

Abstract

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Seagrass Integrated Mapping and Monitoring Program Mapping and Monitoring Report Version 2.0 FWRI Technical Report TR-17 2016

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Abstract

This is the second edition of the Seagrass Integrated Mapping and Monitoring (SIMM) report, providing mapping and monitoring information for seagrasses throughout Florida's coastal waters. Each regional chapter has been updated, and we have added information on management programs and water quality and clarity. For most regions, seagrass maps now show data gathered between 2010 and 2014. Exceptions include the Big Bend, Cedar Keys, Waccasassa Bay, the Charlotte Harbor region, Estero Bay, the Ten Thousand Islands, and Biscayne Bay; however, imagery was acquired in 2014 or 2015 with photo-interpretation underway for these remaining regions except Cedar Keys, Waccasassa Bay, and Biscayne Bay. The primary indicators derived from mapping projects are seagrass areal coverage and habitat texture (*i.e.*, continuous or patchy). Secondary indicators of seagrass condition and health determined by mapping projects are estimates of gains and losses in cover and changes in texture determined from analyses of two most recent sets of imagery having the same spatial extent. Where successive imagery data sets are available, we have updated changes in seagrass acreage.

As a result of our inventory of monitoring programs for the first report, we obtained funding and worked with partners to activate or establish field monitoring programs in three regions lacking monitoring: Choctawhatchee Bay, St. Andrew Bay, and the Pensacola Bay region. Field monitoring programs are planned for the Apalachicola National Estuarine Research Reserve and the Ten Thousand Islands. On Florida's east coast, seagrasses along the Volusia County coastline are not monitored. Seagrass beds in the remaining regions are monitored by several agencies, including Estuary Programs, the Aquatic Preserves of the Florida Department of Environmental Protection, National Estuarine Research Reserves, water management districts, national parks, universities, non-governmental agencies, and the Fish and Wildlife Research Institute. Field monitoring programs measure the presence or absence of seagrasses, estimate the density of seagrass shoots, and document the species composition of seagrass beds using quadrats of varying sizes. Some programs identify and assess macroalgae, and most measure seagrass abundance using the Braun-Blanquet scale or percentage of cover in replicate quadrats at each site. Sampling designs are variations of two types: sampling along transects, often perpendicular to the long axis of seagrass beds; and point sampling, either fixed or varying, random or non-random, in design. Most programs conduct field monitoring at least once a year, but the time of year varies between summer and fall. Indicators that can be reported for most seagrass monitoring programs include seagrass (and macroalgae) abundance, species composition and diversity, and depth distribution of seagrass species. Most monitoring programs also include some measurements of water quality, including, at a minimum, temperature and salinity.

Using the most recent mapping data available, we estimate that there are about 2,480,000 acres of seagrass in nearshore Florida waters. Most are located in southern Florida (1,620,000 acres) and in the Big Bend and Springs Coast region (618,000 acres). Acreage in south Florida remained stable until the summer of 2015 when as many as 10,000 acres of seagrass died in western Florida Bay, due to hot, very saline conditions. The Big Bend region has likely lost seagrasses due to a prolonged period of poor water clarity from 2012 through 2014; seagrasses in the Springs Coast region are generally stable. The western Panhandle has 40,500 acres of seagrass, and some estuaries in this region have increased acreage while in others acreage has declined. In recent years, seagrass acreage has increased along the west coast of Florida from Pinellas County–Tampa Bay to the Charlotte Harbor region and is estimated to be 143,000 acres. Mapping seagrasses in Rookery Bay and the Ten Thousand Islands remains difficult because of poor

water clarity, and updated estimates of seagrass area in those areas are not available. On Florida's east coast, seagrasses have expanded to 58,300 acres since 2013, but these increases followed large losses in 2010, as the result of widespread algal blooms, especially in the northern Indian River Lagoon. Since 2012, storm runoff, resulting in poor water clarity, and algal blooms have damaged seagrass beds in the Panhandle, the Big Bend, southwest Florida, and along the east coast from Biscayne Bay to the northern Indian River Lagoon.

Florida coastal waters support seven species of seagrass. Shoalgrass (*Halodule wrightii*) is the most widely distributed seagrass species, occurring everywhere except in portions of Santa Rosa Sound in the Panhandle, portions of the Florida Keys, and in central Lake Worth Lagoon. It is the most common species in some areas of the Panhandle, along much of the central and southern west coast, and in the Indian River Lagoon. Turtlegrass (*Thalassia testudinum*) is also widely distributed and is the most common seagrass in Pensacola Bay, Big Lagoon, parts of Santa Rosa Sound, St. Andrew Bay, St. Joseph Bay, in many sub-regions of the Big Bend, the Cedar Keys, the Springs Coast, southern Tampa Bay, Sarasota Bay, Rookery Bay, the Florida Keys, Florida Bay, and southern Biscayne Bay. Manateegrass (*Syringodium filiforme*) also occurs throughout most of Florida coastal waters, but generally is not as common as shoalgrass and turtlegrass. It is the most common seagrass observed at some locations in Franklin County, the Gulf side of the middle Florida Keys, northern Biscayne Bay, northern Lake Worth Lagoon and parts of the southern Indian River Lagoon. Widgeongrass (*Ruppia maritima*) can be found in Panhandle estuaries, the Big Bend, occasionally in the Charlotte Harbor region, and at some locations in the northern Indian River Lagoon. Three *Halophila* species occur in Florida. *H. engelmannii* (stargrass) is observed from Lanark Reef in Franklin County through the Springs Coast usually at low levels with distributions that vary widely spatially and temporally. *H. decipiens* (paddlegrass) and *H. johnsonii* (Johnson's seagrass) occur sparsely. Paddlegrass is observed in Rookery Bay, the Ten Thousand Islands, the Tortugas and Marquesas, Lake Worth Lagoon, and in southern portions of the Indian River Lagoon. It also grows offshore on the continental shelf west of Big Bend and southwest Florida. The distribution of Johnson's seagrass is limited to the east coast, in Lake Worth Lagoon and southern parts of the Indian River Lagoon, where it often co-occurs with paddlegrass and shoalgrass.