

**Brief report on the Monthly Research Seminar on  
“Ecology and Climate Change: Perspectives, Prospects and Insights” held at Institute of  
Forest Genetics and Tree Breeding, Coimbatore on 28.02.2019**

Forests provide critical refuges for terrestrial biodiversity, are central component of the earth's biogeochemical systems, and are a source of ecosystem services essential for human wellbeing. It also has the potential to mitigate global climate change, by serving as net carbon sink. The climate change has the potential to initiate multiple, interacting processes that affect forests and has always shaped the world's forests. Today, the world's climate has become warmer and will change further at an unprecedented rate. For example, during the next two decades a warming of about 0.2°C per decade is projected for a range of emission scenarios.

In order to sharpen the research objectives in the light of changes happening in the forest ecosystem, including those brought about by the climate change, the present monthly seminar was organized in the Institute of Forest Genetics and Tree Breeding on the topic “Ecology and Climate Change: Perspectives, Prospects and Insights” on 28<sup>th</sup> February, 2019. Dr. K.R. Sasidharan, Scientist-F, FECC Division welcomed the gathering. During the presidential address, Dr. S. Murugesan, GCR, IFGTB highlighted the effect of green house gas emission, plant and animal interactions - essential for ecosystem functioning and impact of climate change on forest ecosystem and biodiversity.

Dr. B. Nagarajan, Scientist-G and Head, Forest Ecology and Climate Change (FECC) Division presented a brief history of the division, starting from establishing of Biodiversity Division on 01.04.1998 and subsequent reconstitution of the division as FECC Division w.e.f. 01.04.2018. The revised objectives of the division and the research work carried out like, species recovery research in few RET medicinal plants of Silent valley (Kerala) and Kolli hills (Tamil Nadu); natural regeneration and population studies carried out in Silent Valley; studies on strict endemic plants of Kalakad-Mundanthurai Tiger Reserve; work on of sacred groves of Alappuzha District in Kerala; documentation of bee fauna in the Nilgiris; studies on butterfly diversity in Walayar Valley, Kerala; assessment of population and documentation of tree characteristics in the preservation plots of teak and pollination ecology and controlled pollination studies in mangrove species as well as in Andaman Padauk. Dr. C. Kunhikannan, Scientist-G presented an overview of the Fischer Herbarium, which is a repository of more than a century old plant collections. The details of plant accessions added and the developmental activities carried out in the botanical garden were also highlighted. He described the works carried out by FECC Division in

reclamation and rehabilitation of areas affected by mining and studies undertaken on Environmental Impact Assessment (EIA) in connection with various consultancy projects of ICFRE.

A detailed presentation on plant-animal relationships with special reference to seed dispersal was made by Dr. P. Balasubramanian, Sr. Principal Scientist, Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore and highlighted plant-herbivore interactions, plant-pollinator interactions and plant-seed disperser interactions. He also emphasized effect of climate change on avian pollinators and informed that honeycreeper populations have decreased as much as 98 percent over the past 15 years. Among plant adaptations, small-sized fruits attract higher number of bird species than the large-fruited species, he remarked. For example, fruits of *Lantana camara*, about 4 mm in size is consumed by 21 types of birds, whereas fruits of *Capparis grandis*, about 60 mm in size is consumed by only one species. He added that, selection of fruits by birds is a complex process based on the fruit morphology, nutritional quality, and the physiological needs and capabilities of birds. Fruits of families such as Lauraceae, Celastraceae, Meliaceae, Annonaceae, Anacardiaceae, Myristicaceae, are rich in lipids, whereas Rubiaceae and Santalaceae have sugary fruits. He pointed out that birds like Bulbuls, Barbets, Koel and Orioles prefer sugar rich fruits; Hornbills and Fruit pigeons prefer lipid-rich fruits during breeding season, whereas all birds prefer figs. In *Salvadora persica*, interesting phenomenon of fruiting was observed in two seasons i.e. fruiting in October to January having seeds, which are used by residential birds and fruiting occurred in March to April, which are seedless, used as food by migratory birds. He observed that, among fruit-eating birds of dry deciduous forests, out of 37 bird species, 25 species preferred the invasive taxon, *Lantana camara*. He also stated that, Malabar Grey Hornbill is dependent on fruits of *Aphanamixis polystachya* (Meliaceae), *Tabernaemontana heyneana* (Apocynaceae), *Myristica* spp. (Myristicaceae) and *Caesaria elliptica* (Flacoutiaceae). He referred elephants as “megagardeners” since they disperse seeds to a distance of 40-50 km. He also highlighted the restoration brought about through seed dispersal by bats.

Dr. H.S. Suresh, Centre For Ecological Sciences, Indian Institute of Science, Bangalore delivered a lecture on ‘Drought and Phenology’ for long term ecological monitoring of forest species with reference to dry forests of Mudumalai Tiger Reserve. He stated that phenology of dry forests is interesting, as it is linked to climate. He added that, moisture stress is most frequently cited as primary factor influencing phenology in dry forests. He explained in detail about the

studies carried out in the long term ecological monitoring plots in Mudumalai, located at the foot hills of the Nilgiri mountains, with distinct rainfall gradient along east (dry)-west (wet) direction and the vegetation, ranging from tropical moist deciduous type to dry thorn type through dry deciduous type. The variations noticed in phenophases like leaf initiation, leaf expansion, synchrony of flower and fruit initiation, synchrony of young and mature fruits in some of the important constituent species like, *Tectona grandis*, *Anogeissus latifolia*, *Terminalia crenulata* and *Lagerstromia microcarpa* in drought and normal climatic conditions were presented.

The following potential research areas emerged out during the deliberations:

- i) Ecological monitoring of ecosystems, especially the critical ecosystems in the climate change scenario.
- ii) Studies on plant – animal interactions and its importance in maintenance of ecosystem health.
- iii) Understanding the role of exotic / invasive plants as resource base for pollinators, herbivorous / frugivorous animals.
- iv) Long term monitoring of pollinators in forest ecosystem.

Dr. S. Murugesan, Scientist- G and Group Co-ordinator (Research) while concluding the programme remarked that the deliberations were very interesting and congratulated the guest speakers for sharing their rich field knowledge. Dr. C. Kunhikannan, Scientist- G, FECC Division proposed vote of thanks.

