Seagrass in Lemon Bay

FISH, WILDLIFE, & HABITAT PROTECTION

Summary

Lemon Bay Basin extends from South Venice to the Gasparilla Island Causeway. Due to high amounts of urban land use, the watershed has been impacted by stormwater runoff, channelization of natural streams, increase of impervious surfaces, and conversion of natural habitat to other land uses. The tributaries to the estuary have also been transformed by ditching for mosquito control and development activities. Seagrasses present in Lemon Bay mostly include Shoalgrass (*Halodule wrightii*), followed by Turtlegrass (*Thalassia testudinum*) and Manateegrass (*Syringodium filiforme*)[1]. Lower Lemon Bay receives tidal flushing from New Pass and has large seagrass meadows. Upper Lemon Bay has freshwater inputs from the artificial waterway 'Venice Canal' connecting it to Dona and Roberts Bays and nearby Alligator Creek, seagrass meadows here have lower total acreage and less species diversity.

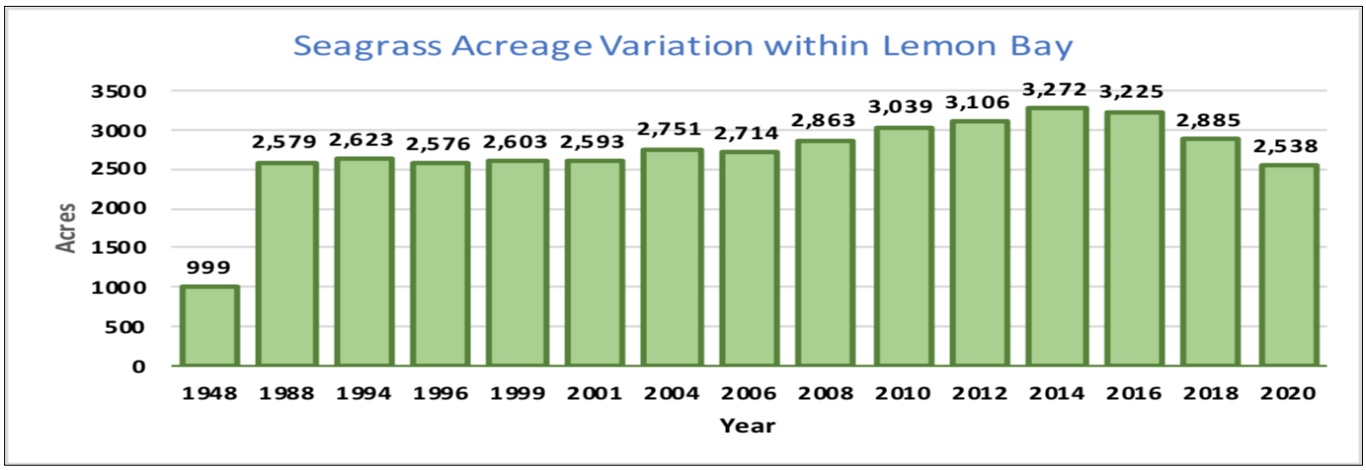
Seagrass as a Way to Track Water Quality and Estuary Health

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

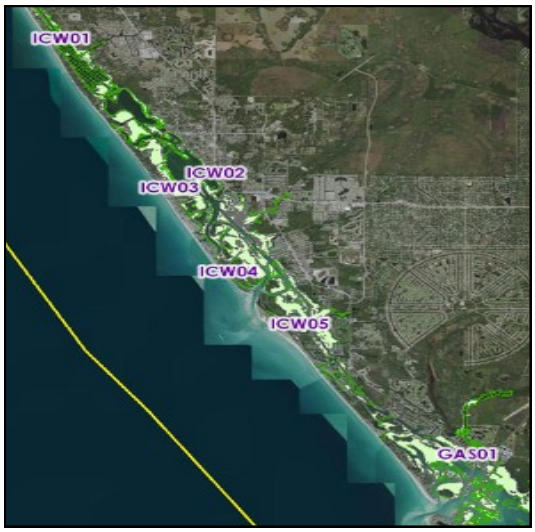
The below graphic depicts results from bi-annual seagrass mapping in Lemon Bay from 1996-2020. Seagrass in this area has remained relatively stable over time since monitoring began, but acreage began to decline in 2018 and demonstrated more loss between 2018 and 2020. The cause of this decline is complex and involves several likely factors including red tide, increasing nutrient loads, hurricanes, rainfall pattern and others. The CHNEP continues to work with our partners to investigate causes.



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

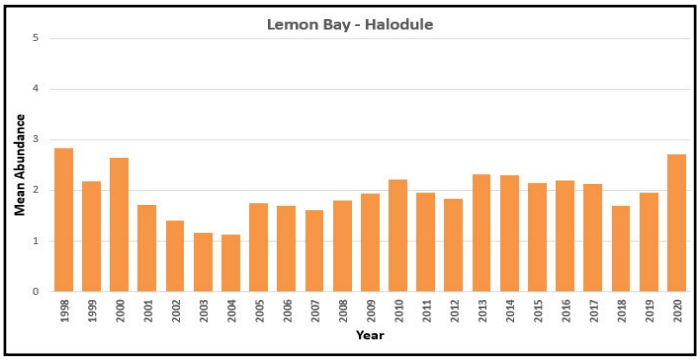
Monitoring Sites

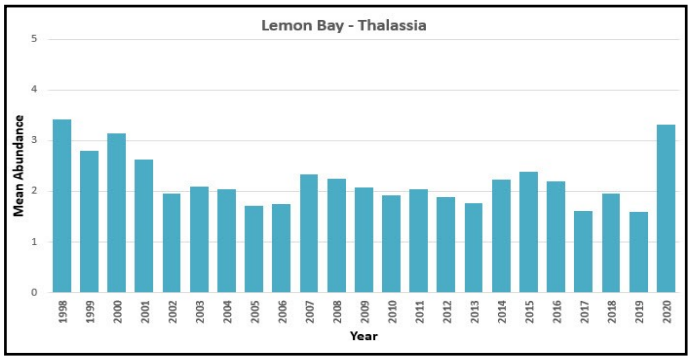
Monitoring is the repeated observation of a system to detect localized changes in a specific seagrass meadow over time in response to environmental conditions and light availability as well as measure overall health. The map to the right shows locations of monitoring sites in selected meadows in Lemon Bay 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).

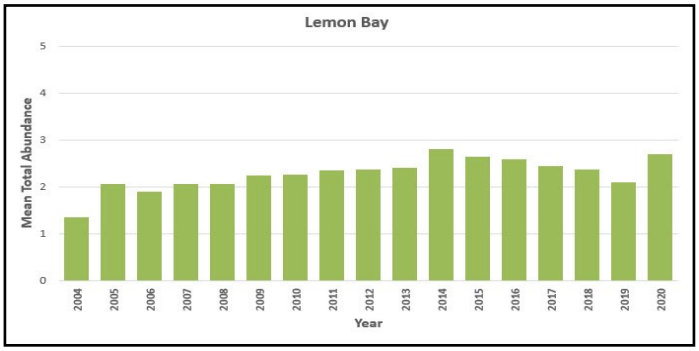


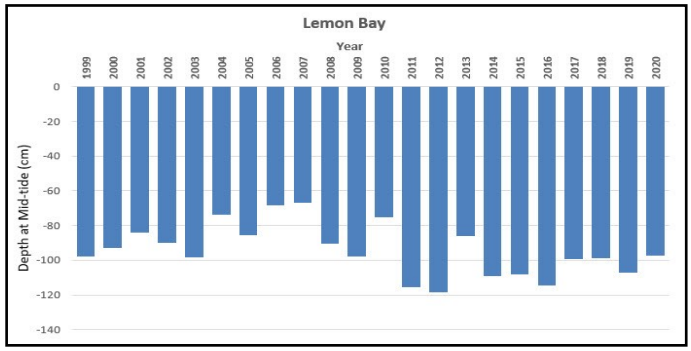
Seagrass Diversity and Health

The bar graphs below show the total abundance for two seagrass species Shoalgrass (*Halodule wrightii*) and Turtlegrass (*Thalassia testudinum*), total amount of grass, and depth at which the grass was growing at selected monitoring locations in Lemon Bay area for the years 1998-2020[3]. They demonstrate that Shoalgrass (*Halodule wrightii*) and Turtlegrass (*Thalassia testudinum*) saw declines in abundance at multiple monitoring locations starting as far back as 2017 preceding the to the decline in overall acreage observed between 2018 and 2020[3]. 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.









[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]Southwest Florida Water Management District (2008, 2016) and South Florida Water Management District (2008, 2014)
[3]Brown, 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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