

Bandeira, Salomão O. 2000. Diversity and Ecology of Seagrasses in Mozambique: Emphasis on *Thalassodendron ciliatum* Structure, Dynamics, Nutrients and Genetic variability

**Abstract:** The approximately 3000 km Mozambican coastline, divided into coral limestone, estuarine and sandy zones, possesses extensive plant communities viz. seagrass meadows, mangroves and seaweeds. This pioneering work in Mozambique emphasizes seagrasses, having 20.6 % of the world's species. Seagrass diversity and distribution were studied in two areas: Inhaca Island (southern Mozambique, 9 species) and Mecúfi (northern Mozambique, 12 species), but only four species were seen flowering. Coral limestone areas, particularly common at Mecúfi, have quite distinct combinations of seagrasses and seaweeds. In contrast, typically sandy areas at Inhaca are dominated by seagrasses only, and one species also occur at sandstone fulcrums subjected to strong waves from the Indian Ocean.

Special attention was given to *Thalassodendron ciliatum*, one of the most prominent seagrasses in eastern Africa, occurring both in sandy and rocky areas with different ecological performances. Rocky areas have six times more intense water motion and five times higher speed, compared to sandy areas, where the intertidal can reach one km from shore and salinity varies. Plant density in rocky areas was among the highest in seagrasses due to plants with condensed rhizomes, while sandy plants had broader and longer leaves. Growth rates per m<sup>2</sup> and biomass was also higher in rocky areas and plants there had more biomass below-ground. Epiphytic seaweed biomass was 13 times higher on plants from rocks. Highly significant differences were observed in N and P concentrations between leaves of different ages, decreasing from the youngest to the oldest. Both N and P nutrient resorption and nutrient-use efficiencies were higher in plants from rocks. Flowers were only observed in sandy areas but the genetic variability between the two habitats was not significant; instead a high genetic variability was observed within the six populations sampled in southern Mozambique. This variability was also considerable within each rocky location.

**Keywords:** Seagrass distribution, *Thalassodendron ciliatum*, Indian Ocean, Inhaca Island, Mecúfi, southern Mozambique, rocky versus sandy habitat, growth rate, detachment rate, leaf area index, total rhizome length, epiphytic biomass, grazing patterns, nitrogen, phosphorus, carbon, nutrient resorption, nutrient-use efficiency, DNA-fingerprinting, RAPD

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