

O44.3**Restoration of abandoned shrimp ponds and mangrove forests through mangrove planting in southern Thailand**

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Abstract

Introduction: Mangrove forests are widely distributed in 128 tropical and subtropical nations and territories. Mangrove ecosystems provide an array of essential ecosystem goods and services, which contribute significantly to the livelihoods well-being and security of coastal communities. Mangroves are recognized as an important ecosystem in the context of national and global development and environment objectives, including the 2030 agenda for sustainable development. Mangrove forests were targeted to develop to aquaculture, agriculture and industrial area, especially in Southeast Asia countries. During the past 40 years, the forest area in Thailand has significantly reduced by the concession for unethical timber trading and land conversion to aquaculture and agriculture areas such as shrimp ponds, industrial area, and palm oil plantation.

Materials and methods: The mangrove planting project *"The Green Carpet"* had started to rehabilitate abandoned shrimp ponds and degraded mangroves at Nakhon Si Thammarat in southern Thailand since 1997. Over 8 million mangrove seeds were planted in the area approximately 1,500 ha. 70 fishes were caught and collected from Pak Phang Bay at Nakhon Si Thammarat. All fishes and three mangroves were analyzed as stable isotopes (¹³C and ¹⁵N) in samples for food web study by Stable Isotope Mass spectrometer.

Results and discussion: (1) Rehabilitated mangrove areas is accumulating carbon into above ground biomasses, below ground biomasses and soil. It produces a very high level of biomass. And there is huge amount of carbon surround them and produce very high level of biomass. Mangrove forests can store around 1,000 Carbon ton/ ha in biomass. Its amount of 25 years old mangrove forests is 5 times higher than tropical rain forests.

(2) Results of stable isotopes (¹³C and ¹⁵N) study in fishes was suggested that food web of rehabilitated mangrove areas is returning to rich biodiversity environment condition through mangrove planting.

Keywords

mangrove planting, rehabilitation, food web, resoration