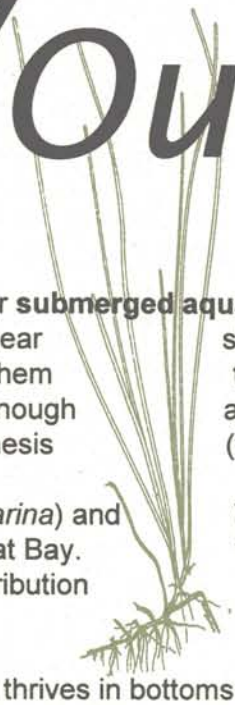
NJ Sea Grant Marine Advisory Service

SAV Our Seagrass

sea note series no.12



Seagrass meadows or **submerged aquatic vegetation (SAV)** are underwater plants that inhabit shallow estuaries or near shore waters. They produce flowers and have a root system that anchors them to the bottom. They can only grow in portions of the estuary that are shallow enough and clear enough for the plants to receive the sunlight they require for photosynthesis (the process of converting sunlight into food).

Eelgrass (*Zostera marina*) and **Widgeon grass** (*Ruppia maritima)* are the two species of **SAV** found in Barnegat Bay. These plants are considered seagrasses and not algae or seaweeds. Their distribution depends upon water temperature and salinity (the amount of salt in the water).

Fig. 1

Eelgrass, **(Figure 1)** thrives in bottoms of mud-sand and forms underwater meadows of thin, narrow, grasslike, green leaves, which float and wave in the tidal currents. The leaves range in size from six to 36 inches in length and are attached to the bottom by roots. In Barnegat Bay, eelgrass meadows primarily occur along the eastern shores from the Toms River bridge south into Little Egg Harbor. The lower salinity north of the Toms River bridge inhibits eelgrass growth. When eelgrass dies it changes from a bright green color to black, floats in the water, and washes onto Barnegat Bay beaches and shores.

Widgeon grass **(Figure 2)** prefers a more sandy bottom than eelgrass. It has needle-like, short leaves about two inches in length that branch off a slender stem. In Barnegat Bay, widgeon grass is primarily found on the eastern side of the Bay where the bottom is relatively shallow and sandy. It also occurs in some sandy areas in Little Egg Harbor. Widgeon grass can tolerate a wide range in salinity.

Fig. 2

Importance of Seagrass Meadows

In spring and summer, these plants grow and take up nutrients that would otherwise be available to harmful phytoplankton (microscopic single-celled plants). When the plants die and decay in the fall, these nutrients are slowly released into the Bay when blooms of phytoplankton would not be as harmful. At this time, they are an important source of nutrients for many organisms living in the Bay.

Seagrass beds also reduce shoreline erosion by dissipating the energy of incoming waves. Their roots act to bind the sediments on the bottom and hamper water currents. As a result of decreasing water flow, suspended sediments will settle out of the water column and thus, increase water clarity.

These plants support the food chain and provide breeding and nursery grounds for commercially and recreationally important finfish and shellfish. Ducks, Canada geese, and Atlantic Brant feed upon the seagrasses. These beds are also home to invertebrates (animals without a backbone) and other plants.

Decline of Seagrass Meadows

Paul "Pete" McClain examines eelgrass beds in Barnegat Bay during his 1996 study.

Loss of **SAV** beds can have a detrimental effect upon an estuary. When seagrass meadows decline, nutrient levels increase and result in heavy phytoplankton blooms. The water becomes discolored which limits the water depth that the sun can penetrate. This can cause the seagrasses to die because they need light for photosynthesis. The increase in nutrients can also cause the algae that grow with the seagrass leaves to become thickened, which then blocks the sunlight needed by these seagrasses and can result in their death.

In the early 1930s, wasting disease, decimated 90 per cent of the North American eelgrass beds from Nova Scotia to North Carolina. This disease causes blackish blotches to form and cover the eelgrass leaves and results in death of the plant. The cause of the disease is is a Protist, a marine slime mold called *Labyrinthula zosterae*, which was identified only recently. Plants growing in higher salinity regions appear more susceptible to the disease (Muehlstein, L.K., D. Porter and F.T. Short 1991). In 1995 wasting disease was discovered in Barnegat Bay by Paul "Pete" McClain, (pictured above) who received NJ Sea Grant Development funds to partially support a three phase seagrass study of growth rate and the extent of cutting damage, wasting disease analysis, and a mapping project.

Boat and Personal Watercraft Impacts

Boats and personal watercraft (i.e., jet skis) can have a negative impact upon seagrass beds. Propellers, prop wash, and vessel wakes can uproot seagrasses and resuspend sediments. When bottom sediments become resuspended in the water column, water clarity decreases and light penetration is reduced. Many seagrass beds are damaged by propeller scarring, when the propeller cuts a path through the seagrass bed. Anchoring in seagrass meadows can also damage this habitat. Therefore, both boaters and personal watercraft users should remember these beds are an important component of the Barnegat Bay ecosystem and avoid running through or anchoring in seagrass meadows.

Figure 1. Eelgrass (*Zostera marina*). Reprinted from: Volunteer Estuary Monitoring: A Methods Manual. U.S. EPA, EPA 842-B-93-004, Office of Water (4504F). December 1993. **Figure 2. Widgeon Grass (*Ruppia maritima*).** Reprinted from: Volunteer Estuary Monitoring: A Methods Manual. U.S. EPA, EPA 842-B-93-004, Office of Water (4504F). December 1993. **Photo:** Courtesy of Pete McClain **Literature Cited:** Muehlstein, L.K., D. Porter and F.T. Shorter. 1991. *Labyrinthula zosterae* sp. Nov., The Causative Agent of Wasting Disease of Eelgrass, *Zostera marina*. Mycologia 83(2):180-191.

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