भारतीय वन्यजीव संस्थान
Wildlife Institute of India

WII NEWSLETTER

Autumn 2024

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Project Inception cum Planning Workshop:

Gaur Supplementation in Bandhavgarh Tiger Reserve

The inception-cum-planning workshop on Gaur Supplementation in Bandhavgarh Tiger Reserve (BTR) was held at the Eco-centre, Tala, BTR, on 15th October, 2024. The workshop marked an important collaboration between the Madhya Pradesh Forest Department and the Wildlife Institute of India (WII) aimed at improving genetic health of the reintroduced gaur at BTR.

The workshop was inaugurated by Sh. L. Krishnamoorthy, Addl. Principal Chief Conservator of Forests (Wildlife), Madhya Pradesh in the presence of Senior Forest and Wildlife Health officers from Satpura, Sanjay, Kanha and Pench Tiger Reserves of Madhya Pradesh besides experts from the School of Wildlife Forensic and Health, NDVSU, Jabalpur, Wildlife Forestry Services, Ujjain and WII. A total of 35 officials representing field managers, wildlife health officers and experts participated in the workshop.

The deliberations focused on the feasibility and necessity of gaur supplementation in BTR and the development of a strategic action plan for its implementation. The workshop outcomes included a consensus on the criticality of Gaur supplementation in BTR to safeguard genetic diversity and enhance genetic viability and vigour of the existing gaur population. Furthermore, a multidisciplinary task force was established to oversee project implementation, coordinate stakeholders, and monitor progress, ensuring a comprehensive approach to Gaur conservation. It was also instrumental in finalizing a preliminary action plan for capture and translocation, including research and post release monitoring. The project logo and a document titled "The Gaur: Giants of the Wilderness" was released during the inaugural session.

This initiative demonstrates the shared commitment of the Madhya Pradesh Forest Department and Wildlife Institute of India towards the conservation and sustainable management of India's precious wildlife heritage.

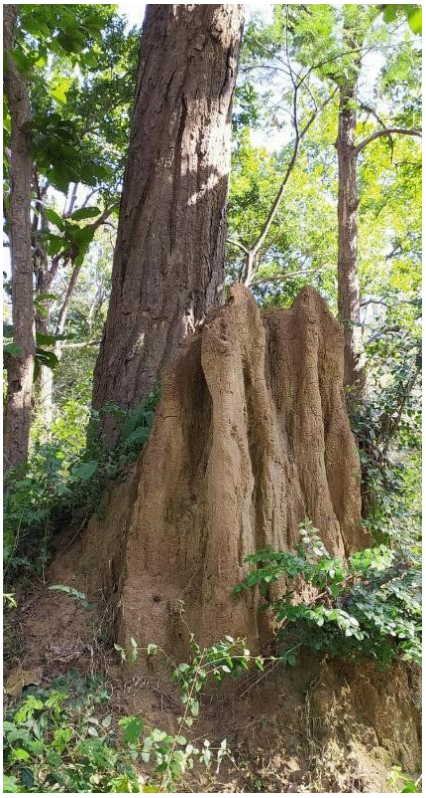
Dr Parag Nigam, Scientist G & Head, Dept. of Wildlife Health Management, WII and Sh. Gaurav Choudhary, CF & FD, Bandhavgarh Tiger Reserve, MP coordinated the workshop.

"This collaboration marks a significant step towards conservation of the majestic Gaur and ecosystem balance in Bandhavgarh Tiger Reserve." - ***L. Krishnamoorthy, Addl. Principal Chief Conservator of Forests (Wildlife), Madhya Pradesh.***

"The Wildlife Institute of India is committed to supporting evidence-based conservation efforts. This project exemplifies our commitment to collaborative research and capacity building." - ***Virendra R Tiwari, Director, Wildlife Institute of India.***

From Pest to Pal:
My Termite Transformation

-Ananya Das



A termite mound in WII Campus (top) & a termite mound in Sal patch (bottom)

The word "termites" conjures two distinct images: the imposing, almost sculptural majesty of their mounds, rising from the earth like miniature, intricately crafted castles, and the disheartening sight of ravaged furniture, testament to their destructive capabilities. That, at least, was my reality until my master's dissertation in January 2020, at the Wildlife Institute of India (WII), took a surprising turn. My supervisor's suggestion – to study *termites* – was met with a sceptical eyebrow raise. "Pests, right?" I asked, picturing only damage and destruction. He chuckled, a knowing glint in his eyes, and gave me a day to do my research. One night of research was all it took to change my perspective completely and I was immediately captivated. Termites, it turned out, were far more fascinating than mere pests. Their taxonomy, genetics, and behaviour—a vast, largely unexplored realm of scientific discovery—lay before me. The sheer artistry and engineering feat represented by a single termite mound, a structure far more sophisticated than I'd ever imagined, blew my mind. These weren't simple piles of dirt; they were complex, ventilated structures, carefully designed to regulate temperature and humidity, a testament to the collective intelligence of these often-overlooked creatures. My supervisor, sensing my enthusiasm, suggested I focus my research on the termite mounds scattered across the WII campus, meticulously documenting their size, activity levels, and general characteristics, resulting in my dissertation title "Mapping the patterns of termite mounds in the campus of Wildlife Institute of India, Dehradun"

And so began my amazing, and occasionally perilous adventure! Armed with my trusty GPS, measuring tape, notebook, and pen (my weapons!) I embarked on a daily quest into the wilderness of the WII campus, accompanied by my equally enthusiastic friend Ankit. The chilly and damp January mornings found us battling not only the thorny bushes that guarded the termite mounds but also some unexpected obstacles. However, despite the occasional mishaps, our dedication never wavered. Each mound became a site of intense investigation. We meticulously recorded their dimensions, noting variations in height and diameter, and observing the activity levels around each structure. We spent hours sitting near the mounds, silently observing the intricate social lives of the termites, our efforts resulting in detailed maps showing the spatial distribution of these fascinating structures across the campus.

In the exploration of termite mounds, we surveyed a total of 101 mounds, uncovering a fascinating array of activity levels. To our delight, we found that 56% of these mounds were highly active, buzzing with life, while 31% showcased a medium level of activity, and the remaining mounds exhibited low activity.

This vibrant activity sparked our curiosity about the preferred locales of these industrious insects. Diving deeper, we categorized the campus into four distinct land use types: forest, grassland, scrubland, and buildings. The results were striking—an impressive 72% of termite mounds were nestled in the lush embrace of forests, 18% were found near the structured safety of buildings, 8% thrived in scrubland, and a mere 3% had chosen the open grasslands. This clear preference for forest habitats indicates that termites gravitate towards areas rich in dense, natural vegetation for their mound construction.

With 56% of the mounds actively buzzing with termite life, it's evident that our campus provides a healthy ecosystem ripe for termite proliferation. The presence of these mounds not only reflects the thriving termite community but also contributes significantly to supporting verdant vegetation, enhancing overall ecosystem productivity. Our analysis didn't just stop at activity levels; we delved into the structural intricacies of the mounds themselves. We discovered a compelling correlation between the height of the mounds and the number of ridges they contained—taller mounds (over 1 meter) featured an impressive array of ridges, which are crucial for the air circulation needed to sustain life within. Initially, we believed that mound height would be a faithful indicator of activity levels. However, the reality was more nuanced - while most active residents were indeed found in taller mounds, some towering structures stood completely inactive, posing a puzzling contradiction. Conversely, we also unearthed smaller mounds (less than 0.5 meters tall) brimming with life—evidence that mound activity isn't dictated solely by height. Instead, it dances to a rhythm influenced by a complex interplay of factors, beckoning us to continue our exploration of these remarkable ecosystems.

Our interactions with the termites themselves were often surprisingly gentle. Though they did manage a few stings (surprisingly gentle pinpricks, I must say!), they generally seemed more interested in their work than in harming us. I was particularly intrigued by their dedication to their mound— their home. This led me to my most striking experiment: using a phenocam to observe their repair work. I carefully made a deep gash in the exterior of a mound, removing a significant chunk of material to observe how quickly they would close the

A termite mound in WII Campus Measuring and recording structural variables of mounds during the survey pus (top) & a termite mound in Sal patch (bottom)

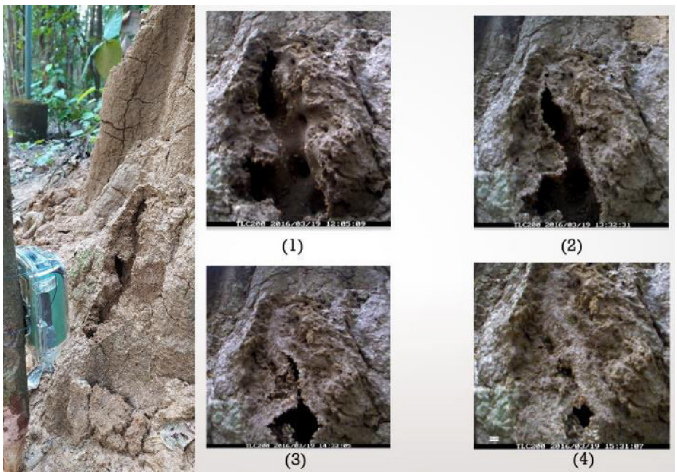
breach. The resulting footage was more than simply astonishing; it was mesmerising. Seeing the termites working with incredible speed and efficiency and their collaborative efforts in sealing up the wound within four hours was incredibly touching. Their intricate social organization and tireless work ethic were truly impressive. This experience solidified my deep respect and burgeoning fascination for these remarkably adaptive creatures.

My literature review revealed an incredible array of facts: termites are "bio-indicators", meaning their presence (or absence!) tells us about the health of an ecosystem. Their mounds are treasure troves—sources of minerals, medicinal clay (used for healing in Africa for ages!), and even clues to finding groundwater! They're also "soil ecosystem engineers," vital to soil formation and its health. But their intricate lives remained a puzzle, full of fascinating secrets to be uncovered.

Then, an encounter significantly expanded the scope of my research. I met Alex, a researcher studying Amur falcons in the remote landscapes of Nagaland. Our conversation revealed a completely unexpected connection: termites formed a substantial part of the falcons' diet! This unexpected link highlighted the interconnectedness of seemingly disparate ecosystems and the crucial role termites play in seemingly unrelated food webs. Alex assisted me in identifying the termite species present within the WII campus, explaining their anatomical features and helping me gain a complete understanding of their complex social structures, communication systems, and division of labour within their colonies. His expertise was invaluable, allowing me to analyze the termites not just as an isolated species, but as integral components of a larger ecological network.

This entire journey has been profoundly transformative. The initial scepticism and the simple view of termites as mere pests gave way to a deep appreciation for their complex ecological roles and the immense power of even the smallest creatures. My research sparked a renewed interest in the often-overlooked world of insects, highlighting the importance of understanding their intricate interactions and the vital functions they perform within their ecosystems. We need to radically shift our attitude towards insects—moving away from seeing them solely as enemies or nuisances and recognizing them as essential partners in maintaining the health of our planet. Termites, I've discovered, are far from simple pests; they are integral components of a healthy ecosystem and, in a way, have become unexpected friends.

Odontotermes obesus, termite species thriving in the WII campus



Snapshots taken from the footage acquired from the time lapse camera

About the Author:

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Training course:

Wildlife Conservation & Management for Jharkhand Forest Department Officials and Frontline Staff
1st - 14th July 2024

From 1st to 14th July 2024, a specialized course on *Wildlife Conservation & Management* was conducted for the officials and frontline staff of the Jharkhand Forest Department. Wildlife conservation is crucial in combating global challenges such as habitat loss, climate change, biodiversity decline, and wildlife trafficking. Frontline staff are the first line of defence in protecting wildlife and ensuring sustainable natural resource management. However, gaps in expertise can lead to inconsistent conservation practices. This course aimed to bridge that gap by enhancing the participants' knowledge of ecological principles, legal frameworks, habitat and species management, community engagement, and adaptive conservation strategies.

A total of 31 participants attended the course, including 9 veterinary officers, 20 frontline forest staff, 1 GIS expert, and 1 biologist. The workshop was coordinated by Dr. Parag Nigam, Scientist G & Head of the Department of Wildlife Health Management, and Dr. Ramesh Chinnasamy, Scientist E from the Department of Population Management, Capture, and Rehabilitation. Support was also provided by the Elephant Cell and the EIACP Programme Centre (Wildlife & Protected Areas).

This course is a significant step forward in equipping forest department personnel with the skills required to address the complex conservation challenges faced by Jharkhand's wildlife and natural ecosystems.

Guardians of the Evening Road:
Pythons of Asola Bhatti

- Feba K.S., Shubham Kumar Maletha, Mukesh Chand, Rashi Nautiyal and Dr. B.S. Adhikari

One evening in early September, around 6 pm, while navigating Asola Bhatti's winding sanctuary roads, I encountered one of the sanctuary's elusive guardians: a python sprawled across the road. Resting calmly, it seemed undisturbed even as I neared, basking in the residual warmth of the pavement as the sun dipped below the horizon. This was not an isolated event and between September to October, a pattern became clear. Around five individual pythons were encountered on the roads within the sanctuary in the evening. These sightings underscore an interesting behaviour in pythons: using the sanctuary's roads to conserve energy and maintain their body temperature in the absence of direct sunlight. This behaviour not only offers a unique glimpse into the pythons' survival strategies but also highlights their vulnerability when choosing such exposed locations.

Behavioural Insight: Why Pythons Choose Roads

'Basking' is a prominent thermoregulatory behaviour observed in many animals, allowing them to optimize physiological functions. Being ectothermic, reptiles like pythons produce minimal metabolic heat and depend heavily on external heat sources to regulate their body temperature, with prolonged basking periods in colder weather to attain optimum body temperature for carrying out physiological activities. Roads, with their heat-absorbing properties, provide an ideal warm surface for thermoregulation, particularly in the evening and nighttime. This underscores the significance of basking durations, especially during the breeding season (October to egg-laying in May) for Indian rock pythons. This thermal resource is vital not only for reproduction but also for overall metabolism and movement. Other possible reasons for pythons choosing roads might be the open and expansive nature of these pathways, which allows them to cover large areas with minimal obstacles. They may also be drawn to roads in search of prey or potential mating opportunities.

Python basking on the road with the surrounding evening landscape of Asola Bhatti Wildlife sanctuary

A Rare Sighting in a Transformed Landscape

One of the more striking observations was near the newly felled plantation area in the Asola Bhatti Wildlife Sanctuary, where we spotted a python on the road around 9 pm. In this area, the natural habitat had already been completely cleared and soil freshly dug up to prepare for the new plantation. Despite the lack of cover, the python was calmly resting on the road, a reminder of how adaptable these creatures are, even in altered habitats. Roads cut through natural habitats, leading to fragmented landscapes and the snakes may be using the roads to move between patches of suitable habitats.

A Call for Awareness: Protecting Asola Bhatti's Road-Dweller

Several other species, including jackals, monkeys, birds, amphibians, and reptiles, were also sighted on these roads, making them a bustling avenue for wildlife at dusk. A jackal den was also found near one

Python resting near a newly transformed area within Asola Bhatti Wildlife Sanctuary

of these roads, further emphasizing the proximity of wildlife activities to these pathways. This showcases how sanctuary roads inadvertently become part of the ecosystem, being used extensively by a variety of species, making it essential for all visitors to tread carefully.

Conclusion

Silent Guardians of Asola Bhatti: Our observations of pythons in Asola Bhatti Wildlife Sanctuary reveal the unique ways these snakes adapt to human-altered landscapes, including the regular use of roads for thermoregulation and movement. Despite being a wildlife refuge, the sanctuary's proximity to urban areas means that people, often passing through at restricted times, are likely to encounter these fascinating reptiles on the roads. This underscores the importance of careful driving, speed regulations, and respecting wildlife spaces, especially as habitat fragmentation continues to influence animal behaviours in unexpected ways. Such insights highlight a need for further awareness and protective measures to safeguard both snakes and other wildlife from unintended harm in semi-urban sanctuaries like Asola Bhatti. By understanding these behaviours and encouraging responsible visitor actions, we can help preserve the natural balance and unique biodiversity within these precious habitats.

Jackal inside its den near the road in Asola Bhatti Wildlife Sanctuary

Python basking by the road near the feeding centre of Asola Bhatti Wildlife Sanctuary

About the authors:

Feba K.S, **Shubham Kumar Maletha**, **Mukesh Chand** and **Rashi Nautiyal** are researchers at the Wildlife Institute of India, working as Project Associates in the project "Developing an Integrated Management Plan for Asola-Bhatti Wildlife Sanctuary, New Delhi".

Dr. B.S. Adhikari- Scientist G, PI of the project "Developing an Integrated Management Plan for Asola-Bhatti Wildlife Sanctuary, New Delhi".

78th Independence Day Celebration
15th August, 2024

India's 78th Independence Day was celebrated in the Wildlife Institute of India campus on 15 August, 2024. Shri Virendra R. Tiwari, Director, WII, hoisted the national flag. He addressed the large gathering of faculty members, officers, staff, researchers and trainees and urged them to provide continued support in successfully meeting various challenges present before the Institute. He also informed the gathering about the major steps taken by the Institute in the recent past. Shri Virendra R. Tiwari, Director, WII, appreciated the efforts of all employees in the Institute building. Shri Virendra R. Tiwari, Director of WII, inaugurated the nursery at Block IV, WII. A Football Tournament was also organised on the occasion of Independence Day.

The Independence Day Football Tournament 2024

The Independence Day Football Tournament 2024 was held from 10th to 15th August 2024. The event witnessed an enthusiastic audience, including Shri Virendra R. Tiwari, as well as participants from the new batches of M.Sc. students. The finals on 15th August featured an exhilarating match between Team Viper and Team Markhor, with Team Viper emerging victorious with a commanding score of 3-0. The commentary team did an excellent job of keeping the audience engaged throughout the tournament. Kudos to the organizers for hosting a five-day festival of thrilling games. A special mention goes to Teams Lammergeier and Manta for their remarkable match, which ended with a score of 0-2.

Field Note:
Capture and collaring of Gaur in Sanjay Tiger Reserve

In an ambitious stride toward biodiversity conservation, Madhya Pradesh Forest Department (MPFD) together with the Wildlife Institute of India (WII) reintroduced 50 gaurs from Kanha and Satpura Tiger Reserves to the Sanjay Dubri Tiger Reserve (SDTR) during 2023-24.

The animals have been monitored by a team of WII researchers and SDTR officers since their release. These animals have been exploring a considerable part of the reserve besides moving into neighbouring areas of Guru Ghasidas National Park in Chhattisgarh and also to Bandhavgarh Tiger Reserve in Madhya Pradesh. The collars of select individuals have worn off and some collars suffered a considerable amount of damage making it necessary to re-collar.

In response to their dispersal, the necessity for replacing collars became unavoidable. The Madhya Pradesh Forest Department, in collaboration with the Wildlife Institute of India, strategically re-collared six gaurs, comprising two males and four females from three distinct herds. This targeted approach not only aided in understanding their behavioral adaptations to new habitats and interstate movement but also provided vital insights into the overall success of the species recovery project.

Field operations to collar these individuals were initiated between October 25 to 27, 2024 and involved park managers, scientists, veterinarians, research scholars and front-line staff who coordinated essential preparations for the capture and collaring process.

To start with, the research team identified suitable herds for collaring based on the movement history of the individuals after their release into the wild. Initially the targeted herds were monitored using the captive elephants. This also provided an opportunity to approach the gaurs closely and make the respective herds familiar with the captive elephant so as to facilitate closer approach for the darting.

About Gaur

Gaur- one of the world's largest and most powerful bovid is native to the forests and grasslands of South and Southeast Asia, where it plays a vital role in maintaining ecosystem health. Standing over 1.2 metres at the shoulder and weighing up to a ton, this megaherbivore significantly impacts habitat dynamics in Indian forests. Gaurs play a vital role in the ecosystem as both grazers and browsers, shaping vegetation structure and aiding in seed dispersal. Their feeding habits create microhabitats that enhance plant diversity. By reducing the density of certain plant species, gaurs help maintain open areas in dense forests, allowing sunlight to penetrate and fostering a variety of plant life. However, in recent years, the gaur population has faced threats from habitat loss, poaching, and human-wildlife interactions. In several protected areas, local gaur populations have disappeared. To counter this, conservation efforts such as reintroduction projects and establishment of protected corridors are being explored to restore gaur populations in their native ecosystems.

The operation began with the team assembling at the Pondi Forest Rest House for a final round of drills, training, checks and preparations. The monitoring team reported sighting a herd of 13 individuals near the Tingi grasslands in the Pondi Forest Range. Based on this information, the core team mobilized the captive elephants and proceeded to the sighting location. Early in the morning, the herd was observed grazing in a grassy meadow, and as the day advanced, the herd gradually moved deeper into the dense forest.

The darting team arrived at the site, advancing towards the gaur on the backs of captive elephants, which skilfully guided the herd to a more accessible and open area suitable for darting. Adult individuals were selected for collaring. They were chosen based on long-term monitoring by the WII's research team and identifiable through their distinct physical characteristics. The team administered a combination of Thiafentanil (an opioid) and Azaperone (a short-acting tranquilizer) to immobilize the animal, which went into sternal recumbency within two to four minutes. Once the gaur was sedated, the team quickly approached, blindfolded and stabilized the animal prior to any intervention. The physiological parameters were evaluated followed by weighing, collaring, ear tagging and numbering.

Later in the evening, following a report from the monitoring team about a herd of nine individuals including a calf in Domarpart beat of the Pondi Forest Range, the capture team moved to the area and initiated the field capture operation.

By the end of the day, a total of five gaurs, comprising 1male and 4 females, were successfully collared. In a groundbreaking achievement, the team managed to partially revive the immobilized animal using Butorphanol tartrate and was able to make the animal walk for few steps while under sedation. This marked the first-of-its-kind success of walking a wild bovid under sedation in the country.

On the second day, the team moved to the Domarpart area to capture and collar the sixth gaur. Presence of wild elephants in the area also posed a challenge for the team, as the animal was grazing along with the herd thus, making closer approach difficult for darting and collaring procedures. Additionally, the captive cow elephants assisting in the capture operation required the team to exercise with extra caution while strategizing ways to proceed safely in this potentially challenging environment. The captive male tusker 'Bapu' proved to be an asset during the operation as he helped in deterring the wild elephants, by providing an added layer of safety for the team to work.

While the captures generally followed planned protocols, capturing the fourth and sixth individuals presented a unique challenge. For instance, during the capture of the fourth gaur, the revival drug did not get fully administered causing the gaur to regain half consciousness and bolt from the area. The team however maintained vigilance, and the gaur eventually returned, allowing a successful second dart of revival.

The final capture provided a great learning experience. After darting, the male gaur began running erratically, eventually heading toward the staging area where the ground team was positioned. This unexpected turn sent the team into a brief scramble. After approximately 15 minutes, the gaur settled in a bamboo patch, creating an opportunity for the team to safely carry out collaring procedures.
Capturing wild gaurs, that weigh between 600 and 1,000 kg, is a complex and demanding task. It requires a dedicated, well-coordinated team with specialized roles, including duly sensitized tracking team, darting team, animal handling team, post immobilization animal monitoring team, animal lifting, weighing and emergency management team. The success of each capture depends on the seamless coordination of these team members and their responsibilities.

This operation, marked by dedication, precision, and adaptive management, has contributed valuable insights into the behaviour and handling of these majestic animals, setting new benchmarks for future wildlife conservation efforts.

Collaring megaherbivores like the gaur plays a crucial role in conservation efforts, providing vital insights into their behaviour, movement, and ecological impact. By fitting these large animals with GPS or VHF tracking collars, researchers can collect real-time data on their movement patterns, which helps in understanding how gaurs use their habitat for activities such as foraging, resting, and breeding. This data is essential for mapping their home range – the area in which they live and fulfil their ecological roles. For a species like the gaur, defining these ranges is critical to identify and conserve essential habitats, as their grazing and browsing directly influences vegetation structure and biodiversity within their ecosystems. Tracking collars also help conservationists monitor the movement of gaurs in human-impacted landscapes, where understanding their interactions with human settlements is key to mitigating conflicts.

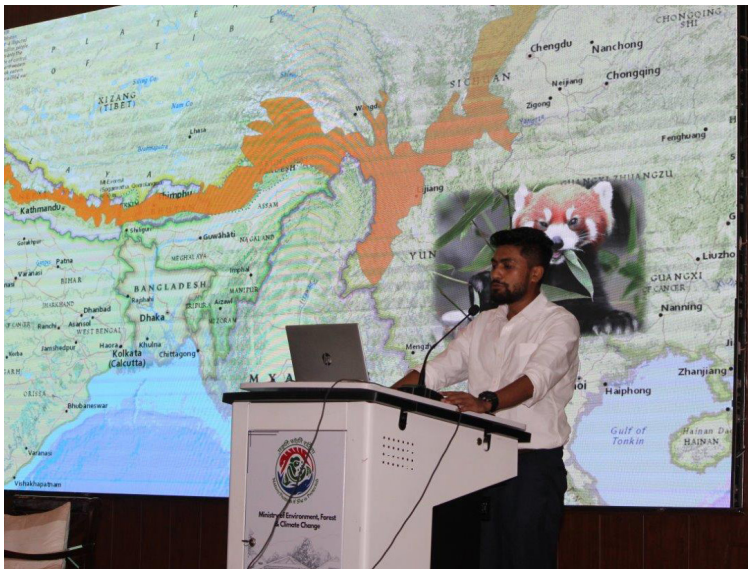
About the Authors:

Ritesh Vishwakarma holds a Master's degree in Wildlife Sciences, and began his journey in conservation science in 2017 with the All India Tiger Estimation Project. He later transitioned to the Gaur Reintroduction Project in Bandhavgarh, where he became instrumental in conducting key feasibility studies for gaur reintroduction across Sanjay Tiger Reserve, Nagarjunasagar Srisailam Tiger Reserve, and Bandhavgarh Tiger Reserve. Currently, he serves as Senior Project Associate for the Gaur Reintroduction Plan in Sanjay Tiger Reserve.

Gorati Arun Kumar graduated in Environmental Science and began his career in wildlife research in 2023 as part of the All India Tiger Estimation. He later transitioned to the Gaur project conducting feasibility studies for gaur reintroduction in Nagarjunasagar Srisailam Tiger Reserve, Andhra Pradesh. Currently, he serves as a Project Associate for the Gaur Supplementation Project in Bandhavgarh Tiger Reserve, Madhya Pradesh.

17th Internal Annual Research Seminar

The 17th Internal Annual Research Seminar was held from 9th to 11th September 2024. The seminar was chaired by Dr. G. S. Rawat and it started with a welcome note by Research coordinator Dr. Bivash Pandav; followed by remarks by Dr. Ruchi Badola, Dean WII and the inaugural address by Shri. Virendra R. Tiwari, Director WII. From the Himalayas to the Aquatic system, Avian ecology, Carnivore ecology to Conservation management with Landscape and Genetic studies; the sessions were very insightful and filled with new information on current understanding of the different dimensions involving wildlife and also interactions involving us mankind.



Training course:

Forestry Module of Mid-Career Training (MCT Phase-III Course for IFS Officers

10th July 2024

The Wildlife Institute of India (WII), Dehradun organized a one-day course on the Forestry Module of the Mid-Career Training (MCT) Phase-III for Indian Forest Service (IFS) Officers on 10 July 2024. The course was coordinated by Dr Ramesh Chinnasamy, Scientist-E, WII and was attended by 60 IFS officers from various states.

Mr. Virendra R. Tiwari, IFS, Director, WII welcomed and addressed all 60 IFS course participants and he spoke about the importance of wildlife conflict mitigation. He highlighted the efforts of the Maharashtra Forest Department and how they are working to address this issue in a modern way. This inaugural session was concluded with the ending remarks by Shri. Kunal Angrish, Associate Professor, IGNFA. He familiarized the trainees with the role of this course and its importance. He also thanked WII for providing this opportunity to the trainees, to have an interactive session with faculty members of WII and gain expertise on this issue.

Dr Ruchi Badola, Scientist - G, Dean, WII presented an extensive overview of the activities and research initiatives undertaken by WII, emphasizing its role in wildlife conservation and management, how the institute is at the forefront of biodiversity assessment, conducting extensive surveys across various ecosystems to understand species distribution and habitat conditions. She also gave information on the conservation projects for endangered species such as tigers, elephants, rhinos, and snow leopards. The institute is also engaged in ecological research to study habitat dynamics and the impact of climate change, developing strategies for habitat restoration and conservation. The institute also conducts specialised training programs for wildlife managers, researchers, and forest officers, equipping them with modern conservation techniques and it plays a crucial role in the development of wildlife policies at both national and state levels. WII is also proud of its global partnerships with international conservation organisations and academic institutions. The institute also participates in global research projects and transboundary conservation initiatives, working with neighbouring countries to protect migratory species and shared ecosystems.

Shri. Qamar Qureshi, Scientist - G, WII delivered a session on "Tools and techniques for managing human-wildlife conflict". This included advanced methodologies and practical approaches such as using satellite telemetry and GPS collars to monitor the movements of large mammals such as elephants, tigers, and leopards. This helps understand their range, identify potential conflict zones, and devise strategies to prevent encounters with human populations. Camera traps can be strategically placed in conflict-prone areas to monitor wildlife activity. Remote sensing technologies, including drones, provide real-time data on wildlife presence, enabling rapid response to potential conflicts. When necessary, problem animals can be translocated to less conflict-prone areas. He gave multiple ideas on habitat management, to ensure that wildlife have adequate natural resources within their habitats, reducing their likelihood of venturing into human territories. He also spoke about acoustic devices that emit distress calls or ultrasonic sounds and light barriers, such as solar-powered LED fences, that deter animals from entering human areas.

Dr Parag Nigam, Scientist - G, WII delivered a session on "Animal capture techniques as a tool for managing Human-Wildlife Conflict".

He elaborated on specific animal capture techniques that are critical in mitigating human-wildlife conflicts and also provided case studies and examples to illustrate the effectiveness of these methods. He provided information on tranquilization and chemical immobilization techniques to sedate animals for safe capture and transportation. It is particularly useful for large and potentially dangerous animals like tigers, leopards, and elephants. Next, he spoke about live traps, such as cage traps and foot snares which are used to capture animals without causing them harm. He also mentioned the recent successful reintroduction of Gaur to Sanjay Tiger Reserve, Madhya Pradesh.

Dr Bilal Habib, Scientist-F, WII delivered a session on "Understanding the issue and development of conflict in changing scenarios". He presented an analysis of the evolving nature of human-wildlife conflicts in the context of environmental and societal changes, discussing potential future scenarios and adaptive strategies to mitigate these issues effectively. He addressed the urban expansion and infrastructure development that are fragmenting natural habitats, pushing wildlife into closer proximity with human populations and how wildlife may be adapting to these changing environments by altering their behaviours. He also mentioned that restoring degraded habitats and creating wildlife corridors can help reduce conflicts by providing animals with a safer passage between fragmented habitats. Using advanced technologies such as drone surveillance, AI-based monitoring systems, and automated early warning systems can improve our ability to detect and respond to potential conflicts.

At the end, a panel discussion was moderated by Dr. S. Sathyaumar, Scientist-G, Registrar WII where a platform was provided for the critical appraisal of existing strategies for managing human-wildlife conflict. The panellists included Shri. V.R Tiwari, Director, WII, Dr. Samir Sinha PCCF and CWLW, UK, Dr. Ruchi Badola Dean, WII and Dr. K. Ramesh Scientist-F, WII.

The panellists shared their expertise and debated various approaches to develop more effective and sustainable management strategies. The training program focused on emerging ideas and approaches to managing human-wildlife conflict, a critical issue in contemporary wildlife conservation.

Meeting:

India at the 69th International Whaling Commission Lima, Peru 23rd – 27th September, 2024

Three member delegation of Additional Director General of Wildlife, Shri Sushil Kumar Awasthi, Director, Wildlife Institute of India, Shri Virendra R Tiwari, and Scientist from WII, Dr. Vishnupriya Kolipakam, represented the country at the 69th International Whaling commission meeting, at Lima, Peru from 23rd – 27th September, 2024.

India during its interventions strongly supported and welcomed the adoption by consensus of the Resolution on Cooperation with CCAMLR in Antarctica, the Resolution on Synergies between IWC, the Convention on Biological Diversity, the Kunming-Montreal Global Biodiversity Framework, and the BBNJ Agreement. India also supported the resolution to renew the moratorium on whaling, reaffirming its commitment to whale conservation. The resolution passed with a majority vote in favour. India also backed the South Atlantic Whale Sanctuary amendment, reaffirming its dedication to OECM & marine biodiversity protection. India was firm that the moratorium on whaling should not be lifted, underscoring its longstanding conservation values.

During the meeting, India held many strategic meetings to further the cause of conservation, and to share best practices as well as to increase the capacity of our country through international collaborations.

Jalmala Samwaad:
An Initiative Towards River Conservation

Awareness programs play an important role in promoting a sense of responsibility towards the environment and instilling a commitment to biodiversity conservation among the younger generation. Schools play a crucial role in nurturing environmentally conscious citizens. One such initiative taken up by the Wildlife Institute of India under the National Mission for Clean Ganga (NMCG) Program is that of conducting biodiversity awareness programs and establishing Interpretation Corners in government schools in the Ganga River Basin, known as the *Jalmala Samvaad*.

Jalmala Samvaad is an interpretive initiative in schools for disseminating information about rivers and their biodiversity. These informative Interpretation corners focus on the journey of the river from origin to destination. It also provides information about the rich biodiversity in the river basin, the mythological and cultural importance of the river and how community involvement can contribute towards conservation initiatives.

From July 2024 to October 2024, a total of 6 *Jalmala Samvaads* have been set up in six schools across six districts within the Ganga River Basin—spanning Uttarakhand, Bihar, Jharkhand, Himachal Pradesh, and Madhya Pradesh. Government schools within 5-8km of the river were chosen. Established along the Ganga and Chambal Rivers, these interpretation corners have played a crucial role in sensitizing approximately 5,000 students and 150 teachers about the ecological and cultural significance of river ecosystems, through wall paintings and informative panels. Biodiversity awareness programs were also conducted in these schools. By engaging people in interactive and informative experiences, these corners serve as an important tool for developing an understanding and appreciation of the biodiversity and cultural significance of our National River – the Ganges and its tributaries.

"*Through interpretation, understanding; through understanding, appreciation; through appreciation, protection.*"
~ Freeman Tilden – the father of Interpretation.

Guardians of the Valley:
The Sacred Junipers of Ladakh

-Aimon Bushra, Jikmat Stanzin, Amit Kumar, & Gautam Talukdar

Ladakh, renowned for its majestic mountains and mystical rivers, is also home to diverse flora and fauna. This unique natural wealth not only draws tourists, but also wildlife enthusiasts and researchers from various fields, eager to explore and protect its hidden ecological treasures. Ladakh's vibrant cultural heritage shines through its unique architecture, ancient monasteries, colorful festivals, and interesting oral literature. Together, these elements weave the distinct identity of Ladakh, reflecting both its natural environment and a deep-rooted cultural legacy.

Juniper leaves smoldering in a censer, placed at the entrance of a famous temple in Fokar.

Despite its largely treeless landscape, Ladakh has scattered Juniper woodlands (*Juniperus semiglobosa* Regel), commonly known as 'Himalayan Pencil Cedar' and locally known as Shukpa. These woodlands are especially found in the northwestern regions of Ladakh, particularly in and around Kargil. One such grove is found in the Fokar village, a small hamlet nestled in the Shargole block, approximately 40 km from Kargil town. An interesting tale revolves around this Juniper grove, inspiring generations of locals to protect it, and passing down this reverence and guardianship through the ages. The legend has it that this grove is the sacred abode of an important oracle of Fokar village. In Tibetan Buddhism, oracles are spirit mediums who enter the body of another medium, either a man or a woman, through a ritual. They are believed to protect the Buddha Dharma and its followers, as well as to provide healing and foretell the future. It is believed that several centuries ago, around the 8th and 11th century AD, an oracle named Fokar Chomo arrived in the Fokar village alongside 'Guru Rinpoche' (the Precious Guru) or 'the Second Buddha', who is widely celebrated for introducing Buddhism to the Tibetan lands. Each juniper tree in the grove is regarded as an integral part of the oracle's presence, with every tree bearing its own unique name. These trees are not merely flora but revered as living members of the oracle's spiritual essence, embodying a sacred connection with the inhabitants of the village and serving as their protectors. Each year, the villagers gather in the grove to offer prayers at a temple dedicated to the oracle. In respect for the sacred nature of the grove, no one is permitted to cut, damage, or even pluck leaves from the juniper trees.

Beyond Fokar, other sacred Juniper groves exist, including a well-known one in Hemis Shukpachan, a village about 80 km from Leh. The name 'Shukpachan' itself comes from the Ladakhi word for Juniper, 'Shukpa'. The trees in this grove appear to be older than those in Fokar, though their exact ages remain unknown. With support from the LAHDC (Ladakh Autonomous Hill Development Council) and the Leh Forest Department, the residents of Hemis Shukpachan have safeguarded this last remaining population of Juniper trees.

Leaves and twigs from Juniper trees growing in areas without any sacred associations, are commonly used as incense in monasteries and homes throughout the region. These traditional practices not only highlight the deep reverence the local communities hold for the sanctity of the Juniper trees, but also play a crucial role in preserving the area's biodiversity. Conversations with locals suggest that Juniper populations in Ladakh have declined over the years. A common view is that much of the damage occurred during the infamous Kargil War of 1999. This decline may be attributed not only to the direct destruction of vegetation but also to the degradation of habitats and soil quality caused by the bombings, heavy artillery fire, and the movement of military vehicles, which can lead to soil compaction, reducing its ability to absorb water and support plant life.

The regeneration of Juniper trees has only started to show signs of revival in the past few years, suggesting a slow recovery process after the environmental impacts of the war. Another significant threat to Juniper populations is overharvesting. The high demand for Juniper twigs during the festive season of Losar has led to unsustainable harvesting practices, further exacerbating the decline of these trees in the region.

Given the ecological, economic, and cultural importance of *Juniperus semiglobosa*, the species was declared the state tree of the Union Territory of Ladakh in 2023. This designation is expected to raise awareness and increase the tree's popularity among locals, while primarily strengthening conservation initiatives focused on preserving and expanding Juniper populations for future generations. Nevertheless, the cultural significance of the species is key to the success of these long-term conservation initiatives.

The sacred Juniper trees stand resiliently through thick (ice) and thin (air), in isolation and in congregation, as if they whisper the vagaries of time.

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A close-up view of the sacred Juniper grove and the Oracle's temple adorned with prayer flags tied around it.

A panoramic view of the sacred Juniper grove above Fokar village.

From Crisis to Conservation:
Protecting the Nanda Devi Biosphere Reserve

Debaleena Chatterjee, Nitesh Goswami & B.S. Adhikari

The Nanda Devi Biosphere Reserve, a UNESCO World Heritage site known for its attractive landscapes, abundant wildlife, and vibrant cultural history, resides deeply concealed in the Indian Himalayan System. The reserve encompasses areas surrounding the magnificent Nanda Devi National Park and Valley of Flowers National Park, is home to rare alpine plants and animals, including several endangered species like the Himalayan musk deer and the snow leopard. The entrance to the reserve as well as the starting point for both the trekkers and devotees is Joshimath - a historic town and point of pilgrimage. However, the combined effects of climate change, unplanned urbanization and massive infrastructure projects have resulted in frequent landslides and other environmental hazards in this ecologically delicate place, making the area more sensitive and vulnerable than ever.

The area is experiencing noticeable changes in weather patterns. One of the most apparent modifications in recent years has been the warming of the environment. Joshimath, similar to other mountainous regions around the world, is experiencing rising temperatures, including an increase in extreme heat events. Which in turn is affecting the timing and distribution of precipitation, influencing the hydrological cycle of the region and water supply. Some areas may receive more rainfall and flash floods, while others face extended dry spells and water scarcity, posing challenges for agriculture and water management. Glacier retreat and snowmelt are major factors influencing the hydrology and biodiversity of the region. The glaciers are receding at an alarming rate as temperatures rise, resulting in faster snowmelt and changes in river flows. In the previous few decades, there have been reports of less snowfall as well. Temperature and precipitation regime shifts influence the suitability of habitat for flora and fauna, resulting in changes in species suitability, phenology, and ecosystem dynamics.

Hence, these catastrophic occurrences endanger the biodiversity of the reserve by destroying vital habitats and threatening species that are already under stress from the environment.

Landslide in Joshimath taluka, Nanda Devi Biosphere Reserve

Discussions with residents of nearby villages indicate growing concern about the increasing frequency and severity of floods and landslides. The disturbances in the fragile ecosystems within the reserve are putting residents' safety in peril. Furthermore, agriculture is increasingly affected by climate fluctuations, leading to reduced production and more frequent pest outbreaks. The unpredictability of the rainfall is making issues worse by substantially disrupting agricultural cycles, especially staple crops like potatoes and tomatoes. As a result, local farmers are exposed to greater risks, including decreased agricultural reliability and increasing economic strain, which contributes to food insecurity across the place. Extreme climate impacts and unregulated developmental activities also pose an existential threat to the delicate zone. Climate change has increased the frequency and intensity of natural disasters, including flash floods, unpredictable rainfall, and glacial melting, destabilizing regional geology and heightening the risk of landslides. Due to the

area's steep terrain and a rapid rate of glacier melting and weak soil composition, Joshimath is particularly vulnerable to landslides.

Tourism pressure in Joshimath presents a complex interplay between the region's natural beauty and the challenges of sustainable development and environmental conservation. As the place acts as a gateway to several well-known pilgrimage sites and hiking attractions, like Niti Valley, Badrinath, the Valley of Flowers, and Hemkund Sahib, the rush of adventurers has put an additional burden on the ecosystem and local infrastructure. The calm landscapes, clean rivers, and the rich flora and fauna are under threat from unregulated tourism activities. Deforestation, pollution, and habitat degradation are some of the impacts of increased traffic in the area. Trekkers frequently abandon waste along the trails, damaging biodiversity and reducing the aesthetic value of the area. Furthermore, unplanned construction of resorts, guesthouses, and roads affect the surrounding natural habitats and change the topography, resulting in soil erosion and landslides, particularly during the monsoon season. The construction of these hotels, housing developments, and commercial establishments frequently occur, often without proper planning, permission and concern for the fragile ecology of the area. Large-scale road projects also require a lot of excavation, blasting, and widening. Tourism pressures are also putting strain on the cultural fabric of the local communities. Traditional practices are gradually disappearing. There is pressure on resources such as water and power, as locals compete with the growing tourist population for access. Infrastructure fails to keep up with the number of visitors, particularly during the peak pilgrimage season. Roads are crowded, lodging facilities are overburdened, and basic services like healthcare and sanitation are insufficient to meet the demands of both residents and tourists. The economic benefits of tourism are apparent, with many residents finding work in the hospitality, transportation, and guiding industries. However, because of its reliance on tourism, the area is vulnerable to fluctuations in the number of visitors brought on by the emergence of natural disasters like earthquakes, regular rock falls, and building cracks. These instances are becoming more prevalent, as evidenced by the current news of ground subsidence occurring at Joshimath.

A multifaceted, sustainable strategy that strikes a balance between the requirements of locals and tourists and the natural conditions is needed to address these issues and improve the ecological health of the region. For restricting unauthorized construction in the surrounding areas, strict laws must be implemented. In order to minimize strain and to prevent additional ground subsidence, building permits must include a geological stability evaluation. Strict environmental regulations must be followed while constructing roadways and other infrastructural projects. Every project must also undergo thorough environmental impact assessments, with an emphasis on the long-term effects on local populations and wildlife. Early warning systems for floods and landslides can provide evacuations with vital notice in time. Local inhabitants should be trained to actively participate in disaster response teams. Creating awareness, encouraging ecotourism and providing tourists with clear guidelines might reduce the adverse impacts of anthropogenic activities on the ecosystem and boost the local economy.

Rockfall in Urgam Valley, Nanda Devi Biosphere Reserve

Lastly, landslide risks might be decreased, carbon sequestration could be facilitated and local biodiversity can be enhanced by afforestation projects that use native vegetation and soil stabilizing measures along susceptible slopes to prevent erosion. In high-altitude regions, sustainable water resource management can be facilitated by the promotion of climate-resilient crops like millets, utilization of integrated pest management solutions, crop rotation techniques and rainwater harvesting.

Therefore, it is possible to reduce the anticipated threats, protect this delicate landscape for future generations and guarantee the resilience and sustainability of Indian Himalayan regions by implementing sustainable construction practices, involving local communities in disaster management, encouraging ecotourism, agroforestry, and funding environmental restoration.

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Landslide restoration along Badrinath Road,
Nanda Devi Biosphere Reserve

Yellow-bellied Prinia:
An introduction to Harike Wildlife Sanctuary

Harike Wildlife Sanctuary: a flock of Eurasian Spoonbill, a resident bird along the riverbanks of the Wetland (12 April, 2024) © Stanzin Zangmo

One of the prominent sounds in the wild summer months of Harike Wildlife Sanctuary is the call of the Yellow-bellied Prinia *Prinia flaviventris*, a small passerine bird that flits among the reeds and rushes of the wetland. The Sanctuary spans three districts of Punjab namely, Ferozepur, Tarn Taran and Kapurthala. It formed after the construction of the Harike barrage in 1952 at the confluence of Beas and Sutlej rivers, to provide drinking water and irrigation to the states of Punjab and Rajasthan. Its subspecies, *Prinia flaviventris sindianus* is found in the northwestern states of India including Punjab, Delhi and Haryana, while in north India, including Uttarakhand and Arunachal Pradesh in the east, host the subspecies *Prinia flaviventris flaviventris*. Harike Wildlife Sanctuary was designated as a Wildlife Sanctuary in 1976 and has been re-notified several times, most recently in 1999, with a total notified area of 86 sq. km, although the present sanctuary's boundary only covers 56 sq. km. In 1990, it was also declared a Ramsar Site, recognising it as a wetland of international importance. Additionally, it is classified as an Important Bird and Biodiversity Area (IBA) and a Key Biodiversity Area (KBA), highlighting its significance in preserving the biodiversity it encompasses.

As part of a research team from Wildlife Institute of India, when I visited Harike in the month of March 2024, a constant call accompanied us throughout our survey days, casually pitching in its unique vocalisation as a reminder of the Sanctuary's vibrancy despite the scorching summer heat. The call belonged to Yellow-bellied Prinias. Their song in Harike is a rapid musical note, descending in pitch as didli-idli-u didli-idli-u didli-idli-u, where the song phrase is repetitive with very short irregular intervals. The vocalisation of this bird varies not only across geographic regions but also within regions and even at a genetic level. The subspecies *Prinia flaviventris sindianus*, found in Punjab, is particularly noted for having vocalisations that are more similar to those of the Southeast Asian subspecies. Not just in the terrestrial areas, but these songs are heard across the diverse habitats of Harike, ranging from marshes, swamps, croplands, sandy riverbanks, woodlands, mid-river islands to open water bodies, ponds and lakes (reservoirs). This rich combination of habitats further complicates the delineation of the Sanctuary's boundaries, which shift with seasonal flooding and human encroachment from settlement and agriculture. The two vital waterways of Harike wetland, the Sutlej and Beas rivers, are easily differentiable with the former being darker and bubbling with industrial

and sewage effluents from the neighbouring cities like Jalandhar and Ludhiana, whereas Beas remains relatively clean but turbid. While Critically Endangered species like gharial and Endangered Indus River Dolphin are found in these waters, particularly in Beas, the Sanctuary's terrestrial areas also support an impressive diversity of wildlife including the hog deer, Indian crested porcupine and smooth-coated otter. Whether one travels along the major river channels or walks along the trails made on the embankments surrounding the Sanctuary, the calls of the Yellow-bellied Prinia persist, indicating their local nesting or breeding period in the summer months of Harike.

The nest of Yellow-bellied Prinia is a mixture of coarse and fine grasses, built typically in a dome or oval-shaped manner with the entrance from the top. It is even understood that the birds decorate the nests externally using materials like bright yellow ermine moth cocoons or sloughed snakeskin, adding a distinctive touch to their homes. Despite frequent calls, we were unable to find any nests of YBPR during our survey in Harike. One memorable encounter was that of an individual that perched outside the reeds, long enough for me to capture an iconic photograph. The bird stood tall with one leg raised, scanning its surroundings for food, embodying the spirit of a warrior prepared to hunt down insects among the grasses. With its striking lemon-yellow belly, white throat and breast, olive green upperparts and grey crown with a prominent white supercilium, one cannot go wrong with its identification in sight.

As I walked along the embankment of the sanctuary again in September 2024, after a break of three months, I hoped to hear them again from the tall grasses. However I could only hear their chirps in a single note once in a while, or their usual longer song phrase, but in a much lesser frequency, which remained so as winter approached. In November, I found Striated Babblers vocalising from the dense grasses where the YBPR had shown its presence throughout summer. While there are several studies from China on YBPR, including its nesting and parental behaviour, with one reporting its nesting period to occur in between mid-March to late-July, such behaviour studies from the Indian subcontinent are limited. A bird sanctuary like Harike is known as a bird paradise for waterbirds as their wintering and staging ground along the Central Asian Flyway, where they travel from northern most places like Siberia as well as Central and Northern Asia towards West and South Asian countries, including India and the British Indian

Yellow-bellied Prinia perching on top of a shrub (16 April, 2024)
© Stanzin Zangmo

Ocean Territory. While I look forward to the winter surveys to spot one of the biggest annual migrations of these waterbirds, Yellow-bellied Prinia's seasonal singing at Harike has left a lasting impression on me, for it was these little songbirds that introduced me to the Sanctuary when all the migratory birds had returned home in March.

Despite frequent observations, small passerines often go undocumented, especially in wetlands like Harike where larger birds tend to attract more attention. This further brings me to the realisation that the rhythm of life in Harike is not constant, but ebbs and flows with the seasons. Just as migratory birds must return when their northern breeding grounds thaw, and as the vast expanse of rice and wheat fields shifts through their cycles of burning and sowing in the surrounding areas of Punjab, another passerine may take its time, singing from the tall grasses this winter – until it is time for the Yellow-bellied Prinias again.

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Speaking for Nature:
WII-C2C at the 46th World Heritage Committee

With 196 States Parties as signatories, the 1972 UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, commonly known as the World Heritage Convention, is the world's premier agreement concerning the preservation of humanity's common legacy. It remains the main international mechanism linking nature and culture, by documenting the interaction of people with the natural environment, including world views of Indigenous people and local communities. Many Cultural World Heritage Sites overlap with many of the most significant areas for biodiversity. As per the International Union for Conservation of Nature (IUCN), Natural World Heritage sites protect over 370 million hectares of land and sea, which comprise about 7% of the total area covered by 270,000+ protected areas of the world.

India ratified the World Heritage Convention on 14th November 1977 and as of 2024, there are 35 Cultural, 7 Natural and 1 Mixed property recognized as World Heritage Sites under the Convention. In addition, India also maintains a Tentative List of 56 sites with 11 of them Natural/Mixed, which is an inventory of those properties situated on its territory that the country considers suitable for nomination to the World Heritage List.

The 46th World Heritage Committee (46th WHC) meeting, a statutory meeting under the provisions of the World Heritage Convention, was held at Bharat Mandapam, New Delhi from 21st to 31st July 2024. 20 cultural properties, five natural properties and one mixed site were inscribed. With its unique mission of natural heritage capacity building, the Wildlife Institute of India – Category 2 Centre for World Natural Heritage and Management Training and Management in Asia and the Pacific Region, under the auspices of UNESCO (WII-C2C) was a key stakeholder in the meeting. Represented by Dr R Suresh Kumar, Nodal Officer, WII-C2C was part of the plenary sessions on natural heritages and also conducted and participated in a variety of linked skill development and networking programmes.

Director WII speaking at the World Heritage Young Professionals Forum of the 46th WHC at Red Fort, New Delhi

Nodal Officer, WII-C2C participating in Plenary Session of the 46th WHC as part of the India delegation

Associate Nodal Officer, WII-C2C presenting at the Site Managers Forum

WII-C2C engaged with participants of the meeting and conveyed the critical role played by C2Cs in the implementation of the World Heritage Convention. The presence of delegates, heritage professionals and organizations from 165 countries in attendance offered the opportunity to seek common ground and understand training gaps in the natural heritage sector. This was further understood through the documentation of needs expressed by representatives of countries and organizations in bilateral meetings. In its official role as an advisor to the Indian delegation on natural heritage matters and as the only C2C focused on natural heritage, WII-C2C inputs on State of Conservation (SOC) Reports and Nomination Dossiers were crucial in making the right decisions.

A meeting was held with the IUCN representatives on the sidelines of the 46th WHC regarding the role played by WII-C2C in natural heritage relevant matters in the Asia region. By releasing publications that conveyed the natural splendour of India and the Asia-Pacific Region in a visual and captivating manner and hosting a side-event for all the World Heritage C2Cs, WII-C2C brought these unique institutions together. Active participation in the side events helped gain insight into the approaches to be taken up by it in the future. The event highlighted the global need for natural heritage capacity building which can be achieved by utilizing the strength of the existing UNESCO network and training methodologies laying a path to help WII-C2C multiply its impact and fulfil its important mission.

A Side-Event for World Heritage C2Cs hosted by WII-C2C

A view of the Plenary Hall at the 46th WHC

Meeting:

Developing Regional Action Plan by States of Southern India Coimbatore, Tamilnadu 5th September, 2024

The Regional Meeting on Elephant Range States of Southern India was jointly organized by the Project Elephant Division, MoEFCC, Tamil Nadu Forest Department, and the Wildlife Institute of India. The meeting was aimed at ensuring the conservation and sustainable management of elephant populations and their habitats in the southern regions encompassing Karnataka, Kerala, Andhra Pradesh, and Tamil Nadu. The aim was to develop a Regional Action Plan (RAP) at the landscape level, ensuring the long-term survival of viable populations of elephants through land-use planning, regulation and consolidation in the larger natural landscapes of the States, ensuring free transboundary movement and also reducing the levels of Human Elephant Conflict (HEC). The meeting was chaired by Shri. Jitendra Kumar, IFS, DGF&SS, MoEFCC, and included the participation of senior officials from the MOEFCC and Chief Wildlife wardens of the southern states. The status of HEC in various states and their best practices in managing the same were presented. A total of 35 officials from Karnataka, Andhra Pradesh, Kerala, Tamil Nadu, NTCA, and MoEFCC attended the meeting and provided their inputs for developing the framework of the Regional Action Plan.

Capacity Building Workshop:

"Enhancing Elephant Welfare in capacity" For Elephant Custodians and Handlers Coimbatore, Tamil Nadu September 5th - 6th, 2024

The workshop was organized by the Wildlife Institute of India under the aegis of Project Elephant Division, MoEFCC in collaboration with the Tamil Nadu Forest Department. This workshop was aimed to enable the elephant custodians and mahouts in the Southern region (encompassing Tamil Nadu, Kerala, Karnataka, and Andhra Pradesh) of the country to ensure the welfare and health of captive elephants maintained by the government, temple authorities, and private agencies by bringing together experienced mahouts, veterinarians, biologists and managers to improve the knowledge and skill levels of the practicing elephant handlers and custodians. It also providing exposure to various aspects of elephant management and welfare. The workshop sessions covered various aspects of captive health management, legalities in maintaining and managing elephants in captivity, housing and enclosure, nutritional needs, wound management, foot and tusk care, oestrous, pregnancy and musth management, and elephant gear and fitting essentials.

The workshop was attended by 39 elephant custodians and mahouts from 4 states including Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu. The participants felt that the workshop was effective in enhancing their understanding and provided an opportunity for them to diversify their skills and gain knowledge proficiency in the management and welfare of captive elephants.

Better Management through a Heritage Lens:

2nd Certificate Course in Heritage Management (CCHM)

Rooted in history, informed by science, and shaped by socio-economic identities, heritage is a field that links nature, culture, administration, and communication. The 2nd Certificate Course in Heritage Management (CCHM) organized by WII-C2C from 12th August to 6th September 2024 at the Wildlife Institute of India, Dehradun endeavoured to build upon this understanding of heritage. This course took further the learnings from the 1st CCHM held in 2023 to help trainees gain the ability to infuse heritage concepts into management practices. The batch of 11 officer trainees had the opportunity to learn about the processes in place for the conservation of potential and existing World Heritage properties while appreciating the multi-disciplinary aspects of heritage.

The course was delivered in the form of 60 sessions, 50 minutes each, over three weeks. This included 40 sessions by 13 Resource Persons from WII and WII-C2C and 20 sessions by 10 external domain experts. This included online sessions from international agencies viz. the World Heritage Centre, Paris; IUCN Regional Office, Bangkok; and World Heritage Interpretation and Presentation C2C (WHIPIC), Republic of Korea; and further from Site Managers of Western Ghats and Great Himalayan National Park. The content was further organized into three key themes of Heritage Concepts and Conventions, Heritage Management and Heritage Interpretation with emphasis on the principles, philosophies, and history of heritage conservation; factors, documentation, and impacts critical to heritage management and innovation interpretation techniques respectively.

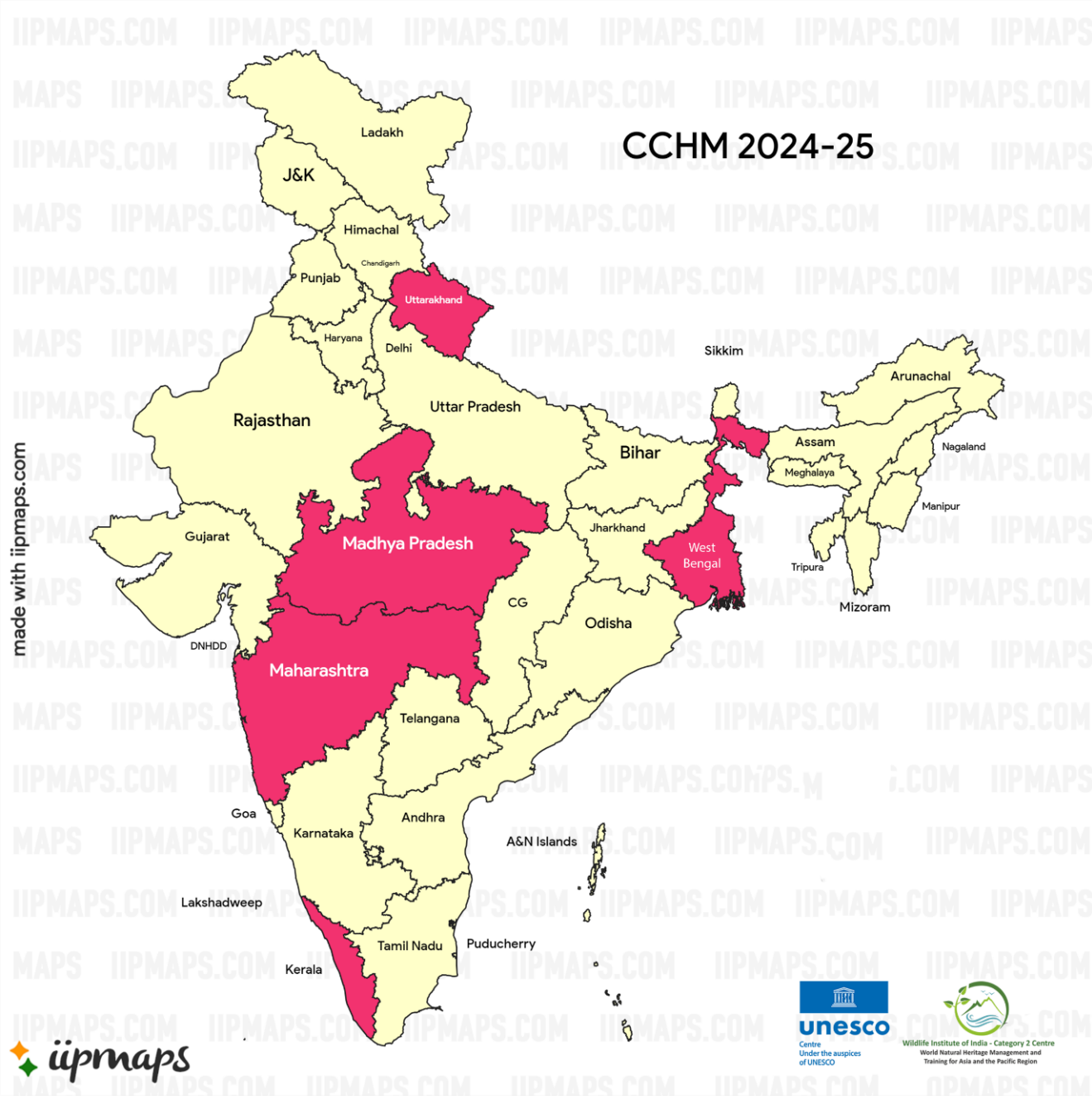
2nd CCHM Batch on Completion of their course

During Field Visit to Asan CR for 2nd CCHM

Visit of 2nd CCHM to OECM Jabarkhet Nature Reserve

The theory sessions were complemented by heritage-focused day trips to Jabarkhet Nature Reserve, Asan Conservation Reserve, and the Ashokan Rock Edict at Kalsi. After this, the course was rounded off by a 5-day field tour to a series of World Heritage Sites in Delhi, Agra, and Bharatpur helping the trainees gain a first-hand perspective of how these iconic sites are managed. The visit to the National Museum Institute in New Delhi also offered the trainees an inside look at the methods of preservation and promotion of national heritage.

In feedback received from the trainees, they acknowledged how heritage changed their perspectives to give a more holistic view of forestry. With sites and responsibilities under their management having significant heritage components such as Indigenous cultures, ancient cave art, public interfaces through tourism, and zoological parks, it is hoped that their learnings from this course will help them become better and more effective protected area managers.



Map representing participation in 2nd CCHM

The Last Leaf of Chipko:
A Guardian's Tale from the Himalayas

Figure 1. Sudesha Devi at Ganga Grandma's Course, WII, Dehradun (**P.C.** Piyush Pandey)

In the heart of Uttarakhand, where the Ganges begins its descent and the forests hum with ancient songs, lives a woman whose spirit is as enduring as the Himalayas themselves—Sudesha Devi, affectionately known as **Sudesha Behan**. A survivor, activist, and grandmother to generations of environmental consciousness, she has become a living legend in the realm of nature conservation. This article captures her journey, from the horrors of Partition to the forests of Hemvalghati, where she stood shoulder-to-shoulder with the brave hearts of the Chipko Movement.

Meeting her at the four-day workshop titled **"Ganga Grandma's Course: Documenting Traditional Knowledge Systems for Conservation of Freshwater Ecosystems in the Ganga River Basin"**, I saw not just an elder, sipping tea from her private steel cup, but a guardian of traditions and values. Behind her serene smile lay the wisdom of decades of struggle, sacrifice, and triumph. As the workshop participants dispersed for a break, journalist Shiba Aslam struck up a conversation with her. I joined them, eager to learn from this extraordinary woman, a woman who embodies the spirit of resistance and harmony, carrying with her the memories of trees hugged, rivers revered, and communities united in defiance.

Rooted in Tragedy, Blossoming into Activism

Sudesha Devi's journey began amid one of the most heart-wrenching events in modern Indian history: the Partition of 1947. Her father, a driver for an Indian officer in Lahore, was among those who risked their lives to rescue widows and girls left behind in the chaos. This traumatic experience planted in Sudesha's family an unshakable belief in compassion and community upliftment.
Her father eventually settled in the village of Kot, Chamba near Tehri, where he noticed the villagers cutting down green branches indiscriminately. His concern gave rise to a grassroots conservation effort—he appointed a guard to protect the forest and urged the villagers to collect only dry wood and graze their cattle responsibly. This early initiative became a template for sustainable living, and neighbouring villages soon followed suit. It was from these seeds of stewardship that young Sudesha imbibed her love for nature, a love that would grow into a lifelong mission.

Education and Empowerment Against All Odds

As a child, Sudesha Devi attended Kasturba Gandhi Trust School, which provided education to women and girls who were victims of Partition. Here, she learned the art of weaving on Gandhiji's Charkha. The school embodied Gandhi's philosophy of self-reliance—students spun their cloth and boycotted foreign goods. At a time when educating daughters was seen as taboo, her father defied social norms, sending her to school despite criticism. Her father's determination ensured she received an education that would empower her to become a voice for the voiceless.

During her time in school, she was also introduced to the Bhoodan Movement led by Vinoba Bhave. As a young girl, she travelled from village to village, persuading wealthy landowners to donate land to the landless—an act of justice and solidarity that would shape her sense of activism. This journey wasn't without challenges. In an era where it was frowned upon for unmarried women to travel alone, Sudesha broke conventions, laying the foundation for the trailblazing activist she would later become.

Marriage, Forests, and the Fight for Conservation

At the age of fifteen, Sudesha Devi was married into a wealthy family, a union that introduced her to a way of life vastly different from her own vegetarian upbringing. "I married into a family of butchers," she said with a mischievous laugh, describing the shock of finding her new relatives consuming meat with gusto. Yet, the forest became her refuge. With other women, she would venture into the wilderness, collecting fruits like Amla, Kaphal, Tetu, and Timli, which sustained them and connected them to their ancestral roots. "The jungle was our 'mayka'—our parents' home," she explained. The nutrients from these wild fruits, she believes, granted her the health and vitality she enjoys to this day.

It was this deep bond with the forest that fueled her participation in the Chipko Movement—a nonviolent protest where villagers, led by women, embraced trees to prevent them from being felled by contractors. Alongside Gaura Devi and Chandrakala Behan, Sudesha became a prominent figure in the movement, travelling extensively to spread awareness and rally support. Often, this activism came at a personal cost, forced to leave her children behind when protesting and was even arrested multiple times. Her husband, however, stood by her, recognizing the significance of her cause.

"The forest was not just a source of firewood; it was life itself," she said, recounting the brutal suppression the protesters endured—beatings by hired goons, hunger, and the tragic deaths of fellow activists who succumbed to malnourishment. Yet, these hardships did not deter her. "We fought not for fame but for the soul of our land," she declared.

Lessons from the Past, Warnings for the Future

Reflecting on how human-wildlife conflict has intensified over the years, Sudesha spoke with both sorrow and wisdom. "In our time, animals would flee at the sight of a human. Now they attack because we have encroached upon their homes." She lamented the loss of old forests and the careless exploitation of natural resources. "We stopped respecting nature, and now nature is returning the favour," she said with grave finality.

For Sudesha, conservation is not just about preserving the environment but also about nurturing the community. "You cannot protect the forest if the people around it are hungry or excluded from the process," she explained. She emphasized the need to blend traditional knowledge with scientific methods and urged the younger generation to work for the cause, not for fame.

Her words carry the weight of lived experience: "The forest and the people must thrive together, or not at all."

A Legacy of Courage and Contentment

At the end of our conversation, Sudesha Behan's tone softened. She spoke fondly of her late husband and the children she raised with care. "I am a great-grandmother now," she said, pride lighting up her eyes. Though two of her children passed away young, her daughter went on to become a lawyer and even contested local elections, carrying forward her mother's spirit of activism. "My children and grandchildren live by the values I fought for," she said with quiet satisfaction.
When asked about her future plans, Sudesha laughed heartily. "It's time for me to go now," she said, without a trace of regret. "But I leave behind a happy life, filled with purpose and love."

The Wisdom of Sudesha Behan

Sudesha Devi's life is a testament to the power of individual action in the face of overwhelming odds. From Partition to the Chipko Movement, from human-animal conflict to the conservation of freshwater ecosystems, her story is one of resilience and responsibility. As she sat sipping tea at the Ganga Grandma workshop, surrounded by younger conservationists, it was clear that her legacy would continue to inspire generations.

Her parting advice to us was simple but profound: "Work not for recognition but for the good of the land and its people." And in that, she reminded us that true conservation is a labour of love—a love as enduring as the forests she fought to protect.

In an era of fleeting activism and social media fame, Sudesha Behan's life stands as a beacon, urging us to reconnect with our roots, honour our commitments, and embrace the simple truth that to save nature is to save ourselves.

About the Author:

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Teaching for Tomorrow:
Integrating River Conservation into Classrooms

- Alankrita Sharma

In an effort to inspire and empower educators as *champions of environmental conservation*, the National Mission for Clean Ganga (NMCG), Wildlife Institute of India (WII), hosted a National Level Training Workshop for School Teachers on "Integrating River Conservation into Education Programmes." Held from July 23 to 26, 2024, at WII in Dehradun, Uttarakhand, this landmark event brought together 121 teachers from 11 States across India, including Himachal Pradesh, Uttarakhand, Uttar Pradesh, and West Bengal. Shri Mahaveer Singh Bisht, Director of Secondary Education (Uttarakhand), honoured the event as Chief Guest, emphasizing the need for a unified approach to environmental education.

The workshop was designed to equip teachers with the knowledge and skills to incorporate river conservation into their curricula, aiming to reach young minds across India with the message of environmental management. Through a mix of interactive sessions, field visits, and collaborative activities, educators explored strategies for engaging students in issues related to river conservation, biodiversity, and sustainability.

The program underscored the importance of experiential learning, with participants actively exploring techniques to make conservation education both impactful and accessible.

The event highlighted the crucial role educators play in shaping future generations' attitudes toward the environment. By providing resources and training, the workshop encouraged teachers to inculcate values of ecological responsibility in students, fostering a generation of informed and proactive environmentalists. This initiative marks a promising step toward integrating conservation into mainstream education. This emphasizes that lessons on river ecosystems have the potential to inspire young minds to protect India's natural aquatic heritage.

Group activity

A group photograph at the Regional Science Centre

Nature Through Every Child's Eyes:

Celebrating Wildlife Week at Learning Tree Special School

-Alankrita Sharma

On October 8th, 2024, the WII-NMCG team celebrated National Wildlife Week at Learning Tree Special School, embracing the idea that every child, regardless of ability, can be a voice for the Earth. In a vibrant hands-on session, students expressed their love for nature through card-making and puzzle-solving activities, bringing their creativity to life.

Each card was a unique creation, featuring wildlife themes that reflected the students' perspectives and artistic flair. With scenes of lush forests, delicate flowers, and colourful animals, their artwork captured the beauty and diversity of nature. Puzzle-solving further engaged the students, helping them develop a deeper connection with wildlife and the environment. This memorable event emphasized inclusivity in conservation education, demonstrating that every child has a valuable role in advocating for our planet.

Students with their beautiful art

Group photograph with the school children

In the Service of Nature:

Ganga Rescue Training for Forest Guardians-WII-NMCG team

-Simran Aggarwal

In the scenic Renukaji Zoo, Himachal Pradesh, 37 zookeepers, veterinarians, and frontline forest staff gathered for a unique training on August 6-7, 2024, organized by the Wildlife Institute of India (WII)-NMCG and the Himachal Pradesh Forest Department. The workshop, funded by the National Mission for Clean Ganga (NMCG), aimed to equip these professionals with critical skills to rescue distressed aquatic wildlife in the Ganga River Basin. Opening with an address from ACF Shri Vinod Kumar, participants were reminded of their vital role in safeguarding the river's biodiversity.

The workshop combined theory with hands-on practice across various conservation topics. Dr. Sangeeta Angom introduced the *Biodiversity of the Ganga River Basin* and led a session on *Freshwater Turtle Rescue and Treatment*. Dr. Neeraj Mahar demonstrated *Bird Monitoring, Capture, and Handling* techniques, while Dr. Pariva Dobriyal discussed strategies for managing Human-Wildlife Conflict. Shri Aditya Tiwari, founder of Paryavanam NGO, showcased *Snake Rescue and Handling* through live demonstrations. Ms. Simran Aggarwal covered the *Ethical Collection of Biological Samples for Genetic Analysis*, emphasizing genetic tools and conservation research. Dr. Soufil Malek engaged participants with a session on *Butterfly Identification* and *Monitoring*, providing guidance on using butterflies as bioindicators and creating butterfly-friendly habitats. Mr. Danish Kaleem concluded with a session on *Freshwater Turtle Egg Retrieval and Hatchling Release*, where he demonstrated techniques for safely relocating turtle eggs and ensuring the survival of hatchlings.

This training was of immense importance for the forest department, as it enhanced their capacity to effectively manage and conserve the diverse species within the Ganga River Basin. By providing frontline staff with practical, hands-on experience, the workshop ensured that they were well-prepared to respond swiftly and appropriately to wildlife emergencies, especially those involving endangered aquatic species. With this newfound expertise, the forest department now has a stronger, more skilled team ready to handle rescue operations and mitigate human-wildlife conflicts, playing a pivotal role in the long-term conservation of the river's rich biodiversity.

Snake handling session

Group photograph

Swacchata pledge

Swachhata Hi Seva Abhiyan

-Mohd Danish Kaleem

Swachhata Hi Seva Abhiyan 2024 (18th September – 2nd October), initiated by the Government of India, promotes a cleaner, greener India with the theme *Swabhav Swachhata Sanskar Swachhata*. Under this theme, the WII-NMCG team encouraged students to take active roles in environmental conservation through various educational and hands-on activities.

This year a series of 53 events were organized in Ganga Basin States, engaging 5,671 *Bal Ganga Praharis* from various schools. Activities started with the Swachhata Pledge , where students committed to maintaining cleanliness in their communities. The Plantation Drive, themed "*Ek Ped Ma Ke Naam*" (One Tree in Mother's Name), inspired students to plant trees in honour of their mothers, symbolizing their care for both family and the environment.

Further, the Cleanliness and Awareness Drive encouraged students to actively clean their surroundings and educate others on the importance of a clean environment. Creative events such as Painting and Slogan Writing Competitions allowed students to express their views on cleanliness artistically. Through these activities, the Swachhata Hi Seva Abhiyan 2024 successfully promoted the values of *Swabhav* (goodwill), *Sanskar* (cultural values), and Swachhata (cleanliness), inspiring the new generation to commit to a sustainable and clean future.

Painting competition

Empowering Future Conservationists:
Workshop on Ganga Biodiversity and Wetland Conservation

-Mohd Danish Kaleem

A two-day workshop on "Ganga Biodiversity and Wetland Conservation" was held from October 18th to 19th, 2024, at Deen Dayal Upadhyay Gorakhpur University, in collaboration with the Institute of Agriculture and Natural Science under the WII-NMCG project. About 350 students and 20 faculty members attended, focusing on the conservation of Ganga and its wetlands.

The workshop opened with remarks from the Vice-Chancellor and Pro-Vice Chancellor of the University where they emphasized the importance of biodiversity and wetland conservation. Participants learned about the ecological significance of wetlands and key species in the Ganga Basin. The integration of conservation education into academic curricula was a primary theme.

Hands-on activities allowed participants to practice biodiversity monitoring and conservation techniques, followed by presentations on interdisciplinary conservation approaches. The valedictory session featured Padma Shri Dr. R.C. Chaudhary, who encouraged student involvement in conservation efforts. Certificates were awarded to attendees, highlighting their commitment to preserving the Ganga Basin's biodiversity. This workshop was a vital step in developing environmentally conscious leaders dedicated to protecting our natural heritage.

Training workshop at Gorakhpur University

Empowering Wildlife Rescuers:
National Training Workshop at Gorakhpur Zoo

-Simran Aggarwal

The Wildlife Institute of India (WII) - National Mission for Clean Ganga (NMCG) team conducted a three-day national training workshop from October 22nd-24th, 2024, at Shaheed Ashfaq Ullah Khan Gorakhpur Prani Udyan, Uttar Pradesh, with a focus on enhancing expertise in aquatic wildlife rescue and conservation. Inaugurated by Mayor Dr. Manglesh Srivastava and Shri Vikas Yadav, IFS, Director of Gorakhpur Zoo, the workshop brought together veterinarians, students, zookeepers, and frontline forest staff. Day one introduced participants to the biodiversity of the Ganga River through Dr. Sangeeta Angom's informative session, followed by an interactive session on butterfly monitoring techniques by Dr. Soufil Malek, emphasizing butterflies' significance as ecological indicators.

Day two centered on advanced conservation techniques, starting with Ms. Simran Aggarwal's presentation on genetic tools in species preservation. Mr. Danish Kaleem followed with a session on best practices for freshwater turtle rescue, which led into a live demonstration of crocodile rescue by Mr. Hemant Vadhavana and his team from Nature Help Foundation, Vadodara. These sessions provided essential, practical skills in handling and caring for distressed aquatic species, giving participants hands-on experience in animal rescue and management.

The final day began with Dr. R.K. Singh's comprehensive lecture on veterinary care for rescued aquatic animals, focusing on effective rehabilitation and care strategies to support long-term health. This was followed by Mr. Aditya Tiwari of the Paryavarnam Society, who led an interactive session on snake rescue, busting myths, and teaching safe handling techniques. The workshop concluded with a valedictory session attended by Shri Bhimsen, IFS, and Shri Vikas Yadav, IFS, during which Dr. Sangeeta Angom presented the training report. Participants shared feedback on the workshop, underscoring the importance of these hands-on skills in advancing aquatic species conservation efforts across India.

Demonstration on freshwater turtle rescue

Live demonstration of crocodile rescue

Bal Ganga Prahari Corner:
Nurturing Biodiversity Awareness in the Sundarbans

- Mohd Danish Kaleem

The Ganga Aqua-life Knowledge Centre, also known as the Bal Ganga Prahari Corner, was recently inaugurated by the WII-NMCG team at Rangebelia High School (H.S.), Gosaba Island, Sundarbans, West Bengal. This centre serves as a crucial platform for educating students and the local community about the diverse biodiversity of the River Ganga, its tributaries, and the unique habitat of the Sundarbans. The Knowledge Centre is specially designed to showcase the rich aquatic life and ecological significance of the Ganga River Basin, highlighting species such as the Gangetic dolphin, gharials and turtles, as well as the various fish and bird species that depend on this river system. Through informative displays and interactive activities, it provides insights into the interconnectedness of the Ganga's biodiversity and the critical role of the Sundarbans mangrove ecosystem in maintaining ecological balance.

In addition to establishing the Centre, the WII-NMCG team conducted sensitization workshops for students and teachers of Rangbelia High School, Gosaba, Narayanpur High School, South 24 Paraganas, Belghoria Mahakali Girls High School and Shakhawat Memorial Govt. Girls High School, Kolkata West Bengal. These workshops aimed to instil a deeper understanding of environmental conservation, focusing on the importance of protecting the Ganga River and the Sundarbans. Through these efforts, the initiative seeks to inspire a generation of youth committed to safeguarding the biodiversity of the Ganga and its surrounding ecosystems.

Bal Ganga Prahari Corner (Ganga Aqua-life Knowledge Centre)

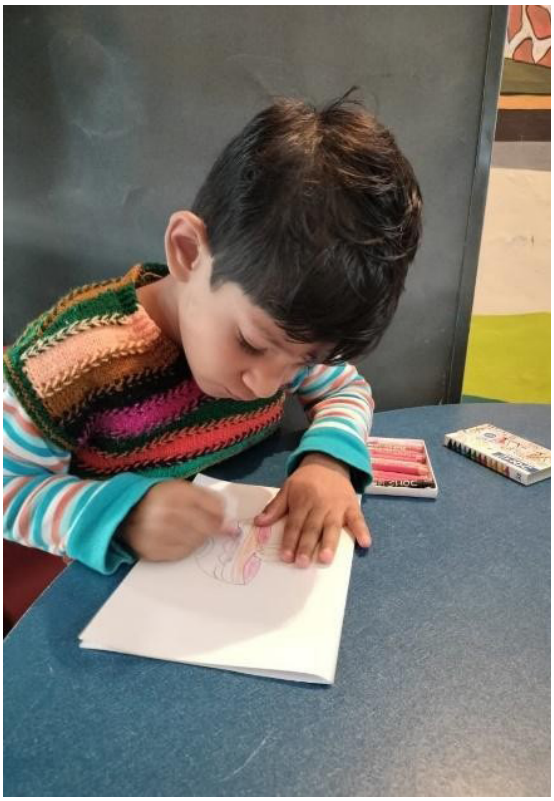
Sensitization workshop for the students

Little Lights Shine Bright:
Diwali Celebrations at WII Creche

-Simran Aggarwal

Diwali, the festival of lights, is a cherished celebration that brings people together, uniting communities with its spirit of joy, brightness, and hope. This year, the WII Creche welcomed Diwali early, bringing warmth and creativity to our little ones through a delightful card-making session. With their unique designs and big smiles, the children crafted colourful Diwali cards, each a beautiful expression of the festival's vibrance and charm.

The event created a joyful atmosphere, bringing the little ones together in the true spirit of Diwali, fostering friendships and happiness. At the WII Creche, we're committed to supporting our staff by providing a safe, nurturing environment for their children. Celebrations like these help our little stars explore traditions, connect with others, and create lasting memories, adding joy and light to their early years.



Little artist at work

Festive card creations at the WII creche

Little hands crafting diwali cards

Ganga Grandma's Course:
Preserving the Ganga River's Legacy

-Alankrita Sharma

The Ganga Grandma's Course is a pioneering initiative aimed at safeguarding traditional knowledge and practices essential to the conservation of freshwater ecosystems. Created by WII-NMCG, this course uniquely combines oral history, digital archiving, and cultural exchange to ensure that the time-honoured wisdom held by grandmothers along the Ganga River Basin can be passed down to future generations. By exploring customs, folklore, songs, and traditional agricultural practices, the program aspires to preserve cultural heritage while promoting sustainable freshwater ecosystem conservation.

With a comprehensive approach, the Ganga Grandma's course is structured around four core objectives: documenting traditional ecological knowledge; analysing the role of oral history in conserving freshwater ecosystems; creating a digital archive for educational and cultural purposes; and facilitating intergenerational dialogue. Through these objectives, the course honours the guardians of this knowledge, fostering an appreciation for age-old practices that align with sustainable living. This course brought together 111 grandmothers from eight Ganga River Basin States.

This unique gathering provided an opportunity to learn directly from the "Ganga Grandmas" themselves, helping to bridge generational gaps and keep their ideas alive in a world that urgently needs such wisdom. The program's digital archive allows these stories, songs, and practices to be blended into education and community participation, ensuring the Ganga Grandma's Course's conservation philosophy lives on.

Lightning of the lamp by the dignitaries

Group photograph

Celebrating National Wildlife Week:
Inspiring Conservation through Learning and Engagement

-Simran Aggarwal

An impactful biodiversity awareness workshop was held at Dev Bhoomi Uttarakhand University (DBUU), Dehradun, by the Wildlife Institute of India (WII)-National Mission for Clean Ganga (NMCG) team in observance of National Wildlife Week. The purpose of the event was to encourage both teachers and students to learn more about biodiversity and conservation. Dr Soufil Malek gave an engaging talk about the value of protecting our ecosystems, highlighting the interdependence of species and the vital part they all play in keeping the condition of our natural environment.

The outdoor activities, led by Ms. Simran Aggarwal, offered participants hands-on learning experiences through engaging exercises designed to enhance their awareness of local flora and fauna. These activities encouraged students to explore their natural surroundings and recognize the delicate balance that sustains wildlife in their region. By actively participating in these activities, attendees gained a firsthand appreciation for the diverse life forms that populate our ecosystems and the conservation challenges they face.

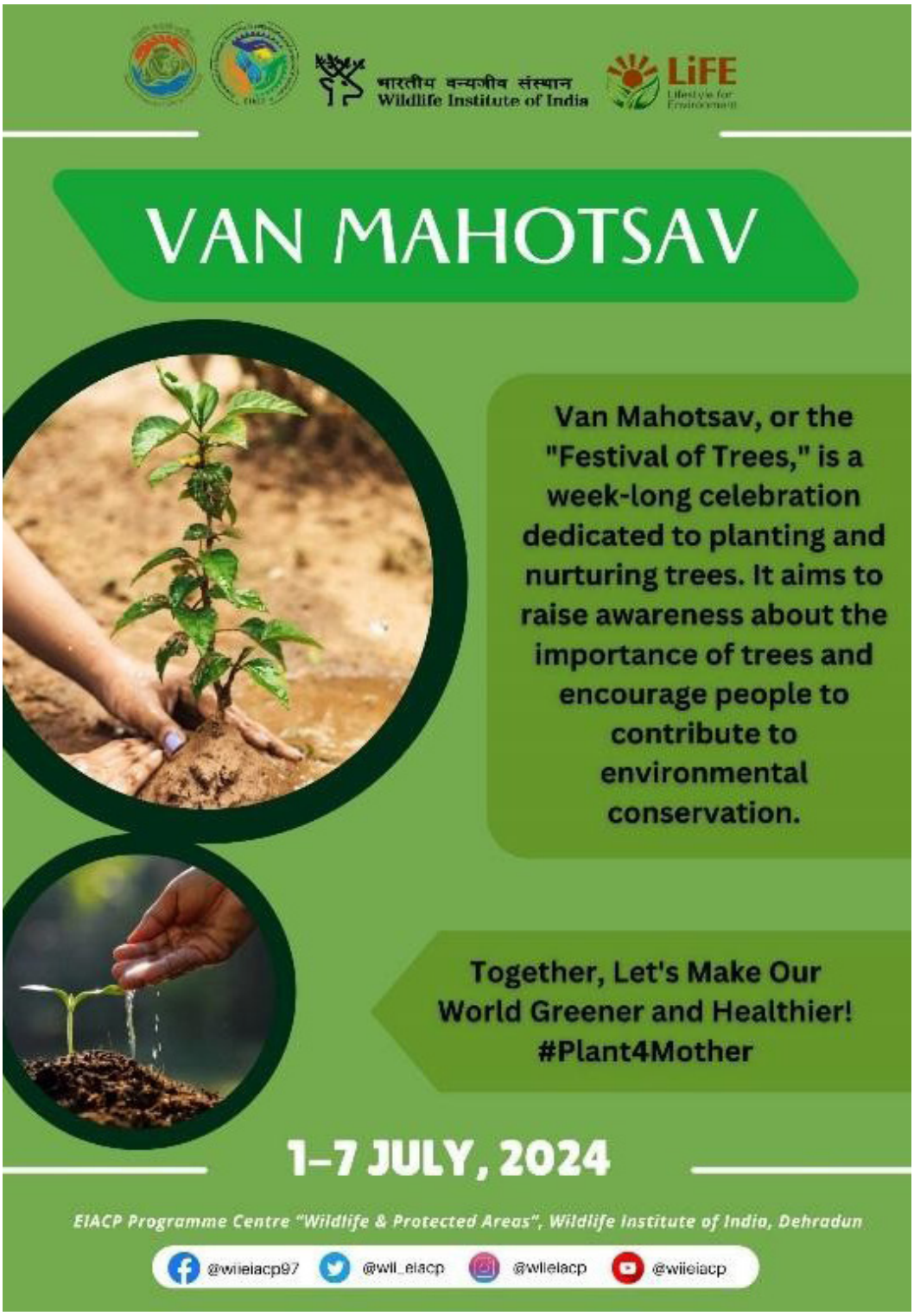
Concluding the event with a lively quiz competition added an element of friendly rivalry as students tested their newfound knowledge of biodiversity. The day ended with a prize distribution ceremony, celebrating participants' enthusiasm and dedication to wildlife conservation. This program marked a successful step towards fostering a new generation of conservation-minded citizens, ensuring that the message of National Wildlife Week respecting and protecting our natural world resonates throughout the community.

Group Photograph

Celebration: Van Mahotsav

01st – 07th July, 2024

The release of this e-poster is intended to educate the public about the numerous benefits of trees, including their role in improving air quality, providing oxygen, supporting biodiversity, and mitigating climate change. The day motivates individuals and communities to engage in tree-planting activities, emphasizing that even small contributions can have a substantial positive impact on the environment.



Celebration: International Day for the Conservation of the Mangrove Ecosystem

26th July, 2024

The EIACP Centre at the Wildlife Institute of India released a poster aimed at raising widespread awareness among the public about the vital role of mangroves in protecting coastal ecosystems. The poster highlights how mangroves act as natural barriers against coastal erosion, reducing the impact of storms and tsunamis, while also providing crucial livelihoods to coastal communities through fisheries and other resources. Additionally, the poster emphasizes the importance of mangroves in carbon sequestration, as they absorb and store significant amounts of carbon, helping mitigate climate change. Furthermore, the poster showcases the rich biodiversity that mangrove ecosystems support, including various species of fish, birds, and marine life. It also provides a visual representation of mangrove coverage across India, illustrating the extent of these critical habitats and the need for their conservation. Through this initiative, the EIACP Centre aims to raise awareness of the ecological and socio-economic significance of mangroves, urging both communities and policymakers to prioritize their protection.

Celebration: Global Tiger Day

29th July, 2024

To mark this important occasion, the EIACP Centre at the Wildlife Institute of India, Dehradun, released a compelling infographic designed to showcase the captivating world of tigers. The infographic offers a blend of fascinating facts about tigers, emphasizing their critical role in maintaining ecological balance as apex predators, as well as highlighting their importance in sustaining biodiversity. It also features a detailed graph that traces the population trends of tigers over time, providing insights into their current status and the challenges they face, such as habitat loss, poaching, and human-wildlife conflict.

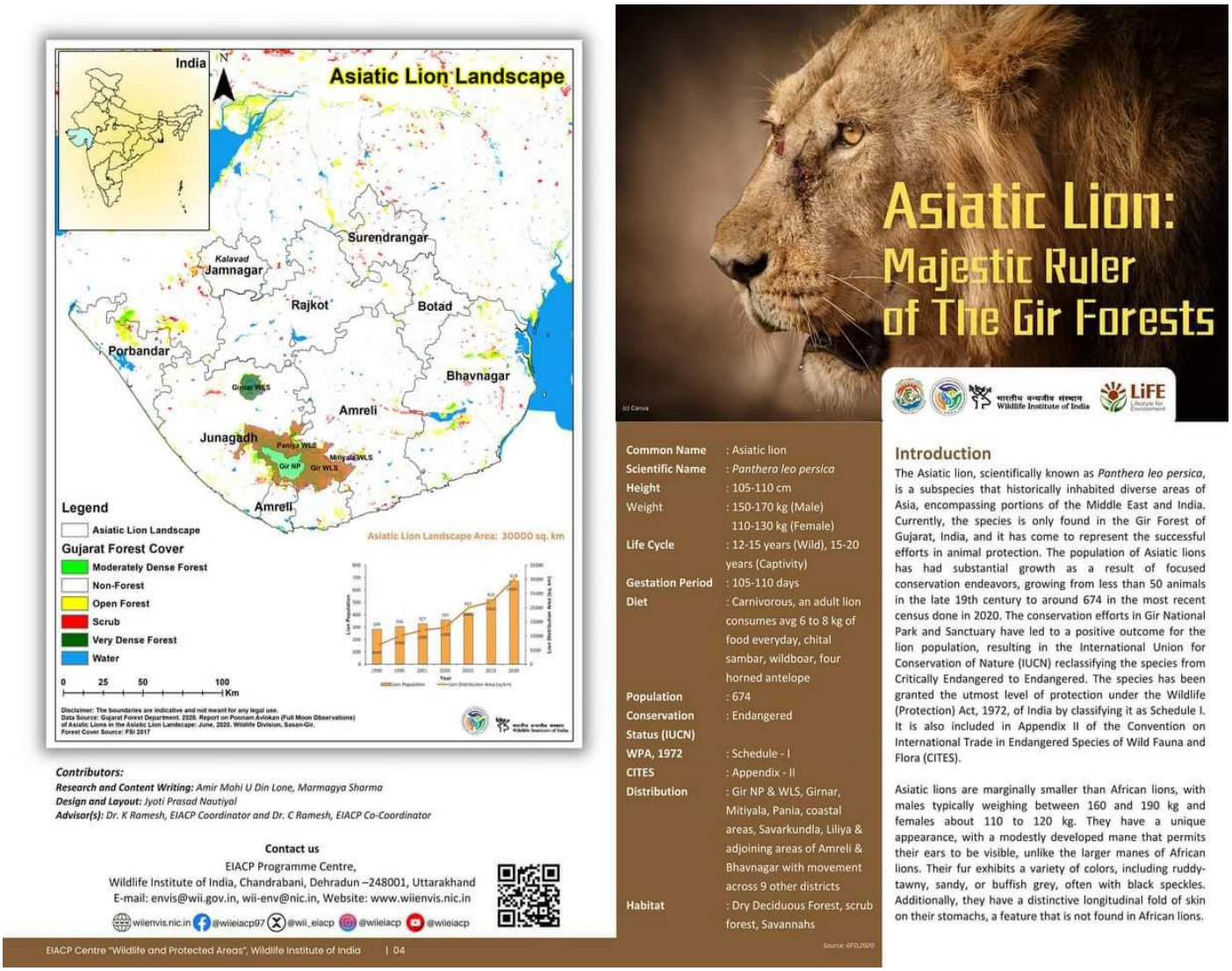
By presenting both compelling information and relevant statistical data, the visual aims to raise awareness among the public about the precarious state of tiger populations, while inspiring action to safeguard their future. Through this initiative, the EIACP Centre seeks to educate a broader audience, stressing the need for collaborative efforts to protect these majestic creatures and their habitats for future generations.

Online Quiz Contest

The EIACP Centre at the Wildlife Institute of India organized an online quiz to raise mass awareness about tiger conservation. This engaging initiative saw the enthusiastic participation of over 503 individuals. The quiz not only tested participants' knowledge about tigers but also served as an educational tool, highlighting critical issues related to their conservation.

Celebration: World Lion Day

10th August, 2024



To mark the importance of the day the EIACP Centre at the Wildlife Institute of India has released a comprehensive resource titled ***"The Asiatic Lion: Majestic Ruler of Gir Forests"*** This informative document offers an in-depth exploration of the Asiatic lion, delving into various aspects of its life, distribution, and conservation. It provides a thorough overview of the lion's natural habitat in the Gir Forests of Gujarat, detailing the unique ecological characteristics of this region that support the lion population.

The document also examines key challenges faced by the Asiatic lion, including human-wildlife conflict and the ongoing threat of poaching. It offers insights into the current population status of the species, highlighting both the successes and setbacks in conservation efforts over the years. By showcasing the progress made in lion recovery programs and the efforts to mitigate conflicts with local communities, the document underscores the importance of ongoing protection initiatives.

Through the release of this product, the EIACP Centre seeks to raise public awareness about the precarious state of the Asiatic lion, encouraging collaborative efforts to safeguard its future. By providing essential facts and data, this resource serves as an important tool for informing policymakers, conservationists, and the general public about the lion's conservation needs and the crucial steps required to ensure its continued survival.

Mission Life Pledge

12th August, 2024

On August 12, 2024, the EIACP Centre at the Wildlife Institute of India organized a Mission LiFE Pledge event at Arya Inter College, Dehradun. Over 80 participants, including students and staff, committed to adopting sustainable practices to reduce their carbon footprint. The event featured sessions on environmental impact, sustainable living tips, and the importance of collective action. Attendees pledged to make eco-friendly changes, such as reducing waste, conserving energy, and supporting sustainable products. This initiative reflects Arya Inter College's ongoing efforts to promote sustainability and environmental responsibility.

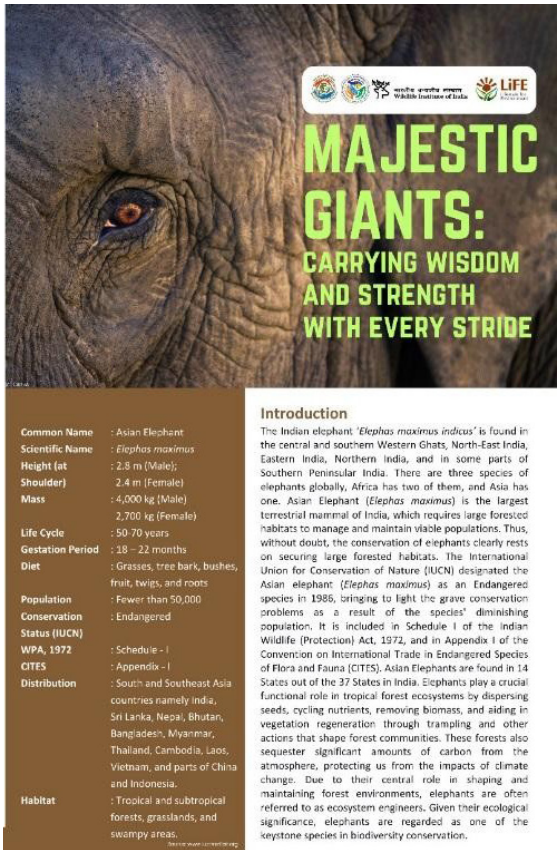
Celebration: World Elephant Day

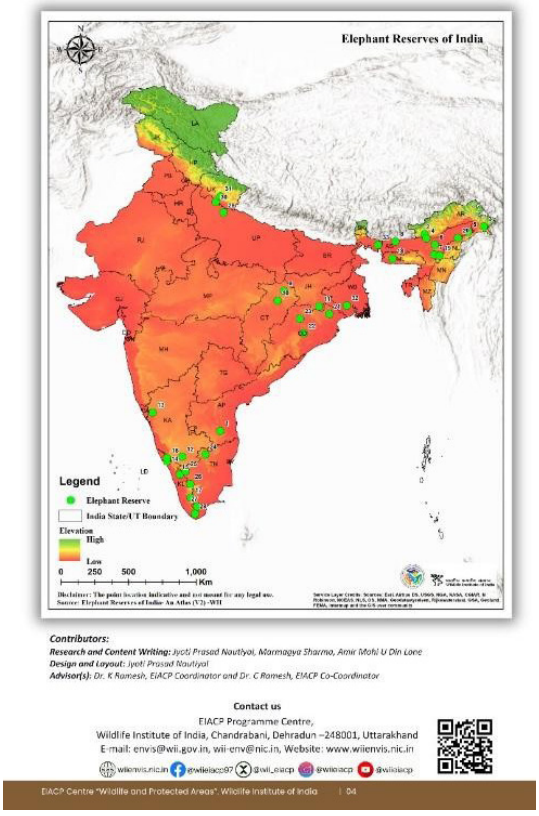
12th August, 2024

In observance of World Elephant Day, the EIACP Centre at the Wildlife Institute of India has unveiled an insightful resource titled ***"Giants: Carrying Wisdom and Strength With Every Stride."*** This meticulously crafted knowledge resource offers a thorough exploration of elephants, highlighting their critical role as keystone species within ecosystems. Elephants are essential to maintaining biodiversity, and this document delves into their unique contributions to the environment, from seed dispersal to shaping the landscape.

The knowledge product provides detailed insights into various facets of elephant biology and behavior, including their diet, social structure, and migratory patterns. It also presents an in-depth analysis of population dynamics, examining the challenges that elephants face in terms of habitat loss, human-wildlife conflict, and poaching. Moreover, the document highlights the current conservation status of elephants, with a focus on the efforts being made to protect them and their habitats.

By offering this comprehensive resource, the EIACP Centre aims to raise awareness about the importance of elephants in ecosystems and the urgent need for continued conservation efforts to safeguard their future.

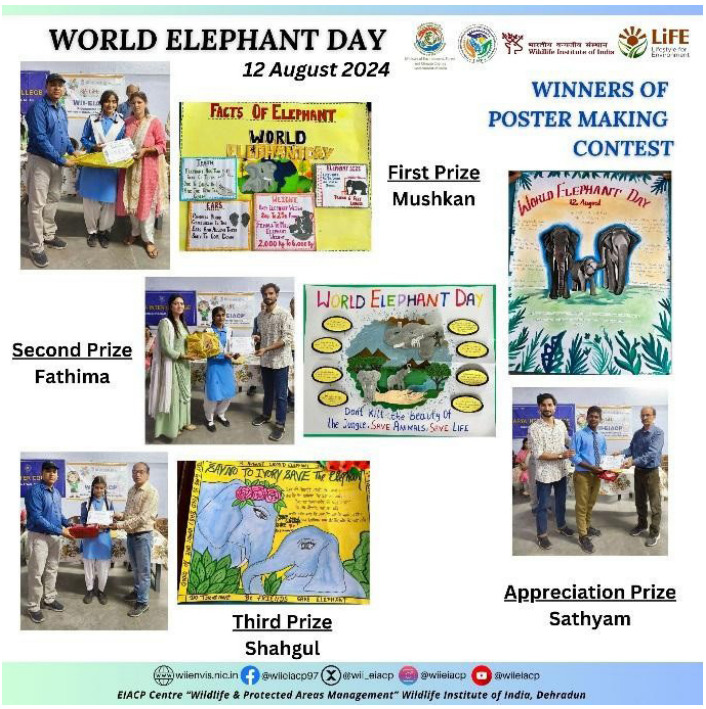




Quiz and Poster Making Contest
Arya Inter College, Dehradun

12th August, 2024

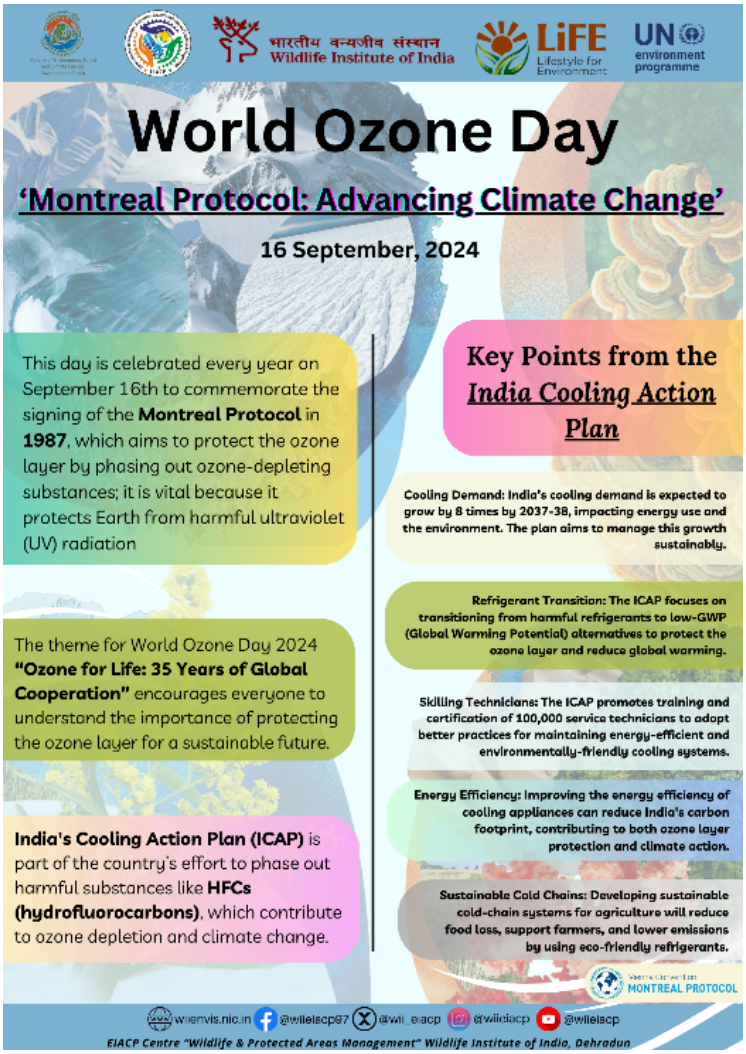
To celebrate World Elephant Day this year, the EIACP Centre at the Wildlife Institute of India organized a Poster Making Contest and Quiz for students in Classes 9th to 12th at Arya Inter College, Subhash Nagar, Dehradun. A total of 40 students participated in the contest.



Celebration: International Day for the Preservation of the Ozone Layer

16th September, 2024

The EIACP Centre at the Wildlife Institute of India, Dehradun released an informative infographic showcasing the main highlights of the India Cooling Action Plan. This year's theme, "Montreal Protocol: Advancing Climate Action," highlights the Protocol's crucial role in mitigating climate change, with Customs playing a key part in these efforts. It emphasized the need for innovative approaches to tackle the rising demand for cooling, especially in a warming climate. The efforts under the India Cooling Action Plan serve as a vital step toward a more sustainable future, ensuring that economic growth does not come at the expense of our planet's health.

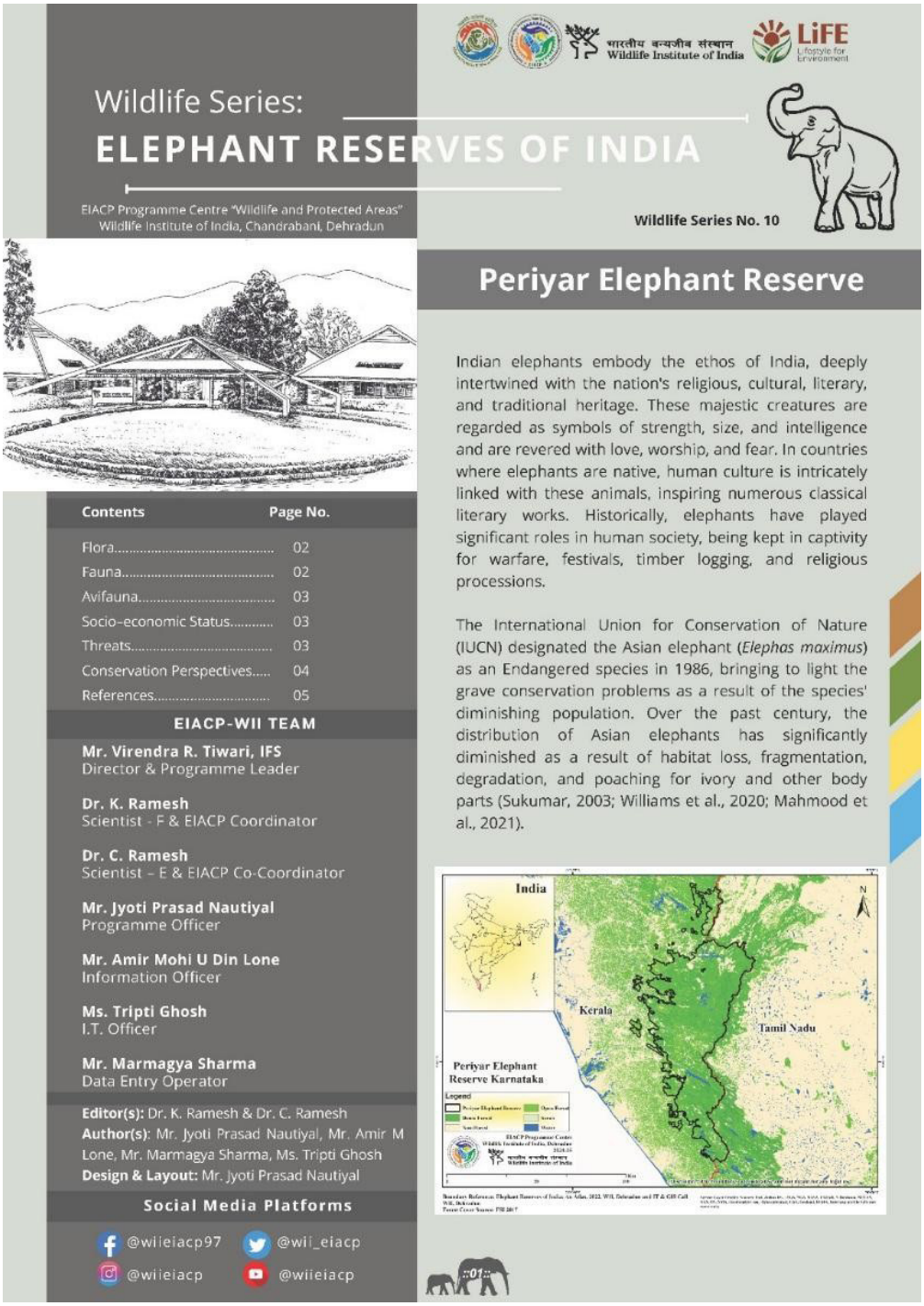


Online Quiz:
International Day for the Preservation of the Ozone Layer
16th September, 2024

To celebrate World Ozone Day this year, the EIACP Centre at the Wildlife Institute of India organized an online quiz to raise awareness about ozone layer preservation. Over 150 people participated enthusiastically, and all participants received e-certificates for their participation.

Elephant Reserves of India
Periyar Elephant Reserve, Vol. 10

The Wildlife Series: Elephant Reserves of India is an initiative by the WII-EIACP Programme Centre that provides comprehensive information on various elephant reserves throughout India. This series covers aspects such as flora, fauna, avifauna, socio-economic conditions, and conservation challenges, particularly focusing on mitigating human-elephant conflicts to ensure the survival of elephants. One notable reserve, the Periyar Elephant Reserve, extends from the Aryankavu pass to the Periyar Tiger Reserve, incorporating significant forest areas. The initiative aims to enhance the conservation and management of elephant habitats across India, contributing to broader efforts in wildlife protection and habitat sustainability



Workshop:

Human-Animal Interface Management for IFS Officers

18th – 20th September, 2024

The Wildlife Institute of India recently hosted a three-day workshop on Human-Animal Interface Management, with significant planning and coordination support from the WII-EIACP Centre. This specialized workshop was designed exclusively for Indian Forest Service (IFS) officers, offering an in-depth look at key strategies for managing human-wildlife conflicts, a growing challenge in many parts of India. The course covered a wide range of essential topics, providing participants with practical tools and techniques for effective wildlife conservation. One of the key focus areas was animal capture methods, which are critical for safely managing conflict situations and ensuring both human and animal safety.

In addition to the technical sessions, the workshop addressed the evolving dynamics of human-wildlife conflict, particularly in the context of changing landscapes and ecosystems. It highlighted the importance of adapting management strategies to meet the challenges posed by habitat loss, population growth, and encroachment. A unique feature of the workshop was a series of experience-sharing sessions, where officers from different states shared real-world examples of human-animal conflict management. Each officer had the opportunity to present their insights in a 5-7 minute presentation, followed by discussions and expert feedback. These sessions fostered a collaborative learning environment, allowing officers to learn from each other's experiences and gain valuable perspectives on best practices for managing complex wildlife issues.

Through this workshop, the WII aimed to enhance the skills and knowledge of IFS officers, enabling them to develop more effective, region-specific solutions for managing human-animal interactions in their respective jurisdictions.

Sitting Row (L to R) :- Sh. Kumar Manish Arvind, Dr. S.P. Goyal, Dr. B.S. Adhikari, Dr. C. Ramesh, Sh. Virendra R. Tiwari, Sh. Qamar Qureshi, Dr. S.K. Gupta, Dr. Nehru Prabhakaran,

Standing Row (L to R) :- Sh. C.S. Chouhan, Sh. Kodeeswaran, Sh. Akshay Balu Bhorde, Sh. Abhay Kumar Singh, Ms. Nidhi Chouhan, Sh. Sagar Pawar, Sh. Ramesh Chandra, Sh. Sunny Khokhar, Ms. Vidhya C., Sh. Upendra Pratap Singh, Dr. Rengaraju T., Sh. Vijay Shankar Pandey, Sh. Aditya Madanpotra, Sh. S. Navakishore Reddy, Sh. Pawan Jeph, Sh. Hari Om, Sh. Santosh Kumar K., Ms. Tripti Ghosh, Dr. Ritesh Gautam,

Field visit:

Great Himalayan National Park with students of Woodstock School, Mussoorie
21st – 26th September, 2024

The EIACP Centre at WII organized a field visit to the Great Himalayan National Park (GHNP) for students from Woodstock School, Mussoorie, offering a unique opportunity for immersive learning that combined conservation, community engagement, and hands-on experiences. The day started with an introductory session where the students had the chance to meet forest staff, local community members, and representatives from the Biodiversity Tourism Community Association (BTCA). This initial interaction gave the students a deeper understanding of the vital role local communities play in preserving the region's biodiversity while promoting sustainable tourism.

A key highlight of the visit was a tour of village community centres, where students observed traditional weaving and handloom techniques. This hands-on experience not only emphasized the importance of preserving local crafts but also showcased how such skills are integral to the livelihood of the local communities, illustrating the interconnectedness of cultural heritage and sustainable economic practices.

हिंदी पखवाड़ा दिवस

हिंदी पखवाड़ा के अंतर्गत भारतीय वन्यजीव संस्थान में अनेक कार्यक्रमों एवं प्रतियोगिताओं का आयोजन किया गया। इसमें हिंदी प्रश्नोत्तरी, हिंदी निबंध लेखन, कविता पाठ, एवं हिन्दी टिप्पण एवं आलेखन का आयोजन किया गया, जिसमे संस्थान के अधिकारियों, कर्मचारियों, शोधकर्ताओं एवं छात्रों ने उत्साहपूर्वक भाग लिया।

इसके आलावा संस्थान के पुस्तकालय में एक पुस्तक प्रदार्शनी भी लगाई गई है जो 14-28 सितम्बर तक जारी रहा।

In Conversation with Dr. Yadvendradev Vikramsinh Jhala

Filming puddling butterflies outside of the newly constructed boma for cheetahs in Kuno National Park.
©Moulik Sarkar

Yadvendradev Vikramsinh Jhala is an ardent conservationist who served as Dean, WII before retiring from the professional outpost last year (2023) in February. He currently serves as an Indian National Science Academy's Senior Scientist at the National Centre for Biological Sciences. Although he grew up in Mumbai, he spent his vacations in the farmland and wilderness of Gujarat – in semi-arid conditions with blackbuck and wolf populations. A renowned scientist in the field of wildlife conservation, he loves horse-riding and encourages his students to learn the field crafts as passionately as – if not more – than the analytical skills. In the AITE project, he worked alongside Prof. Qamar Qureshi and Dr. Rajesh Gopal. In the interview that he gave for the WII newsletter, we asked him for opinions on topics such as wolf conservation in the country, and details about his personal life such as the moments that he cherishes after having retired from the institute.

Q. What role do you believe conservationists play in teaching and inspiring the youth to care about the natural world? And can you tell us about any individual or organization that you believe is leading this effort?

I think educating the general public is crucial and as you can see today, across the world, people do know what the right thing is, but they're reluctant to take the right path. Most governments across the world today are ones which are mostly exploitative of nature – there's very little support for conservation of the environment, mostly lip service. And if that doesn't change in the years to come, it'll be too late to stop the environmental crisis on which humanity has pushed this planet.

And I think the role of conservation biologists, professionals like ourselves, is very crucial at this time. Though society acknowledges and pays homage to this profession, there's very little remuneration to conservation biologists in terms of salaries or recognition or that kind of stuff.

But I believe most of us who are in this field are passionate about what we do and are there for a purpose. And that's what is required.

The first name which comes to my mind is, late Mr. Lavkumar Khachar, who started the environmental education movement in India. WWF and the Bombay Natural History Society used to have very important and extensive programs involving the

local NGOs, local schools, and local colleges. Unfortunately, both are now limited to their respective cities with headquarters and therefore, the target audience is much smaller than before.

I believe it's very important that NGOs take up this role. Professional institutions like the Wildlife Institute of India, the Forest Research Institute, IIFM Bhopal, AMU, NCBS, all these professional institutions including the IISERs and IIFMs, also need to start working on environmental education, in training the school and college teachers on the ethics of conservation, and emphasising the essence of ecological balance. Today, social media and digital means are very important for communication and we need to use these to communicate site specific environmental problems and remedies as well as general awareness about biodiversity conservation.

Weighing a captured wolf prior to radio-collaring in Kachchh, Gujarat.
©Courtesy Y. V. Jhala

Q. You are a legend in the field of wildlife biology and conservation. When did you know that you wanted to be a wildlife biologist? What is that moment that shaped your entire future?

Although I grew up in Mumbai, my vacation time was spent in Gujarat – lots of farmland and wilderness around – semi-arid conditions with blackbuck and wolf populations.

My love for animals has been with me since childhood and I recollect, in my first grade, I wrote about wanting to be a zookeeper, which set me apart from my peers. Animals always fascinated me, though I didn't yet know about wildlife conservation. It's a childhood passion that I probably inherited from my parents. My father was an ardent conservationist, believed in saving life and practiced *ahimsa*, while my mother was more adventurous, enjoyed hunting and horse riding.

Q. During your tenure as a scientist associated with the AITE, the number of tigers has gone significantly up from 1411. Kindly relate some memorable moments that you shared with your colleagues during this time period.

A lot of memorable incidents come to mind. The All India Tiger Monitoring project was a wonderful combination of bureaucrats, wildlife managers and scientists working together for a common objective. In fact, to start the All India Tiger Estimation itself, was a nerve-wracking job.

We had to convince a lot of people to move away from the pugmark technique and subjective assessment into an objective based assessment where you could use replicable science to get reliable numbers. So it was a double-edged sword where my own community had to be first convinced of the method as well as field managers. I had opposition not only from bureaucrats and the government sector but also from scientists.

The team which we formed together included Dr. Rajesh Gopal, Prof. Qamar Qureshi and myself - the three people who actually started this program. While we had to convince a lot of bureaucrats, Dr. Rajesh Gopal - who was the director of Project Tiger - was a staunch supporter and had faith in our analytical skills to design and implement vast scale assessments.

The first meeting with the Secretary of Environment, Forests and Climate Change - Dr. Pradipto Ghosh – involved us giving a presentation through which we were successful in convincing him about the science behind the new technique. He subsequently went to the extent of saying to Dr. Gopal, then Director Project Tiger, that, "we will let scientists do their job, not interfere with them, and we don't even need to know what numbers are coming out of the whole protocol. We'll put the scientists on the pedestal in *Vignan Bhavan* and ask them to declare the results to the country as a press conference", without the government even knowing what we were going to say. This kind of support for scientists and quest for the truth is rare to see today.

In subsequent years, we also had staunch support from Minister MoEFCC, Shri Jairam Ramesh, who was so confident of our scientific approach and participatory in nature that he invited all our critics including Dr. Ullas Karanth for the release of the Tiger Report of 2010. The estimated numbers were not well received by two governments – West Bengal and Orissa. The estimations by the State governments were very far from the numbers that we estimated for the Sundarbans and Similipal Tiger Reserves. At this point, the support of Mr. Jairam Ramesh, the then minister of environment was crucial as he understood how tiger ecology, bureaucracy and politics work together to do conservation. He had even established a forum where critics could freely communicate about any criticism about the estimation.

Q. You have recently retired from a distinguished career spanning many decades. What is the most cherished aspect of your career that you miss now?

What I miss the most now is working with students and conducting fieldwork – hands on with wildlife. I believe that wildlife scientists need to be out in the field to actually do science. While I still have opportunities to observe wildlife, especially on my farm in Gir, where wildlife is abundant, it's not the same as the kind of work I used to do – hands-on and invasive research, involving catching animals and working with them.

I also miss interacting with students—teaching, mentoring, and guiding them through their academic and research journeys. I am hoping that my recent appointment at NCBS will fill this void to some extent.

Measuring the heartrate of a tiger before reversing the anaesthesia after satellite radio-collaring in Kanha Tiger Reserve. ©Chris Carbone

Q. From a management perspective, how have the roles, responsibilities and operational strategies of forest officials in tiger reserves and protected areas evolved over the past two decades?

We've come a long way in terms of management responsibilities and conservation strategies of a forest officer.

In the beginning of the 1950s-60s, an officer needed to shoot a tiger to prove that he was capable of becoming a forest officer. After 1972, the Wildlife Protection Act came into effect and the whole perspective towards being a forest officer has changed substantially.

From the 70s to the 90s, the pugmark system was used to count tigers and that probably was not wrong at that time, because there is an art in identifying tigers from their pug marks. In fact, we published peer reviewed scientific papers based on quantitative data to show that there is power of discrimination between individual tigers based on variables if you could measure them accurately through the pug mark.

So, a human eye can actually do that! Shikaris could track individual lions and tigers based on their pugmarks and bushmen in Africa can identify and track individual antelope that they have shot with a poison arrow based on their footfall amongst a herd of ungulates.

While the method itself is not wrong, there is a possibility of misusing it. The way it started off was that you could count tigers when you had an intimate knowledge of your animals and the habitat and you were monitoring them on a daily basis. Subsequently, the system later changed to some experts from Delhi being called in to identify the pugmarks, from a pile of plaster casts collected from the entire reserve stacked in a room, these "experts" had no knowledge of the land-tenure of resident tigers and the estimation then amounted to a guessing game. Now, not even *Bhagwan Vishnu* could estimate tigers from a pile of plaster casts of their pugmarks. So that's where the problem started.

Additionally, since the promotion of officers was related to tiger numbers, people would often inflate numbers. So there were paper tigers at that point in time. The bombshell fell when Sariska (TR) had total extinction while the official record of tigers was 19. So that was the issue in many of our tiger reserves and the first scientific assessment of 2006 done by WII-Project Tiger gave us the number of only ~1400 tigers in India when the official figure was about 3600 tigers. Today, with better governance and conservation policies for the past 20 years, tigers have recorded a growth rate of about 6% nationally, which is substantial for a large carnivore population.

Today, due to the increase in the tiger and leopard population there is a subsequent increase in human-carnivore conflict, and if this is not addressed professionally, people will take law and order in their hands and retaliate.

Currently, in my opinion, carnivore conflict resolution often lacks professionalism. So the role of the forest department has changed from protection (exclusive management) to people's participation (inclusive management). Ameliorating local communities, giving them livelihood opportunities, enhancing their livelihoods, making sure that their rights are acknowledged and compensated. Instead of using the *danda* - to use the carrot and the stick simultaneously. To enforce law as well as share monetary benefits out of conservation, which varies from sharing revenues of gate receipts of parks, forming tiger conservation foundations and eco-developmental activities.

So, the whole gamut has changed from management of parks and wildlife for hunting and timber produce, to protection, and now biodiversity conservation in participation with communities. So that has been the transition which has happened in the last 40 years of the forest department.

The future role of forest departments lies in working towards the population management of wildlife. Although we do mass captures of certain ungulates, and translocate them, they are mostly from forest to forest, or PA to other parts of the PA. The future of population management lies in the art of mass captures and translocation of agricultural pests such as wild pigs, nilgai, and black buck, into the forests of Chhattisgarh, Jharkhand, and Orissa, where carnivore densities are low due to bushmeat consumption. This would enhance the prey base and promote tiger and leopard occupancy in those areas. But if reintroductions and supplementation of carnivores is done without prey restoration, it will be a recipe for conflict and disaster.

Q. Having worked at WII and being one of the pivotal people in building WII, what do you feel that makes WII so unique from other organisations and what direction do you wish that it takes in the future?

After completing my PhD at VPI&SU and postdoc at the Smithsonian Institution in 1993, I received two job offers: one as Deputy Director at the Bombay Natural History Society (BNHS) and another as a Scientist E at the Wildlife Institute of India (WII). Although BNHS offered a higher salary at that time, I chose WII because it provided better opportunities for translating science into conservation due to its direct link with the government.

Conservation in India requires collaboration with the government, and WII's semi-government status allows autonomy while working within the Government's ambit.

WII occupies a unique position – combining research with conservation action. It integrates managers and scientists, fostering a collaborative approach to conserving India's biodiversity—something unparalleled worldwide.

The institute offers a balance of academic programs, such as PhD and MSc courses, alongside training for wildlife practitioners. Additionally, WII advises the government, with technical inputs that get translated into policy and law. This blend of academia, training, and policy influence makes WII a truly exceptional institution. The GOI had made WII autonomous so that its science and opinion remained unbiased and free from Government pressures. In the words of Mr. Seshan the Secretary of MoEF, GOI when WII was created (1982), "this autonomy needs to be valued and defended" as without it WII would lose its sanctity of "free scientific opinion".

Obtaining morphometric measurements from a darted snow leopard in Leh, Ladakh.
©Pankaj Raina

Q. Being a member of the IUCN and SSC specialist group for wolves and canids, how do you see the future of wolf conservation efforts progressing, especially in North India?

Currently, there is no official wolf conservation agenda implemented by any State forest department or the Government of India. While wolves are listed under Schedule I of the Wildlife Protection Act, enforcing this level of protection is challenging since wolves rarely have substantial populations within protected areas. Wolves primarily inhabit agro-pastoral landscapes where they often come into conflict with livestock herders. There are very few new areas which wolves have colonized.

The only positive thing going on for wolf conservation today is that the population of wolves that reside within the PAs and buffer zones are reasonably well off. Outside the PA, where 80% of the total wolf population lives, they suffer due to conflict and as mentioned earlier, there are no active conservation strategies being implemented in these landscapes.

The timing of whelping for wolves is almost fixed across India which is a period of 2-3 weeks between the end of December and early January. Following which, there's a three month period – until March end, where pups and the pack are restricted near rendezvous sites to rear their pups before they are old enough to join the pack. This 4 month period December-March is the phase when most mortality occurs in wolves and when critical protection is required. Pastoralists kill pups at this time when they're localized by smoking the pups in the dens or poisoning the entire localized pack. And so, traditional breeding habitats need to be identified within these mosaics of agro-pastoral habitat in which at least 2-8 sq. km. needs to be protected during this period.

So that's the strategy for wolf conservation, but it's not been implemented because it's very difficult to locate these sites. Only biologists, local grazers, or interested forest officers can actually do this. These are difficult due to the scale of the wolf distribution.

Checking the radio-collar frequency and its VHF range on a reintroduced cheetah in Kuno National Park.
©Courtesy Y. V. Jhala

Q. You've been a lecturer at St. Xavier's Mumbai. What made you shift careers, and how do you feel about making the change?

I didn't shift careers at all. I was always focused on doing wildlife for which I studied Zoology. So after I got my master's degree, I was trying for a PhD abroad which was a rarity back in my days - unlike now. While applying to colleges, I took up the post of lecturer at St. Xavier's College - which was an interim (short) arrangement. Simultaneously, I was already selected as a junior research fellow at the BNHS, for the Ladakh black neck crane project. Hence if I didn't go abroad, I was gonna do my PhD through the BNHS on black neck cranes. But, fortunately, I got admission abroad for my PhD. So working at St. Xavier's was not a deviation.

I believe it's great to have a zoology background to understand wildlife science. I would have preferred to also have a veterinary background as well, but there's so much one can do in life - It's too short.

Q. What have your relationships with students and mentors been like, and why do you tell your PhD students to have the 3 prerequisites - driving, swimming, and horse riding?

Although quantitative, writing, and analytical skills are crucial, skills in field crafts are just as important—maybe more so. To be a well-rounded wildlife scientist, you need to be as skilled in the field as much as on the computer.

For data collection, you've got to walk a lot, cycle, ride a motorcycle, drive a 4WD vehicle and be able to handle basics like changing tires or fixing fan belts—though that was more common in my days. I used to encourage horse riding, as I used horses for fieldwork back then. Skills like swimming are especially useful and essential in this profession.

There are five people I would like to mention who have acted as mentors for me. First is Dr. Rasanayagam Rudran – Rudy Rudran as he was fondly called – whom I met at the Smithsonian, he is the person who actually framed most of my knowledge in field craft, techniques, and so forth. I learnt a lot from him, subsequently I also worked for him. I believe this single man has had a global effect for over 40 years and trained 3 generations of wildlife biologists and practitioners across developing countries - Latin American, tropical Africa and the Asian countries. The second person would be my graduate professor, Prof. Robert Giles, who was a pioneer in his field. He was about 20 years ahead of his time, and he's the person who wrote the first book on wildlife management. Robert Giles is a legend in his way, and I learned the use of technology in wildlife from him.

In India, I was very impressed with Late Mr J C Daniels from BNHS who was my local Ph.D. guide and Late Prof. A M Bhagwath who was my MSc guide and also on my PhD committee. They were very supportive of my research, excellent teachers and also inspired me to teach. Genetics – I learned from Late Prof. Chawathey, who was also a very excellent educator.

Q. Having been so closely involved in academics for so long, do you see any shortfalls in the educational opportunities available to Indian students? With conservation being such a holistic science, how do you wish to see curriculums change over time?

In the Indian scenario, I believe that wildlife science and conservation of biodiversity has become a fad – there are lots of institutions mushrooming to cover these topics. Unfortunately, many of these institutions lack the required professional staff and also India does not currently have sufficient venues for employment of wildlife scientists. Since the crisis on the planet is real, young people are charmed by this profession as they want to do something for the planet. As professionals, we need to make sure that new Institutions that venture into this field have the faculty and the competence to actually do justice to the subject. Because, if the degrees are given out left, right, and center without a core competence in the faculties in teaching the syllabus, then I think it's going to be an eyewash, and you're going to create a cadre so called wildlife biologists who don't have the basics of what is required by the profession.

Coming to the second part, yes, it's a multidisciplinary science. Wildlife science is one thing, but conservation science is totally different: in a sense, science plays a very small role in doing conservation on the ground – out in the field.

A lot of it involves working with people, bureaucrats, politicians, and changing their behaviour and attitude. For which, most biologists are not competent or trained for.

For Conservation Science, a major shift in our curriculum is needed where we include humanities, in order to understand how to do the correct kind of interpretation, education, and sensitization of people who are not from the biological background. Another important aspect which is neglected in the current curriculum is understanding socioeconomics. Earlier, we used to rely on ethics and values of religions, but society is mostly motivated by monetary values today. Unless we have interpretations of tangible economic benefits from resources, which we are trying to conserve, very few societal or governmental elements will lend support to it. So we need to ensure that we understand economics, and we get economics into the picture of wildlife conservation. The local person who bears the brunt of conservation should actually profit from conservation.

And that model, that paradigm shift, though we talk about it, has not yet happened in our country. It has happened in very few places on the planet. And unless the people on the ground who live with biodiversity benefit from the resource, we are not going to see conservation happen. And that's the bottom line – I don't think any of us are actually fully trained in addressing that issue currently.