

**COMPOSITION, DIVERSITY AND TEMPORAL
VARIATION OF FAUNA INHABITING SEAGRASS
AND
REEF ASSOCIATED *Halimeda* AT WELIGAMA BAY**

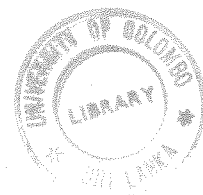
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Abstract

This study focused on the composition, diversity and temporal variation of macro fauna inhabiting reef associated calcareous alga *Halimeda opuntia* and seagrass community, mainly of *Cymodocea serrulata*, in the Weligama bay. The study was carried out as a 6 month M.Sc project from July to December 2001, using monthly triplicated 25cmx25cm quadrat samples at a south-west location of the bay. The faunal density, dry biomass and Shannon-Weiner diversity index (SWDI) are statistically analyzed based on a factorial design. Fauna in *Halimeda* comprised mainly of crustaceans, gastropods, polychaetes and ophiuroids. The mean densities of crustaceans, gastropods, polychaetes and ophiuroids that occurred in *Halimeda* during the study period were $1495 \pm 225.8 \text{m}^{-2}$, $980 \pm 207.8 \text{m}^{-2}$, $543 \pm 127.4 \text{m}^{-2}$ and $310 \pm 74.3 \text{m}^{-2}$, respectively. Among the less abundant taxa, Nemetinea, Echiura, Platyhelminthes and Chordata were identified in *Halimeda*. Fauna in seagrass comprised mainly of crustaceans, sipunculids and polychaetes, and lesser numbers of gastropods, ophiuroids, holothuroids and poriferans. The mean densities of crustaceans, sipunculids and polychaetes observed in seagrass during the study were $819 \pm 137.7 \text{m}^{-2}$, $137 \pm 104.1 \text{m}^{-2}$ and $100 \pm 46.6 \text{m}^{-2}$, respectively. In *Halimeda* the highest faunal density was observed in August ($6240 \pm 92.17 \text{m}^{-2}$) and in seagrass the highest faunal density was found in September ($1530 \pm 12.02 \text{m}^{-2}$). The lowest faunal densities in *Halimeda* ($2480 \pm 124.46 \text{m}^{-2}$) and seagrass ($1008 \pm 10.60 \text{m}^{-2}$) were observed in September and July, respectively. Largest number of families was observed among the crustaceans and polychaetes. In *Halimeda* 26 crustacean and 20 polychaete families were identified. In seagrass 20 crustacean and 11 polychaete families were identified. Terrellids and nereids dominated the polychaete population in *Halimeda*, but in seagrass

polychaete population was dominated by sebellarids and glycerids. The crustacean population in both the studied habitats was dominated by amphipods. In *Halimeda*, the highest faunal density and diversity were observed during south-west and north-east monsoons periods, respectively. Although there was no significant seasonal variation of fauna in terms of their composition and diversity in seagrass, a significant seasonal variation was recorded in the fauna inhabiting *Halimeda*. In *Halimeda*, faunal density on leaves was found to be significantly higher than the faunal density in underlying sediments, but no such variation occurred between seagrass leaves and sediments. Analysis of the diurnal variation of faunal composition in seagrass community showed that the faunal density during the day-light hours was higher than the density in dark hours. Faunal density during the day-light hours was dominated by crustaceans, and gastropods dominated the faunal density during the dark hours, and an oscillation systems of dominance between these two classes was observed to occur during the daily cycle. Faunal dry biomass, faunal diversity and floral biomass increased from shoreward locations to deeper locations of the seagrass community. In the most shoreward locations of the seagrass community, the faunal composition in terms of density was dominated by sipunculids and gastropods and in all other locations, it was dominated by crustaceans.