

Endophytic microbial diversity in seagrass beds from Cabo Rojo, Lajas and Vieques, Puerto Rico

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The occurrence of marine microorganisms has been documented from sand, sea foam, reefs, salt marshes, mangrove communities, fishes, invertebrates and other fauna. In these studies microorganisms have been isolated from external surfaces (epiphytic) or the water column, and most have been reported as pathogenic. Although research on endophytes associated to terrestrial plants have shown that these microorganisms can enhance growth of the host plants and deter insect and animal herbivory, studies on endophytic microorganisms associated to healthy tissue in marine plants and algae are scarce. Sea grass beds support phytoplankton, epiphytic flora, invertebrates, and benthic algae. They also stabilize the substrates where they grow and provide essential habitat for economically important invertebrate and fish species and threatened endangered species, like the manatee and hawksbill turtles. Fungal endophytes from sea grasses were reported for the first time in 1998, but although protection of the health of this essential fish habitat is critical for the long term survival of marine species of economic importance, the role of endophytic flora within the plants is still unknown.

The main research goal of Sandra Maldonado from the Department of Biology of the University of Puerto Rico at Mayagüez is to determine the endophytic microbial diversity in *Thalassia testudinum* and *Syringodium filiforme* from different geographic areas of Puerto Rico. This project will also: determine temporal and spatial distribution; host specificity and seasonality of the endophytic flora associated to healthy tissue of *T. testudinum* and *S. filiforme*; and improve cultivation and preservation techniques for the endophytic flora recovered. Future research on sea grass endophytes will be facilitated by compiling diversity, distributional and temporal data for a linked, online database.

The proposed work has an interdisciplinary approach to understand the role and importance of endophytic microorganisms in the health and survival of *T. testudinum*. The knowledge acquired will provide new tools for appropriate management of fisheries, the planning of the development of the coastal zone and can be integrated into the region's decision and policy making processes.