



# WILDLIFE CONSERVATION TRUST ANNUAL REPORT

**2022-23**



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Wildlife Conservation Trust, India

Cover Photo: Malabar Pit Viper (*Trimeresurus malabaricus*); Credit: Dr. Anish Andheria

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THIS REPORT IS FOR INTERNAL CIRCULATION ONLY

# CHAIRMAN'S MESSAGE

Dear Friends,

I take great pleasure in presenting to you the WCT Annual Report for the year 2022-23. This report will give you a fair overview of the magnitude of work undertaken by the dedicated and eclectic team of conservation biologists, economists, psychologists, forensic and law enforcement experts, wildlife veterinarians, medical experts, writers, communicators, and the highly dedicated field staff who quietly and tirelessly work behind the scenes in some of the most testing field conditions.



Since 2002, when WCT was conceptualised with a vision to protect India's natural heritage, it has organically evolved into a force to reckon with, an authority in conservation research and policy in India, today.

Our economy is only as robust as our ecology. But we have faltered in our understanding of natural ecosystems as agents of food, water, economic, social, and climate security. Today, the impacts of climate change are being felt every day in our country in the form of frequent floods, cyclones, heatwaves, wildfires, erratic seasons, disease outbreaks, etc. Combatting the effects of climate change demands boldly restructuring our economy, decarbonising it, valuing ecosystems as important infrastructures, factoring in ecosystem services in our development plans, and recognising the indisputable interdependence of climate, biodiversity, and people.

India has long led the way in wildlife conservation and habitat protection despite the many challenges it faces. WCT is committed to partner with various stakeholders such as the Forest Department, other government agencies, local communities, NGOs, corporates, national and international institutions and universities, and individuals to collectively lead the charge in wildlife conservation and climate action, using science as the compass that guides us, and work on building holistic solutions that benefit not just wildlife but also people who live in and around our wildernesses.

I request you to take a moment to read through the Annual Report and support us in our endeavours with your knowledge, networks, and funds.

I am deeply grateful to all our generous donors and supporters who have strengthened our resolve over the years.

Thank you.

Sincerely,

**Hemendra Kothari**

## Trustees

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- Ms. Aditi Kothari Desai**
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# PRESIDENT'S MESSAGE

## Dear Friends,

Another eventful year has passed us by. Reflecting on the outcomes achieved by the WCT team in the past 12 months has been a stimulating process.

The world's human population crossed the eight-billion-mark last year. The biggest question facing us today is whether we, collectively as *Homo sapiens*, the last remaining species of genus *Homo* on Earth, will be able to turn the tide of climate change around in time. As countries across the world grapple with social, economic, and environmental stress owing to the impact of climate-related events, scientific studies show that it is still not too late to evade and alleviate the worst impacts. But for this to happen, every country, big or small, rich or poor, will have to put its best foot forward, and for once, agree that natural ecosystems and biodiversity cannot be compromised anymore to achieve economic stability. The planet and its wild denizens have for time immemorial tried to tell us that ecology is the bedrock of economy. It is about time we paid heed to them.

Recently, an important study published in the *Nature Climate Change* journal conclusively proved what was known to conservation experts all along — that protecting and restoring wild animal populations can help to mitigate climate change. Rewilding wildlife populations to repair the food web and reset natural processes within ecosystems can further “supercharge” and turn these ecosystems into potent carbon-absorbing sinks, thus potentially thwarting the global temperature rise to below the ominous 1.5 degree Celsius threshold. The authors of the study refer to this as ‘Animating the Carbon Cycle’ (ACC).

This year, India celebrated 50 grand years of Project Tiger, one of the world's most successful conservation stories. According to the All India Tiger Estimation 2022, India has once again proved that it is unique in



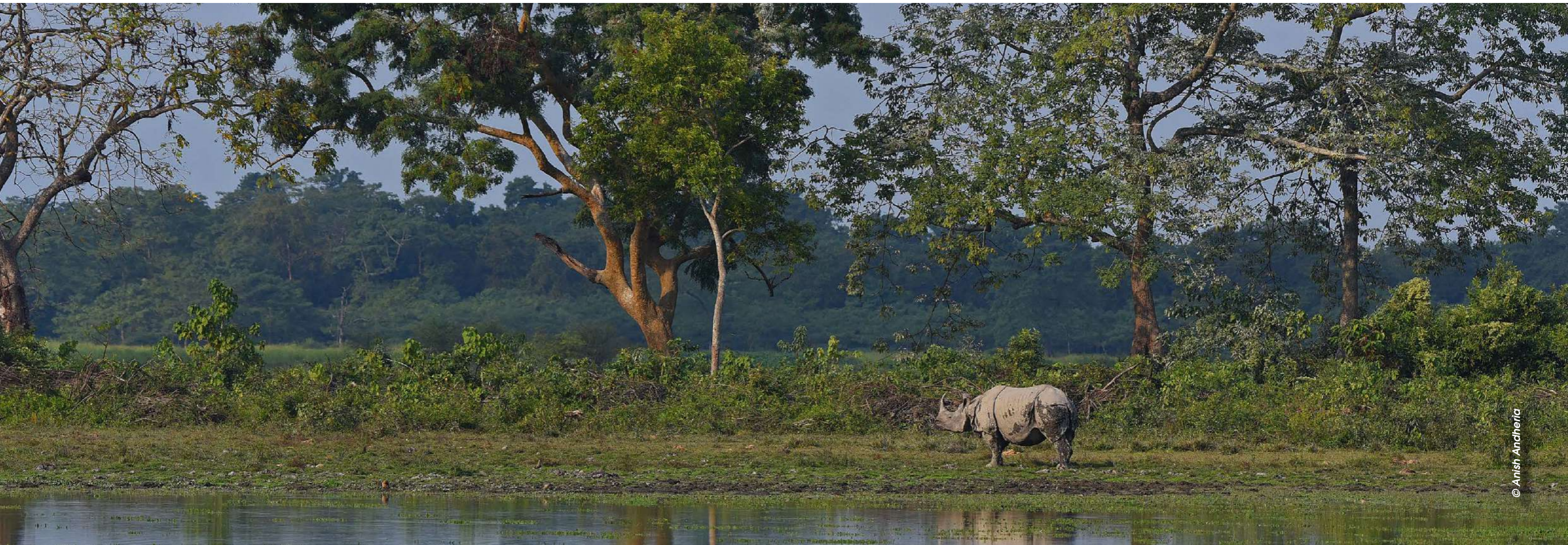
many ways. Many conservationists and scientists had written off the tiger in the late 1990s — they strongly believed that the world's largest cat might not live to see the 21<sup>st</sup> Century. Three decades later, however, India can take justifiable pride in the fact that tigers have not only survived, but have seen a measurable population rise. Even as the populations of *Panthera tigris* declined in most of the 13 tiger range countries, India managed to set aside relatively large forested lands to protect the striped predator.

While this is all very well, it is important to note that 75 percent of all of India's tigers exist in just six out of 18 tiger states! Much has been achieved for tigers in the past 50 years. However, climate change and a rapid rate of development, involving roads, dams, canals, mines and more, are poised to throw up huge challenges in the near future. Unless policy makers accept that natural ecosystems are in themselves infrastructures with vastly greater economic value than currently estimated, heavy human footprints, including urbanisation, will place tremendous stress on the last-remaining natural habitats.

WCT's trademark approach to species and landscape conservation over the years — that of undertaking systematic, on-ground scientific research and using irrefutable data and findings to inform policy and develop holistic conservation strategies — has proven time and again to be effective in the long-term.

This year, one of WCT's most impactful projects, titled ‘Monitoring of Key Tiger Populations in Corridors of the Central Indian Tiger Landscape’, concluded after five years of intensive efforts by the Conservation Research team. The meticulous, long-term camera trapping exercise in the important forest blocks and corridors outside Protected Areas in Maharashtra and Madhya Pradesh has influenced the larger tiger conservation policy framework at the state and national levels. Through our on-ground research and close coordination with the state governments, we have been able to play an important role in bringing large tracts of forestland under either Protected Area, buffer zone or corridor networks.

As part of WCT's linear ecology efforts, the Conservation Research team initiated a new project in 2022 which aims to use technology-based solutions that will aid in facilitating corridor connectivity by mitigating



the impact of linear infrastructure development such as upgradation of roads and railway lines, that lead to wild animal deaths.

In the northern Western Ghats, this year, the WCT team was laser-focused on building capacity of forest staff and assisting the Maharashtra Forest Department in advancing conservation outcomes in the Sahyadris. For this, three of WCT's verticals — Conservation Research, Combatting Wildlife Crime, and Health — came together to involve various stakeholders including the Forest Department, grassroots NGOs, homestay owners, nature guides, and hoteliers.

The WCT field teams leading the Riverine Ecosystems and Livelihoods (REAL) programme and Programme Makara in the riverscapes of Bihar, Uttar Pradesh, Rajasthan, and Madhya Pradesh, among other states, have made enormous technological strides towards conservation of endangered riverine wildlife such as the Ganges river dolphin and the gharial. While the REAL programme developed a prototype buzzer designed to minimise the risk of accidental bycatch by fishers and worked on building a web application to track flooding water levels across India's Gangetic plains, the Programme Makara team has developed a proof-of-concept monitoring system, using unmanned aerial vehicles (UAVs) to monitor riverine wildlife, mainly gharials and Ganges river dolphins.

WCT's Conservation Behaviour team has taken the Heater of Hope project to more impactful heights in the past year. The sustainable, affordable, and biomass-fuelled water heater or *Bumbb* intervention by WCT has today managed to benefit over 5,800 households in the Chandrapur District, Maharashtra. This intervention has been included in the government's *Dr. Shyama Prasad Mukherjee Jan Van Vikas Yojana* scheme, and is being replicated in villages around the Bandipur Tiger Reserve in Karnataka. The water heater is not only helping arrest forest degradation in Chandrapur, but has also reduced people's visits to the forest by 30 percent per year in the project villages, thus reducing the risk of negative interactions with wildlife in the region. Carbon emissions by the households that have adopted the water heater have reduced by an estimated 1.5 tonnes per year per household. Women's workload involving firewood collection for water heating, and exposure to smoke emitted by the traditional cooking stoves, have eased considerably. The water heater is changing human lives and forest for the better, one household at a time.

The tireless efforts of the Combatting Wildlife Crime (CWC) programme team towards building the law enforcement capacity of the state forest departments and judiciary through dedicated training and sensitisation programmes are worth mentioning here. In the past year, the CWC team has held intensive training programmes for the forest officers, state-level judiciary, and government prosecutors across the states of Madhya Pradesh, Gujarat, Maharashtra, Tamil Nadu, Telangana, Uttar Pradesh, and West Bengal.

You will read about many such promising project developments and achievements in the Annual Report 2022-23 which I proudly present to you.

This note is not complete without expressing my sincere gratitude to all our donors for supporting WCT over the years to allow our field teams the freedom to ask difficult conservation questions and put their minds and efforts into finding practical, replicable, and scalable solutions. Without our corporate and individual donors and well-wishers in the Government, we would not be able to achieve the conservation impact that we have. On behalf of my colleagues and the Board of Trustees, I would like to assure you that WCT will continue to use hardcore field science, existing knowledge base created by several organisations, and the power of collaboration, to address the root causes of issues faced by natural ecosystems, biodiversity, and the human society on the whole.

Sincerely,



**Dr. Anish Andheria**



# Finance and Sustainability: A New Innings

WCT's journey of two decades has been both challenging and interesting. It's been a learning curve all along as the spectrum of work widened with the passage of time. During these two decades, WCT has embarked on initiatives from supporting and equipping forest departments to 'Save the Tiger' campaign to undertaking flagship projects which have had far-reaching impact under its various verticals.

In a country so diverse and riddled with multiple issues, each of WCT's initiatives has made a difference and highlighted the issue of conservation, environment, and climate change.

On a macro scale, WCT has not only been a catalyst in bringing the importance of conservation to the forefront at the national level, but also been a key partner of the government in rolling out conservation initiatives and developing future plans.

On a micro scale, WCT continues to apply its best practices in implementation of projects at the ground level. Transparency and robust administrative frameworks continue to find a place of prime importance.

During the year 2022-23, WCT honoured all its commitments to various projects and worked with diverse partners—international grant organisations, public sector foundations, corporate foundations and CSR teams, individual grant organisations and individual donors.

Having set out and defined a robust framework for mobilising public funds for its various projects, WCT continues to have a disciplined approach to budgeting and partnering with donor agencies. Growing with partners as projects progress and outcomes emerge instils a sense of deeper confidence and co-



ownership with them. Their increasing visits to the field and enthusiastic employee engagements are mere reflections of this.

WCT has worked in a scientific manner in mapping out its sustainability plan. Its approach has created a strong foundation and a roadmap in its journey to remain sustainable over a long period of time. In the current year, all projects have been supported through CSR/donor funds. The corpus interest income helps to fund some of the administrative cost. WCT trustees have always encouraged sustainability as a way of life for future succession, yet providing the safety net-assuring funds to bridge any shortfalls. In the financial year 2022-23, WCT was able to meet 92 percent of its costs through a combination of international project grants, funding support from CSR donations and foundations, and interest income.

As we embark on to the next phase of evolution, we are confident of establishing a legacy of sustainability and an environment that nurtures like-minded partners who are willing to support WCT in an unrestricted manner, so as to allow WCT to take on challenging projects that need a lot of data-driven ground work before one can talk about impact.

The trustees and WCT team take this opportunity to acknowledge the contributions of our donors, corporate partners, international partners, individuals, and well-wishers, whose support is invaluable to the organisation.

Best,

A blue ink handwritten signature, appearing to read 'Ami Gumastha', written in a cursive style.

**Ami Gumastha,**  
**Senior Financial Advisor, WCT**



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# DONORS

## CSR Donations/Project Grants:



We would like to thank all our individual donors for extending their support towards WCT's concerted conservation efforts. Every donation is highly valued.

# GOVERNMENT PARTNERSHIPS



## STATE FOREST DEPARTMENTS

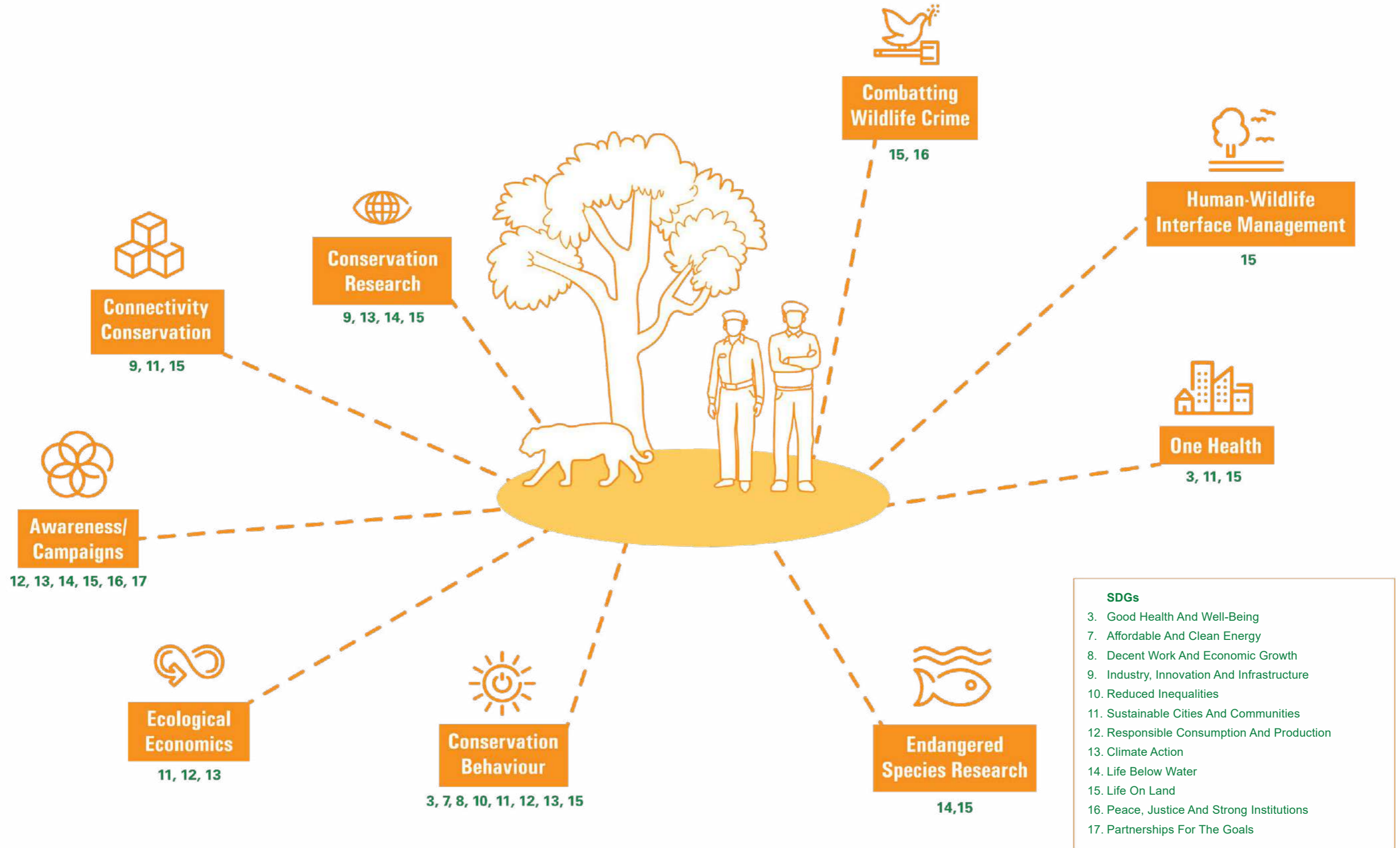
- Bihar
- Gujarat
- Jammu and Kashmir
- Jharkhand
- Karnataka
- Madhya Pradesh
- Maharashtra
- Rajasthan
- Tamil Nadu
- Telangana
- Uttar Pradesh
- West Bengal

# PARTNERS & COLLABORATORS

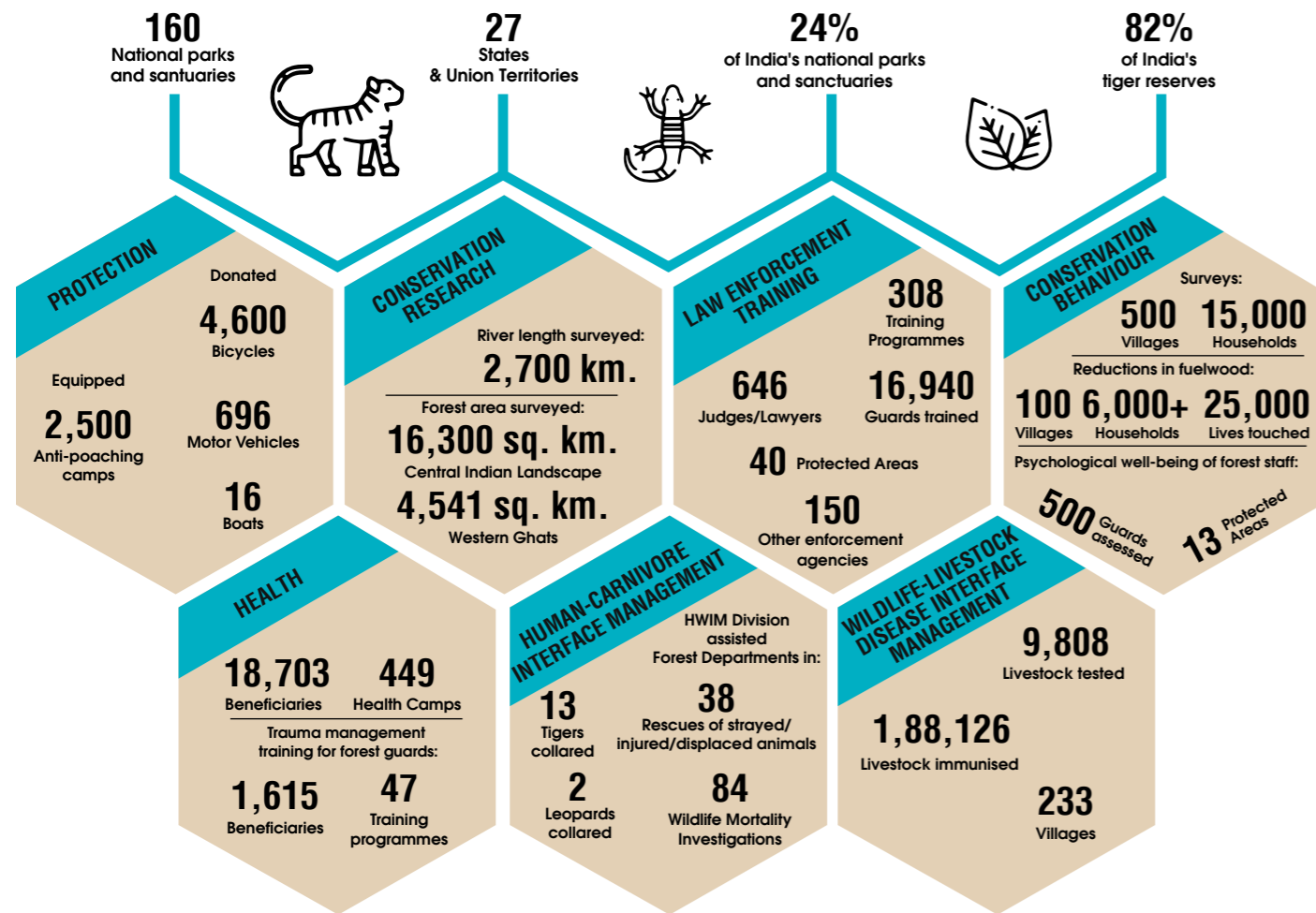


# CONSERVATION STRATEGY

WCT is committed to assisting the Government in meeting the United Nations Sustainable Development Goals (UNSDGs), designed to be a “blueprint to achieve a better and more sustainable future for all”. At a macro level, our work that spans a wide spectrum of the conservation paradigm, remains aligned with the SDGs.



# OUR REACH



# ABBREVIATIONS AND ACRONYMS

ACF	Assistant Conservator of Forests
ADPO	Assistant District Prosecution Officer
CDU	Conservation Dogs Unit
CPR	Cardiopulmonary Resuscitation
CWC	Combatting Wildlife Crime programme
DFO	Divisional Forest Officer
FACCTS	Facilitating Corridor Connectivity using Technology-based Solutions
FLOWIDER	Flow and Water Level Integrated Datasets for Ecological Studies of Rivers
FMD	Foot and Mouth Disease
GIS	Geographic Information System
HWIM	Human-Wildlife Interface Management
IUCN	International Union for Conservation of Nature
LULC	Land Use and Land Cover
MPSTF	Madhya Pradesh Special Task Force
PACIFIS	Protected Areas and Conjoined Inland Fisheries Interactions Status
PAs	Protected Areas
REAL	Riverine Ecosystems And Livelihoods programme
RFO	Range Forest Officer
SMART	Spatial Monitoring and Reporting Tool
UAV	Unmanned Aerial Vehicle
WCT	Wildlife Conservation Trust
WLDIM	Wildlife-Livestock Disease Interface Management



## HIGHLIGHTS

- Dr. Nachiket Kelkar, Head, Riverine Ecosystems And Livelihoods (REAL) programme, WCT, was honoured with the NDTV True Legend - Future of Young India (Environment) Award for 2022.
- In July 2022, the Ganges river dolphin (*Platanista gangetica*) was classified as 'Endangered' by the latest IUCN Red List assessment of the species, given the persisting threats to its survival in the rivers of the Indian sub-continent. The assessment's lead author is Dr. Nachiket Kelkar, and Mr. Subhasis Dey, Programme Officer, REAL programme, is the co-author, along with renowned global and regional experts.
- The REAL team developed a prototype buzzer-alarm device using GSM-based geo-fencing technology that can be deployed on fishing boats to let fishers know when they are around wildlife hotspots in rivers. Around these areas, the device can signal fishers to change their fishing area or net-use practice to minimise the risk of accidental bycatch.
- A review paper on fishery and wildlife conservation conflicts was published, which classified and analysed conflict cases from over 500 terrestrial and freshwater Protected Areas (PAs) in India. The paper highlights the potential variables influencing these conflicts, and discusses ways for integrated management of wildlife conservation areas conjoined with inland fisheries.
- After five years of intensive efforts in the Central Indian Landscape (CIL) and multiple and ongoing outcomes, the Wildlife Conservation Trust (WCT) concluded its Large Carnivore Monitoring Project.
- The Conservation Research team clocked camera trap survey efforts of 31,870 trap nights as part of the project focused on securing the vital Satpura-Melghat corridor in Madhya Pradesh.
- During the winter phase of the camera trapping under the Facilitating Corridor Connectivity Using Technology-based Solutions (FACCTS) project, a total of 190 locations along the Betul-Harda and Betul-Ranipur roads were sampled, and the sampling effort totalled upto 11,307 trap nights. In this season, the team recorded the presence of 21 species along these roads.
- Over the past year, multiple tiger and sloth bear deaths have been recorded due to rail collisions in the Rajura Forest Range in the Central Chanda Forest Division. To maintain wildlife connectivity and reduce deaths due to rail collisions, a joint site visit was carried out in November 2022 by the Central Chanda Forest Division, South Central Railway, and WCT, to propose mitigation measures along this railway line.
- All of the rehabilitated Indian pangolins have settled down within the forest areas where they were released as part of WCT's ongoing Indian Pangolin conservation project. The data from camera traps have provided some rare insight into breeding, rearing, and parental behaviours of this elusive species.
- The WCT team, with the help of the veterinarian from the Satpura Tiger Reserve, radio-tagged one adult female Eurasian otter in March 2023, but the animal wriggled out of the harness in less than five minutes. This is the first-ever attempt at radio-telemetry study on the Eurasian otter in India.
- WCT's Sahyadri Landscape project lead, Mr. Girish Punjabi, gave an orientation talk on corridor connectivity to Range Forest Officers and Assistant Conservators of Forests from the Sahyadri Tiger Landscape, at a workshop organised by the Sahyadri Tiger Reserve Foundation at Shivaji University in Kolhapur.
- In order to assess the minimum population of tigers and leopards in the Conservation Reserves of the Sahyadri Tiger Landscape, WCT took up systematic camera-trapping in collaboration with the Sahyadri Tiger Reserve and Territorial Circle of the Maharashtra Forest Department. This is the first time ever that all



the Conservation Reserves in the corridor area of the Sahyadri landscape are being camera-trapped.

- The Programme Makara team has developed a proof-of-concept monitoring system using Unmanned Aerial Vehicles (UAVs) to complement water and land-based (visual observations) efforts to monitor gharial and river dolphin occurrence, local abundance, fine-scale habitat use, river channel habitat, and sandbar availability.
- As of March 2023, the Conservation Behaviour team's Heater of Hope project, with the support of its various partners (Donors and Forest Department), has managed to directly reach over 5,800 households in the Chandrapur district through the systematic and data-driven intervention involving distribution of the sustainable biomass-fuelled water heater (also known as the *Bumbb*).
- A total of 45 interventions were undertaken under the Human-Wildlife Interface Management project, which included assisting the Madhya Pradesh Forest Department in monitoring human-carnivore interface, capture of animals involved in conflict with humans, translocations, and mortality investigations.
- In 2022, following a joint survey by Sanjay-Dubri Tiger Reserve and WCT's Wildlife-Livestock Disease Interface Management (WLDIM) team, active cases of Foot and Mouth Disease (FMD) in livestock were detected in villages of Ramgarh and Lawahi in the Bastua Core Range, threatening over 3,000 livestock and wild ungulates in the region. To prevent the spread of the highly virulent FMD virus, a containment strategy was successfully developed in partnership with the Forest and Animal Husbandry Departments.
- In 2022-2023, a total of 23,247 livestock were vaccinated in 103 villages across the eight buffer and core ranges of Sanjay-Dubri Tiger Reserve by WCT's WLDIM team in collaboration with Madhya Pradesh's Forest Department and Animal Husbandry Department.
- The Health team developed a first-of-its-kind Android mobile phone application, titled 'Vann Aarogya', dedicated towards improving forest staff's access to information regarding health and safety.
- The Communication and Outreach team resumed the 'Trapped In Trade' awareness campaign during the National Wildlife Week in October 2022 to highlight the ills of the exotic pet trade, and its impact on biodiversity and ecosystems. The campaign was a collaborative effort between WCT's Communications and Combatting Wildlife Crime teams, and other organisations such as RESQ CT, various educational institutions, and wildlife experts.
- WCT President Dr. Anish Andheria was nominated as a wildlife expert on the 15-member high level committee formed by the Maharashtra government to monitor the implementation of the Maharashtra State Wildlife Action Plan (MSWAP 2021-2030).
- Dr. Anish Andheria was invited to be a member of the committee constituted by the Chief Wildlife Warden to formulate and draft the Madhya Pradesh State Wildlife Action Plan (MPSWAP) 2023-43.
- Dr. Anish Andheria was invited to be on the jury for the All Living Things Environmental Film Festival (ALT EFF) 2022, which focused on environment, community, and sustainability.
- Dr. Anish Andheria was invited to Goa University in March 2023 to deliver a series of lectures to the Bachelors and Masters students. The lectures were also thrown open to the public and were well-attended.
- Dr. Anish Andheria was invited to be on the Panel of Judges for the Environment category of the coveted Qimpro Awards 2022, which were conceptualised to recognise role-model individuals for a Quality

Revolution in India in the field of Business, Healthcare, Education, and Environment.

- Dr. Anish Andheria was invited to sit as a curator/jury member for the Mumbai Press Club Red Ink Awards for Excellence in Journalism – 2022, in the Environment category.
- Dr. Anish Andheria was invited to be on the Board of the Satpura Landscape Tiger Partnership (SLTP), which is a consortium of several NGOs including Born Free, BNHS, TRACT, Satpura Foundation, Corbett Foundation, Baavan, and NCSA.
- Dr. Anish Andheria was invited to be part of the Shillim Collective to expand nature conservation in a 100 sq. km. multiple-use area in an equitable and integrated manner, safeguarding the natural, social, and cultural heritage of northern Western Ghats, encouraging responsible growth and development models for all stakeholders.
- Ms. Pooja Dewoolkar, Ecological Economist with WCT, was chosen to be on the selection panel of SBI Youth for India Fellowship 2022-23.
- Pooja Dewoolkar and WCT's Lead Conservation Psychologist, Ms. Prachi Paranjpye, were selected as 'Global Talents' for UNLEASH Innovation Lab 2022.
- Ms. Prachi Paranjpye and Mr. Aniket Bhatkhande, Ecological Economist and Head, Conservation Behaviour, WCT, were selected for the Management Development Programme on Management of Village Relocations from Tiger Reserves, held at the Indian Institute of Forest Management, Bhopal, and sponsored by the Ministry of Environment, Forest & Climate Change, Government of India.
- Ms. Tamanna Ahmed, Development Researcher with WCT, was selected as an Anubhav Fellow for the Anubhav Lecture Series of the Harris School of Public Policy, University of Chicago.
- Mr. Aniket Bhatkhande was invited by CTARA, IIT Bombay, to deliver a seminar on the research for WCT's Heater of Hope project.
- Several employee engagement and donor visits were organised by WCT and various donors in the course of the financial year.

### Tribute to Moya

In September 2022, we lost one of our canine teammates, Moya, to cancer. Moya was one of the first canines to be trained to detect pangolins. She has contributed immensely towards the survey of forest areas to map pangolin presence in this landscape. She is sorely missed.



© Aditya Joshi/WCT



# DEPARTMENTAL REPORTS

# CONSERVATION RESEARCH

Since its inception, the Conservation Research division has consistently evolved and expanded to include newer projects focused on developing conservation strategies and informing policy through extensive scientific research and intra/inter-collaborative groundwork. Currently, the programmes under this vertical are being implemented at three major sites across India: the Central Indian Landscape, the Gangetic floodplains and the Western Ghats. Each site has its own set of projects and field teams that look at various aspects of habitat and species protection. Moving forward, WCT's Road Ecology division and Conservation Dogs Unit will be absorbed into the Conservation Research division.

## THE CENTRAL INDIAN LANDSCAPE (CIL)

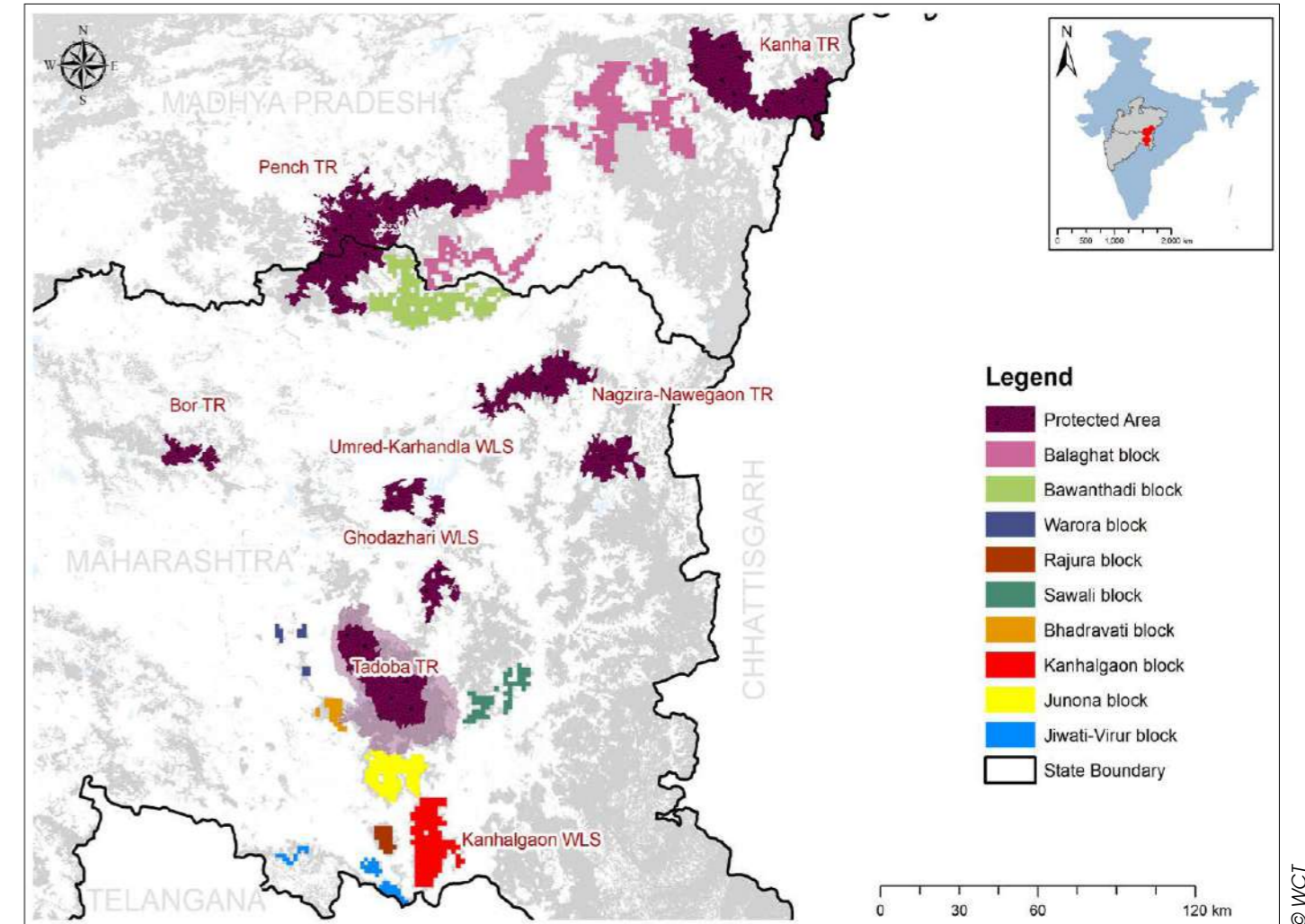
### I. Large Carnivore Monitoring Project

The main objective of this project has been to generate long-term spatial data on tiger densities and population dynamics in forest blocks outside PAs, to influence the larger tiger conservation policy framework at the landscape and national levels. Another objective has been to build the capacity of forest staff and other stakeholders in monitoring tiger populations outside PAs, and use individual-level data in human-tiger conflict mitigation, planning mitigation measures for linear infrastructures and monitoring dispersal events. After five years of intensive efforts in the CIL, WCT smoothly concluded this impactful project in 2022. We are grateful for the support and collaboration of the Madhya Pradesh and Maharashtra Forest Departments in the implementation of the project. We are also immensely thankful for the funding support received from DSP Investment Managers and the U.S. Fish & Wildlife Service. The conservation impact of the project over the years has been immense, and has resulted in notification of several important forest blocks in the CIL as Protected Areas, buffer zones to existing Protected Areas, and wildlife corridors.

- The team used camera trap surveys in conjunction with the spatially explicit capture-recapture framework to monitor tiger populations in important forest blocks in the CIL. The following forest blocks were surveyed as part of this project:

No.	Forest Block	Administrative Unit	Forest Circle	Area (sq. km.)	State
1	Junona	Chandrapur and Central Chanda Forest Division	Chandrapur	300	Maharashtra
2	Kanhalgaon Wildlife Sanctuary	Central Chanda Forest Division	Chandrapur	300	Maharashtra
3	Warora- Bhadravati	Chandrapur Forest Division	Chandrapur	100	Maharashtra
4	Sawali	Chandrapur Forest Division	Chandrapur	150	Maharashtra
5	Rajura	Central Chanda Forest Division	Chandrapur	65	Maharashtra
6	Jiwati-Wirur	Central Chanda Forest Division	Chandrapur	100	Maharashtra
7	Bawanthadi	Nagpur and Bhandara Forest Division	Nagpur	650	Maharashtra
8	Balaghat	Balaghat Forest Circle	Balaghat	1000	Madhya Pradesh
		<b>Total Area Sampled</b>		<b>2665</b>	

- As opposed to conventional camera-trap-based surveys where the objective is to estimate tiger densities, the team used intensive grid-based sampling at a finer scale to estimate densities as well as gather information on individual tigers (movement, area covered, breeding status, injuries, etc.).



Map of the study area

- Diet analysis was carried out to determine prey selection by tigers outside PAs/corridors. Tiger scat samples were collected from forest blocks where camera trapping was carried out. These samples were processed to analyse the diet of the tigers within the study area.
- The WCT team conducted training programmes for the frontline forest staff while deploying camera traps in the field. The beat-level field staff from the respective ranges were trained in the use of camera traps and the basic concepts of tiger monitoring. On-field sessions were conducted to explain the rationale behind camera trapping and other monitoring activities carried out with respect to large carnivores.

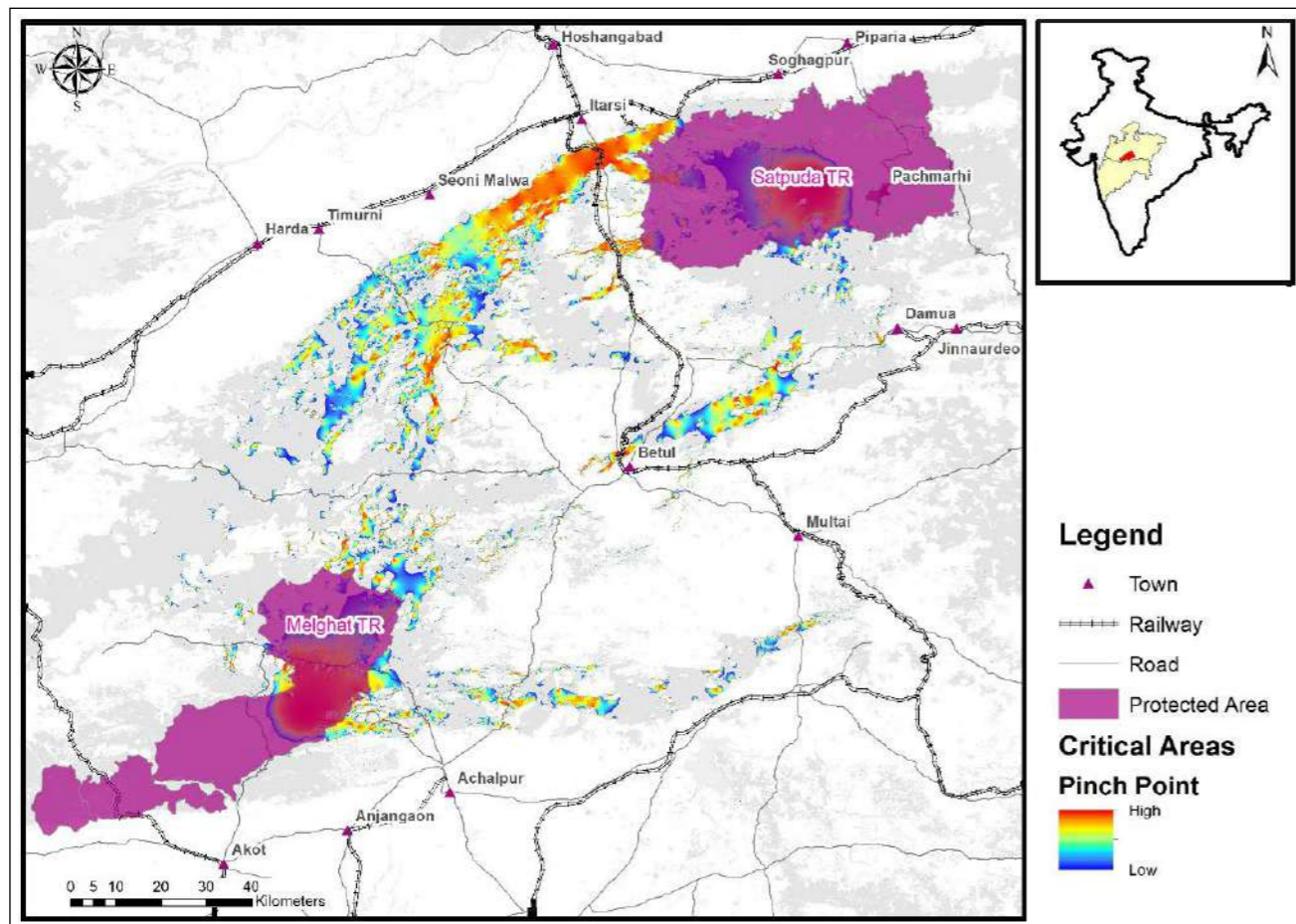
In 2022, the project ended after five years of intensive efforts by the Conservation Research team. The camera-trapping exercises conducted in the critical forest blocks outside PAs over the years have helped inform policy with respect to tiger conservation at the state and national levels. The data, findings, and learnings from this project have also formed the basis for building newer, important projects across multiple verticals within WCT.

## II. Securing a Vital Tiger Corridor Connecting the Melghat Tiger Reserve in Maharashtra with the Satpura Tiger Reserve in Madhya Pradesh

WCT surveyed the corridor connecting the Melghat Tiger Reserve in Maharashtra to the Satpura Tiger Reserve in Madhya Pradesh. We carried out the mapping of critical wildlife corridors, identification of tiger-bearing sites, and estimation of tiger populations in these relatively less-protected forest blocks. Such spatial data is crucial for making informed conservation decisions. This project aimed to upgrade the status of key tiger-bearing forest blocks outside PAs, ensuring better wildlife management strategies, and mainstreaming such blocks into tiger conservation strategies.

The corridor connecting Melghat Tiger Reserve to the Satpura Tiger Reserve is an extensive yet understudied region of CIL. The corridor follows the Satpura Hill Ranges and comprises over 4,000 sq. km. of forest with several streams/rivers feeding the Narmada basin. Due to the vast stretch of the hilly forest, this landscape has not been systematically surveyed for tiger presence. Quality data from such less-explored areas provides a baseline for developing new conservation areas for dispersing tigers. Major roads and railway lines cut through this corridor. Data from the project will help identify critical areas where mitigation measures can be incorporated to allow safe movement of wildlife to maintain connectivity.

We are grateful for the generous support of the SBI Foundation and DSP Investment Managers towards this project.



Map showing the critical bottlenecks/pinch points in the corridor. These are the areas where the habitat connectivity is tenuous and protecting these patches is critical to maintain overall habitat connectivity within the corridor

- As part of the mapping exercise, the team analysed multi-season remotely-sensed satellite imagery to calculate the extent of forest area, water availability, human settlements, forest fires, etc., to understand the habitat suitability for tigers.
- Camera trap surveys (survey effort of 31,870 trap nights) were conducted in conjunction with the spatially explicit capture-recapture framework to monitor tiger populations in the study area.
- Species occurrence maps were generated for some of the key species to identify areas where a particular species' occurrence is relatively higher in the corridor. Based on human activities, maps for anthropogenic pressures, and presence of livestock and domestic dogs were created.
- The team conducted capacity-building programmes in the basic concepts of tiger monitoring for the frontline forest staff.

## III. Developing an Ecology-based Conservation Strategy for the Indian Pangolin

WCT aims at increasing the rate of successful rehabilitation of Indian pangolins (*Manis crassicaudata*) in the wild by using ecological data collected from the radio-tagged wild and rehabilitated individuals. Using information from spatial, ecological, and behavioural data of the species, we want to identify key factors essential for pangolin survival, and design long-term conservation strategies around the species.

We are grateful for the generous support extended by BNP Paribas India and BNP Paribas Foundation towards the project.



WCT has radio-tagged nine pangolins in the Satpura and Pench Tiger Reserves in Madhya Pradesh

- Until now, the team has successfully rehabilitated seven rescued Indian pangolins in the wild, and has gathered ecological data from nine radio-tagged pangolins. The tagged pangolins are being monitored in the wild for their daily activity and site preference.
- Using the telemetry data from the tags and photo-captures from camera traps, the team has been analysing their movement and mapping the area utilisation for all the individuals. This will help in the selection of ideal sites for the release of confiscated/rescued pangolins, and increase the success rate of rehabilitation. Using this data, the team has started surveying new forest blocks to identify suitable rehabilitation sites for the seized/confiscated pangolins.
- The team has trained two conservation dogs in pangolin detection to help find pangolin burrows and pangolin scat. The dogs indicate the burrows and the team sets up camera traps in the vicinity of the burrows to monitor pangolin activity.
- Pangolin surveys have been extended to the Balaghat Forest Circle. Camera traps have been installed at potential sites to gather data on pangolin presence. The team will soon be expanding the canine-assisted surveys in the Balaghat forest block.

The camera trap data has provided some very rare insight into the breeding, rearing, and parental behaviours of the Indian pangolin. Four radio-tagged female pangolins have given birth to a single pup each. This is highly encouraging as successful breeding of rehabilitated individuals will have a positive impact on the population, and will also help us understand the factors essential for their breeding.

- As part of World Pangolin Day 2023 on February 18, the team designed posters in the local language for the forest department to be displayed at sites near Pench Tiger Reserve for community engagement and outreach.
- In September 2022, we lost one of our canine teammates, Moya, to cancer. Moya was one of the first canines to be trained under this project to detect pangolins. She has contributed immensely towards the survey of forest areas to map pangolin presence in this landscape.

#### IV. Otter Ecology and Hydrology: Satpura Landscape

WCT, in collaboration with the Madhya Pradesh Forest Department, started a project focusing on the status of rivers and streams originating from the Satpura Tiger Reserve. The project focuses on understanding the forest hydrology in the Satpura Tiger Reserve and studying the Eurasian otter (*Lutra lutra*) as an indicator species of the aquatic habitats in this landscape. This is first-of-its-kind study in the CIL which is gathering baseline information on forest hydrological systems linked to a rare aquatic species. This is crucial for understanding and addressing the complex interactions between climate, forests, water, and biodiversity. This long-term dataset will help understand the influence of forest and other land-cover and land-use on stream hydrology and ecology. One of the main objectives of this project is to understand the current distribution of Eurasian otters in relation to the status of perennial forest streams and water reservoirs. The distribution survey will form the first step towards the identification of key areas of conservation and best practices for safeguarding these unique ecosystems.

We are grateful for the generous long-term support extended to this project by the Astral Foundation, Alkyl Amines Chemicals Ltd., and Illuminati Trading Pvt. Ltd.



Camera trap photo-captures of Eurasian otters in the Satpura Tiger Reserve

- The team carried out occupancy surveys for otters in three major rivers in the Satpura Tiger Reserve. The rivers were surveyed on foot to collect information on various habitat parameters for each of the predetermined river segments.
- Camera traps were placed in every segment of the rivers to collect information on otter presence. Two camera traps were deployed in each segment. A camera trapping effort of 2,670 camera trap nights was recorded in Phase I Survey 2 and 4,005 camera trap nights in Phase II Survey 1.
- The team is collecting hydrology-related data and monitoring the water discharge using acoustic Water Level Recorders (WLRs) and staff gauges that were installed at different locations. Monitoring rivers will help in understanding the complexities of hydrological systems, which govern in-stream water availability, and how it might affect the distribution of associated wildlife.
- To understand the effect of rainfall on water level and discharge, the team has placed eight rain gauges within three major catchments in the study area.

### Otter Telemetry

One of the major components of this project is to understand the ecology and movement behaviour of otters. To understand the ecology of Eurasian otters, we are conducting a radio-telemetry study. Based on camera trapping data from occupancy surveys, the team identified sites with a high probability of otter occurrence. Three potential sites were shortlisted for capturing otters for radio-tagging within the study area.

The capture site and tagging protocols were reviewed by the veterinarians and forest department officials to ensure all the safety measures were in place. The WCT team, with the help of the veterinarian from the Satpura Tiger Reserve, tagged one female Eurasian otter in March 2023. The retention time of the radio-tag-bearing harness on the otter's body was very short. This is the first-ever radio-telemetry study on the Eurasian otter in India.

### Monitoring Water Quality: Nagdwari Mela

Every year, during the monsoon season, the Nagdwari *Mela* (pilgrimage) takes place at the Nagdwari temple in the voluntarily relocated village of Kajri, which is located within the core of the Satpura Tiger Reserve. During this *mela*, more than 2.5 lakh devotees visit and camp along the banks of the river Mithijhiri, which is one of the tributaries of the Nagdwari River, a prime otter habitat. The *mela* starts 15 days before the Nag Panchami festival. Last year, the *mela* started on July 20, 2022, and ended on August 4, 2022. Since the devotees walk to the temple, they camp for multiple days inside the forest. The Forest Department and the *mela* committee provide portable toilets for the pilgrims; however, the facilities cannot handle this large number of visitors. This leads to open defecation and increases sewage pollution in the adjoining streams in the area. The contaminated water from the pilgrimage site goes into other downstream rivers which support a good otter population.

To understand the extent of this contamination, the WCT team carried out water quality monitoring during the *mela*. Water samples were collected to test the bacterial load for *Escherichia coli* (*E. coli*) in the water. During the *mela* season, the *E. coli* colony counts were significantly higher at the campsite. The colony count lowered after the *mela* season. However, the *E. coli* load was relatively higher at the campsite compared to the upstream sites even one month after the *mela*.

### V. Facilitating Corridor Connectivity Using Technology-based Solutions (FACCTS)

- Over the last decade, linear infrastructure development has emerged as a major threat to the demographic viability of tigers in India. Development activities such as the upgradation of roads and railway lines lead to animal deaths and hamper the movement of wildlife within and between forest patches. Technology-based systematic monitoring of wildlife movements along the existing roads/railway lines can provide a crucial baseline to decide the placement of the mitigation measures suggested in the government guidelines. Tech-based solutions will also help to minimise wildlife mortality caused by linear projects passing through wildlife habitats.
- As part of WCT's linear ecology efforts, the FACCTS project was conceptualised and initiated in 2022. The project is focused on applying existing technology as well as developing new technology to

address lacunae in the linear mitigation guidelines for road projects on the verge of upgradation, and to minimise wildlife mortalities and monitor wildlife movement along existing railway lines passing through wildlife habitats where structural modifications are not possible.

- We are grateful for the funding support extended by BNP Paribas India and for the support of the Madhya Pradesh Forest Department in the implementation of the project.



WCT researcher installing camera traps along a road in the Melghat-Satpura corridor



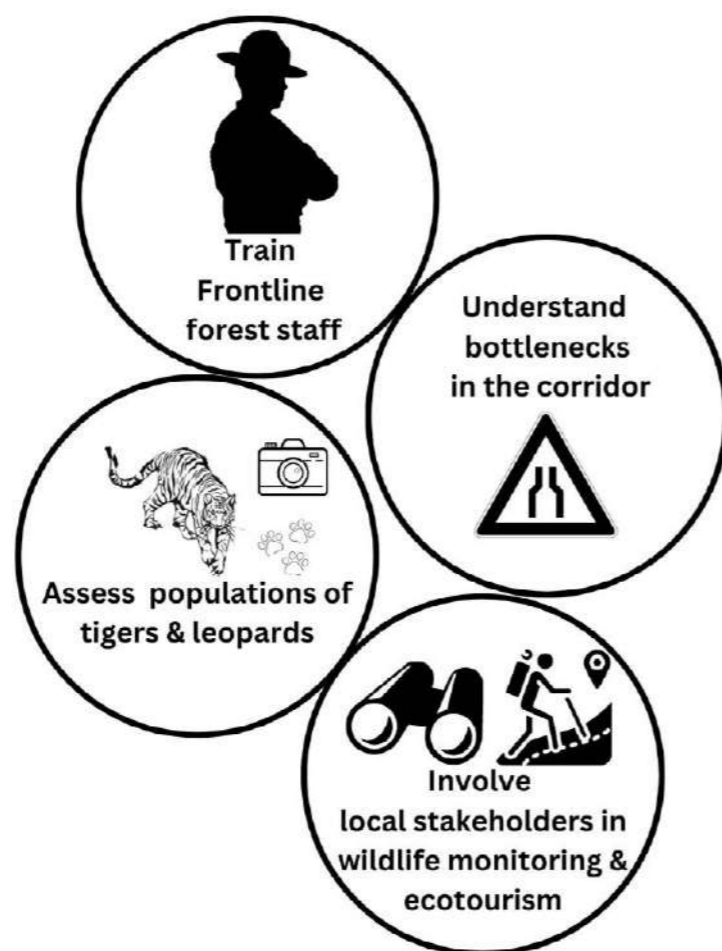
WCT team conducting a traffic survey along a road in the Melghat-Satpura corridor

- The team was also invited by the Maharashtra Forest Department to identify high-priority sites for placement of mitigation structures along the railway line in Central Chanda Forest Division. Over the past year, multiple tiger and sloth bear deaths have been recorded due to rail collisions in the Rajura Forest Range in the Central Chanda Forest Division. To maintain wildlife connectivity and reduce deaths due to rail collisions, a joint site visit was carried out in November 2022 by the Central Chanda Forest Division, South Central Railway, and WCT, to propose mitigation measures at specific locations along this railway line.
- About 16 km. of the Hyderabad-Ballarpur (Ballarshah) railway line in Maharashtra, between Wirur and Chunala railway stations, cuts through the important tiger corridor connecting Tadoba-Andhari Tiger Reserve and Kanha/Goan. Since the identification of wildlife crossing sites is critical to planning mitigation structures and increasing the efficacy of the suggested measures, it was decided to carry out field surveys to map wildlife presence/activity along the railway tracks, and use that spatial data to identify high-priority sites to install wildlife crossing structures.
- The team is working on developing and testing new technology to minimise wildlife mortalities and monitor wildlife movement along existing railway lines passing through wildlife habitats where structural modifications are not possible. We are working with technology developers on two systems to detect trains and warn wildlife along the railway tracks.

## THE WESTERN GHATS

### I. Advancing Conservation Outcomes in the Sahyadri Landscape through Capacity Building and Management Planning

The present project builds upon a previous study, also funded by Vinati Organics Ltd., which examined the status and change in distribution of four large carnivores (tiger, leopard, Asiatic wild dog, and sloth bear) in the Sahyadri-Konkan Landscape. The objective of the present project has been to improve the capacity of frontline forest staff of the Maharashtra Forest Department through on-ground training workshops and conservation measures that assist in the management of the Sahyadri Tiger Reserve and the Conservation Reserves in the landscape. Another significant component of the project is training local stakeholders and forest staff in wildlife survey techniques, wildlife monitoring, and ecotourism, through well-curated workshops in collaboration with the Maharashtra Forest Department.



© Glish Punjabi/WCT

- In collaboration with WCT's Health team, three basic trauma management training workshops and health check-ups for frontline forest staff of the Sahyadri Tiger Reserve were conducted. The workshops were highly interactive, and all attendees were provided with practical guidance on handling emergency situations.
- The team conducted six trauma management training workshops for the frontline forest staff of the Vishalgad, Panhalgad, Gaganbawda, Chandgad, Tillari, Amboli-Dodamarg, and Ajara-Budhargad Conservation Reserves, and the Radhanagiri Wildlife Sanctuary.
- In collaboration with WCT's Law Enforcement Department, two workshops on the fundamentals of wildlife law and its enforcement were held for the frontline forest staff at Chandgad and Ajara-Budhargad Conservation Reserves. Seven workshops on wildlife forensics and crime scene investigation were held for the frontline staff of the Sahyadri Tiger Reserve; the Vishalgad, Panhalgad, Ajara-Budhargad and Gaganbawda Conservation Reserves; and the Radhanagiri Wildlife Sanctuary.



Training programmes in wildlife law and enforcement, forensics (top left), wildlife monitoring (top right), and trauma management (bottom) were held for the forest staff in the Sahyadri-Konkan Landscape

© WCT

- WCT's project lead, Mr. Girish Punjabi, gave an orientation talk on corridor connectivity to Range Forest Officers and Assistant Conservators of Forests from the Sahyadri Tiger Landscape, at a workshop organised by the Sahyadri Tiger Reserve Foundation at Shivaji University in Kolhapur. The talk gave insights about the project, explaining the current state of distribution of the four large carnivores in the landscape, and issues with corridor connectivity.
- Mr. Girish Punjabi was invited to conduct a training session on corridor conservation and its legal definition for Round Officers (Foresters) from multiple Circles of the Maharashtra Forest Department at the Kundal Academy of Development, Administration and Management (Forests).
- The team partnered with the Maharashtra Forest Department to organise a workshop for frontline staff of the Radhanagari Wildlife Sanctuary on the topic of wildlife monitoring using sign surveys, line transects, and camera-trap surveys.
- Two workshops were organised in partnership with the Sahyadri Tiger Reserve to train the frontline staff of the Vishalgad, Panhalgad, and Gaganbawda Conservation Reserves on monitoring large carnivores with the help of camera traps. The workshops also sensitised the staff on the need for regular monitoring of large carnivores in the corridor areas using sign surveys during routine foot patrolling.

#### Monitoring large carnivore populations using camera trapping

In order to assess the population of tigers and leopards in the Conservation Reserves of the Sahyadri Tiger Landscape, WCT took up systematic camera-trapping in collaboration with the Sahyadri Tiger Reserve and Territorial Circle of the Maharashtra Forest Department. This is the first-time ever that all the Conservation Reserves in the corridor area of the Sahyadri landscape are being camera-trapped. The WCT team had systematically surveyed this landscape on foot using sign surveys in 2019-20, and opportunistically placed camera traps in a few areas in 2021-22, but a thorough camera-trap survey was necessary to obtain systematic data.



Camera-traps being installed (left); two tigers photo-captured in different CRs (middle and right)

- As part of the project strategy to encourage the growth of ecotourism ventures in the Conservation Reserves as well as to discuss crucial issues related to wildlife monitoring and conservation measures with local stakeholders (individuals from grassroots NGOs), two stakeholder workshops were organised in the Amboli-Dodamarg and Tillari Conservation Reserves. A total of 42 individuals participated in these workshops. This included representation from six different grassroots organisations, two homestay owners, nature guides, photographers, as well as hoteliers.
- In addition, a nature guide training workshop was organised by the Maharashtra Forest Department at Amboli. WCT's Girish Punjabi was invited as a resource person to train budding nature guides.

## GANGETIC PLAINS

### I. Riverine Ecosystems and Livelihoods (REAL) Programme

In 2022-23, WCT's REAL programme expanded its research and policy-based work on conserving India's endangered riverine wildlife and forging their coexistence with fishers in the Gangetic plains. The impact of the work undertaken by the programme encompassed monitoring Ganges river dolphins, gharial, and capture fisheries; assessments of mortality driven by entanglement in fishing nets as well as poaching; hydrological monitoring; awareness and outreach; capacity building; and scientific support to state forest departments.

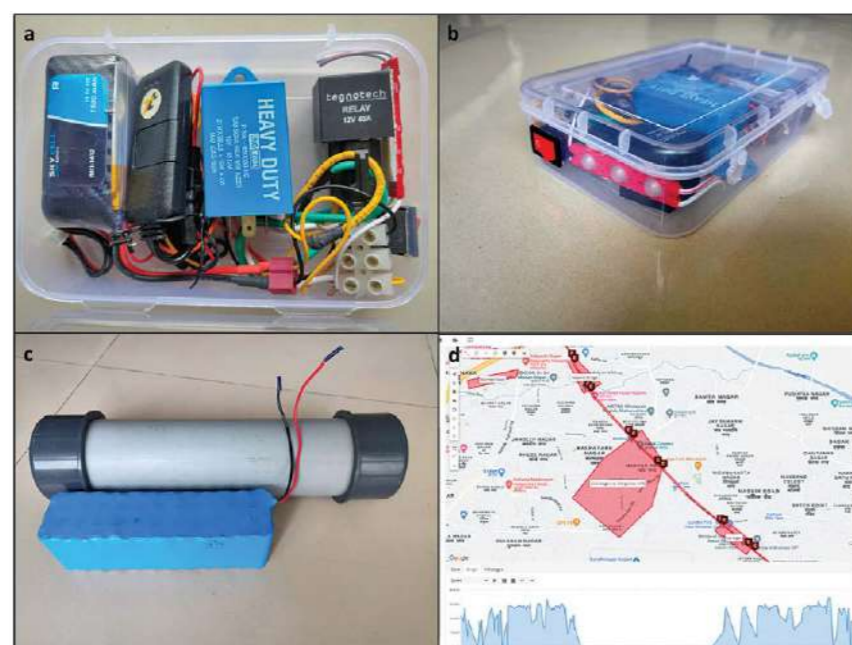
The REAL programme is being supported by BNP Paribas India, BNP Paribas India Foundation, the Duleep Matthai Nature Conservation Trust, and Dolphin Quest, USA.

- Surveys of river dolphins, other wildlife, and fisheries along the entire length of the Gandak and Kosi rivers in Uttar Pradesh and Bihar, in addition to the stretch from Munger to Dhulian along the Ganga river in Bihar, Jharkhand, and West Bengal, was carried out.
- Comparative fishery studies in Bhagalpur area (Bihar), Rajmahal area (Jharkhand) and Farakka area (West Bengal) are yielding robust estimations of river dolphin mortality due to entanglement in fishing nets as well as due to targeted and non-targeted poaching.



Images of a Ganges river dolphin mortality case along the Ganga, Bhagalpur district, Bihar, in September 2022

- The vulnerability of fish catches and yields to seasonal climatic changes and spatial differences in hydrological conditions as well as institutions and tenure in fisheries, is being tracked.
- The REAL team is also studying the potential for promoting the use of ecologically-benign fishing methods as opposed to gillnet-dominated fishing, to prevent mortality of riverine wildlife without affecting fishers' livelihood security and incomes.
- Recently, a prototype buzzer-alarm device using GSM-based geo-fencing technology that can be deployed on fishing boats to let fishers know when they are around wildlife hotspots in rivers, was developed. Around these areas, the device can signal fishers to change their fishing area or net-use practice to minimise the risk of accidental bycatch of endangered wildlife.
- A threat-monitoring workshop for forest guards of the Bettiah Division, West Champaran district, Bihar, to train them in detecting and mitigating threats to riverine species in the Gandak River was conducted. WCT advised the Bhagalpur division of the Dept. of Environment, Forests, and Climate Change, Govt. of Bihar, on riverine wildlife and fisheries monitoring methods.
- In July 2022, the Ganges river dolphin (*Platanista gangetica*) was classified as 'Endangered' by the latest IUCN Red List assessment of the species, given the persisting threats to its survival in the rivers of the Indian sub-continent. The assessment's lead author is Dr. Nachiket Kelkar, Head, REAL programme, and Mr. Subhasis Dey, Programme Officer, REAL programme, is the co-author, along with renowned global and regional experts. The latest assessment provides a comprehensive and solid scientific baseline for Ganges river dolphins, that will lay the foundation for future conservation efforts.
- As part of WCT's wider outreach, awareness, and capacity-building efforts, other significant and exciting outputs have been produced or are on the anvil. A documentary film called 'Tangled Fates', which highlights the problems surrounding the issue of river dolphin bycatch in fishing nets, is in the post-production stage, and will be released soon with English and Hindi narrations.



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(a) Assembly of the buzzer unit. (b) LED strips to flash at the time of entry into the virtual fence placed outside the box. A switch is also provided. (c) Actual prototype to carry the unit on a boat, with the assembly circuit fitted within a PVC unit for easy carriage and handling. (d) A screen grab from the software used to pilot test the virtual fence (red polygon) for "in" and "out" movements of the buzzer device on a two-wheeler.

### Development of two new datasets

#### FLOWIDER

Hydrological monitoring has been a strength of the scientific work done by the REAL programme, and soon a web application called FLOWIDER (Flow and Water Level Integrated Datasets for Ecological studies of Rivers) will be launched, which will offer a user interface to track flooding water levels of rivers across India's Gangetic plains. Users can identify over 100 gauging stations on 25 rivers relevant to the species of their interest, and can produce graphs of flood-pulses and view metadata for those stations. FLOWIDER is intended as a tool for ecologists and hydrologists interested in riverine biodiversity or human livelihoods to facilitate access to information on trends in flooding across rivers.

#### PACIFIS

Dr. Nachiket Kelkar wrote a review paper to assess the nature and prevalence of gaps in institutional management, law and policies, and prospects for joint management of wildlife and fisheries by state agencies. The paper concluded that there is scope for cooperative management of areas where terrestrial/freshwater PAs and capture fisheries are conjoined. The review is the first such effort towards organising numerous scattered case-reports in a coherent framework to understand fishery-conservation conflicts in India. The data compiled has led to the creation of a spatial dataset named PACIFIS (Protected Areas and Conjoined Inland Fisheries Interactions Status database), summarising inland fishery interactions in and around PAs.

## II. Programme Makara

WCT is building a conservation roadmap for gharial conservation under its Makara programme, with an emphasis on Chambal, Son, Ghaghra, and Gandak Rivers. To secure gharial populations and riverscapes, WCT is (a) assessing the viability of extant gharial populations and habitats, (b) developing effective population monitoring tools, (c) evaluating current management practices, (d) estimating ecological flow requirements in regulated rivers, (e) building capacity of frontline protection personnel, and (f) building public engagement through communication, education, and awareness outreach. We are thankful to the KCT Group Trust for extending their support for the smooth implementation of this project.



A gharial and mugger bask on a sandbar in Chambal

© Anish Andheria

- The WCT team was involved in six surveys during 2022-23 to monitor gharial (*Gavialis gangeticus*) and Ganges river dolphin populations and habitats covering over 1,100 km. along four rivers across six states. The Makara team also assisted WCT's REAL programme in dolphin surveys along the Kosi and Ganga Rivers.
- As part of the programme's threat-mapping exercise to identify threat hotspots and vulnerabilities, the team is developing a GIS database to understand land-use land-cover (LULC) changes using a combination of topographic maps, satellite imagery, and ground truthing to complement field surveys, enable remote change monitoring, and develop support for conservation planning and threat response.
- A proof-of-concept monitoring system using UAVs to complement water (hydrological monitoring and acoustic methods) and land-based (visual observations) efforts is being developed to monitor gharial and river dolphin occurrence, local abundance and site-specific, fine-scale habitat use, river channel habitat, and sandbar availability.
- The team conducted/partnered/assisted in five capacity-building workshops for frontline forest personnel, researchers, and students across Madhya Pradesh, Uttar Pradesh, and Bihar, providing an overview on aquatic wildlife and ecosystems, highlighting conservation challenges, demonstrating field survey techniques, and use of new technologies (such as UAVs) and platforms such as SMART (Spatial Monitoring and Reporting Tool) to help collect, measure, and evaluate data to improve PA management.



© WCT / TfW

Data collection using UAVs to complement land and water-based monitoring of gharials (seen here) and Ganges river dolphins



© Google Earth

Time-series of satellite images from 2015, 2018, and 2020 (top to bottom) showing the complete loss of a gharial nesting site in the Chambal (near Riithora, MP)

# CONSERVATION BEHAVIOUR

The Conservation Behaviour vertical focuses on developing a data-driven understanding of inclusivity, inequity, and incentives that impact conservation. It uses this understanding to strengthen institutions of governance, thus facilitating long-term sustainable improvements in conservation outcomes. At a national level, the Fiscal Principles Project aims to include diverse ecosystems and communities as recipients of the Forest and Ecology grant of the Finance Commission. In the Chandrapur District of Maharashtra, the team has reached more than 5,000 households through the Heater of Hope Project, saving more than 8,000 tonnes of carbon emissions annually.

## I. Heater of Hope Project

Communities that live in and around the forests depend on the forests for meeting their energy requirements. Sustained fuelwood extraction leads to forest degradation, which in turn affects the region's water and ecological security, and eventually economic development. People's movement in forests for firewood collection also puts them at risk of encountering wildlife such as large carnivores, potentially causing conflict. Studies have also highlighted the negative health consequences of firewood usage, especially on women and children. A large part of the task of manual firewood collection for domestic usage is shouldered by women. The purpose of the project is to reduce forest degradation, human-wildlife conflict, and the workload of women, through adoption of an efficient biomass-fuelled water heater by the families that live in and around the Ghodazari Wildlife Sanctuary in the Bramhapuri Forest Division. The villages are selected based on their proximity to the forest and the intensity of human-wildlife interaction. Initially, more than 8,000 households were surveyed from 182 villages around the landscape. This formed the baseline for monitoring and impact evaluation. This will ensure a robust evaluation for adoption, extent of usage, and behavioural changes that facilitate the adoption of the water heater.

WCT is grateful to BNP Paribas India for supporting the project in FY 2022-23.

A Ghodazari village resident (right) uses a sustainable water heater as an alternative to burning firewood to heat water



© Anish Antheria

- From its inception till March 2023, WCT, with the support of various partners (Donors and Forest Department), has managed to reach over 5,800 households in the Chandrapur district.
- The success of the pilot programme and overwhelming response from the villages also led to the inclusion of the water heater in the Dr. Shyama Prasad Mukherjee Yojana scheme of the Forest Department. The Maharashtra Forest Department has agreed to scale up the project to more villages.
- WCT was able to cater to additional demand from existing as well as other villages bordering the southern section of Ghodazari Wildlife Sanctuary. Also, the intervention was taken to a few villages in the Bramhapuri Forest Division identified as 'high priority' on account of experiencing high frequency of negative interaction between humans and tigers.

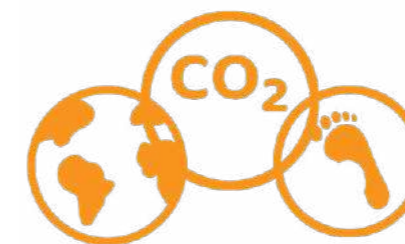
The project aimed to facilitate a change in policy to lay emphasis on using greener energy for water heating purposes as a key part of transition to sustainability. The impact of the project can be classified into benefits for the households that have adopted the water heater, and policy-level changes acknowledging water heating needs of the households.



- **Lesser Human-Wildlife Interaction**  
30 percent fewer visits to the forest per year, thus reducing the risk of negative interactions with large carnivores.



- **Better Human Health**  
Reduced exposure to smoke by eliminating the need to blow air as is required in a traditional *chulha*.



- **Carbon Savings**  
1.5 tonnes of CO<sub>2</sub> emissions reduced per year per household.

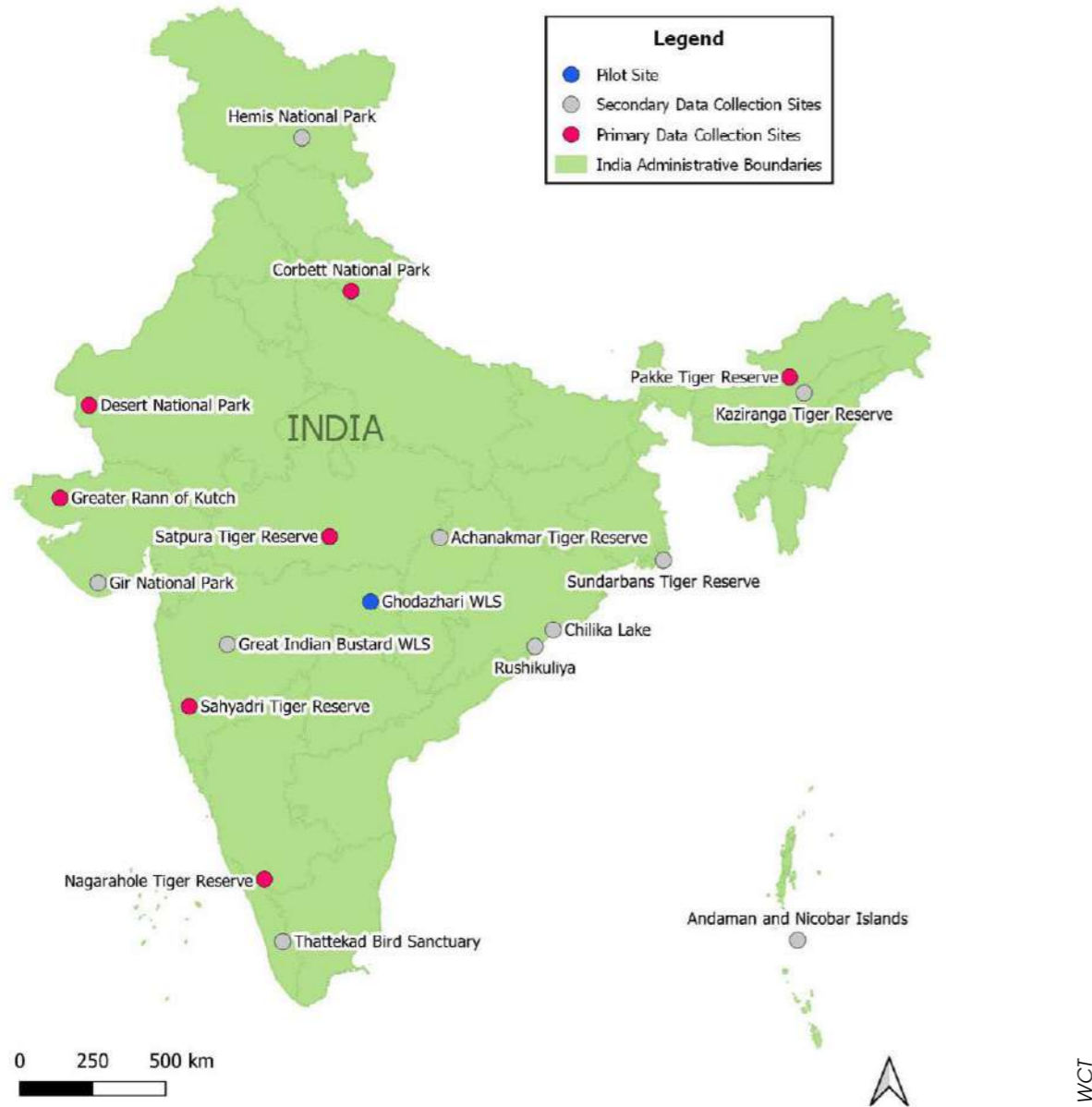


- **Reduced forest degradation**  
70 percent lower consumption of firewood.

## II. Fiscal Principles - An Impetus for Natural Capital

In India, current policies implemented by the Finance Commission mark devolution of funds based on forest cover. There is no incentive for any state government, local bodies, communities, and individuals to conserve other equally critical ecosystems like grasslands, wetlands, deserts, coral reefs, and other marine ecosystems. If replaced by a more holistic index based on ecosystems functionality, it would incentivise states to protect other ecosystems apart from forests. WCT has undertaken a unique flagship project titled '**Fiscal Principles: An Impetus for Natural Capital**'. Through this project, WCT will provide evidence-based and scientifically robust policy recommendations to the Finance Commission on fund devolution that incentivises environmental protection and promotes it as an allied objective.

We are thankful for the consistent funding support of H T Parekh Foundation towards the project.



Map depicting the main project sites

- Economics and psychology tools were developed to ensure robust measurements of attitudes, microeconomic dependence on ecosystem, and inequity. The team tested the psychology questionnaire for household data collection after an expert review. Additionally, questionnaires for community- and gram panchayat-level data collection were also designed.



© Anish Andheria

*WCT will provide evidence-based policy recommendations on fund-devolution that incentivises conservation of non-forest ecosystems such as deserts, grasslands, mangroves, etc., and reduces economic inequities*

- The team completed the primary data collection in five sites (Satpura, Nagarahole, Sahyadri, and Corbett Tiger Reserves, and the Desert National Park).
- Secondary data on incomes and population at the granularity of one square kilometre, based on satellite imagery, was collected. This data on incomes and population was used to understand income inequality at the village, district, and state-levels, which in turn provided insights for the inequality faced by local communities in preservation of various ecosystems.
- Local partners and other select members of the respective communities at the project sites were trained by the team to administer the questionnaire and use standard operating procedures for the survey. Post training, the local partner agency collected data under the supervision of WCT's social scientists.
- Significant progress was made with regards to establishing a criterion for devolution. The team produced several working papers which were the building blocks for developing a key discussion paper titled 'An Alternative Criteria for Devolution: Looking Back to Move Ahead', that has now been completed. This policy discussion paper computes Ecological Functional Index (EFI) and projects the allocation to various states.

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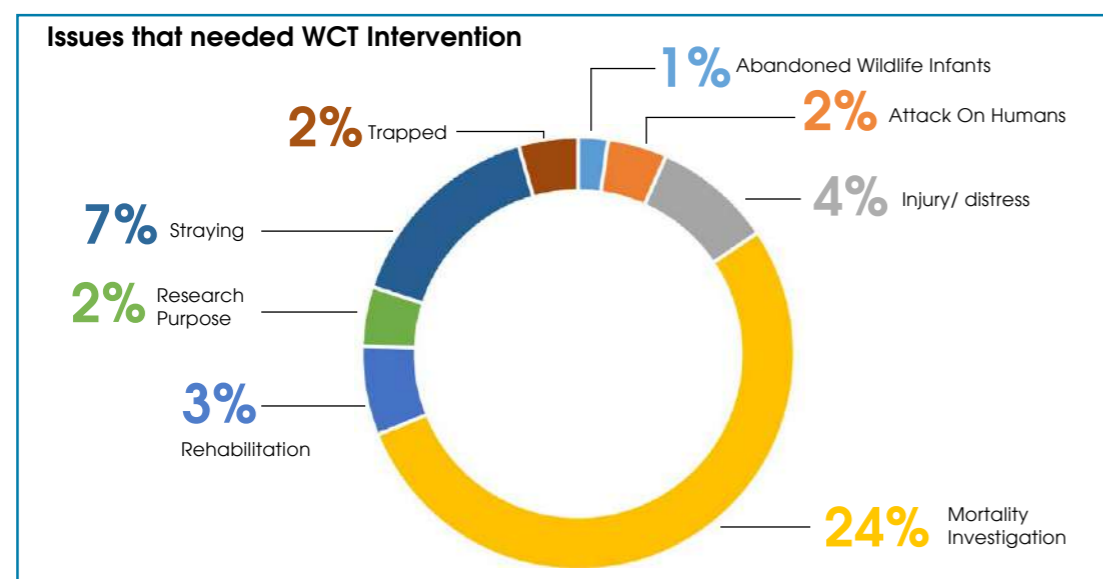
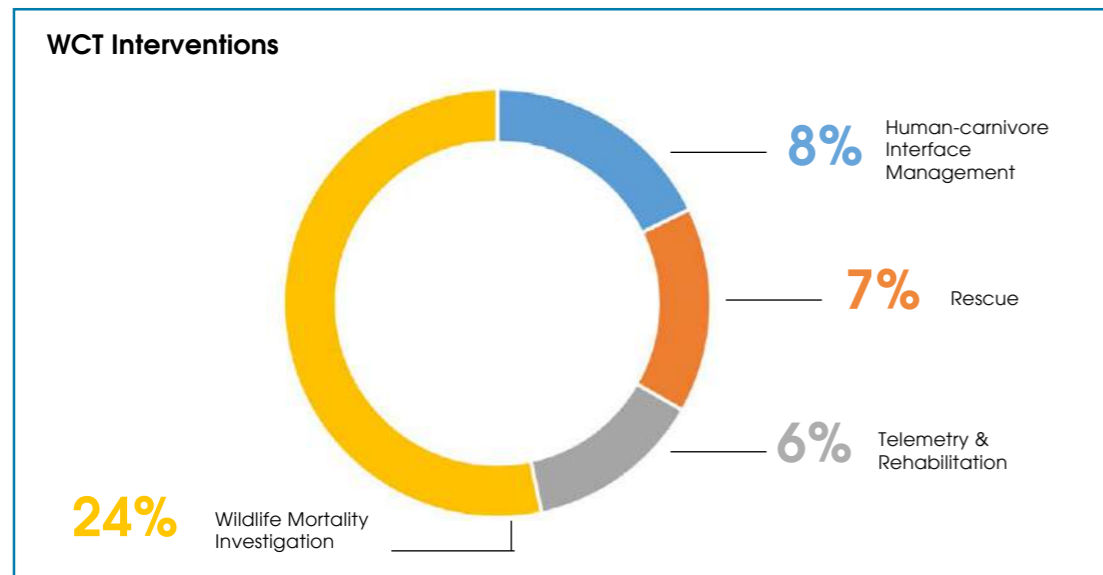
# HUMAN-WILDLIFE INTERFACE MANAGEMENT (HWIM)

## I. Human-carnivore Interface Management

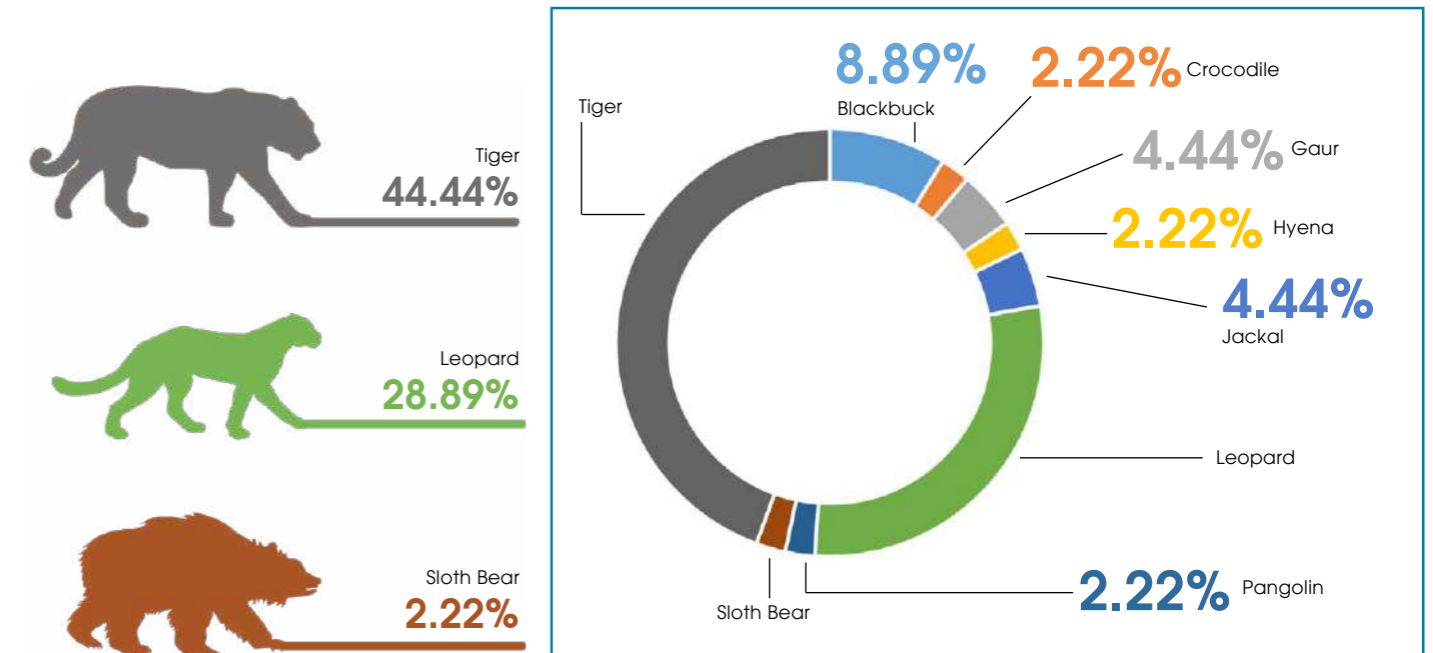
The Human-carnivore Interface Management division of WCT studies different types of interactions between humans and wildlife, and provides technical assistance to the Forest Department in dealing with negative or potentially negative human-carnivore interactions. The HWIM division trains forest staff in ways of minimising damage during human-wildlife conflict situations, and assists in devising long-term solutions. In addition, WCT's veterinarians assist the state Forest Departments in tracking large carnivores such as tigers and leopards; tranquillising large carnivores; employing radio and satellite collaring methods to monitor tigers and leopards; and conducting post-mortems of deceased wildlife.

WCT is grateful for the generous funding support extended by BNP Paribas India and BNP Paribas India Foundation towards this project.

- During FY 2022-23, a total of 45 interventions were carried out under this project, including monitoring human-carnivore interface, monitoring rehabilitated large carnivores, capture of animals involved in negative interactions with humans, translocations, and mortality investigations.



## Species that benefitted from WCT interventions:



- The Madhya Pradesh Forest Department requested the WCT team to assist them with an investigation concerning a series of leopard attacks on livestock in Kumadi village. The team conducted a field visit to assess the situation and interacted with the households which suffered attacks on livestock. The team also assisted the Forest Department in the capture and treatment of an injured leopard that had come into conflict with the people in the Kumadi village.

### Application of Satellite Telemetry in Translocation and Rehabilitation of Carnivores

Satellite telemetry is a powerful tool that has been used to study various aspects of animal behaviour and ecology, including carnivore rehabilitation. Carnivore rehabilitation refers to the process of preparing animals that have been orphaned, injured, or involved in negative interaction with humans, to live in the wild again. In recent years, the use of satellite telemetry in carnivore rehabilitation has gained popularity due to its ability to track animals in real-time, provide valuable data on the animal movements and behaviour, and to help in making informed management decisions. In the current project, four animals (two tigers and two leopards) have been collared and are being monitored in the year 2022-2023.

The translocation of carnivores is a common method used to relocate potentially dangerous animals from conflict areas. The process involves capturing the individual causing the conflict alive, transporting it to another suitable habitat, and releasing it. This method is favoured as it is non-lethal. The effectiveness of this method, however, remains debatable. In Madhya Pradesh, the fate of leopards following translocation is unknown. In this project, WCT is making an effort to understand how leopards cope with the translocation, whether they exhibit homing/exploratory behaviour or remain at the release site and establish a permanent home range.

## II. Wildlife-livestock Disease Interface Management

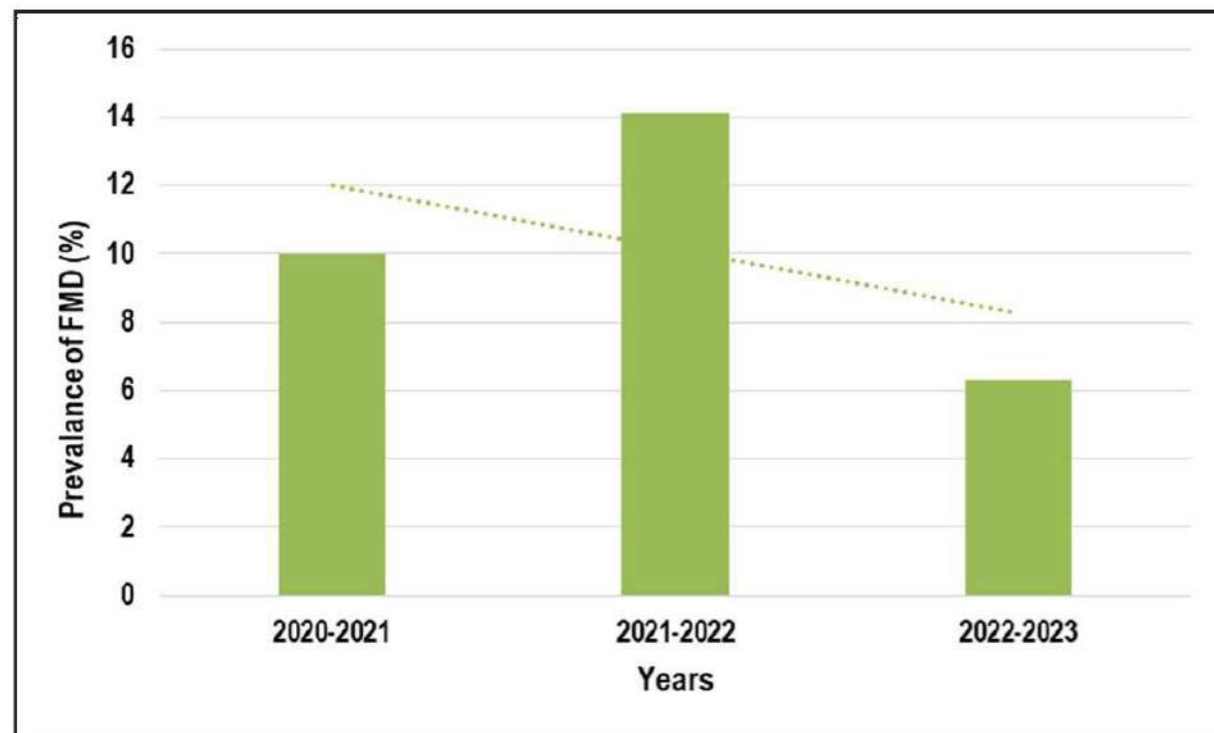
The Wildlife-livestock Disease Interface Management (WLDIM) division employs a strategy of long-term surveillance of diseases at the human-livestock-wildlife interface. WCT seeks to assess the effect of interactions between livestock and wild herbivores on disease prevalence. The information gathered through this work will enable us to lobby State Forest Departments to make disease surveillance practices an integral part of park management; build capacity of park veterinarians and create access to surveillance labs; and promote research on the ecology of diseases in free ranging wildlife. Currently, the project is being executed in collaboration with the Madhya Pradesh Forest Department and with active participation of the Madhya Pradesh Animal Husbandry Department as well as the Project Directorate of Foot and Mouth Disease, Indian Veterinary Research Institute (IVRI), Mukteshwar.

The project is being funded by DSP Investment Managers.

### Monitoring and Containing Disease Spread in Wild Herbivores due to Interactions with Domestic Animals in the Sanjay Dubri Tiger Reserve (SDTR), Madhya Pradesh

#### a. Prevalence of Foot and Mouth Disease (FMD)

- In 2022-2023, a total of 878 blood samples were collected from livestock (large ruminants such as cow and buffalo and small ruminants such as goat and sheep) for determining the prevalence of FMD. Additionally, oropharyngeal fluid samples were also collected.
- The results indicated that the clusters in the buffer had low prevalence of the FMD virus, while those in the core of the tiger reserve (which had recently experienced an outbreak), had a high prevalence. This indicates the presence of the virus and carrier livestock in the region, and this could spread FMD even to wild ungulates.



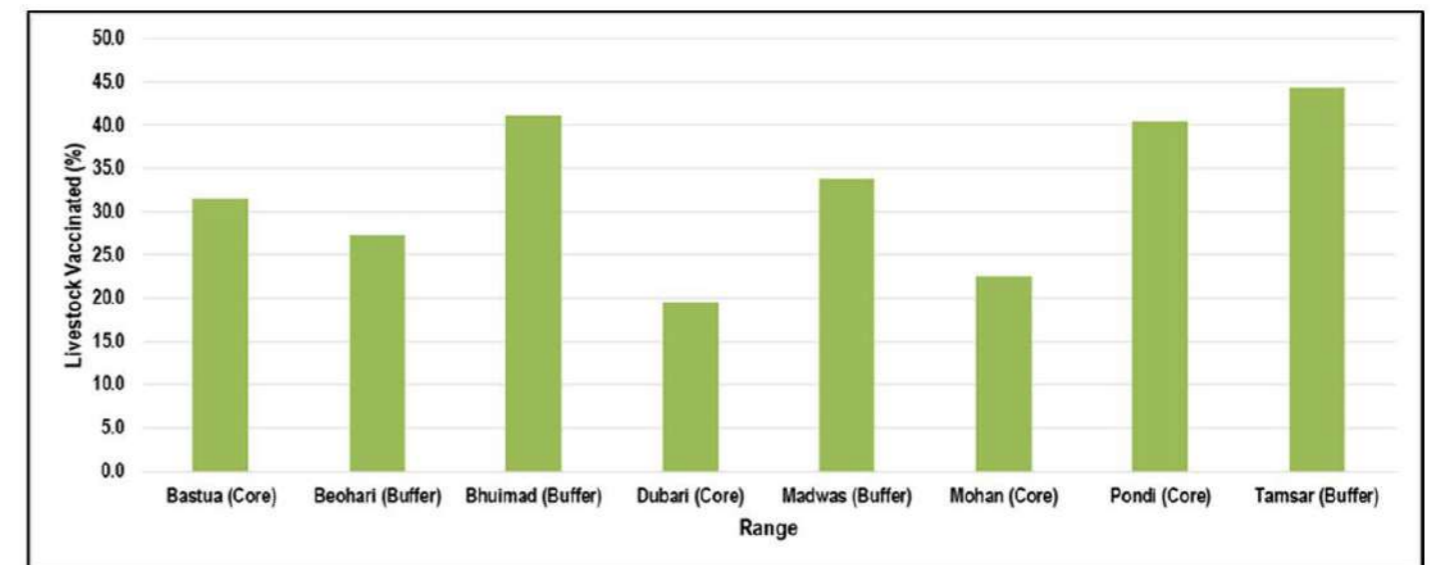
Prevalence of FMD in livestock during 2022-2023

#### b. Investigation of FMD Outbreak

- In November 2022, the Bastua Core Range villages of Ramgarh and Lawahi reported lameness in cattle and buffalo. Following a joint survey by SDTR and WCT team, active cases of FMD in livestock were detected in several villages, threatening over 3,000 livestock and wild ungulates in the region. The National Institute of Foot and Mouth Disease confirmed the presence of "FMD virus serotype-A" in affected cattle and buffaloes.
- To prevent the spread of the highly virulent FMD virus, a containment strategy was developed together with the Forest and Animal Husbandry Departments. Animals exhibiting clinical signs of FMD were isolated from the herd. Livestock health camps were set up to distribute antibiotics, antiseptics, and other medications to households with affected livestock. Vaccines obtained from the Forest Department were used for the emergency vaccination of healthy livestock in the proximity of affected villages.

#### c. Livestock Vaccination

- WCT coordinated vaccination campaigns in SDTR with the Forest and Animal Husbandry Departments. The team developed a comprehensive programme with these partners for the vaccination of livestock in SDTR and held health camps to reduce the prevalence of FMD and increase herd immunity to prevent its spread to wild ungulates.
- In 2022-2023, a total of 23,247 livestock were vaccinated in 103 villages across the eight buffer and core ranges of SDTR. Together with the Animal Husbandry and Forest Departments, WCT ran ambulatory veterinary clinics and distributed deworming, multivitamin, and ectoparasiticide medication. The owners of livestock were advised on good husbandry practices. During the programme, a total of 12 livestock health camps were organised, as well as door-to-door medicine distribution was undertaken. Through these activities, 800 households in 54 villages were reached.



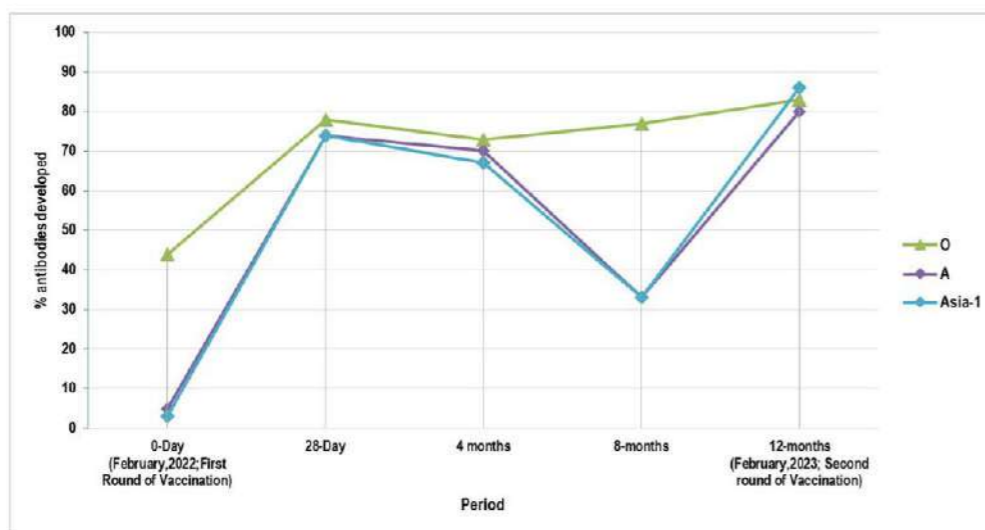
Vaccination coverage in different ranges of Sanjay Dubri Tiger Reserve

### Monitoring Herd Immunity Against FMD

Herd immunity is achieved when a significant proportion of a herd acquires immunity to a disease, typically through vaccination and the production of protective antibodies against subsequent infections. To achieve herd immunity against FMD, vaccination is required. WCT measured the increase in antibodies against three virus strains (O, A, and Asia 1) between the last vaccination which occurred between December 2021 and February 2022, and the most recent vaccination which occurred between January 2023 and March 2023, to determine the efficacy of the vaccination programme. Immunity to FMD virus strains increased from 3-31 percent to 72-81 percent after vaccination, and remained stable for six months before gradually declining. Nonetheless, the current vaccination round resulted in an increase in immunity levels of 80-86 percent. These findings demonstrate the effectiveness of vaccination campaigns held every year between December 2021 and March 2023.



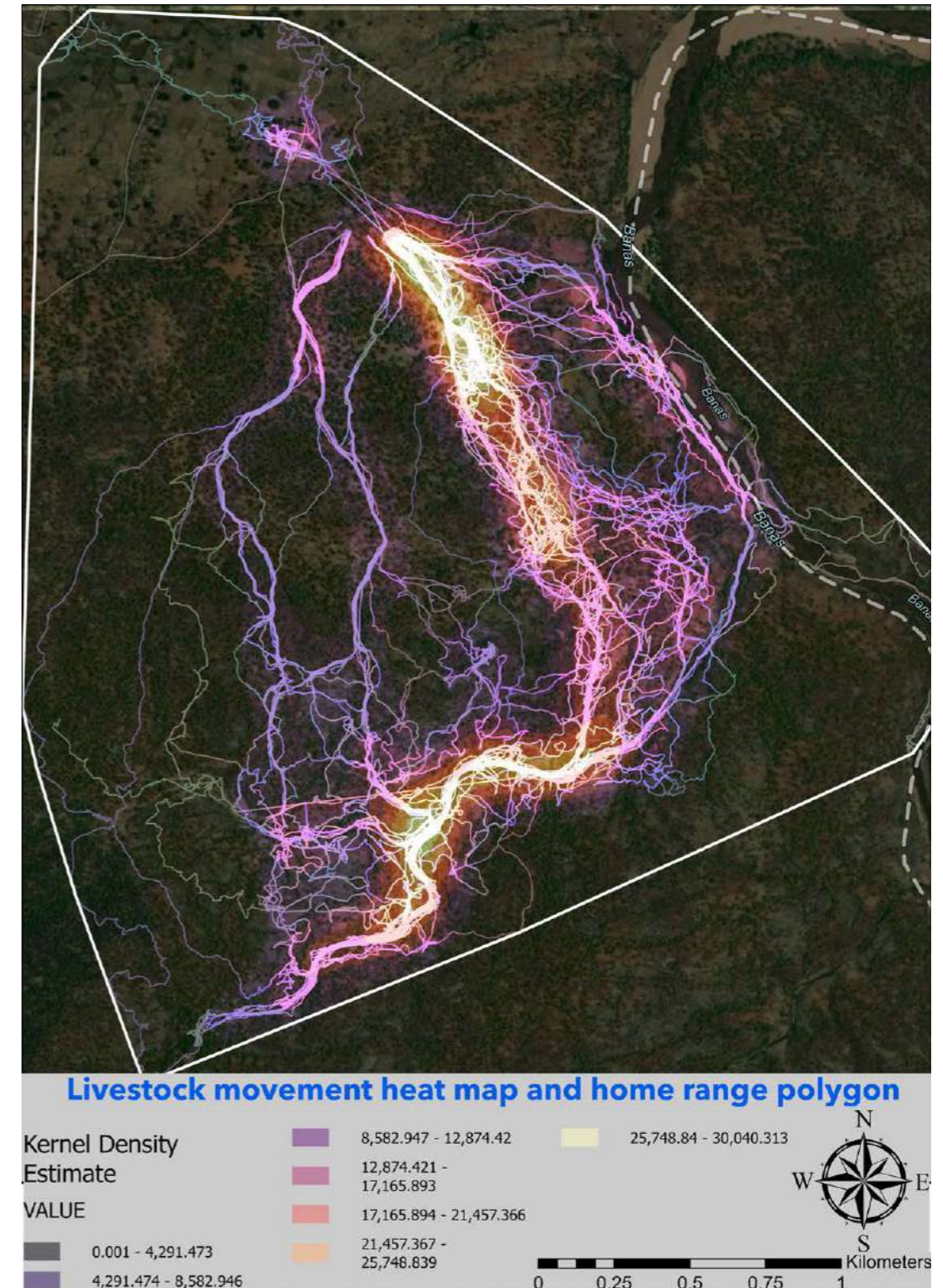
Vaccination teams consisting of Beat Guard, Chokidaar and Livestock Vaccinators



Graph showing rise in immunity against FMD post vaccination of livestock

### d. Monitoring Livestock Movements

- Monitoring livestock movements using GPS collars at the wildlife-livestock interface is instrumental in identifying and predicting hotspots of probable interactions between wildlife and livestock. By analysing the GPS data collected from the collars, we have gained a deeper understanding of where and how livestock and wildlife can interact.



Livestock movement heat map and home range polygon

# COMBATTING WILDLIFE CRIME PROGRAMME

In recognition of and in response to the grievous issue of Illegal Wildlife Trade and other wildlife offences that threaten the survival of wild animal populations; the recent evidence linking the coronavirus pandemic to illegal wildlife trade; and the growing global efforts against wildlife crime, WCT created the overarching 'Combating Wildlife Crime' (CWC) Programme that draws from our decade-long law-enforcement-centric work and expertise to drive multi-pronged, multi-stakeholder efforts to combat wildlife crime. In the coming years, WCT seeks to use this programme as the vehicle to create capacity for improved investigation of wildlife crime, increased conviction of wildlife criminals, and greater protection of tiger and prey populations across India's forests.

We are grateful to DSP Investment Managers for extending their support towards the implementation of this programme.

- The team held capacity building programmes in wildlife law enforcement as well as crime scene processing and forensic evidence collection for over 700 frontline forest staff members serving in PAs across Gujarat, Maharashtra, Tamil Nadu, Telangana, Uttar Pradesh, and West Bengal.
- Training programmes were also organised for over 120 frontline forest staff members at the Forest Training Institutes in Maharashtra and Madhya Pradesh, as well as for over 300 frontline forest staff serving at various forest divisions across Madhya Pradesh.
- Wildlife forensics training sessions were organised for over 40 mid-level officers (RFOs, ACFs and DFOs) of Madhya Pradesh in collaboration with two leading educational institutes—National Forensic Sciences University, Gandhinagar, and Amity University, NOIDA.
- WCT's Conservation Dogs Unit (CDU) was called upon frequently by the management of Kuno National Park, Madhya Pradesh, to aid with screening of the landscape for snares as part of the preparations for the iconic Cheetah Project.



A Wildlife Law Enforcement Training programme organised for forest staff in South Balaghat

© WCT

- Sensitisation and training programmes were held at the Madhya Pradesh State Judicial Academy for over 40 members of the state-level judiciary serving across various districts of Madhya Pradesh with the highest pendency of wildlife crime cases.
- WCT held a special training programme for 20 government prosecutors (also known as Assistant District Prosecution Officers or ADPOs) of Madhya Pradesh in collaboration with the Madhya Pradesh Special Task Force (MPSTF). The team also held a training programme for legal professionals from across the country and law students in collaboration with Christ University, Bengaluru.
- Judgements-related resource material that will help officers interpret and use case law better in the courts of law was also developed.
- Owing to COVID-19-related restrictions, WCT was forced to conduct Moot Court competitions online in FY 2020-21 and 2021-22. However, this year, WCT in collaboration with the Government Law College, Mumbai, held an offline edition of the National Wildlife Protection Moot Court Competition. This marks the fourth edition of the event, and it saw participation of students from 14 reputed law colleges from across India. The final rounds of the competition were presided over by Judges from the Bombay High Court.
- The law enforcement team collaborated with the Western Ghats team of the Conservation Research Department to build capacity in wildlife law in various parts of the Western Ghats. As part of this, WCT's law enforcement expert Mr. Kiran Rahalkar held trainings on wildlife law enforcement at Chandgad and Ajara-Budhargad Conservation Reserves. WCT's forensics expert Ms. C. Samyukta held trainings on wildlife forensics at Sahyadri Tiger Reserve; Radhanagari Wildlife Sanctuary; and Vishalgad, Panhalgad, Ajara-Budhargad and Gaganbawda Conservation Reserves.
- Ms. C. Samyukta was invited to deliver lectures for St. Xavier's College, Mumbai, the Nature's Eye and Amity University, Noida.
- Ms. C. Samyukta, environmental lawyer Ms. Mridula Vijayraghavan, and Dr. Anish Andheria held several lectures and interview sessions as part of WCT's Trapped in Trade Campaign outreach activities.



Forest staff undergoing a wildlife crime investigation and forensics training in the Satpura Tiger Reserve (right)

© WCT

The frontline forest staff play a crucial role in protecting India's rich and diverse wildlife. The wellbeing and security of these forest officials are paramount to successfully preserving the forest as well as combatting the illicit trade in wildlife. The latter could also aid in averting the occurrence of zoonotic diseases in the future. WCT is committed to support the forest staff by providing necessary equipment and training to build their capacity in conservation. Our previous health interventions have been instrumental in enhancing the frontline forest staff's access to preventive healthcare, and imparting skills in management of medical emergencies in remote field settings. The outcomes of these efforts have underscored the connections between human wellbeing and conservation using the One Health approach.

We are very grateful to DSP Investment Managers for their support towards this project.

## I. Caring for Conservators: Preventive Health Check-ups for Forest Staff

- Preventive health check-ups were conducted in six PAs and non-PAs including Tadoba-Andhari Tiger Reserve, Central Chanda Forest Division, and Sahyadri Tiger Reserve in Maharashtra, and Satpura Tiger Reserve, Kuno National Park, and Pench Tiger Reserve in Madhya Pradesh.
- A total of 1,417 forest staff members were assessed for their risk of cardiovascular disease and oral health. Of those, the team followed up with 945 officers via telephonic interviews two weeks after the check-ups. The health check-up results were shared with the forest staff through a 'Health Passbook'. Consolidated reports of each PA were shared with the respective state forest departments.

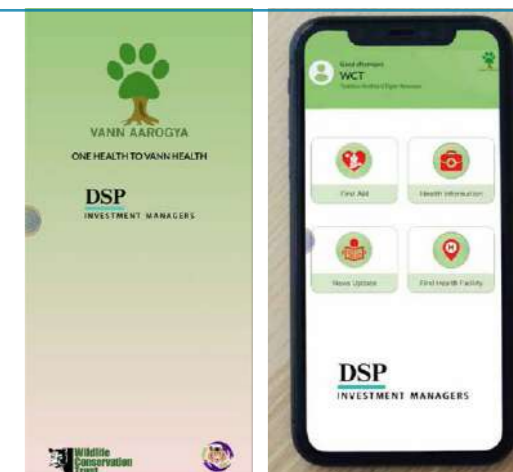


A WCT Health expert conducting health check-up as part of WCT's Caring for Conservators programme

## II. Vann Aarogya App

- The Health team has developed a first-of-its-kind Android mobile phone application dedicated to improve forest staff's access to information regarding health and safety. The 'Vann Aarogya' app as it is called, was launched on July 31, 2022, on World Ranger Day.
- Seven hundred and forty one forest staff from the five PAs where preventive health check-ups were conducted, were surveyed to seek additional information on their access to healthcare. This information is incorporated into the mobile application.

WCT aims to make the Vann Aarogya app multi-functional and interactive by combining inputs from previous and ongoing health interventions. This will help provide the forest staff with access to training resources, health information, and location of the nearest available healthcare facilities at their fingertips, while also allowing them to contribute to compilation of data on their health risks and challenges.



## III. Basic Trauma Management Training

- The Health team organised the Basic Trauma Management Training for forest staff at the Sahyadri Tiger Reserve, Radhanagari Wildlife Sanctuary, and Conservation Reserves in the Kolhapur district of Maharashtra, in collaboration with WCT's Conservation Research team. The objective of this training was to enhance the capacity of forest staff to provide basic first aid and trauma care in common medical emergencies that may arise during fieldwork.
- The training was conducted across different ranges, and 241 forest staff members received practical demonstrations on various medical topics such as CPR, snakebite first aid, splinting and bandaging, and safe extrication. To aid in emergencies, forest staff were provided with the 'First Aid Field Guide,' which was developed by WCT and its partners, and translated into Marathi to facilitate effective application.

### Digital Trauma Training

Our extensive experience of conducting in-person trauma training programmes for over 1,200 forest staff members from 18 PAs in the CIL has revealed significant challenges in access to emergency medical care. According to the results of the largest ever survey on the health needs of forest staff, 54 percent reported exposure to medical emergencies. The survey also revealed that a majority of forest staff (63 percent) did not receive any first aid training, and 82 percent did not have access to first aid kits while working in remote forest areas. Given the forest staff's access to mobile communication, the creation of digital trauma training resources would be the best way forward to enhance the outreach and sustainability of our training programme. This would involve the creation of short videos of trauma management skills as well as a trauma training manual in English and regional languages. WCT is in the process of developing the resources for digital training. These would be available over the web and as resources for face-to-face training when needed.

## IV. ECHO Network

- WCT has been an important participant in developing health initiatives that involve both humans and wildlife, and has played a central role in engaging with the ECHO network. The ECHO network, which is a Government of India initiative, aims to create a collaborative community of experts who can work together to solve real-world problems in the human and environmental ecosystem. The team has collaborated with this network to promote its work around One Health, and plans to continue the collaboration in the future.

## STRENGTHENING ON-GROUND PROTECTION OF INDIA'S PROTECTED AREAS

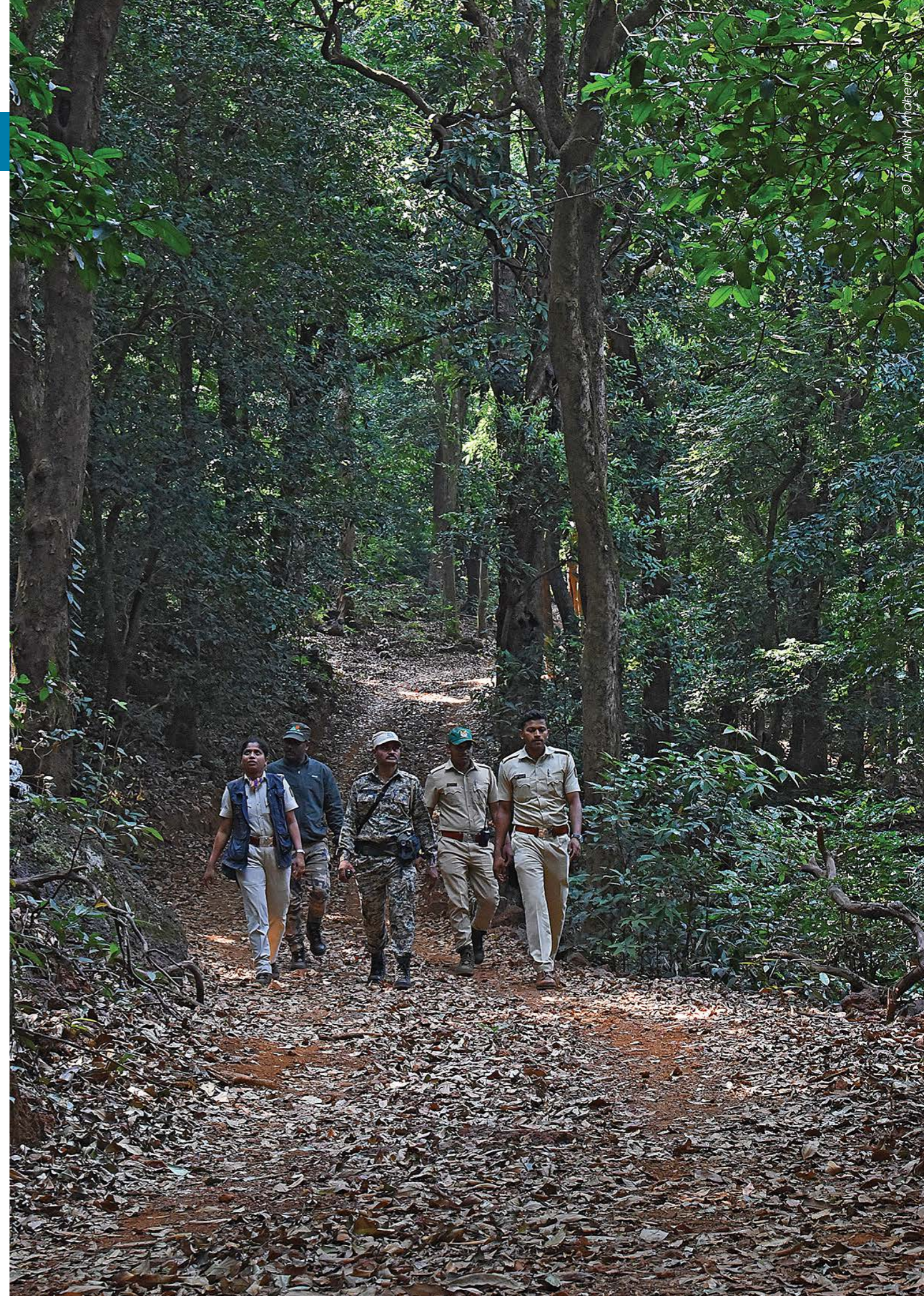
Forest guards are the frontline of the Government's forest protection framework. Their importance in conserving India's PAs cannot be over-emphasised. Some of the key gaps in the protection framework of India's Forest Departments relate to a lack of suitable infrastructure for the frontline staff to perform their duties in relative safety, and limited mobility. Well-equipped and suitably trained forest guards are a prerequisite for a secure and healthy PA network as well as the connecting wildlife corridors. Field research carried out by the WCT team on work-motivation has concluded that safety of the guards, i.e. owning suitable safety equipment, basic amenities in the protection huts (anti-poaching camps), vehicles etc., has a direct impact on their work motivation, which in turn has a positive impact on their job performance, resulting in better protection of natural ecosystems. In the past years, WCT, with support from Hemendra Kothari Foundation, DSP HMK Holdings Pvt. Ltd., and DSP ADIKO Holdings Pvt. Ltd., has equipped the forest staff by providing protective gear and vehicles ranging from high speed motorboats, twenty-seater trucks, water tankers for filling water in man-made waterholes, four-wheel drive patrolling vehicles, motorcycles and bicycles, to improve their mobility in PAs across India; as well as equipped patrolling camps by providing important amenities including cots, utensils, chairs, generators, etc.

### Items donated to Forest Departments:



### WCT equipped the forest staff in the following PAs:

- Satpura Tiger Reserve, Madhya Pradesh
- Kuno National Park, Madhya Pradesh
- Pench Tiger Reserve, Madhya Pradesh
- Kanha Tiger Reserve, Madhya Pradesh
- Ramgarh Vishdhari Tiger Reserve, Rajasthan
- Ranthambhore Tiger Reserve, Rajasthan
- Mukundra Hills Tiger Reserve, Rajasthan
- Tadoba-Andhari Tiger Reserve, Maharashtra



# COMMUNICATION & OUTREACH

The past four years (2019-2023) have marked the strengthening and scaling up of WCT's communication and outreach efforts. The team has undertaken several key projects, including important awareness activities, assisting other WCT teams with internal and external communication and producing project reports and proposals, producing written and visual content, authoring articles for leading wildlife publications, and producing documentaries about various WCT projects. The team has significantly increased WCT's following among new and diverse audiences, through unilateral and collaborative efforts. WCT's social media platforms and website are now being used to amplify the organisation's conservation projects as well as to disseminate knowledge and create awareness on natural history, wildlife, and key conservation issues.

## Trapped In Trade Campaign

Last year, in October 2021, WCT launched the #TrappedInTrade awareness campaign to start a mainstream conversation regarding the rapidly growing demand for exotic wild animals among Indians. This year, WCT resumed this impactful conservation awareness campaign during the National Wildlife Week in October 2022. The #TrappedInTrade campaign is focused on the serious issue of growing demand for exotic animals in India and the urgent need for stronger wildlife laws for better regulation of trade in exotic species in the country. Through this campaign WCT has been highlighting the ills of the exotic pet trade, and their impact on biodiversity and the ecosystem.

Since the launch of the campaign, WCT has organised several online talks and discussions with experts to further educate the audience about this deep-rooted issue, and bring about a shift in mindset, so that more and more people are discouraged from purchasing, keeping, and breeding exotic animals.

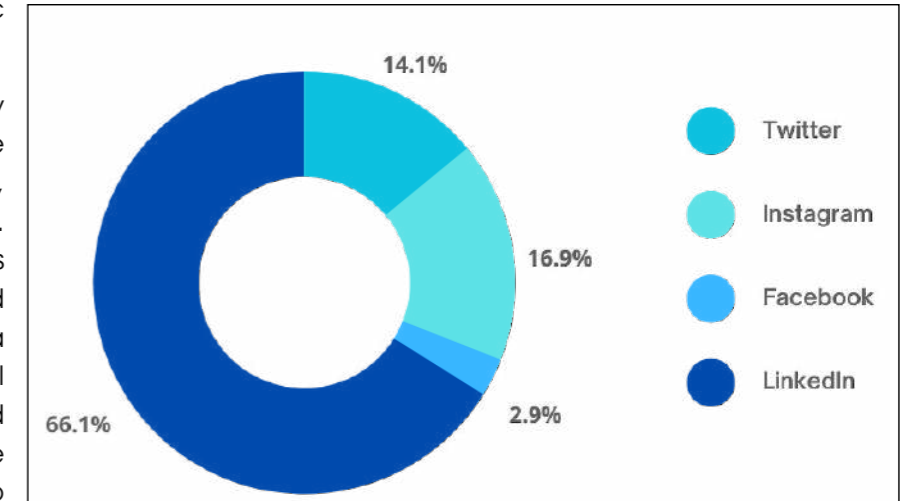
Several in-person awareness sessions were held for over 600 students in different colleges in Mumbai and Bengaluru. Customised #TrappedInTrade badges, stickers, and mugs were designed by the Communications team and distributed amongst college students and our donors free of cost to improve awareness.

A series of popular articles on the issue have been written and published by WCT's writers. WCT has also been producing impactful social media and website content to impart knowledge and awareness regarding the issue of illegal wildlife trade and to engage with our followers. This campaign has seen some interesting collaborations materialise with organisations such as RESQ CT, various educational institutions, and individuals including talented artists and writers, which in turn has helped broaden our reach. The campaign has also received its fair share of media coverage by [Sanctuary Asia](#), India's leading wildlife and conservation magazine, [The Print](#), a popular digital news platform, and WorldAtlas.



## Social Media

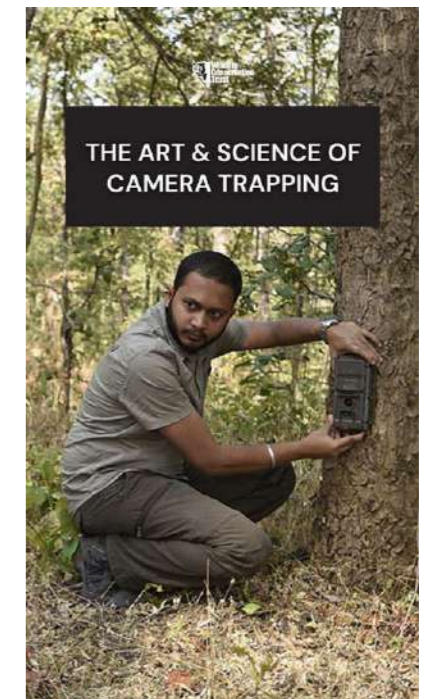
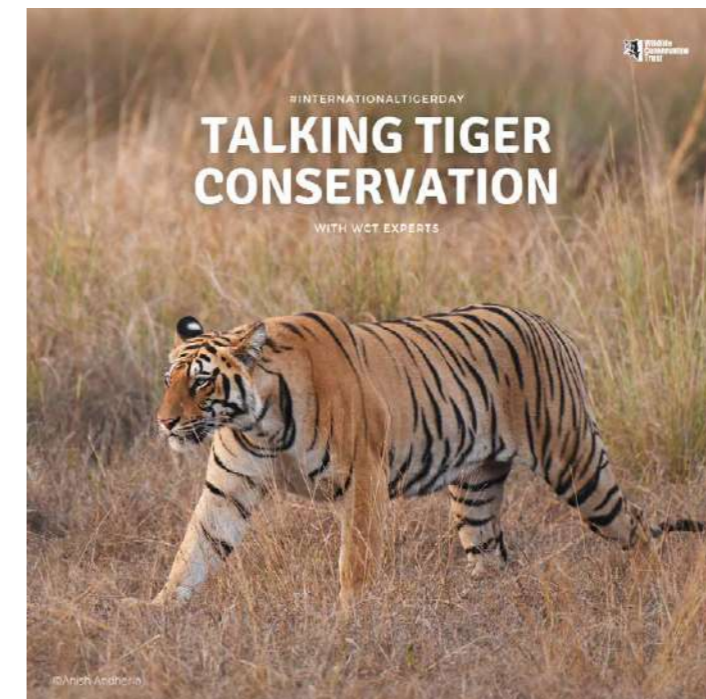
- On World Sea Turtle Day 2022, the team hosted an Instagram Live session titled 'Sea Turtles in the Human Age' with wildlife veterinarian Dr. Dinesh Vinherkar.
- The team also organised two Instagram Live discussions as part of WCT's #TrappedInTrade campaign, with WCT President Dr. Anish Andheria, Head of Forensics at WCT, C. Samyukta, and other experts shining a light on India's exotic pet trade problem.
- On World Environment Day 2022, the team organised a Live discussion on Twitter Spaces, in which WCT President Dr. Anish Andheria, WCT's forensics expert Ms. C. Samyukta, and environmental lawyer Ms. Mridula Vijairaghavan discussed the illegal wildlife trade crisis in India, and the urgent need for strong wildlife laws and their enforcement to curb this menace.



Percentage growth observed across WCT's social media handles during FY 2022-23

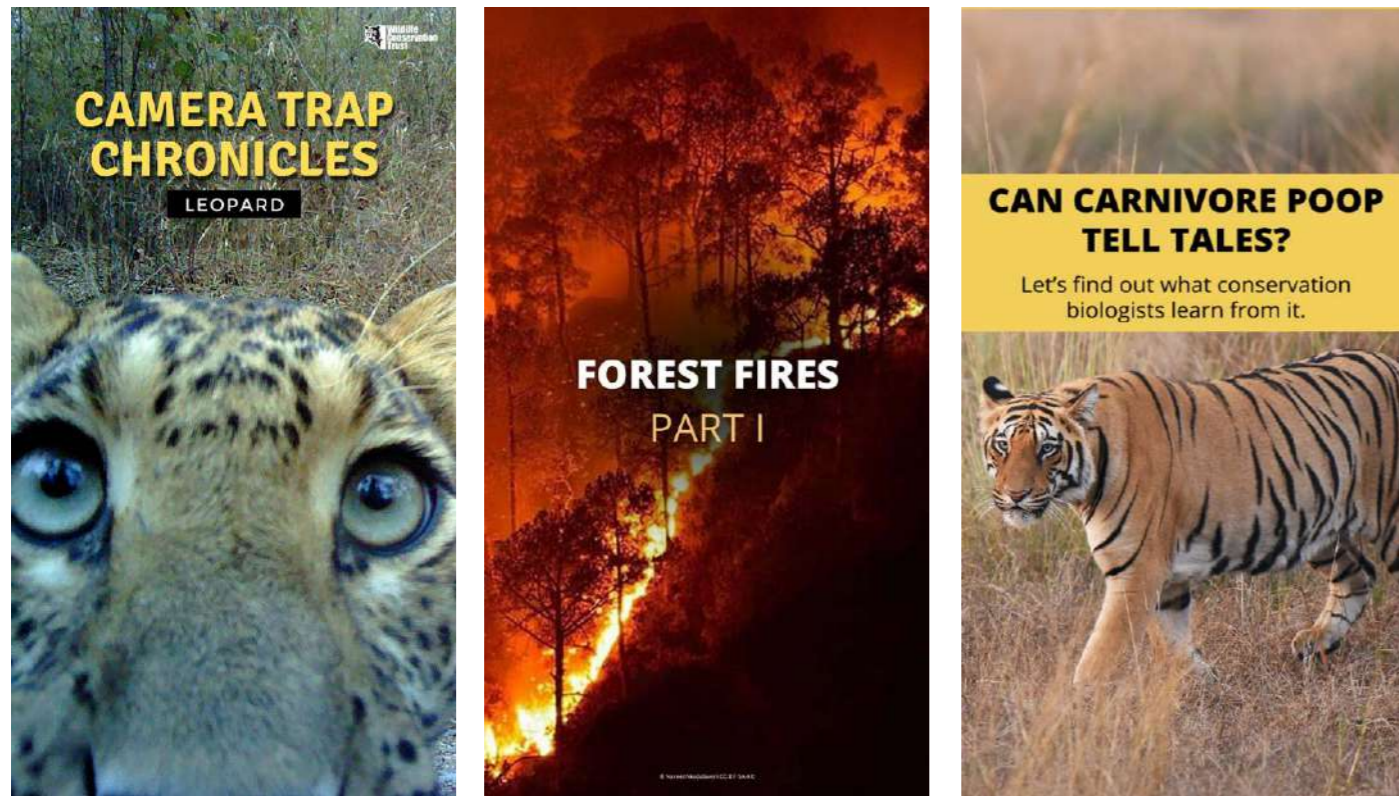
## Films/Videos

- The team produced nine long-form educational videos for WCT's social media channels, including 'Talking Tiger Conservation with WCT Experts' on 'International Tiger Day', the launch video for WCT's 'Vann Arogya' health app for frontline forest staff, 'The Art & Science of Camera Trapping', and a video about WCT's Pangolin project on the occasion of World Pangolin Day.



Video poster (left) and reel cover (right)

- The team continued producing short educational videos for the popular Instagram Reels. A new series of reels titled 'Camera Trap Chronicles' was launched, which touched upon unique ecological and natural history aspects of species captured on WCT's camera traps. Twenty-four Reels were produced during the year, on a variety of topics.



Some of the video reels produced by the team

- The team in collaboration with the Conservation Research team made a short informative video on the 'Art of Camera Trapping' in collaboration with the SBI Foundation.

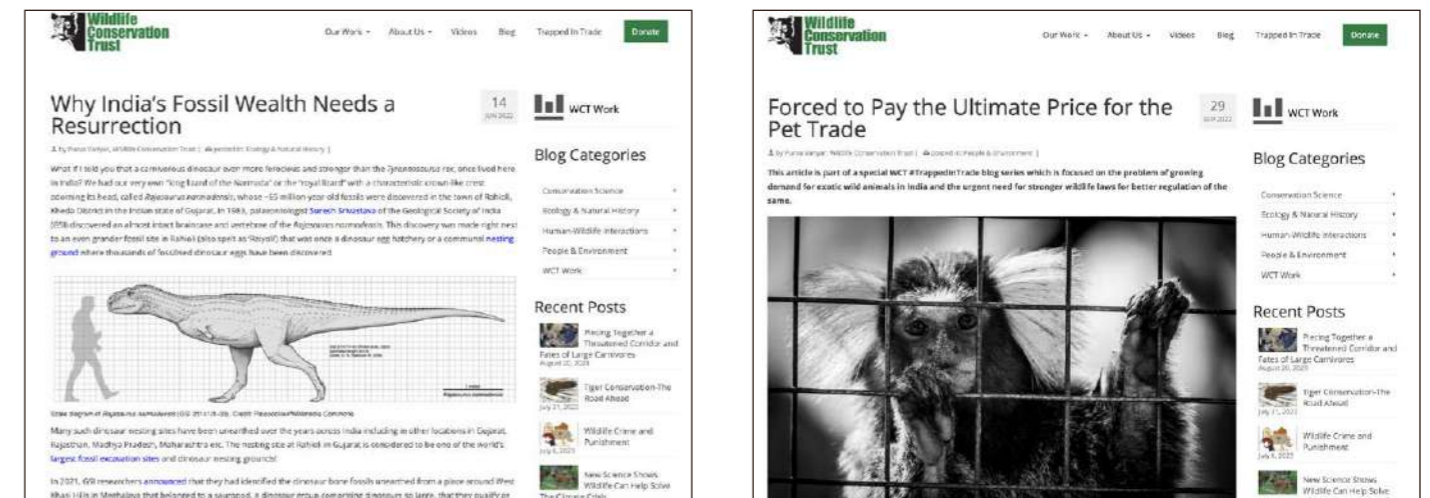
#### Articles Produced

- The team published six articles in *Sanctuary Asia* magazine on a variety of topics including an interview with WCT's Conservation Behaviour team on how they designed the energy-efficient, biomass-fuelled water heater intervention, WCT's Pangolin conservation project, WCT's #TrappedInTrade campaign, an interview with WCT's economists, and women in conservation.
- The team's writers authored articles that were published in news publications such as *Sunday Mid-Day* and *The Hindu*. (For more information, see 'Publications' section on pg. 66)
- The team published over 20 articles on the WCT Blog, covering a wide range of conservation and natural history topics.

#### Website

- Twenty-four blog posts and 34 webpages were published to create awareness about various environmental issues and work carried out by WCT.

- WCT Work Overview and Newsroom webpages were launched to highlight WCT's work.
- Landing page to promote the #TrappedInTrade campaign was set-up.



WCT Blog posts

#### Online Donations Catalysed by Social Media Presence

- Total monetary donations received in FY 2022-23 through the WCT website amounted to **Rs. 3.50 lakhs** (a **22 percent** increase compared to the previous year).
- A Google Search Ad campaign called 'Donate and Save Tax' was launched to tap into the audience looking to save tax by making donations.

#### Other Initiatives

- The Communications department collaborated with WCT's Combatting Wildlife Crime department to produce promotional and social media content and designs for the National Wildlife Protection Moot Court Competition.
- A new and updated WCT handbook was produced, as well as a work overview map was created in collaboration with an illustrator detailing WCT's geographic on-ground work and presence across India.



WCT Work Overview Map (left) and WCT Handbook cover (right)

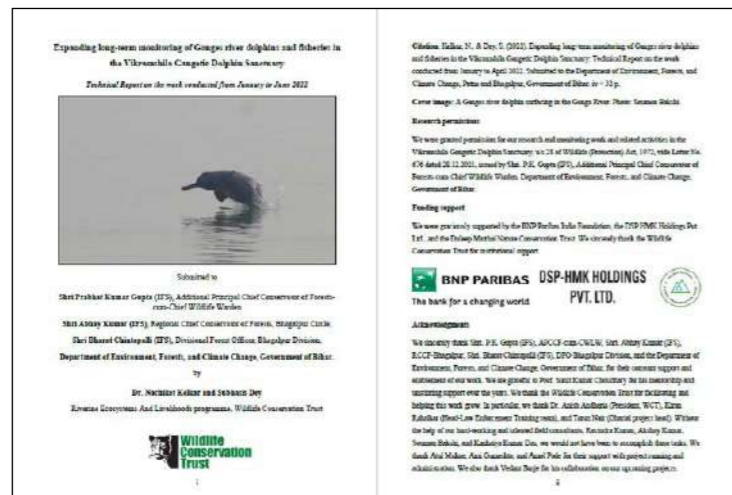


# **PUBLICATIONS**

# PUBLICATIONS

## Reports

- The REAL and Makara teams produced/co-produced the following reports:
  - ◆ Report titled '**Assessing population and habitat changes for Ganges river dolphins and Gharials in the regulated Gandak River, India: conservation and water management implications**' was submitted to the APCCF and Chief Wildlife Warden, Department of Environment, Forests and Climate Change, Government of Bihar.
  - ◆ Technical Report on the work conducted from January to April 2022 authored by Dr. Nachiket Kelkar and Mr. Shubhasis Dey, titled '**Expanding long-term monitoring of Ganges river dolphins and fisheries in the Vikramshila Gangetic Dolphin Sanctuary**' was submitted to the Department of Environment, Forests, and Climate Change, Patna and Bhagalpur, Government of Bihar.



- ◆ Project report titled '**From air, land, water: developing monitoring systems to conserve endangered river dolphins and gharials in regulated rivers of India's Gangetic plains**', authored by Technology for Wildlife Foundation and WCT, was submitted to the Chief Wildlife Warden, Department of Environment, Forests and Climate Change, Government of Bihar, and to Stiftung Artenschutz.

- ◆ A report on the workshop titled '**Monitoring threats to river-floodplain wildlife in the Gandak River**' was submitted to the Divisional Forest Office, Bettiah Division, Department of Environment, Forests and Climate Change, Government of Bihar



- Multiple donor reports were produced in collaborative effort between WCT's field teams, Finance team, and the Communication team.

WCT donor reports

## Research Papers, Reviews, Posters, and Abstracts

- Chetan Trivedy, Chief Medical Officer, WCT, co-authored a scientific publication titled '[Primateology and one health: Two disciplines destined to come together](#)', that was published in the *American Journal of Primatology*.
- The abstract titled 'Availability of trauma care in tiger reserves in the Central Indian Landscape' was produced by the Health team, which was accepted at the Annual Scientific Conference 2022 of the Royal College of Emergency Medicine (RCEM), UK.
- Review titled '[Inland capture fisheries, dam reservoirs, and protected areas for wildlife conservation in India: conflicts and ways forward](#)' authored by REAL programme Head, Dr. Nachiket Kelkar, was published in the international journal *Reviews in Fish Biology and Fisheries*.
- WCT's wildlife biologist Mr. Girish Punjabi co-authored a scientific paper titled '[Chasms in charismatic species research: Seventy years of carnivore science and its implications for conservation and policy in India](#)', that was published in the journal *Biological Conservation*.
- Dr. Nachiket Kelkar co-authored a paper titled '[House-warming: wild king cobra nests have thermal regimes that positively affect hatching success and hatchling size](#)', that was published in the *Journal of Thermal Biology*.
- Dr. Nachiket Kekar co-authored a paper titled '[Platanista gangetica. The IUCN Red List of Threatened Species 2022](#)'.
- Paper titled '[Stocking in inland food fisheries of South and Southeast Asia: issues, risks, and rewards](#)', co-authored by Dr. Nachiket Kelkar, was published in *Fisheries Management and Ecology*.
- Research paper titled '[Facilitating Human-Wildlife Cohabitation through Conflict Prediction](#)' co-authored by Aniket Bhatkhande, Head, Conservation Behaviour, WCT; Tamanna Ahmed, Development Researcher, WCT; and Dr. Anish Andheria, President, WCT, was published in the *Proceedings of the AAAI Conference on Artificial Intelligence*.
- As part of World Pangolin Day 2023, the Conservation Research team designed posters in the local language for the forest department, to be displayed at sites near Pench Tiger Reserve, for community engagement and outreach.

**विश्व पैंगोलिन दिवस २०२३**

Wildlife Conservation Trust (WCT) और मध्य प्रदेश वन विभाग, बीएनपी परिव्यास इंडिया (BNP Paribas India) के सहयोग से, भारतीय पैंगोलिन की परिस्थितिकी को समझने और वन्य जीवों के अवैध व्यापार से बचाए गए पैंगोलिनों के लिए एक प्रभावी पुनर्वासन योजना विकसित करने की अमूर्ती संरक्षण परियोजना पर काम कर रहे हैं।

मध्य प्रदेश वन विभाग के साथ मिल कर WCT ने कई जंगली और वन्य जीवों के अवैध व्यापार से बचाए गए भारतीय पैंगोलिन को रेडियो-टैग किया है।

वन कर्मचारियों के सहयोग से WCT की Conservation Research टीम जंगल में इन पैंगोलिन की निगरानी कर रही है ताकि उनके गुप्त जीवन में गहरी पारिस्थितिक अंतर्दृष्टि प्राप्त कर सके।

WCT ने पैंगोलिनों की जानकारी प्राप्त करने में सहायता के लिए conservation dogs को प्रशिक्षित किया है। conservation dogs WCT शोधकर्ताओं को पैंगोलिन के बिलों और छिपे का पता लगाने में मदद करते हैं।

Logos: Pench Tiger Reserve, Wildlife Conservation Trust, BNP PARIBAS, Wildlife Conservation Trust.

# MEDIA COVERAGE

## Popular articles

- Article titled 'Niche Women in Conservation', authored by WCT's Senior Conservation Communicator and writer Purva Variyar, was published in *Sanctuary Asia's* April 2022 issue.
- Article titled 'Heater of Hope', authored by WCT's Senior Conservation Writer Rizwan Mithawala, with contributions from the Conservation Behaviour team, was published in *Sanctuary Asia's* June 2022 issue.
- Photo story titled '[Fathomless Fungi: Monsoon Mysteries on Goa's Forest Floor](#)', authored by Purva Variyar, was published in *Roundglass Sustain* in June 2022.
- Article titled 'Wild Wild Best', on the life and work of forest guards posted in India's Tiger Reserves, and the recommendations of WCT's 'Assessing Work Motivation of Forest Guards' studies, authored by Rizwan Mithawala, was published in *Mid-Day* on the occasion of World Ranger Day, July 31, 2022.
- Article titled 'Speaking the Language of Economics in Modern Conservation', authored by Purva Variyar, with contributions from WCT's Economists Pooja Dewoolkar and Aniket Bhatkhande, was published in the August 2022 issue of *Sanctuary Asia*.
- Article titled '[Forest guards under fire](#)', authored by Rizwan Mithawala, on the occasion of National Forest Martyrs Day, was published in *The Hindu* on September 11, 2022.
- Article titled '[Creating a sustainable home for the cheetahs](#)', authored by Dr. Anish Andheria, was published in the *Hindustan Times* on September 20, 2022.
- Article titled 'Trapped In Trade - A WCT Campaign', authored by Purva Variyar, was published in *Sanctuary Asia* October 2022 issue.
- Article titled 'Scaling up Pangolin Conservation in India', authored by Purva Variyar, with contributions from WCT's Conservation Research Head, Aditya Joshi, was published in *Sanctuary Asia's* December 2022 issue.
- Article titled 'How a Water Heater Can Change and Save Lives', authored by Rizwan Mithawala, was published in *Sanctuary Asia's* February 2023 issue.

**Jangal mein margal**  
Can forest guard couples with children continue to serve nature in the remotest parts of India's tiger reserves? On World Ranger Day, Sunday mid-day makes a pitch for taking welfare to seclusion in a bid to continue to protect our natural heritage

**How a Water Heater Can Change and Save Lives**

Popular article produced by WCT's writers

- WCT Trustee Aditi Kothari Desai was interviewed for a feature article by the [Mint Lounge](#).
- WCT's Conservation Research project focused on developing ecology-based conservation solutions for the Indian pangolin was covered by [The Hindu](#).
- Dr. Anish Andheria was interviewed along with other wildlife experts for an article by [Local Samosa](#), that talks about the history of tiger conservation in India.
- WCT's 'Trapped In Trade' national awareness campaign was covered by [The Print](#) and [WorldAtlas](#) during the National Wildlife Week.
- Dr. Anish Andheria was invited for an interview by [Planet Custodian](#) where he talked about the challenges that face conservation in India.
- Dr. Anish Andheria was invited for an interview by the [NDTV](#) news channel as a wildlife expert, where he aired his views on the introduction of African cheetahs in India.
- Dr. Anish Andheria was invited by [ABP News](#), a regional news channel, to speak about the Living Planet Report 2022.
- Dr. Anish Andheria was invited by [Grace Farms Nature Initiative](#) for a live conversation with the initiative's Director on the occasion of World Wildlife Day.
- WCT was featured by [The Big Cat Sanctuary](#) as one of its new conservation partners.
- WCT's Forensics and Trauma Management Training sessions conducted for the frontline forest staff of Sahyadri Tiger Reserve were covered by the local media in July and December 2022.
- Dr. Nachiket Kelkar's published research paper was covered by the [India Water Portal](#).
- Tarun Nair, Head of Programme Makara at WCT, talked about the sand mining menace in the Chambal habitat of the gharial in an article published in [The Hindu](#).

**Digging up the Chambal**  
Illegal sand mining in the protected riverine area continues unabated, endangering several threatened species

**Forest guards under fire**  
The couple was assigned the charge of adjacent belts in the core zone of Malghat Tiger Reserve. They would take four-day turns to patrol their beats and labour their way. In 2019, they managed a jointing of the more accessible Loner Wildlife Sanctuary in Sahyadri PWS corridor.

**चंबल नदी में बढ़ी डॉल्फिन, घड़ियाल और मगरमच्छ भी बढ़े**  
चंबल नदी में डॉल्फिन की संख्या में वृद्धि के साथ ही घड़ियाल और मगरमच्छ की संख्या में भी वृद्धि देखी गई है। यह वृद्धि चंबल नदी में डॉल्फिन की संख्या में वृद्धि के कारण है। चंबल नदी में डॉल्फिन की संख्या में वृद्धि के कारण ही घड़ियाल और मगरमच्छ की संख्या में वृद्धि देखी गई है।

**आद सारो की मरणा के परिणाम**

Year	Value
2011	1102
2012	1253
2013	1681
2014	1826
2015	2176
2016	2108
2017	1681
2018	1826
2019	2176
2020	2108
2021	1681
2022	1826

Media coverage of WCT's work



**PROVIDING FUNDS  
FOR CONSERVATION**

## PROJECT FUNDING

WCT provided financial support to the following organisations in an effort to fund some of their projects:

Organisation	Project
Tadoba-Andhari Tiger Conservation Foundation	Legal Support
Dusty Foot Foundation	Strengthening the Forest Patrolling Staff Network through the Green Hub Project
Uttarayan Wild Life Wing	Ecological Restoration of Sundarbans to Enhance Ecosystem, Climate Resilience and Human Wellbeing
Titli Trust	Mitigating Human-Leopard Conflict in Uttarakhand



## FINANCIAL STATEMENT

Financial Statements for the year ended 31 March 2023 (audited)		
<b>ABRIDGED INCOME &amp; EXPENDITURE ACCOUNT</b>	<b>amount in '000</b>	<b>amount in '000</b>
<b>INCOME</b>	<b>2022-23</b>	<b>2021-22</b>
Donations in Cash or Kind	9,280	26,578
Grants	1,04,563	67,661
Interest	26,637	26,369
Other income	0	148
<b>Total Income</b>	<b>1,40,480</b>	<b>1,20,756</b>
<b>EXPENDITURE</b>		
Establishment Expenses	28,502	32,057
Depreciation	12,834	12,504
Expenditure on Objects of the Trust	94,286	66,545
Surplus/Deficit carried over to Balance Sheet	4,858	9,650
<b>Total Expenditure</b>	<b>1,40,480</b>	<b>1,20,756</b>
<b>ABRIDGED BALANCE SHEET</b>	<b>amount in '000</b>	<b>amount in '000</b>
<b>FUNDS AND LAIBILITIES</b>	<b>2022-23</b>	<b>2021-22</b>
Corpus Funds	4,73,171	4,73,171
Earmarked Fund (CSR Grants)	7,902	37,687
Provision for Expenses	1,521	1,326
Income and Expenditure A/c	55,741	46,091
Surplus/Deficit for the year	4,858	9,650
<b>Total Liabilities</b>	<b>5,43,193</b>	<b>5,67,925</b>
<b>PROPERTY AND ASSETS</b>		
Fixed Assets	47,085	42,831
Investments	3,59,500	3,67,000
Advances	773	7,738
Outstanding Interest	346	445
Receivables and others	7,850	5,647
Deposits with Banks	1,13,800	1,06,300
Cash/Bank Balances	13,839	37,964
<b>Total Assets</b>	<b>5,43,193</b>	<b>5,67,925</b>

Summarised from Financial Statements audited by M/s Gunderia and Co., Chartered Accountants.  
Dated : 27 October, 2023



WCT has registrations under Section 80G of the Income Tax Act, 1961; Section 12-A (a) of the Income Tax Act, 1961; Bombay Public Trust Act 1950; and the Foreign Contribution Regulation Act, 2010

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