

FILE: SEA GRASSES

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Vegetation
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Inv. 4/85

DISCUSS NATIONAL MONUMENT
REFERENCE

BIOLOGY OF GULF OF MEXICO AND CARIBBEAN
SEAGRASSES WITH PRINCIPLES OF RESTORATION

Dr. Anita Thorhaug

Florida International University

Tamiami Campus

Miami, Florida 33199

Seagrasses are frequently the dominant nearshore organism in clear coastal, estuarine, lagoonal and back reef areas throughout the Gulf of Mexico, Florida East coast estuaries and Caribbean. The dominant species in much of the Caribbean and Gulf of Mexico is Thalassia testudinum (where salinities do not fall below about 20⁰/oo, temperatures do not fall below 15⁰C for extensive winter periods, and turbidity allows clear light penetration to the bottom). In more brackish water and intertidal environment Halodule wrightii (formerly called Diplanthera) frequently predominates. Both Halodule and Syringodium filiforme can be successional stages in seagrass to a dominant Thalassia community, an impacted community. Thalassia has a far more dense rhizomal and root system frequently binding sediment 4-6 feet below the surface. As a long-lived plant, fossil rhizomes have been located many feet below the surface, still active as sediment binding. Both Halodule and Syringodium have rhizome and root systems far less effective as sediment stabilizers and fairly close to the surface. The genus Halophila (several species found in the Gulf and Caribbean) has an extremely light rhizome and root structure in

comparison to the above. The biomass or production of plant material per day differs greatly between the four species with Thalassia being the highest quality producer and Halophila last. The food web associated with the various seagrasses differs markedly between Thalassia (a rich above and below sediment fauna) (Thorhaug and Roessler, 1977; Roessler, et al., 1975; Thorhaug et al., 1979; Thorhaug, Roessler and McLaughlin, 1977; Thorhaug and McLaughlin, 1978) and Halophila (only a diverse subsediment fauna). In many locations, the Halodule community has less fauna diversity and abundance, fewer epibionts (Thorhaug, et al., 1976) and less benthic macroalgae associated with it than a Thalassia community (Thorhaug and McLaughlin, 1978). (Where this principle may not hold is in a late successional stage of Halodule after impact to a former Thalassia community.) Syringodium and its associated community is the least studied and no apparent generalization about the food web are now available except a sparser epibiotic population and fewer above-sediment organisms are usually apparent (Thorhaug, Roessler and McLaughlin, 1977). Syringodium distribution in the Caribbean is patchy, although it is found throughout the Gulf of Mexico. Restoration of Thalassia by seed has been reported lightly successful in South Florida (Thorhaug, 1974, 1979a, 1979b). Thalassia plugging was not successful in the middle west Florida coast (Kelly et al., 1971; Van Breedveld, 1976). Thalassia turion planting was successful on the Texas coast (Carangelo, et al., 1979) and not on the upper Gulf of Mexico (Eleuterius, 1972). Halodule wrightii was successfully plugged in South Florida (Thorhaug, 1979), in middle west Florida (Van Breedveld, 1976), Texas (Carangelo, et al., 1979) and not successful

in the Florida Panhandle (Phillips, 1977 and personal communication).

Ruppia has been successfully planted in north Florida in fresh to estuarine environments (Winter, 1978).