

Extreme variation in reproductive strategy: tropical seagrass superclone unveiled

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Enhalus acoroides is a large-sized seagrass species that is regionally threatened, yet considered widely distributed across the Indo-Pacific region. Despite its robust fruit dispersal capacity and slow rhizome growth rate favoring sexual reproduction, recent studies revealed substantial variation in the reproductive strategy for *E. acoroides*. The interplay between sexual and asexual reproduction significantly influences the resilience of seagrass beds to environmental change. As a result, there is a pressing need to enhance our comprehension of the reproduction strategy and dispersal capacity of *E. acoroides*, and the environmental drivers that control these life history traits. In this study, we investigated the clonal richness, genetic diversity, and genetic connectivity in 33 populations across diverse islands in the Andaman Sea (Phuket), the Gulf of Thailand (Koh Samui, Koh Phangan, Phu Quoc), the Camotes Sea (Leyte), and the Western Pacific Ocean (Guam). Our findings underscore substantial local and regional variability in the reproductive strategy of *E. acoroides* which has profound implications for the effective conservation of seagrass beds. Strikingly, we found unprecedentedly high levels of clonality in Guam where one exceptionally large and old clone of *E. acoroides* spans the entire island.

Keywords

Seagrass; Clonality; Dispersal; Conservation; Genetics