Effects of mono-specific plantation of *Rhizophora stylosa* on the mangrove community

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Abstract

The effect of plantation on mangrove communities was studied at the central Philippines. Mangrove species composition and their morphology were investigated both at planted and at natural stands in Olango and Banacon islands. In mono-specific plantations, *Rhizophora stylosa* has been ardently planted for 60 years for surge protection and for fuels. *R. stylosa* was chosen due to the ease of establishment of the species.
At natural stands, the main species at the most outer edge was *Sonneratia alba*, followed by *Avicennia marina* dominating stand in the behind. The density of these stands was relatively scarce, leaving an ample room for the colonization of other species. At planted areas, on the other hand, almost the entire population was composed of *R. stylosa* with same age. Due to dense plantation and higher survival rate of seedlings, trees grew densely in comparison with natural stands of *R. stylosa*, tangling proproots among individuals. It was observed that following introduction in natural stands, *R. stylosa* occupies free space between trees and leave no room for propagation and extension of *S. alba* or *A. marina*. *R. stylosa* also interrupts the use solar radiation by other species and alters the pattern of current and sedimentation. Besides, seeds of planted *R. stylosa* spread by the current of relatively deep water, invade into the natural stands of other species. The morphology of individual *R. stylosa* was substantially affected at dense population, where they were taller and thinner. It seems, therefore, that the mono-specific plantation of *R. stylosa* extremely deteriorates species richness and variety of age distribution.

Keywords
mangrove plantation, *Rhizophora stylosa*, biodiversity, species composition, *Sonneratia alba*