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The Living World of Indian Wildlife

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A Review Study of Wildlife Species, Their Habitats and Conservation from Satara District, Maharashtra

- *M. V. Ingawale*

Introduction

Plants and animal species which live and grow in areas uninhabited by human are referred as wild life. It includes all non-domesticated animals, plants, many other organisms & fungi. Wildlife is found in all ecosystems such as forests, plains, grasslands, deserts and all other areas and have a specific and different form of wildlife. Practice of protecting wild animals, plants, and their natural habitats to ensure that nature will be around for future generations is called wild life conservation.

Nestled in the heart of the Western Ghats, Satara district in Maharashtra is distinguished by its extraordinary natural heritage. Renowned for historical forts and vibrant cultural traditions, Satara is equally celebrated for its rich biodiversity. Situated within the globally recognized biodiversity hotspot of the Western Ghats, the district is a repository of unique flora and fauna. Its landscapes, ranging from mist-shrouded montane forests to sprawling plateaus adorned with seasonal wildflowers, support an astonishing array of habitats and wildlife species. The purpose of this paper is to overview of Satara's habitats and wildlife, underscoring its ecological importance, conservation challenges, and the urgent need to preserve its natural wealth for future generations.

Study Area

Physiography and Climate

Satara district spans latitudes 17°5′ N to 18°11′ N and longitudes 73°33′ E to 74°54′ E, covering approximately 10,480 square kilometres. Its terrain is largely dominated by the Sahyadri ranges, with elevations from 500 m to over 1,400 m above sea level. The district's physiography is classified into three main zones:

- **Western Hill Zone**: Encompassing the Sahyadri ranges and Mahabaleshwar plateau, this zone receives heavy monsoon rainfall and supports dense forest cover.
- **Central Plateau Zone**: Characterized by undulating plateaus and valleys, it receives moderate rainfall and comprises grasslands interspersed with agricultural mosaics.
- **Eastern Dry Zone**: Located in rain shadow areas, this zone is typified by scrubland and dry deciduous forests.

Climate varies from humid tropical in the west (Mahabaleshwar, Patan, Koyna) to semi-arid in the east (Karad, Koregaon, Man), with annual rainfall exceeding 6,000 mm in Mahabaleshwar and less than 600 mm in the eastern parts. These variations generate diverse habitats, each hosting distinctive plant and animal communities.

Methods:

Reviewed number of publications for the period 2000-2024 screened each publication for terms that were used to define habitat, the animal species group and ecosystem studied.

Observations

Major Habitat Types

Forests: Satara contains moist deciduous, semi-evergreen, and evergreen forests, especially prominent in the western and central regions. Chandoli National Park and Koyna Wildlife Sanctuary, part of the Sahyadri Tiger Reserve, are vital habitats for apex predators such as leopards, as well as a variety of ungulates.

Grasslands and Scrublands: The eastern plateau's open grasslands and scrub support species like the Indian fox, blackbuck, and ground-nesting birds such as the Indian courser. Rich in biodiversity, these grasslands face threats from habitat conversion for agriculture.

Wetlands and Rivers: Satara is traversed by rivers including the Krishna, Koyna, Urmodi, and Venna. Reservoirs like Koyna Dam and Urmodi Dam provide essential habitats for migratory water birds, including ducks, storks, and waders. Seasonal ponds on the Kaas Plateau are ecological niches for unique amphibians and aquatic insects.

Plateaus and Lateritic Ecosystems: The Kaas Plateau is globally acclaimed for its monsoon-blooming wild flowers and unique microhabitats. Designated a UNESCO World Natural Heritage Site, it harbours endemic plant species and remarkable pollinator diversity.

Floral Diversity Satara:

Satara's vegetation reflects monsoon patterns and varied soil types. High-rainfall zones are dominated by evergreen species such as *Syzygium cumini* (jamun), *Terminalia paniculata*, and *Holigarna grahamii*. Semi-evergreen and moist deciduous forests feature teak (*Tectona grandis*), ain (*Terminalia tomentosa*), and dense bamboo groves.

The Kaas Plateau alone supports over 850 species of flowering plants, many endemic to the Western Ghats. Genera such as *Impatiens, Eriocaulon*, and *Utricularia* create vivid seasonal carpets. These plants are pivotal for insects, birds, and small mammals, emphasizing the intricate ecological connections within these habitats.

Wildlife Species

Mammals: The mammalian diversity of Satara is significant, with approximately 32 species recorded. Of these, nearly 21 species fall under the higher schedules of the Wildlife Protection Act, and about 10 species are categorised as threatened by the IUCN. The forests and adjoining agricultural landscapes serve as home to both large carnivores and smaller endemic rodents. Among the most remarkable is *Rattus satarae*, commonly called the Sahyadri forest rat, which is vulnerable and endemic to the moist evergreen and deciduous forests of the district. Apex predators such as the Indian leopard (*Panthera pardus fusca*) occur widely in the forested zones, relying heavily on intact forest corridors for movement and survival. The sloth bear (*Melursus ursinus*), another key species, is frequently associated with fragmented forests and is particularly vulnerable to human disturbances. Arboreal mammals such as the Indian giant squirrel (*Ratufa indica*) add further ecological richness, inhabiting the dense canopy layers of forest patches.
Reptiles and Amphibians: The herpetofaunal diversity of Satara is equally notable. Recent studies in the Mahadare Conservation Reserve (2021–2023) have documented 60 species, including 51 reptiles and 9 amphibians. Of these, 11 species are listed under Schedule I and 33

under Schedule II of the Wildlife Protection Act. Their conservation importance is further reflected in IUCN assessments: one species is Critically Endangered, three are Vulnerable, five are Near Threatened, 44 are Least Concern, and seven remain Data Deficient due to inadequate information. Noteworthy species include *Nilssonia leithii*, a freshwater turtle endemic to peninsular India and categorised as Critically Endangered, and *Raorchestes bombayensis*, a Vulnerable amphibian restricted to the Western Ghats. Particularly striking is the *Hemidactylus sataraensis* or Satara gecko, which is Critically Endangered and confined to a highly restricted range. The district also shelters endemic snake species such as *Grypotyphlops acutus*, *Calliophis nigrescens*, and *Trimeresurus gramineus*, which further reflect the ecological uniqueness of Satara's habitats.

Birds: Avifaunal diversity in Satara is exceptionally high, with around 200+ bird species recorded across forest, plateau, and wetland habitats. Nearly 25 of these are endemic to the Western Ghats. The district's forests provide shelter to emblematic species such as the Malabar pied hornbill, the Nilgiri wood pigeon, and the Malabar whistling thrush. Wetland and reservoir habitats, including those around Koyna and Kaas, also attract a wide range of raptors, waterfowl, and migratory species, underlining the role of aquatic ecosystems in maintaining avian diversity. This rich assemblage not only serves ecological functions such as seed dispersal and pest regulation but also enhances the ecotourism potential of the district.

Invertebrates: Satara also supports remarkable invertebrate diversity. The district hosts around 153 species of butterflies, many of which are habitat specialists dependent on seasonal flowering and forest patches. Odonates (dragonflies and damselflies) are also well represented, with unique species like *Euphaea pseudodispar*, a high-altitude damselfly endemic to Satara's streams, recently described from the region.

Fishes: Aquatic biodiversity includes approximately 50+ species of freshwater fish recorded from forest streams in areas, reflecting the ecological importance of perennial water systems.

In sum, Satara's faunal wealth is both vast and fragile. With nearly 700 documented species, a high proportion of endemics, and many taxa under threat, the district exemplifies the conservation challenges of the Western Ghats. Its diverse landscapes from dense forests and grassy plateaus to rivers and reservoirs act as refuges for

rare and endemic species, while also being under pressure from habitat fragmentation, agricultural expansion, and anthropogenic disturbances. Conservation of these species, therefore, requires not only legal protection but also community involvement, habitat restoration, and continued ecological research. Satara stands as a microcosm of the Western Ghats, reflecting both its splendour and its vulnerability.

Special Ecosystems & Biodiversity Hotspots

1. **Kaas Plateau:** A crown jewel of Satara, the Kaas Plateau is recognized as a UNESCO World Natural Heritage Site. Each monsoon, the plateau is transformed by endemic wildflowers such as *Smithia hirsuta* and *Utricularia purpurascens*. Microhabitats here support amphibians, reptiles, and specialized pollinators.
2. **Chandoli National Park:** Covering 318 sq km, Chandoli forms part of the Sahyadri Tiger Reserve and harbours large mammals including leopards, sloth bears, gaur, and various primates. Its corridor function is vital for wildlife movement between Goa and Karnataka forests.
3. **Koyna Wildlife Sanctuary:** Encircling the Koyna Dam, this sanctuary preserves dense forests, hill slopes, and riparian habitats. Key residents include the Indian giant squirrel and a diversity of avifauna.
4. **Mahabaleshwar–Panchgani Belt:** This region features semi-evergreen forests, sacred groves, and landscapes where traditional practices coexist with wildlife habitats.

Conservation Importance and Endemism

Satara district occupies a important position within the northern Western Ghats, a region globally recognised for its high biodiversity and levels of endemism. The district supports 94+ endemic species across various faunal groups, ranging from small amphibians and reptiles to invertebrates and mammals. These species are highly specialised and confined to narrow ecological niches, often dependent on unique Western Ghats ecosystems such as lateritic plateaus, high-altitude evergreen forests, and perennial stream habitats.

A substantial number of these species are categorised as threatened under the IUCN Red List, while many fall under the legal

protection frameworks of the Indian Wildlife (Protection) Act, particularly Schedules I and II. This legal recognition reflects the ecological importance and vulnerability of the region's fauna. Several taxa are especially sensitive to habitat fragmentation and microclimatic alterations. For instance, forest-dependent mammals such as the leopard and sloth bear rely on intact corridors for survival, while endemic reptiles like the Satara gecko and amphibians such as *Raorchestes bombayensis* require highly specific habitat conditions stable humidity, undisturbed forest cover, and perennial water bodies. Any disruption to these delicate environmental balances can result in population declines, underscoring the need for targeted conservation interventions.

Human–Wildlife Interactions and Emerging Threats

The biodiversity of Satara faces mounting pressures from anthropogenic activities. Agricultural expansion is one of the most prominent drivers of habitat loss, particularly the spread of water-intensive crops such as sugarcane, which not only consume vast quantities of groundwater but also replace natural forest and grassland ecosystems. Large-scale infrastructure, including dams and reservoirs, has further altered the district's ecological character. Projects such as the Koyna dam have interrupted natural river flows, submerged forests, and disrupted the seasonal cycles of wetlands and waterfalls. These hydrological modifications affect aquatic species directly and have cascading impacts on riparian flora and fauna.

Tourism, particularly in biodiversity-rich areas such as the Kaas Plateau and the hill stations of Mahabaleshwar and Panchgani, presents another complex challenge. While it generates economic benefits and raises awareness, unregulated visitor inflow results in trampling of fragile habitats, accumulation of waste, disturbance to wildlife, and potential introduction of invasive species. Habitat fragmentation remains a pervasive issue, with roads, settlements, and small-scale logging contributing to the isolation of species populations. Poaching and the illegal extraction of biological resources ranging from bushmeat hunting to unsustainable harvesting of medicinal plants pose additional threats. Overlaying these local pressures are the impacts of climate change, manifesting in altered rainfall patterns, prolonged dry spells, and rising temperatures. Such changes have begun to affect key ecological processes, including amphibian breeding cycles and the

flowering rhythms of plateau ecosystems like Kaas, thereby threatening species that are tightly linked to these seasonal cues.

Ongoing Conservation Efforts:

Despite these challenges, Satara district has witnessed several positive conservation measures aimed at safeguarding its biodiversity. The establishment of Protected Areas such as Chandoli National Park and Koyna Wildlife Sanctuary provides important refuges for many threatened species, while the recent creation of smaller units like the Mahadare Conservation Reserve in 2022 reflects an emerging strategy of decentralised and community-linked conservation. The Indian Wildlife (Protection) Act and related forest laws continue to offer legal safeguards to endangered taxa, while traditional practices such as the preservation of sacred groves contribute significantly to the protection of biodiversity outside formal Protected Areas. Community awareness programmes and participatory approaches are also being implemented to align local livelihoods with conservation goals.

Scientific research and long-term ecological monitoring have played a pivotal role in highlighting the district's biodiversity significance. Recent surveys on reptiles and amphibians, butterfly diversity, and freshwater fish populations are gradually filling knowledge gaps and informing policy and management. Furthermore, ecotourism regulation has been introduced in highly sensitive areas such as the Kaas Plateau, where visitor numbers are now restricted, and buffer zone planning is being emphasised to reduce human impacts. Together, these efforts demonstrate a growing recognition of Satara as not only a centre of biodiversity but also as a landscape where sustainable coexistence between humans and wildlife must be actively pursued. Effective conservation in this district will depend on maintaining a balance between ecological integrity, traditional cultural practices, and modern developmental pressures.

Conclusion

Satara district exemplifies the ecological richness of the Western Ghats. Its forests, grasslands, wetlands, and plateaus host remarkable diversity from leopards and hornbills to minute endemic wildflowers and amphibians. Facing growing pressures from human activity and climate change, safeguarding Satara's wildlife is imperative for sustaining both natural ecosystems and local communities. Through

informed management, participatory conservation, and ongoing scientific research, Satara can preserve its living sanctuary of biodiversity for generations to come.

Effective conservation requires a multifaceted approach that includes legal enforcement, community involvement, sustainable planning, public education, and international collaboration. Addressing these environmental issues is important for the survival of diverse wildlife. Healthy ecosystems provide invaluable services such as climate regulation, water purification, and soil fertility, which are essential for human wellbeing and biodiversity conservation.

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To,

Dr. Ingawale M. V
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Subject: Letter of appreciation and thanks…

Respected Sir/Madam,

We hope this letter finds you in the best of spirits. We are writing to express our sincere gratitude for your invaluable book chapter **"A Review Study of Wildlife Species, Their Habitats and Conservation from Satara District, Maharashtra"** in book entitled **"Van Vishwa: The Living World of Indian Wildlife"** with **ISBN No. 978-81-992962-1-3.** It has been an absolute pleasure working with you throughout the publication process, and we wanted to take a moment to convey our heartfelt appreciation for your dedication and commitment.

On behalf of VYD Publisher's, we would like to express our profound appreciation for creating awareness among the society on very important burning issue. We look forward to future opportunities for collaboration and wish you continued success in all your future endeavors.

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