

# Coastal Habitat Integrated Mapping and Monitoring Program (CHIMMP) and Mangrove Working Group (MWG) Workshop



*16 – 17 January 2024*

*Florida Fish and Wildlife Conservation Commission*

*Fish and Wildlife Research Institute*

*St. Petersburg, FL*



# Who are we?

## Workshop organizers:

CHIMMP



**Kara Radabaugh** FWC Fish and Wildlife Research Institute



**Heather Stewart** FWC Fish and Wildlife Research Institute

MWVG



**Jeremy Conrad** US Fish and Wildlife Service National Wildlife Refuge System

# Workshop Purpose

- Increase communication for coastal wetland mapping and monitoring methodology, gaps, needs, and trends
- Improve data sharing among mapping and monitoring efforts, CHIMMP, and MWG
- Opportunity for the coastal wetland community to connect (or re-connect!)



# FWRI Integrated Mapping and Monitoring Programs



Seagrass (SIMM)



Coastal wetlands (CHIMMP)



Oyster (OIMMP)

# Seagrass Integrated Mapping and Monitoring Program (SIMM)

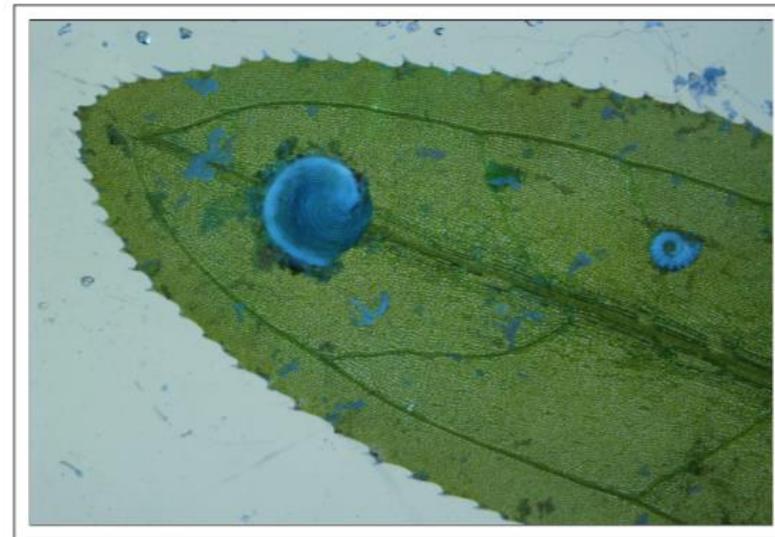
- Started at FWRI by Paul Carlson and Laura Yarbro
- Statewide SIMM report available at:

<https://myfwc.com/research/habitat/seagrasses/completed/simm/simm-reports/>

## FISH AND WILDLIFERESEARCHINSTITUTE **TECHNICALREPORTS**

Seagrass Integrated Mapping and Monitoring  
Program Mapping and Monitoring Report No. 2

Laura A. Yarbro and Paul R. Carlson, Jr.  
Editors



Florida Fish and Wildlife  
Conservation Commission



# Seagrass Integrated Mapping and Monitoring Program (SIMM)

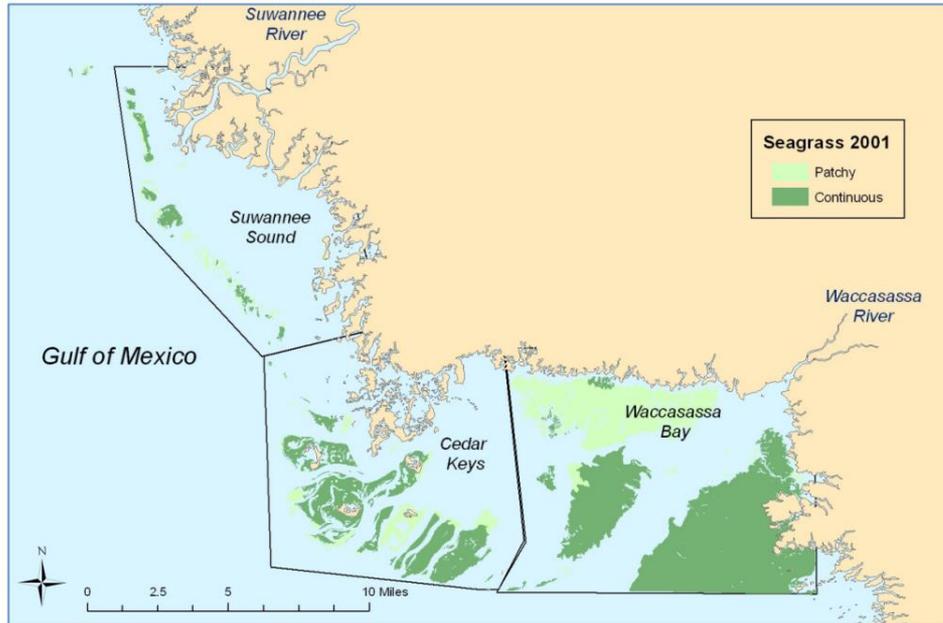
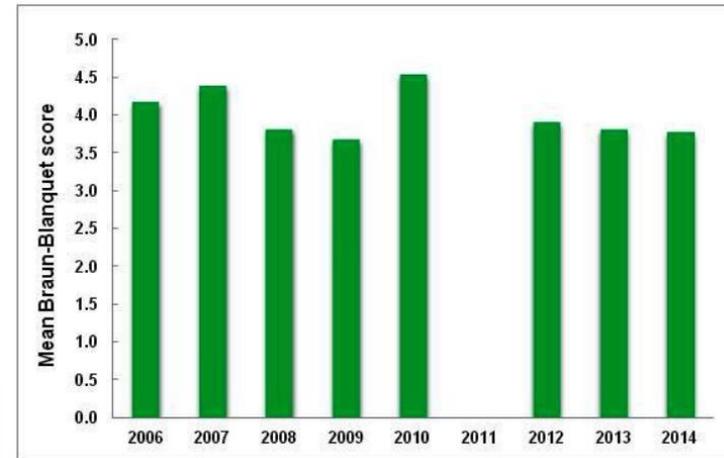


Figure 1 Seagrass cover in Suwannee Sound, Cedar Keys, and Waccasassa Bay, 2001.

- Report includes regional maps, trends, and stoplight report cards



## Seagrass Status and Potential Stressors in Suwannee Sound, Cedar Keys, and Waccasassa Bay

Status indicator	Status	Trend	Assessment, causes
Seagrass cover	Yellow	Declining	River impacts in Suwannee Sound
Seagrass meadow texture	Green	Stable	Monitoring in Cedar Keys only
Seagrass species composition	Green	Stable	
Overall seagrass trends	Green	Fairly stable	Potential runoff impacts

# Seagrass Integrated Mapping and Monitoring Program (SIMM)

- New SIMM program, led by Brad Furman and staff, will include a focus on restoration and collaboration with statewide researchers
- An announcement will be sent to CHIMMP and OIMMP email lists when the SIMM email list is being formed



# What is CHIMMP?

- The Coastal Habitat Integrated Mapping and Monitoring Program began in 2013, following the model of SIMM
- CHIMMP focuses on coastal wetlands of Florida (rather than all coastal habitats)



A decorative graphic on the left side of the slide. It features a vertical blue bar with two overlapping white circles. Below the bar is a photograph of a lush green wetland area with water visible at the bottom.

# What is CHIMMP?

**CHIMMP includes the following goals:**

- **Inventory existing coastal wetland mapping and monitoring programs in FL**
  - Share information in a statewide report
- **Bring together representatives from mapping and monitoring programs across the state**
  - Increase information-sharing through workshops and emails
  - Compare methods
  - Identify data gaps and priorities
- **Complete small-scale coastal wetland mapping and monitoring projects**

# Funding Acknowledgment



Funding for CHIMMP and this workshop was provided by the Florida Fish and Wildlife Conservation Commission, Florida's Wildlife Legacy Initiative, and the U.S. Fish and Wildlife Service's funding support of Florida's State Wildlife Grants Program Monitoring and Aquatic Restoration Projects



Additional funding for CHIMMP previously provided by FDEP's Coastal Zone Management Program



FDEP FCZM funding by a grant provided by the Office of Ocean and Coastal Resource Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration Award No. NA16NOS4190120. The views, statements, findings, conclusions and recommendations expressed herein are those of the authors and do not necessarily reflect the views of the State of Florida, NOAA, the U.S. Department of Commerce, or any of their subagencies.

# CHIMMP Team

## **Current leaders:**

- Kara Radabaugh (PI)
- Heather Stewart (co-PI, coordinator)

## **GIS support:**

- Christi Santi, LaTosha Tompson, Julia Davis

## **Past and present FWC/FWRI support:**

- Ryan Moyer, Caroline Gorga, Amber Whittle, Christine Russo, Bland Crowder, Savanna Hearne, Casey Craig, Megan Osgood, C. Scott Adams, Joshua Breithaupt, Amanda Chappel, Emily Dontis, Emily Ritz, Robin Grunwald, Kathleen O'Keife, Shannon Whaley, Sam Roussopoulos, Emma Wennick

**CHIMMP includes many statewide collaborators!**

# CHIMMP websites

[2020 Workshop](#) [2017 Workshop](#) [2015 Workshop](#) [2014 Workshop](#) [CHIMMP Regions Map](#) [Resources](#)

## Coastal Habitat Integrated Mapping and Monitoring Program

Workshops and Resources



The Coastal Habitat Integrated Mapping and Monitoring Program (CHIMMP) was funded by Florida's State Wildlife Grants Program from 2013-2017 in order to support the study of high priority coastal habitats and meet requirements of the State Wildlife Action Plan. CHIMMP's goals included bringing together representatives from mapping and monitoring programs across the State in order to increase communication, minimize duplicate efforts and identify data gaps, needs, and priorities. As a result of this effort, a statewide technical report on the status of mangroves and salt marshes in Florida was published in 2017.

[2017 CHIMMP Report for the State of Florida](#)

- Report website
- <https://myfwc.com/research/habitat/coastal-wetlands/chimmp/>

- Workshops and resources
- <https://ocean.floridamarine.org/CHIMMP/>

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Florida Fish and Wildlife  
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[Home](#) [FWRI](#) [Habitat Research](#) [Coastal Wetlands Research](#) [Coastal Habitat Integrated Mapping and Monitoring Program \(CHIMMP\)](#)

## Coastal Habitat Integrated Mapping and Monitoring Program (CHIMMP)

Salt marshes and mangroves provide valuable ecosystem services to coastal communities in Florida. Coastal wetlands stabilize shorelines, filter surface water runoff, sequester large amounts of organic carbon, and provide important fisheries habitat. However, the statewide extent of coastal wetlands is shifting. Future sea-level rise is expected to cause fragmentation of salt marshes and loss of acreage where hardened shorelines, coastal development, and other obstacles prevent the landward migration of salt marsh vegetation. Mangrove distribution is also changing and mangrove forests are encroaching into marsh habitats in response to climate change and sea-level rise. Thus, a coordinated statewide mapping and monitoring program was deemed necessary to better



# CHIMMP workshops

- 2014 workshop
  - Attendee presentations and focus on planning CHIMMP report, recruiting report coauthors, and determining report regions
- 2015 workshop
  - Attendee presentations and focus on methods comparisons for mapping and monitoring



# CHIMMP workshops

- 2017 workshop (joint with MWG)
  - Attendee presentations, restoration site field trips, and focus on wetland management and methods used to study the effects of sea-level rise





# CHIMMP/MWVG workshops

- 2020 workshop (joint with MWVG)
  - Virtual meeting. Attendee presentations and focus on gaps and needs, hurricane response, and compiling online resources
- 2021 Horseshoe Cove workshop
  - Joint meeting with SIMM, CHIMMP, and OIMMP focused information sharing and identifying the needs of Horseshoe Cove and Suwannee Sound
  - Information on [OIMMP workshops website](#)

# What about the oysters?



# Oyster Integrated Mapping and Monitoring Program (OIMMP)

- OIMMP started in 2016
- OIMMP PI's: Kara Radabaugh, Heather Stewart, Steve Geiger, Ryan Moyer (past PI)
- Report available at:  
<https://myfwc.com/research/habitat/coastal-wetlands/projects/oimmp>
- Email Kara or Heather to join the OIMMP email list

ISSN 1930-1448

Oyster Integrated Mapping and Monitoring Program  
Report for the State of Florida

KARA R. RADABAUGH, STEPHEN P. GEIGER, RYAN P. MOYER, EDITORS



Florida Fish and Wildlife Conservation Commission  
Fish and Wildlife Research Institute  
Technical Report No. 22 - 2019  
MyFWC.com

# OIMMP Workshops

- Past workshops held in 2017, 2018, and 2019, and 2022
- Past workshop presentations available on OIMMP website <https://ocean.floridamarine.org/OIMMP/>



# Oyster Beds in Florida Map



Statewide oyster map available for viewing and download at:

<http://geodata.myfwc.com/datasets/oyster-beds-in-florida>

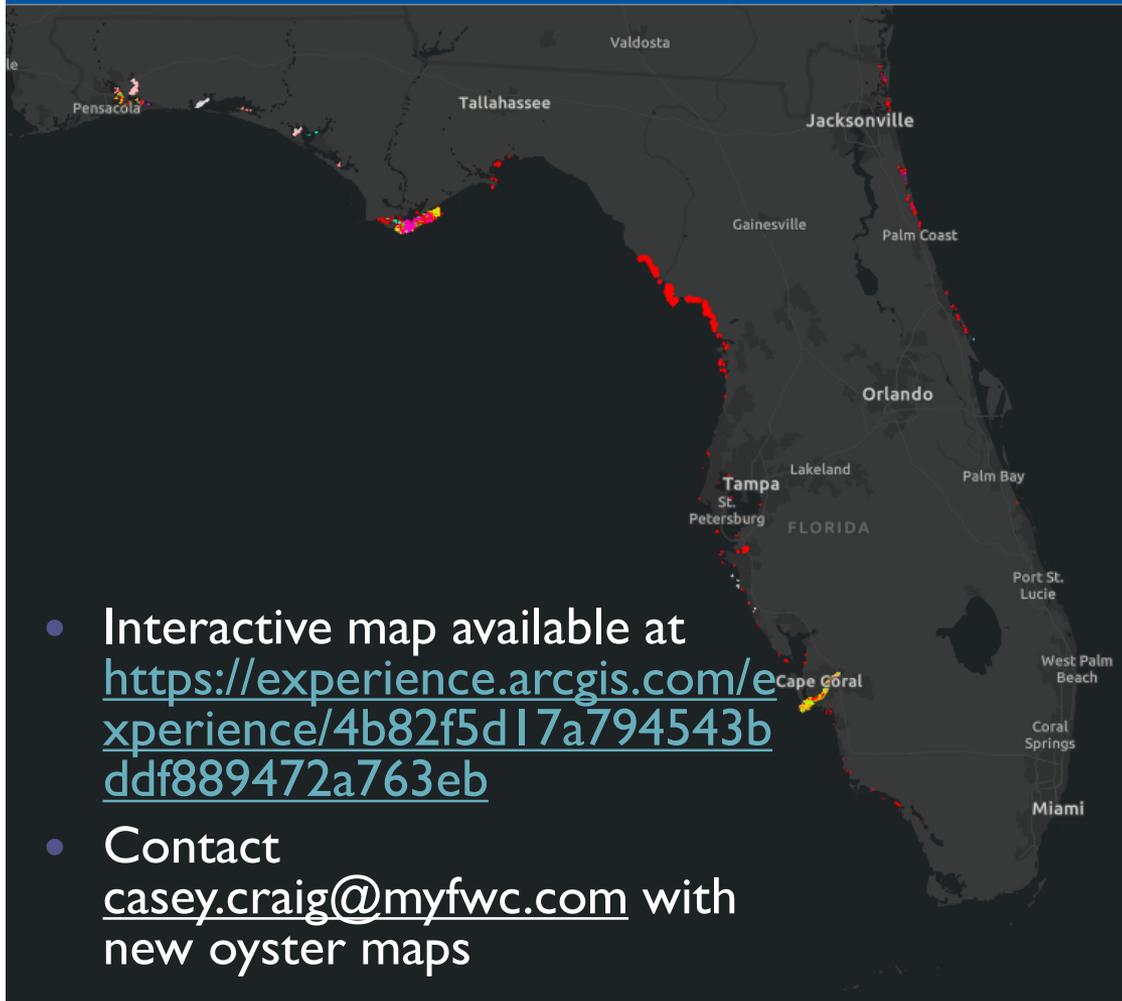
Map is a compilation of many local oyster mapping efforts

Layer updated as new data sources become available

# Index of Oyster Maps in Florida

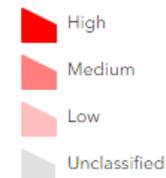
## Index of Oyster Maps in Florida

Compiled by the Oyster Integrated Mapping and Monitoring Program



### Northwest Florida

#### ESI\_RPI\_2012



#### hardness\_Pensacola\_FDEP\_2021

Custom

- ▷ Northwest Florida
- ▷ Apalachicola Bay
- ▷ Big Bend & Springs Coast
- ▷ Tampa & Sarasota Bay
- ▷ Southwest Florida
- ▷ Southeast Florida
- ▷ Central Eastern Florida
- ▷ Northeast Florida

# CHIMMP Report

ISSN 1930-1448

Coastal Habitat Integrated Mapping and Monitoring Program  
Report for the State of Florida

KARA R. RADABAUGH, CHRISTINA E. POWELL, AND RYAN P. MOYER, EDITORS



Florida Fish and Wildlife Conservation Commission  
Fish and Wildlife Research Institute  
Technical Report No. 21 • 2017  
[MyFWC.com](http://MyFWC.com)

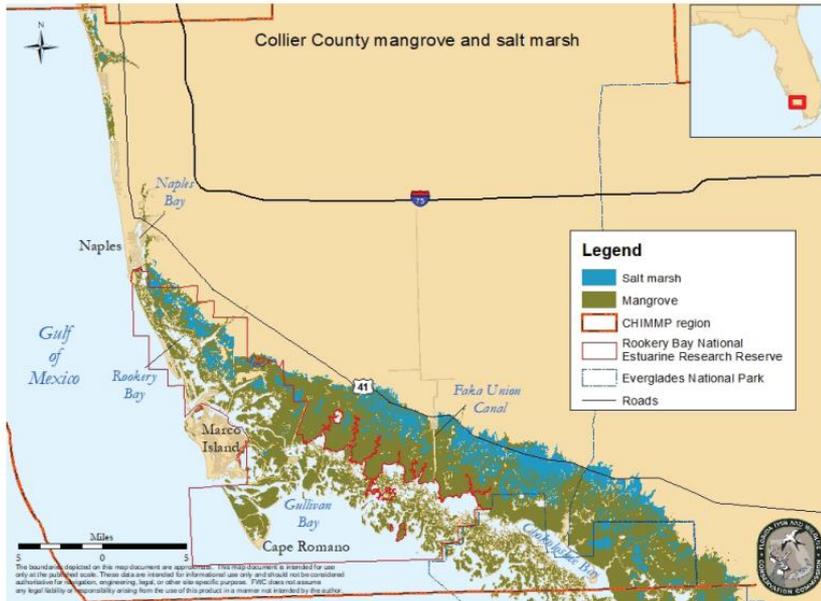
- Compilation of statewide mapping and monitoring information
- “Literature review” rather than a database
- Primary focus on natural coastal wetland habitats
  - Some references to restoration
- Coauthors include local coastal wetland experts

# CHIMMP regional chapters

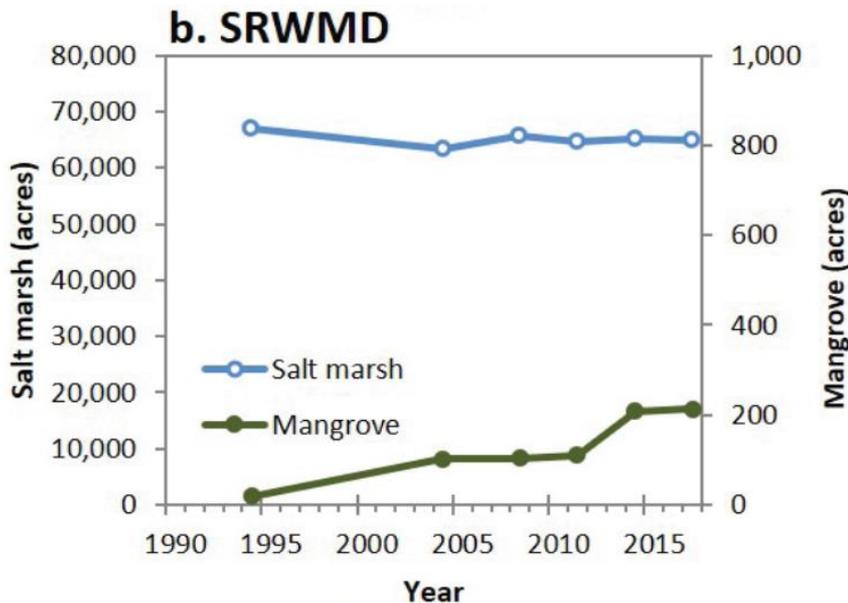
- 12 CHIMMP regional chapters, regions determined during 2014 CHIMMP workshop
- Each written in collaboration with local coauthors



# CHIMMP regional chapters



- Regional maps (using Water Management District Land Use/Land Cover maps) and area trends
- Introduction to regional history/ecology, description of local mangroves and salt marshes
- Threats to coastal wetlands
- Summary of recent mapping and monitoring programs
- Recommendations for management, mapping, and monitoring



# CHIMMP Chapter updates

Chapter 1: [Introduction](#)

Chapter 2: [Northwest Florida](#)

Chapter 3: [Big Bend and Springs Coast](#) (version 2.0, added 4/2021)

Chapter 4: [Tampa Bay](#)

Chapter 5: [Sarasota Bay](#)

Chapter 6: [Charlotte Harbor and Estero Bay](#)

Chapter 7: [Collier County](#) (version 2.0, added 8/2020)

Chapter 8: [Everglades](#) (version 2.0, added 4/2021)

Chapter 9: [Florida Keys](#) (version 2.0, added 8/2020)

Chapter 10: [Biscayne Bay](#) (version 2.0, added 4/2021)

Chapter 11: [Palm Beach and Broward Counties](#) (version 2.0, added 7/2023)

Chapter 12: [Indian River Lagoon](#) (version 2.0, added 10/2022)

- **Version 1 of CHIMMP report published in 2017**
- **Version 2 underway**
- **Updates published online on CHIMMP report website**

# CHIMMP emails

- Occasional email updates include
  - Recent coastal wetland publications and reports
  - Job and funding opportunities
  - Announcement of chapter updates and upcoming workshops
- You're now on the CHIMMP email list
  - email Kara or Heather to add or remove yourself from OIMMP or CHIMMP emails

**CHIMMP**

Coastal Habitat Integrated Mapping and Monitoring Program



# Current status of CHIMMP/OIMMP

- FY2023-25 funding by SWG to:
  - Update 3 CHIMMP and 3 OIMMP chapters
  - Complete two oyster mapping projects
  - Hold a CHIMMP workshop!
- Future workshops depend on future funding
  - Date of next OIMMP workshop unknown



# Mangrove Working Group

Jeremy Conrad

2014

J.N. *Darling*  
NATIONAL WILDLIFE REFUGE  
"Darling" Darling Visitor & Education Center



2015



2016





## CHIMMP/Mangrove Workshop 2017

2018

# ROOKERY BAY Environmental Learning Center

2018  
Rookery Bay National Estuarine Research Reserve  
*Celebrating 40 Years of Coastal Stewardship through Research & Education*  
1978

ENTRANCE



# Online Resources

- See agenda packet for a compiled list of online resources



## **FWC and collaborators**

Coastal Habitat Integrated Mapping and Monitoring Program (CHIMMP)

Report: <https://myfwc.com/research/habitat/coastal-wetlands/projects/chimmp/>

Workshop presentations and resources: <https://ocean.floridamarine.org/CHIMMP/>

Oyster Integrated Mapping and Monitoring Program (OIMMP)

Report: <https://myfwc.com/research/habitat/coastal-wetlands/projects/oimmp/>

Workshop presentations and resources: <https://ocean.floridamarine.org/OIMMP/>

Oyster Beds in Florida layer (map of live oyster extent)

<https://geodata.myfwc.com/datasets/oyster-beds-in-florida/explore>

# CHIMMP Report Resources

- Report introduction includes a summary of:
  - 10 land cover classification schemes
  - 10 land cover mapping data sources
  - 13 coastal wetland monitoring procedures
    - List will be updated for Version 2 of CHIMMP report

Table 1.3. Selected large-scale providers of coastal wetland land cover data in Florida

Program	Affiliation, region of map extent	Data origin, most recent data	Classification scheme	Reference
National Wetlands Inventory (NWI)	USFWS, national	Composite of multiple data and aerial image sources, 1970s to 2000s	Cowardin et al. 1979	USFWS 2010; <a href="http://www.fws.gov/wetlands">www.fws.gov/wetlands</a>
National Gap Analysis Program (GAP)	USGS, national	Southeast Gap Analysis Project, 1999–2001	NatureServe 2007, FGDC 2008	<a href="http://gapanalysis.usgs.gov/">gapanalysis.usgs.gov/</a>
Southeast Gap Analysis Project	USGS and North Carolina State University, southeastern U.S.	Landsat ETM+ and DEM models used to model vegetation classes, 1999–2001	NatureServe 2007, FGDC 2008	<a href="http://www.basic.ncsu.edu/segap/index.html">www.basic.ncsu.edu/segap/index.html</a>
Wetland Status and Trends	USFWS, national	Remote imagery and randomized sample plots, 2009	Cowardin et al. 1979	Dahl 2005, 2011; <a href="http://www.fws.gov/wetlands/Status-and-Trends/index.html">www.fws.gov/wetlands/Status-and-Trends/index.html</a>

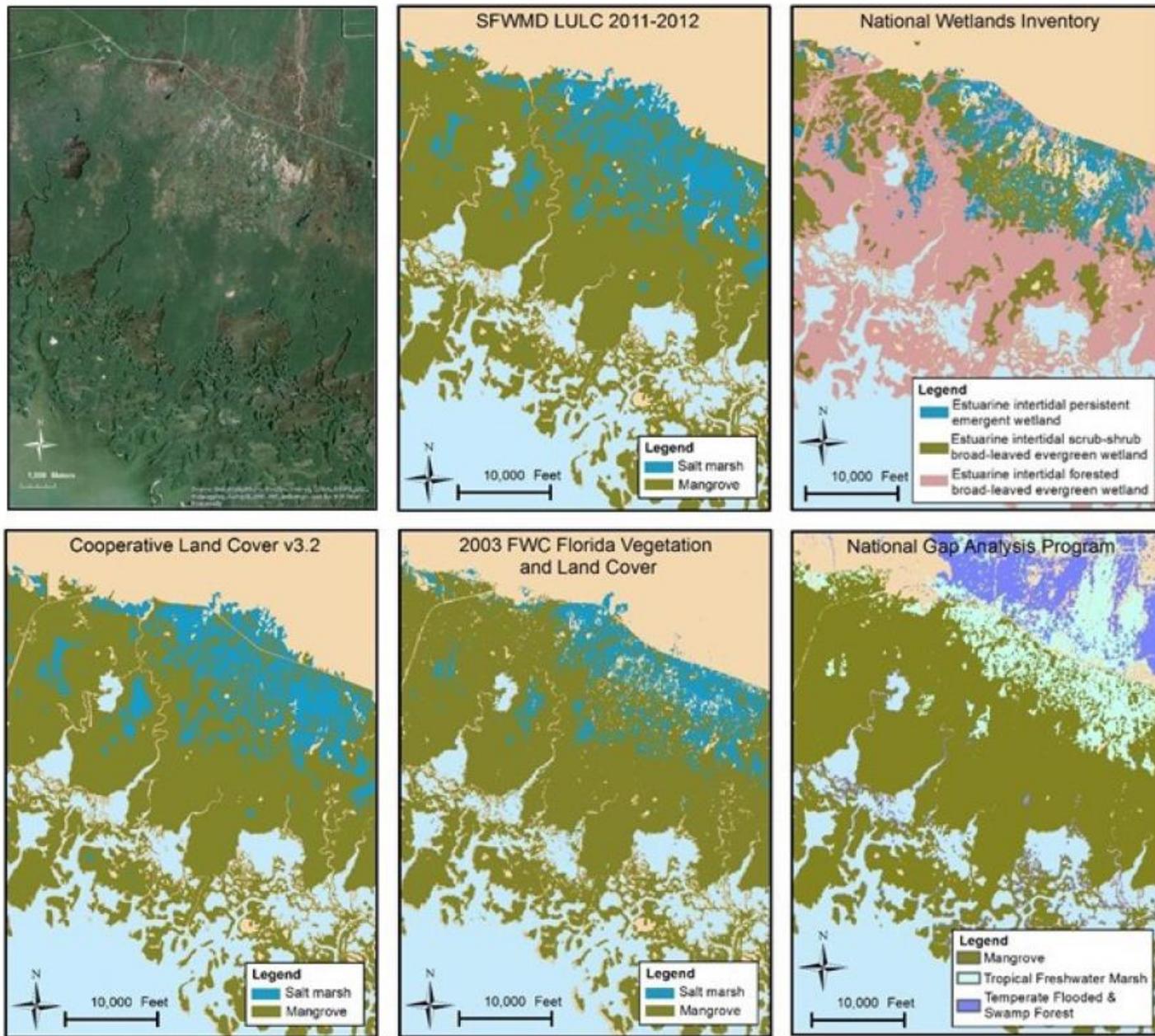
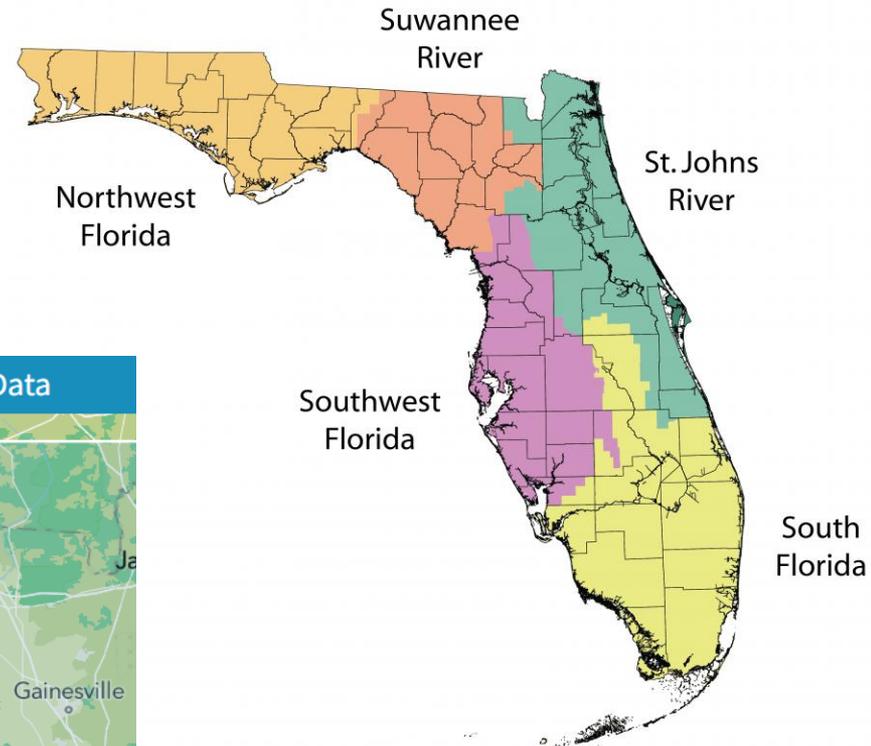


Figure 1.11. Ten Thousand Islands example of raster and polygon coastal wetland mapping data from various sources. See Table 1.3 for details on data sources.

# Statewide land cover maps

DEP compiles and updates a statewide layer of Water Management District maps

<https://geodata.dep.state.fl.us/datasets/statewide-land-use-land-cover/explore>



 Florida Department of Environmental Protection Geospatial Open Data

## Statewide Land Use Land Cover

Authoritative

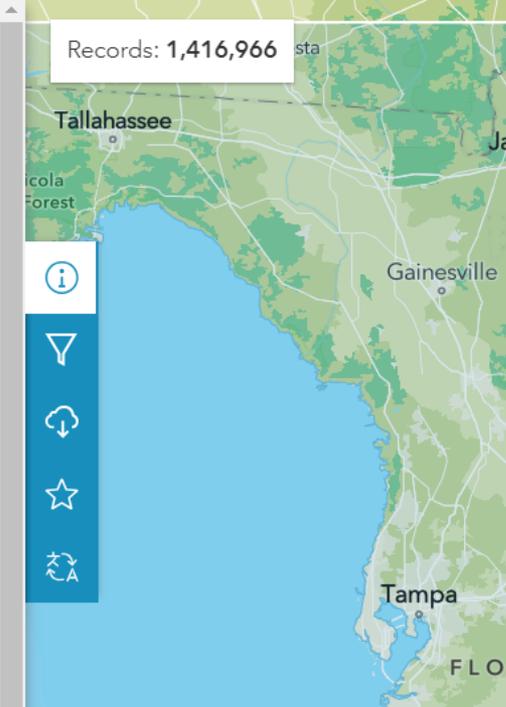
 **FDEP Open Data Administrator**  
Florida Department of Environmental Protection

### Summary

To compile the 5 Florida Land Use datasets into one consistent geographically continuous state-wide layer for analysis and display purposes.

[View Full Details](#)

[Download](#)



# Statewide land cover maps

- Cooperative land cover
  - Partnership between FWC and FNAI
  - Based off 37 mapping sources, including Water Management District maps
  - Frequent revisions and refinements



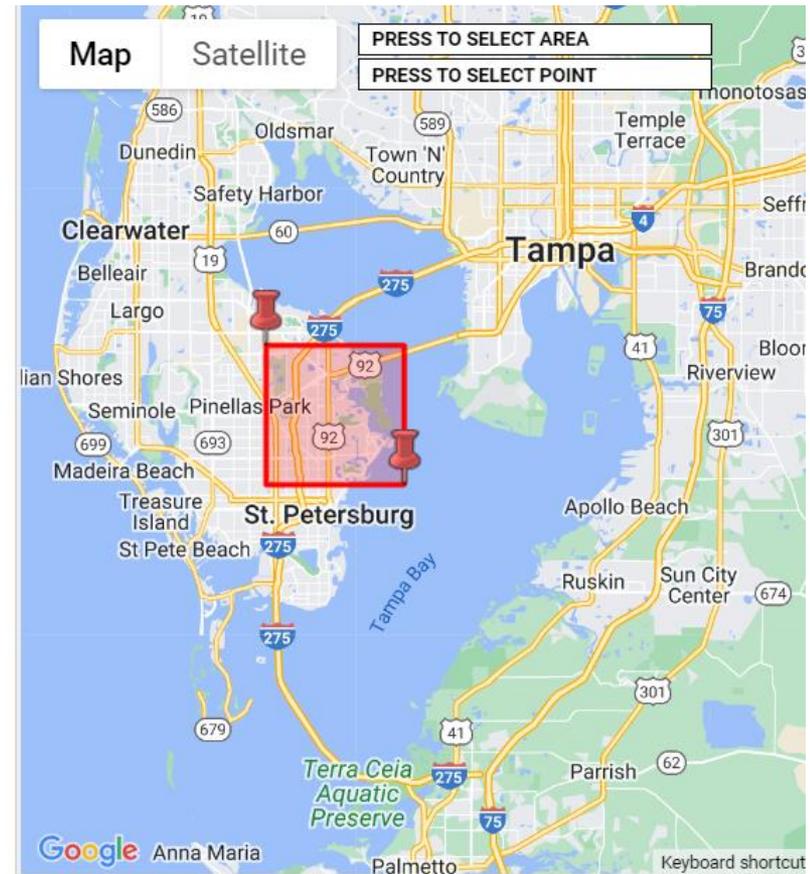
<https://myfwc.com/research/gis/wildlife/cooperative-land-cover/>

# Online Resources

- Historical habitat data
- University of Florida Aerial Photo Library

<http://ufdc.ufl.edu/aerials>

Select area of  
interest on  
interactive map



# Online Resources

- Historical habitat data
- University of Florida Aerial Photo Library

<http://ufdc.ufl.edu/aerials>

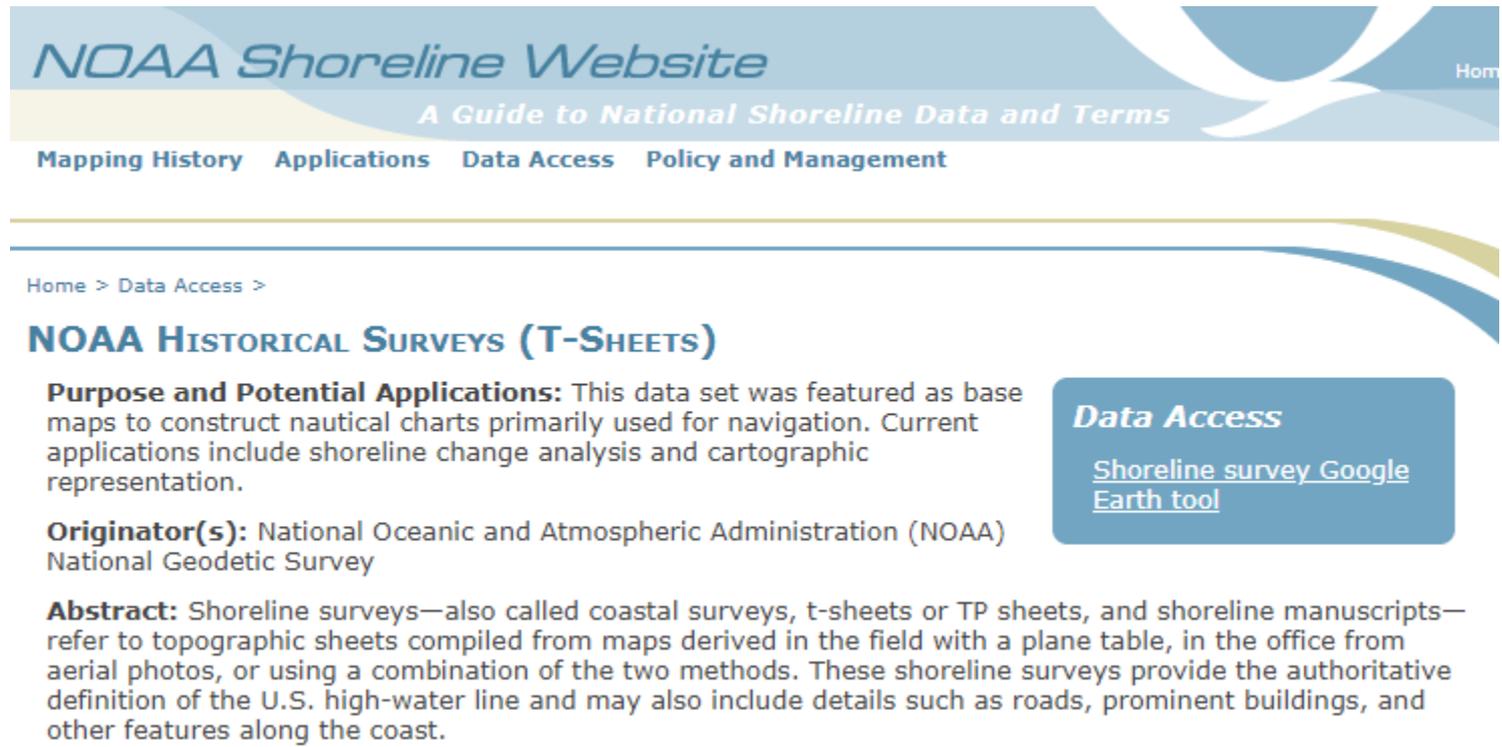
View historical  
photographs of  
selected area



St. Petersburg in 1943

# Online Resources

- Historic habitat data
- NOAA topographic surveys (T-sheets)
- <https://shoreline.noaa.gov/data/datasheets/t-sheets.html>



The screenshot shows the NOAA Shoreline Website header with the title "NOAA Shoreline Website" and the subtitle "A Guide to National Shoreline Data and Terms". Navigation links include "Mapping History", "Applications", "Data Access", and "Policy and Management". The breadcrumb trail is "Home > Data Access >". The main heading is "NOAA HISTORICAL SURVEYS (T-SHEETS)". The "Purpose and Potential Applications" section states that the data set was used for nautical charts and is now used for shoreline change analysis. The "Originator(s)" are listed as NOAA and the National Geodetic Survey. The "Abstract" describes the surveys as topographic sheets compiled from field maps, aerial photos, or a combination. A blue box on the right contains the "Data Access" link: "Shoreline survey Google Earth tool".

*NOAA Shoreline Website*

*A Guide to National Shoreline Data and Terms*

Mapping History Applications Data Access Policy and Management

Home > Data Access >

## NOAA HISTORICAL SURVEYS (T-SHEETS)

**Purpose and Potential Applications:** This data set was featured as base maps to construct nautical charts primarily used for navigation. Current applications include shoreline change analysis and cartographic representation.

**Originator(s):** National Oceanic and Atmospheric Administration (NOAA)  
National Geodetic Survey

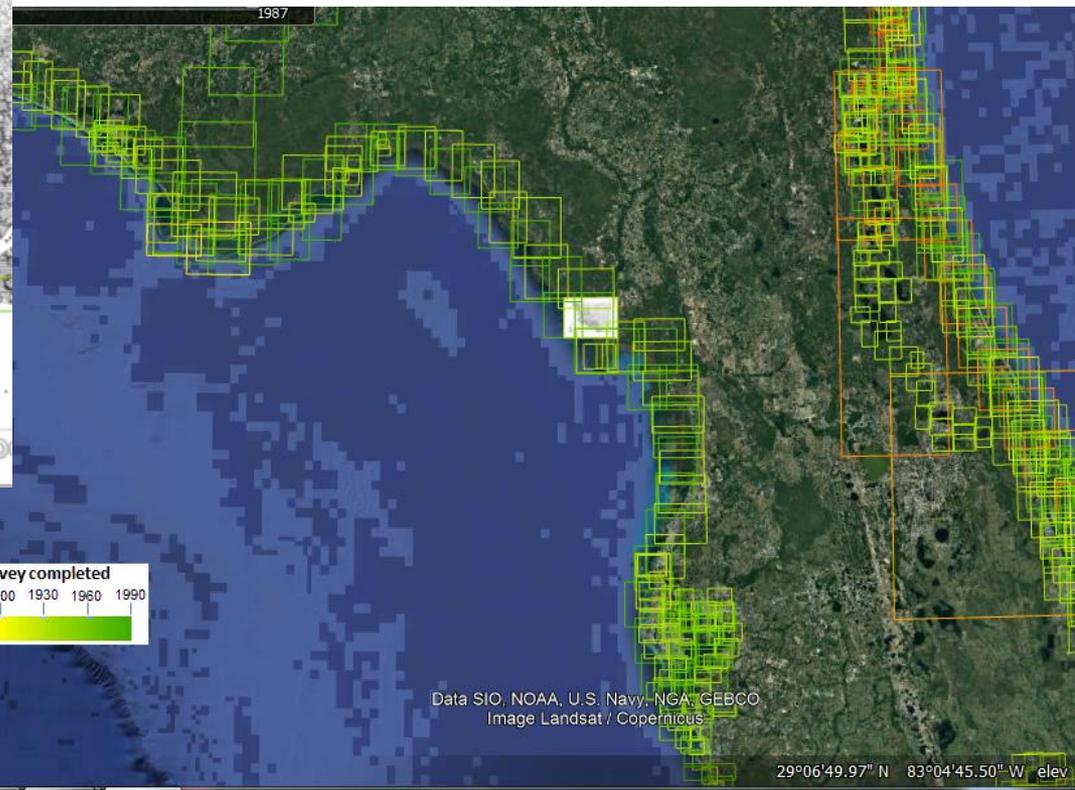
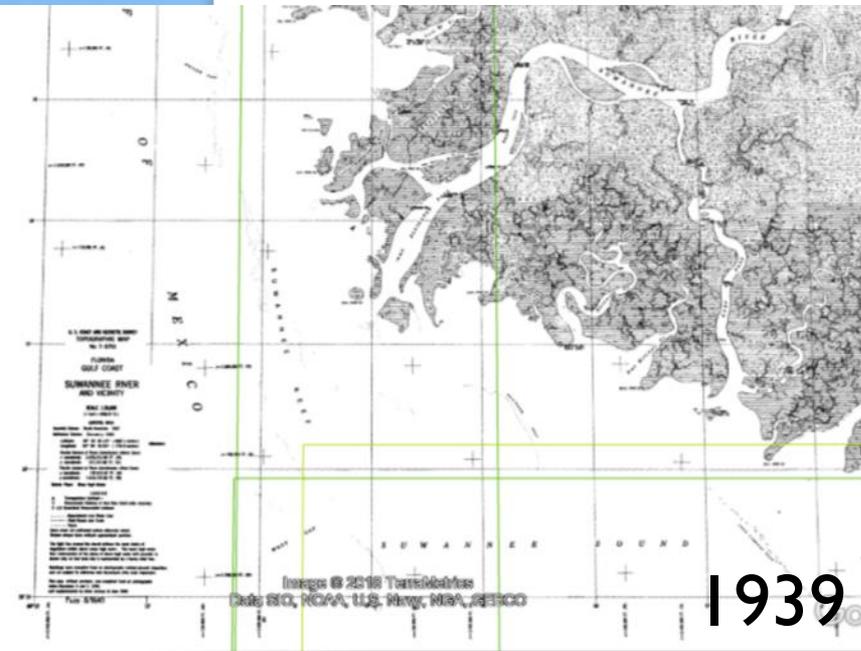
**Abstract:** Shoreline surveys—also called coastal surveys, t-sheets or TP sheets, and shoreline manuscripts—refer to topographic sheets compiled from maps derived in the field with a plane table, in the office from aerial photos, or using a combination of the two methods. These shoreline surveys provide the authoritative definition of the U.S. high-water line and may also include details such as roads, prominent buildings, and other features along the coast.

**Data Access**

[Shoreline survey Google Earth tool](#)

# Online Resources

- Historic habitat data
- NOAA topographic surveys (T-sheets)



# What's next?

- Update CHIMMP website with workshop content
- Continue updating CHIMMP chapters
- Send recent publications to Kara or Heather for distribution on the OIMMP or CHIMMP email lists
- Stay tuned for further updates on CHIMMP, OIMMP, and SIMM!