PRELIMINARY DATA ON BATHYMETRIC AND TEMPORAL CHANGES IN THE MORPHOLOGY OF A MALTESE *POSIDONIA OCEANICA* (L.) DELILE MEADOW

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Preliminary data on the morphology of a local *Posidonia oceanica* meadow were obtained as part of an ongoing study on the community structure and composition of the vagile fauna associated with this seagrass. The values for Shoot Density, Leaf Standing Crop and Leaf Area Index obtained appear to be higher than those reported for meadows of this seagrass in other parts of the Mediterranean.

Data on the structure and composition of meadows of *Posidonia oceanica* and on morphological parameters of the plant itself are lacking for the Maltese Islands; the only published data are those of DREW & JUPP (1976). The aim of this study was to provide preliminary data on the morphological characteristics of a local *Posidonia* meadow situated off the White Tower headland, in the Malta-Comino Channel.

Shoot Density was estimated *in situ* by taking five 0.125m^2 quadrats at each of four stations located along a depth gradient at 6 m, 11 m, 16 m and 21 m. Estimates were made in August 1993, December 1993 and April 1994. Number of leaves per shoot, leaf length, and leaf width were measured in the laboratory for 25 shoots chosen at random from each sampling station. The dry weight of the leaf fraction excluding rhizomal weight and the leaf area index were also estimated.

The mean Shoot Density as measured over the whole sampling period showed an overall decrease with depth. Values recorded were: 782 - 807 shoots/m^2 at 6 m, 570 - 657 shoots/m^2 at 11 m, 464 - 530 shoots/m^2 at 16 m, and 357 - 420 shoots/m^2 at 21 m. The number of intermediate and adult leaves per shoot varied between a minimum of 3.9 leaves/shoot recorded at a depth of 16 m in August '93 and a maximum of 6.1 leaves/shoot recorded at a depth of 21 m in December '93. The number of leaves per shoot varied least with depth in December '93 (Fig. 1). The Leaf Area Index (L.A.I.) showed a general decrease with depth (Fig. 2). Maximum values for the Leaf Standing Crop (L.S.C.) were obtained in August '93 (Fig. 3).

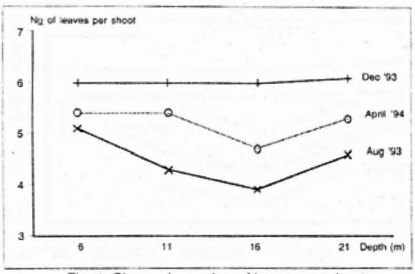

Fig. 1. Change in number of leaves per shoot of *Posidonia oceanica* with depth

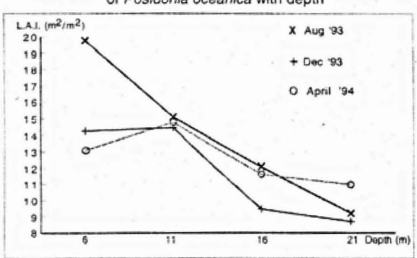

Fig. 2. Change in Leaf Area Index (L.A.I.) of *Posidonia oceanica* with depth

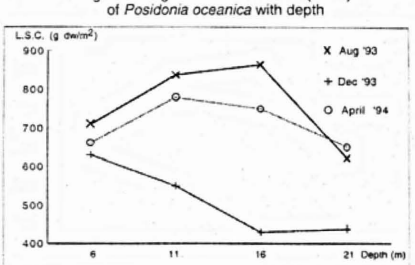

Fig. 3. Change in Leaf Standing Crop (L.S.C.) of *Posidonia oceanica* with depth

In general, the Shoot Density values recorded during the present study are higher than those reported by DREW & JUPP (1976) for Malta and by other workers for different regions of the Mediterranean (for example, MAZZELLA *et al.*, 1989 and BUIA *et al.*, 1985). This is also true for the Leaf Area Index. Overall, values of number of leaves per shoot are similar to those reported for other localities (for example, MAZZELLA *et al.*, 1984) and to those of DREW & JUPP (1976) for Malta. The discontinuity in leaf morphological parameters recorded at depths of 10 to 15 m by other workers is most pronounced locally for the Leaf Area Index and this discontinuity probably represents a separation between shallow-water and deep-water meadows (MAZZELLA *et al.*, 1989; CINELLI *et al.*, 1984; MAZZELLA & OTT, 1984). The low L.A.I. and L.S.C. values at 6 m cannot be attributed to sea-urchin grazing as has been suggested by DREW & JUPP (1976) since echinoid density was close to zero in the study area following a sudden large decline in the *Paracentrous lividus* population some four to five years ago. Furthermore, no significant temperature differences were recorded in the 6 to 21 m depth range. We attribute the presence of this discontinuity to different growth patterns of *Posidonia* in response to the varying hydrodynamic regime at different depths in the study area, as has already been suggested for other parts of the Mediterranean (MAZZELLA & OTT, 1984; BUIA *et al.*, 1992).

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