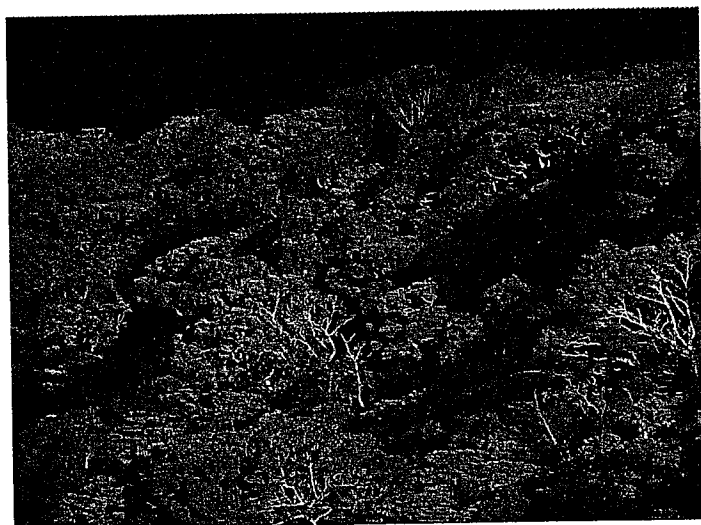


Introduction

Tropical forest canopies are the least explored regions in the world. The estimate on global species richness was drastically revised after a short exploration of forest canopies. Yet, it still remains one of the least understood regions in our biosphere. Many brave researchers in the past have explored these regions with limited accessing capabilities across the globe and have revealed interesting findings on the behaviour of plants and animals. In recent times canopy science, thanks to hi-tech accessibility, is emerging as a new discipline where more interdisciplinary and large-scale research possibilities are forthcoming; canopy– atmosphere interactions, structural and functional aspects of canopy on biodiversity are a few among them.

The canopies of tropical forests are unique in many aspects with diverse habitats, of which we know very little. These have been recognized as the last biotic frontier and the heart of biodiversity. Much of the biodiversity found in tropical forests is in the canopies. Terry Erwin, who estimated insect diversity in the canopy through fogging experiments in Central America, revised the estimate of insect species numbers from 5 to 30 million. This has brought the canopy into the limelight of science and has kindled interest in other parts of the world. Canopy studies in the past and in most parts of the world were hampered by lack of adequate safe-climbing gear to access the rainforest roof. However, this did not hamper the spirits of some pioneering workers in the canopies.



With the 5th International Canopy conference being held in Bangalore, 25th to 30th October, 2009, canopy science is now emerging as a recognized field and is slowly evolving as a distinct discipline. Research in the forest canopy has challenged the current-day understanding of concepts related to global species richness, plant physiology and the provision of ecosystem services. Also, the closed forest canopies in India and around the world are fragmenting and

disappearing faster than any other habitat, creating dire consequences such as the depletion of biodiversity and related services. Conservation of this unique habitat needs a multi-disciplinary approach, embracing other disciplines including social sciences, economics and policy research. However, canopy research in India is in its infancy. Although India is recognized as a mega-diversity country with four hotspots of diversity, almost all biodiversity assessments have been conducted at the ground level. This workshop has provided a much needed boost to canopy research in India by exposing students to research that is being carried out by leading canopy scientists from across the world.

Workshop Report

The workshop was inaugurated by Dr. Gladwin Joseph, Director, ATREE. He welcomed the students and introduced the canopy work done by ATREE at Kallakad-Mundunthurai Tiger Reserve over the past 15 years.

This was followed by Dr.T.Ganesh, who gave an overview of the workshop and introduced the subject experts.

The first talk was give by Prof. Jan Wolf from the Institute of Biodiversity and Ecosystem Dynamics, Holland. Prof. Wolf is an expert on epiphytic plants that inhabit the canopies of the world. He spoke about sampling of epiphytes in the Neotropics giving examples from his work in Mexico. It was an excellent lecture that stimulated the students and was followed by discussions.

The second lecture was given by Dr. Roger Kitching from Griffith University, Australia. Prof. Kitching is a world-renowned entomologist. He introduced the participants

to sampling insects in the canopies. He used examples of his work across the globe from Australia to France to illustrate the great diversity of insects in the canopies of tropical as well as temperate forests. He also pointed out that there are opportunities to study insects in India as tropical forest canopies are poorly studied.

Prof. Margret Lowman of New College, Florida, USA gave the 3rd lecture about carrying out research in the canopies. This was a very motivating lecture which enthused the participants to apply themselves to canopy research. She spoke about the perils and pit falls encountered by young researchers and how to overcome them.

Post lunch, Dr. Jagdish Krishnaswamy from ATREE spoke about sampling methodology and how canopy studied are designed. He spoke of the common

pitfalls of canopy sampling and how they can be overcome by proper study design.

He was followed by Dr. Nathan Philips from Boston University who spoke about the importance of canopy ecophysiology studies in the current scenario of Global Climate Change. He emphasized the point that not only should forest canopies be studied but there is need to study urban-rural gradients to understand the effects of increasing atmospheric temperatures on plant communities.

Master climber Mr. Tim Kovar from North-West Tree Climbing gave an introductory lecture on various tree climbing techniques. He spoke about the importance of proper safety protocols. He introduced the students to the nuances of tree selection, inspection, rigging and equipment.

This was followed by a wrap-up and a vote of thanks by Dr. T. Ganesh, who thanked all the speakers for taking time out from their busy schedules and giving the participants an overview of canopy research that is being carried out across the globe.

The participants accompanied by Dr. Soubadra Devy, Prof. Margret Lowman, Mr. Tim Kovar, Ms. Sophia Sparks, Mr. Cassey Jones and Mr. Vivek Ramachandran departed to Honey valley, Coorg at 6 AM from Bangalore.

On arrival at Coorg, the participants were taken on a orientation to familiarize them on the native flora and fauna. They were then split into 4 groups of 5 students and instructed to develop a proposal that would require canopy access and implement research strategies that they had been exposed to the previous day.

The groups had brain-storming sessions with the faculty to outline their ideas and the experts suggested improvements and changes if necessary.

The next day, the climbing instructors, Tim Kovar, Sophia Sparks and Casey Jones demonstrated various climbing techniques. They demonstrated rigging and tree selection. They also involved the participants and gave hands on climbing lessons in the Single rope Technique. All the participants were trained to use the equipment and access the canopies. There was a very enthusiastic response from the students.

After the hands on training, the groups presented their proposals to the faculty and other groups. This was followed by certificate distribution by Prof. Margret Lowman and a vote of thanks by Mr. Vivek Ramamchandran.

0940 -1040	Introduction to Canopy Science Dr. Margaret Lowman
1040-1100	Tea
1100-1200	Lecture 2- Epiphytes in the Canopy Dr. Jan Wolf
1200-1300 research	Lecture 3- Canopy Arthropods Dr Roger Kitching
1300-1400	Lunch
1400-1430 research	Lecture 4- Research design in canopy Dr. Jagdish Krishnaswamy
1430-1500 canopy	Lecture 5- Eco-physiology studies in the Dr Nathan Philips
1500 onwards	Lecture 6- Methods of safe access and working in the canopy – Tim Kovar, North- West Tree Climbing

1st November 2009

0600	Departure for Coorg
1400	Arrival in Coorg.
discussion	Research questions and draft proposals

2nd November 2009

0630	Demonstration of climbing techniques and hands on training in canopy access
1200	Proposal presentation