

A GROWING THREAT TO TIDAL FORESTS: INCURSION OF MANGROVE ECOSYSTEMS BY INVASIVE ALIEN SPECIES *ACACIA AURICULIFORMIS* A. CUNN. EX BENTH. (FABACEAE)

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Abstract

Mangrove forests are reported to be invaded by invasive alien species (IAS). This study was therefore aimed at studying the level of distribution of the IAS, *Acacia auriculiformis* A. Cunn. ex Benth. in mangrove ecosystems in the southern coast of Sri Lanka and assessing the risk to periphery of mangrove forest by considering the Rekawa mangrove forest as a model site. Growth performances of two mangrove species; *Rhizophora mucronata* and *Avicennia marina* in the presence of *Acacia* plants were also tested under three different competition levels; low, moderate and high. According to the results, infestation of *Acacia* plants was significant in the southern coast of Sri Lanka, particularly in Matara and Hambantota districts ($p < 0.05$). Species diversity determined as the Simpson diversity index was high (0.77) in the periphery of the Rekawa mangrove forest. Four true mangroves and two associates co-occurring with *A. auriculiformis* in the periphery could be observed during the field validation experiment. The highest seedling ($15.4 \pm 2.2 \text{ m}^{-2}$) and sapling ($11.2 \pm 2.8 \text{ m}^{-2}$) densities were reported for *A. auriculiformis* plants. Dominance, calculated as the importance value index of different species in the mangrove periphery varied from 18.0-120.6 and the latter highest was recorded for *Acacia* which has the highest relative density (42.1%) and the relative dominance (52.5%). The total leaf area of the *Rhizophora* plants grown in the high-competition level was significantly lower than that of the control plants while the dry weights at three different competition levels; were significantly higher ($p < 0.05$) than the control. This could be due to the higher root biomass allocation. In *Avicennia* plants, cumulative shoot height, total leaf area and dry weight of the plants grown at the high-competition level were significantly lower than that of the control plants ($p < 0.05$). *A. auriculiformis* plants grown with these true mangrove species better performed and did not show any significant deviation from the respective control plants. The level of survival of *Acacia* was significantly reduced at 25 psu ($p < 0.05$). Early intervention and serious scrutiny are much needed to reverse the possible impacts of IAS on mangrove forests and the need for forest conservation is emphasized.

Keywords: Inter-specific competition, mangrove periphery, invasion, relative dominance, relative density, Important Value Index (IVI), threats

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