

### Primary productivity of sea-grasses in Rekawa, an estuarine lagoon

Sea-grasses are submerged angiosperms in marine and coastal water bodies in the tropical and temperate regions. Sri Lanka, being surrounded by the Ocean and having a large number of lagoons and estuaries, has a considerable extent covered by sea-grasses. Despite the extent and their possible contribution in aquatic food chains, with economic implications, the research on their primary production is meagre in Sri Lanka. The surface covered by sea-grasses in Rekawa lagoon, in the southern coast of Sri Lanka, is about 17%, but there is no information on the productivity. In this investigation, dark and light bottle method was adapted to estimate primary productivity, using oxygen concentration as a measure. All the six species (*Halophylla ovalis*, *Halophylla ovata*, *Halophylla decipiens*, *Potamogeton pectinatus*, *Najas marina* and *Ruppia maritima*) present in Rekawa lagoon were studied separately. Whole plants, weighing approx. 1 g, cleaned free of epiphytes, were inserted in to bottles filled with filtered lagoon water (free of plankton). The bottles were suspended in the lagoon at 25 cm depth for 1 h during 10:00 – 11:00 H. Oxygen concentration was measured before and after the incubation using Winkler method. The oxygen values were converted to carbon equivalents and net primary productivity was expressed as the difference between gross primary productivity and respiration. The procedure was repeated three times at three-month intervals.

The efficiency of CO<sub>2</sub> fixation varied considerably between different species. The most effective species was *H. ovalis*, whereas *N. marina* was the least effective. The range of productivity matched closely with that of abundance of the six species (g wet wt./ m<sup>2</sup>). *H. ovalis* occurs at deeper areas as a monoculture, indicating a competitive advantage where light is limiting. The productivity expressed as g C/ m<sup>2</sup>/ yr ranged from 1.1 for *N. marina* to 14780 for *H. ovalis*. Contribution by *R. maritima* was also considerable (1530 g C/ m<sup>2</sup>/ yr). Even after allowing for possible overestimation, the productivity values are rather high indicating their importance as a part of the base of food pyramid in the lagoon ecosystem and beyond that into the near shore areas. Sea-grasses are not preferred food for many fish species, but their contribution via detrital food chains in fishery production can be emphasized.