SEAGRASSES OF CHARLOTTE HARBOR

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What are seagrasses? Seagrasses are flowering plants that grow underwater in marine and estuarine environments. In addition to flowers and their seeds, seagrasses, like plants on land, have roots and leaves that do different "jobs" for the plant… that is, the roots access nutrients buried in the sediment, while the leaves photosynthesize (convert sunlight to energy). Having roots, leaves, flowers, and seeds makes seagrasses (and their freshwater cousins) different from algae.

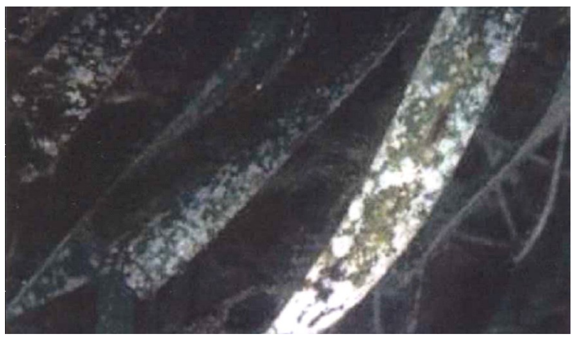
Where are seagrasses found and why? Seagrasses are found in bays, lagoons and shallow coastal waters where sediments are soft enough for them to become anchored and establish roots and where sufficient light penetration through the water column occurs.

Why can some live in more saline/ fresh/tannins/sand bottom/mud/ etc.? Worldwide there are about 60 seagrass species. In Florida, seven species occur; six of these can be found in Charlotte Harbor (more on these species and where they're found below).

Shoal grass – has very thin, flat blades (leaves) and is found throughout Charlotte Harbor. It can grow in a wide range of depths and salinities. It is fast growing and commonly found in disturbed sediments making it an ideal "pioneer species" (first to colonize). Shoal grass can also tolerate periodic air exposure and as a result is found in shallower water than our other seagrass species. However, because Shoal grass can also tolerate low light levels it is one of the deeper growing species found too.

Turtle grass – is our most common species in Charlotte Harbor. It has wide, flat blades. Turtle grass requires stable salinities, stable sediments and high levels of light penetration. In the seagrass world, Turtle grass is long lived and slow growing. It is able to tolerate short-term stresses well (such as seasonal salinity changes or episodic turbidity events), but because of its slow growth, Turtle grass takes a long time to recover from prop scar damage.

Shoal grass—FSG Image



Turtle grass—FSG Image

Manatee grass—FSG Image

Manatee grass – is round; if you roll it in your fingers, it feels like spaghetti. Like Turtle grass above, Manatee grass also requires stable salinities; however its salinity range is much narrower and higher on the salinity scale. Manatee grass is often found growing in deeper water than Turtle grass; but it's not uncommon to find Manatee, Turtle and Shoal grass growing together. Like Turtle grass, Manatee grass is long lived and slow growing.

Widgeon grass – resembles Shoal grass, but is capable of branching (other seagrasses cannot). Widgeon grass is sometimes not considered a true seagrass, but rather a freshwater grass that can tolerate saltwater. It grows in bays and creeks with brackish water; will establish quickly and disappears equally quickly. In our area, Widgeon's grass is sometime found in the Myakka River, along the West Wall and in Coral Creek.

Paddle grass and Star grass –are generally restricted to low light environments. They are often found in deeper, darker and even turbid water, and are therefore less commonly observed, with the exception of Collier County, where both species are quite prevalent. Both Paddle grass and Star grass are very tiny seagrass species, only growing to heights of a few inches. Paddle grass has two paddle shaped leaf blades and Star grass generally has 7-9 paddle shaped blades.

What marine wildlife is dependent on seagrasses? Why do some like specific types of seagrasses? A whole host of wildlife species depend on seagrasses. Turtles, manatees and parrotfish

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feed on seagrass directly. Many commercially and recreationally important species such as groupers, snappers, seatrout, scallops, shrimps, blue crabs and stone crabs utilize seagrasses for food and shelter. In addition, seagrasses provide food and shelter for many fish and invertebrate species that our commercially and recreationally important species feed upon. Some wildlife species, in particular manatees and green sea turtles, selectively feed on turtle and manatee grass. This is probably because these seagrasses are large bodied, have large thick leaves and a much greater biomass than other seagrass species.

What effect does Red tide/storms/pollution and other outside influences have on seagrasses and how does that affect the critters? Red tide generally will not have a negative impact on seagrasses but can have a negative impact on animals that feed upon them if red tide toxins make their way onto the plant tissue. Likewise, seagrasses are pretty resilient against storm damage. In fact because they are rooted, seagrasses help to trap sediments stirred up during storms thus reducing turbidity and aiding water clarity. Pollution, specifically from nutrients however is a different story. As nutrient levels in coastal environments change so do the plants species. All plants require light, water and nutrients to grow. Studies have shown that seagrasses generally dominate in waters with low nutrients and high light availability. In contrast, macroalgae (also called drift algae or seaweed) and microalgae (microscopic) tend to dominate where there is less light and more nutrients. As a result, one could expect as nutrient levels increase, seagrasses to be replaced by algae. From an ecosystem perspective, the shift from seagrass to algae could have cascading impacts as animals dependent upon seagrass for food and shelter, spotted seatrout for instance, are replaced by less desirable species such as jellyfish. Other negative influence on seagrasses include dredge and fill activities, dock construction, trampling, anchoring, propeller damage and boat grounding.

> Florida's roughly 2.2 million acres of seagrass is estimated to provide more than $20 billion in ecosystem services annually. Ecosystem services are functions that contribute to our wellbeing and help sustain the environment such as maintaining good water quality or harvestable fish.

Sources:

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How do we know if our seagrass resources are changing? Water clarity and salinity are naturally variable in all estuaries around the world, including Charlotte Harbor. These variable conditions are often magnified in un-natural ways, ultimately impacting seagrasses. Seagrasses in Charlotte Harbor are monitored in two ways. Since 1982, the Southwest Florida Water Management District has conducted aerial surveys to determine seagrass acreage within Charlotte Harbor. This is accomplished by taking photographs from an airplane flying at a known elevation, and then identifying regions of seagrass coverage in each image. In this way, researchers can estimate seagrass resources across a very large area in a short amount of time. In contrast a monitoring program conducted by the FDEP Charlotte Harbor Aquatic Preserves (CHAP) describes both where seagrasses grow, and how much seagrass is there. Twenty-six permanent underwater transects have been monitored annually in upper Charlotte Harbor since 1999. Think of a transect as a road with between five and fifteen locations spaced along its length. Each year, staff from the CHAP return to these precise locations – several hundred throughout Charlotte Harbor, Gasparilla Sound, Lemon Bay, and elsewhere -- by getting in the water, with dive masks near the bottom, to estimate how much seagrass is present. The purpose of long-term resource monitoring programs such as the two mentioned above is to detect changes in the environment. Once detected, research into the causes of the change can be conducted so that solutions may be identified.

What kind of seagrass restoration efforts have occurred in our area? Restoration efforts have included projects to improve water quality, projects to stabilize sediments, projects to encourage natural recruitment and direct plantings to re-establish seagrasses. A couple of the most visible restoration projects in our area have been the bird stakes in Turtle Bay and behind Thornton Key. Bird stakes, generally constructed of pvc pipe with a wooden block on top that serves as a perch are often used to encourage seagrass to re-establish in areas damaged from prop scarring. Birds are attracted to the stakes and while they roost they poop in the water. Nutrients from the bird feces help to facilitate seagrass colonization into the damaged area. According to EarthBalance (a local consulting firm), the Turtle Bay restoration project utilized a combination of bird stakes and sediment tubes (to stabilize the scar) with bare root Shoal grass plantings. After three years, the prop scars were stabilized and deemed restored. The continued use of the bird stakes helps to protect this shallow area from further prop damage.

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