



**RESPONSES OF THE SEXUAL PROPAGULES OF *Enhalus acoroides*
(L.f. Royle) TO MARICULTURE-DERIVED CHANGES
IN WATER QUALITY**

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ABSTRACT – Marine aquaculture (or mariculture) has induced varying levels of environmental change in coastal waters, including the decline of seagrass populations. A microcosm experiment was carried out for 115 days to examine the responses of *Enhalus acoroides* sexual propagules to changes in water quality, specifically nutrient enrichment and reduced light availability resulting from addition of artificial fish feed used in mariculture. Seed germination was delayed by two days in the enriched microcosms. Fish feed loading resulted in higher concentrations of dissolved nutrients (NH_4^+ , NO_3^- , NO_2^- , PO_4^{3-}) and suspended particulate inorganic (PIM) and organic matter (POM). The nutrient enrichment stimulated the growth of both planktonic and epiphytic algae as evidenced by increased suspended and epiphytic chlorophyll content. Consequently, the higher water column turbidity and denser epiphyte layer resulted in at least 7% increase in light attenuation. The lower light availability for the growing propagules may account for 13% and 40% reduction in seedling growth and survival, respectively. The length and biomass of the roots the seedlings in the enriched microcosms were reduced by 41% and 35%, respectively, hence the seedlings remained weakly attached to the substrate. As sexually derived propagules are essential for the persistence of genetically diverse seagrass populations as well as recovery and restoration of damaged seagrass areas, the inability of these propagules to establish and survive the deteriorating water quality associated with mariculture could ultimately lead to the decline of seagrasses along with its key ecosystem functions. Therefore, there is need to reevaluate mariculture practices and identify ways to maintain healthy and resilient seagrass meadows.

Keywords: Enhalus acoroides, mariculture, nutrient enrichment, seagrass, sexual propagules



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