

THE STATE OF *POSIDONIA OCEANICA* (L.) DELILE MEADOWS IN THE MALTESE ISLANDS (CENTRAL MEDITERRANEAN)

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We have assessed the state of local *Posidonia oceanica* meadows by considering spatial and bathymetric distribution, general health, and plant morphological characteristics. Our results show that dense and healthy meadows cover large areas of bottom off the Maltese coasts and extend to considerable depths, in places down to 43 m. At some sites where there is a strong anthropogenic influence, *Posidonia* meadows have regressed or been killed off altogether.

Data on the spatial and bathymetric distribution and on phenology of *Posidonia* meadows in the Maltese islands is lacking, even though dense beds of this seagrass cover large areas of bottom off the islands' coasts. The only information available on the spatial distribution of *Posidonia* meadows is that presented by ANDERSON *et al.* (1992) in the form of a map of the benthic communities around the Maltese Islands; DREW & JUPP (1976) give the only local data on growth and morphological parameters of this seagrass. The aim of our research is to assess the state of *Posidonia* meadows in the Maltese Islands in order to establish a baseline against which to compare future work.

The spatial extent of *Posidonia* meadows around the Maltese Islands was mapped using standard SCUBA diving techniques. Because of this, our data is limited to the depth of safe diving, in practice about 45 m (Fig. 1). Typically along the coasts of Malta, *Posidonia* first occurs as patchy stands at a depth of around 5 to 6 m and continues as dense meadows down to depths of 25 to 30 m on soft sediment. It is only in the more sheltered bays and inlets that continuous meadows are found in very shallow water (1 to 3 m). The Malta-Comino and Comino-Gozo Channels (Fig. 1) have particularly dense and healthy meadows. In March 1994, we discovered a healthy *Posidonia* meadow at a depth of 43-44 m at Wied Ternu, off the southwestern tip of Comino island. Three 0.125m² quadrats were used to estimate the shoot density. This varied between 125 and 155 shoots/m². The mean number of leaves per shoot was 4.2 (n = 10), while the mean length of the leaves (based on intermediate and adult leaves) was 14.4 cm. The leaf width was between 8.5 and 9.5 mm. We are aware of only a few records of *Posidonia* meadows growing at such depths in the Mediterranean (for example, MEINESZ *et al.*, 1988; BOUDOURESQUE *et al.*, 1990).

In other parts of Malta, such as at Mellieha Bay, frequent anchoring of pleasure boats is probably the main factor causing significant damage to the extensive *Posidonia* meadows originally present, as shown by an increase in the size and number of "intermatte" areas in the bay. Two *Posidonia* barrier reefs have been discovered in this bay, and another in the nearby Salina Bay.

In several bays and creeks where harbours are located, *Posidonia* meadows have regressed and have been totally replaced by pollution-tolerant benthic communities characteristic of such environments (for example, Marsamxett and Grand Harbour). At Pretty Bay, Birzebbuga, dumping of large amounts of sediment dredged from the seabed and pumped onshore to create an artificial beach, buried and killed most of the seagrass meadows in the area when it was subsequently moved offshore by wave action and currents (BORG & SCHEMBRI, 1993). At Mistra Bay and Mellieha Bay, offshore fish farming operations have caused regression of *Posidonia* meadows located under the fish cages.

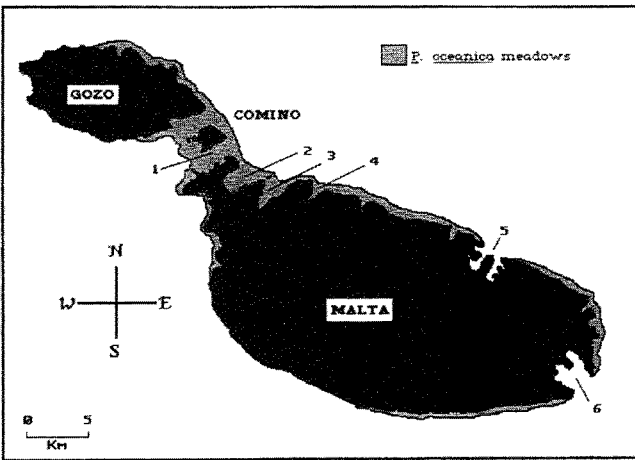


Fig. 1: Small scale map of the Maltese islands showing the spatial distribution of *P. oceanica* meadows, and localities mentioned in the text: 1 Wied Ternu, 2 Mellieha Bay, 3 Mistra Bay, 4 Salina Bay, 5 Marsamxett and Grand Harbour, 6 Pretty Bay.

REFERENCES:

- ANDERSON E., ROLE A. & SCHEMBRI P. J., 1992. Coastal zone surveys of the Maltese Islands: onshore and offshore. In: J. L. SUAREZ DE VIVERO (ed.), *The ocean change: management patterns and the environment*: 139-152. Universidad de Sevilla, Seville, Spain.
- BOUDOURESQUE C. F., BIANCONI C. H. & MEINESZ A., 1990. Live *Posidonia oceanica* in a coralligenous algal bank at Suiana Bay, Corsica. *Rapp. Com. inter. Mer Médit.*, 32 (1): 2 pp.
- DREW E. A. & JUPP B. P., 1976. Some aspects of the growth of *Posidonia oceanica* in Malta. In: E. A. Drew, J. N. LITHGOE & J. D. WOODS (eds.) *Underwater Research*: 337-368. Academic Press, U.K.
- BORG J. A. & SCHEMBRI P. J., 1993. Changes in marine benthic community types in a Maltese bay following beach rehabilitation works. Conference proceedings, Clean Seas Conference 1993, Valletta, Malta: 7 pp.
- MEINESZ A., BOUDOURESQUE C. F., & LEFEVRE J. R., 1988. A map of the *Posidonia oceanica* beds of Marina d'Elbu (Corsica, Mediterranean). *P.S.Z.N.J. Marine Ecology*, 9 (3): 243-252.