Seagrass in Estero Bay

FISH, WILDLIFE, & HABITAT PROTECTION

Summary

Estero Bay was the first aquatic preserve in Florida. The western border consists of a chain of barrier islands. The estuary has significant freshwater inputs from small rivers and weak tidal exchange due to the restricted size of the four main inlets. Although the estuary is separated from the Charlotte Harbor estuary, it does receive water indirectly from the Caloosahatchee River through San Carlos Bay. Seagrasses present within Estero Bay include mostly Turtlegrass (*Thalassia testudinum*), followed by Shoalgrass (*Halodule wrightii*) and Manateegrass (*Syringodium filiforme*), as well as some Widgeongrass (*Ruppia maritima*), Paddlegrass and Stargrass (*Halophila* spp.) [1].

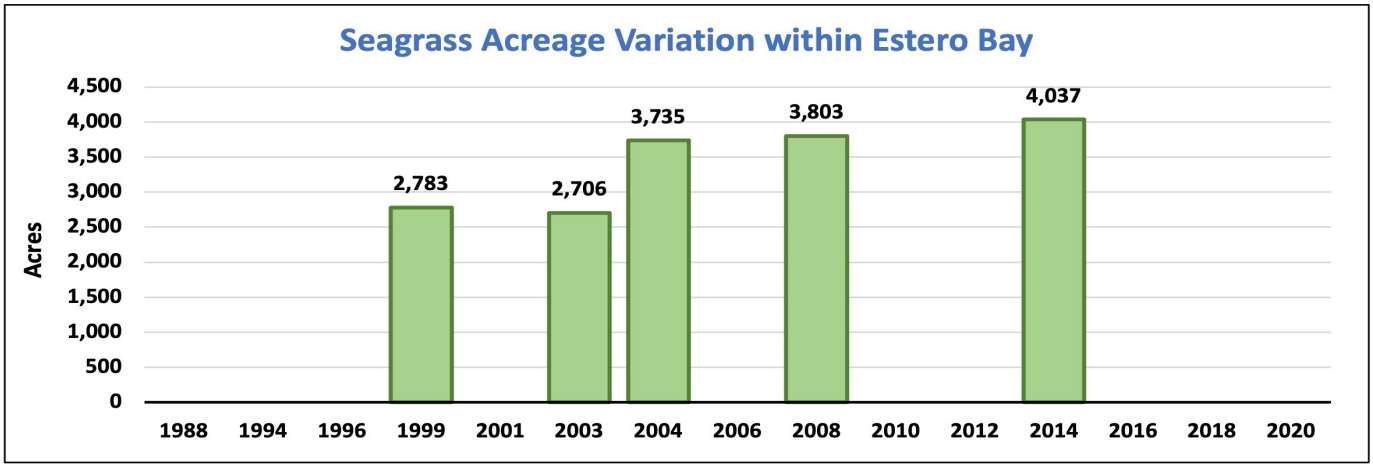
Seagrass Measures Water Quality & Improves Estuary Health

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

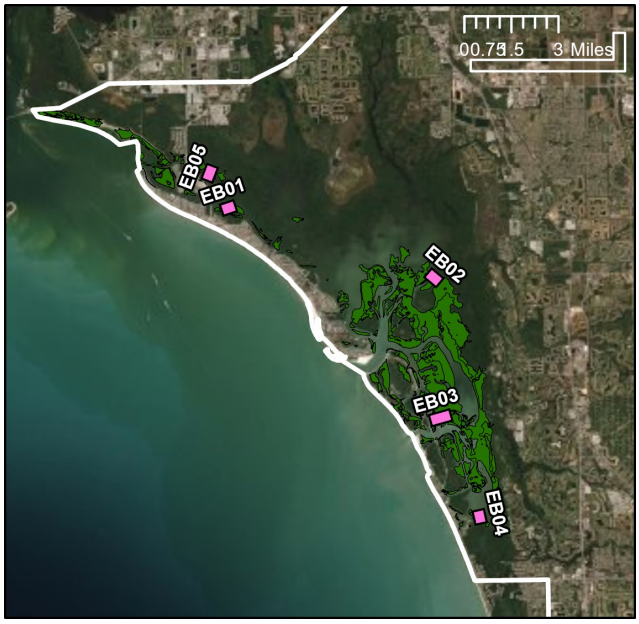
The below graphic depicts results from seagrass mapping in Estero Bay from 1999-2014[2]. From 2004 to 2014, seagrass acreage in the Estero Bay basin appears relatively stable with slight increases. However, consistent mapping of seagrass with aerial photography is needed at least every 3-4 years in order to evaluate trends in acreage. Updated data for the region was collected by the South Florida Water Management District (SFWMD) in the winter of 2020-2021 and will become available in early 2022.



For more information, please visit the CHNEP Water Atlas at chnep.wateratlas.usf.edu

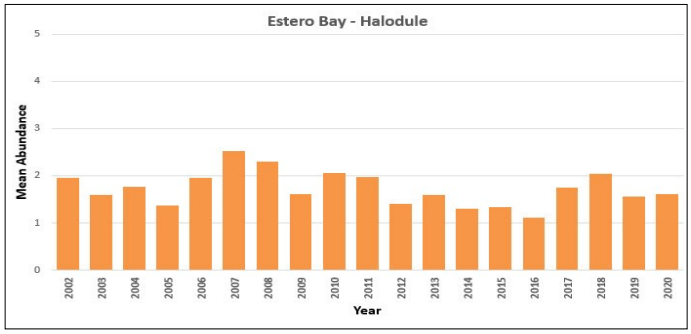
Monitoring Sites

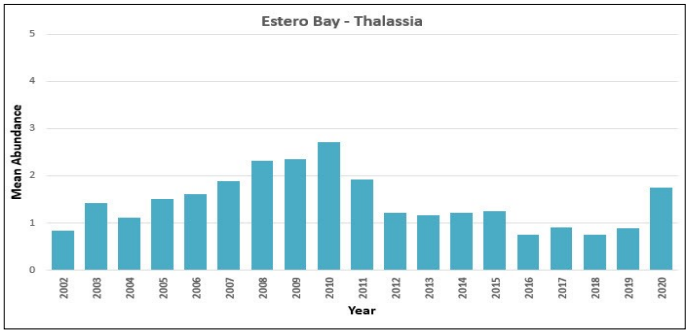
Monitoring is the repeated observation of a system to detect localized changes in a specific seagrass meadow over time in response to environmental conditions and light availability as well as measure overall health. The map to the right shows locations of monitoring sites (highlighted in pink) in selected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

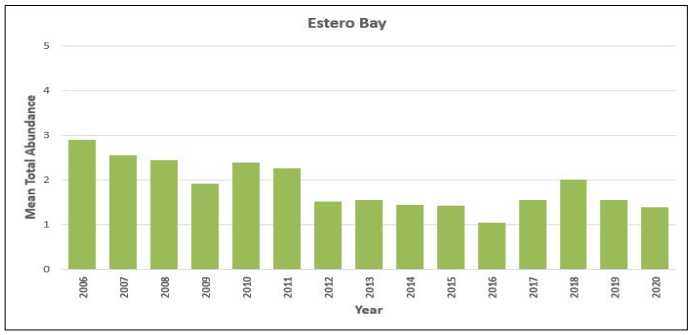


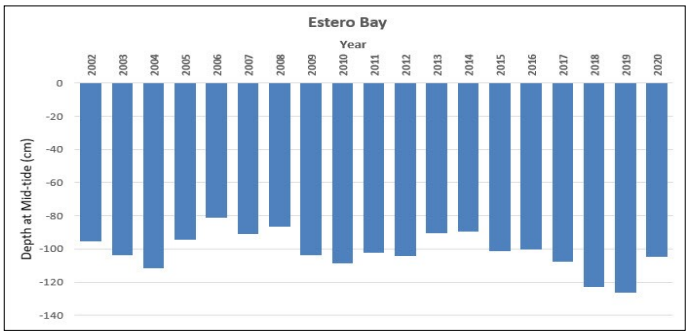
Seagrass Diversity and Health

The bar graphs below show the total abundance for two seagrass species, Shoalgrass (*Halodule wrightii*) and Turtlegrass (*Thalassia testudinum*), total amount of grass, and depth at which the grass was growing at the monitoring sites in Estero Bay for the years 2002-2020[3]. They demonstrate that while Shoalgrass (*Halodule wrightii*) remains relatively stable throughout the system, seagrass and Turtlegrass (*Thalassia testudinum*) saw declines in abundance at multiple monitoring locations starting as far back as 2011. However, data collected in 2020 shows modest gains (though not full recovery) for Turtlegrass throughout the area. 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.









[1]Yarbro, 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.
[2]South Florida Water Management District (1999, 2003, 2004, 2008, 2014)
[3]Estero Bay Aquatic Preserve. Seagrass Monitoring Program (2002-2020).

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