2019 Tampa Bay Water Quality Assessments

A Tampa Bay Estuary Program Initiative to Maintain and Restore the Bay's Seagrass Resources

Historic results:

	OTB	HB	MTB	LTB
1975	red	red	yellow	yellow
1976	red	red	yellow	yellow
1977	red	red	red	red
1978	red	red	red	yellow
1979	red	red	red	red
1980	red	red	red	red
1981	red	red	red	red
1982	red	red	red	red
1983	red	yellow	red	red
1984	red	green	red	yellow
1985	red	red	red	yellow
1986	red	yellow	yellow	green
1987	yellow	yellow	yellow	green
1988	green	green	green	green
1989	red	yellow	yellow	yellow
1990	yellow	green	yellow	green
1991	green	yellow	green	yellow
1992	green	green	green	yellow
1993	yellow	green	green	yellow
1994	yellow	yellow	yellow	red
1995	red	yellow	yellow	yellow
1996	yellow	green	green	green
1997	green	green	yellow	green
1998	red	yellow	red	red
1999	yellow	green	green	yellow
2000	green	green	green	yellow
2001	yellow	green	yellow	yellow
2002	yellow	green	green	green
2003	red	green	green	green
2004	yellow	green	green	yellow
2005	green	green	green	yellow
2006	green	green	green	green
2007	green	green	green	green
2008	yellow	green	green	yellow
2009	yellow	yellow	green	green
2010	green	green	green	green
2011	red	green	yellow	green
2012	green	green	green	green
2013	green	green	green	green
2014	green	green	green	green
2015	yellow	green	yellow	green
2016	yellow	green	green	green
2017	yellow	green	green	green
2018	yellow	green	green	green
2019	yellow	green	green	green

Figure 2: Decision matrix results for 1975 to 2019.

Background

Light availability to seagrass is the guiding paradigm for TBEP's Nitrogen Management Strategy. Because excessive nitrogen loads to the bay generally lead to increased algae blooms (higher chlorophyll-a levels) (Figure 1) and reduce light penetration to seagrass, an evaluation method was developed to assess whether load reduction strategies are achieving desired water quality results (i.e. reduced chlorophyll-a concentrations and increased water clarity).

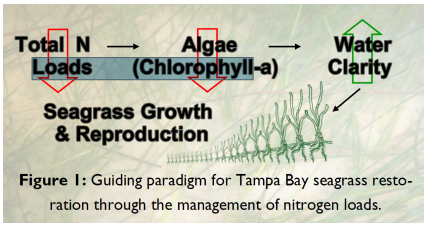

Figure 1: Guiding paradigm for Tampa Bay seagrass restoration through the management of nitrogen loads.

Decision Support Approach

Year to year algae abundance (measured as chlorophyll-a concentrations) and visible light penetration through the water column (depth of secchi disk visibility) have been identified as critical water quality indicators in Tampa Bay. Tracking the attainment of bay segment specific targets for these indicators provides the framework for developing and initiating bay management actions. TBEP management actions adopted in response to the annually-assessed decision support results are shown to the right.

Green	"Stay the Course" Continue planned projects. Report data via annual progress reports and Baywide Environmental Monitoring Report.
Yellow	"Caution" Review monitoring data and nitrogen loading estimates. Begin/continue TAC and Management Board development of specific management recommendations.
Red	"On Alert" Finalize development and implement appropriate management actions to get back on track.

2019 Decision Matrix Results

Water quality (chlorophyll-a and light penetration) remained supportive of seagrass in Hillsborough Bay (HB), Middle Tampa Bay (MTB), and Lower Tampa Bay (LTB)(Table 1, Figure 3). The nuisance alga, *Pyrodinium bahamense*, was again reported in Old Tampa Bay (OTB) during the Summer and Fall 2019, contributing to a small magnitude chlorophyll-a exceedance. In all bay segments, separate algal bloom events contributed to individual stations exceeding the bay segment chlorophyll-a targets (Figure 4). However, effective light penetration was supportive of seagrass in all bay segments (Table 1).

Table 1: Observed water quality indicators & recommended management outcomes for 2019.

Bay segment	Chlorophyll-a (ug/L)		Effective Light Penetration (m^{-1})		
	2019	target	2019	target	outcome
OTB	10.64	8.5	0.76	0.83	yellow
HB	11.31	13.2	0.97	1.58	green
MTB	5.83	7.4	0.59	0.83	green
LTB	4.05	4.6	0.61	0.63	green

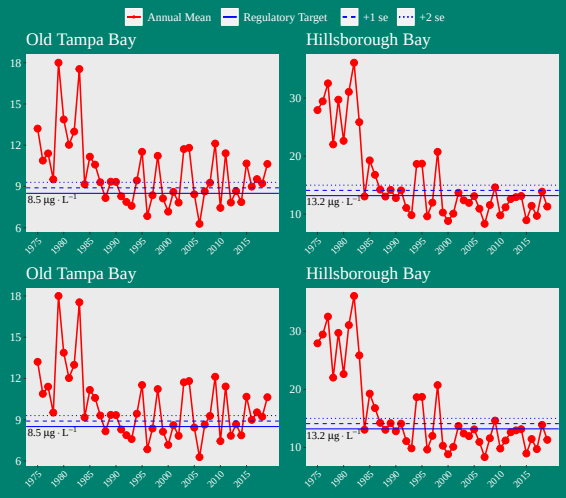

Figure 3: Historic chlorophyll-a annual averages for the four bay segments.

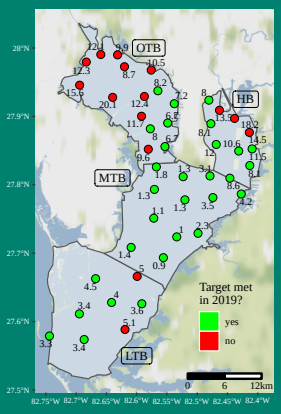

Figure 4: Chlorophyll attainment outcomes by site for 2019. Historic chlorophyll-a annual averages for the four bay segments.

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