

**Coastal Habitat Integrated Mapping and Monitoring Program (CHIMMP)**  
**Workshop Conclusions and Future Directions**  
**April 29-30 2014**

The majority of the content of this document is based upon feedback and contributions from attendees of the CHIMMP workshop that took place at the Fish and Wildlife Research Institute (FWRI) on April 29-30 2014. This document will be updated periodically.

**Last update: May 16 2014**

**Subdivisions of Florida that will comprise the 10 chapters of the CHIMMP report:**



## Regional Coauthors

*Coauthors have been arranged based upon notes submitted during the CHIMMP workshop. Please feel free to modify co-authors as needed and let us know of any changes. If a group leader has been identified, they are listed in italics. People listed as “suggested” coauthors were not present during Day 2 of the CHIMMP workshop to officially sign up. They have been contacted by CHIMMP to determine their interest in participating. We encourage coauthors in their region to contact suggested coauthors, listed additional contacts, or any further people who may be able to provide relevant coastal wetland information.*

### Northwest Florida

- Coauthors
  - Maria Merrill (FWC), Beth Fugate (DEP)
- Additional contacts
  - Barbara Albrecht (University of West Florida)
  - Beth Stys, Jennylyn Redner (FWC)

### Big Bend & Springs Coast

- Coauthors
  - *Ellen Raabe (USGS)*
  - Suggested coauthors: Chris Anastasiou (SWFWMD), Timothy (St. Martins Marsh Aquatic Preserve DEP)
- Suggested additional contacts
  - Jenna Harper (ANERR)
  - Kim Wren (ANERR)
  - Rob Matson (Suwanee River WMD)
  - Clinton Dawes (USF professor emeritus)
  - Keith Wiley (Pasco County Environmental Lands Program)
  - Caitlyn Snyder (ANERR)

### Tampa Bay

- Coauthors
  - *Lindsay Cross (TBEP), Kris Kaufman (SWFWMD), Ed Sherwood (TBEP), Frank Courtney (FWC), Chris Miller (St. Leo), Bill Ellis (St. Leo)*
  - Suggested author: Melissa Harrison (Pinellas county)
- Additional contacts
  - Carole McIvor (USGS)

### **Sarasota Bay**

- Coauthors
  - *Jay Leverone (SBEP)*
- Additional contacts
  - Jon Perry (Sarasota County)
  - Tony Janicki (Janicki Environmental, Inc)

### **Charlotte Harbor and Estero Bay**

- Suggested coauthors
  - Judy Ott (CHEP) and Lisa Beever (CHEP)
- Additional contacts
  - Jim Beever (Southwest Florida Regional Planning Council)

### **Collier County**

- Coauthors
  - *Jill Schmid (Rookery Bay NERR)*, Robin Lewis (Coastal Resources Group)
  - Suggested: Ken Krauss (USGS), Mike Barry (The Institute for Regional Conservation), Kathy Worley (The Conservancy of Southwest Florida)
- Additional contacts
  - Laura Flynn (Coastal Resources Group)

### **South Florida**

- Coauthors
  - Tom Smith (USGS)
  - Suggested: Pablo Ruiz, Kevin Whelan (South Florida/Caribbean Inventory and Monitoring Network), Chris Bergh (The Nature Conservancy), Sarah Bellmund (Biscayne National Park), Laura Flynn (Coastal Resources Group)
- Additional Contacts
  - Pamela Sweeney (Biscayne Bay Aquatic Preserves)
  - James Byrne (The Nature Conservancy)
  - Curtis Kruer (Coastal Resources Group)
  - Joan Browder (NOAA)
  - Joe Serafy (NOAA, RSMAS)
  - Pete Harlem (FIU-SERC)
  - Diego Lirman (RSMAS)
  - Steve Blair, Josh Mahoney (Miami-Dade DERM)
  - Joanna Walczak, Janice Duquesnel (FDEP)
  - Scott Burns, Matt Morrison (SFWMD)
  - Jerome Lorenz (Audubon of Florida)
  - Patrick Pitts (USFWS)
  - Lisa Krinsky (Florida Sea Grant)

### **Palm Beach and Broward**

- Coauthors
  - *Eric Anderson (Palm Beach County)*, Bud Howard (Lox River Management District, suggested)
- Additional contacts
  - Pat Quinn, Ken Banks, Peter Burke, Katie Lelis, Linda Sunderland (Broward County)
  - Marion Hedgepeth (SFWMD)
  - Matt Raffenberg (Florida Power and Light Environmental Services)
  - Charles Jabaly (Florida Park Service)

### **Indian River Lagoon**

- Coauthors
  - *Ron Brockmeyer (SJRWMD)*, Jeff Beal (FWC), J. Cho (Bethune-Cookman University), Brian Sharpe (DEP)
- Additional contacts
  - Mark Provancha (Kennedy Space Center)
  - Mark Virgilio, Mark Sharpe (IRL Aquatic Preserves)
  - Ed Proffitt (FAU)
  - Ilka "Candy" Feller (Smithsonian Environmental Resource Group)
  - Gordon Anderson (USGS)

### **Northeast Coast**

- Coauthors
  - *Andrea Small (DEP)*, *Nikki Dix (GTM NERR)*, Ron Brockmeyer (SJRWMD), J. Cho (Bethune-Cookman University)
- Additional contacts
  - Ray Grizzle (University of New Hampshire)
  - Ilka "Candy" Feller (Smithsonian Environmental Resource Group)

### **General**

- Nikki Dix – offered to help with monitoring section of report and/or recommendations section
- Robin Lewis – offered to serve as an editor
- Laura Geselbracht-offered to serve as an editor
- Kris Kaufman – offered to edit mapping methods section of introduction

## General comments from workshop attendees

- General report comments
  - The general consensus was that report cards are not ideal as a summary of regional coastal wetland status due to variable ecosystems and hydrology, methods used by monitoring programs (or lack of monitoring programs), subjectivity of categories of assessment, and possibility of misinterpretation. Instead, a table that provides a regional summary of coastal wetland information would be preferable for each region of Florida. The contents of the table will be left up to regional co-authors.
  - The CHIMMP report should be accessible to public elected officials but needs to be scientifically defensible
  - The introduction of the CHIMMP report should clearly outline the goals of the project i.e. "CHIMMP's purpose is to characterize past and current conditions of coastal habitats in Florida coastal regions and identify a vision for future conditions to provide a road map for management and restoration activities."
  - Don't use "commercial value," but rather "economic value." This captures aesthetic value, property values, ecotourism etc. and goes beyond just fisheries and commercial operations.
  - See Florida Aquatic Habitats and Fisheries (edited by Bill Seaman) for mangrove marsh definition.
  - Use watersheds as natural boundaries while subdividing the panhandle into regions.
- Regional chapters may want to include:
  - A list of additional resources for topics that were not addressed in detail
  - Information on past, present, and future coastal conditions and vegetation
  - Information on how much potential habitat area is present that may be overtaken by coastal wetlands in the future
  - An overlay of disturbance and hydrology
- Limitations
  - Many regions lack monitoring efforts; land cover maps do not enable detection of stressed ecosystems
  - The encroachment of mangroves into salt marshes cannot be mapped using the traditional land cover categories because their occurrence is patchy, often with single mangrove trees surrounded by salt marsh.
  - Statewide landcover mapping may have too coarse of a resolution (ie 10 m) to detect change over time
  - It is difficult to set restoration goals because marsh and mangroves competing for the same habitat area
  - Some agencies may be limited in how they can describe threats (i.e. sea level rise, nuclear power plant impacts, etc)

- Recommendations for future
  - CHIMMP strive to include more monitoring and should recommend a spatial and temporal scale for monitoring and mapping. It would also be helpful for CHIMMP to help establish what should be monitored and a monitoring schedule.
  - Programs like MangroveWatch offer a method of mesoscale monitoring and use of crowdsourcing.
  - Hope that oyster reefs can be included in future efforts as they are also part of coastal habitats.
  - Grant discussions should focus on larger, more regional scales.

## Region-specific comments

*Regional boundaries are identified at the heading for each region. Boundaries may be modified if you coordinate with the group leader of a neighboring region. If modifications are made, please inform the CHIMMP coordinators and we will update the document. Additionally, regions may be further subdivided as desired within chapters.*

**Northwest Florida (Panhandle)** Western boundary: FL state line. Eastern boundary: Western edge of Apalachicola watershed

- Strengths and existing programs
  - USGS mapping coastal, emergent marsh throughout Gulf coast
  - Extensive protective lands, post oil spill imagery from 2012
  - New partnerships have formed as a result of oil spill & funding
  - St. Andrew Bay Resource Management Association
  - FWC wildlife management areas
  - Sediment elevation tables (SET) that measures changes in marsh elevation are conducted by USGS and Florida Geological Survey (FGS)
  - NRDA marsh monitoring
  - Some USGS modeling for climate impacts
  - Choctawhatchee Basin Alliance
  - Northwest Florida State College, Florida State University
  - Escambia county, Peridido Bay
  - FDEP aquatic preserves
  - Future RESTORE projects
- Limitations and gaps
  - Lack of mangrove mapping/monitoring exists in this region, although they have begun to move north
  - Focus is often on mapping rather than monitoring
  - SLR impacts evident in this region

**Big Bend & Springs Coast** Western boundary: Western edge of Apalachicola watershed. Southern boundary: Northern edge of Pinellas County

- Strengths and existing programs
  - Ellen Raabe/USGS used wetness and biomass measurements based on LANDSAT (28.5 m resolution) for Big Bend
  - USGS mapping coastal, emergent marsh throughout Gulf coast
  - USFWS wildlife refuges (St. Vincent, St. Marks)
  - Apalachicola National Forest and Apalachicola River Water Management Area
  - Apalachicola National Estuarine Research Reserve
  - FDEP aquatic preserves. Timothy Jones willing to begin collecting quantitative monitoring data for Big Bend preserves
  - Big Bend NWR's and DEP State Parks
  - Florida State University
  - NRDA oil spill oyster and marsh mapping
  - Future RESTORE projects
  - Sediment elevation tables (SET) that measures changes in marsh elevation are conducted by USGS and Florida Geological Survey (FGS)
  - Pasco County Environmental Lands Acquisition and Management Program (ELAMP)
  - Crystal River National Wildlife Refuge
  - Suwanee River WMD
  - USFWS wildlife refuges (Lower Suwanee, Cedar Keys, Crystal River, Chassahowitzka)
- Limitations and gaps
  - Mangrove mapping and monitoring needs to extend further north due to growing range
  - Focus is often on mapping rather than monitoring
  - SLR impacts evident in this region

#### **(Central Gulf Coast General Comments)**

- Strengths and existing programs
  - Contiguous NEPs, so better management and coordinated projects
  - More sequential and diverse data sets such as environmental sensitivity index (ESI) data NOAA data, and USCG information.
  - McNulty et al. 1972 provides detailed historical coastal data for the Gulf coast
  - SWFWMD land use/land cover orthoquads
- Limitations and gaps
  - Less coordination in areas like Springs Coast
  - Gaps in historical baseline maps/data sources. Hard to have a real baseline because some urbanization occurred before time periods with good aeriels.
  - Spatial extent is determined periodically but there is little information on what is happening within the habitats
  - It is not possible to detect coastal wetland stress early because stress isn't incorporated in land use/land cover exercises (but could be incorporated)

- Indicators of health for rapid assessment (beyond invasive species) is difficult

**Tampa Bay** Northern boundary: Northern edge of Pinellas County. Southern Boundary: Manatee River and Passage Key Inlet

- Strengths and existing programs
  - Tampa Bay Estuary Program
  - Tampa Bay Critical Coastal Habitat Assessment
  - Hillsborough County Environmental Lands Acquisition and Protection Program
  - MangroveWatch
  - SWFWMD land use/land cover orthoquads
  - USF St. Petersburg
  - Tampa Bay aquatic preserves
- Limitations and gaps
  - Monitoring of mangrove trimming is difficult and there is no funding. The MangroveWatch program of Tampa Bay may be a comprehensive way to detect illegal mangrove trimming.

**Sarasota Bay** Northern boundary: Manatee River and Passage Key Inlet. Southern Boundary: Venice Avenue in downtown Venice.

- Strengths and existing programs
  - Sarasota Bay Estuary Program
  - Close ties with neighboring programs

**Charlotte Harbor and Estero Bay** Northern boundary: Venice Avenue in downtown Venice. Southern Boundary: Collier county northern edge

- Strengths and existing programs
  - CHNEP conducts shoreline mapping (ie seawall, meandering vs. natural by type) and monitoring
  - SWFRPC (SW Florida Regional Planning Council) conducted extensive salt marsh mapping
  - Sanibel-Captiva Conservation Foundation (SCCF)
  - Audubon of Southwest Florida (based in Naples)
  - Charlotte Harbor Preserve state park
- Limitations and gaps
  - Funding is limited and more consistent monitoring is needed
  - Aquatic preserve boundaries end at mean high water line,
  - Trimming and hedging of mangroves is inadequately regulated and enforced.

**Collier County** Northern Boundary: Collier county northern edge. Southern boundary: Collier county southern edge

- Strengths and existing programs



- Rookery Bay NERR conducts coastal habitat mapping (and monitoring?)
- Ten Thousand Islands National Wildlife Refuge conducts habitat mapping
- Conservancy of Southwest Florida
- Coastal Resources Group active in SW Florida

**South Florida** Gulf coast boundary: Collier county southern edge. Atlantic coast boundary: Miami-Dade county northern edge

- Strengths and existing programs
  - Everglades National Park has extensive habitat mapping and monitoring
  - Army Corps of Engineers
  - Comprehensive Everglades Restoration plan (CERP) includes seagrass to uplands and has a focus on coastal habitats. Mapping is very detailed (for example, several categories of mangroves).
  - Miami-Dade County Department of Environmental Resources Management (DERM)
  - Keys National Marine Sanctuary and has extensive habitat mapping and some monitoring
  - Florida Coastal Everglades Long Term Ecological Research
  - Integrated Biscayne Bay Ecological Assessment and Monitoring program (IBBEAM)
  - Biscayne Bay Aquatic Preserves
  - NOAA, FIU, University of Miami, National Park Service, Aquatic preserve state parks
  - Crocodile Lake National Wildlife Refuge
- Limitations and gaps
  - Severe budget cuts in SFWMD limited data collection (monitoring) in Miami-Dade and Monroe by the Dept. of Environmental Resources Management (DERM), FIU, and the NPS
  - Florida Bay Fisheries Habitat Assessment Program (FHAP) no longer running/data set discontinued (FWC)

**Palm Beach and Broward Counties** Southern boundary: southern edge of Broward County. Northern Boundary: northern edge of Palm Beach county.

- Strengths and existing programs
  - Broward County GIS department
  - Nova Southeastern University
  - Port Everglades consultants (Miller Legg, The Chapelle Group)
  - Hugh Taylor Birch State Park
  - Palm Beach County has shoreline habitat mapping 1985-1990, 2001, 2007. PBC Environmental Resource Management
  - Loxahatchee River District
  - MacArthur State Park
  - Broward County parks
  - Army Corps of Engineers

- Limitations and gaps
  - Severe budget cuts in SFWMD limited data collection in Miami-Dade and Monroe by the county DERM, FIU, and NPS.
  - Palm Beach county-maps historic but limited monitoring post-construction (5 years beyond project, no additional monitoring). Perhaps the Florida Park service has additional data.

**Indian River Lagoon** Southern boundary: northern edge of Palm Beach county. Northern boundary: Ponce Inlet

- Strengths and existing programs
  - Many good partnerships
  - Kennedy Space Center Geospatial lab
  - Brevard County, Volusia county
  - Florida Atlantic University
  - IRL Aquatic Preserve
  - IRL National Estuary Program
  - Smithsonian Mangrove group
  - A lot of public land near the northern Indian River Lagoon
  - About 40 SET stations established near Merritt Island and Canaveral
- Limitations and gaps
  - No long term monitoring, but project specific monitoring has occurred.

**Northeast Coast** Southern boundary: Ponce Inlet. Northern boundary: FL state line

- Strengths and existing programs
  - Good partnerships between agencies and with academics
  - Large amount of public land
  - Mapping includes 1943 land cover for old NCB, SJRWMD land cover and coastal vegetation map, FGS geomorphology geology, UF shoreline characterization, 1870's navigation charts. Historic maps for Georgia line to Jacksonville beach.
  - Guana Tolomato Matanzas NERR marsh and mangrove monitoring, gaps outside boundaries
  - Volusia county wetlands map
- Limitations and gaps
  - Gaps in shoreline characterization
  - Gaps in marsh and mangrove mapping and monitoring outside of GTM NERR boundaries