

BIOGEOGRAPHY AND SEASONALITY OF MACROALGAL COMMUNITIES IN THE GULF OF OMAN

Pauly Klaas, Tom Schils and Eric Coppejans

Phycology Research Group, Biology Department, Ghent University
Krijgslaan 281 (S8), B-9000 Ghent, Belgium
E-mail: Klaas.Pauly@UGent.be

We studied the biodiversity, biogeographical affinities and seasonal changes of the macroalgal flora at the OMIFCO site near Sur (Oman). The OMan India Fertiliser Company (OMIFCO) is a shared project between the Omani and Indian governments to produce fertiliser destined for India, powered by Omani gas supplies. Understanding natural variability of the community should provide a baseline survey for future monitoring.

In February and September 2003, during the northeast and southwest monsoon respectively, 3 transects from the intertidal to 20m depth were sampled. The data input consisted of abundance data, biomass data and a reference collection. At 3 intertidal stations and one control station, 7 species have been sampled for nutrient and stable isotope analysis. The macroalgal communities of the OMIFCO site were compared to neighbouring assemblages from the Socotra archipelago (Yemen) and Masirah Island (Oman) in the Arabian Sea.

A total of 76 species have been identified, of which 47 Rhodophyceae. Species richness did not fluctuate between seasons. Ordinations (DCA) based on biomass data show upwelling and depth related grouping along the first axis for the OMIFCO site and Socotra. The groups obtained from the qualitative DCA and cluster analysis show an important distinction between upwelling exposed and upwelling sheltered sites, followed by a difference between upwelling sheltered sites in the Arabian Sea and the Gulf of Oman. Total biomass of the intertidal OMIFCO stations was at least tenfold the total biomass of subtidal stations. Only the intertidal community showed significant seasonal changes in biomass, the summer being the most productive. In contrast with total tissue nutrients, stable isotope values did not show any seasonal trend.

Twenty-five species were recognised as new records for Oman, probably due to a historical undersampling of the region. Most species are very common in the Indian Ocean and have strong affinities with tropical East-African communities. Changes in productivity and tissue nutrient contents could not be related to current eddies bringing nutrient enriched upwelling water from the northern Arabian Sea into the Gulf of Oman during summer monsoon.

Although species richness is relatively low compared to the Arabian Sea, the OMIFCO site is important for its high productivity as a feeding ground for the Green turtle. Future monitoring of the site could be established using delta¹³C and delta¹⁵N values to assess whether fertiliser has contaminated the communities.