



Biodiversity patterns of macrophyte and macroinvertebrate communities in two lagoons of Western Greece.

G. Fyttis (1,3), S. Reizopoulou (2), and E. Papastergiadou (3)

(1) Oceanography Center of Cyprus, University of Cyprus, P.O. Box 20537, 1678 Nicosia, Cyprus (fyttis.georgios@ucy.ac.cy), (3) Department of Biology, Section of Plant Biology, University of Patras GR 26 500 University Campus Patras, Greece, (2) Institute of Oceanography, Hellenic Centre for Marine Research, PO Box 712, 190 13 Anavissos, Attiki, Greece

Aquatic macrophytes and benthic macroinvertebrates were studied seasonally (Spring, Autumn, Summer) between the years 2009 – 2011 in two coastal lagoons (Kotychi and Prokopos) located in Peloponnese, Greece, in order to investigate spatial and temporal biodiversity trends related to hydrological processes (degree of confinement, nitrates, phosphates, chl-a, total suspended materials, light irradiance, pH, salinity, temperature and dissolved oxygen). Kotychi lagoon presents a better communication with the sea, while Prokopos has a high degree of confinement. Both ecosystems seasonally receive freshwater input from streams. The submerged aquatic macrophytes constituted a major component of the ecosystems studied. In total, 22 taxa of aquatic macrophytes (angiosperms and macroalgae), 16 taxa for Kotychi (2 Rhodophyta, 8 Chlorophyta, 5 Magnoliophyta, 1 Streptophyta) and 14 taxa for Prokopos (1 Rhodophyta, 5 Chlorophyta, 5 Magnoliophyta, 3 Streptophyta) were found. *Ruppia cirrhosa*, and *Potamogeton pectinatus* were dominant in both lagoons. Kotychi lagoon was also dominated by *Zostera noltii* and Prokopos by *Zannichellia pallustris* ssp. *pedicellata*, while the biomass of aquatic species peaked during the summer periods, in both lagoons. The total number of macroinvertebrates found in the lagoons was 28 taxa for Kotychi and 19 for Prokopos. Chironomidae were dominant in both lagoons, while Kotychi was also dominated by *Lekanesphaera monodi* and *Monocorophium insidiosum*, and Prokopos by Ostracoda and *Lekanesphaera monodi*. Benthic diversity ranged from 1.33 to 2.57 in Kotychi and from 0.67 to 2.48 in Prokopos. Species richness, diversity, and abundance of benthic macroinvertebrates were strongly related to aquatic vegetation and to the degree of communication with the marine environment. Moreover, species richness and abundance of both macrophytes and macroinvertebrates were mainly dependent on depth, temperature, pH and concentration of total suspended materials (TSM). Results also showed that environmental variables such as depth, transparency/depth ratio, total P, chl-a, and TSM differed significantly between the two lagoons. In order to assess the ecological quality of the study sites, the functional ISD index has been applied. From the preliminary results it seems that ISD index, based on the biomass size structure of the macroinvertebrate communities, is more appropriate for the assessment of the ecological status for these particular ecosystems. The development of a monitoring team is essential for the protection and management of these ecologically important ecosystems. Further investigation is necessary to examine the relationships between benthic macroinvertebrates and aquatic macrophytes, the use of biotic indices to the evaluation for lagoonal ecosystems' ecological status and the relation between the hydrological processes and the biodiversity patterns of the biotic elements.