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Founded: 1976
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3RD CYCLE NAAC ACCREDITATION PROCESS-2024

CRITERIA: 3 RESEARCH, INNOVATIONS AND EXTENSION

Key Indicator: 3.5 Collaboration

Metric: 3.5.1- Number of functional MoUs/linkages with institutions/ industries in India and abroad for internship, on-the-job training, project work, student / faculty exchange and collaborative research during the last five years.

***Activity performed against the Collaborative Research between Sarat Centenary College and Department of Bio-Technology (Govt. of India)**

SARAT CENTENARY COLLEGE * Estd. 1976 HOOGHLY * DHANIAKHALI *

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Dr. Ray leads her team through a mangrove restoration. Photo by Bill Spindle

As distant as this meandering amalgam of islands and waterways can seem — even for many Indians and neighboring Bangladeshis, whose country takes in more than half of the delta — the region matters globally. Mangroves are impressive carbon storehouses, locking

plants were grown so as to maintain native diversity.

The Sundarbans is a protected wetland under the Ramsar Convention and is also UNESCO world heritage site. Small coastal patches of mangroves are highly vulnerable and fragmentation of the ecosystem is creating barriers to species movement and dispersal.

The transplantation started in November 2014, initially at a moderately degraded patch and was then extended to severely degraded zones. “Mangrove forests having high diversity are more stable than those having less species diversity and diverse multispecies mangrove forests are more resilient to sea level rise. Species for plantation in different zones which have different salinity level were selected based on their slat-tolerance levels,” explained Dr Krishna Ray, while speaking to India Science Wire.

For instance, species with low or moderate salt tolerance were planted on stabilized mudflats next to highest salt tolerant species to make the habitat species-rich. This shore line zone was stabilized with grass species having highest mechanical strength and salt tolerance potential.

In areas that are most susceptible to erosion due to transportive force of tidal water, transplanted seedlings were protected by iron-wired cages in the root zone. This was to ensure that sediments remain confined within the cage protecting the roots till seedlings get established. In addition, plant growth promoting bacteria were used at the rhizosphere level of mangrove seedlings at the site of restoration.

“The restored site is like mini-Sundarbans which has diversity of species usually observed in pristine mangroves of Indian Sundarbans. The high species diversity of South East Asia’s mangrove communities likely makes them more resilient to sea level rise as multispecies due to interspecific facilitation and increased below-ground root production,” said Dr Ray. “As floral communities are re-established, we have found it has become favorable ecosystem also for native faunal communities like crabs, fishes, snails, butterflies and birds.”

The researchers saw a strong correlation between physiological parameters of mangrove such as levels of accumulated osmolytes and total chlorophyll concentration with factors that determine degradation (soil nutrients like ammonia nitrogen, organic carbon and plant available inorganic phosphorus, soil and surface water conductivity etc). Osmolyte are molecules required for maintaining osmotic balance in mangroves.

The group has identified degraded mangrove patches in western part of Indian Sundarbans for restoration using this technology. The research team includes Rajojit Chowdhury, Tapan Sutradhar, Momtaj Begam, Chandan Mukherjee, Kiranmoy Chatterjee, Sandip Kumar Basak and Krishna Ray. Research results on different aspects of the project have been published in journal Hydrobiologia.

India Science Wire

Previous
National centre for clean coal R&D opened
(National-centre-for-clean-coal-R&D-opened.html)

Next
Dangers of artificial ripening of fruits and vegetables
(Dangers-of-artificial-ripening-of-fruits-and-vegetables.html)

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PhD student in search of Catenella Spp. across Indian Sundarbans Mangrove Eco-System

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PhD student recording the in-situ water criteria measurements on boat in Indian Sundarbans estuary

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Water Sample collection and on-site environmental criteria measurements going on by PhD students at Sunarbans estuary

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PhD students adding growth promoting bacterial consortia in Mangrove restoration sites

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PhD student using Chlorophyll Content Index Meter (CCIM) in Mangrove Eco-System to get an idea of Chlorophyll Content of Mangrove Species at Sundarbans