

## PLANT COVER DEVELOPMENT AND SAND ACCUMULATION: RESULTS OF ONE YEAR QUANTITATIVE MONITORING ON A CONSTRUCTED DUNE SYSTEM

M.SPERANZA\*, L. FERRONI, G. PRITONI

Dipartimento di Scienze e Tecnologie Agroambientali - Alma Mater Studiorum Università di Bologna, Viale Fanin 44,  
40127 Bologna \*maria.speranza@unibo.it

Coastal areas are in a really critical state in the most part of Europe. The altered balance between the sedimentation and erosion processes, due to the sediment reduced supply by channelled and dammed rivers, is one of the main causes of this situation (European Environmental Agency, 2006). Beach nourishment can overcome this problem, especially if accompanied by measures to keep sand where it was artificially deposited (offshore breakwaters, construction and/or the restoration of dune systems). Given the importance of plant cover in the development and functioning of the sand dune systems, artificial planting can help to quickly obtain a plant cover in the case of dune construction or restoration. This work reports the results of a monitoring of the plant cover development and sand accumulation on a young dune artificially built near the new mouth of the river Bevano (Ravenna, Italy), two years after his realization. Plant cover development has been quantitatively monitored (quarterly measurements of diameter, circumference and height of *Ammophila littoralis* (Beauv.) Rothm. and *Agropyron junceum* (L.) Beauv. planted tufts), as well as the sand accumulation (monthly recording of the sand level on 138 fixed poles), from October 2008 to September 2009. During the 2008/2009 winter, the plant cover evidently decreased because of the destructive effects of storms, combined with the seasonal interruption of the vegetative growth. In June 2009 winter losses were, in most cases, recovered, while in late September 2009 the plant cover volume far exceeded that of the previous year. At the end of the monitoring period the sediment accumulation in the vegetated area shows a positive balance. Monitoring results shows that it is possible to realize a plant cover functioning as active sediment trap and dune builder in a relatively short time. The plant cover development and the maintenance of its functions over time is however strongly conditioned by meteo-marine events and by the alternation between unfavourable (late autumn and winter) and favourable (spring-summer) periods. The achievement of a positive balance, for the plant cover development, between constructive and destructive events depends in a determinant manner on physical factors such as the geomorphology of the site (heights with respect to the level of the sea, and the depth of the beach). The assessment of these aspects during the planning of dune reconstruction cannot therefore be ignored, when considering the global success of the project.

European Environment Agency, 2006 – The changing faces of Europe's coastal areas. Copenhagen.

INDICE