g., Coleoptera, Orthoptera, Lepidopteran larvae), lizards suppress pest outbreaks naturally, reducing reliance on chemical pesticides.
- **Trophic Intermediaries:** Lizards convert invertebrate biomass into energy accessible to

higher-order predators, including avian raptors, small mammals, and snakes.

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5. Anthropogenic Threats

Despite their adaptiveness, saurian populations in Yavatmal face multiple synergistic threats. Table 2 outlines the primary anthropogenic drivers and their specific ecological impacts on regional saurian taxa.

Table 2: Anthropogenic Threat Matrix and Ecological Impacts

Threat Factor	Primary Cause / Driver	Affected Taxa	Ecological Impact
Habitat Fragmentation	Deforestation, quarrying, road construction	All species (especially arboreal & rocky outcrop specialists)	Isolation of sub-populations; reduced genetic diversity.
Agrochemical Toxicity	Intensive pesticide & fertilizer use in cotton/soybean crops	Insectivorous species (<i>Calotes</i> , <i>Hemidactylus</i> , Skinks)	Prey base depletion; bioaccumulation of toxic residues.
Vehicular Mortality	Traffic across roads intersecting forested/rural areas	Terrestrial and basking species (<i>Varanus</i> , Agamids)	Direct adult mortality during seasonal migrations.
Direct Persecution	Misconceptions regarding venom/toxicity	Skinks, Geckos, Monitor Lizards	Unnecessary targeted killing by local communities.

6. Recommended Conservation and Research Framework

To safeguard saurian diversity and address data gaps within Yavatmal district, key action items

must be prioritized. Table 3 details the strategic steps required for future research and regional management.

Table 3: Proposed Strategic Framework for Research and Conservation

Priority Area	Action Item	Target Outcome
Systematic Surveys	Multi-season Visual Encounter Surveys (VES) & pitfall traps	Baseline species checklist and spatial distribution map.
Habitat Management	Protection of Tipeshwar Wildlife Sanctuary corridors & rocky plateaus	Prevention of localized extinctions and habitat loss.
Agricultural Integration	Promotion of Integrated Pest Management (IPM)	Reduction of chemical run-off and restoration of insect prey.
Public Outreach	Educational workshops for farmers and local schools	Mitigation of human-driven persecution based on myths.

7. Conclusion

Yavatmal district possesses a varied landscape capable of supporting a rich and ecologically diverse saurian fauna. While regional studies provide a preliminary baseline, detailed empirical field research is required to map precise spatial distributions, seasonal patterns, and population health. Implementing community supported conservation strategies alongside habitat protection will ensure the long-term persistence of central India reptile diversity.

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