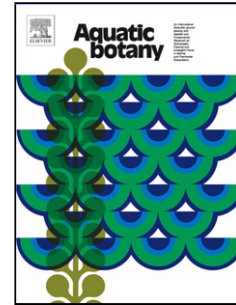


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Clonal and genetic diversity of the threatened seagrass *Halophila beccarii* in a tropical lagoon: resilience through short distance dispersal

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Highlights:

- A low level of genetic and clonal diversity was observed in *H. beccarii* in a Viet Nam lagoon habitat
- Sexual reproduction is an important mode besides asexual regrowth in maintaining *H. beccarii* meadows
- The resilience and survival strategy of *H. beccarii* is through local seed recruitment at very small distances and showing a very limited local clonal extension

Abstract

Halophila beccarii is a threatened tropical seagrass which has a narrow, restricted distribution in the shallow coastal areas of the Indo-Pacific. The monoecious *H. beccarii* reproduces both sexually or asexually and such mixed reproduction mode is important to stay resilient in a dynamic coastal environment. This study examined genetic diversity and structure of *H. beccarii* to determine its survival strategy within a tropical coastal lagoon of Southeast Asia (Central Viet Nam). Seven microsatellite loci gave an overall low level of allelic richness ($A_r = 1.9$), gene diversity ($H_E = 0.233$) and clonal diversity ($R = 0.27$). A small neighborhood size and short dispersal distance together with a significant fine-scale genetic structure within each site indicated that its survival strategy is through local seed recruitment over very short distances and a limited local clonal extension (< 5 m). These estimations together with a low selfing rate, no inbreeding and significant recent bottlenecks, all indicated that the main resilience strategy of *H. beccarii* meadows is through sexual reproduction and within site dispersal. Implications for

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