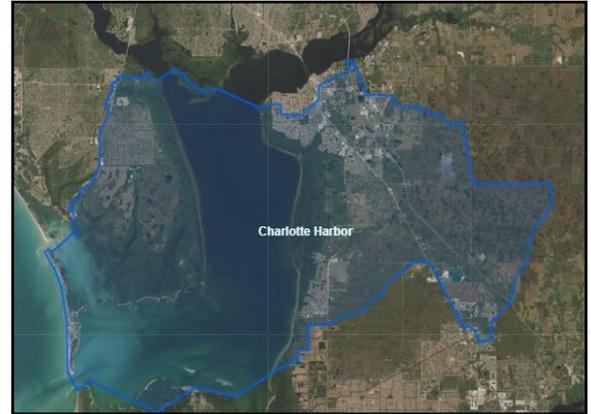


Seagrass in Charlotte Harbor

FISH, WILDLIFE, & HABITAT PROTECTION

Summary

Charlotte Harbor is the largest, deepest, and most diverse of the estuaries in this region. Charlotte Harbor is influenced by three watersheds - Peace River, Myakka River, and Charlotte Harbor Proper. Fresh water from the Peace and Myakka rivers mixes with salt water coming through Boca Grande Pass from the Gulf of Mexico. While areas closer to the Pass receive significant tidal flushing (Gasparilla Sound), areas in the upper harbor near the mouths of the rivers have dissolved oxygen, color, and salinity levels that are significantly affected by the seasonal fluctuations in river discharges. Seagrasses present within Charlotte Harbor include Shoalgrass (*Halodule wrightii*), Turtlegrass (*Thalassia testudinum*), Widgeon grass (*Ruppia maritima*), and Manatee grass (*Syringodium filiforme*)¹.



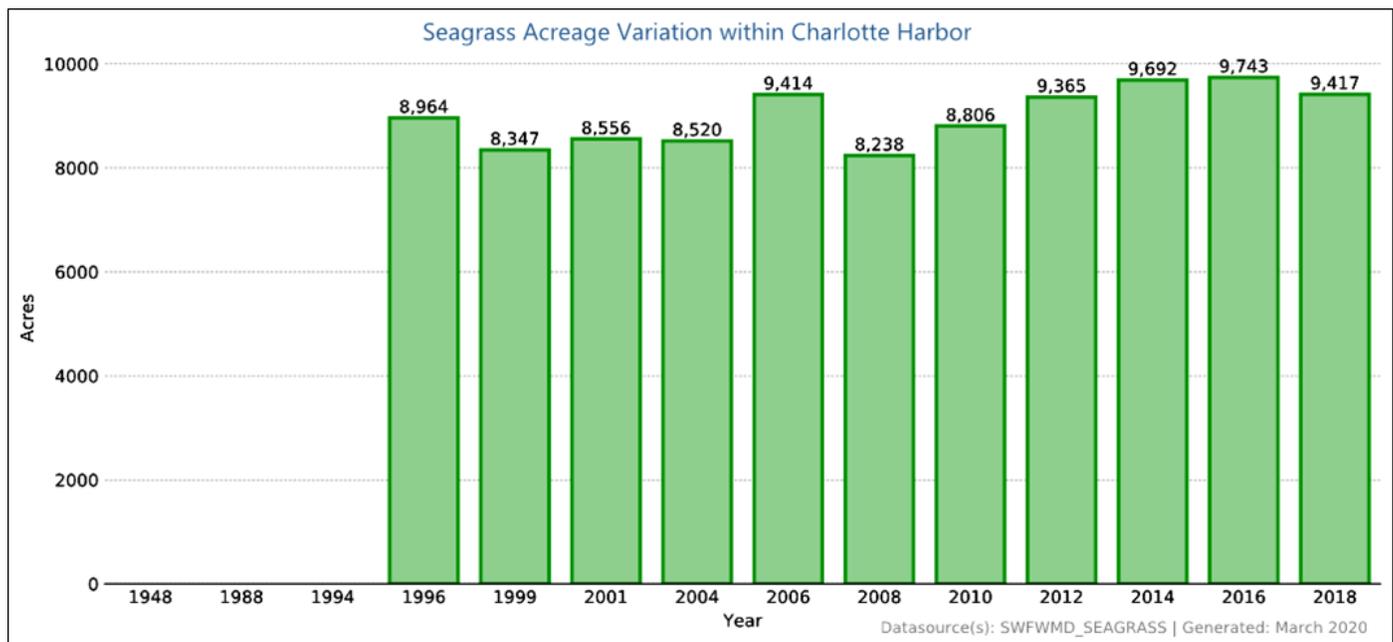
Seagrass Measures Water Quality and Improves Estuary Health

Over 2.2 million acres of seagrass have been mapped in estuarine and nearshore Florida waters. Many economically important fish and shellfish species depend on seagrass beds during critical stages of their life. Seagrass beds also contribute to better water quality by trapping sediments, storing carbon, and filtering nutrients from stormwater runoff. Florida had historical declines in seagrass acreage during the 20th century. Seagrass requires clean water and ample sunlight to grow. Because seagrass thrives in clean and clear water- it is used by agencies and local governments as a way to measure water quality. This is done in two ways:

- Mapping changes in seagrass acreage and location over time with aerial photography (spatial coverage). This is valuable for estimating seagrass locations, acres and broad changes over time.
- On-the-ground monitoring of changes in species composition, estimation of bottom cover in a seagrass bed (abundance), and maximum depth in which seagrass can grow due to light availability and water clarity (deep edge). This monitoring works to characterize the density, complexity, and stability of those seagrass meadows.

Seagrass Acreage

The below graphic depicts results from bi-annual seagrass mapping in Charlotte Harbor from 1996-2018². Seagrass in this area has remained relatively stable over time since monitoring began.

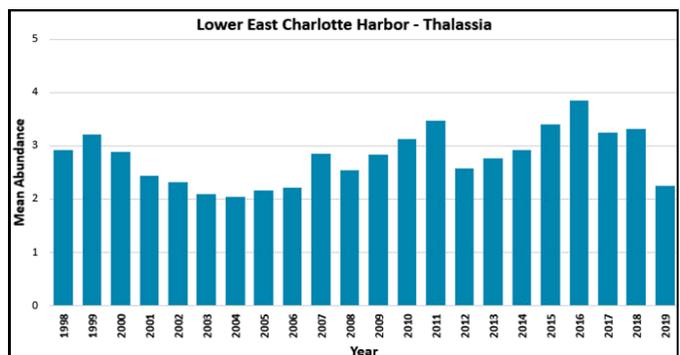
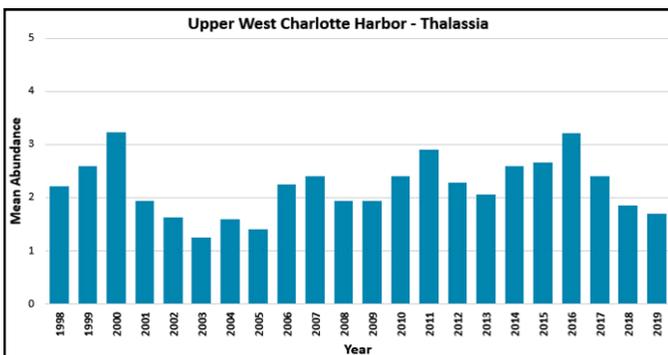
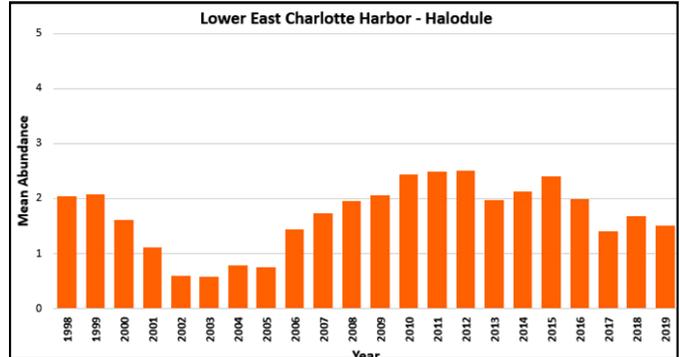
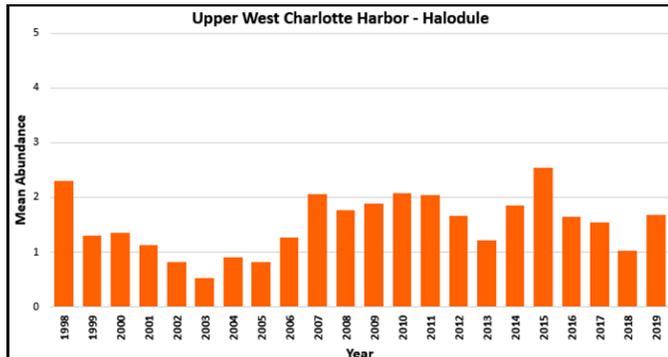
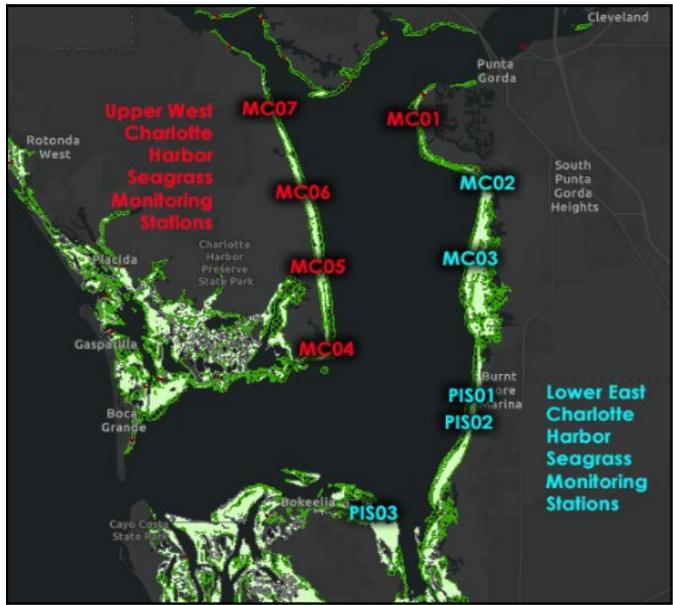


Monitoring Sites

Monitoring is the repeated observation of a system to detect localized changes in a specific seagrass meadow over time in response to environmental conditions and light availability as well as measure overall health. The map to the right shows locations of monitoring sites in selected meadows in Charlotte Harbor by the Florida Department of Environmental Protection Aquatic Preserve staff. Annual seagrass monitoring in the Harbor examines species types, density, distribution and how deep the grass will grow (this is dependent on light availability).

Seagrass Diversity and Health

The bar graphs below show the total abundance for two seagrass species at different monitoring locations in Charlotte Harbor Upper West part of the estuary (shown in red) and Lower East (shown in blue) for the years 1998-2019³. They demonstrate that while Shoalgrass (*Halodule wrightii*) remains stable throughout the system, both sites have seen declines in Turtlegrass (*Thalassia testudinum*). Note that a diverse seagrass species composition is an important indicator of a healthy seagrass meadow and serves as more complex habitat for fish and shellfish.



¹Yarbro, L. A., and P. R. Carlson, Jr., eds. 2016. Seagrass Integrated Mapping and Monitoring Program: Mapping and Monitoring Report No. 2. Fish and Wildlife Research Institute Technical Report TR-17 version 2. vi + 281 p.

²Southwest Florida Water Management District (2008, 2016) and South Florida Water Management District (2008, 2014)

³Brown, Melynda. 2017. Charlotte Harbor Aquatic Preserves: 18-Year Results of the Seagrass Transect Monitoring Program 1999-2016. Florida Department of Environmental Protection.

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