(120)

Carbon Storage in Selected Seagrass Beds in Southern Coast of Sri Lanka

Faazil M.D.M.[1*], Iroshanie R.G.A.[1], Bandara W.M.D.K.[2]

[1]Faculty of Fisheries and Marine Sciences and Technology, University of Ruhuna, Matara, Sri Lanka
[2]Faculty of Biosciences and Aquaculture, Nord University, Bodø, Norway
**faamatara@gmail.com*

Abstract

Although seagrass beds can act as carbon sinks and can play a role in climate change mitigation, carbon sequestration information of Sri Lankan seagrass meadows is seldom available. Therefore, a study was conducted to estimate the carbon storage of three selected seagrass meadows of southern Sri Lanka, located in Hikkaduwa, Ahangama and Rekawa areas. The study was aimed towards (i). comparing the sediment organic carbon in seagrass-covered and adjacent non-vegetated areas, (ii). comparing carbon storage in different seagrass species and its impact on sediment organic carbon, and (iii). mapping out the seagrass beds. *Thalassia hemprichii* and *Syringodium isoetifolium* were considered in Ahangama, *Thalassia hemprichii* in Hikkaduwa and *Halophila ovalis* in Rekawa meadows. Meadows were spatially mapped for above seagrass meadows considering their spatial distribution under three categories: canopy cover, canopy height and shoot density. Seagrass samples for above-ground and below-ground biomass (AGB and BGB) carbon analyses were collected using the point-quadrate method and sediment samples were taken from vegetated and non-vegetated areas of the meadow. Sediment and seagrass carbon contents were estimated using the loss on ignition method. While the sediment organic carbon content did not significantly differ between vegetated and non-vegetated areas of Hikkaduwa (Wilcoxon rank-sum test: W=-1.955, p=0.051) and Rekawa (W=-0.420, p=0.674) meadows, a significant difference was observed in Ahangama meadow (W=-2.366, p=0.018). The AGB was highest in Ahangama meadow (59.68 $gDWm^{-2}$) and the BGB was highest in Hikkaduwa meadow (114.39 $gDWm^{-2}$). The lowest AGB (9.55 $gDWm^{-2}$) and BGB (3.16 gDWm-2) was estimated in Rekawa meadow. These translated to a total biomass carbon (AGB+BGB) estimate, that was highest in Hikkaduwa (3006.67 MgC ha^{-1}) and lowest in Rekawa meadow (1.35 MgC ha^{-1}). This notable difference largely reflects the higher carbon storage capacity of *Thalassia hemprichii* compared to *Halophila ovalis* and their spatial distribution and abundance patterns in the investigated seagrass meadows.

Keywords: Seagrass meadows, Blue carbon habitats, Biomass, Climate change, Carbon sequestration