

Indehiscent fruits of *Posidonia oceanica* (L.): seed release and germination potential

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Abstract

The seagrass *Posidonia oceanica* can reproduce both vegetatively and sexually, although the frequency and intensity of seed production can vary greatly as it is linked to irregular flowering events. Despite the importance of fruit dispersal in ensuring the colonization success of new areas or the re-colonization of damaged meadows, little is known about the fruits life-span and the viability of seeds released after fruit dehiscence. In this study we investigated a) the dehiscence percentage of *P. oceanica* beach-cast fruits collected along the north-western Sicilian coasts in spring 2021 and 2022; b) the fate of indehiscent fruits; c) the percentage of viable seeds in indehiscent fruit. Fruits dehiscence was visually evaluated by observing the collected fruits after placing them inside *ad hoc* made floating arenas placed at sea, while the viability of seed from indehiscent fruits was assessed under laboratory-controlled conditions (temperature 20°C, salinity 37ppm, 12-hour dark/light cycle). Almost half of the fruits observed were indehiscent in both years (49% in 2021, 50% in 2022) and the indehiscent fruits sunk between 48 and 302 hours after the start of observations. 79% of these fruits in 2021 and 70% in 2022 had viable seeds for which appreciable growth of primordial leaves was visible a few days after transfer to the laboratory. These results suggest that in *P. oceanica*, sunken indehiscent fruits can release viable seeds even after a long period of time which may help promote the propagation of the species.