

# MINEUSLETTER

This edition is dedicated to the "International Day of Biological Diversity" | S | I | C | R | O | S | S | W | O | R | D | E



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The CAMPA-Dugong team at Andaman and Nicobar Islands made significant strides in their conservation efforts with the recent follow-up capacity-building program held at the Indian Coast Guard Station, Hutbay, on January 25th, 2024. The agenda was thoughtfully designed to raise awareness among officers about the importance of dugongs, their habitats, and threats, emphasizing the need for conservation. During the session, the team provided detailed information on the dugong monitoring program, a citizen science initiative in the Islands to identify dugongs from both boat and aerial platforms.

This initiative fosters public engagement and contributes valuable data for conservation efforts. The event saw notable attendance from esteemed personnel, including Commandant Shri. DP Yadav, Deputy Commandant Rohit Batra, Surg. LT CDR, Jishnu Raj, and dedicated sailors reflecting a strong commitment to environmental stewardship within the Indian Coast Guard. The program concluded with a productive discussion session, highlighting the collaborative efforts needed to safeguard the vulnerable dugong population and their habitats.

The overwhelming response underscores the significance of such initiatives, such as the glimpse of the Dugong monitoring program, in fostering awareness and mobilizing support for conservation efforts.

## GUJARAT CLEAN UP

The collaborative effort between the Wildlife Institute of India's CAMPA Dugong team, the Indian Coast Guard (Okha), schools, Gram Panchayat, Marine Police, Wildlife Trust of India, and other government agencies for a special coastal cleanup on the occasion of the 48<sup>th</sup> Coast Guard Raising Day on January 23<sup>rd</sup>, 2024, exemplifies the power of collective action in marine conservation.

The primary goal of the coastal cleanup was to address marine pollution and its detrimental effects on marine life and ecosystems. Participants aimed to collect plastic waste, ghost nets, thermocol, and other debris from the coastline to prevent further harm to marine habitats. The event included a pledge to keep the ocean clean, symbolizing a collective commitment to sustainable environmental practices. By pledging to reduce marine pollution and actively participate in cleanup efforts, participants reinforced their dedication to preserving marine biodiversity and ecosystems. The coastal cleanup not only removed harmful debris from the coastline but also raised awareness about the importance of marine conservation among participants and the broader community. The event served as a platform for education and advocacy, inspiring individuals to take action and make positive changes in their daily lives to protect the ocean.

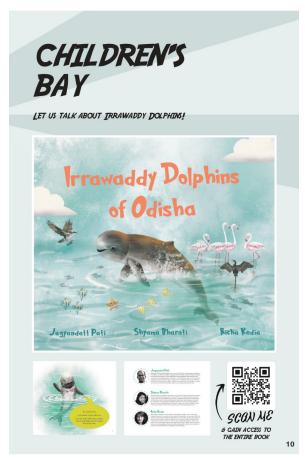
Overall, the coastal cleanup organized during the 48<sup>th</sup> Coast Guard Raising Day exemplifies the spirit of collaboration,

environmental stewardship, and community engagement in safeguarding marine environments. Such initiatives play a vital role in promoting a sustainable ocean conservation effort.

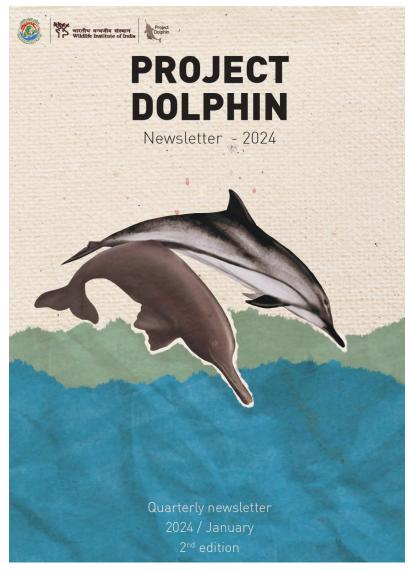


## SECOND EDITION OF THE DOLPHIN NEWSLETTER RELEASED

The latest Dolphin Newsletter, Edition 2, unveils groundbreaking initiatives from Forest Departments, Scientific institutions, and local communities under Project Dolphin. Hon'ble Minister Shri Bhupender Yadav ji unveiled this edition, showcasing a commitment to marine conservation and collaboration.















# THE BIOLUMINESCENT WORLD

- JEBIN BRISTO

Do you believe in fairy tales? I guess you should. A cluster of fireflies enchanting a forest patch in the Valparai plateau of Tamil Nadu's Anamalai Tiger Reserve. This stunning visual display is observed only for a few days in early summer, which is said to be their mating season, where a certain set of conditions must coincide to enable this bioluminescent spectacle. Imagine trees on a whole mountain illuminated by several lakhs of fireflies synchronizing their yellow-ish-green light in such a coordinated manner, a sight that leaves you absolutely spellbound and mesmerised. Poorly-regulated tourism and other developmental activities though may cause an increase in light pollution and alter landscapes in and around Protected Areas, which pose major threats to such large congregations.

Darkness holds its own kind of mystery and harmony, like the deep depths of the ocean that leave us fascinated. We must not only seek to conserve species and habitats, but also such astounding natural phenomena that reinforces in us nature's unbound beauty.

#### About the Author

Jebin worked with the Wildlife Institute of India as a Technical Assistant in the All India Tiger Estimation exercise for a year until February 2024. He is currently a freelancing naturalist. As an ecologist, he is interested in animal behaviour in human-altered landscapes. He also likes photography, travelling and birdwatching. Email: <a href="mailto:bristojebin37@gmail.com">bristojebin37@gmail.com</a>





# REPUBLIC DAY CELEBRATIONS

WII celebrated Republic Day festivities in the campus, where patriotism harmonized with nature's splendor. As the sun rose over the lush landscape, WII gathered to honor the spirit of our nation and its diverse wildlife heritage. Amidst the serene campus full of diverse flora and fauna, WII paid homage to the guardians of our forests and the stewards of our constitution.

Sports and health go hand in hand: Republic Day Volleyball Tournament was organised at the Institute in which six teams namely, Eagle (researchers), Buzzard (MSc students), Falcon (Staff), Hawk (Faculty), Hornbill (44<sup>th</sup> Diploma Course Officer trainees) and Kingfisher (38<sup>th</sup> Certificate Course Officer trainees) participated. Kingfisher won the event with a hard-fought 2-1 victory over Hornbill.

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# ROLE OF CIVIL SOCIETY IN TOURISM

The WII-C2C conducted a three-day training programme on the "Role of Civil Society in Tourism and Natural Heritage Conservation". The program was conducted from 29<sup>th</sup> to 31<sup>st</sup> January 2024, and sponsored by the RT Division of the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India. The specialized capacity-building training programme was organized to enhance participants' knowledge and skills in the domains of tourism, advocacy, and community engagement.

The program, led by experts from reputed organization including the Geological Survey of India, Archaeological Survey of India, Independent experts from tourism industry, World Heritage Site Manager and WII-C2C personnel, sought to strengthen organizational capacities, foster collaboration, and develop advanced advocacy skills. Twelve participants from four World Heritage Sites, namely Nanda Devi, Keoladeo National Park, Great Himalayan National Park and

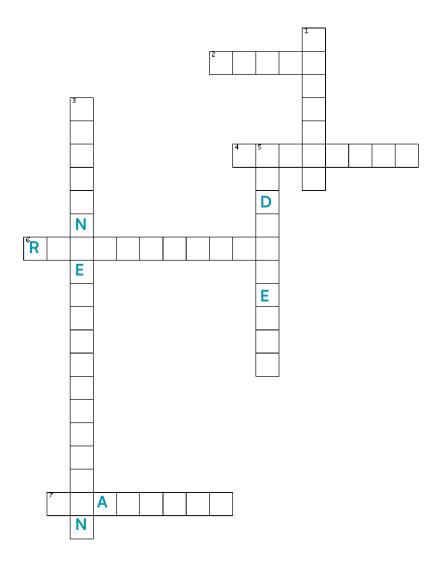
Kaziranga National Park, attended the programme. The participants represented members of Eco-Development Committees, Community-based Organizations, Tourist Guides and Home Stay owners from communities residing around the World Heritage Sites. A panel discussion was conducted during the workshop, featuring seven panelists including Dr. V.K. Uniyal, former PCCF, Kerala Forest Department; Sh. Manas Singh, DCF (WL) KNP, Bharatpur; Sh. Lokesh Ohri, INTACH Dehradun Chapter; Mr. Mohit Aggrawal, Tourism Practitioner NOIDA (India); Shri Peeyush Sekhsaria, Independent Professional, New Delhi; and Sh. Abhishek Tiwari, Geologist, GSI.

During the three-day training programme, diverse range of topics covered and the participation of experts from various institutions contributed to a comprehensive learning experience. The field visit added a practical dimension to the theoretical knowledge gained during the lectures. The panel discussion provided a platform for in-depth discussions on promoting and sustaining heritage tourism. Overall, the program was a valuable initiative towards fostering collaboration and creating a more informed and engaged civil society in the conservation of natural heritage



## **Biodiversity crossword**





#### ACROSS

- 2. An area classified according to the species that live in that location.
- 4. An organism that helps hold the system together.
- 6. The action of returning something to a former owner, place, or condition.
- 7. The illegal trafficking and killing of wildlife.

#### DOWN

- 1. Comprehensive information source on the global extinction risk status of animal, fungus and plant species.
- 3. The process of capturing and storing atmospheric carbon dioxide.
- 5. Close to exntinction

#### Use the clues to fill in the words above.

Words can go across or down.

Letters are shared when the words intersect.

## BEYOND THE CHAOS: A captivating encounter with a Rhesus monkey

- PANCHALI HAZARIKA

In the heart of the Sundarbans Tiger Reserve, I found myself in a captivating encounter with a female Rhesus monkey. As our team disembarked from our boat for a brief halt at a picturesque Forest Rest House, I took my DSLR camera to explore the serene surroundings. Suddenly, a troop of Rhesus monkeys descended into chaos, their antics causing a stir among us. Amidst the mania, one individual caught my eye. Perched atop a fence, she remained serenely observant, unfazed by the commotion around her. She rubbed her eyes in a gesture that seemed to display fatigue or perhaps a moment of introspection. Driven by the desire to capture this fleeting moment, I approached cautiously.

As I clicked my lens, she paused, meeting my gaze with a sense of silent comprehension. I braced for her reaction, expecting aggression or alarm. Yet, to my astonishment, she simply acknowledged me before returning to her tranquil vigil. In that singular moment, a profound realisation dawned upon me: amidst life's chaos, there exists a quiet dignity in simply minding one's own affairs. I could no longer blame an entire species for the actions of a few. Instead, I found solace in the quiet grace of individuals like her, who navigate their world with gentle resolve.

#### About the Author

Since joining WII in 2020, Panchali has been involved in conservation research. Since 2021, she has been a Project Associate in the CAMPA Dolphin project, focusing on the plankton ecology associated with the habitat of river dolphins in the Ganga and Brahmaputra river systems. Her core research interest lies in studying the impact of environmental variables and human **Email:** panchali@wii.gov.in



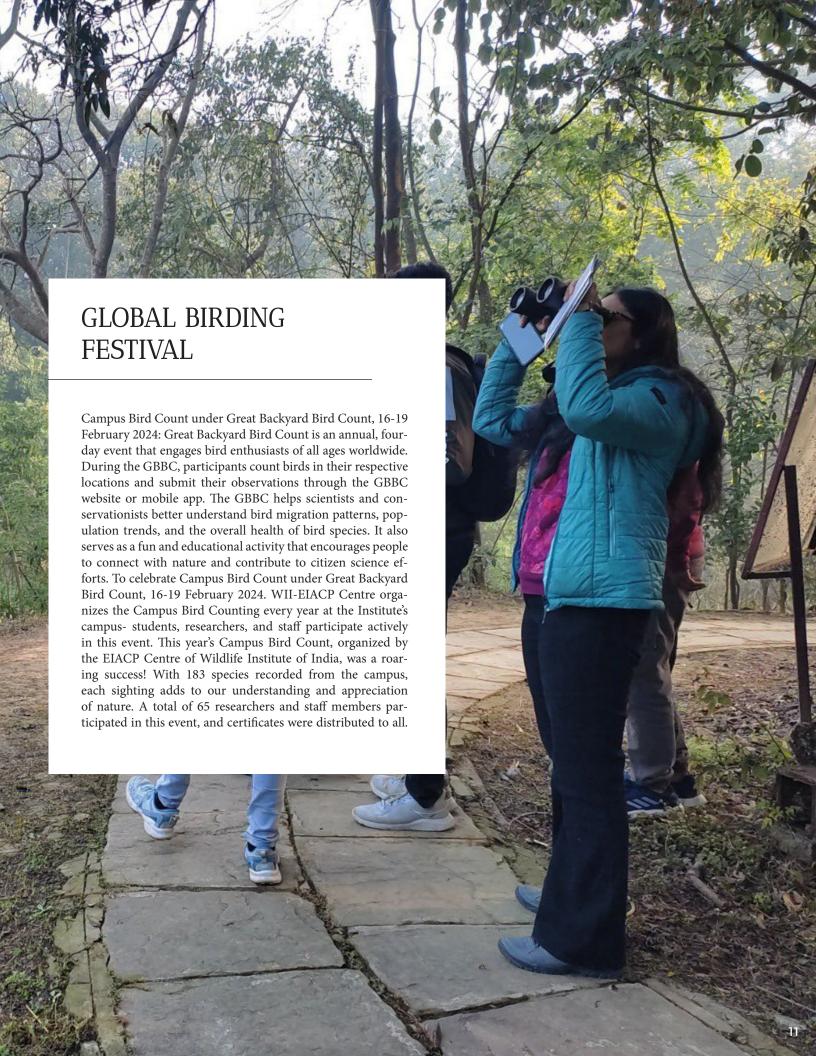


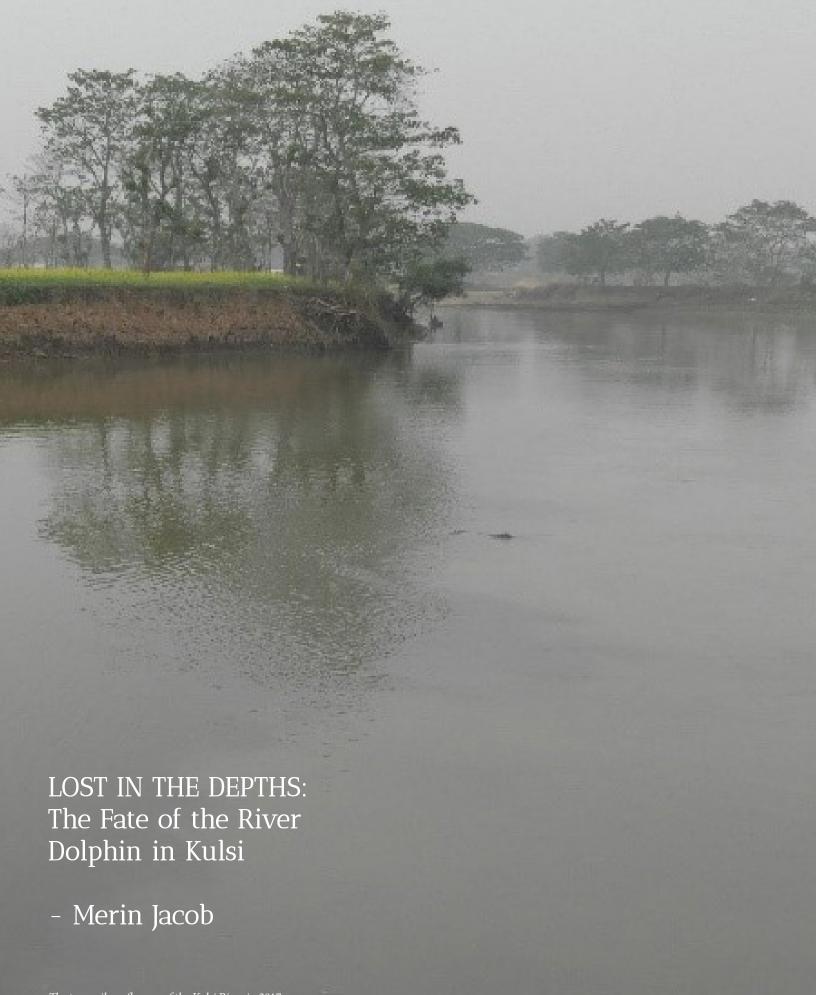
# IN CONVERSATION WITH CORNELL UNIVERSITY

Ornithology experts from Cornell University and the Nature Conservation Foundation convened to discuss collaborative research opportunities with WII on 26<sup>th</sup> February, 2024. The discussions, led by Prof. Lan Owens, Mr. Praveen J, Dr. Suhel Quader, and Mr. Chris Woods, centred on the crucial role of citizen science in bird conservation. During the talks, the experts delved into the potential for collaborative research and shared insights on bolstering conservation efforts both in India and worldwide. They emphasized the significance of citizen science in engaging communities and gathering crucial data for bird conservation.

The discussions also showcased successful citizen science initiatives and brainstormed strategies to further integrate them into conservation practices. This exchange of ideas provided a dynamic platform for researchers to collaborate and inspire the next generation of conservationists.







In December 2017, I found myself standing on the banks of the Kulsi River in Kukurmara, Kamrup district, Assam. It was then that I experienced a moment that left an indelible impression on me – my first ever encounter with the enchanting Ganges River dolphin (*Platanista gangetica*).

As I stood at the water's edge, the air was filled with anticipation. Suddenly, a gentle ripple broke the surface, followed by the graceful arc of a dolphin's back as it surfaced for air. I watched, mesmerised, as the dolphin moved effortlessly through the depths, its playful energy filling me with joy. From that moment on, I felt a deep connection to these majestic creatures. Over the years, I returned to the confluence where I had seen my first Ganges River dolphin. As time passed, I began noticing subtle yet significant changes in the once pristine dolphin habitat that had captivated me. By 2021, the once free-flowing confluence of the Kulsi River had become constricted, hemmed in by increased anthropogenic activity. The construction of the ITC factory and its boundary wall on the bank of the Kulsi River near the Kulsi-Jagaliya (Batha) confluence, and the ceaseless extraction of sand from the river, led to a shift in the depth of the river near the Kulsi-Chaigaon bifurcation point and its upstream areas. This resulted in the diversion of the water flow to the Chaigaon channel (Fig. 1), which drastically reduced the water depth in the Kulsi River, turning it into a pale shadow of its former self. The tranquillity I had once found was now tinged with a sense of urgency, as the impact of anthropogenic pressures became increasingly apparent. The delicate balance of the ecosystem had been disturbed, leaving the habitat of the Ganges River dolphin under threat. The overall population of the river dolphin in the River was found to be declining with each passing year. During one of my visits in 2021, amid the lean water period (summer) (Fig. 2), I witnessed a heartbreaking sight – a Ganges River dolphin trapped within a small pool near the confluence. Over the years that followed, the situation



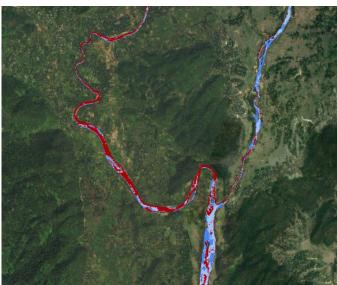


Figure 1: The shift in the river depth over the years (red and blue colours show river stretches where a decrease and an increase, respectively, in water depth has been observed), from 2017 (left) to 2021 (right).

only seemed to worsen, with the same pattern reoccurring during the lean water period. By February 2024, when I visited the same area, the once vibrant population of Ganges River dolphins had all but vanished from the confluence, driven away by the devastating effects of human greed and negligence.

The loss of the Ganges River dolphin population from this area serves as a poignant reminder of our responsibility to protect and preserve the delicate balance of nature. May this serve as a wake-up call for us all to strive towards a future where such losses are not just prevented, but actively avoided through responsible stewardship of our natural resources.

#### About the Author

Merin is currently working as a Senior Project Associate with the CAMPA-Dolphin Project. She has a passion for the aquatic ecosystem and is particularly interested in cetacean acoustics. Her current focus revolves around the Ganges River Dolphin's population biology, threat analysis, and proposing various evidence-informed mitigation measures to ameliorate them.

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Figure 2: Dried up Kulsi River in the Dolphin hotspot area near the confluence during February 2021



## SCUBA DIVING TRAINING PROGRAM

As a component of the CAMPA Dugong Recovery program, WII has launched a SCUBA diving training initiative for frontline forest staff in the Andaman Islands. This program aims to equip forest personnel with the necessary skills and knowledge to contribute effectively to the conservation efforts for dugongs, a vulnerable marine species. Through SCUBA diving training, frontline staff will gain firsthand experience and understanding of marine ecosystems, enabling them to better monitor and protect marine habitats. This initiative underscores the commitment of WII and its partners to safeguarding marine biodiversity and promoting sustainable management practices





## THREE UNEXPECTED ENCOUNTERS AT THE INSTITUTE'S SAL PATCH

#### - K P AKILAN

At around five in the evening, I found myself walking through the Institute's 40-hectare rectangular-shaped Sal patch, adjoining the main campus. The forest here is dominated by Sal (*Shorea robusta*) trees of similar age class. A relatively thin strip of residential settlements separate it from the forests of Dehradun Forest Division. As I navigated the slopes and streams, I noticed a creature on an opposite slope. It stood behind a newly growing Sal plant, its brown tail with a white border resembling that of a deer. I waited for a minute before walking down the slope, jumping across the stream and climbing the slope.

I stood at the place where that deer stood looking at me earlier. I tried tracing behind the vanished deer. While I stood looking around, I heard a rustling down the slope. There emerged a jackal with its long furry tail. I had probably earlier mistook the jackal (*Canis aureus*) for a deer. The jackal continued walking through the stream under a canopy of shrubs, while another animal, this time surely a barking deer (*Muntiacus vaginalis*), climbed up the slope. As the deer sought cover, the jackal began to climb in a different direction, its golden coat shimmering in the filtered sunlight. On another morning, I was navigating towards a point for a bird count, my eyes shifting between the path and my phone. I was stopped by a thicket of bushes, as water trickled down the drying stream. A pair of jackals climbed out of the water straight towards me. Two metres away, I froze. They walked past me as if I was invisible, in what seemed to be their regular track.

I found a way past the bushes and walked away. During another evening bird count, I heard rustles and splashes in the stream behind me. Turning around, I saw a jackal emerge from behind a shrub. Startled by my presence, it quickly retreated and began to climb the slopes with its partner. It momentarily paused to take a look at me, before vanishing into the bushes. However, its partner stood there and directly gazed at me. I looked back at it. It took a closer look at me, in turn, and eventually decided to leave the scene. A minute later, I heard splashes once again, only this time the splashes approached faster. Another jackal was approaching, probably trying to catch up with the other two. I saw it before it saw me, as it was truly stunned seeing me stand there. It was quick to turn up to a slope. Once at a distance, it glanced at me and ran away. As I stood in silence, dead Sal leaves slowly drizzled down occupying the autumn forest floor.

These three encounters all share a common thread - they were

unexpected for both me and the animals involved. Each time, I walked away from the scene having, even if momentarily, disrupted their everyday life. Whether these encounters were significant or insignificant to them, I am glad to have been a part of them, and to have walked away with a few natural history lessons.

#### About the Author

Akilan is a student in the 19<sup>th</sup> batch of the M.Sc. Wildlife Science programme at the Wildlife Institute of India His research interests include dispersal systems, invasio ecology, and biogeography amongst others.

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Barking deer (Muntiacus vaginalis) are common in the Institute's Sal patch and seem to thrive in areas with a dense understorey of shrubs and saplings



Golden jackal (Canis aureus) are one of the most adaptable canids in the world and are equally at ease in their natural habitat and at the periphery of human-use areas



The health of wild animals faces enormous challenges to-day, as a result of climate change and ongoing human impacts on natural environments. A new paradigm in veterinary medicine has arisen that spotlights the health management of wild animals in response to these urgent concerns. The Wildlife Institute of India (WII) in partnership with the Zoological Society of London (ZSL), the University of Edinburgh (UoE), the Royal Veterinary College (RVC), the University of Melbourne (UoM) and Toronto Zoo has been jointly running a field course titled "Interventions in Wild Animal Health (IWAH)" in Sariska Tiger Reserve since 2016.

This course is at the front of this young field and provides a rare chance for prospective veterinary specialists to learn about the complexities involved in preserving the health of wild populations. The course is an integral component of the online MVetSci course in Conservation Medicine awarded by UoE, providing practical knowledge to complement theoretical training. During the three-week course, students engage with sessions covering ecological survey techniques (such as sign surveys, camera traps, radio telemetry and distance sampling), disease outbreak investigation, pathological examination, understanding challenges of the human-wildlife interface, wildlife forensics, and best practices in wild animal restraint and anaesthesia in the field. Sessions are led by tutors from the collaborating organisations involved in the course and they bring together a plethora of expertise and share their knowledge and skills. Since its inception, the course has been instrumental in enhancing capacities of 227 veterinarians from 33 different countries in various aspects of wild animal health, welfare, and conservation besides providing opportunities to learn the various skills required for investigating wildlife diseases.

2024 marked the successful organization of the ninth field course at Sariska Tiger Reserve from 10th to 27th February 2024. A total of 24 veterinarians from 7 countries: India, Philippines, Australia, Spain, Portugal, Germany, and the UK attended the course. Fifteen veterinarians in attendance in 2024 were from India. They are currently working in various national parks and zoos and are involved in various conservation breeding programmes of endangered native species. The learning outcomes of the field course included exploring the dynamics of wildlife populations and their interactions with their environment, understanding the principles of disease ecology and epidemiology in wild animal populations, learning techniques for monitoring wildlife health, including field sampling, diagnostics, and data analysis, gaining insights into the ethical considerations and challenges of intervening in wild animal health and developing practical skills through hands-on experience in the field, under the guidance of experienced instructors.

This course was aimed at being more than an academic endeavour. The hands-on exercises were designed to demonstrate the challenges faced in the field, providing a unique opportunity to apply theoretical knowledge to real-world scenarios. It included carrying out wildlife crime investigations, disease outbreak investigations, community engagement and participation into wildlife activities and animal restraint (physical and chemical) techniques. The course provided opportunities in live animal im-



mobilisation, post-immobilization monitoring, carrying out health assessment in free ranging Sambar (*Rusa unicolor*), and Spotted Deer (*Axis axis*). This exercise introduced the participants to best practices for immobilisation, advances in applied pharmacology and immobilization protocols, and post immobilisation monitoring to avoid emergencies along with equipment use and ethical considerations in the field. The course was instrumental in shaping the perception of veterinary professionals and providing opportunities for interacting with the wild along with imbibing cultural nuances that would promote an understanding that our actions today contribute to a sustainable and harmonious coexistence. The ultimate goal was to foster a community of professionals dedicated to the responsible handling and conservation of wild animals.

The field course was coordinated by Dr Parag Nigam, Scientist G & Head, Dept. of Wildlife Health management.

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## CERTIFICATE COURSE IN NATURAL HERITAGE MANAGEMENT

A Certificate Course in Natural Heritage Management (CCNHM) was organized in WII-C2C from 19th February to 15th March 2023 for International participants sponsored by the Ministry of External Affairs - Indian Technical & Economic Cooperation (MEA-ITEC) Programme. In this first of its kind international course, 12 participants from 8 countries (Costa Rica, Bulgaria, Ethiopia, Kenya, Tanzania, Madagascar, Sri Lanka and Mongolia) representing 4 continents were trained on the core principles and theory of heritage along with the ability to incorporate the same into their official roles and responsibilities. The course drew on Wildlife Institute of India's (WII's) expertise in the field of wildlife conservation and natural heritage management in addition to the global diversity of officer trainees to boost cross-learning. Through this 4-week course, the trainees were equipped with critical skills on themes like Concepts and Conventions, Heritage Management and Heritage Interpretation.

Classroom topics covered included Heritage Values – From Personal to Outstanding Universal Value; Global Context of the Heritage Movement; the multiple International Conservation Designations; Nature-Culture Linkages and Sustainable Development; Managing Mountain World Heritage Sites; Principles and Practices of PA & Wildlife Management; Human Dimensions of Natural Heritage Management; Monitoring World Heritage Sites through Geospatial Techniques; Cultural Heritage and Impact Assessment; Heritage as an Economic & Social Asset; Visual Communication and Heritage and Interpretation Principles and Planning among others.

Practical aspects of heritage management were also addressed through multiple field day trips (Camel's Back Road, Wadia Institute of Himalayan Geology, Forest Research Institute and Rajaji National Park) and a 5-day field trip which included visits to the Indian Institute of Heritage (formerly the National Museum Institute), Archaeological Survey of India and 5 World Heritage Sites based in Bharatpur (Keoladeo NP), Delhi (Red Fort, Qutub Minar) and Agra (Taj Mahal, Fatehpur Sikri), learning from the managers themselves as to how the agencies managed these very popular and iconic sites. Throughout the course, the participants were given opportunities to present on their own country while learning of the heritage of the other countries such as Country Presentations by Participants and Site Nomination documents submitted by participants













## 3 DAY TRAINING COURSE ON HUMAN - WILDLIFE CONFLICT

The WII-EIACP Centre, in collaboration with the Wildlife Institute of India, Dehradun, hosted a comprehensive three-day training course on Human-Wildlife Conflict Issues and Mitigation. The program, held from February 26th to 28th, 2024, catered to other Department State Level Officers (Class II & III). Spanning various crucial topics, the training delved into India's rich biodiversity, wildlife forensic techniques, and included insightful field visits to Rajaji Tiger Reserve. Expert-led discussions addressed strategies for effective media engagement, the One Health approach, and the integration of conservation technologies. Participants also gained valuable insights into the multifaceted management of human-wildlife conflicts and were briefed on Mission LiFE, a conservation initiative. The course culminated with a collective pledge towards sustained conservation efforts, underscoring the commitment of all attendees to safeguarding wildlife and ecosystems.





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## A DAY IN JHILMIL

## -MANAS SHUKLA



Bulls in the all-male coalition group returning to the forest after a nutritious breakfast in croplands (Credit: Michael Isaac Rayen)



Waking up at 2 am is not typically how an <u>M.Sc</u>. student would choose to start their Saturday, especially after a week saturated with academic work. However, a summons from Dr. Bivash Pandav always takes precedence over any weekend relaxation. A long-overdue trip to the Jhilmil Jheel Conservation Reserve – a small saucer shaped wetland covering an area of 37.83 km², on the left bank of the Ganga River in Chiriyapur Forest Range of Uttarakhand's Haridwar district near Rajaji Tiger Reserve – was finally a reality. Thus, our <u>M.Sc</u>. (Wildlife Science) cohort boarded the bus, albeit half asleep. It may have taken a while for some of us to realise that we were no longer dreaming when we alighted onto the dreamlike landscape of Dassowala. The red waxing gibbous moon lingered near the horizon, and the surrounding fog was faintly lit by distant urban lights.

This time and space was strategic as we were about to witness an uncommon yet significant phenomenon – a coalition of supposedly solitary male elephants. A large group of bulls traverses almost nightly to visit croplands on the other side of the River Ganga and typically returns before sunrise. As we made sure none of us smelled like fruits, Dr. Bivash briefed us on the nature and dynamics of male elephant coalitions. In highly fragmented forests and urbanised areas, bulls of diverse age classes tend to congregate and adopt a 'high-risk high-reward' strategy, gorging on nutritious crops in agricultural fields together. Field studies from a similar all-male group in Karnataka have also highlighted this behaviour as a strategy solitary males have been forced to adopt, succumbing to the pressures of increasing anthropogenic disturbance. While the high risk part emanates from probable negative interactions (sustaining injuries when repelled, or even death due to electrocution), the high reward is by way of improved nutrition and, subsequently, better body condition through crop produce intake. Within a few minutes, we got a signal from Imam ji, our trusted and experienced local collaborator. There it was: a strikingly huge tusker, making its way across the River Ganga. Its massive tusks were easily discernible despite the dim and foggy twilight. Moments later, the rest of the group followed, tailed by a noticeably young male, who was as enthusiastic as any teenage boy would be to be a part of a heist group. We counted a record high of 11 individuals, with fresh footprints seen (from another direction) of a twelfth who managed to slip past our sight!

A remarkably eventful morning such as this had already set the course of the day. We proceeded to observe two adjacent nest-bearing *Bombax ceiba* (or Red silk-cotton) trees near the river bank, one of which we suspected belonged to a pair of Pallas's Fish-Eagle (*Haliaeetus leucoryphus*), since we heard squeals of this majestic endangered raptor a few hours ago. About an hour of waiting was to no avail, and we moved forward thinking that the nest might have been abandoned. But as fate would have it for us, just minutes later we were informed that the fish-eagle pair had returned to the nest! Rushing back to the bank, we witnessed the pair manoeuvring around the nest. The moment was further embellished by a large kettle of griffons, comprising nearly 40 individuals, soaring overhead. Shadowed by the wings, we stood in awe until the raptors glided out of sight.

The day then turned towards understanding a few anthropogenic dimensions of wildlife management. Dr. Bivash led us to the Haridwar-Najibabad road, or National Highway 34, where construction is underway on two elevated sections, apparently being the aftermath of linear infrastructure development and wildlife welfare meeting common ground. A masters' dissertation study in 2017-18 by WII alumnus Sultan Singh provided evidence that a 5 km stretch of this road was choking connectivity between two forest/habitat patches, forcing wild animals to cross the road and put themselves at risk of accidental collisions. Coming from the Wildlife Institute of India, this study was deemed credible enough to be accounted as evidence in the court of law, and thus a proposal for a 5 km elevated road to be built by the National Highways Authority of India (NHAI), was put forth. It was hoped that this mitigation measure would result in a safe and sufficiently wide underpass for wild animals, stabilising the local ecosystem and drastically reducing animal-vehicle collisions. However, the final settlement converged to two 1200 m long underpasses each, joined by a 600 m long block wall. Far from ideal as it may be, it can still be seen as a significant victory for long-term conservation.

To fulfill the missing element of this trip, our next stop was at Jhilmil Jheel where we climbed up the watchtower adjacent to the Lake and scoured the landscape with our binoculars. A herd of nearly 50 barasingha or swamp deer (*Rucervus duvaucelii*) were at their usual spot, taking their noon rest. Their crouched posture may have obscured their bodies, but the outstanding male antlers were enough to give their location away. Some individuals in the herd remained vigilant, while most lazed off amidst the grasses. Not far off in the backdrop was a muster of six Asian Woolly-necked Storks (*Ciconia episcopus*), like sentinels in repose. Exhausted from sleep deprivation and walking under the scorching sun, we too took a moment to relax as the sounds of the forest were taken up by distant chital (*Axis axis*) alarm calls.

There couldn't have been a more momentous end to the day than gorging on an invigorating meal of curd rice served on teak (*Tectona grandis*) leaves, accented with papad and chillies. Filling our water bottles with mint leaves, we boarded the bus back to the Institute as a pair of Crested Serpent-Eagle (*Spilornis cheela*) were calling out to each other behind us. Each of our field notebooks may attempt to capture the most striking elements of our trip, much like this article. However, when compared to the first-hand experience of Jhilmil Jheel, all words seem inadequate.

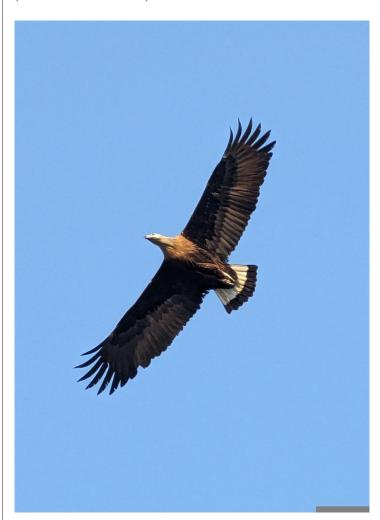
#### About the Author

Manas is an aspiring ecologist from the XIX MSc (Wildlife Science) batch at the Wildlife Institute of India, with research interests aligned towards raptor ecology. He has collaborated with his peers to publish butterfly and bird field guides for the Mussoorie Wildlife Sanctuary. Additionally, he was previously a technical assistant in tiger and elephant estimation exercises with the Institute's Tiger Cell. Keen on writing and photography, he finds his own path towards contributing to scientific communication.

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The northern swamp deer (Rucervus duvaucelii duvaucelii) unwinding with Woolly-necked Storks (Ciconia episcopus) on account of a warm afternoon (Credit: Betwonsaoo Passah)



The magnificent Pallas's Fish-Eagle (Haliaeetus leucoryphus) soaring over River Ganga in Jhilmil Jheel Conservation Reserve (Credit: Manas Shukla)



## JAPAN-INDIA MOC

Japanese delegates involved in the Japan-India Memorandum of Cooperation (MOC) on forestry were warmly received at the WII campus for discussions on Human-Wildlife Conflict Resolution and prospects for future collaboration with faculty members. The gathering served as a platform for exchanging insights and experiences regarding the intricate challenges of managing forests sustainably. Discussions centered on the critical issue of Human-Wildlife Conflict Resolution, highlighting the need for innovative strategies to mitigate such conflicts. Additionally, participants explored opportunities for joint projects, research endeavors, and capacity-building initiatives aimed at enhancing forest conservation efforts. The atmosphere was characterized by mutual respect and a shared commitment to promoting harmony between humans and wildlife while ensuring the long-term health of forest ecosystems. The meeting concluded with a sense of optimism and determination to translate discussions into concrete actions that would benefit both Japan and India, contributing to global efforts toward sustainable forestry practices, fostering collaboration and creating a more informed and engaged civil society in the conservation of natural heritage.





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## DRUMMING: A virtuoso performance

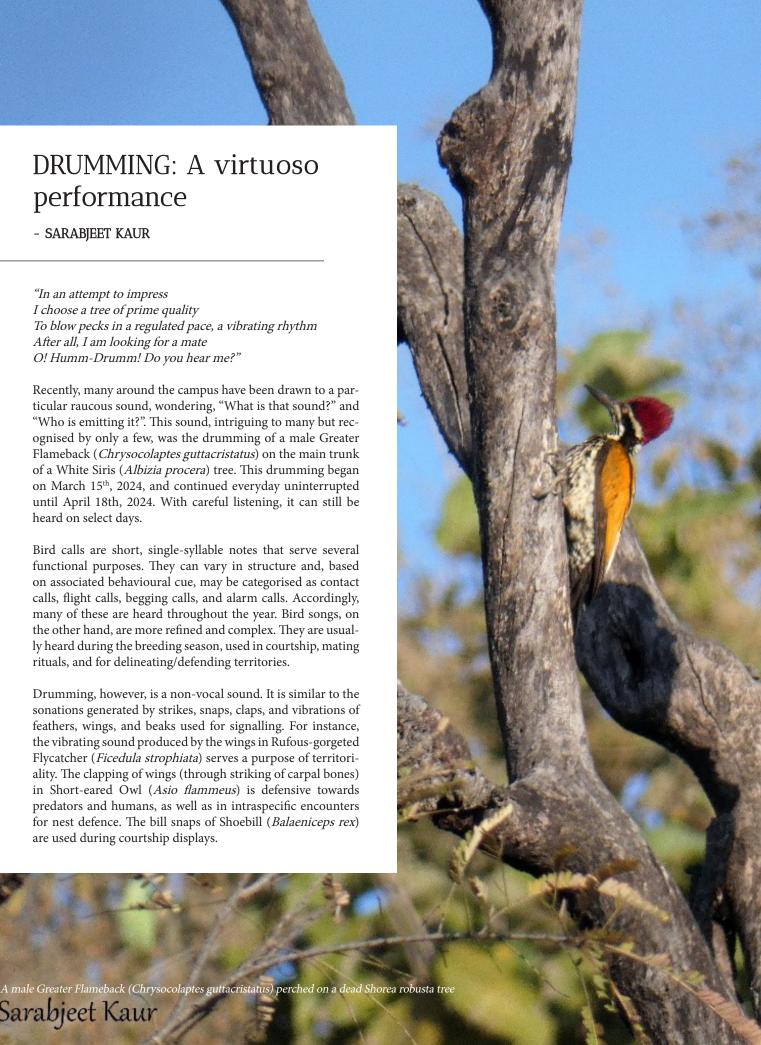
- SARABJEET KAUR

"In an attempt to impress I choose a tree of prime quality To blow pecks in a regulated pace, a vibrating rhythm After all, I am looking for a mate O! Humm-Drumm! Do you hear me?"

Recently, many around the campus have been drawn to a particular raucous sound, wondering, "What is that sound?" and "Who is emitting it?". This sound, intriguing to many but recognised by only a few, was the drumming of a male Greater Flameback (Chrysocolaptes guttacristatus) on the main trunk of a White Siris (Albizia procera) tree. This drumming began on March 15th, 2024, and continued everyday uninterrupted until April 18th, 2024. With careful listening, it can still be heard on select days.

Bird calls are short, single-syllable notes that serve several functional purposes. They can vary in structure and, based on associated behavioural cue, may be categorised as contact calls, flight calls, begging calls, and alarm calls. Accordingly, many of these are heard throughout the year. Bird songs, on the other hand, are more refined and complex. They are usually heard during the breeding season, used in courtship, mating rituals, and for delineating/defending territories.

Drumming, however, is a non-vocal sound. It is similar to the sonations generated by strikes, snaps, claps, and vibrations of feathers, wings, and beaks used for signalling. For instance, the vibrating sound produced by the wings in Rufous-gorgeted Flycatcher (Ficedula strophiata) serves a purpose of territoriality. The clapping of wings (through striking of carpal bones) in Short-eared Owl (Asio flammeus) is defensive towards predators and humans, as well as in intraspecific encounters for nest defence. The bill snaps of Shoebill (Balaeniceps rex) are used during courtship displays.



A bird needs to hear its particular song at a certain age, during a 'sensitive phase' in in its development, to learn it, even if it possesses an innate ability to discriminate its own species-specific songs. This is beacuse bird songs can be incredibly complex, and may vary from individual to individual. The superb Lyrebird (*Menura novaehollandiae*) of eastern Australia, for instance, has the most complex song known to date. This species is famous for its vocal mimicry, which includes sounds as diverse as a crying human baby, chainsaws and car alarms. They are among several species that continue to learn and acquire new songs throughout most of their lives. Each bird has a variety of songs, and with careful observation, one may discover new calls or songs along the way.



A male Fulvous-breasted Woodpecker (Dendrocopos macei) blowing pecks on the secondary branch of a (Bombax ceiba) tree

Drumming is a unique interaction observed in the family Picidae, which includes piculets, wrynecks, sapsuckers, and woodpeckers. These species use drumming – much like songbirds – to advertise their presence, proclaim & defend territories, and attract mates. It's a specialised form of communication used during the breeding season, consisting of a series of pecks hammered on a surface that produce a rhythmic sound and vibration repeatedly.

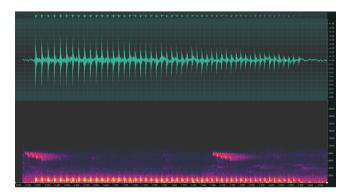
The head and neck of a woodpecker function as a stiff hammer. Each woodpecker species has a unique drumming pattern. Interestingly, one can identify a woodpecker species by measuring the pace of their pecks and knocks, regardless of the substrate used. For example, Downy Woodpeckers (*Picoides pubescens*) drum at a rate of approximately 15 drums per second, Hairy Woodpeckers (*Picoides villosus*) at a rate of approximately 26 drums per second, and Yellow-bellied Sapsuckers (*Sphyrapicus varius*) display variable drumming rates (Source: Macaulay Library, Cornell Lab of Ornithology).

Young woodpeckers learn how to drum by watching and imitating adult woodpeckers. They start out by trying on different surfaces and strengths of pecking, and with practice, they improve their drumming abilities by changing the intensity, rhythm, and duration of their drumming based on the reaction they receive from other woodpeckers.

Interestingly, a special brain area associated with vocal learning in animals and language in humans is activated by drumming in woodpeckers. A marker gene, Parvalbumin (PV), is

present in all cells of the body and expressed in a specialised region of the forebrain in songbirds and humans. This gene helps learn vocalisations during a young age and develop complex muscle movements to control sound production. Schuppe et al. (2022) found that PV regions were activated by drumming in woodpeckers rather than when they vocalised.

Anatomically, when a woodpecker's tongue is retracted, it keeps the hyoid muscles relaxed. These muscles hug the skull, which was previously thought to facilitate shock absorption during woodpecker pecking and drumming. However, a study by Van Wassenbergh *et al.* in 2022 analysed high-speed video camera footage and built biomechanical models to conclusively debunk this long held belief popularised in the media, books, zoos, and on several websites. In fact, their calculations demonstrated that any shock absorbance would actually hinder the woodpeckers' pecking abilities. It is simply the woodpecker brain anatomy (small, lighter brains) that increases the threshold for suffering any concussion-related brain damage from its usual pecking/drumming activities.



Greater Flameback drumming discernible in Waveform and Spectrogram View (Ocenaudio)

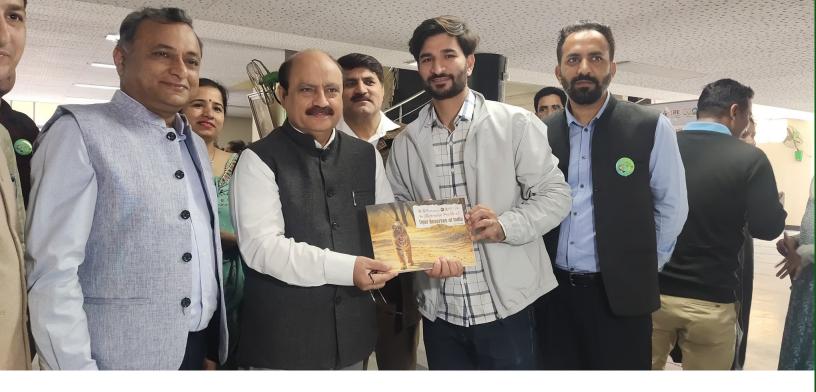
Our campus' Greater Flameback has finally found a mate after a month-long drumming. Both individuals communicated with each other using the live and dead trees of *Shorea robusta* and the live trees of *Albizia procera* to establish territorial interactions. So, tune in to your surroundings! See if you can identify any woodpecker species other than Greater Flameback drumming lately. If it helps, familiarise yourself with the drumming calls of picids (check out the links below below) before you go birding!

- Greater Flameback <a href="https://macaulaylibrary.org/asset/617423985">https://macaulaylibrary.org/asset/617423985</a>
- Grey-capped Pygmy Woodpecker <a href="https://xeno-canto.org/170088">https://xeno-canto.org/170088</a>
- Grey-headed Woodpecker <a href="https://macaulaylibrary.">https://macaulaylibrary.</a>
   org/asset/617424214

#### About the Author

As an aspiring ornithologist, Sarabjeet started monitoring birds around her from a very young age. In 2017, she began her doctoral work on the ecology of Great Slaty Woodpecker in Uttarakhand, which helped further her understanding of Picids (or woodpeckers) in general. Since 2023, she has also taken on the voluntary role of an eBird Regional Reviewer for two districts of Uttarakhand.

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# MISSION LIFE MARATHON

EIACP Centre at Wildlife Institute of India set up a Mission LiFE stall at Kurukshetra University on March 18, 2024. The stall served as a comprehensive platform to showcase various initiatives and resources aimed at fostering sustainable living practices and environmental conservation.

Through activities such as displaying EIACP activities, distributing publications and infographics, providing a Mission LiFE selfie booth, offering Millets bookmarks, and presenting posters under the seven themes of Mission LiFE, attendees were aware about the interconnectedness of environmental issues and the importance of collective action. Moreover, the administration of a pledge and organization of a marathon involving college students further emphasized the commitment to promoting environmental stewardship and inspiring positive change within the community. For more details contact <a href="mailto:envis@wii.gov.in">envis@wii.gov.in</a>







## ONLINE QUIZ ON FORESTS

The International Day of Forests serves as a platform to raise awareness and provide guidance at all levels for sustainable forest management and biodiversity preservation. Healthy forests are essential for strong, thriving communities and prosperous economies.

To commemorate the International Day of Forests, the EIACP Programme Centre at the Wildlife Institute of India took proactive steps to raise awareness about the significance of forests and their vital role in our ecosystem. An online quiz was organized to engage the audience and test their knowledge about forests. This quiz covered various topics such as forest ecosystems, wildlife conservation, the importance of sustainable forest management, and the role of forests in combating climate change. For more details contact <a href="mailto:envis@wii.gov.in">envis@wii.gov.in</a>



## SENSITISATION PROGRAM -ANDAMAN

Engaging with relevant stakeholders is a key for dugong conservation. WII Dugong team conducted a sensitisation program with the Indian Navy officers engaged in aerial sorties at INS-Utkrosh, Port Blair. 50 officers were briefed on dugong conservation and the role of Indian Defence Bodies in Marine biodiversity management in the Andaman Islands.

Active engagement with relevant stakeholders is a critical step towards species conservation. The CAMPA-Dugong recovery program has engaged with a number of stakeholders over the years. The Indian Navy is one of the most important stakeholders of the citizen science based Dugong Monitoring Program in the Andaman and Nicobar Islands. A sensitisation program on Dugong monitoring for the Indian Navy officials in the Andaman Islands was conducted by the WII team at the naval unit, INS- Utkrosh, Port Blair to foster joint monitoring of Dugongs in the remote islands. Around 50 personnel were engaged in the briefing on dugong conservation and the role of Indian Defence Bodies in its research and management in the Islands.

Dr JA Johnson - Scientist -F, Head, Department of Habitat Ecology.

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## WORLD SPARROW DAY

On 20th March, WII in collaboration with the Uttarakhand State Biodiversity Board and Uttarakhand Forest Department, celebrated World Sparrow Day with students of Galaxian International School, Dehradun. Over 250 students attended the program and they were made aware about House Sparrows through series of presentations and around 50 students engaged in poster-making depicting house sparrows, nest boxes were also distributed.

Partnering with the Uttarakhand State Biodiversity Board, the WII research team undertaking a study of House Sparrows in the Uttarakhand State conducted an awareness program on the 20th of March, which is the World Sparrow Day. The event was held at the Galaxian International School, Chandrabani. The school located in a sub-urban area in the Doon valley still holds relatively good numbers of house sparrows in and around. More than 200 students along with their teachers attended the program and they were sensitized on the significance of the World Sparrow Day and the urgent need to protect House Sparrows. Information brochures providing details about the life, behaviour, and the ecological significance of house sparrows were distributed to the students. A select number of students also participated in an art competition, wherein they expressed their understanding of the plight of House Sparrows. The students showcased remarkable talent and passion through their visually captivating art work. The

students also took a pledge to spread the word on house sparrow conservation through their families and friends. Further, nest boxes for sparrows were provided to interested students, who would now also take on the role of citizen scientists and monitor house sparrow populations and their nesting in and around their houses. Through the efforts of these young minds it is hoped that house sparrows in the area will continue to survive.



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# BARN SWALLOW: A tale of homecoming

- AMARJEET KAUR

Each year after her long absence in the warm lands of the south she comes to us with the sunshine and the flowers, and she tells us with her merry chatter that spring is on the way.

- Dr. Giuseppe Pitrè



Cultural and traditional beliefs, such as not disturbing a bird's nest in one's house or viewing nesting as a sign of good fortune, have fostered a close relationship between Barn Swallows and humans in Uttarakhand. Often, if comfortable, the Barn Swallow family befriends their human hosts and allows physical approach. In this image, a lady 'greets' swallow fledglings, who will soon embark on a southward journey with their parents.

In this transitional season, the sun shares the lingering soft warmth of winter, while the wind carries the fragrant promise of new life. Afternoons are hot, yet nights remain cool. Life announces its grandiose rebirth as the Palash (*Butea monosperma*), Silk cotton tree (*Bombax ceiba*), and Purple orchid tree (*Bauhinia purpurea*) burst forth with vibrant colours through their showy flowers. The ceaseless serenades of the Asian Koel (*Eudynamys scolopaceus*) and Common Hawk-Cuckoo (*Hierococcyx varius*) collectively announce the arrival of spring on the WII campus.

Amidst this awakening, a small yet resilient long-distance migrant, the Barn Swallow (*Hirundo rustica*), embarks on its homeward journey to the human settlements of the Himalaya. Known by various names such as "Dev chidiya", "Dhan chidiya" or "Gotayi" this bird is welcomed as the harbinger of spring in the hills of Uttarakhand. Revered as a symbol of Goddess Lakshmi, the Dev chidiya returns to its nest, diligently repairing it with nearby damp mud and grass in preparation for raising a new family.

Soon, life bursts forth anew as four or five baby swallows announce their arrival with constant begging calls for food. The adult swallows tirelessly hunt for aerial insects, making a series of rounds throughout the day to feed their hungry chicks, until dusk sets in. The setting sun signals the busy parents to finally call it a day and return to rest alongside their chicks within the safe confines of human dwellings. With the dawn of the next day, the cycle repeats itself until the chicks can fend for themselves.

As dark, moisture-laden clouds start hovering above, June-end onwards, threatening monsoonal downpours, barn swallow families begin preparing for their journey southwards. They bid a temporary farewell to their human hosts, promising to return the next spring! They leave in the hope that their human hosts will welcome them back with open doors, windows, and most importantly, warm hearts.

#### About the Author

Amarjeet began her career as a professional ornithologist with the Wildlife Institute of India in the Amur Falcon research project, tracking the bird's migration in remote villages of Nagaland and Manipur. She later enrolled into the Institute's PhD program (affiliated with Saurashtra University) in 2019, focusing on Barn Swallow ecology in the Indian Himalaya Region. Her research navigates the intersection of wildlife ecology and sociology, including documenting local narratives and perceptions about the species.

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Barn swallow pairs often build nests near each other in available spaces within the same property, this combined presence helps to more successfully warn against and deter away predators. In this bustling Nainital vegetable shop, two Barn Swallows guard their respective nests, ready to start their new families.



Once cave-nesters, Barn Swallows now rely completely on human habitats for nesting. They seek safe spaces in architecturally appropriate shops and houses, having become completely dependent on the warmth and protection offered by their human hosts.



As the season progresses, swallow chicks fill the room with their constant calls, announcing their hatching. Here, a human host has kindly placed a cardboard beneath the Barn Swallow nest to protect it and prevent chicks from falling. The parent swallows appear to appreciate this gesture, using the cardboard as a perch while feeding and guarding their chicks.



(a) The female common cuckoo ejecting a Daurian redstart nestling from the nest (picture extracted from a video); (b) two of the ejected redstart nestlings found on the ground under the nest; (c) a common cuckoo egg in the replacement nest of the same pair (central egg, surrounded by five redstart eggs; one host egg had been removed by the cuckoo during parasitism) (Note: Image and caption are directly reproduced from Zhang et al., 2024)

# FARMING IN CUCKOOS - All you need to know

- PARVAIZ YOUSUF

In a remarkable discovery, cuckoos have been observed to "farm" their hosts for brood parasitism. They achieve this by ejecting the nestlings of their host if the host has already developed a nest. This action prompts the host to re-nest, which can later be parasitised. This behaviour was analysed by a team of researchers from China, Germany, and the United Kingdom, led by Beijing Normal University's Jinggang Zhang, and their findings were published in a paper titled "Video evidence that cuckoos farm their hosts by ejecting nestlings" in the journal Ecology and Evolution in April 2024.

Birds employ various reproductive strategies to maximise fitness. One such strategy is interspecific brood parasitism, where a bird species, known as a brood parasite, lays its eggs in the nests of another bird species, known as hosts. This behaviour shifts the responsibility of parental care to the host species, reducing the host's own biotic potential. This is an excellent example of coevolution, where hosts and parasites compete to overcome defensive adaptations and counteradaptations, respectively. One of the extreme behaviours adopted to promote brood parasitism is that proposed by the farming hypothesis and observed in some birds like cuckoos.

The researchers were actually studying the reproductive behaviour and parasitism status in Daurian Redstarts when they came across this rare behaviour by cuckoos. They fitted a video camera to record the Daurian Redstart nest and collected data on cuckoo behaviour. The authors observed that a common

cuckoo female destroyed one of the focal nests of a Daurian redstart by ejecting all its nestlings. The host then re-nested, and the cuckoo successfully parasitised the new nest. This indicates that farming behaviour might be more common than we think.

#### Cuckoos Farm Their Hosts for Brood Parasitism

The authors observed that a common cuckoo Cuculus canorus female destroyed one of the focal nests of a Daurian redstart *Phoenicurus auroreus* by ejecting out all its nestlings. They observed that the host then re-nested, and the cuckoo was successfully able to parasitise the new nest of the redstart. The study suggests that cuckoos benefit from destroying a nest that has advanced features and is too difficult for cuckoos to parasitise. This behaviour is a form of "farming" where cuckoos intentionally destroy the nest of its host to induce the formation of a new nest that can later be parasitised.

However, there is scarce data available for birds to show farming behaviour. Previous studies have shown clear evidence of farming behaviour in the brown-headed cowbird Molothrus ater and that too only at the egg stage. For example, in a study, researchers stimulated farming behaviour in captive cowbirds by presenting these birds with artificial nests with either highly developed host eggs or freshly laid eggs. It was observed that cowbirds removed or punctured the developed eggs more often than the fresh eggs. Similarly, another study found that hosts trying to re-nest were more frequently parasitised by the cowbirds than fresh nesting attempts.

It is necessary to mention that farming behaviour is different from "mafia strategy". The latter may also result in re-nesting, but the destruction of the nest is regarded as a kind of retaliation that only occurs when the host rejects the cuckoo egg. Only parasitic species like the brown-headed cowbird and the great-spotted cuckoo *Clamater glandarius*, where the parasitic chick does not kill the host's offspring can exhibit the parasite's "mafia" behaviour, as these systems allow the host parents to successful-

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ly raise some of their nestlings after accepting the parasitism. Therefore, the common cuckoo's nest destruction behaviour, in which the cuckoo chick usually evicts all host progeny, cannot be explained by the mafia concept.

### Limitations of Farming Hypothesis

Although several species have been observed to display farming behaviour, experts argue that there are potential limitations when applying this concept to other parasitic bird species. The hypothesis assumes that the parasitic bird species have the potential to recognise and target the nests that are too advanced for parasitism. However, not all birds possess the cognitive abilities to recognise and distinguish between nests of different types. Similarly, the hypothesis assumes that the host bird species will respond to the nest destruction by building a new one, which is not always true. It is quite possible that the host species does not build a new nest but rather may abandon the nest once it's destroyed.

They may not even have enough resources and time to build a new nest, which is not something that a brood parasite prefers. Furthermore, the concept assumes that the new nest built by the host bird species will be equally or more suitable for parasitism by the brood parasite. However, this may not be true in the external environmental conditions. While building the nest a second time, it is quite possible that the nest has different characteristics that do not suit the brood parasite. At the same time, the farming hypothesis is based on the assumption that the brood parasite will locate the new nest built by a host bird. However, it is possible that some brood parasitic bird species may not be able to locate the new nest. This is especially true if the host builds a new nest in an entirely different location and at a different time.

#### Conclusion

In conclusion, the study provides unambiguous evidence of the farming hypothesis in the common cuckoo, which suggests that the species "farm" at least some of their host nests, given the right circumstances, for brood parasitism. However, such clear evidence is usually scarce. It is likely that the behaviour is more common but often goes undetected as it requires intense nest monitoring. Thus, more studies are needed to establish whether the farming strategy is utilised by other brood parasitic species or not.

#### About the Author

Parvaiz Yousuf is currently a researcher at the Wildlife Institute of India, apart from being a prolific writer. He holds an MSc in Zoology with his chief interest being Ornithology. He recently authored the well-received book, "Birds of Jammu & Kashmir Including Ladakh" and has numerous publications in prestigious journals. He contributes to international science magazines like Asian Scientist and Truly Curious, and served as the Director of the Wetland Research Centre, Wildlife Conservation Fund YPJK from 2018-2023.

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# A DAY OF DISCOVERY -Surveying Aquatic Invertebrates at the WII Campus

#### - KARMANNYE CHAUDHARY & RITESH GAUTAM

On a sunny yet unhurried morning amidst the verdant expanse of the Wildlife Institute of India (WII) campus, Mr. Ritesh Gautam and I embarked on a quick survey of the aquatic invertebrates inhabiting the tranquil waters of the Campus Lake and streams. Our initial enthusiasm was met with a minor setback – we had forgotten our collection vials! Thankfully, a quick detour allowed us to retrieve the necessary equipment, and soon I was wading into the Lake (Fig. 1). Equipped with the collection vials and clad in our trusty Wellington boots, we approached the lake, where a chorus of spot-billed ducks bid us a fleeting farewell as they soared gracefully into the azure sky.

With each step into the cool embrace of the lake, clouds of silt billowed around us, prompting the retreat of diminutive water boatmen and riffle bugs. A sweep of my D-net through the aquatic vegetation yielded a mixed bag – a healthy population of invertebrates alongside debris and charophytes. After extricating myself from the foot-deep mud, we transferred the net's contents to a spill tray, allowing the copious amount of silt to settle before a visual inspection and analysis.

Amidst the silt, the ubiquitous presence of *Micronecta ludib-unda* (Fig. 2), colloquially known as water boatmen, emerged as a prominent feature. They were accompanied by the sleek

forms of backswimmers of the genus *Anisops* (Fig. 3), asserting their role as primary predators within the aquatic ecosystem. Larger water boatmen of the genus Sigara were present as well, easily identifiable by their cigar-like shape and dorsal patterning. Drawing closer to the sample tray revealed the delicate forms of Daphnia and Cyclops, diligently tending to the vital task of nutrient cycling amidst the aquatic milieu.



Figure 2. Micronecta



Figure 3. Anisops sp.

After collecting some backswimmers and boatmen for mounting, we released the remaining organisms back into the lake. My primary interest lies in water beetles, and their absence in the sample was a slight disappointment. However, Mr. Gautam assured me that the streams at the other end of the campus might hold promise. Indeed, the densely vegetated stream, with a small bridge overhead, teemed with life. Water striders or *Gerridae* (Fig. 4), their long legs nimbly navigating the water's surface tension, scattered in a flurry as I approached with my net. We envisioned using a guitar, if one were present, to mimic vibrations and induce a synchronized ripple effect amongst these fascinating creatures.



Figure 4. Water Strider floating around the lake looking for prey.



Figure 5. Zebrafish collected from the WII streams.

Fish collected from the stream initially resembled the invasive Gambusia, based on a previous survey. However, a closer look by Mr. Gautam revealed vibrant yellow lateral lines, identifying them as Zebrafish (Fig. 5). This discovery was a welcome surprise compared to the potential presence of invasive Gambusia. The stream also hosted a diverse population of water striders, particularly from the genus Metrocoris, alongside riffle bugs. The continued absence of water beetles led us to hypothesise several possibilities: competition from backswimmers and water striders, a lack of suitable ecological niches, or simply inadequate sampling. Our findings beckon further investigation, hinting at the possibility of long-term monitoring initiatives to unravel the intricacies of this dynamic ecosystem. This potential project holds immense promise for providing valuable insights into the intricate dynamics of the WII campus's aquatic ecosystem.

#### About the Authors

Karmannye is a 20-year old student from Chandigarh, currently studying biology at Queen Mary University, London. His current research interests are waterfowl population dynamics along with wetland ecosystems and water beetle taxonomy.

Ritesh is a faculty member at the Wildlife Institute of India. He works on insects in a broad sense, focusing on the taxonomy and ecology of wild bees in the Himalaya region.

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# WHEN TWO CAMPUS CANINES WENT BIRDING

### - ABHINAV YADAV

Dogs are often referred to as man's best friends. Genetic studies suggest that dogs diverged from their wild ancestors between 14,000 and 29,000 years ago, becoming domesticated through human interactions. They have played a significant role in human evolution, providing safety from wild animals and, in the process, becoming almost completely dependent on us.

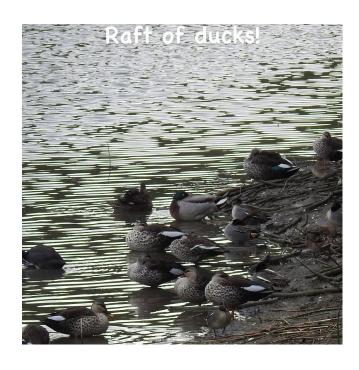
However, with time, a harsh reality has emerged. Feral or free-living dogs (often subsidised/fed by humans) pose one of the biggest threats to wildlife. Negative interactions have been reported worldwide, and even in our biodiversity-rich Institute, many ground-dwelling birds, jackals, and civets have been threatened and predated by these seemingly innocent-looking

Saunta and Raja went for birding!

creatures. This is a sensitive topic of debate between animal welfare groups and conservationists. Thankfully, in our Institute, some measures have been taken to keep the dog population in check. Dogs are neutered, and to control any spillover of diseases, anti-rabies vaccinations are administered periodically. However, is this enough? It is worth pondering how we can minimise their negative interactions with on-campus wildlife.

Meanwhile, here is an anthropomorphised look at what two campus dogs – Saunta and Raja – found when they ventured to the lakeside along the Campus's nature trail.















### About the Author

Abhinav is a researcher in the CAMPA Dolphin project. Apart from being a keen student of the natural world, he is an ardent art lover and additionally loves to read and write about India's cultural heritage. He has previously worked as a researcher in the All India Tiger Estimation exercise of 2022.

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The Wildlife Institute of India organized a winter camp for government schools, private schools, Bal Ganga Prahari schools and underprivileged children under the guidance of Dr. Ruchi Badola, Dean, WII and Dr. Sangeeta Angom, Project Scientist-III & Bal Ganga Prahari Programme Coordinator, WII-NMCG Project. The winter camp was filled with colourful events, including a calming yoga session, art and craft classes featuring vivid block painting, best out of Waste session, cultural programme, captivating dance performance, rhythmic rhyme recitations, and storytelling session brimming with knowledge, creativity, and friendship.



The winter camp began with a peaceful yoga class, where 100 girls from Dayanand Kanya Inter College, Subhash Nagar,

participated. Both instructors and students found comfort in the age-old practice of well-being. With the help of experienced teachers, they delved into the depths of awareness and discovered inner peace. Following this, in the "Best Out of Waste" workshop, inventiveness reached unprecedented heights. Students took used plastic wrappers and turned them into reusable, environmentally friendly bags. The act of reusing abandoned resources to create new life inspired the spirit of sustainability.

Ms Bilashni Devi, Bal Ganga Prahari Mentor, engaged in art and craft sessions and where students immersed themselves in the craft of creating cards in a flurry of color and creativity. With every brushstroke, their creations told stories, demonstrating their inventiveness and enthusiasm.



Ms. Ashmika Aggarwal and Ms. Aarti Chauhan conducted the, another exciting skill development workshop, which included a block printing activity where 250 students from 5 different schools participated actively followed by cultural activities, including folk dance and music, where students showcased their spectacular presentation of talent, and the atmosphere was electric with anticipation.



Ms. Alankrita Sharma, conducted a vibrant session comprising a dance workshop, followed by rhyme recitation and fun games. Their youthful enthusiasm and passion on stage were evident in everything from captivating dance performance to rhythmic rhyme recitations.



Shri. Devendra Mewari, a renowned science writer and communicator, led a storytelling session named 'Katha Kaho Yayawar' which was the event's high point. Shri. Mewari captivated the audience with his captivating stories of science and amazement. He took the eager audience on a voyage across time and space with his engrossing stories, revealing the secrets of the universe with each passing word and his distinct narrative style that made his session stand out. He captivated the students with his remarkably outstanding voice by imitating various birds, animals, and other things. His performance motivated the kids, who eagerly imitated the sounds of the surrounding natural environment.

With every event, the winter camp evolved from a simple stdent assembly into a celebration of creativity, curiosity, and camaraderie. Hearts were full of memories of learning, laughing, and the promise of new experiences ahead as the camp came to an end.





Figure 1: A flock of House Sparrows perching on traditional roofs in village Malari (3050 m elevation) in Niti Valley of Chamoli District in the summer of 2022

# FEATHERS AND FOOTSTEPS: Exploring the House Sparrow-Human Relationship in the Himalayas

- RENU BALA

Within the majestic expanse of the Himalayas, Earth's highest mountain ranges, lies an environment of unparalleled challenges—a realm where survival is a demanding test for all living organisms, including humans. As we ascend the Himalayas, where the familiar tree line gives way to rugged brown slopes and the melody of mountain rivers echoes through these rugged terrains, a breathtaking panorama unfolds. At an elevation exceeding 3500 meters, where the air becomes thin, jackets are pulled tighter, and a noticeable chill prevails, the house sparrow (*Passer domesticus*) emerges as an unexpected protagonist. In this seemingly unforgiving altitude, where hypoxia affects many, this passerine bird not only endures but thrives, embodying a remarkable story of adaptation and tenacity.

In late October 2021, as I initiated my reconnaissance surveys of house sparrows into the higher reaches of Uttarakhand, I found myself captivated by their large flocks at altitudes reaching 3500 m near the temples of Kedarnath and Badrinath in Uttarakhand. I noticed that these sparrows were larger and fluffier than their counterparts in the plains, sparking curiosity. I found it intriguing that, despite heavy snowfall in Kedarnath, these sparrows were flocking around the bushes near the temple. It was a testament to their adaptability and resilience

in such challenging environmental conditions.

These initial encounters set the stage for further exploration, which led to similar sightings of large house sparrow flocks in the remote villages of Niti Valley (Chamoli district) during my visit in the summer of 2022. These villages, situated in highly remote locations, include Niti, the last village in the valley at an elevation of 3450 m. I spent my days surveying these villages, searching for the nests of house sparrows. The sparrows prefer nesting in the crevices formed by stacked rocks that make up the walls, which are around 1.5 feet wide—a cozy spot for them to build their nests. To my surprise, a single rock wall of a house had more than 15 active nests of house sparrows. This observation hinted at how the traditional way of living in these villages has significantly benefited house sparrows.

This led me to wonder—do these sparrows stay in these high-altitude villages throughout the year, or do they migrate with the residents as they move to their winter homes in October-November? Summer-Smith (1993) mentioned that the *P. d. parkini* subspecies, found in the higher Himalayas, is an altitudinal migrant, descending to about 2000 meters in winter. However, whether house sparrows nesting in these villages exhibit altitudinal migration or not is unknown. To understand this better, I decided to conduct a survey of these locations during the peak winter of January 2023.

As I set foot in Niti, a profound silence enveloped the village, accompanied only by the soothing sounds of the Dhauli Ganga River filling the air. In this quiet haven, not a soul was in sight, and my search for the familiar chirps of sparrows proved unsuccessful. The absence of human activity and house sparrows added to the stillness, creating an atmosphere where nature's whispers were the only audible companions. Then I moved down to Gamshali, the next village about 5 km from Niti situated at 3360 meters. A similar story unfolded here as well—no humans, no house sparrows, but large flocks of plain mountain finches *Leucosticte nemoricola*, over 200 of them, in the trees and bushes.

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The trend continued at Bampa and Malari villages, where plain mountain finches had taken over the winter-scape. I then descended to the small village of Fagti situated at around 2300 meters elevation where, once again, only plain mountain finches were in sight.

After spending two days in Fagti, I proceeded to a comparatively larger village, Tapovan, at an elevation of 2000 meters. Tapovan boasted a few shops, small restaurants, and an ongoing hydropower project. Here, my expectations were finally met as I heard the familiar chirps of house sparrows. The sparrows, however, were in larger flocks than I had seen during the summers—more than 150 of them foraging in the expansive bushes near the main road. This observation reinforced the notion that sparrows tend to migrate down with locals to lower-elevation areas where ample food resources are available during the harsh winter months.



Figure 2: House Sparrows flock at the Naga camp of the Indo-Tibetan Border Police (ITBP) in Nelong Valley, Uttarkashi District (October 2022)

The story doesn't end here; in October and early November, I explored other remote locations in Nelong and Jadhang in Gangotri National Park in Uttarkashi. These sites are devoid of civilians and house only Indian armed forces. Surprisingly, these camps had a substantial population of house sparrows. According to these personnel, sparrows stay there throughout the winter. This exploration seeks to verify whether the presence of humans at altitudes as high as 3850 meters can indeed sustain the sparrows during severe winters. If proven true, it might establish the intriguing connection between humans and sparrows, reinforcing the notion that sparrows seem to follow suit wherever humans reside, thriving alongside them.

My observations hint at a connection between human settlements and sparrow migration patterns. This behavior highlights the adaptability of sparrows to human-altered landscapes, showcasing their capacity to thrive in such environments. Interestingly, while house sparrows in urban areas have experienced a drastic

decline, these challenging terrains appear to be a stronghold for them. Sparrows, known for sticking close to us, show a surprising resilience in extreme cold and hypoxic environments, whereas in our bustling cities, they have quietly disappeared. These findings spark some thought-provoking questions. Do house sparrows at higher elevations undergo morphological adaptations and changes in feather structure for better thermoregulation in these cold environments? Are there physiological changes to cope with lower oxygen levels in these hypoxic surroundings? Exploring these aspects in house sparrows in the Uttarakhand Himalayas offers a valuable opportunity to comprehend the species' adaptation to such environments. The ongoing project on house sparrows of Uttarakhand, of which I am a part, seizes this chance to explore these intricacies and study these aspects in detail.

#### About the Author

Renu Bala is a PhD scholar with the Wildlife Institute of India (affiliated with Saurashtra University) and is currently working on the Uttarakhand House Sparrow Project under the mentorship of Dr. R. Suresh Kumar. Her research focuses on the population ecology and nesting behaviour of house sparrows in the Uttarakhand Himalaya. In addition, she is investigating the population genetic structure, morphological variations, and hemato-physiology of house sparrows within the region, thereby shedding light on the evolutionary dynamics of the species.

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# NATIONAL LEVEL TRAIN-ING WORKSHOP ON 'Freshwater Biodiversity Conservation' for university teachers and professors at WII

The National Level Training Workshop for University Teachers and Professors on Freshwater Biodiversity Conservation, sponsored by the National Mission for Clean Ganga (NMCG) and National River Conservation Directorate (NRCD) at the Wildlife Institute of India, Dehradun from March 5th to 8th, 2024. The programme aimed to enhance the understanding of 47 professors from different states about the complex

ecological dynamics that regulate aquatic fauna. It also emphasised the importance of conserving the biodiversity in the Ganga River and its tributaries.

Under the distinguished guidance of Shri Virendra R. Tiwari, Director WII, Dr. Ruchi Badola, Dean, WII and Principal Investigator, NMCG Project, Dr S.A Hussain, Project Manager, WII-NMCG Project and Dr. Sangeeta Angom, Training Coordinator, WII-NMCG Project the inaugural day of the workshop reverberated with enthusiasm and scholarly engagement. Lectures, Interactive sessions and immersive hands-on activities formed the cornerstone, providing a fertile ground for participants to delve into nuanced discussions and knowledge exchange. Topics spanning aquatic species conservation methodologies, holistic river assessment frameworks, and the ecosystem services rendered by the Ganga River and its tributaries were meticulously explored, setting a robust foundation for the days ahead.

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As the workshop progressed, participants were immersed in a diverse array of thematic lectures and practical demonstrations, each offering profound insights into the multifaceted realm of freshwater biodiversity conservation. From mastering advanced monitoring techniques to deciphering the intricacies of water quality assessment, participants were equipped with a comprehensive toolkit poised to address real-world conservation challenges. The experiential highlight came in the form of a captivating field visit to the Asan Conservation Reserve, where participants were afforded invaluable first-hand encounters with the region's rich aquatic ecosystems, further cementing their theoretical learning.

Beyond the confines of lecture halls, the workshop fostered a spirit of collaboration and camaraderie, as participants engaged in lively group activities and discussions. This collective synergy not only deepened their understanding but also laid the groundwork for potential future collaborations in the realm of freshwater biodiversity conservation. Culminating in a resounding crescendo, the workshop's concluding phases featured a memorable field visit to the Rajaji Tiger Reserve and a reflective visit to the Ganga Avlokan at Chandi Ghat in Haridwar. These experiences underscored the profound significance of the Ganga River while reigniting participants' commitment to safeguarding its invaluable ecosystems for generations to come.









# LEGACY IN RETIREMENT: Honoring our retired personnel



**Shri Arjun Singh Negi** 18.03.1991- 31.01.2024



**Dr. Bitapi C. Sinha** 23.04.1993 - 31.01.2024



**Shri Ramesh Chandra Kanti** 06.09.1991 - 31.01.2024



Shri Ram Sundar Prasad Yadav 02.02.1992 - 31.01.2024



**Shri Shambu Prasad Nawani** 18.03.1991 - 31.01.2024



**Shri Mahesh Tyagi** 28.09.1999 - 31.01.2024



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