

Summary Report for Western Pinellas County Coastal Waters

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In

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General assessment: In 2014, 26,214 acres of seagrass were mapped in Boca Ciega Bay, Clearwater Harbor, and St. Joseph Sound; St. Joseph Sound accounted for 50% of the mapped acreage. Between 2012 and 2014, seagrass acreage increased about 2% for the entire region, but seagrass area in the northern Clearwater subregion decreased 30 acres. Shoalgrass (*Halodule wrightii*) and turtlegrass (*Thalassia testudinum*) are the

most common seagrasses in the region; manateegrass (*Syringodium filiforme*) is occasionally present. Many seagrass beds in this urban county are greatly affected by storm-water runoff. In addition, propeller scarring affects seagrass beds in some areas. Water quality is affected by storm-water runoff and large scale events such as El Niño.

General Status of Seagrasses in Western Pinellas County			
Status and stressors	Status	Trend	Assessment, causes
Seagrass acreage	Green	Increasing	Urban runoff a concern
Water clarity	Yellow	Poor in Boca Ciega Bay	Urban runoff
Natural events	Yellow	Sporadic	El Niño, tropical cyclones
Propeller scarring	Yellow	Regional	Near high-use areas

Geographic extent: This region includes the shallow waters of Boca Ciega Bay, Clearwater Harbor, Shell Key, and St. Joseph Sound in Pinellas County. The watersheds of these bays are densely populated and almost entirely urban.

Mapping and Monitoring Recommendations

- Continue the fall monitoring program managed by the Tampa Bay Estuary Program.

- Continue biennial acquisition of imagery and photo-interpretation by the Southwest Florida Water Management District.

Management and Restoration Recommendations

- Continue efforts to reduce storm-water runoff and nutrient loading to coastal waters, especially Boca Ciega Bay.
- Monitor the impact of propeller scarring and develop a proactive

strategy for reducing impacts.

Restore scarred seagrass beds as funding becomes available.

- Use the recently completed boating and angling guide for waters in the region to improve boater education

Summary assessment: Seagrass beds in western Pinellas County are stable or slightly increasing in size (Table 1). From 2012 through 2014, the region gained 485 acres of seagrass, an increase of almost 2%. Shoalgrass and turtlegrass are the most common seagrasses in Boca Ciega Bay, and occurrence of both species has remained stable since monitoring began in 1998. Manateegrass occurs much less frequently and is more variable than shoalgrass and turtlegrass. In Clearwater Harbor, recent monitoring data show that shoalgrass and turtlegrass occur at similar frequencies, while manateegrass is less common. The percentage of bare quadrats along monitoring transects in Boca Ciega Bay has remained low over the 15-year period (17%; Table 2), but a much greater proportion of quadrats (49%) were bare in Clearwater Harbor during monitoring in 2010–2012. All coastal waters receive storm-water runoff from the urban Pinellas peninsula, and this might diminish water clarity and quality. Propeller scarring, especially in areas of greatest boat use near the Intracoastal Waterway, continues to fragment seagrass beds.

Seagrass mapping assessment: Seagrass beds covered 26,214 acres in the coastal waters of western Pinellas County in 2014, and half of the beds were found in St. Joseph Sound in the northwestern part of this region (Figure 1). From 2006 to 2014,

and awareness of seagrass beds and to reduce propeller scarring.

- Establish a framework for detecting effects of climate change and ocean acidification on coastal marine resources in the region.



Figure 1 Seagrass beds in Boca Ciega Bay, Clearwater Harbor, and St. Joseph Sound, 2012.

seagrass cover in the entire region expanded by 2,271 acres or 9.5%. An increase of 2,522 acres in St. Joseph Sound (a 24% increase for this subregion; Table 1) and losses in Boca Ciega Bay and Clearwater Harbor account for the change

in seagrass acreage. Between 2006 and 2012, seagrass beds in Clearwater Harbor (both north and south) lost 169 acres or 4%. Seagrass beds in Boca Ciega Bay lost about

500 acres between 2006 and 2008, but acreage increased by 336 acres from 2012 through 2014.

Seagrass Status and Potential Stressors in Western Pinellas County			
Status indicator	Status	Trend	Assessment, causes
Seagrass cover	Green	Increasing	All areas except Boca Ciega Bay
Seagrass meadow texture	Green	Stable	
Seagrass species composition	Green	Stable	
Overall seagrass trends	Green	Improving	
Seagrass stressor	Intensity	Impact	Explanation
Water clarity	Yellow	Poor in Boca Ciega Bay	Storm-water runoff
Nutrients	Orange	Increasing	
Phytoplankton	Yellow	Variable	Responsive to nutrients in storm-water runoff
Natural events	Yellow	Low and sporadic	El Niño, tropical cyclones
Propeller scarring	Yellow	Regional	Near high-use areas

Table 1 Seagrass acreage in western Pinellas County, 2006–2014 (data source: Photo Science Inc. and Kaufman, 2015).

Bay Segment	2006	2008	2010	2012	2014	Change 2012–2014	
						Acres	%
Clearwater North	3,522	3,784	3,759	3,526	3,496	-30	-0.9%
Clearwater South	914	1,000	907	743.2	769.6	26	2.9%
St. Joseph's Sound	10,546	12,639	12,819	12,914	13,068	154	1.5%
Boca Ciega Bay	8,961	8,457	8,554	8,544	8,880	336	3.7%
Total	23,943	25,880	26,039	25,727	26,214	486	2.0%

Monitoring assessment: Field monitoring data from quadrats located on fixed transects suggest that seagrass beds were stable in western Pinellas County between 1998 and 2012. In Boca Ciega Bay, the most

common seagrass species were shoalgrass and turtlegrass. Manatee grass was observed much less frequently (Table 2). Some transects showed a temporary decrease in density from 2004 to 2005, most likely an

effect of tropical storms during that time (Meyer and Hammer Levy, 2008). In Clearwater Harbor, data from 2010–2012 show that about half of all quadrats were

bare of seagrass and that, as in Boca Ciega Bay, shoalgrass and turtlegrass were most common.

Table 2 *Percentage occurrence of seagrass species and bare quadrats in Boca Ciega Bay (1998–2012) and Clearwater Harbor (2010–2012). Data collected during fall were extracted from the Tampa Bay Estuary Program database. Blanks indicate that a species was not observed.*

Year	# of quadrats	Bare	Shoal-grass	Manatee-grass	Turtle-grass
Boca Ciega Bay					
1998	106	5.66	60.4	0.94	50.9
1999	183	25.1	47.0	0.55	39.9
2000	162	29.0	45.7	4.32	37.0
2001	157	19.7	48.4	3.82	42.7
2002	169	17.2	52.1	6.51	40.8
2003	174	21.8	51.7	7.47	39.7
2004	183	15.8	59.6	6.56	38.3
2005	159	9.43	65.4	6.92	39.0
2006	130	13.8	48.5	10.8	50.0
2007	117	9.40	62.4		48.7
2008	73	12.3	61.6	13.7	42.5
2009	95	24.2	45.3		43.2
2010	68	16.2	52.9	14.7	41.2
2011	77	16.9	46.8		49.4
2012	77	13.0	53.2	16.9	42.9
Clearwater Harbor					
2010	26	53.8	23.1	15.4	34.6
2011	22	50.0	27.3	13.6	36.4
2012	27	44.4	40.7	14.8	29.6

Mapping methods, data, and imagery:

Every two years since 1988, the Southwest Florida Water Management District (SWFWMD) has acquired aerial imagery of submerged aquatic vegetation along the Gulf Coast from Pinellas County south through northern Charlotte Harbor. The

most recent set of photographs was acquired in December 2013 and January 2014. Imagery was photo-interpreted from natural color photographs taken at 1:24,000 scale and classified using the SWFWMD modified Florida Land Use Cover and Forms Classification System (Florida

Department of Transportation, 1999). The minimum mapping unit for classification was 0.5 acre. Data are available from SWFWMD or the Marine Resources Geographic Information System (MRGIS) portal of the Florida Fish and Wildlife Research Institute website.

Monitoring methods and data: Seagrass beds are monitored as part of a regional program administered by the Tampa Bay Estuary Program (TBEP). From 1998 through 2012, seagrass cover was evaluated by the Braun-Blanquet method in 1-m² quadrats located along fixed transects. There were 11 fixed transects in Boca Ciega Bay and 14 transects in Clearwater Harbor and St. Joseph Sound. Beginning in 2006, the fixed-transect design was replaced with a stratified random-transect design (Burnes *et al.*, 2011). Sixty-three sites were visited in 2006, 65 sites in 2007, and 67 sites in 2008–2010. Generally, transects begin at the shoreline and end at the water depth adopted by TBEP as the seagrass target depth for the respective bay region (Avery and Johansson, 2001). In Boca Ciega Bay, the longest transect extended 600 m into the bay, and in Clearwater Harbor the longest transect was 100 m. Field monitoring was completed in the fall by personnel of the Pinellas County Department of the Environment and Infrastructure. Data are reported to the TBEP. In addition to assessing seagrass cover, divers determine shoot density and canopy height for each species present. Field staff also measure water quality (pH, temperature, salinity, dissolved oxygen concentration) and water clarity (transmissivity, light attenuation) parameters.

Pertinent Reports and Scientific Publications

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General References and Additional Information

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<http://www.tampabay.wateratlas.usf.edu/w>

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