Decomposition process of the seagrass Thalassia hemprichii in Bise, Okinawa, Japan

PE-25 Decomposition process of the seagrass *Thalassia hemprichii* in Bise, Okinawa, Japan

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Patterns of weight loss in decomposing leaves and sheaths of the seagrass *Thalassia hemprichii* were studied using litter bags in relation to dyamics of their organic carbon and nitrogen contents in a seagrass bed of Bise, Okinawa. Comparisons were made between different part of the seagrass, between seasons, and between habitats, i.e., sandy substrate with *T. hemprichii* showing a very low-density (MP 0), sandy substrate with *T. hemprichii* showing high-density (MP 1), coral-gravel substrate with *T. hemprichii* and the coral, *Montipora digitata* (MP 2), and sandy substrate with good growths of *T. hemprichii* and *Cymodocea rotundata* (MP 3). In addition, the net loss of the amount of organic carbon and nitrogen in the seagrass bed was estimated using the information on seagrass decomposition process and the *T. hemprichii* biomass.

The weight of sheath with lower initial N concentration (high C:N ratio) decreased during the first 2 weeks of the experiment, but it was relatively constant thereafter. On the other hand, weight of leaf with higher initial N concentration (low C:N ratio) decreased gradually during the experiment. This finding implies that degradation pattern varies in the part of plant. Content of organic nitrogen in the decomposing leaves and sheaths varied seasonally. The weight loss pattern of their leaf and sheath was consistently low in autumn, and was high in summer in the 1st week after the start of experiment. Total nitrogen content of leaves was higher in summer than in other seasons. It must be affected by the bacterial biomass and activity due to water temperatures and the daylight hours.

The pattern of change in leaf litter TOC and TN content over time varied after the 4th week in summer at MP 0. Large variation of organic carbon and nitrogen contents at MP 0 may be caused by unstable environmental condition without seagrasses. The biomass of *T. hemprichii* showed seasonal variation and was different in different habitats. This was true for its density and shoot height. The amount of out flowing carbon and nitrogen during the seagrass decomposition process was estimated from the amount of initial ones and theoe which subsequently disappeared at 7th week. Net loss in the field could be also estimated using the information of the changes in *T. hemprichii* biomass. The net loss of the carbon and nitrogen per 50×50 cm^2 was 5.5 g and 0.19 g respectively at MP 2 showing the highest *T. hemprichii* biomass, and 0.5 g and 0.014 g at MP 0 where the biomass was the smallest. Further detailed investigations on seagrasses as a source of organic carbon and nitrogen to the ambient environment are needed considering the amount of litter supply and its decomposition process.