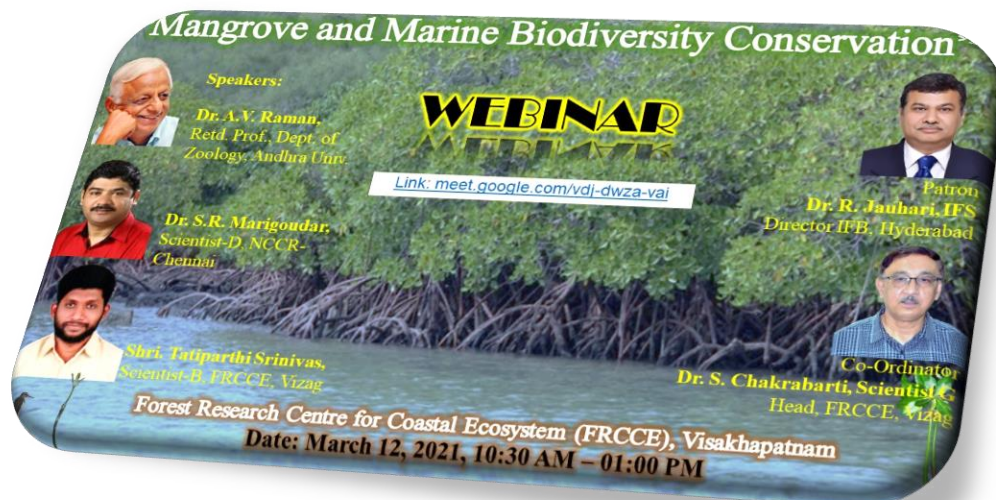




WEBINAR ON

MANGROVE AND MARINE BIODIVERSITY CONSERVATION



Date: March 12, 2021

Time: 10-30 AM to 1 PM

Organizer: FRCCE, Visakhapatnam

Dignitaries

Dr. Ratnaker Jauhari, IFS	Director, IFB
Retd. Professor Dr Akkur V. Raman	Andhra University
Dr. Shyam Viswanath	Director, KFRI
Prof. Amitabh Pandey	IIFM, Bhopal
Dr. S. Chakrabarti	Scientist G, Head, FRCCE
Prof. Yayati Taide	Principal of Forestry College, Akola, MH
Dr. B. Nagarajan	Scientist – G, Coimbatore
Dr. S. R. Marigoudar	NCCR, Chennai
Dr. Yogeshwar Mishra	GCR, IFP, Ranchi

Time	Agenda and Presenter	Association
10-30 AM	Welcome Address by Dr. S. Chakrabarti	Head, FRCCE
10-35 AM	Inaugural Speech by Dr. Ratnaker Jauhari	Director, IFB
10-40 AM	1 st presentation by Shri T. Srinivas, Scientist B	FRCCE, Vizag
11-00 AM	2 nd presentation by Dr. S. R. Marigoudar, Scientist D	NCCR, Chennai
11-50 AM	3 rd presentation by Dr Akkur V. Raman, Retd. Prof.	Andhra Univ.
12-35 PM	Discussion	
10-55 PM	Vote of Thanks by T. Anusha, Technician	FRCCE, Vizag
1-00 PM	Programme Concluded	

The Report

Forest Research Centre for Coastal Ecosystem, Visakhapatnam, organised a webinar entitled “Mangrove and Marine Biodiversity Conservation” on 12th March 2021 under the patronage of Dr. Ratnaker Jauhari, IFS, Director IFB, Hyderabad. The programme was coordinated by Dr. S. Chakrabarti, Scientist-G, Head, and Shri T. Srinivas, Scientist B of FRCCE. Two speakers, viz. Dr. A.V.Raman, Retd. Professor Dept of Zoology, Andhra University and Dr. S.R. Marigoudar, Scientist -D NCCR, Chennai were invited to share their views on the topic. Shri. T. Srinivas, Scientist- B, was also one internal speaker on the half of FRCCE, Visakhapatnam.

The webinar was incepted with the welcome address by Dr S. Chakrabarti, Head, FRCCE, Vizag, where he emphasized the importance of research both on plant and animal diversity and its conservation in mangrove ecosystem. The inaugural speech was delivered by Dr. Ratnaker Jauhari, IFS, Director IFB, Hyderabad. Several distinguished guests like Principals, Directors, Professors, as well as students from different corners of India, and all technical staffs of both IFB, Ranchi and FRCCE actively participated in programme.
by Shri. T. Srinivas Scientist-B

First lecture was delivered by Shri. T. Srinivas on a topic entitled “Marine Biodiversity: Threats and Conservation”. He initiated his speech highlighting the threats related to the destruction or extinction of mangroves and depletion of coral reefs by pollutants of varied sources like untreated human sewage and industrial biproducts. Mass mortality of fish or other marine organisms caused by the release by industrial wastes. Animals can be poisoned or suffer internal damage due to oil ingestion during oil spillage. Heavy siltation, Eutrophication (nutrient enrichment), Persistent organic pollutants (POP’s), Heavy metals from mine tailings and other sources, Acidification, Radioactive substances, Marine litter are also other major causes. He explained how a direct pollution through a cruise journey can have adverse impact on sea through an example as a moderate-sized cruise ship on one week of voyage generates 795,000 litres of

sewage 3.8 million litres of grey water, 500 litres of hazardous waste, 95000 litres of oily bilge water, 8 tons of garbage based on 2200 passengers and 800 crew (Copeland, 2008). The decomposition rates of different types of pollutants such as plastic bags, glass bottle, metal and wooden utensils are elucidated for the decay of marine debris. He elaborated threats due to overexploitation which can lead to depletion or extinction of threatened and endangered species. A greater variety of species at a higher trophic level is exploited in the sea than on land. Invasive species can eliminate vital components of the food chain and marine ecosystems by changing biodiversity. He also briefly explained about the current status of mangroves forests in India. He stressed about the importance of conservation of mangroves through laws related to conservation by enforcement agencies, recovering abandoned fishponds & re-establishing these as mangrove areas, through establishment of mangroves nurseries, through development of high saline variants, by different planting methods and models, and by establishing marine protected areas or marine sanctuaries.

2nd speaker was Dr. S. R. Marigoudar who delivered his presentation on “Mangrove Ecology” and started with mangrove distribution in the world and in India, their biological specificity, type of roots, property of viviparity. He explained about the true mangroves and their characteristics with separate slides for each important species like *Aegiceras corniculatum*, *Acanthus ilicifolius*, *Acrostichum aureum*, *Avicennia marina*, *Avicennia officinalis*, *Bruguiera gymnorrhiza*, *Bruguiera cylindrica*, *Excoecaria agallocha*, *Sonneratia alba*, *Sonneratia caseolaris*, *Rhizophora apiculata*, *Rhizophora mucronata*, *Kandelia candel*, *Lumnitzera racemosa*. He elaborated about the important mangrove associates like *Pandanus fascicularis*, *Premna obtusifolia*, *Cerbera odollam*, *Barringtonia racemosa*, *Erythrina indica*, *Dolichondron spathacea*, *Derris trifoliata*, *Calophyllum inophyllum*, *Derris scandens*, *Caesalpinia crista*, *Cyperus malaccensis*. Later he elucidated the zonation of mangrove species in fringing, intermediate and landward zones from seashore to the mainland. Many mangrove-oriented ecosystem services viz. subsistence fishery, commercial fishery, recreative fishery, wood extraction, mangrove tourism, protection against waves, bioremediation, sediment trap, carbon sequestration and other activities of human intervention like honey collection, soil for brick making, flowers for perfume making etc were briefly pointed out. Different types of crabs, birds and also important plant species that are revered as sacred groves are present in the mangrove areas. Mangroves boost the economy through evaluation methods of provisioning services in providing food, timber, fuel medicines and other resources, regulating services in controlling floods, erosion, fresh water storage and retention etc., cultural services like recreational aesthetics, education and research and supporting services in support of production of other ecosystems with indirect benefits such as Nutrient cycling and fertility. He highlighted the role of “Sacred Groove” in coastal areas and also pressed the need of conservation of mangroves by creating awareness among the local masses through extension, restoration, propagation etc. Mangrove corridors, germplasm conservation, capacity building-research and training activities can be paralleled to conservation activities.

The last talk was on “Macrobenthic Communities of Tropical Bay System Revisited: Decadal Events in Relation to Anthropogenic Forcing” presented by the key speaker Retd. Professor Akkur Raman who highlighted research on the marine animals with his vast experience, elucidated the changes of microbenthic community in Kakinada Bay. The Kakinada bay began deteriorating with the conversion of breakwater to deep water port followed by industrial and urban growth. Different parameters like Benthos sampling, Surface and Sub-surface seawater sampling were examined and analyzed qualitatively and quantitatively at 12 locations for one year on monthly basis (Apr 2016-Mar 2017). The bay was arbitrarily divided to three locations namely

mangrove, intermediate and sea-end location from coastal line into the sea. Salinity increased from mangrove location to the Sea-end Location, Suspended Particulate Matter (SPM), Silicate and Dissolved organic Nitrogen (DON) are decreased from mangrove location to the Sea-end Location. There also exist monsoonal and pre-monsoonal differences in the parameters. The Bay environment also distinguished in to three discrete zones based on unique hydrographical conditions as North, Central and South zones. He listed out the 79 Macro-benthos species, comprising 1591 individuals belonging to representing cnidarians, crustaceans, gastropods, bivalves and echinoderms that were collected and preserved. He explained the necessity of primer software to assess the assemblage and clusters of benthos. Range of clusters or groups that are located in three zones can be assessed for different species in different colour codes through the sophisticated maps developed by the software. He pointed that the variation of biodiversity, different parameters as well as the variations in marine resources through the decades are posing a threat. He also said that many similar kinds of studies were conducted along the coast of Andhra Pradesh.

The programme ended with vote of thanks delivered by Smt. T. Anusha, Technician, FRCCE, Vizag, where she congratulated all the speakers for their resourceful presentations. She also thanked all guest participants and IFB staffs as well as FRCCE for their constant encouragement to make this event a grand success.

Glimpses of the online Programme

Mangrove Distribution

- Found in coastal areas all over the tropics
- Primarily in brackish water
 - salty and fresh water
- Cover approximately 22 million hectares in tropical and subtropical coasts
- Within the 20°C isocline

Region	Area (sq km)	Percent
South and Southeast Asia	73,170	41.4
The Americas	49,096	27.1
West Africa	27,995	15.4
Australasia	18,788	10.4
East Africa and Middle East	10,348	5.7

Introduction

- The ocean was viewed as a bioactive reservoir of biodiversity with unexplored capacity to assimilate wastes.
- A productive ecosystem is characterized by High degree of biological diversity
- Species has a well defined role to play
- Provide numerous pathways for energy of a system to flow
- The resources of the sea have been over-harvested by human activity threatening marine biodiversity.

Coringa Wildlife Sanctuary: Resource Exploitation

The annual production of shells from Kakinada Bay and Coringa mudflats is about 8000 tons. Several bivalve species (e.g. *Placuna placenta*, *Anadara granosa*, *Macoma* sp., *Meretrix* sp.) and gastropods (e.g. *Centrides cingulata*, *Telescopium telescopium*) are regularly handpicked, for preparing lime. In recent years, there has been a decrease in shell population evidently caused by their overexploitation.

This planktonic arrow worm, *Squilla setacea*, has eaten a blue plank. (See above image long. Photograph: Dr Richard Kirby)