

NILGIRI BIOSPHERE RESERVE PARK: AN EXAMPLE OF SCIENTIFIC TRIUMPH



RHATC 2023-24 Fellows at the NBNP with the alumni and Zooreach team. © B. Ravichandran.

Introduction about NBNP

On 14 October 2023, we visited the Nilgiri Biosphere Nature Park (NBNP) along with the Zooreach team. NBNP is located within the Nilgiri Biosphere Reserve (NBR), India's first biosphere reserve, located at Anaikatti, about 32 km from Coimbatore, and home to roughly 110 exclusively endemic plants (NBNP 2022). With an emphasis on protecting its native wildlife, NBNP is an attempt to replicate elements of NBR.

The story of the park starts long back in 1986 when the young couple Shri Rangaswamy and

Nandini Rangaswamy, who were passionate wildlife lovers thought of setting up a zoo in a vast 250-acre barren land. So, they consulted Sally Walker at Zooreach to construct a zoo on this land. Sally had been a part of and worked with Mysore Zoo for years and was instrumental in the setting up of the Central Zoo Authority. Her work stated that our country already has almost 600 zoos and making a new one would not be the best thing to do for animals. Sally was successful in convincing the couple to restore the same land into a biodiversity park full of native species and a haven for the flora and fauna in the region. Out

of the whopping 250 acres of the total area, NBNP occupies 70 acres of the space and has been successfully restored and open to visitors. It is home to 300+ invertebrates, 22 species of amphibians, 100 species of birds, 18 species of mammals, and over 430 species of plants of which 85 species are exclusively found in Nilgiri Biosphere Reserve and, interestingly, nearly 30% of these 85 species are endangered in the wild (NBNP 2022). Also, NBNP is one of only two botanic gardens in the world which has more than 90% native plant species.

The land is flourishing gradually. We could see several seedlings and saplings emerging amidst the existing huge trees planted during the initial stage of the restoration program providing habitat for various species of fauna enriching the ecosystem. The region witnesses several species of butterflies, birds, small mammals, and herpetofauna. Before the restoration program, the nearby villages and farms were frequently visited by elephants due to the absence of food plants and water. This created a lot of negative interactions which caused harm to both people and the elephants. Thus, successful native reforestation ensured a niche for elephants and has actively reduced the interactions in the landscape.

Restoring the area was never a cakewalk and had complications for several reasons such as lack of cooperation, knowledge, external pressures, etc. Sally and the Coimbatore Zoo team started the work by collecting seeds of around 400 native plant species from the NBR, nurtured them in a nursery, and planted them. The team collected seeds for plantation from the nearby forest edges and near Silent Valley,

thinking that all the seeds would be native, little did they know that a few of the species they planted in the region were non-native.

The real challenges began when more than 1,500 plants died. It took the team quite some time to understand that it was heavy wind and lack of shade causing the deaths. Soon they came up with a solution, they made thatches of coconut leaves to provide shade and barricade of sheets along the edges in the wind direction which ensured the proper growth of the saplings. Slowly they started seeing success. Accepting failures that happened while restoring is great evidence of the sincerity and honesty of the endeavour. Over the years, plants were doing well, elephants found a haven, and the villagers were happy.

Along the trail

The Father of Biodiversity, Edward O. Wilson said, "If all the humans die off the planet will not suffer, without mammals, it will recover but without invertebrates, the planet will not survive". At the entrance of the park, there is a board showing some facts, 'A fully matured tree is worth Rs. 1,39,75,840. A tree living for 50 years will generate Rs. 22,60,000 worth of oxygen, provide Rs. 44,83,840 worth of air pollution control, control soil erosion and increase soil fertility to the tune of Rs. 22,60,000, recycle Rs. 27,12,000 worth of water, and provide a home for animals worth Rs. 22,60,000' (derived from the board at NBNP based on Das 1979 – original reference not found). Sanjay explained to us that this figure does not include the value of fruits, lumber, or beauty derived from trees. This helped us understand how much we are taking

the trees for granted and never bothering to repay the debt.

We were welcomed by a huge Banyan tree standing at the centre near the entrance of the garden. The tree has been there since the making of the garden and is of cultural significance for the communities around. There are various native tree species as we looked around, like the Flame of the Forest *Butea monosperma*, Scholar tree *Alstonia scholaris*, Jangli Almonds *Terminalia catappa* & *Hydnocarpus pentandra*, Red Silk Cotton *Bombax ceiba*, Kamala tree *Mallotus philippensis*, and Indian Trumpet Flower tree *Oroxylum indicum* among hundreds of other native species that makes the park look very natural. The park also has a good diversity of lichens, which indicates that the ecosystem is thriving amazingly with good air quality and less pollution.

The Red Silk Cotton Tree *Bombax ceiba* produces white ball of seeds which is similar to cotton, it's used to manufacture pillows

On reaching the park Mr. Kandhaswamy, a botanist at NBNP for the past 12 years, took us around. He explained to us about the native species in the park and their importance in the ecosystem. Alongside, he is a wonderful lepidopterist. We visited the Butterfly Garden within the park where he told us that NBNP is home to around 40 butterfly species! The park has a pond in the centre which homes several native water plants and flowering plants around it. We were lucky to witness species like the



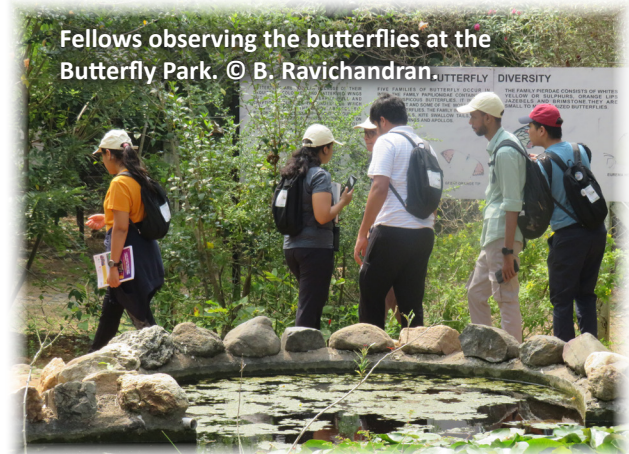
Common Crow
Euploea core.
 © S. Joel.



Orange Blistering beetle
Mylabris pustulata. © Praveen Rozario.



Common Tiger *Danaus genutia.* © S. Joel.



Fellows observing the butterflies at the Butterfly Park. © B. Ravichandran

Common Tiger *Danaus genutia*, Blue Tiger *Tirumala limniace*, Common Crow *Euploea core*, Great Orange Tip *Hebomoia glaucippe*, and many more. There were beautiful water lilies, dragonflies, mating damselfly pairs, a couple of skittering frogs, and the list goes on.

The fruits of Kamala tree *Mallotus philippensis* are used to make sindhuram

After this, Sanjay joined us and as always, he began with a piece of myth-busting discussions. Did you know? The Indian laburnum *Cassia fistula* is a non-native tree and this came as a shock to us considering the history behind the flower 'Kanikonna' — which is majorly used in Kerala during the festival of Vishu. Sanjay also told us that there is a Cycas *Cycas circinalis* belonging to the Cycadaceae family, a group of plants belonging to gymnosperms that have been on earth since the reign of dinosaurs! The species found in the past are predicted to have been ~30 m tall but have adapted and now appear short and stout.

Walking along the trail we noticed that the information and education boards were embedded in concrete structures. This is when Payal (RHATC mentor), explained to us the different challenges conservationists face. This one was quite funny though, as the reason for not having metal boards was that the earlier ones were smashed down by the elephants while using it to scratch their body. Also, she took the opportunity to explain to us about the matriarch movement of elephants and how the park has played a crucial role in

reducing human elephant negative interactions. Earlier before the restoration project started, the elephants from the forests would go into the villages, leading to antagonistic situations. But now, NBNP holds native food trees for the wildlife and thus they are content within the park and don't raid the agricultural farms anymore.

During the 3 km long walk, we saw four nature information centres. The first one showcases hoof and pug marks of major mammals, second one is an insect hut exhibiting beautiful posters of a variety of insects, the third one is an information hut on the bird diversity, an excellent birding spot, and the fourth one an information centre for Tamil Nadu state biodiversity exhibit. We were amazed to spot a Two-tailed Spider *Hersilia* sp. and witness its wonderful camouflage, a Coppersmith Barbet *Megalaima haemacephala* feeding on the trunk of the Indian Rain Tree *Albizia lebbek*, and a couple of Orange Minivets *Pericrocotus flammeus* flying nearby. We came across an intrusion of Indian Red Bugs *Probergrothius sanguinolens* feeding on the seeds of Indian Chestnut Tree *Sterculia* sp. The leaf structure of the fern tree was an absolute piece of beauty! The trail ended with the greetings from a group of Yellow-billed Babblers *Argya affinis*.

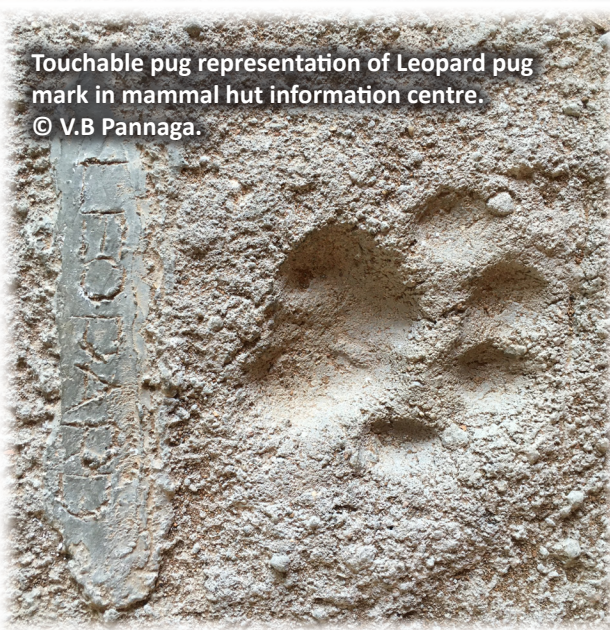
The interconnectedness of nature, the relationship between the Banyan tree and specific fig wasps, as well as the bamboo's unique flowering and fruiting characteristics, which occur only once in a lifetime was something that intrigued all of us. The park is a good example of how restoration if carried out ecologically and scientifically can bring back



Along the trail. © Praveen Rozario.



Tree diversity in NBNP. © V.B. Pannaga



Touchable pug representation of Leopard pug mark in mammal hut information centre.
 © V.B Pannaga.

the wilderness and if taken care for a while will become a self-thriving piece of biodiversity rich land. The trip was a perfect experience for us to learn on the ground and as they say, “stand on the shoulder of giants”.

Involvement of Corporates in Conservation

Halfway during the visit, we were accompanied by around 100 employees from Bosch Global Software Technologies (BOSCH) who were there to learn from the Zooreach team about the park just like us.

Zooreach collaborates with Bosch for a wetland restoration project in Coimbatore as part of their CSR initiative. CSR refers to Corporate Social Responsibility whereby companies give back to society by integrating social and environmental concerns in their business operations and interactions with the stakeholders. It could be financial support or providing support for spreading awareness by conducting seminars and workshops or volunteering for social or environmental causes. In this context, Zooreach conducts a regular field visit to NBNP for the Bosch employees to make them understand the restoration process, and educate them about the ecological significance of species. The goal is to create a sense of responsibility among the urban crowd to conserve and appreciate the native life around them.

For the trail we were divided into three groups, a mix of Bosch employees and RHATC Fellows. After the trail, the employees were given saplings of native trees such as Indian Beech *Pongamia pinnata*, Indian Bullet Tree *Mimusops elengi*, Purple Orchid Tree *Bauhinia purpurea*,

Indian Rain Tree, Indian Bombax *Bombax ceiba*, and Flame of the Forest based on the part of the country they came from and thus giving them sapling native to their home. The idea of giving native trees over exotic tree species was commendable and Sanjay explained the need to plant these native tree species and how to keep them thriving. The awe in their eyes was priceless. Just like us, they were also given amazing new information that is helpful to all of us to understand the conservation and ecological world better.

Visit to Vidya Vanam

After leaving NBNP, all of us (including Bosch employees) visited 'Vidya Vanam' School initiated to provide holistic learning and education for kids from communities and nearby tribes. The school was established in 2007 (Vidya Vanam 2024) with the sole idea of Mrs. Prema Rangachari whose plan was to bring change and give the marginalized equal opportunities for education. An epitome of bravery, she echoes the fact that age is never a barrier to bring change in the society. The school supports a conventional knowledge foundation and gives the students exposure to various experiences to shape them into future leaders and changemakers. At Vidya Vanam, every kid is given the freedom to express their thoughts, fostering a generation of young people who don't hesitate to follow their aspirations.

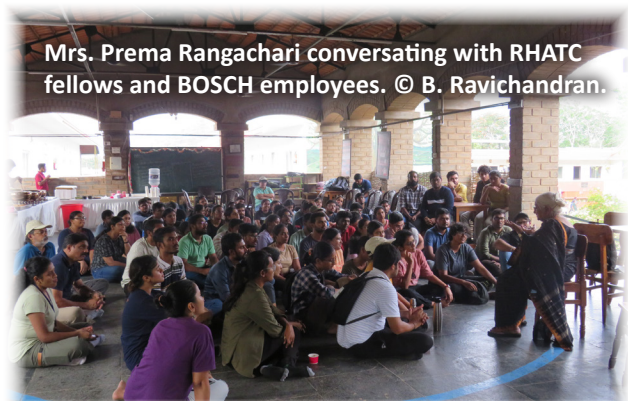
The journey began when Prema Rangachari in her early 60s left behind city life and started reaching out to the underprivileged, setting an example for others by providing education to the less fortunate, a noble endeavour that reflects the very essence of compassion and



Priyanka explaining about trees to BOSCH employees and RHATC fellows. © B. Ravichandran.



Zooreach team and BOSCH employees at NBNP. © B. Ravichandran.



Mrs. Prema Rangachari conversating with RHATC fellows and BOSCH employees. © B. Ravichandran.



RHATC Fellows at Vidya Vanam School. © B. Ravichandran.

social responsibility. Education is a powerful tool that can uplift individuals and entire communities from the shackles of poverty. When we extend a helping hand to those who lack access to quality education, we not only equip them with the knowledge and skills they need to improve their lives but, also instil in them the belief that their dreams are attainable. By sharing the gift of education, we sow the seeds of hope, empowerment, and progress. As we do so, we not only create a brighter future for those we assist but also inspire a ripple effect of generosity and support, demonstrating that together, we can make the world a better place for all.

Conclusion

The trip offered us a wonderful opportunity to spend time and learn in the field from our course director, Sanjay Molur, course planners Payal Molur and Priyanka Iyer, course coordinator Trisa Bhattacharjee and provided us an amazing advantage to interact with the RHATC alumni Fellows; Usha, Tandrili, Lakshmi, Aishwaria, Swaathi, and Pooja. We learnt from experts like Mr. Kandhaswaami and Mrs. Prema Rangachari and interacted with them to the fullest. The fact that we got the opportunity

to mingle with the employees from Bosch gave us an insight on how the people from the corporate world feel about the natural world and conservation. The trip gave us insights about various things such as the truth about invasive plants, different commercial usage of trees & their characteristics, and roles played by flora and fauna in the ecosystem. NBNP is a perfect example to show that nothing is impossible if you have clear scientific knowledge and the patience to wait for success and the will to learn from your mistakes.

References

Nilgiri Biosphere Nature Park (2022). <https://www.nbnaturepark.com/> accessed on 08 November 2023.
Vidya Vanam (2024). <https://vidyavanam.org/> accessed on 18 January 2024.

Acknowledgements

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