PHENOLOGY OF A RECENT *POSIDONIA OCEANICA* SETTLEMENT IN THE LIGURIAN SEA, WESTERN MEDITERRANEAN

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The litterature on *Posidonia oceanica* phenology is rich and reports data from different geographical areas and depths of the Mediterranean Sea (BOUDOURESQUE *et al.*, 1984; BOUDOURESQUE *et al.*, 1987). Information mainly concerns large meadows and is often related to regression problems. Few data are available on the phenology of a beginning settlement of the seagrass (COOPER, 1979; MEINESZ and LEFEVRE, 1984). So, on 1992, we began to collect data on the dimensions and on the phenology (shoot density, number of leaves per shoot, leaf length and width) of some little tuft of *Posidonia oceanica* settled on hard substrate, at 4 m depth, near Cogoleto (8°39' E, 44°24' N) in the Ligurian Sea. No traces of living or death meadow have been found all around the site. Local fishermen and SCUBA-divers, besides, agree in dating four or five years back the first observation of these settlements of the seagrass. Owing to the reduced size of the tufts (the largest is about 100 cm long and 70 cm wide), a not destructive procedure has been followed to collect data *in situ*, by SCUBA-diving, without sampling. All the dimensions have been measured in mm, by a soft rule, while densities have been calculated from a 400 cm^2 surface and leaf counts have been made by direct observation. By such a procedure, underestimates of phenological parameters are probable : leaf base are not considered, youngest leaves cannot easily be detected, etc. So, the reported results must be considered as a preliminary information about the development of these *Posidonia* tufts.

Mean shoot density (calculated inside the tufts) is very high : 1327.0 shoots/m^2 (s.d. 175.8). Although it is hard to compare this figure with the available information about large meadows settled in comparable environmental conditions, we can observe that the Prelo meadow (Portofino promontory : 9°13.6' E, 44°20.2' N; 4 m depth. Personal observations) is characterized by a mean density of 670.0 shoots/m^2 (s.d. 227.3) and that PESSANI *et al.* (1987) report for the Punta Garavano meadow (7°29' E, 43°45' N; 6 m depth) a density of 950 shoots/m^2. In the Cogoleto tufts, the mean leaf number per shoot is 4.6 (s.d. 0.3) and is quite different from that reported by PESSANI *et al.* (1987) (8.5 leaves per shoot); on the other hand, this figure is similar to that of the growing margin (plagiotropic axes dominant) of a large meadow 2.5 km far from the tufts : 4.4 leaves per shoot (s.d. 1.0). Leaves dimensions differ from those of other prairies: the mean leaf length of the tufts is 141.8 mm (base excluded) while the mean length measured in the margin of the Cogoleto large meadow is 202.9 mm (base excluded). Seasonal figures show a clear trend (fig.1): the highest mean length has been measured in June (215.0 mm), the lowest in November (95.0 mm). BUIA *et al.* (1992) report a similar trend for intermediate and adult leaves of a meadow at 5 m depth (Ischia island). The mean leaf width of the Cogoleto tufts is 7.8 mm (s.d. 0.9), while the Cogoleto meadow figure is 9.0 mm and the Punta Garavano figure (PESSANI *et al.*, 1987) is 8.9 mm. During cold season, the mean leaf width of the tufts is higher (8.1 mm in November; 7.8 mm in January), while in summer is lower (6.5 mm in july). Leaf area index (LAI) shows a seasonal trend related to the water temperature (fig.2): the lowest mean value has been observed in November (4.2 m^2/m^2), the highest in June (10.5 m^2/m^2); a summer decrease is evident. PESSANI *et al.* (1987) report a LAI of 15.8 m^2/m^2. Phenological features quite similar to those described in this work have been observed in a little tuft sampled on May 1994 in the Sori meadow (9°7' E, 44°23' N; 4 m depth), on hard substrate. In this site, the residuals of a largest meadow (deepest at present), scattered on hard substrate widely not covered by *Posidonia oceanica*, show phenological parameters quite different from the sampled tuft (data not published). The hypothesis that the Cogoleto and Sori tufts represent a recent settlement of *Posidonia oceanica* is supported, besides, by the growth observed at Cogoleto; single and randomly placed external rhizomes, marked at the base of the youngest scale, showed a 7.0 cm/year elongation during the experiment. More data are requested to confirm this hypothesis and to describe the phenology of *Posidonia oceanica* during substrate colonization.

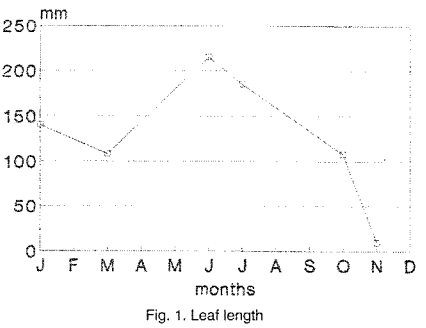

Fig. 1. Leaf length

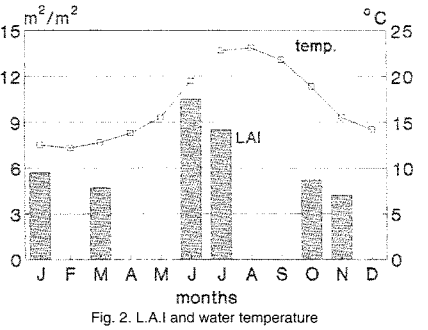

Fig. 2. L.A.I and water temperature

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