



# Souvenir





## THEME 2023

Conservation Efforts & Management Challenges  
of Lesser-known Faunal Diversity

## SOUVENIR



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### 1<sup>st</sup> National Conference on Lesser Known Species of MP

**Organized and Published by :** Society of Nature Healers, Conservators and Local Tourism Development, Bhopal

**Venue :** EPCO Conference Hall, Paryavaran Parisar, E-5, Arera Colony, Bhopal, MP

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**Designed by :** IMAGINATION

**Printed at :** S D ENTERPRISES, Bhopal

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SNHC India with registered name Society of Nature Healers, Conservators and Local Tourism Development is a Non-Profit Organization (NGO) founded in Year 2019 in capital city of MP i.e. Bhopal with a vision of healing (restoring) Mother Nature in natural and effective ways and conserving its beauty, the beautiful species of birds, animals, stunning and wide varieties of plants also the conservation and promotion of Heritage & Culture which is handed over to us from our ancestors.

Through our publication i.e. SNHC Journal – A quarterly magazine of central India on sensitising people for Nature, we are reaching Educational institutions at National Level, all forest divisions of India, libraries of different govt departments, NGO's and people in nature conservation etc. We have been publishing this since February 2020 and have received very good responses and commendations from all over India and some parts of the world too. We have 27500 + E - distribution and 2500+ Hard copy distribution all over India and abroad.

With the vision of Nature Conservation and sensitization to Youth as well as people in action we are organising a 2- day National Conference on Lesser-Known Species of MP, Dated 20 and 21st of January 2023.

India being a party to Convention on Biological Diversity (CBD) enacted Biological Diversity Act in 2002. A three-tier structure has been established for implementation of Biological Diversity Act, 2002 with National Biodiversity Authority (NBA) at the apex, State Biodiversity Boards (SBBs) at provincial level and Biodiversity Management Committees (BMCs) at the local body level. As per the provisions of BD Act, 2002, Madhya Pradesh State Biodiversity Board was constituted on 11th April, 2005. The objectives of the Board are Conservation of biodiversity, Sustainable use of its components and Equitable sharing of benefits arising out of the use of biological resources and associated traditional knowledge.

Madhya Pradesh State Biodiversity Board has an advisory role in promoting Biodiversity concerns amongst various stakeholders. One of the focus areas of Board is promoting research on various facets of biodiversity and advocating policy in gap areas. The lesser-known faunal species is one such gap area which needs focus and action. MPSBB has supported research projects on some important and lesser-known faunal species like Caracal, Forest Owlet, Lesser florican, Vultures, Red-Crowned Roofed Turtle (Batagur Kachuga), Mahseer, Malabar Pied Hornbill and four horned antelope to improve the understanding of these species.









### Dr. Sujit Narwade

Asst. Director, BNHS, Mumbai

He is working in BNHS since year 2004 and at present coordinating projects on;

- Conservation of critically endangered bird Lesser Florican *Sypheotides indicus* in Shokaliya landscape, Ajmer, Rajasthan.
- Conservation of the critically endangered bird Great Indian Bustard *Ardeotis nigripes* (GIB) with community engagement in the Thar Desert.
- Developing strategies for the conservation of critically endangered Lesser Florican *Sypheotides indicus* and its habitat through assessment of its population, distribution, and threats in Bidar district, Karnataka supported by Karnataka Forest Department.
- ENVIS Resource Partner in Avian Ecology, BNHS India supported by the Ministry of Environment and climate change (MoEF & CC).





Image Courtesy: Nayan Khanolkar

# Saving Lesser Florican in Madhya Pradesh

By Sujit Narwade, PhD., Assistant Director, BNHS

The lesser florican *Sypheotides indicus* is the smallest of bustards found in India, protected under schedule 1 of the Wildlife (Protection) Act, 1972. Currently placed under the Critically Endangered category by the IUCN with an estimated population of 250-300 males (500 to 600 considering a 1:1 male-female ratio) in 2017. Lesser Florican has been included as one of the prioritized species by the Ministry of Environment, Forest, and Climate Change (MoEFCC); under the scheme of Integrated Development of Wildlife Habitats in 2009.

Once abundantly found in the terai region of Nepal and sighting records in Pakistan and Bangladesh. At present, these birds have a breeding range restricted to the western MP, Gujarat, Southeast Rajasthan, drier areas of Maharashtra,

the eastern plains of Karnataka, and the Kurnool district of Andhra Pradesh. While its non-breeding ranges are mainly confined to the Deccan plateau (Vidarbha, south-western plateau, and Marathwadaparts of Maharashtra; eastern plains of Karnataka; and parts of Andhra Pradesh).

## Status of Lesser Florican in MP

On the recommendation of Dr. Salim Ali, the Government of Madhya Pradesh constituted protected areas for Lesser Florican, these are Sailana Wildlife Sanctuary in Ratlam district and Sardarpur Sanctuary in Dhar district. The BNHS team visiting the western part of MP since the year 2017 at least once a year. BNHS conducted surveys with the collaboration of the Wildlife Institute of

India, The Corbett Foundation, and the Forest Department for understanding the status of florican during monsoon 2017 and 2018 in Madhya Pradesh. In the 2017 survey, teams could not count any birds, but in the year 2018, they succeeded at counting 11 birds in MP (2 in Sailana WLS, 4 in Sardarpur, 3 in the Jeeran area of Neemuch and 2 in Petlawad). Then after, floricans are mainly reported from Sardarpur WLS and Petlawad areas from 2019 to 2023. Since no long-term landscape-level studies being conducted in MP for a few decades, it is difficult to give a proper assessment based on the short site visits.

## Major reasons for the declining population of LF

The Major reason for the declining



population of this species is the land use change taking place at a large scale. Loss of beeds(grasslands or pastures), and intensified and mechanized agriculture led to drastic land use changes. Overgrazing, mining, positioning of the new renewable energy infrastructure without ecological considerations, heavy use of chemicals (herbicides, pesticides, fungicides, fertilizers, etc.), free-ranging dogs (predation on eggs and chicks), and collision with high tension powerlines are major threats to these birds.

### **Recommendations to save LF from local extinction.**

1. Boundary demarcation and habitat protection
2. Conducting impact assessment studies before planning any new renewable energy power plants in

- entire florican distribution ranges
3. Control of overgrazing in breeding sites
4. Local people should get involved in LF conservation, across all the sites
5. Designing a scheme for incentives to be given to local farmers for Florican-friendly agriculture practices for providing suitable habitat in marginal areas of the Sanctuary.
6. Studying the impact of monoculture crops like Soyabean on native biodiversity
7. Controlling the population of free-ranging dogs in and around breeding sites of the floricans
8. Habitat restoration by removal of Lantana and other exotic invasive plant species, especially in Amba, Sherpur areas (Ratlam), Petlawad (Jhabua), Cheeta Kheda (Neemuch)

9. More florican areas should get designation as community reserves or conservation reserves. It is essential to involve local panchayats and to sensitize locals to develop community reserves that shall cater safe havens for these birds.

### **Future of LF**

At such a rapidly declining rate, the LF has a tough situation to face in the future, the episode of local extinction of the bird may take place. It is necessary to make more efforts and pay attention to the conservation research focussing on species' ecology, behavior, and habitat in the breeding and as well as the non-breeding ranges. A conservation breeding program for Lesser Florican can be initiated as an insurance policy to save this species in MP.



Image Courtesy: Ashley Chiu





**Parveen Shaikh**  
Scientist C, BNHS, Mumbai

She currently works as a Scientist 'C' with the Conservation Department, Bombay Natural History Society. Her interests are behavioural ecology, conservation biology, conservation through community participation and citizen science. She presently works at Chambal understanding the nest survival and conservation needs of Indian Skimmer and Black-bellied Tern. She along with her team at BNHS are conserving Indian Skimmer along with other riverine nesting birds at Chambal through a 'Guardians of the Skimmer' project which is a community-based conservation initiative.





Image Courtesy: Oishimaya Sen Nag

# SKIMMING CHAMBAL- Status, distribution, threats and conservation needs of Indian Skimmer at National Chambal Sanctuary, India.

By Parveen Shaikh, Scientist C (BNHS, Mumbai)

Indian Skimmer (present population 2000-2500 birds) was once widely abundant throughout Southeast-Asia but is now extinct from most of the range-countries owing to a multitude of threats. It is presently distributed only in India, Bangladesh; few records in Pakistan and Nepal. India is hosting significant (>90%) breeding population of this species and, is the only hope for preventing it from extinction.

Unlike Southeast-Asia, rivers in India are under tremendous pressure of dams, lift irrigation, illegal sandmining etc. In India, National Chambal Sanctuary holds a significant population of this species but it is not any exceptional and face the similar issues leading to unregulated water flow and nesting habitat degradation for these species. Due to low water level during the breeding season most of the nesting sandbars get connected

to banks providing access to predators like Jackal, free-ranging dogs, trampling of eggs and chicks by cattle, and other threats. Our work at River Chambal indicated that the major threat to the breeding-population is low nesting success and recruitment rate. This low nesting success is due to multitude anthropological threats.

For the conservation of skimmers, we have recently tested a community-based conservation intervention on a small scale at Chambal and it has resulted in improved nesting success. "Guardians of the Skimmer" programme which includes 24X7 protection of nests from predation and trampling by trained locals who will be paid incentives. This project will reduce the nest loss and help in improving the recruitment rate. On a long-term this will help in stabilizing the global population decline of Indian Skimmer.

## Recommendations

1. Initiate a long-term Indian Skimmer nest monitoring at National Chambal Sanctuary.
2. Allocate annual funds for 'Guardians of the Skimmer' programme to safeguard minimum four nesting colonies at National Chambal Sanctuary.
3. Develop a committee and protocol for managing unregulated release during dry season to avoid flooding of nesting colonies.
4. Initiate similar research to understand the status of Black-bellied Tern at National Chambal Sanctuary.
5. River Chambal and Son in Madhya Pradesh together holds a significant population of Indian Skimmer and safeguarding nesting colonies from predation and trampling will help in improving the recruitment rate.



**Dr. Shomita Mukherjee**  
Senior Principal Scientist  
SACON, Coimbatore, Tamil Nadu

She did her Master's (Wildlife Biology) and Doctoral Degree from the Wildlife Institute of India and Saurashtra University, Rajkot Gujarat and her Post-doctoral work at the National Centre for Biological Sciences, Bengaluru. She studied several species of small cats to varying degrees throughout India, including diets, distribution and phylogeography of Jungle Cat, Leopard Cat and Fishing Cat, distributions and activity times of Marbled Cat, Clouded Leopard, Asiatic Golden Cat and Leopard Cat in Arunachal Pradesh and distribution and diet of Rusty-spotted Cat involving trained citizen volunteers in Mumbai. She recently worked as a consultant for UNDP to design a small cat conservation program for India. She is currently employed at the Sálím Ali Centre for Ornithology and Natural History, Coimbatore, Tamil Nadu, India.





Image Courtesy: Dharmendra Khandal

# Small Cats of Madhya Pradesh: Present Status and Conservation Challenges

By Shomita Mukherjee, Senior Principal Scientist, SACON, Coimbatore

**Introduction:** India's rich representation of the Family Felidae can be explained by its geographic location and the diversity of ecosystems and habitats in the country. Of the 41 species of cats found globally, 15 currently occur in India, with the Cheetah being declared extinct from the country in 1952 (Kitchener et al., 2017; Kazmi, 2023). Interestingly, the hotspots for felids in India lie in two contrasting regions—the dry semi-arid tract of western India in Gujarat, Rajasthan and part of Madhya Pradesh and the wet tropical forest of northeast India. Both these regions harbour six to nine species of cats each. However, the assemblage

of cats from western India differs to an extent from that in northeast India. Cats in western India, like the Caracal and Jungle Cat have very short tails and long legs and ears—associated with open habitats. In contrast, some from northeast India (Clouded Leopard and Marbled Cat) sport very long tails, which are associated with arboreality (Mukherjee et al., 2016).

## Status of small cats in Madhya Pradesh:

Madhya Pradesh perhaps has six to eight species of cats, without counting the recently introduced Cheetah. Apart from the Tiger and Leopard, there are

confirmed records for Fishing Cat, Jungle Cat, Rusty-spotted Cat and Asiatic Wildcat (Chaudhuri et al., 2021; Dutta et al., 2021). Jungle Cat and Rusty-spotted Cat are fairly widespread across Madhya Pradesh (Vasava et al., 2012; Bora et al., 2020, Silva et al., 2020). Caracal was reported from Madhya Pradesh historically, but there are no recent authenticated reports of the species that are supported with photographic evidence (Khandal, 2020). Based on predictions from ensemble models, Jangid et al., (2022) suggest areas around Kuno National Park to be suitable for Caracal. The Caracal is considered to be extremely rare and threat-



ened in India and is gaining prominence in conservation circles (Khandal, 2020; Ghai, 2022). The Leopard Cat has never been reported from Madhya Pradesh (Pocock, 1939), but niche models suggest a small probability of their presence in Kanha Tiger Reserve, where summer temperatures in certain pockets do not cross 38 – 40°C (Mukherjee et al. 2010). Focussed intensive surveys are required to determine if the two species are indeed currently present in Madhya Pradesh. There are just a couple of reports of the Fishing Cat from Madhya Pradesh (Panna and Bandhavgarh Tiger Reserves), and both as by-catch data from Tiger surveys (Talegaonkar, 2018; Dutta et al., 2021). There were

no reports of the species earlier or after these records, and these are likely to be dispersing individuals tracking their habitats. A dedicated survey is required in Madhya Pradesh for the Fishing Cat, which is categorised as Vulnerable in the global IUCN Red List (Mukherjee et al., 2016).

### Threats and solutions:

Habitat degradation is among the top-most threats to small cats in India. An especially damaging land policy is the designation of certain areas as wasteland, which are then converted to other forms of land use.

These so-called wastelands are often open scrub savannas or Open Natu-

ral Ecosystems harbouring rich and important biodiversity (Madhusudan and Vanak, 2022). The latest (2015-16) land use land cover map of Madhya Pradesh (Figure 1) shows that thirteen per cent of the total geographic area of the State is designated as wasteland, of which 55% is scrubland (ISRO/NRSC, 2021), which forms the habitat of cats like the Caracal, Asiatic Wildcat and Jungle Cat.

Land designated as wasteland is often converted to agriculture or developed for other use, more recently to large-scale renewable energy projects (Vyas et al., 2022). Such land policies must be reviewed and drafted within an ecological framework.

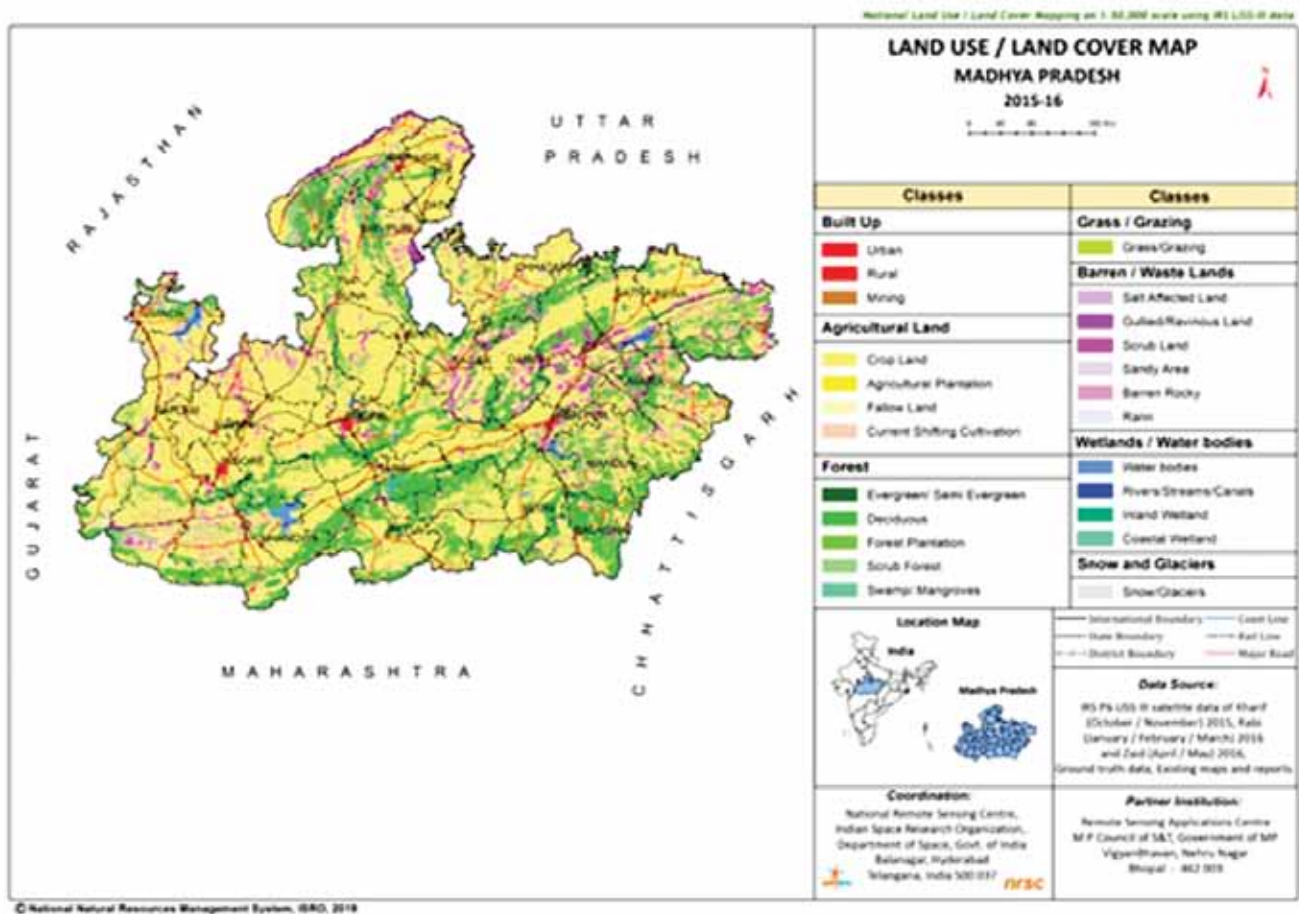


Figure 1: Land Use Land Cover Map of Madhya Pradesh.  
Sourced from BHUVAN (ISRO/NRSA 2021. Downloaded on 03 January 2023).



Since a significant proportion of small cat populations also reside outside the PA network, conservation plans focused on them must consider habitats that overlap with human use. Crop fields simulate their natural habitats, and several small cat species occur in agricultural fields across the country. During the breeding season, several kittens are found by locals who rescue them out of goodwill but are not always able to identify or even rear them (Naveen, 2012). The extent of loss due to the breeding season of small cats coinciding with the crop harvesting season is not known and is worth exploring. Awareness workshops, guidelines, discussions and educational material on small cats aimed at farmers and other locals would help reduce losses considerably.

Since the major diet of small cats is rodents, they provide vital ecosystem services to the farmers by controlling crop pests. A study in Sariska Tiger Reserve, Rajasthan, estimated that just one Caracal and one Jungle Cat together consume up to 5000 rodents per year (Mukherjee et al., 2004). Additional

studies such as this are required to quantify the benefits that small cats provide to humans. Such information should be communicated to farmers and other locals to convince them about the need to conserve small cats. Citizen science is gaining prominence in India, and it provides a platform for citizens from various walks of life to participate and contribute to society through scientific knowledge generation.

Involving school, college and university students and other interested locals would not just build capacity for monitoring small cats but also spread awareness regarding their habits and services to humans (Mukherjee et al., 2021). Biodiversity Management Committees (BMCs) should be involved in monitoring the status of small cats around villages and this should be reported in the Peoples Biodiversity Registers, as mandated by the Biodiversity Act (2002).

### **Conclusions:**

With six to eight species of cats, Madhya

Pradesh is among the richest states in the country with respect to cats. However, the presence of some species, such as the Caracal and Leopard Cat in Madhya Pradesh is only speculated, and focused surveys are required to document their presence in the State. For the Caracal, scrubland in PAs and areas designated as wasteland should be the focus of surveys since the cat inhabits open habitats. Such areas outside the PA network are under severe threat of conversion to other forms of land use.

For the Leopard Cat, forests in the eastern part of Madhya Pradesh, in Kanha and Bandhavgarh Tiger Reserves should be surveyed. Other species like the Jungle Cat, Asiatic Wildcat and Rusty-spotted Cat should be monitored over the long-term to study any population trends. Capacity-building workshops should be organised for various stakeholders, including school and college students and interested locals. Surveys and monitoring should involve locals and Biodiversity Management Committees.



Image Courtesy: Dharmendra Khandal



**K. Narasimmarajan**  
Conservation Biologist  
Coimbatore, Tamil Nadu

He has been intensively working on otter conservation since 2014 in Nilgiri biosphere reserve region and other parts of the Tamil Nadu State.

He is pursuing PhD on Ecology of two south Indian otter species namely smooth-coated otter and Asian-small clawed otter, where as he intensively studied their distribution, resource use pattern, food habits, behaviour of temporal activity. He has a vast experience in studying aquatic ecosystem biodiversity and conservation through stakeholders participation and associated faunal species i.e. muggers, freshwater fishes.





**Mr. David Raju**  
Naturalist, Kerala

Over 18 years of experience as a senior Naturalist in Southern and Central India. He had always been interested in wildlife and with specific interest and expertise on multiple taxa like Birds, Mammals, Butterflies, Reptiles, Amphibians and his first love Dragonflies. He has worked at some of the leading wildlife lodges in India, currently working at Wayanad Wild, A CGH Earth Experience hotel in Kerala.

David has co-authored three books- 'Dragonflies of Kerala', 'A Photographic Field Guide to Wildlife of Central India' and 'Wildlife of South India'. He was part of the team that discovered 12 species of frogs and two species of geckos in the Central India and Western Ghats. He was conferred the prestigious Lodge Naturalist of the Year Award by Sanctuary Asia and Toft in 2014.





**Mr. Seva Ram Malik**  
SDO, Rehli, MP Forest

Presently serving as Sub divisional Officer at Nauradehi wildlife Division Situated in central Indian states of Madhya Pradesh. Worked hard for tiger translocation program for which managed to relocate 11 villages from the sanctuary area and development of habitat for tigers and other fauna. Besides this developed many water bodies using water management skills to name a few Barpani pond is the famous one. Working day and night to make a breathing space for tigers and also securing the possibilities for cheetah introduction program.





**Dr. Nirmalya Chakraborty**  
Founder President & Editor Jungle  
Rhythms, Pune

Dr. Nirmalya Chakraborty is a passionate nature lover & a wildlife explorer. He has traveled to various pristine habitats & has documented unknown animal behaviour & key issues of conservation through strong photostorytelling & wildlife documentaries. He has travelled to Yellowstone to study wolves' behaviour, tracked the rare Hawaiian goose in the volcanic islands of Hawaii, embarked upon an expedition up to the Alaskan Arctic & studied impacts of climatic change on the last remaining Beaufort Sea population of polar bears. His oceanic quests have been on the migratory humpback whales in the North Atlantic Ocean.





**Mr. Dhiraj Das**  
Research Biologist, WRCS, Pune

He is a Masters degree graduate in Environmental Biology and Wildlife Sciences from Cotton University, Guwahati. He is an avid wildlife enthusiast and love spending time in the forests. He is currently studying Forest Owlet in Madhya Pradesh with WRCS. Previously he has also worked on Amur falcons in Nagaland and Manipur and also studied the avian diversity in Deepor Beel Ramsar site. For a brief period he has also worked on Pikas in the trans-himalayan landscape in Ladakh. His areas of interest includes habitat ecology and conservation ecology.





Image Courtesy: Dhiraj Kumar Das

# WRCS Research on Ecology and Conservation of the Forest Owlet in Madhya Pradesh

By Dr. Prachi Mehta, WRCS, Pune

## Current Conservation Status of the Forest Owlet

- The Forest Owlet is a endemic to India and is declared as Endangered under the IUCN Red List because of its isolated population.
- The Forest Owlet is declared under Schedule 1 under the Indian Wildlife (Protection) Act 1972.
- Till date, the Forest Owlet is found in the three states of country: Maharashtra, Madhya Pradesh and Gujarat and from Silvassa, the UT of Dadra and Nagar Haveli and Daman and Diu.
- Till date there are 14 confirmed locations of the Forest Owlet Populations in the country: Maharashtra has four populations: Melghat Tiger Reserve, Tansa Wildlife Sanctuary, Nandur-

bar district and Harsud Forests. Madhya Pradesh has three populations: Khandwa District, Burhanpur District, and Betul District. Gujarat has confirmed population in Purna WLS and Navasariand Valsad district. Recently a population was reported from Silvassa, near Dadra-Nagar-Haveli Union Territory bordering Gujarat border.

## Threats to Forest Owlet and its habitat

- Loss of habitat due to uncontrolled tree cutting by local communities.
- Removal of cavity-bearing trees due to timber logging in Reserved Forests.
- Forest fires in forest owlet habitat.
- Misconception about owls, use of owls for sorcery and pet trade, poaching of

owls for its.

- meat and body parts. This is applicable to owl species in general.
- Action Required for Conservation of Forest Owlet.
- Understanding the factors responsible for lower breeding success of the Forest Owlet.
- Protection of nesting, roosting sites of the Forest Owlet from the known locations.
- Reducing tree cutting pressure in forest owlet habitat.
- Reducing incidents of fires in the forest owlet habitat.
- Training field staff for identifying owls, their nests and roost sites.
- Generating awareness among local communities for conservation of owls and its habitat.



**Mr. Sanjeev Yadav**  
Coordinator Aquatic Biodiversity,  
WWF-India

He is the Senior Coordinator at the Rivers, Wetlands & Water Policy Division, WWF India. He has been working on the conservation of key freshwater species since 2009. He is leading the freshwater Biodiversity work related to Ganges River Dolphin conservation, Gharial reintroduction and Community-led freshwater turtle conservation programs in River Ganga.





### Mr. Sunny Joshi

Senior Project Officer, Raptor Conservation, WWF-India

He has done a Master's Degree in Environmental Science from Doon University in 2017.

He has 7 years of experience in vulture conservation in Uttarakhand. He wrote my Master's dissertation thesis titled, "Population Status and Threat Assessment of Vultures in Doon Valley, Uttarakhand", funded by Conservation Leadership Programme (CLP).

After that, he worked at the Center for Himalayan Ornithology at Himalayan Institute for Sustainable Environment and Research (HISER) Society in different capacities. He is trained in faunal taxonomy from Zoological Survey of India and restoration of degraded habitats from Earth Corps, Seattle, USA.

In WWF-India, he is working as a Senior Project Officer in the Raptor Conservation Programme. His work at WWF-India includes smooth project implementation i.e. Raptor Hotspot Monitoring, Nest Monitoring, Raptor Exhibition, Education Outreach, Community Engagement and Advocacy in Terai Arc Landscape (TAL).





**Mr. Sudheer Kumar Jena**

Project Fellow, ZSI, Central Zone, Jabalpur

He is a project fellow in Zoological Survey of India, Central Zone Regional Centre, Jabalpur in the project entitled "Diversity of scorpions (Arachnida: Scorpionida) in Madhya Pradesh with studies on ecology, biology and associated traditional knowledge about medically important species". He is pursuing his Ph.D. from Ravenshaw University, Cuttack, Odisha. He has completed his M.Sc. and M.Phil. from Central University of Odisha. Previously he has worked on several projects in various institutions. His experiences include biodiversity inventory and assessment, ecological studies on cave fauna with special focus on invertebrates. Currently he is working on taxonomy, biology and behavioural studies on scorpions.





Image Courtesy: Dr. Pratyush P. Mohapatra

# Scorpions: The enigmatic arachnids, with notes on scorpion diversity in Madhya Pradesh

By Sudheer Kumar Jena, Pragma Pandey and Pratyush P. Mohapatra, ZSI

Scorpions are familiar to humans as bizarre arachnids with a pair of hand-like pincers, a segmented tail arched with a stinger at the tip. They are among the most primitive animals thought to come to the surface from the aquatic environment around 435 million years ago. Scorpions are also associated with human culture since early civilization and in Greek mythology, Orion, the son of Zeus, used scorpions as effective weapons to defeat Artemis. Scorpio, the eighth zodiac sign in the constellation, is named as it resembles a scorpion.

This animal group has been part of the mythology and folklore of many civilizations all around the globe. Scorpions are worshipped in many cultures as good and evil characters. But a common perception about scorpions always goes towards an aggressive and dangerous animal.

## How many species?

There are 2744 scorpions found all over the world and the number is increasing day by day. So far, 151 scorpions have been reported from India. The number of identified species of scorpions is

considered to be far less than actually expected. This is due to the survival adaptation of scorpions in extreme habitats.

## Scorpions of Madhya Pradesh

The state Madhya Pradesh is very diverse in terms of biogeography. In terms of scorpions, Madhya Pradesh is home to 24 species (4 Families and 8 genera). Seven species have been described from the state in the past. One endemic scorpion i.e.-Scorpiops pachmarhicus Bastawade, 1992 is only known from two localities of Pachmarhi Biosphere Reserve.

## Need of the hour

Scorpiologists are still in the process of knowing more about the exact species diversity in scorpions, which is evident from the discovery of new species. With the advancement of molecular taxonomy the cryptic diversity of species is getting unravelled. Being a lesser know group, scorpions are facing the problem due to use of their venom in drugs and some therapeutic medicines, in international live pet trade and in traditional medicines.

The international demand for this group is an emerging problem for the Indian scorpions as none of the scorpion species are legally protected. Its necessary to identify and check the trading routes, traded species and trading hotspots for their conservation.



Image Courtesy: Sudheer Kumar Jena





**Dr. Randeep Singh**  
AMITY University, New Delhi

He is currently working as an assistant professor in Amity Institute of Forestry and Wildlife Amity University Uttar Pradesh, Noida. He did his PhD degree in wildlife ecology from Wildlife Institute of India, Dehradun. Dr. Singh has been actively involved in research mainly focused on carnivore ecology, natural resource management and biodiversity conservation. During his PhD research work with Wildlife Institute of India (2005-2011), he has refined the non-invasive methods used for population estimation of tiger (*Panthera tigris*) and quantified the impact of spatial-temporal variation in habitat use pattern and habitat suitability analysis of tiger. Presently he is teaching post-graduate student of Wildlife Science in their course modules and conducting field visits and mentoring students enrolled in ecological work.





### Alok Govind Sheode

Lecturer, Prabodhan, Jr. College  
Buldhana, MH

Prof. Alok Sheode, MA Eng. B.ed. was a junior college teacher, now taken voluntary retirement for the study of insects... Pursuing insect photography since 2008... have clicked roughly over 300 species of insects in Buldhana forest area... conducting lectures on insect diversity, insect behaviour and personality traits of insects.. have conducted 240 lectures so far... strongly feel that insects have emotions just like humans.. working on making Entomology popular among common people.







**Mr. Manpreet Singh**  
Research Scholar, IIFM Bhopal

He has completed his M.Sc. in Environment Management from the Forest Research Institute, Dehradun, and his M.Phil. in Environment and Sustainable Development from Banaras Hindu University. He has also completed a PG Diploma in Animal Protection Laws at NALSAR, Hyderabad, and another PG Diploma in Tribal Development Management at NIRD, Hyderabad. At present, he is pursuing a Ph.D. on the topic of Response of small carnivores to environmental change in the Central Indian Highlands under the joint supervision of Dr. Advait Edgaonkar, Assistant Professor, IIFM Bhopal; Prof. Ruth Defries, Columbia University; and Dr. T. Ramesh, Principal Scientist, SACON, Coimbatore. He has recently completed a 2-year independent project as a principal investigator on Hunting Practices of the Pardhi Tribe in Central India funded by the Defries Bajpai Foundation, USA

# Status of small carnivores in Madhya Pradesh: Threats, Conservation Challenges, and Ways Forward

By Manpreet Singh, Research Scholar, IIFM, Bhopal

Small carnivores play an important ecological role in the variety of habitats they inhabit. For instance, jackals play the role of excellent scavengers by consuming the prey remains of other apex predators, and civets play the role of seed dispersal agents by defecating intact seeds of many fleshy fruit species after gut passage. Many of these small carnivores' species also control the rodent populations in agriculture fields, thus aiding the farmers in significantly reducing the crop damage afflicted by the rodents. Further, by controlling these rodent populations, small carnivores aid in disease control, which can be spread by these rodents.

In addition, species like jackals are crucial reservoir hosts of many infectious diseases, which are important from a medical point of view. Thus, understanding the status of small carnivores is of paramount importance, as they provide key ecosystem services and are an integral part of ecosystem functioning and structure. A threshold criterion of 16 kg distinguishes these extrinsic-regulating species from intrinsically-regulating apex carnivores. There are 229 species of small carnivores worldwide, with 17 species in Madhya Pradesh meeting this criterion. Out of these 17 species, 12 fall under the "least concern" category, 1 falls under

the "endangered" category, and 2 species each fall under the "near-threatened" and "vulnerable" categories. Although most of these 17 species may fall under the IUCN "Least Concern" category, the population of many of them still continues to decline. Also, these small carnivores have received disproportionately less attention, both from researchers and policymakers, compared to their large counterparts. According to IUCN threat classification criteria, biological resource use is the major threat faced by many of these small carnivores. Biological resource use encompasses sub-categories like hunting and collecting terrestrial animals.



These species are being hunted for a variety of reasons, such as the use of mongoose hairs in the paintbrush industry.

According to an estimate, the hair from 1 mongoose can be utilized to make 45 paintbrushes, and 50 mongooses can produce 1 kg of hair. The number of paintbrush seizures reported by the Wildlife Crime Control Bureau indicates that while more than 51,550 paintbrushes were seized during the 7-year time period 2007–13, this number has staggeringly risen to 79,021 in 2018 alone. A recent study conducted by me on the hunting practises of the Pardhi tribal community in the different geo-political regions of Madhya Pradesh revealed that members of the Pardhi tribal community still continue to hunt due to their poor socio-economic status and the lack of alternative livelihood options. Although hunting cases have plummeted significantly since the Wildlife Protection Act came into effect, hunting pressure is still there. Furthermore, there are success stories, such as the change in perception of Pardhis in the Panna landscape as a result of the active work of the forest department and many NGOs involved; however, these success stories are few, and

the Pardhi tribal community's reliance on hunting or other menial jobs to earn a living points to the hunting threat looming large on these small carnivores. Apart from biological resource use, agriculture & aquaculture, and residential and commercial development pose the second and third most grave threats, respectively, to the populations of these small carnivores. Road kills through vehicular collisions are also a non-trivial factor that affects the survival of these species, especially the ones that thrive in agricultural land use, such as jackals and jungle cats. Furthermore, the threat of road mortality is heightened along the landscape's major highways.

The challenge of monitoring these small carnivores is that, as stated earlier, many of the species thrive in agriculture, scrub forests, or the land use classified by the government under the so-called "wastelands" category. We do not have long-term monitoring trends for these species in the reserve forests, so monitoring them in agricultural land use or wastelands seems like a far-fetched dream. The current system must also be revamped to be more inclusive of biodiversity outside of protected areas.

The so-called "wastelands" are actually the places where many of these species thrive, and a lot of revision needs to be done on this front. Also, engaging common people through citizen science programmes can go a long way towards understanding the distribution of species in space and time. Although these programmes are becoming increasingly popular, spreading awareness and increasing their popularity in remote or inaccessible areas remains a challenge in order to realise the full potential of these programs. The research focus also needs to be geared towards understudied species such as the rusty-spotted cat, honey badger, dhole, ruddy mongoose, and Eurasian otter. The research also needs to be conducted on how anthropogenic pressures and human-modified land use changes in the agriculture-forest mosaic landscape of Madhya Pradesh affect the population demographics and distribution of these small carnivore species. Further, the role of tribal communities in conservation management cannot be emphasised enough; their involvement at the grassroot level in conservation initiatives can go a long way in ensuring the long-term survival of these species.



Image Courtesy: Manpreet Singh









## MEDIA COVERAGE







## Acknowledgements

Team SNHC feel privileged to thank Shri J N Kansotiya ji, IAS, ACS Forest MP Govt, for his valuable time, Shri J S Chauhan, IFS, PCCF Wildlife & CWLW Madhya Pradesh, Dr Atul Shrivastava, PCCF and Member Secretary MPSBB, Shri Aseem Shrivastava, IFS, PCCF Production, Shri Suhas Kumar, IFS (Retd), Former PCCF, Shri R. Srinivasa Murthy, IFS (Retd), Ex Member Secretary MPSBB, Shri Subhranjan Sen, IFS, APCCF Wildlife, Shri B S Annigeri, IFS, Dr. Dilip Kumar, IFS, APCCF IT, Smt Kamalika Mohanta, IFS, APCCF, Shri H S Mohanta Ji, IFS, APCCF, Smt Sangita Saxena, Director WWF, MP & CG, Dr Rajesh Saxena, Sr Principal Scientist, MPCST, Shri L Krishnamoorthy IFS, APCCF, Mohd Khaliq & Sangita Rajgir, Bhopal Birds and all other dignitaries for their time and effort in making this event a success.

Team **SNHC India** would like to thank our esteemed supporters  
to make our initiative  
“**1st National conference on lesser known species of MP**”  
dated 20 & 21 Jan 2023 a grand success.

We hope that you continue to support in our future Nature  
Conservation engagements too...

Regards  
**Vikas Singh Baghel**  
Founder President & Chief Editor  
Society of Nature Healers Conservators and Local Tourism  
Development, Bhopal

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