

Coastal Habitat Integrated Mapping and Monitoring Program (CHIMMP)

**Ryan P. Moyer &
Kara R. Radabaugh**

10 – 12 January 2017

**3rd USFWS Florida Mangrove &
CHIMMP Joint Workshop**



*Florida Fish & Wildlife Conservation
Commission*

*Fish & Wildlife Research Institute
St. Petersburg, Florida*

ryan.moyer@myfwc.com

kara.radabaugh@myfwc.com



Introduction to CHIMMP

- Funded by Florida's State Wildlife Grants (SWG) Program in order to support the study of high priority coastal habitats and meet requirements of the State Wildlife Action Plan



CHIMMP Team



Ryan P. Moyer, Ph.D. (PI)



Kara Radabaugh, Ph.D. (Coordinator, Co-PI)



Amber Whittle, Ph.D. (Co-PI)



Christina Powell (Coastal wetlands technician)



Christi Santi (GIS specialist)

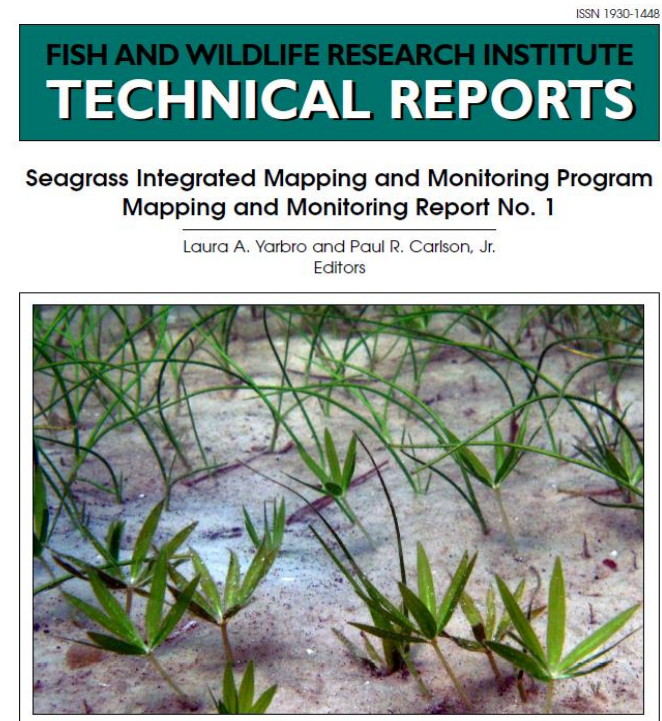


Kathleen OKeife (Geospatial support)

CHIMMP Origin

- Modeled after the Seagrass Integrated Mapping and Monitoring Program (SIMM)
 - Compiles statewide knowledge
 - Current mapping and monitoring programs
 - Regional status, threats, and recommendations
- SIMM report located at:

<http://myfwc.com/research/habitat/seagrasses/projects/active/simm/>



Florida Fish and Wildlife
Conservation Commission



FWRI Technical Report TR-17

2013



CHIMMP Evolution

- 4-year program, 2013-2017
- Identify and compile mapping and monitoring efforts for coastal wetlands
 - Complete statewide report
 - Identify gaps and needs
 - Facilitate partnerships and collaboration throughout the state
- Pilot mapping studies
- Comparison monitoring studies
- Convene workshops with statewide partners

CHIMMP Workshops

- **Designed to bring together representatives from mapping and monitoring programs from across Florida**
 - CHIMMP workshops to increase communication and coordination, pinpoint gaps and needs
 - Information and past workshop presentations available on CHIMMP website:

<http://ocean.floridamarine.org/CHIMMP/>

Coastal Habitat Integrated Mapping and Monitoring Program

CHIMMP Workshop Presentations Resources CHIMMP Regions Map 2014 CHIMMP Workshop

2015 CHIMMP Workshop

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2015 Workshop Agenda and Attendees

Workshop Presentation

Florida Mapping and Monitoring Resources

CHIMMP Workshops

- 1st workshop April 2014
 - 44 attendees, 12 presentations
- 2nd workshop September 2015
 - 49 attendees, 12 presentations
- 3rd (final?) workshop January 2017





Common Feedback on Gaps and Needs for Florida's Coastal Habitats

- Need more coordination among agencies
- Coastal wetlands monitoring often follows variable methodology
- Mapping more extensive than monitoring, but classifications vary widely.
 - Historical/very recent data lacking
- What about oysters?

Oyster Integrated Mapping and Monitoring Program (OIMMP)

- Following models of SIMM and CHIMMP
- 1st workshop to be held February 23-24 at Guana Tolomato Matanzas NERR
- Email Kara.Radabaugh@myfwc.com if you'd like to join the email list or attend the workshop



CHIMMP Monitoring

- **Compare monitoring methodology**
 - Side-by-side comparison of common monitoring techniques (NERR, EPA, PCQ, MangroveWatch, etc...)
 - Determine needs and best practices for monitoring



Pilot monitoring studies in Clam Bayou, Gulfport.

Pilot Monitoring at Clam Bayou

- 2011 SWFWMD Restoration Project
 - Planted as *Spartina* marsh; rapid mangrove encroachment

December 2014



December 2016



CHIMMP Report Updates

- Prior workshop attendees contributed to statewide report
 - 48 statewide contributors
- Workshop feedback dictated report content





CHIMMP Report Chapter Contents

- Regional map
- Introduction to regional history/ecology
- Threats to salt marshes and mangroves
- Summary of select mapping and monitoring programs
- Recommendations for future protection, management, and monitoring



CHIMMP Report Status

- Technical review completed, currently in the process of copy/science editing and formatting for publication
- Scheduled to be published as an FWRI Technical Report in the summer of 2017

Mapping Data in Florida

- Variety of mapping products available
 - See website for list of land cover classification schemes, mapping data providers, and monitoring methodologies

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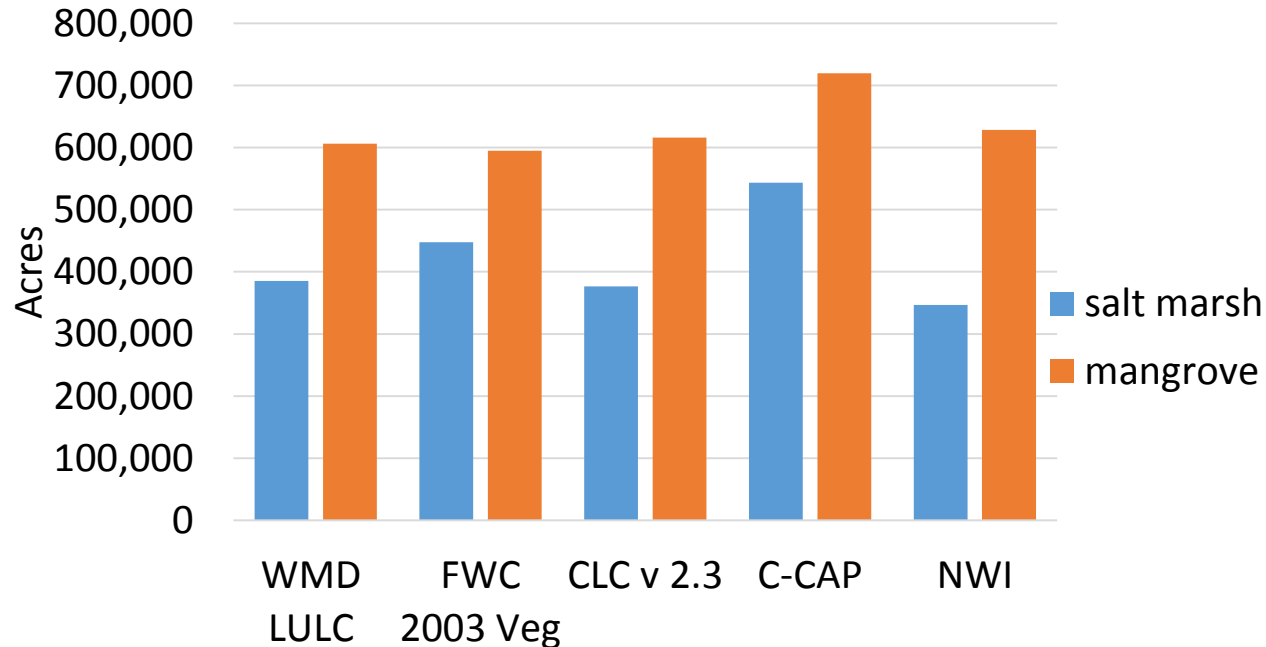
2015 Workshop Agenda and Attendees

Workshop Presentation

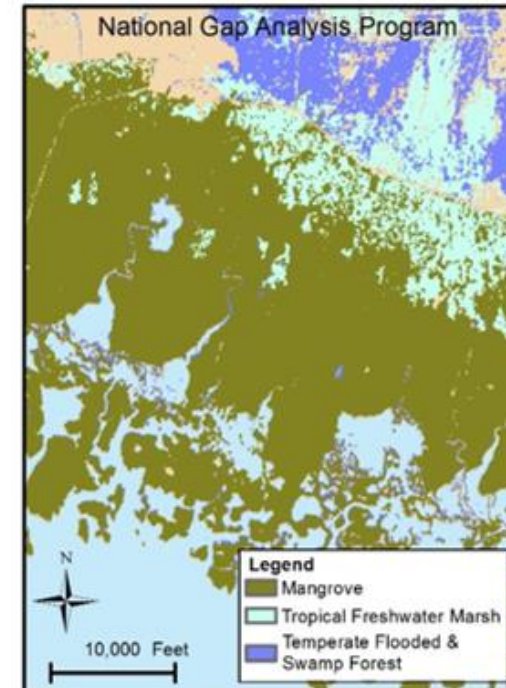
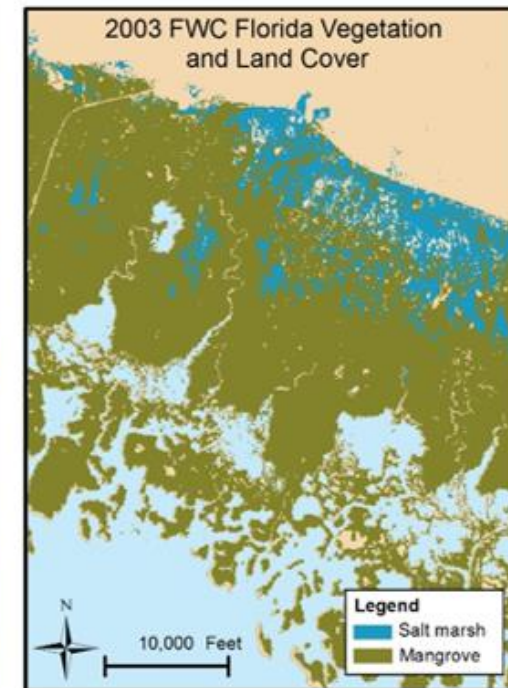
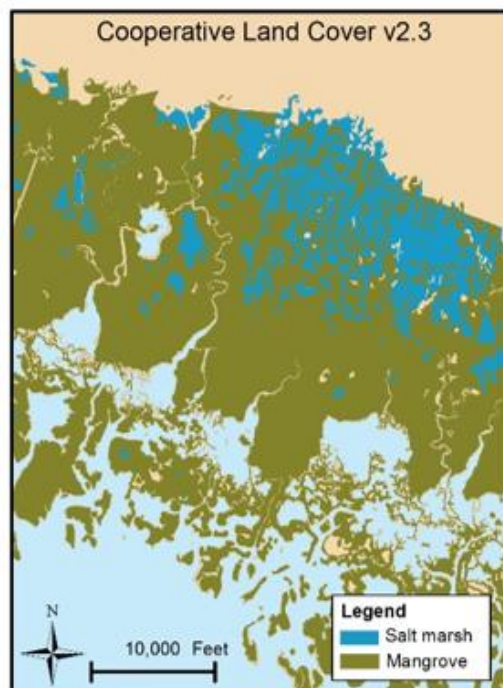
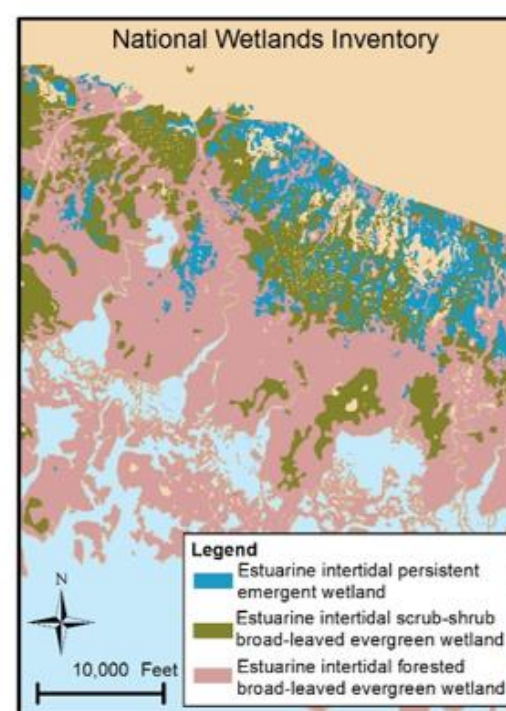
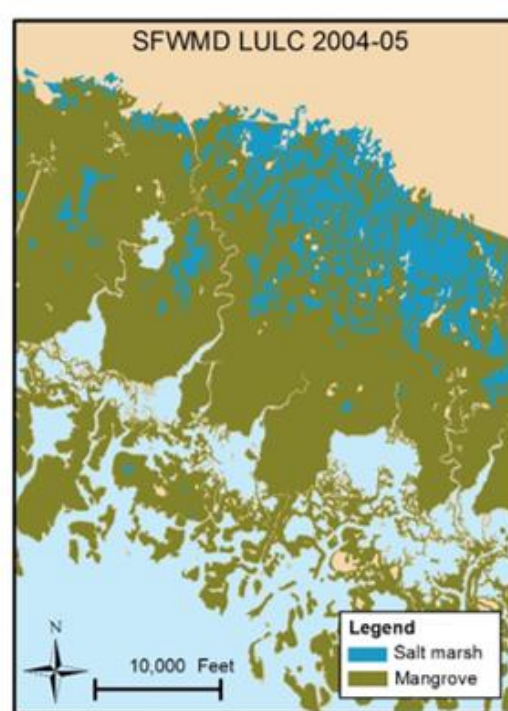
Florida Mapping and Monitoring Resources

How Many Acres of Coastal Wetlands are in Florida?

Habitat	Florida Water Management Districts LULC maps	FWC 2003 Florida Vegetation and Land Cover	Cooperative Land Cover version 2.3	NOAA C-CAP 2010	National Wetlands Inventory
Salt marsh	384,996	447,396	376,690	543,486	346,507
Mangrove	606,044	588,320	608,901	719,441	173,318
Scrub mangrove	-	6,519	-	-	455,093
Keys tidal rock barren	-	-	6,888	-	-



Ten Thousand Islands Example

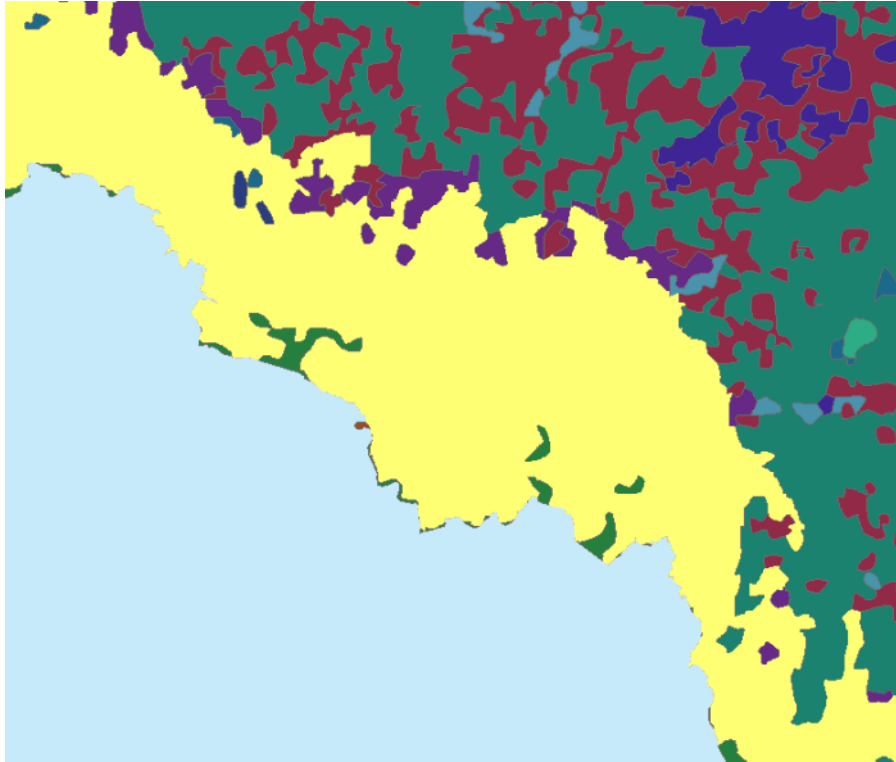


How has Mangrove Extent Changed in the Past 30 Years?



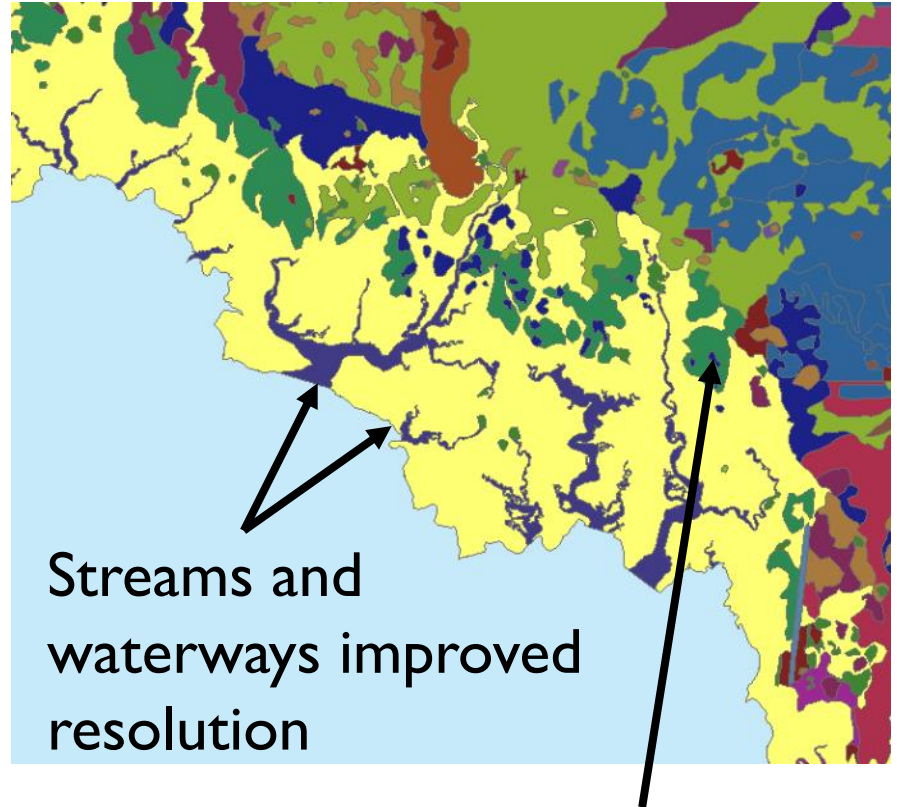
Mapping Methodologies Improved

SRWMD 1988 LULC



Salt marshes shown in yellow

SRWMD 2014 LULC



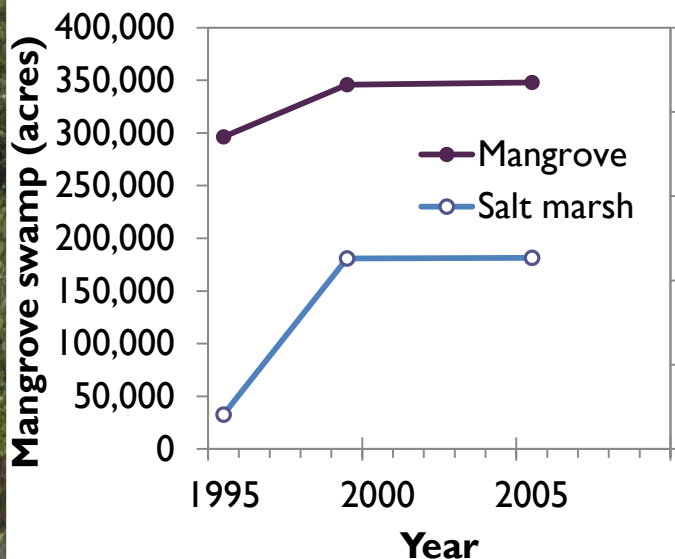
Streams and
waterways improved
resolution

New category: non-vegetated
wetlands (forest green)

Variability in Mapping Data

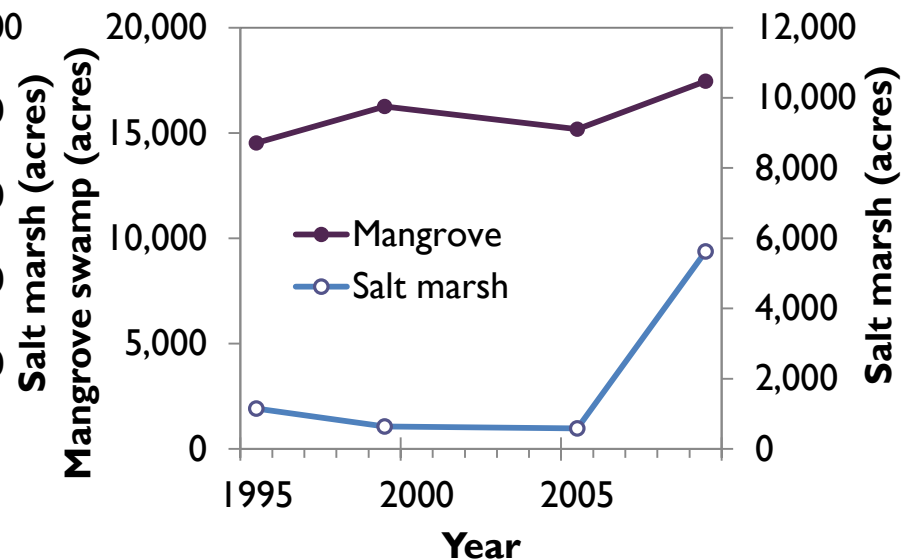
Everglades SFWMD LULC data

Year	Mangrove	Salt marsh
1995	296372	8144
1999	345908	45188
2005	348018	45335

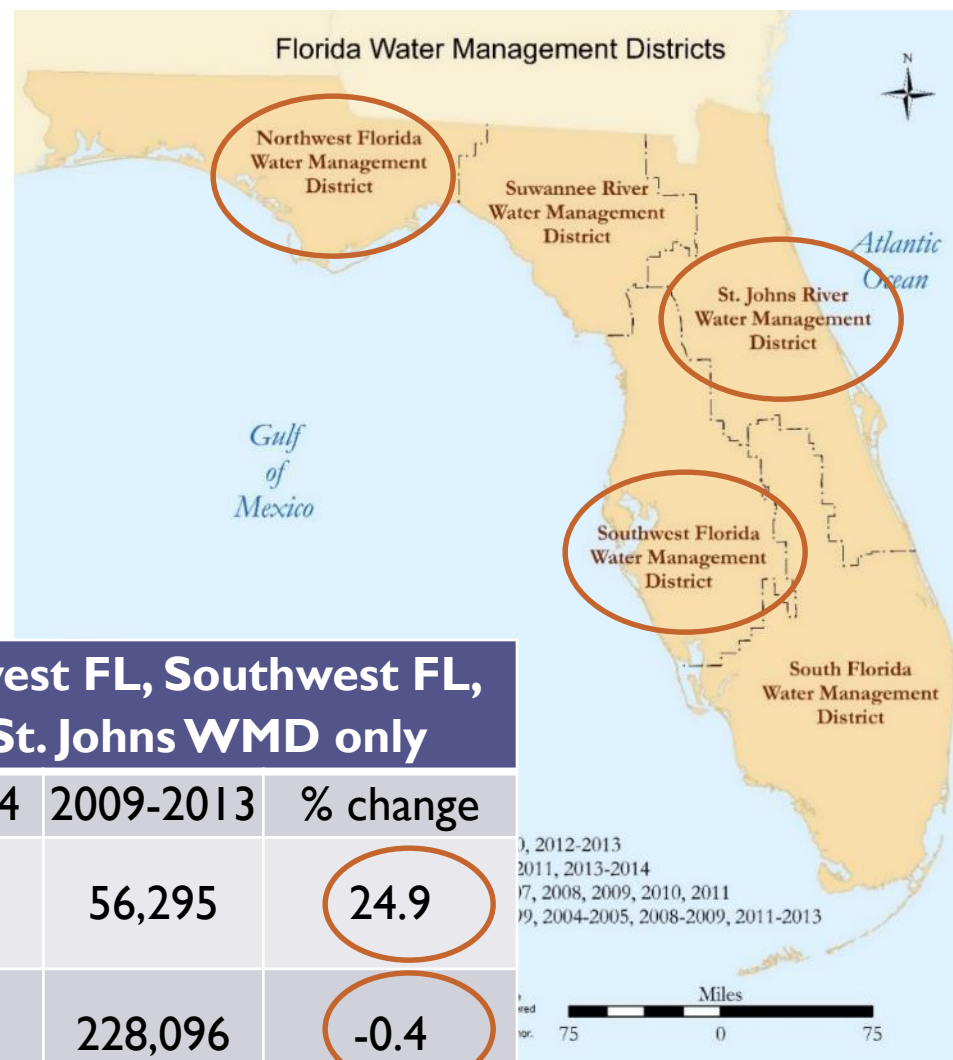


Biscayne Bay SFWMD LULC data

Year	Mangrove	Salt marsh
1995	14526	1155
1999	16261	641
2005	15184	586
2009	17455	5623

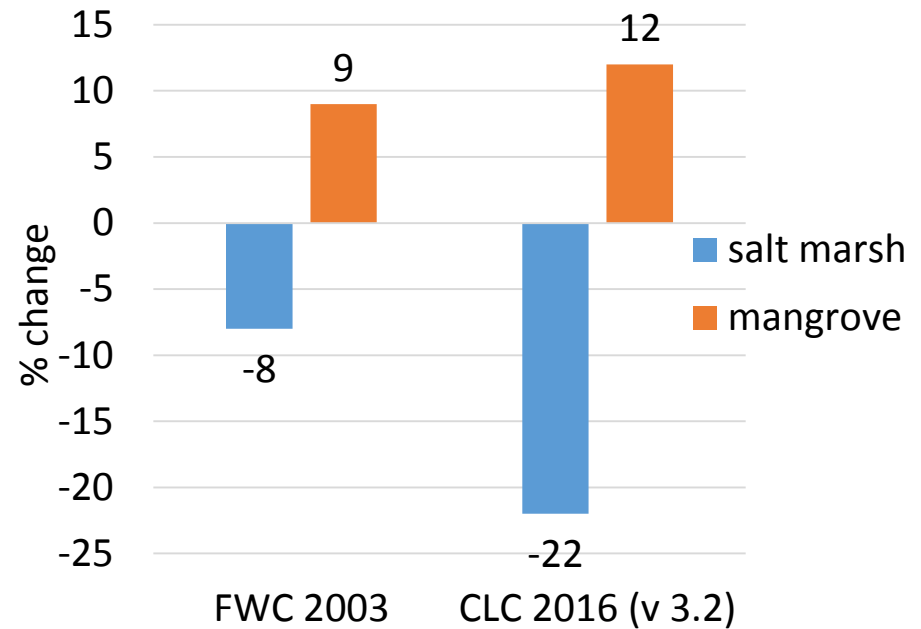


WMD data shows
increase in
mangrove extent
and decrease in salt
marsh extent



	Northwest FL, Southwest FL, and St. Johns WMD only		
Class	1990-1994	2009-2013	% change
Mangrove (6120 FLUCCS)	45,089	56,295	24.9
Saltwater marsh (6420 FLUCCS)	228,905	228,096	-0.4
Mangrove + salt marsh	273,994	284,392	3.8

Statewide data shows similar trend in mangrove expansion at the expense of salt marshes



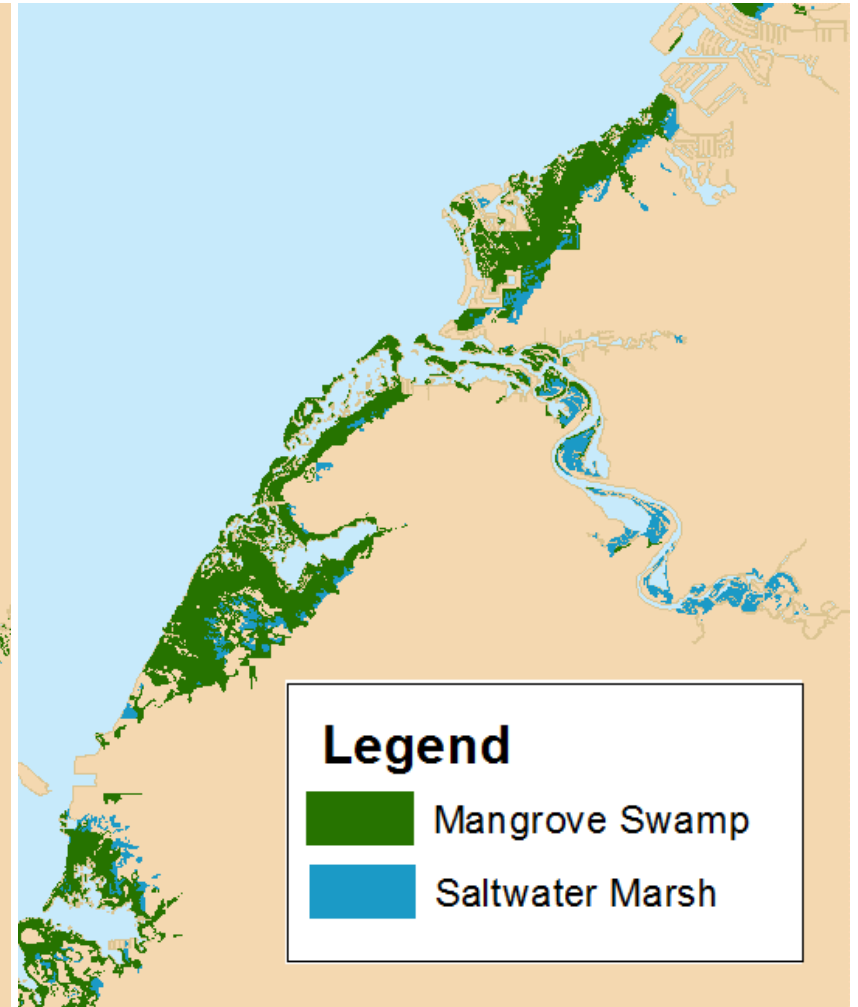
Class	FWC 1985-89	FWC 2003	% change	CLC 2016 (v 3.2)	% change
Mangrove (incl. Scrub Mangrove)	547,000	594,839	9	614,000	12
Salt Marsh	486,000	447,396	-8	379,000	-22
Mangrove + salt marsh	1,033,000	1,042,235	1	993,000	-4

Tampa Bay Example

FWC 1985-1988 land
cover data

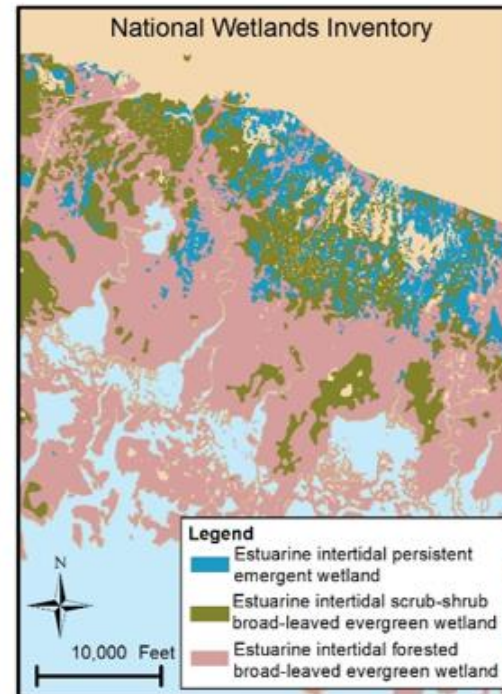
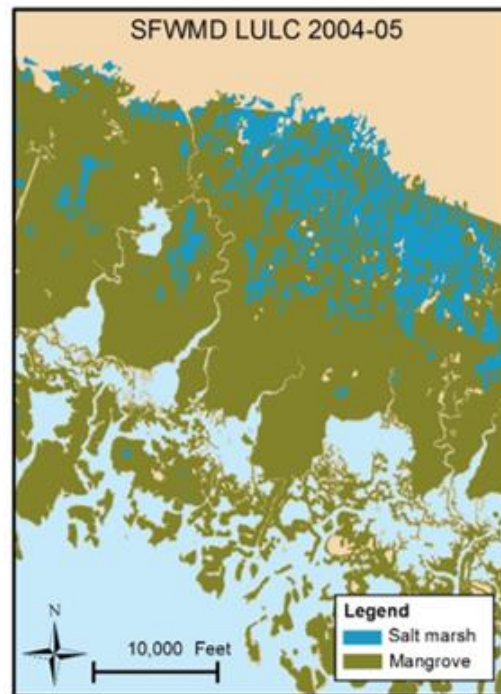


2016 Cooperative
Land Cover (v 3.2)



Mapping Summary

- Mapping data and categories can vary largely between sources, methodologies are often modified (and not directly comparable)
- Large availability of mapping data when compared to other coastal habitats (e.g. seagrasses, oysters)



Mapping Summary

- Land classification schemes are not designed to incorporate a mixture of vegetation types
- Hinders study of mangrove expansion, intrusion of invasive species

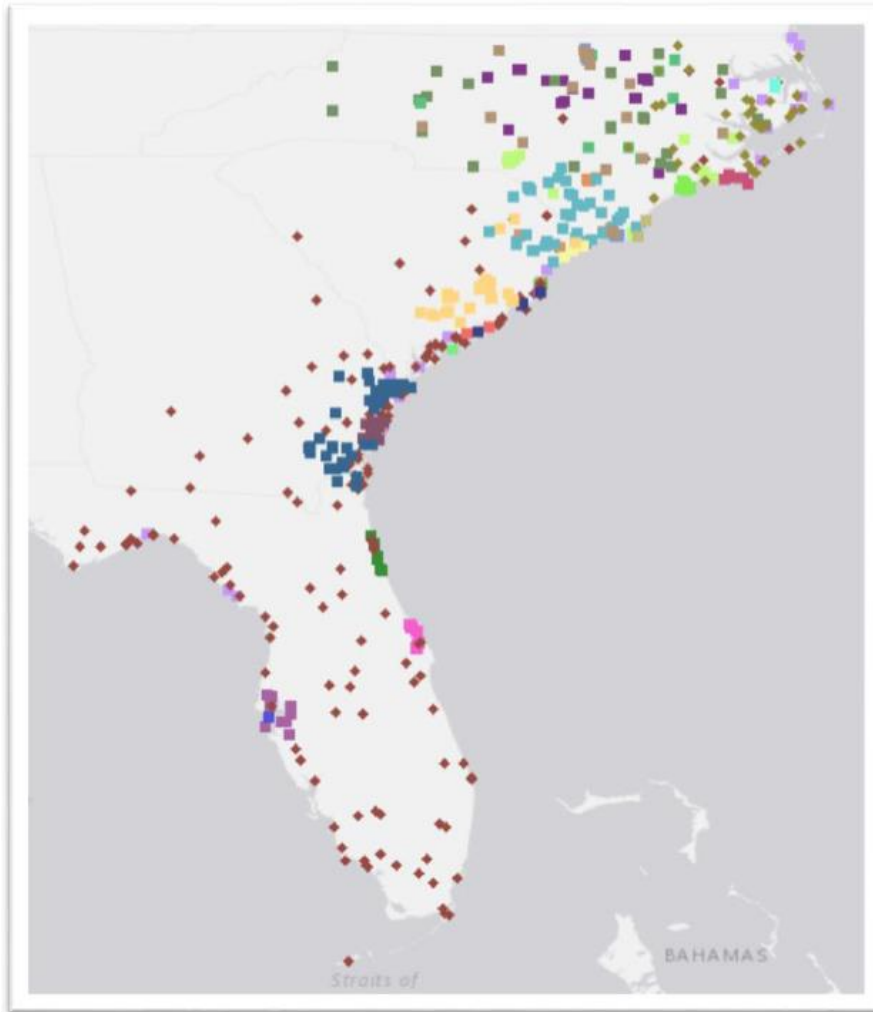


Monitoring Coastal Wetlands

- Two general types of monitoring:
 - Short term monitoring at restoration or mitigation sites.
 - Short to long term monitoring on protected lands – Tampa Bay Critical Coastal Habitat Assessment
- Methodology varies
 - Summary of common monitoring protocols on website



Governor's South Atlantic Alliance Coastal Wetlands Monitoring Database



- Compilation of coastal wetland monitoring programs in the southeast US.
- Report and monitoring database available at <http://southatlanticalliance.org/coastal-wetlands-monitoring-report-and-database/>

Questions?



- Mapping assistance provided by Christi Santi, Rene Baumstark, Jennylyn Redner
- Field assistance provided by Amanda Chappel, Taylor Nielsen, Emma Dontis, Reba Campbell