

Vegetative Reproduction in *Posidonia oceanica*

I. Effects of Rhizome Length and Transplantation Season in Orthotropic Shoots

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With 6 figures and 2 tables

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Abstract. An investigation was conducted on transplantation in the Mediterranean seagrass, *Posidonia oceanica*. The effects of rhizome length and season of transplantation were investigated over the first year of growth in relation to survival and development in orthotropic shoots. Twelve batches, each composed of 36 transplants bearing one leaf bundle, were detached and planted at the same site and depth. They were fixed horizontally to mesh supports. These twelve batches, comprising three classes of rhizome length (10, 15, and 20 cm), were transplanted at four times of year. Mortality was highest for transplants made in early summer, when temperatures exceeded 20 °C, and lowest for those made in autumn. Although initial rhizome length had no discernible effect on subsequent mortality, it was positively related to the length of the necrosed portion one year later. The most successful transplants, made in autumn with 10 to 15 cm long rhizomes, gave survival rates of 92 to 97%. These results should help to develop transplantation techniques for restoring damaged sites.

Problem

In *Posidonia oceanica* (L.) DELILE, the principal marine phanerogam in the Mediterranean, vegetative reproduction remains poorly understood. The species reproduce vegetatively essentially by two methods. In the first method the rhizome grows horizontally, but separates from the parent stock by subsequent necrosis of the proximal part. The second method also involves horizontal rhizome growth, yet separation from the parent stock occurs through tearing away of the distal part by water movement (MOLINIER & PICARD, 1952; BOUDOURESQUE & MEINESZ, 1982). While the second method may promote dispersion, the first strategy allows local colonization by horizontal growth at a maximum rate of 3 cm · a⁻¹ (MEINESZ & LEFEVRE, 1984). Although the horizontal growth rate of plagiotropic rhizomes has been frequently reported (CAYE,

