

MANAGEMENT OF *POSIDONIA OCEANICA* BEACHED ACCUMULATIONS AND THE "ECOLOGICAL BEACH" MODEL

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Abstract

Posidonia oceanica (L.) Delile is a marine phanerogam endemic to the Mediterranean Sea which provides important ecological functions enhancing coastal biodiversity. The beaching of *P. oceanica* remains and other marine phanerogams is a natural phenomenon, observed annually on many coasts. However, the occurrence of *P. oceanica* remains within touristic areas may represent a problem, since most of the beach users still ignore their ecological role and value and consider the plant remains as foul-smelling rejections. ISPRA is therefore promoting the “ecological beach model” as a new management practice for the *P. oceanica* on the beaches, also proposing this model as a new criterion for the assignment of the Blue flag by FEE Italy.

Keywords: *Posidonia*, *Mediterranean Sea*, *Beach*, *Coastal management*

Posidonia oceanica (L.) Delile is a marine phanerogam endemic to the Mediterranean Sea, which forms dense and extensive green meadows and provides important ecological functions enhancing coastal biodiversity. Seagrass meadows stabilize the sea bed and protect the coastline against the erosive action of the sea. In fact, its growth mode leads to the formation of terraced and compact structures, the so-called “matte”. *P. oceanica* meadows are identified as a priority habitat type for conservation under the Habitats Directive 92/43/EEC [1]. The beaching of *P. oceanica* remains (leaves, rhizomes, fibrous remains) and other marine phanerogams is a natural phenomenon, observed annually on many coasts, especially following the autumn and winter storms. The accumulation of beached biomass, combined with sand, forms very compact and elastic lamellar structures known as *banquettes*. *Posidonia banquettes* have an important role in beach protection from erosion [2], promoting the origin of the coastal dunes; moreover, the leaf litter represent an important temporary sink of biogenic elements, playing a fundamental role in the nutrient budget of *P. oceanica* meadows [3].

The occurrence of *P. oceanica* remains within turistic areas may represent a problem, since most of the beach users, still ignore their ecological role and value, considering the plant remains as foul-smelling rejections, rather than natural components of the coastal ecosystem. These aspects paradoxically imply a decrease in the touristic value of the beaches characterized by *P. oceanica* remains occurrence, consequently local administrations are pushed to remove such deposits to make the beaches more pleasant and usable. Along the Italian coasts, the removal of *Posidonia banquettes* is a widespread management practice before and during the summer season, in order to allow the beach tourism. In this way, large quantities of sand are removed forcing the local administrations to undertake costly coastal protection and beach nourishment interventions. Moreover, this practice causes a considerable increase in the cost of beach cleaning, due to the collection of great volumes of rubbish and its transportation to landfills.

In 2006, the Italian Ministry of the Environment has released an official document concerning the management of *Posidonia* beached accumulations [4]. The ecological role of *banquette* have been recognized; three main management solutions have been indicated: 1) maintenance of *banquettes* on site; 2) reallocation of accumulations within the same beach/ within beaches not accessible/ not used by swimmers / particularly exposed to erosion; 3) removal and landfill in accordance with the current legislation. The maintenance on site of the *banquettes* is the best management solution from the ecological point of view and it can be supported by training and informing citizens, to produce a change of opinion on beached accumulations: from waste to environmental and economic resource [5]. In 2017, ISPRA promoted the “ecological beach model” as a new management practice for the *P. oceanica* on the beach [6] and a new criterion for the assignment of the Blue flag by FEE Italy. The so-called “ecological beach” contributes to enhance both the ecological and functional role of the *banquettes* for the beach ecosystem and the circular economy. The success of the Model requires the best management solutions from an ecological point of view, but also the involvement of the beach users and managers in environmental training and education initiatives. Demonstration prototypes as informative posters [6] (Figure 1) are necessary to inform citizens about the meaning and the ecological-functional value of the model. Environmental

education events are carried out to promote a new perspective on the accumulations of *Posidonia* beached remains: from waste to environmental and economic resource [6]. Specific informations for shoreline managers will aim to produce management support and to maintain the ecological beach model in the future.



Fig. 1. An example of the poster designed and realized by ISPRA to inform citizens and beach users [6].

References

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