Techniques for Restoration and Reconstruction of Mangrove Forests in China

By Liao, Baowen, Li, Mei, Chen, Yujun, Guan, Wei. 2011. Science Press, Flat 21, 20/F, Acacia Building, 150 Kennedy Road, Wan Chai, Hong Kong. 434 pages. 98.00 CNY.

Mangrove forest is composed of mangrove family of plants, the Rhizophoraceae, or even more specifically the mangrove trees of the genus Rhizophora. Mangroves worldwide grow in estuaries and saline coastal sediment habitats in the tropics and subtropics, mainly between latitudes 25°N and 25°S. Though a given mangrove forest typically features only a small number of tree species, the ecosystem embraces a great variety of other organisms, and the mangrove forests are among the most productive ecosystems on Earth. Some evidence suggests that mangrove diversity is limited by evolutionary transition into the stressful marine environment and that the number of mangrove lineages has increased steadily over the Tertiary with little global extinction. All mangrove tree species are not necessarily related, but they all demonstrate convergent evolution, showing similar solutions to the tropical conditions of variable salinity, tidal range (inundation), loose, wet and anaerobic soils, periodic tidal submergence and intense sunlight, they thereby outcompete other species under these harsh conditions. In addition, mangroves have one of the most unique reproductive strategies in the plant kingdom; like most mammals, they all possess different degrees of vivipary with propagule (seedling) formation, accomplishing seed germination while still attached to the parent tree, rather than producing dormant resting seeds like most flowering plants. Mangroves disperse propagules via water with varying degrees of vivipary or embryonic development while the propagule is attached to the parent tree.

Mangroves have special aerial roots and salt-filtering tap roots that enable them to thrive in brackish water. Their massive root systems are efficient at collecting sediments, slowing the water's flow, dissipating wave energy and helping to protect coastal areas from erosion, storm surge (especially during hurricanes), and tsunamis. Over time, the roots can collect enough debris and mud to extend the edge of the coastline further out. In at least some cases, export of carbon fixed in mangroves is important in coastal food webs.

At the intersection of land and sea, mangrove forests support a wealth of life, and may be more important to the health of the planet than we ever realized. The importance of mangrove swamps is well established in regard to shoreline erosion control and ecological productivity. They function as nurseries and adult habitat for shrimp and recreational fisheries, exporters of organic matter to adjacent coastal food chains, and enormous sources of valuable nutrients. Because of the irreplaceable functions of mangrove ecosystems in coastal areas, and the increasingly threatened situations resulted from the coastal development, expanding human population, and dredging, filling, diking, oil spills, herbicide and human waste runoff, as well as the significant decline in their integrity and productivity, conservation of mangrove ecosystems are become necessary and urgent worldwide, and has become one of the most important flagship ecosystems for the international biodiversity conservation and wetland protection. However, so far, only some limited efforts are underway to enhance the protection of these valuable ecosystems.

The distribution of mangrove forests in the southeastern coast of China is at their northern edge of their range, not being the ideal habitats for the growth of mangroves. The mangroves in China had been abundant in the history (statistics showed that the mangrove forests in China had even reached 250000 ha), however, in recent decades, mangrove forests in the southeast coast of China have been damaged seriously. 50 years ago, there was about 50000 ha mangrove forests in China, but nowadays, it drops to less than 23000 ha, due to the reasons similar to other countries as mentioned above. The dramatic decline of mangrove forests in China resulted in the serious environmental degradation in coastal area, 60-90% decline of the production of shore economic animals, including the fish resources, crisis of pearl cultivation, seriousness of red tides, coastal land erosion, harbor siltation, increase of typhoon-induced economic loss, increase of abandoned land in the coastal area and monotonicity of coastal landscapes.

Under this background, the restoration and reconstruction of mangrove forests in China is becoming more and more imperative. To do this work more effectively, the publication of the book Techniques for Restoration and Reconstruction of Mangrove Forests in China timely meets the current and urgent demands. Using the principles of restoration ecology, the book comprehensively elucidated the theory and methods of restoration and reconstruction of mangrove forests in China. The contents included seed origin selection, introduction, seeding, planting, pest control, reconstruction of inefficient forest, effects of restoration, resource protection and management. The book put forward some new ways for the effective protection and restoration of the mangrove ecosystem in China, which would be of scientific value not only in China but also to other countries with similar situations.

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In response to the review of *Contributions to the History of Herpetology*. CFN 126(3): 344-345, the book's editor Kraig Adler pointed out (personal communication to FRC 12 May 2013): "Only one small correction. Mrs. Martof used a kitchen knife, not a gun. She told the police she slipped while cutting some pizza. But Bernie was stabbed up under his rib cage several times!"

Erratum The Canadian Field-Naturalist

It has come to our attention that sections of many of the book reviews by Li Dezhi and Qin Aili were copied from sources without attribution. The journal and the authors apologize for this oversight.