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Attachment: Abstract

*Evaluating the Effect of Milkfish Mariculture on the Contribution of *Enhalus acoroides* to Carbon Deposition in Seagrass Meadows*

Seagrass meadows sequester and store carbon in enormous quantities, making these coastal ecosystems an important sink of atmospheric carbon. In the coastal waters of Bolinao-Anda (Pangasinan), *Enhalus acoroides*, a large and wide-ranging seagrass species, often dominates most meadows like elsewhere in the tropical Indo-West Pacific region. In contrast to the small-sized other seagrass species, *E. acoroides* invests more heavily in belowground structures, i.e., rhizomes, roots, leaf sheath margins. As the circumstances of unearthing these structures may not be substantially frequent, the belowground production of seagrasses should form the bulk of the deposition and long-term storage of carbon in seagrass meadows. Such production, being photosynthetic in nature, is likely subject to prevailing environmental conditions (e.g., nutrient availability, light climate, and the need to anchor more strongly against wave-induced blowout, etc.). These environmental drivers, especially light and nutrients, are altered by human activities such as milkfish mariculture. In the wave-sheltered water bodies of Anda-Bolinao area, the milkfish mariculture has been intense and widespread for more than two decades now, resulting in the overall deterioration of the water quality within the mariculture centers and immediate vicinity. Such changes in nutrient quantity and light availability would likely affect the above- and belowground energy allocation of seagrasses, and thus, would have serious implications to the belowground carbon stocks in seagrass meadows within the impact range of mariculture activities.

This study will evaluate the effect of milkfish mariculture in Anda-Bolinao area on the capacity of *Enhalus acoroides* to contribute to the below-ground pool of carbon. Samples of *E. acoroides* along mariculture impact gradients will be collected and assessed for differences in the attributes of and relative energy allocation to the belowground parts. The results from this study will be crucial inputs in designing measures to conserve blue carbon ecosystems affected by mariculture activities.