EXPERIMENTAL SEAGRASS RESTORATION USING FACILITATIVE INTERACTIONS AND FUNCTIONAL METRICS

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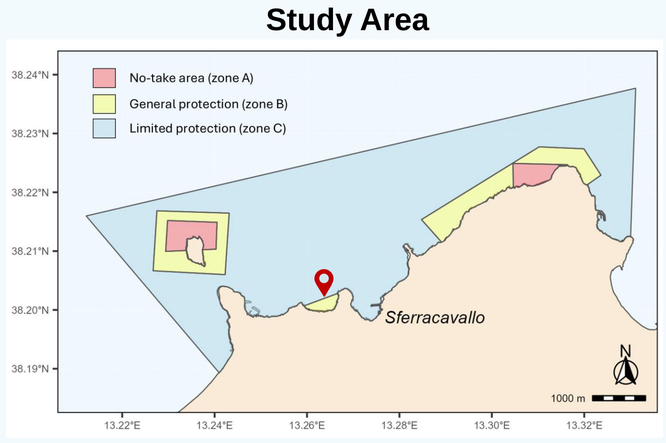
1 INTRODUCTION

Seagrass meadows are key ecosystems in the Mediterranean coastal areas supporting rich biodiversity and providing numerous ecosystem services[1]. However, these ecosystems are increasingly threatened by local anthropogenic pressures and global climate change[2]. Because their natural recovery after disturbance is slow, active restoration - increasingly incorporating innovative methodologies - has become an important tool for their conservation[3]. In this context, the study aim to investigate a facilitation-based interaction technique through an experimental restoration intervention of *Posidonia oceanica* and *Cymodocea nodosa*.

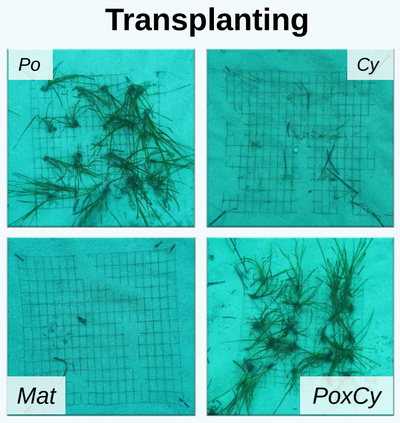
2 MATERIAL AND METHODS

The transplantation was carried out on a *P. oceanica* matte substratum within the “Capo Gallo–Isola delle Femmine” Marine Protected Area and involved 16 one-square-meter grids, arranged into four experimental units and randomly assigned to one of the following treatments: *P. oceanica* only, *C. nodosa* only, a combination of both *P. oceanica* and *C. nodosa* shoots, and an empty grid (matte only). Transplant performance has been monitored monthly using non-destructive methods, combining classical biometric techniques with functional measurements (chlorophyll fluorescence).

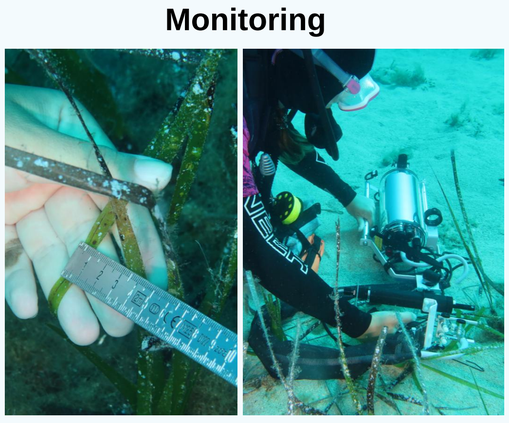
Study Area



Transplanting

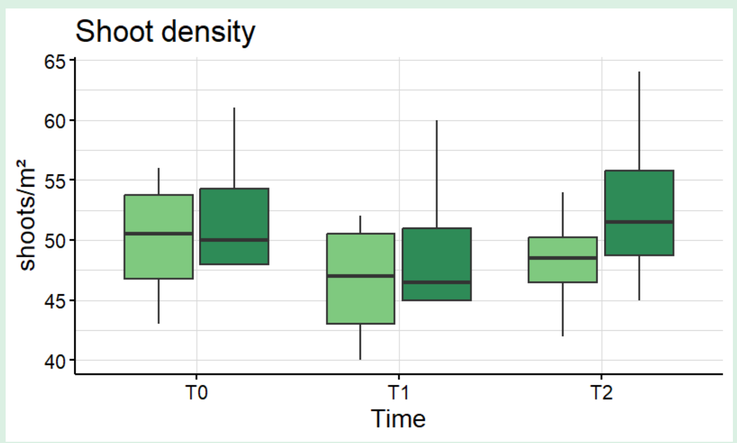


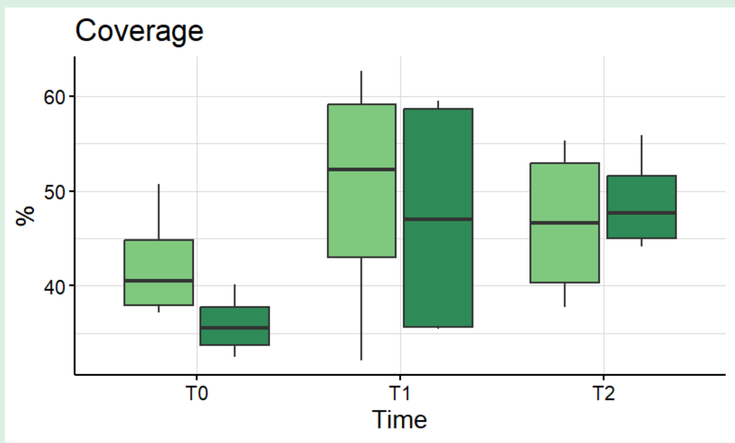
Monitoring

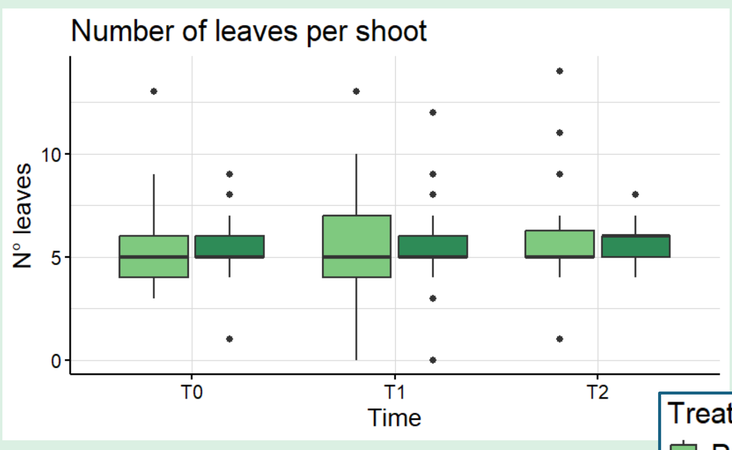


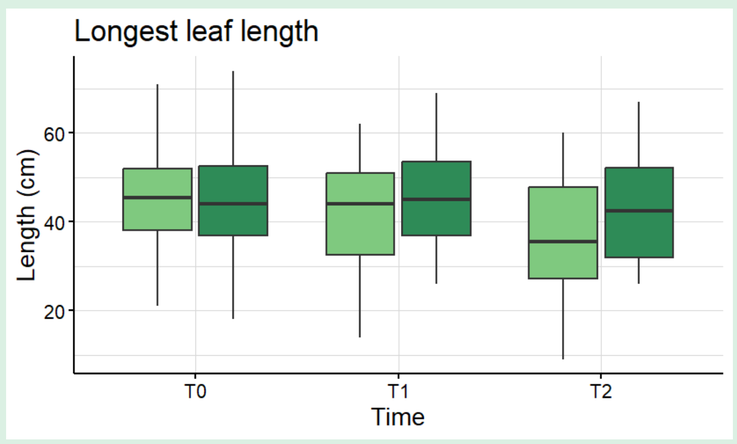
3 RESULTS

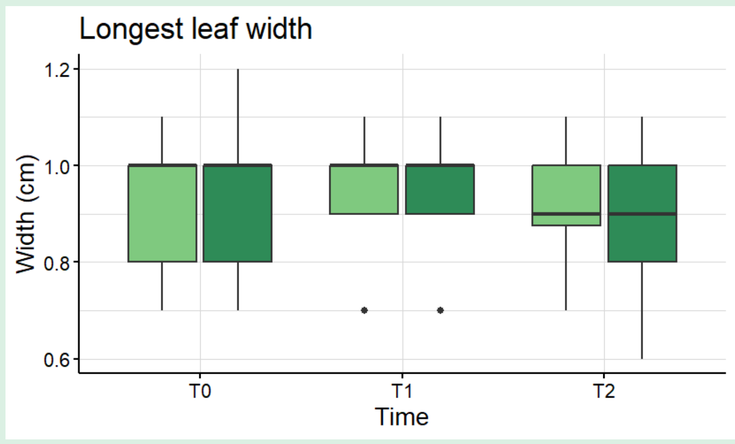
Biometric measurements

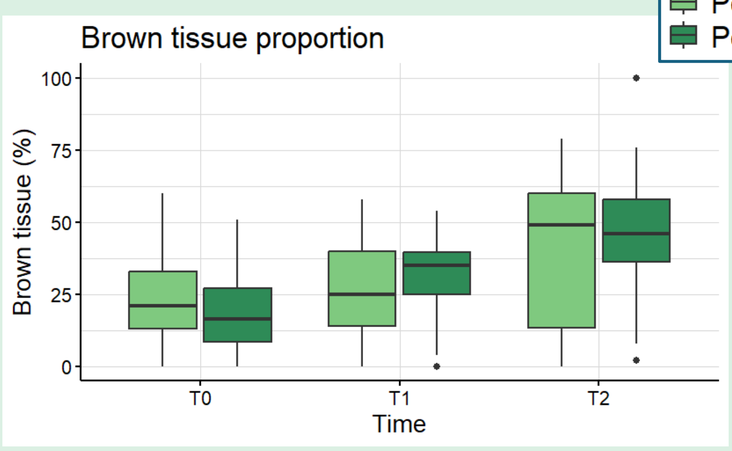


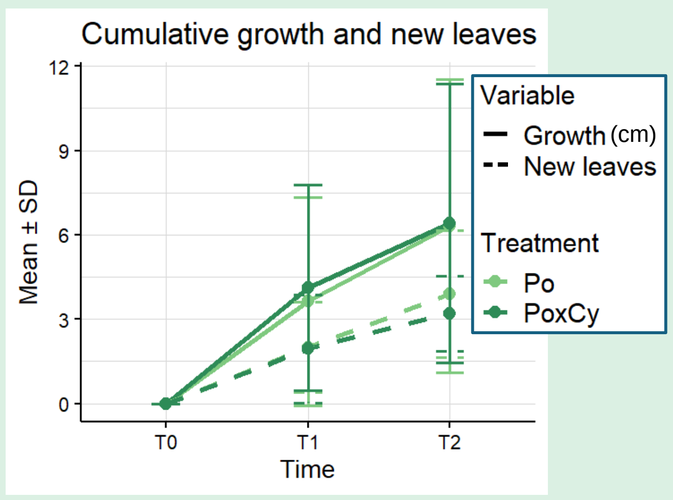


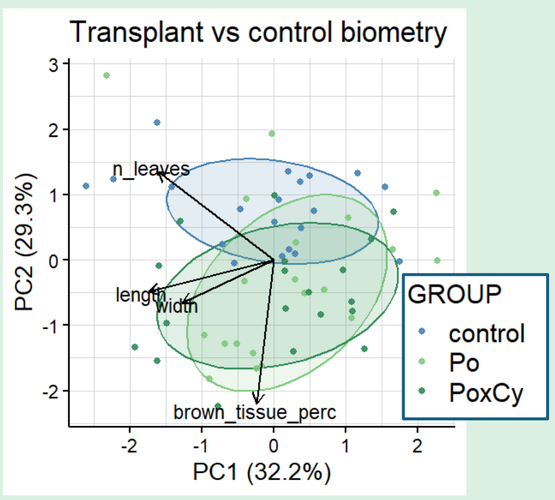




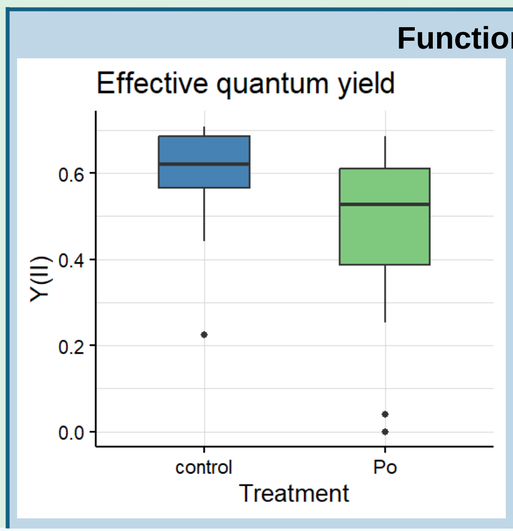


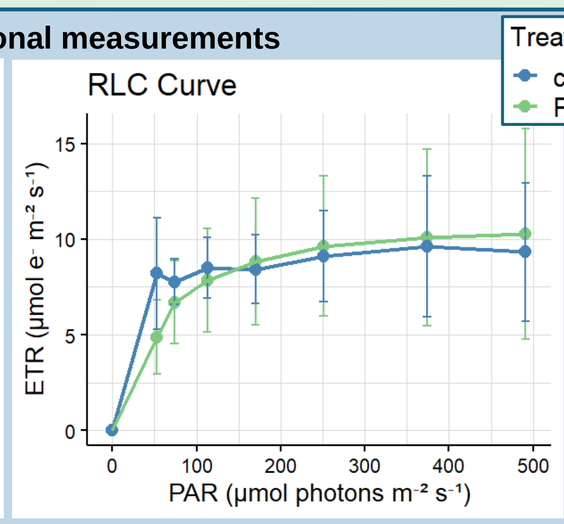






Functional measurements





4 CONCLUSIONS

The transplantation is exhibiting positive growth trends. No significant differences have been detected between single- and multispecies treatments, although emerging patterns in shoot density (per m²) are beginning apparent. Functional measurements provide additional insights into transplant performance relative to the adjacent *Posidonia* meadow. While some differences are noted, the overall results indicate that the transplantation is progressing successfully and holds promise for future restoration efforts.

5 BIBLIOGRAPHY

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