Diversity, Stand Density and Structure of Mangroves in Panama Lagoon, Sri Lanka

K.G. Pathmasekara, S.C. Jayamanne* and A.P. Abeygunawardana

Department of Animal Science, Uva Wellassa University, Badulla, Sri Lanka

This study was undertaken to estimate the diversity, stand density, and structure of mangrove flora in Panama lagoon which has identified as a location with rich mangrove vegetation in Ampara district, Sri Lanka. Six sites covering the whole lagoon were assessed using the transect line plots method by laying three transect lines perpendicular to the shoreline at each site which was varying from 10 m to 40 m in length. The number of mangrove species with the distance from the shore including their diameter (cm) and height (m) were recorded. The individuals were categorized as trees, saplings, and seedlings based on their diameter. The in-situ parameters of soil pH, temperature, and salinity were measured. Five true mangrove species belong to families of Avicenniaceae (*Avicennia marina*), Rhizophoraceae (*Rhizophora mucronata*, and *Bruguiera sexangula*), Combretaceae (*Lumnitzera racemosa*) and Euphorbiaceae (*Excoecaria agallocha*) were recorded. *Avicennia marina* was the most dominant species with the Importance Value of 68.65. The stand density of 475 individuals/ha represented 56% of tree density, 19% of sapling density, and 25% of seedling density. The greatest Shannon-Weiner diversity (1.79) was recorded in site 03 while site 06 recorded the highest Simpson's Diversity Index (0.83) and Pielou's Evenness Index (0.98). Site 05 obtained the highest Margalef's Species Richness (1.83). Highest Basal Area of 70.28m²/ha in site 01 confirmed the undisturbed nature of mangroves. There was a negative linear relationship between distance from the shore and average salinity ($p<0.05$) and a positive linear relationship between salinity and mangrove abundance ($p<0.05$). The cluster analysis depicted the highest similarity of 90.81 for site 03 and 06 based on diversity. *Lumnitzera racemosa* and *Excoecaria agallocha* showed the highest similarity (84.14) based on dominance and density. The results indicated the pristine nature of Panama lagoon with high biological diversity of mangrove flora.

Keywords: Panama lagoon, Mangrove flora, Dominance, Stand basal area