



EARLY ECOSYSTEM DEVELOPMENT OF CREATED MANGROVE WETLAND IN INDONESIA



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Mangrove restoration and created wetlands

- Mangrove wetland restoration and creation efforts are increasingly proposed as mechanisms to compensate for mangrove wetland loss.
- Created wetland, the conversion of a persistent upland or shallow water area into a wetland through some activity of man (Lewis, 1990)



Mangrove restoration issues

- Many restored and created wetlands are not becoming functionally equivalent to their natural counterparts.
- Lack of research at restoration and creation sites that helps to identify successful/unsuccessful practices, and refine our understanding of wetland successional processes and functioning.

Study site : Porong, East Java, Indonesia



Extensive mangrove conversion to fish or shrimp ponds, pollutants from the upstream.

Reason for created wetland construction: utilizing dredge spoils constructed in related to volcanic mud (LUSI) disposal since 2008.



Porong river mouth



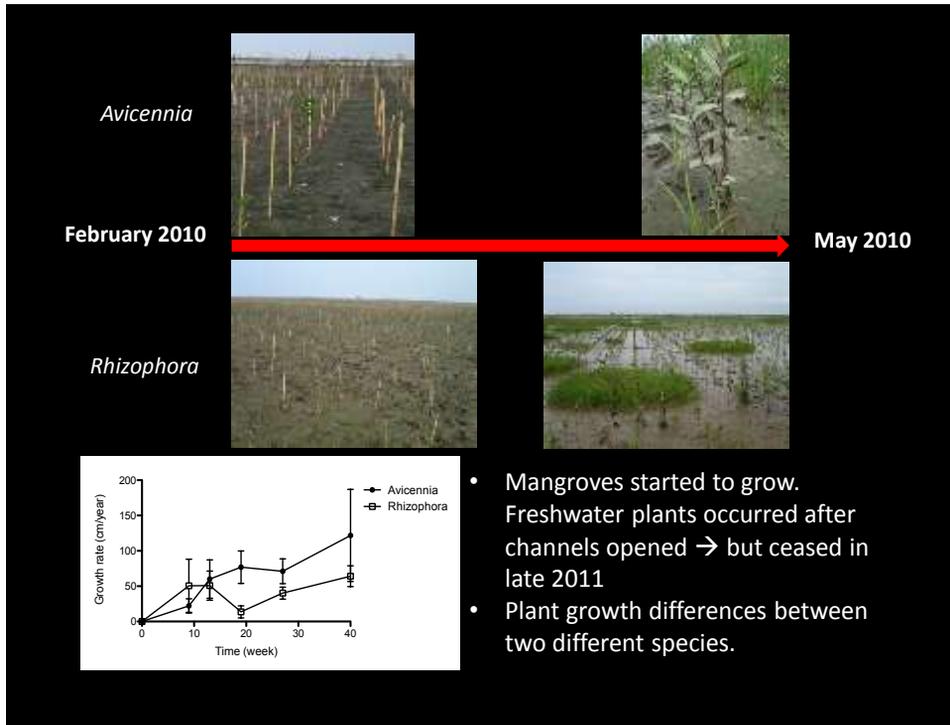
Growth of mangroves

- First planting in 2009: poor hydrology → no growth



- Second planting in Feb 2010: *Avicennia* and *Rhizophora* → growth monitoring (tree height measurement)

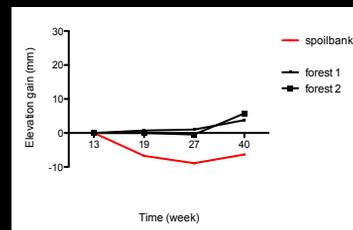
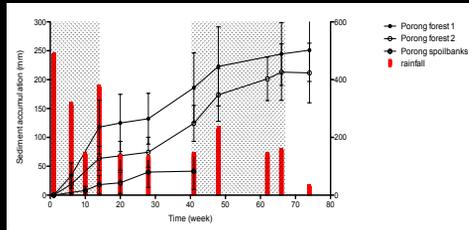




- The success of mangrove plantings on the created wetland could have been enhanced with greater attention to the design and the hydrology of the site in order to make them more appropriate for mangrove growth.



Geomorphological dynamics



Recent in-situ elevation monitoring data were collected (5 cm year⁻¹ and natural wetland 11 cm year⁻¹ decrease) type of created wetland

soil elevation started to increase and created wetland is expected to capture geomorphologic dynamics similar to the adjacent forests as natural reference



Conclusions and Recommendations

- Mangrove ecosystems appeared to establish after appropriate hydrological regimes were in place. Different in sediment dynamics between created and natural wetland due to the type of created wetland.
- We suggest that the hydrological regime is important in determining vegetation establishment and is key in determining the success of mangrove wetland development.

