

Seagrass in Pine Island Sound and Matlacha Pass

FISH, WILDLIFE, & HABITAT PROTECTION

Summary

Pine Island Sound basin also encompasses Matlacha Pass and San Carlos Bay. This area is known for its extensive seagrass beds. Pine Island Sound receives tidal flushing from nearby Boca Grande, Captiva, and Redfish Pass and contains both Pine Island Sound and Matlacha Aquatic Preserve.s The basin is influenced by inputs from the Caloosahatchee River and Punta Rassa Pass to the south. Seagrasses present within Pine Island Sound basin include mostly Manateegrass (*Syringodium filiforme*), followed by Shoalgrass (*Halodule wrightii*) and Turtlegrass (*Thalassia testudinum*), as well as Paddlegrass and Stargrass (*Halophila* sp.)¹. Propeller scarring and freshwater from the Caloosahatchee River continue to impact seagrass beds throughout the region.

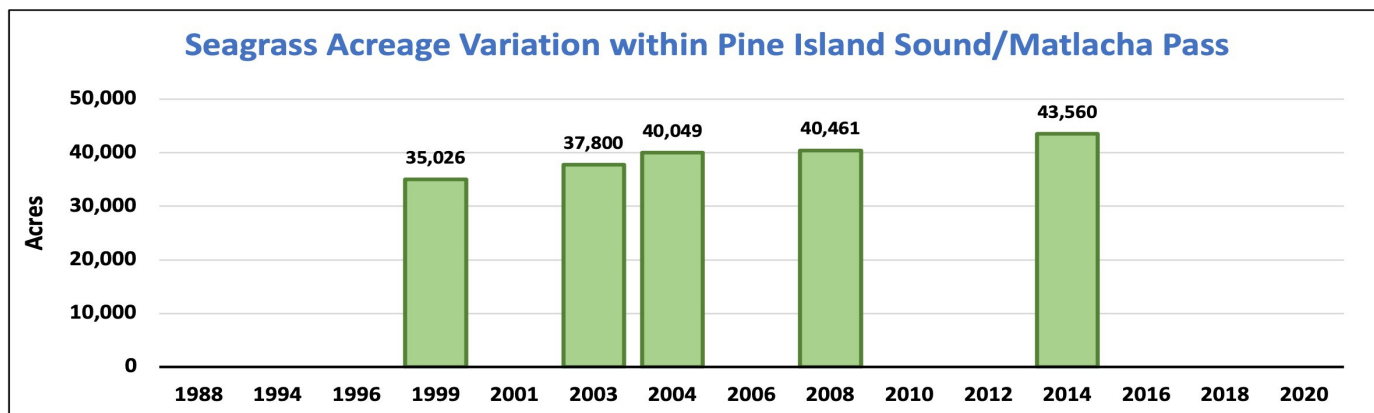
Seagrass Measures Water Quality & Improves Estuary Health

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 Pine Island Sound/Matlacha Pass from 1999-2014². Due to tidal flushing in Pine Island Sound, which hosts the majority of the regions seagrass, acreages in this area have remained relatively stable over time since monitoring began. 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

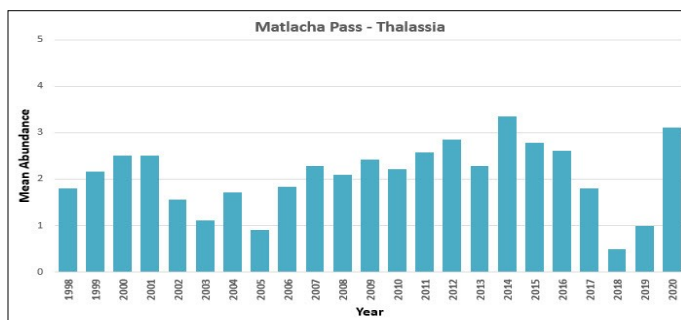
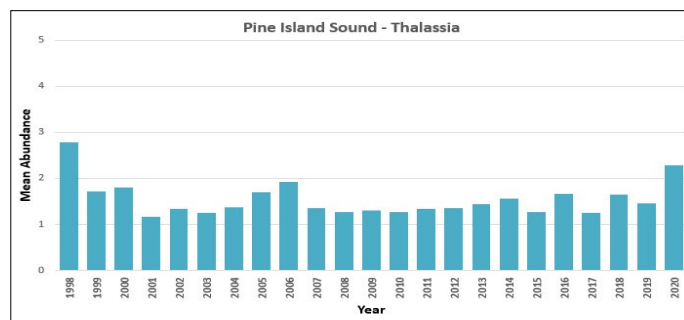
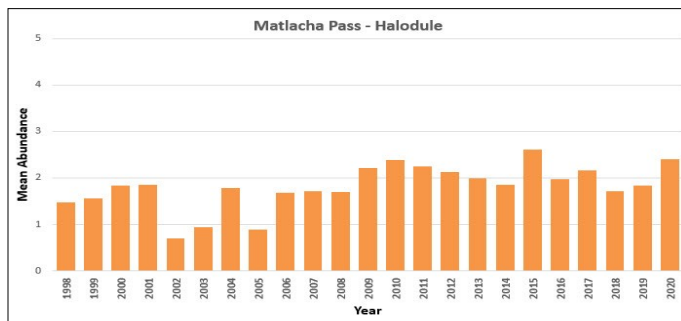
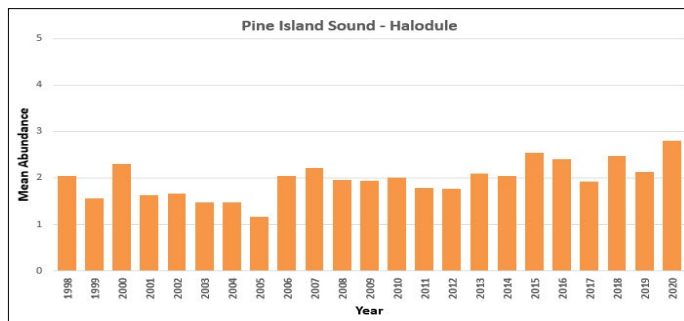
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Monitoring Sites

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 the area by the Florida Department of Environmental Protection Aquatic Preserve staff. Annual seagrass monitoring 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 Pine Island Sound area (PI01-09) and Matlacha Pass (MP01-04) for the years 1998-2020³. They demonstrate that while Shoalgrass (*Halodule wrightii*) and Turtlegrass (*Thalassia testudinum*) remain relatively stable in the Pine Island Sound area, which is mostly influenced by seawater from the nearby passes, Matlacha Pass (which receives freshwater flows from the Caloosahatchee River) has experienced recent declines in both Shoalgrass (*Halodule wrightii*) and Turtlegrass (*Thalassia testudinum*). However, data collected in 2020 demonstrates modest gains (though not full recovery) for both species 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.



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.

²South Florida Water Management District (1999, 2003, 2004, 2008, 2014)

³Charlotte Harbor Aquatic Preserves: Seagrass Transect Monitoring Program 1999-2020. Florida Department of Environmental Protection.

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