

Materials and Methods

Study site

The study site was located at 6 km to the South of the Ombrone river mouth in the Maremma





Regional Park and consisted in a wide eu- and supralittoral (45 m in width), a low dune (1.10 m in height) and a vegetated retrodune with a depression that is flooded during winter months. The beach section of the area had been previously monitored within the MEDCORE project (ICA3-2002-10003) so a previous data base is available for comparisons. Monthly surveys, starting in October 2006, were carried out by the Italian team for a period of an entire year. Two transects perpendicular to the shoreline were set from the shoreline to the retrodune. To assess species diversity, richness and abundance, pitfall cross traps, with intercepting bands of 50 cm and containing glycol ethylene, were set at a 5 m interval. The traps captured surface moving macro-invertebrates and were kept active for a period of 48 consecutive hrs. Fauna samples were collected, sorted preliminarily at the study site and then transferred in 70 % alcohol. At Florence in the



laboratory macroinvertebrate samples were further sorted under binocular microscopes and where possible species level was reached.

Vegetation assessment

Qualitative sampling

During the field visits of July 2006 and April 2007 two work together were organised with the International Environment Institute of Malta (team leader Dr. Louis Cassar) during which the

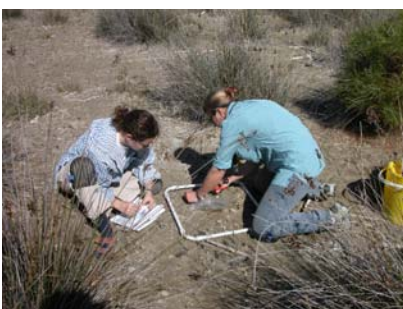


vegetation along the two transects was determined using quadrats of 1 m². For transect A every metre frequency and species number was recorded in the three contiguous metres on either side of the reference pegs of the transects for a total of 900 quadrats. For transect B

vegetation was assessed in quadrats one meter on either side of the reference pegs for a total of 300 samples. Abundance for each plant species was calculated in three beach fasciae (0-50 m, 51-100 m, 101-150 m).

Quantitative sampling

To assess the vegetation quantitatively along transects in the different seasons (October, January, April, July) quadrats (50 x 50 cm) of vegetation were sampled every 5 m at 1, 2, 3, 4m distance



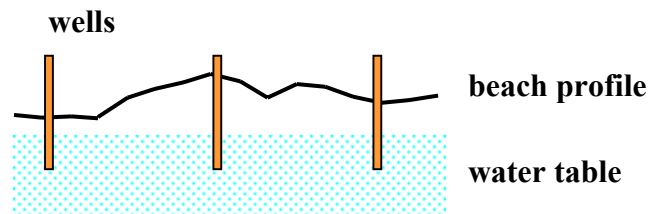
from the reference pegs of the transects. All material in the sample was collected and weighed. Successively in the laboratory each sample was oven dried at 70° and then weighed again. Wet vs dry weights were used to determine water content of plants. For

vegetation biomass a mean value was calculated every 5 m and referred to 1 m².

Assessment of environmental features

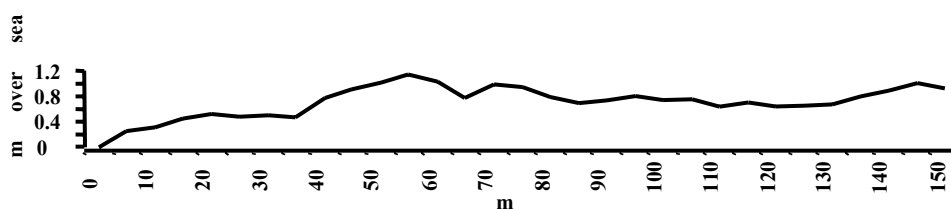
Wells

To assess water table levels and quality wells were dug with a drill and a PVC tube (1-2 m in length according to the depth of the wells) was placed at a 5 m interval.



Beach profiles

Beach morphology (slope, width and orientation) was assessed through transect profiling.



Water table level and quality



To assess water levels along transects and the chemical characteristics of the water table for each well direct measures of temperature, salinity (conductivity), pH and depth were taken.

Soil samples were also taken pushing a core (3 cm in

diameter) to a depth of 10 cm. In the laboratory sand samples were analysed to determine grain size, moisture, pH, salinity (conductivity) and organic matter with standard methods (Folk & Ward, 1957, Società Italiana del Suolo 1985).



To determine total rainfall during each month a permanent rainfall station was placed on the dune close to the transects. Each month the station was checked and rainfall recorded.