Distribution, Density, and Associated Plant Species of *Leucaena leucocephala* in an Accelerated Natural Regeneration Mangrove Site at Anawilundawa Sanctuary, Sri Lanka

K.G.G.T.C. Dayarathna[1*], S. Gallage[1], S. Wijesundara[2], H. Paboda[3], M. Kinastan[3], S. Jayakody[1], W.L.P.B. Upandana[4]

[1]*Department of Aquaculture and Fisheries, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Gonawila, Sri Lanka.*

[2]*National Institute of Fundamental Studies, Kandy, Sri Lanka.*

[3]*Wildlife and Nature Protection Society, Baththaramulla, Sri Lanka.*

[4]*Department of Wildlife Conservation, Baththaramulla, Sri Lanka.*

*tharindudayarathna1@gmail.com

Invasive plants can negatively affect mangrove restoration by altering vegetation structure and reducing the biodiversity of native plant communities. This research aimed at providing initial information regarding the distribution, abundance, and ecological association of the invasive species *Leucaena leucocephala* with the Accelerated Natural Regeneration Mangrove (ANRM) site in Anawilundawa Sanctuary, Sri Lanka. The experimental study was carried out from September 2025 to February 2026 via stratified sampling design in four density categories: high, moderate, low, and none. The total number of transects used in the study was 51, and each transect had a width of one meter but different lengths. Each transect was divided into five different zones. Data from each zone included plant density, Diameter at Breast Height (DBH), the height of the canopy for the largest plant, salinity level, and the species of other plants that were around it. The diversity indices such as Shannon Weiner Index, Margalef's Species Richness, and Dominance were then calculated. Results showed that there were no significant differences in *L. leucocephala* density between high (±1.75) and moderate (±2.12) density sites. Small and medium size densities were significantly different between high and low density areas, whereas seedling density showed no differences between strata. It showed a pronounced preference for occupation on dyke tops under high density (53 plants m^{-2}), despite minimal soil salinity difference (0.0–1.6 ppm). Diverse species richness was recorded in low density areas, based on the higher Shannon-Wiener Index value. The presence of native species alongside the invasive species under investigation was mentioned. The presence of fauna could be seen from direct sightings and footprints. Thus, this study shows the importance of proper management.

Keywords: *Biodiversity, Density distribution, Invasive species, Leucaena leucocephala, Mangrove restoration*