# Conservation in Action: Exploring Ground Realities in the Western Ghats with RHATC

We were very excited when Sanjay announced the first field trip as part of the Ram Hattikudur Advanced Training in Conservation (RHATC) course 2024–25. We were thrilled to be there in the laps of the Western Ghats after spending so much time inside the classroom learning about conservation. Expectations were overflowing. Yeah, finally we started our journey to Coorg by 4.30 am from Coimbatore on 01 November 2024. It was a lot of surprises right along the trip as we were not told about the destinations. The excitement and expectations varied from person to person. Some of us were eagerly waiting to see leeches, some not so much! Of course, there were a few of us who had been to the Western Ghats before, but most of us were new to the forests of Southern India.

**Day 1**

**Rainforest Retreat**

The Rainforest Retreat's Mojo Plantation is a unique project that combines eco-tourism with sustainable agriculture and environmental education. It is an organic farm in the Tropical montane rainforests of the Western Ghats of Kodagu district in Southern Karnataka. Mojo Plantation was founded in 1994 by Drs. Sujata and Anurag Goel. Together with their daughter Maya, they made this very special rainforest environment their home. Sujata has a PhD from the Botany Dept of Delhi University and Anurag completed his studies (PhD in Molecular Biology) in Toronto, Canada. While talking to them, we came to know about their previous research experience in the fields of biological

sciences including botany, plant biochemistry, genetics, ecology and molecular biology. They have lived and worked there for over 25 years developing Mojo plantation as a model for conservation through agro-ecology and sustainable tourism. Their conservation efforts have been recognized by a recent award from Carl Zeiss Foundation and Sujata has been a very active member of OFAI (Organic Farmers Association of India). As OFAI president she hosted the World Organic Congress held in Delhi in 2017.

Income from the Rainforest Retreat funds the activities of the WAPRED Research Foundation (Worldwide Association for Preservation and Restoration of Ecological Diversity), an environmental NGO.

We began our field trip with a hot lunch followed by a cold dip in the stream originating nearby. Wildlife was omnipresent, from sighting a cicada molt on the plastered steps to snails on lily-like leaves, slugs, stick insects landing on the back, female *Nephilia pilipes* spinning and spanning her web across leaves and male sitting still on the web and another Nephila feeding on *Dysphania percota* commonly called the Blue Tiger Moth. All of this was found while moving just around the dining area.

We headed to walk one of the valleys, moving through dense canopies of *Eleocarpus* sp. commonly referred to as Rudraksh, *Syzigium* sp., non-native *Acacia* sp. to sparsely spaced stunted trees to plantations as we ascended to the shola grasslands, now rapidly declining. The shade of the Eleocarpus trees and others sheltered the coffee, pepper, cardamom, avocados, vanilla, etc. This was a great start in familiarizing us with the place and its biodiversity. It rained and it was ideal for mating of frogs. We spotted a significant number of frogs and toads near the lodge most often residing within the lily leaves.

**DAY 2**

**Mushroom Foraging & Ridge Walk**

The next day, we headed to forage for mushrooms and found a magnificent green beetle with pronounced eyes clenching onto grass called as *Lytta vesictoria* commonly known as the Spanish fly. We walked and reached a place where an Eleocarpus tree had fallen and mushrooms were mushrooming there. We learned which ones to pick and which ones

to let be. We saw three kinds of mushrooms, brown, white, and pink. We plucked the white ones from the base, let the pink ones be since they were very few, and let the brown ones be since they were mature hence allowing it to sporulate and reproduce more. A mature mushroom has gills below which are spaced out enough and tightly packed gills indicate that they are still maturing. We saw a snail gorge on a mushroom. The key lesson was to always leave behind enough because it's also somebody else's food and leave room for sporulation and reproduction. Robin Wall Kimmerer would've been proud.

How does one decide if the mushroom is edible or nonpoisonous? How does one identify mushrooms? Mushrooms sold in the local market were one of the key indicators to decide if it was edible and ID'ing wasn't used to understand its edibility. Mycologists use a spore print to ID the mushrooms, a photo of the mushroom is not enough to ID. The spore print is taken by allowing a mushroom to mature and sporulate covered with a glass.

We then headed for the Ridge Walk. We walked through the dense foliage of tall trees in the valleys, shrubs and then coffee and pepper plantations as we ascended to the the grasslands. We witnessed the remnants of the 2018 landslides and its effect on the ecology. It wiped out most of the topsoil and vegetation along with it. After all these years those escarpment-like edges are beginning to get mosses and lichen making a ground for grasses followed by other vegetation growth. Sadly, millions of years of wildlife washed away. Why? Lots of rainfall, loss of 300–1000-year-old tussocks which constitute the grassland. Tussock stores more carbon for its body size in proportion to trees and manages to hold the soil much better because of its fibrous roots. We saw betelnut palms and acacias non-native to Coorg, replacing *Caryota urens* and Fishtail Palms which were the native palm species. We saw spider burrows and learned about the feeding ecology of tarantulas and the way they build burrows lined with their saliva. There were a variety of lichens and mosses; yellow, black, and green. On reaching the grasslands, we spotted soil digging and suspected the presence of a Wild Boar. We were in the Shola grasslands, in the most beautiful ecosystem but unfortunately, the least researched ecosystem. It's visibly declining due to the introduction of acacias, etc. due to a lack of understanding of the importance of grasslands. It was filled with native grasses with patches of invasives. These grasslands were abundant with invertebrates, especially dragonflies. We saw a magnificent standalone earth orchid, white in colour amidst grasslands and *Bulbophyllum* sp. on barks of tall trees. We walked through the valley through the denser canopied part of the forest while heading back. All the stretches were so starkly different from each other highlighting the diversity. It was wondrous.

We ended our day with herping with S.R. Ganesh, we tried and spotted the frogs such as *Microhyla* sp., *Uperodon* sp., *Pseudophilautus amboli*, *Indosylvirana indica* and lizards such as rock forest lizard, geckos and snakes like Malabar Pit Viper, Wolf Snake, Brahminy Blind Snake and a shield-tail snake. Herping requires a different kind of vigilance and eye and the herping walk helped us build that.


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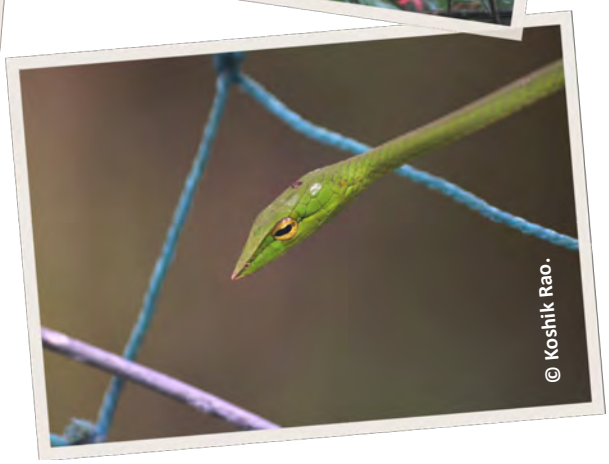
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**DAY-3**

**Field Visit to the Dancing Frog Habitat and Dr. Vivek Pandi's Insights into Climbing Plants**

On the third day of the RHATC field trip, we visited the Dancing Frog Habitat, a conservation initiative led by Mycelium. Located 6 km from our base, Dancing Frog offers an innovative model for preserving the delicate shola habitats of the Western Ghats. We were welcomed by Abhishek Jain, co-founder of Mycelium, who introduced us to the project's mission and methods.

Our first stop was at a stream called Hattihole, where Abhishek discussed issues with current flood control methods. He explained that stones used to reinforce riverbanks are often sourced from grassland rock habitats, a practice that disrupts these fragile ecosystems while offering limited flood control. Instead of containing river overflow, such methods risk intensifying downstream flow, endangering low-lying areas during periods of heavy rain.

We then ascended to a viewpoint with sweeping views of the surrounding hilltops, some of which are either already acquired by Mycelium or under consideration. These areas, adjacent to the Pushpagiri Tiger Reserve, represent a patchwork of private land Mycelium is securing for restoration and conservation. Abhishek shared Mycelium's approach to conservation, which involves purchasing and protecting private lands in the Western Ghats that are threatened by overuse. By removing these lands from the commercial market, Mycelium aims to restore and conserve their natural ecosystems. The 70-acre Dancing Frog Habitat, Mycelium's first major acquisition, is preserved with minimal human interference: 80% of the area remains untouched, while 20% is developed to support eco-friendly human interaction without compromising the ecosystem.

From this viewpoint, we also witnessed the evolutionary uniqueness and biodiversity of the Shola grasslands and the rocky outcrops. We saw balsam species thriving on natural outcrops. Several species of the herbaceous genus *Impatiens* are found on these plateaus.



*Impatiens* is a diverse genus, with over 1,000 species distributed primarily in the Old World tropics and subtropics (Dessai & Janarthanam 2011), with a few species also found in the temperate regions (Mabberley 2017). The genus is one of the most speciose angiosperm genus in India, with >220 species, and exhibits exceptional diversity and endemism in the Western Ghats mountains in southern India (Arigela et al. 2019) with more than 120 species (Bhaskar 2012), of which > 90% are endemic to these mountains, and new species continue to be reported at a high rate (Dessai & Janarthanam 2011; Narayanan et al. 2013; Hareesh & Sabu 2020; Vishnu et al. 2020). Thus, the Western Ghats are a hotspot of diversification of the genus. This diversity underscored the concept that "rocks shape life, and life shapes rocks" – a theme central to our discussions on biogeography and evolution.

After a refreshing lunch, we set out on a guided trek to a river stream within the Dancing Frog Habitat. Fellows enjoyed sightings of endemic species, including a dancing frog and four Malabar Pit Vipers, and many took the opportunity to swim in the stream's pristine waters—a highlight of the day.

**Lianas and Climbers in the Forest:** Returning to our accommodation at the Rainforest Retreat, we concluded the day with a talk by Dr. Vivek Pandi, who provided an in-depth discussion on lianas and their ecological role within tropical forest systems. Dr. Vivek Pandi, a plant ecologist and assistant professor of evolutionary biology at the Manipal Centre for Natural Sciences, has spent nearly 10 years researching the ecology and biodiversity of climbers in India. He holds a Ph.D. focused on woody climbers and is particularly interested in the evolution of climbing behaviour in plants. Dr. Vivek Pandi's contributions to the study of climbers, particularly in liana research, are remarkable and important. He has conducted an ecological mapping of lianas throughout peninsular India. His publication, 'Taxonomy and Ecology of Climbers – Climbing Plants of India,' presents his findings. Currently, his research centres on the taxonomy, systematics, and phylogenetics of Indian climbing plants.

Lianas significantly influence tropical forests by competing with trees for resources for both aboveground and belowground resources, which can hinder tree recruitment, growth, and survival (Pandi & Parthasarathy 2015). Lianas use five main climbing mechanisms to reach sunlight by attaching to host trees, as


they can't grow vertically on their own. These mechanisms include hooks, stem twining, tendrils, armed scramblers, and unarmed scramblers. In some tropical forests, lianas make up 32% of woody stems and 35% of woody species. They take advantage of high solar radiation, especially during dry seasons, often creating dense leaf cover that limits light for the host tree's photosynthesis. In the tropics, liana colonization on host trees is rising (Pandi et al. 2023), with common climber families including Cucurbitaceae, Menispermaceae, and Convolvulaceae. There are over 2,600 species of climbers across 196 families, notably with the genus *Piper* and family Fabaceae highly represented. On that day and the following day, we had the incredible opportunity for on-site learning about lianas. On 5 November we had a debate on lianas, where we were divided into two groups and given a common scenario involving lianas in a plantation. One group represented forest managers, while the other represented conservationists. The debate offered us a platform to recall and reflect on our understanding from Dr. Vivek Pandi's session.

The debate concluded with a discussion on how both teams could strengthen their points to create a more impactful argument.

**Conclusion:** Overall, the visit to the Dancing Frog Habitat gave the fellows an insight into the proactive and innovative approaches that can be taken for biodiversity conservation. Mycelium's efforts to preserve the unique landscape of the Western Ghats prove that biodiversity conservation initiatives can enter the mainstream economic market, with "conservation" being the goal. The entire day spent at Dancing Frog was finally complemented by Dr. Vivek Pandi's discussion on lianas, opened our minds to the uniqueness of these often undermined group of plants. This underscored the fact that each and every entity in an ecosystem is critically required to maintain an ecosystem's uniqueness, like that of the Western Ghats that the fellows got to witness first-hand.

**DAY 4**

**Organic farming techniques & Rocky outcrops**

Sujata took us around Valley 3 to introduce us to their farming practices. We spotted a gliding lizard, basking in the sun on a tree bark. This species is distributed in the entire Western Ghats and some parts of Eastern Ghats. It is an insectivorous lizard. We walked through the cultivated patches of avocados, cardamom and vanilla grown under the existing forest trees. They were grown in the valleys since they are well adapted to wetlands and pepper was cultivated on the slopes since it is adapted to well-drained soil. It was followed by a walk beneath the sprawling branches of *Garcinia cambogia*, with sunlight shimmering through its canopy, surrounded by the dense green and red foliage of *Garcinia indica* and the broad leaves of *Garcinia mangostana*. A Coffee Arabica tree stood nearby, almost unrecognizable due to its towering height. When left unpruned, coffee trees can grow so tall that harvesting becomes impossible, leaving the ripe fruits to fall from the treetops. They act as good mother plants, the big fruits do well for the coffee nursery and are savoured by Civets. One of the patches of the coffee plantations in the forest was left unpruned for Palm Civets to come to eat. Civets also eat the toddy palm's fruit and *Caryota urens*, a preferred food for Elephants (not

spotted here) and are native to hilly regions. The undergrowth was filled with invasives and discussion on invasive species followed.

Can invasives be helpful? Sometimes, yes, but, do not grow them. The characteristics of invasives like *Wedelia* sp. helped get back the soil cover which was washed away in the landslide, and now rock surfaces unsuitable for much growth remained. *Wedelia* sp. was eventually weeded out for four generations, shredded and used in manure. It was followed by the sowing of native grass seeds.

What are invasive species? Invasive species are organisms introduced by human activity that have not co-evolved with the local ecosystem. Their presence can disrupt local ecosystems, sometimes creating ecological imbalances that may cause native species to exhibit dominance-like behaviour, as seen with *Strobilanthes* spp. Undergrowth invasives such as *Hypoestes* sp., *Miconia crenata* which is native to Mexico and the Tropical America took over the ferns and grasses native to Coorg. *Miconia crenata* has colonized large patches of undergrowth in rainforests in southern Asia. This was introduced in Coorg only 15 years ago. In this colonization, native herbaceous weeds like *Commelina* sp. commonly called as Shankhapushpi and Mudleaf which is good in iron can be used as spinach and as nitrogen for livestock were replaced. What makes these herbaceous weeds aggressive is its runner system, roots radiate out and effectively take over.

*Lantana camara*, another invasive species has been adopted by butterflies, why? Butterflies are attracted to a certain ultraviolet reflections

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and Lantana generates the same. It is not because of the chemical it releases that attract the butterflies. So, Butterflies haven't evolved with the *Lantana camara*. It is found to be a good food plant but not a host plant that may eventually lead to declining butterfly populations.

*Spathodea campanulata* or the African Tulip Tree, another rampant invasive tree species was found amidst evergreen forest. It attracts a lot of parakeets, birds, and fireflies.

On our walk further, we saw Wild Pepper which has been observed to be very resistant so it's been there undisturbed followed by a *Salix tetrosperma* bark which was used for aspen production during Aristotle times and is a native species. We saw a humongous *Magnolia champaca* with a narrow umbelliform crown.

Then we were introduced to an alternative way of thinking of pests. They developed a strategy of using repellants rather than killing the pests or insects. They set out to try different combinations of plant extracts and chose the one that worked well. They used it to repel stem borers on coffee and cardamom plantations and then kill them. It was to say to the borers, "Hey, don't feed on this, feed on something else". These are the kind of holistic solutions that systematic, scientific thinking leads to.
We were guided to the rockier parts of the mountains by Purvy, Abhishek's sister who is into urban landscaping and spotted a lot of annual grasses such as *Canscora heteroclita*, mosses, lichens and the *Riccia* bryophytes which is more primitive than mosses. These form the skin of the forest. These have evolved along with this rocky ecosystem. The exposure of the ecosystem to the sun led to growth of small perennial grasses that die with monsoon, but the root still remains and the cycle repeats.

*Strobilanthes* found in this rocky region were very small in size compared to the ones growing in the undergrowth of forests. This size reduction is an adaptation to this ecosystem.

How do we figure out if the grassland is undisturbed and healthy? The presence of narrow endemics would act as a very good indicator. This particular site was grassland 20 years ago (Sanjay Molur pers. comm.) and now the area of grassland has been reduced due to Acacia and other tree plantations.

We were greeted with beautiful orchids in the grasslands such as *Dendrobium* sp. and *Cleistoma* sp. and tiny mushrooms on our way back.

**DAY-5**

**Composting**

At Rainforest retreat, we had the opportunity to learn about compositing from Sujata who herself is involved in this interesting process.

Ingredients they used were cow dung and cow urine which help in the decomposition process and the leftover fodder provides carbon material essential for balancing the compost. A natural microbe supplement is prepared with a mixture of jaggery, peanuts, and daal, spray it and cover it with a tarpaulin and leave it for 6–7 months. For big plants, two tubs and for small plants one tub of mixture is spread around them. These contain beneficial microbes that accelerate

the decomposition of organic matter. Once the compost is ready, it will have a dark, crumbly texture and an earthy smell. This compost improves soil fertility and promotes healthy plant growth.

**Biogas Production Process:** They rear cows which makes it easier for them to get cow dung as in the biogas process, a large amount of cow dung is required initially. There was a sealed container where the anaerobic digestion (breakdown without oxygen) occurs so they put a large quantity of cow dung in that container. Then add any bio-waste such as kitchen waste (vegetable peels) and finally use it for cooking gas. Later we also had the opportunity to get involved in shifting and applying organic compost to the plantation, enhancing our practical understanding of sustainable practices.

**DAY-6**

**Herpetology at Hunsur: Exploring the World of Snakes and Conservation**

On the sixth day, we arrived at Gerry Martin's facility in Hunsur around midday. This visit to Hunsur offered an introduction to herpetology and conservation with various sessions on different aspects of the world of snakes.

**Behind the Scenes at the Liana Trust: Conservation and Care for Captive Snakes**

Following lunch and a brief introductory session, we were given a tour of the serpentarium, where various snake species – both native and non-native – are housed. The non-native snakes had primarily been rescued from the illegal pet trade. Lisa, who is the curator, guided us through the serpentarium and provided an in-depth explanation of how the snakes were brought to the facility, why they cannot be released back into the wild, and the methods used to care for them in captivity.

The enclosures are designed to replicate natural conditions, including provisions for food, UV light, and Infrared A, B, and C to simulate natural light sources. Among the species housed in the serpentarium were the Hump-nosed Pit Viper *Hypnale hypnale*, Russell's Viper *Daboia russelii*, Common Krait *Bungarus caeruleus*, Malabar Pit Viper *Craspedocephalus malabaricus*, King Cobra *Ophiophagus* sp., Saw-Scaled Viper *Echis carinatus*, and Spectacled Cobra *Naja naja*, along with a few non-native species.

Lisa explained the naming protocol used in the serpentarium, which combines the first two letters of the genus and species names, the state abbreviation where the snake was found, and an individual identifier number. She also showed us a new enclosure under construction for the spectacled cobras and kraits, designed to provide larger spaces to house snakes in pairs.

We were introduced to the use of passive integrated transponder (PIT) tags, small subcutaneous microchips implanted in snakes for identification in enclosures with multiple


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individuals. These tags can be scanned with a handheld biometric reader for close-range identification. Gerry demonstrated this process by implanting a PIT tag in a recently rescued Russell's Viper. The serpentarium plays a crucial role in venom collection for antivenom production, which they provide free of charge. They have also developed an app called 'Ophion', which catalogues detailed information about each snake in their care.

In addition to the serpentarium, we toured the farm, which houses a variety of exotic animals rescued from the pet trade. Lisa highlighted that the farm undergoes regular inspections by the forest department to ensure compliance with regulations.

**Exploring the Evolution of Venoms with Dr. Timothy Jackson:** In the evening, we attended a session with Dr. Timothy Jackson, an evolutionary toxinologist from the Australian Venom Research Unit (AVRU) at the University of Melbourne, Australia. The session walked us through the evolutionary dynamics of venom, its ecological roles, and practical applications. Dr. Jackson began by saying that biology is fundamentally the study of relationships, broadly categorized into ecology and evolution

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based on their scale over time and space, which are deeply interconnected. He clarified the distinction between a toxinologist and a toxicologist, explaining that while toxicologists study the harmful effects of toxins, toxinologists focus on the biology of toxins, examining how organisms produce and use them as part of their life strategies.

Discussing the evolutionary history of toxins, Dr. Jackson introduced the concept of organisms "using or stealing" molecules produced by others to serve their own purposes, likening this to human tool use. He cited examples such as:

- Keelback snakes that are resistant to toad toxins, and genera like *Rhabdophis* and *Macropisthodon* that "steal" toxins from their prey, sequestering them in specialized glands for future defence.
- Larvae of certain insects, which feed on toxic plants, store these compounds to make their adult forms, such as butterflies, unpalatable to predators.
- Kleptocnidy, which is a fascinating phenomenon where predators consume cnidarian prey and sequester their cnidocytes (stinging cells) in their tissues, enabling them to sting their prey. Predators can replenish these cells every time they feed, effectively borrowing a molecular defence mechanism.
- Dr. Jackson highlighted that this form of "molecular tool use" is widespread in nature, illustrating the remarkable adaptability and ingenuity of life.

He also discussed the three fundamental principles of evolution: variation, heritability, and selection, with a focus on venom systems.

He explained that venoms exhibit significant variability, even among individuals of the same species. This variability contributes to the challenge of using antivenoms across different regions, as a formulation effective in one area may not work elsewhere. He also highlighted the diversity in the development of defence and venom systems among snakes, observable even today. This ranges from species with undifferentiated dentition and non-venomous dental glands, like rat snakes, to highly specialized adaptations such as:

- Pythons: Constrictors that rely on mucous secretions from dental glands to assist in swallowing prey.
- Front-Fanged Snakes: Families like Elapidae, Viperidae, and Lamprophiidae, which possess advanced venom delivery systems.
- Rear-Fanged Snakes: Found in the Colubridae family, which have less specialized venom systems.

He also discussed how feeding ecology influences venom variation among closely related species. An intriguing aspect he highlighted was the ontogenetic shifts in viper venom composition, where the venom of juvenile vipers differs from that of adults. This variation is believed to be linked to differences in feeding habits and the physiological characteristics of their prey at different life stages.

He ended by talking about the evolutionary arms race, which is a situation where predator and prey species develop adaptations in response to each other over time. For instance, the garter snake has evolved resistance to the newt's toxin, while the newt has become more poisonous. In areas where the two species live together, the levels of toxin and resistance are higher. When separated, the levels are lower.

**Bringing Conservation & Research to the Classroom with Chandini:** The session, led by Chandini, a nature educator from the Liana Trust, focused on integrating conservation and research into educational activities. She emphasized the importance of taking learning beyond the confines of traditional classrooms and engaging children with hands-on, creative activities to teach them about conservation and the natural world.

Chandini shared several examples of how to make learning interactive and fun:

- The Fossil Game: An activity to teach children about dinosaurs and fossil studies.
- “Eat Food Using Beaks” Game: Demonstrates the diversity of bird beaks and how their shapes help birds eat or catch prey.
- The Biscuit Moon Game: A playful way to illustrate the moon's phases using biscuits to explain the changes.

She stressed that such activities should be simple, imaginative, cost-effective, and adaptable using readily available materials.

Chandini also suggested using relatable objects to help children understand the size and scale of animals.

Recognizing that children may retain only some of the information shared, she recommended focusing on physical, interactive activities rather than lengthy explanations or lectures. Examples included:

- Bioenzymes and Biomimicry Activities: To highlight the importance of reducing, reusing, recycling, and waste segregation.
- Plastic Ingestion Demonstrations: To raise awareness about environmental issues like plastic pollution.

Chandini also advocated for organizing workshops for teachers, equipping them with the skills to conduct these activities in their schools. She underscored the goal of bridging the gap between knowledge and action through engaging, enjoyable learning experiences that inspire children to connect with nature and adopt sustainable practices.

We ended the day with a herpetology walk around the farm, guided by Gerry and Dr. Tim. Despite the insightful discussions and explorations, the walk did not result in any snake sightings.

**Understanding Snakes and Snakebite Prevention in India: Insights from Gerry Martin:** The following morning, Gerry Martin conducted a session titled "Snakes and Snakebite in India," where he introduced the basic characteristics of snakes. He explained that snakes are reptiles with forked tongues, limbless bodies, water-tight scaly skin, and no eyelids. They use their


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forked tongues to sense their environment, transferring chemical signals to the vomeronasal organ, also known as Jacobson's organ.

Gerry discussed India's rich snake diversity, currently comprising approximately 342 species, of which around 60 are venomous to humans. However, only 17–20 species are considered medically significant. He also noted the presence of "weed species" that are commonly found near human habitats. Further, he also explained how anti-venom is prepared.

The session then focused on human-snake conflicts, with Gerry emphasizing prevention and appropriate care in conflict situations. He redefined the concept of "snake rescue", explaining that it often serves to rescue humans rather than snakes, and when done recklessly for showmanship, it can endanger both the rescuer and the snake. He highlighted that relocating snakes is not a viable solution, as snakes struggle to survive in unfamiliar environments, often leading to their death. One of the critical issues Gerry addressed was the lack of understanding about coexisting with snakes. He pointed out that in snakebite

situations, poor knowledge of first aid and treatment, coupled with widespread superstitions, often exacerbates the problem. He also debunked several myths and legends surrounding snakes and the exaggerated tales about them. Gerry stressed the importance of learning to coexist with snakes, offering practical pointers on avoiding snakebites and mitigating conflicts. His session underscored the need for education and awareness to foster coexistence and minimize human-snake encounters.

**Conclusion:** The experience in Hunsur provided valuable insights into the importance of conservation, education, and a deep understanding of snake behaviour and venom for effective management and coexistence. The knowledge gained from these sessions will serve as a foundation for future efforts in conservation education and practical action, fostering a more informed and responsible approach to wildlife management and environmental sustainability.

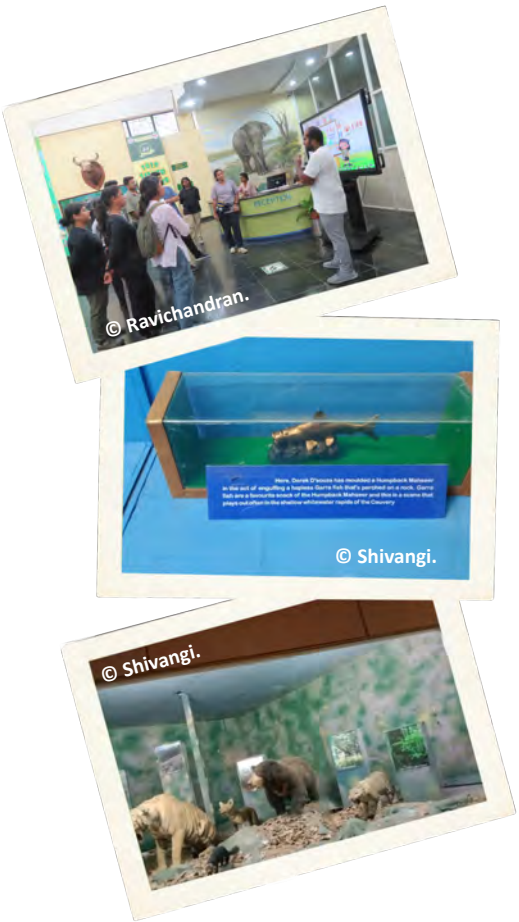
**DAY 7–8**

**Exploring the Natural History of Mysore: Peeping into the Regional Museum of Natural History and the Zoo**

Despite feeling a bit worn out from our full day at Gerry Martin's place, our group set off early on the seventh day after a brief yet insightful lecture by Gerry himself. The two-hour journey to Mysore was a peaceful one, with most of us catching up on rest. Arriving with a lighter schedule ahead, we looked forward to a more relaxed day, with visits planned to the Natural History Museum and Mysore Zoo.

The museum promised to connect the evolutionary concepts we'd explored in Sanjay's lectures, offering a concrete perspective on the history of life. The zoo, a cornerstone of conservation in society, would help us understand the critical role of captive wildlife management and its importance in fostering public awareness and protection of biodiversity.

By the afternoon, we arrived in Mysore and met Thanuja, a naturalist who joined us for a fruitful discussion over lunch. Following this, she led us to the Regional Natural History Museum, one of India's oldest natural history museums, inaugurated in 1985, which showcases the biodiversity of southern India, particularly the Western Ghats. The museum curator gave us a brief introduction to its origin and establishment before guiding us through its three main galleries: Temporary, Biodiversity, and Discovery. The Temporary Gallery highlights a single species or conservation issue, aiming to raise public awareness about endangered species.



During our visit, the focus was on the Mahseer fish, an endangered freshwater species crucial to the Cauvery River ecosystem. The exhibit depicted the fish's history, from its significance during colonial hunting periods to its unique habitat requirements and the growing threats it faces. It was eye-opening—and alarming—to learn that recent surveys found only about 12 individuals along an extensive stretch of the Cauvery. This gallery offered a comprehensive view of the Mahseer's role as an apex predator in freshwater ecosystems, underscoring its importance to conservation.

We then moved to the Biodiversity Gallery, with a primary focus on the Western Ghats. Here, the evolutionary timeline was illustrated through fossils and images, highlighting major events in Earth's history. Having some background on evolution from previous lectures, we could appreciate the display's flow. However, it left us wondering: how many museum or zoo visitors would have this foundational understanding?

The experience underscored the need for conservation education, as these displays could inspire curiosity about evolutionary history among the broader public. Additionally, the gallery's taxidermy displays, featuring charismatic species like the tiger and lion alongside lesser-known taxa, emphasized the unique ecological roles of each species.

The gallery also displayed Western Ghats Forest types, with maps illustrating their distribution and associated species. The final section focused on the indigenous communities of the Western Ghats, emphasizing their deep connection to the land and wildlife. This inclusion reinforced the importance of integrating local communities into conservation efforts and highlighted that human, too, are part of the natural world. Conservation, after all, becomes feasible only when humans see themselves as part of nature.

Lastly, we explored the Discovery Gallery, designed to spark curiosity in children. A full whale skeleton—even awe-inspiring for adults—dominated the space. Additional displays included specimens and fossils illustrating past discoveries and current conservation challenges, such as climate change, pollution, and plastic waste. These exhibits aimed to inspire even young visitors to think critically about environmental issues.

In summary, even a short visit to the museum stirred many questions and thoughts. For some visitors, particularly children, this experience might just plant the seeds of curiosity. If even one child leaves with a question in mind, that, in itself, would be a small but meaningful step toward change.



After the museum, we went to the hilltop of Chamundi, where the deity of Chamundeswari and the demon Mahishasura stood their place pointing to the cultural heritage and history of Mysore. However, we were surprised to hear the story of Mahishasura after whom the city is named, who was the deity of the tribal community and was portrayed as a demon and killed by a rival deity. That was an unheard story of Chamundi hills, though a bit annoying to at least some of us, it made sense as a whole.

To our surprise and delight, we had the chance to meet Dr. Mewa Singh, a renowned primatologist who has completed an impressive 50 years of primate research. Much of his work has focused on the Lion-Tailed Macaque and the Bonnet Macaque, and he shared valuable insights into conservation strategies specifically aimed at these species. His talk provided a window into how decades of dedicated research have shaped his understanding and recommendations for their conservation.

Our group was eager to learn more about his journey, particularly regarding the role of community perception in conservation efforts. While he acknowledged the importance of social factors, he noted that community-focused aspects were not his primary area of interest, leaving that side of conservation to those in the anthropological field. Nevertheless, his emphasis on scientific data as a foundation for conservation was powerful. For instance, it was surprising to learn that, despite the Lion-Tailed Macaque's endangered status, its populations are relatively stable compared to those of the Bonnet Macaque, which was previously classified as 'Least Concern.' In fact, due to Dr. Singh's findings, the Bonnet Macaque's status has been reassessed to 'Vulnerable' by the IUCN—a testament to the impact of his research.

By the end of our discussion, we came away with a deeper understanding of the importance of long-term monitoring and consistent studies


of species distributions. Conservation cannot proceed effectively without a foundation of solid, continuous scientific data—a principle clearly demonstrated by Dr. Singh's remarkable career.

Our last day began at the historic Mysore Zoo, accompanied by Thanuja, who enriched our visit with stories of the zoo's evolution and the journeys of its animals. This was no ordinary zoo visit—our curiosity was focused not on the animals themselves but on the zoo's history and its role in conservation. At every enclosure, Thanuja shared stories of the zoo's transformation over time, providing context that deepened our understanding. A highlight was learning about the native neem tree, *Melia azedarach*, and the surprising fact that the commonly known *Azadirachta indica*, or Indian neem, is actually not native to much of India.

Sanjay further added to our insights with the story of Sally Walker, founder of Zoo Outreach Organisation. Despite having no scientific background, Sally's commitment to conservation was sparked at Mysore Zoo, which ultimately shaped her career in wildlife conservation. Her journey underscores the unique power of zoos to inspire change and action even beyond traditional academic paths.

The visit to Mysore Zoo was timely, as the role of zoos in conservation is increasingly debated. Zoos have long been vital for education, research, captive management, and maintaining gene banks. Yet, as we walked through the zoo, we couldn't help but question whether modern zoos still meet these high standards or whether they are being driven more by economic


motives than conservation. Many questions, both answered and unanswered, lingered as we made our way back to Coimbatore.

Ultimately, this experience forced us to confront some hard truths about conservation—there are some questions that, at least for now, have no clear answers. And perhaps that's the nature of conservation work: complex, ongoing, and filled with challenges that require both patience and perseverance.

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Each session has expanded our understanding of herpetology, conservation, and education, and we are grateful to each speaker and host for their time and effort in sharing their knowledge with us.

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