Environmental Thresholds for the Distribution of the Seagrass, *Thalassia hemprichii* in Talim Bay, Philippines

Jose Mari L. Jimenez
Institute of Environmental Science and Meteorology
University of the Philippines – Diliman

DISSERTATION COMMITTEE
Prof. Rene N. Rollon PhD (Co-Adviser)
Prof. Wilfredo Y. Licuanan PhD (Co-Adviser)
Prof. Laura T. David PhD (Reader)

ABSTRACT

Seagrass beds are among the most productive coastal habitats. Global loss of seagrass beds due to land use change and coastal development threaten these important ecosystems and the services they provide. Siltation impacts seagrass beds by increasing the proportion of fine particles and organic matter in the sediment; and by the degradation of the light environment through increase in likelihood of sediment burial and total suspended particles. Together with variations introduced by water depth and emersion times, siltation creates gradients that may account for differences in seagrass survival and growth patterns. While some generalization about the impact of sediment condition, light availability and the hydrologic regime on seagrass growth parameters can be made, their significance may vary across and within sites. A proper understanding of the extent to which abiotic factors condition seagrass growth will be necessary to be able to formulate appropriate conservation and management strategies. This research is being undertaken to assess the relative importance of sediment conditions, light availability and the hydrologic regime on the survival and growth of *Thalassia hemprichii* in an intertidal seagrass bed in Talim Bay, Lian, Batangas. It is hypothesized that throughout the study area, different abiotic factors will limit seagrass growth.

The component studies in this proposed research will examine first, the relation of sediment characteristics and the distribution of *T. hemprichii* in the study area. By profiling sediment grain size and organic matter content in the unvegetated zones, the research aims to evaluate the sediment attributes that may limit seagrass colonization. A second component study will compare seagrass growth and environmental parameters in the vegetated zones. Through Principal Component Analysis, the study aims to surface patterns among the biotic and abiotic elements that may distinguish various sites within the study area. A third component study is an in situ transplantation experiment to disaggregate interactive effects of sediment grain size and hydrologic regime on growth of aboveground biomass of *T.hemprichii*. Finally, a fourth component study is a mesocosm experiment to disaggregate the effects of light availability and sediment grain size on nutrient assimilation of above- and belowground biomass of *T.hemprichii*.

Through the study of spatial variations on siltation effects on seagrass beds, the research aims to contribute to the improvement of impact assessments of coastal development projects on seagrass beds and to the better integration of terrestrial and coastal management strategies.