



THE EAST ASIAN SEAS CONGRESS



## Charting a New Decade of Healthy Ocean, People and Economies

1-2 DECEMBER 2021 • Hosted by the Royal Government of Cambodia

### Collab 13

## Coastal Ecosystem Restoration Using Nature-Based Solutions (NBS): Focusing on the Seaweed Beds and Marine Microalgae in China

3 November 2021, 8:00 AM - 11:00 AM (GMT+7)

Online via Voov

### ORGANIZERS:



China-PEMSEA Sustainable  
Coastal Management Cooperation  
Center



Ocean University of China



Partnerships in Environmental  
Management for the Seas of East Asia  
(PEMSEA) Resource Facility

## Coastal Ecosystem Restoration Using Nature-based Solutions (NBS): Focusing on the Seaweed Beds and Marine Microalgae in China

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### PROCEEDINGS

#### I. INTRODUCTION

Joined by the Ocean University of China (OUC), Shanghai Ocean University and Shantou University and supported by PEMSEA, CPC organized a webinar themed “Coastal Ecosystem Restoration based on Nature-based Solutions (NBS)-focusing on the seaweed beds and marine macroalgae in China” on 3 November 2021, inviting experts from research institutes and universities to share the knowledge and practice in the restoration of seaweed beds and marine macroalgae and carbon sequestration.

This workshop aims to invite Chinese professors and experts specializing in seaweed beds and marine macroalgae to introduce the latest study on the investigation and cultivation of seaweed beds and macroalgae in China, as well as the carbon sequestration efforts of seaweed, thus providing researchers and administrators with precious knowledge and experience sharing opportunities and a platform to seek possible cooperation.

Over 60 participants from PEMSEA, Chinese research institutes and universities, ICM sites, MPAs and NGOs attended the half-day workshop.

The workshop was chaired by Dr. ZHANG Zhaohui, the Deputy Director of CPC.

#### II. HIGHLIGHTS

Dr. ZHANG opened the workshop at 9.00am GMT+8, November 3 by introducing its background, objectives, expected outcomes and agenda. In addition, Dr. ZHANG briefed the history, preparation and programme of the EAS Congress 2021 which is scheduled on December 1-2, 2021. He stated the importance of the workshop as a pre-Congress event and encouraged everyone to sign for the Congress in advance. Dr. CHU Jiansong, Dean of the College of Marine Life Sciences of OUC, delivered the opening remark. He emphasized the key role of macroalgae and gave examples of fishermen’s willingness of algae cultivation by using their own money to illustrate the economic value of seaweed, and further explained how macroalgae contribute to the carbon sequestration.

The first presentation themed “Life history of *Scytosiphon lomentaria* and its cultivation in China” was given by Dr. GONG Xiangzhong, the professor of seaweed of OUC. In his presentation, he introduced the research of his own team on *Scytosiphon lomentaria* and prospects for its utilization in the future, and the life circle of several kinds of seaweeds and the situation of their sea farming and harvests.

Dr. ZHANG Shouyu of Shanghai Ocean University reported on the status of seaweed bed and carbon sequestration. He shared the knowledge and experience from 3 aspects: distribution of

seaweed bed near China, ecological function of large seaweed habitat, and macroalgae's contribution to carbon sequestration. Specifically, he introduced the history of global efforts in the study and utilization of seaweed and how do we gradually recognize macroalgae's value in the coastal ecosystem and carbon sequestration.

Dr. SUI Zhenghong of OUC introduced the advance on red algae cultivation and research of *Gracilariopsis lemaneiformis* in China technically. She suggested that to better cultivate *Gracilaria*, we shall select a variety of seaweeds with strong adaptability for breeding, increase the cultivation technologies and establish a comprehensive and stable evaluation system for the economic performance of macroalgae to accelerate the breeding process.

Dr. CHEN Weizhou of Shantou University made a presentation on artificial breeding and ecological restoration of large seaweed in Southern China, especially in Guangzhou province. He shared the results of the seaweed resource investigation of macroalgae beds in the coastal area of the East Guangdong, recent study on the physiological and ecological features of *Sargassum hemiphyllum*, and the maintenance and construction of seaweed beds.

The last presentation was made by Dr. ZHOU Bin of OUC, featuring the Rehabilitation of seaweed beds: techniques and limitations, linking the policy and practice of the restoration of seaweed beds in China.

Dr. ZHANG concluded the meeting by thanking all speakers and participants. The economic value and ecological function of macroalgae of great significant. China's algae restoration is crucial for the restoration and management of coastal areas. He appreciated the sharing of restoration experience in algae artificial breeding and cultivation, rehabilitation of giant seaweed beds and the carbon sequestration, and hoped to have a face-to-face workshop next year if the status against virus would allow.

### III. RECOMMENDATIONS

- Joint research and financial support from governments should be given to the restoration of seaweed beds and marine macroalgae;
- Regarding the contribution of macroalgae and seaweed beds to carbon sequestration, research efforts should continue in producing evidence and materials for the study on carbon sink;
- Restoration of seaweed beds and marine macroalgae in coastal areas must be strengthened;
- Awareness building on conservation and restoration of seaweed beds and marine macroalgae should be promoted through knowledge sharing activities for public, especially the fishermen.
- Regional guidelines on addressing ship biofouling should be developed in line with IMO's guidelines.

## **ANNEX 1. AGENDA.**

### **Rationale and objectives:**

Nature-based solutions aim to help societies address a variety of environmental, social and economic challenges in sustainable ways. They are actions which are inspired by, supported by or copied from nature.

As a key part of the coastal ecosystem, seaweed, or macroalgae, refers to thousands of species of macroscopic, multicellular, marine algae. They have a wide variety of species and forms, including some types of Rhodophyta (red), Phaeophyta (brown) and Chlorophyta (green) macroalgae. Together with marine planktonic algae, they constitute the main primary producer of the ocean and provide us with a large number of usable resources. Seaweed species such as kelps provide essential nursery habitat for fisheries and other marine species and thus protect food sources; other species, such as planktonic algae, play a vital role in capturing carbon and producing oxygen. They have been widely used in food, medicine, industry, agriculture and other fields. At the same time, they play an important role in improving the environment, purifying water, and providing resting and breeding sites for marine animals.

Humans have a long history of cultivating seaweeds for their use. Because of their importance in marine ecologies and for absorbing carbon dioxide, recent attention has been on cultivating seaweeds as a potential climate change mitigation strategy for bio-sequestration of carbon dioxide, alongside other benefits like nutrient pollution reduction, increased habitat for coastal aquatic species, and reducing local ocean acidification.

China's long coastline is rich in resources, with a large number of marine macroalgae in warm temperate zone, subtropical zone, tropical zone, a few cold temperate zones and a very few Arctic areas. However, natural seaweed ecosystems are sometimes under threat from human activity. Therefore, the diversity, protection and breeding of macroalgae and rehabilitation of seaweed beds have been one of the focuses in China for a long time. This workshop will provide a platform for the sharing of nature-based solutions in the restoration of seaweed beds and marine macroalgae in China by inviting experts from the Ocean University of China.

### **Expected outputs:**

This workshop is expected to invite Chinese speakers of marine macroalgae background to share their restoration experience in algae artificial breeding and cultivation, rehabilitation of giant seaweed beds and the seaweeds contributing to the carbon sequestration.

### **Organizers:**

China-PEMSEA Sustainable Coastal Management Cooperation Center (CPC)  
Ocean University of China (OUC)  
Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) Resource Facility

### **Meeting Language:**

Chinese

**Target participants:**

50 participants from national agencies, academic and research institutions

**Meeting Information:**

Meeting Format: Half-day Voov-meeting Webinar

Name of the workshop: Coastal Ecosystem Restoration based on Nature-based Solutions (NBS)- focusing on the seaweed beds and marine macroalgae in China

Date and Time: November 3, 2021/09:00-12:00am (GMT+8)

Voovlink: <https://meeting.tencent.com/dm/ioqBpsq3vQQh>

No.: 640 258 607

Pin: 319321

**Initial Program:**

	Time	Contents	Speaker
Nov.3	09:00-09:10	Opening Remarks	CHU Jiansong (OUC)
	09:10-09:40	Life cycle, seed breeding and cultivation of brown algae ( <i>Scytosiphon lomentarius</i> )	GONG Xiangzhong (OUC)
	09:40-10:10	Status of seaweed bed and carbon sequestration	ZHANG Shouyu (Shanghai Ocean University)
	10:10-10:20	Break	
	10:20-10:50	Advance on red algae cultivation and research of <i>Gracilaria</i> in China	SUI Zhenghong (OUC)
	10:50-11:20	Artificial breeding and ecological restoration of large seaweed in Southern China	CHEN Weizhou (Shantou University)
	11:20-11:50	Rehabilitation of seaweed beds: techniques and limitations	ZHOU Bin (OUC)
	11:50-12:00	Summary and appreciation	ZHANG Zhaohui (CPC)