

New Perspectives about Mangroves in Relation to the Natural Ecosystems and Anthropogenic Developments

Date: 8 April 2016 (Friday)

Time: 2.30 – 3.30 pm

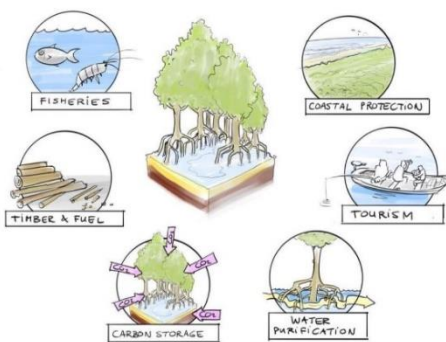
Venue: Mini Theater Aquarium and Museum,
Borneo Marine Research Institute

Dr. Jean W. H. Yong
IUCN Mangrove Red List coordinator



Abstract

Mangrove forests are found at the interface between land and sea. This is an unusual, challenging and unstable environment for plants to grow. When compared to mangroves, there are no other comparable group of plants with such highly developed morphological and physiological adaptations to such extreme conditions. Some new aspects of mangrove ecology (back mangroves, aerial plants, ecosystem-level linkages with coral reefs-seagrasses beds, importance of hydrology), taxonomic updates (*Ceriops*, *Bruguiera*, *Kandelia*, *Sonneratia*, *Heritiera*, *Brownlowia*), and green engineering (multiple species planting vs monocultural planting, modified Riley, etc) for coastal protection strategies in view of Integrated Coastal Management (ICM) strategy, will be shared in this presentation.



MANGROVE ENGINEERING

Various species of mangroves to be planted at 1.65km stretch on Pulau Tekong to stop erosion

- Existing mangroves.** About 1,300 trees are already leaning over. If the coastline erodes further, they are likely to fall.
- Biodegradable sacks** filled with suitable mud and put in the undercut beneath the berm.
- Rocks of varying sizes**, to add support to the shoreline.
- Mangrove saplings** encourage more natural growth of mangroves, and replace those already lost. About 6,000 to 8,000 will be planted in all.
- Bakau wood poles** to dissipate wave energy.

A berm (horizontal ledge in the sloping seashore), formed by erosion of the shoreline.

NOTE: Project area is along a roughly 1.65km stretch of shoreline on the north-east coast of Pulau Tekong, about 760m from the Singapore-Malaysia international boundary.

Hardy mangrove species that can withstand high tides and strong waves

TEXT: GRACE CHUA GRAPHICS: LIM YONG

Moving forward, we need to continue to strike a balance between anthropogenic development and conservation because our quality of life depends, ultimately on biodiversity and the natural living environment around us. This can be done through the following initiatives: conserve existing habitats through holistic science-based landuse planning, conduct scientific studies to better understand tropical ecosystem linkages among mangroves-coral reefs-seagrasses beds-terrestrial, re-introduce extinct species, propagate endangered species, and apply creative interdisciplinary solutions to protect and restore mangrove habitats and the other adjacent eco-systems

Marine Fish Habitats

Remember! No habitat = No fish!

Vital community assets

Managing our fish habitats

Guide to Asian Mangroves

Species shown include: *Bruguiera*, *Sonneratia*, *Rhizophora*, *Xylocarpus*, *Avicennia*, *Heritiera*, *Subicarpus*, *Centropogon*, *Avicennia*, *Heritiera*, *Subicarpus*.

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Profile

As one of the leading South-East Asian plant science expert, Dr. Yong (aka John; 杨远方) is a biochemist and plant ecophysiologicalist by training and received his B.Sc. (Hons) and M.Sc. degrees from the National University of Singapore (NUS). His Ph.D. was awarded in 2001 by the Research School of Biological Sciences, Australian National University. Dr. Yong received a US Fulbright Award with Brown University (2003-2004) where he focused on climate change sciences and policy issues, and science education. As an educator, Dr. Yong has nurtured many students at the two universities (Nanyang



Technological University [NTU] and NUS) in Singapore. For his excellent and sustained innovative teachings, he was awarded the 2003 and 2006 Teaching Excellence Awards at the National Institute of Education, and the 2006 NTU's Nanyang Award for Teaching Excellence. Later, he was sponsored in 2011 to attend the "Teach-the-Teacher" program at MIT, Massachusetts, during his stint as the pioneer faculty of Singapore University of Technology and Design. Pragmatic and yet learned in his approach towards problem solving, Dr Yong provides effective solutions and inspires many students and staff under his charge, to follow in his footsteps. He has written numerous scientific papers and several books in plant science, among them *The Physiology of Tropical Orchids in Relation to the Industry* and *A Selection of Plants for Greening of Waterways and Waterbodies in the Tropics*, providing important information on tropical plants for researchers, institutions, and the plant industry. For the interim, prior to starting his new faculty job in 2017, he was recently appointed as the Principal Research Scientist at NEWRI, NTU, to spearhead new plant science-engineering initiatives.

This programme is organized by:
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