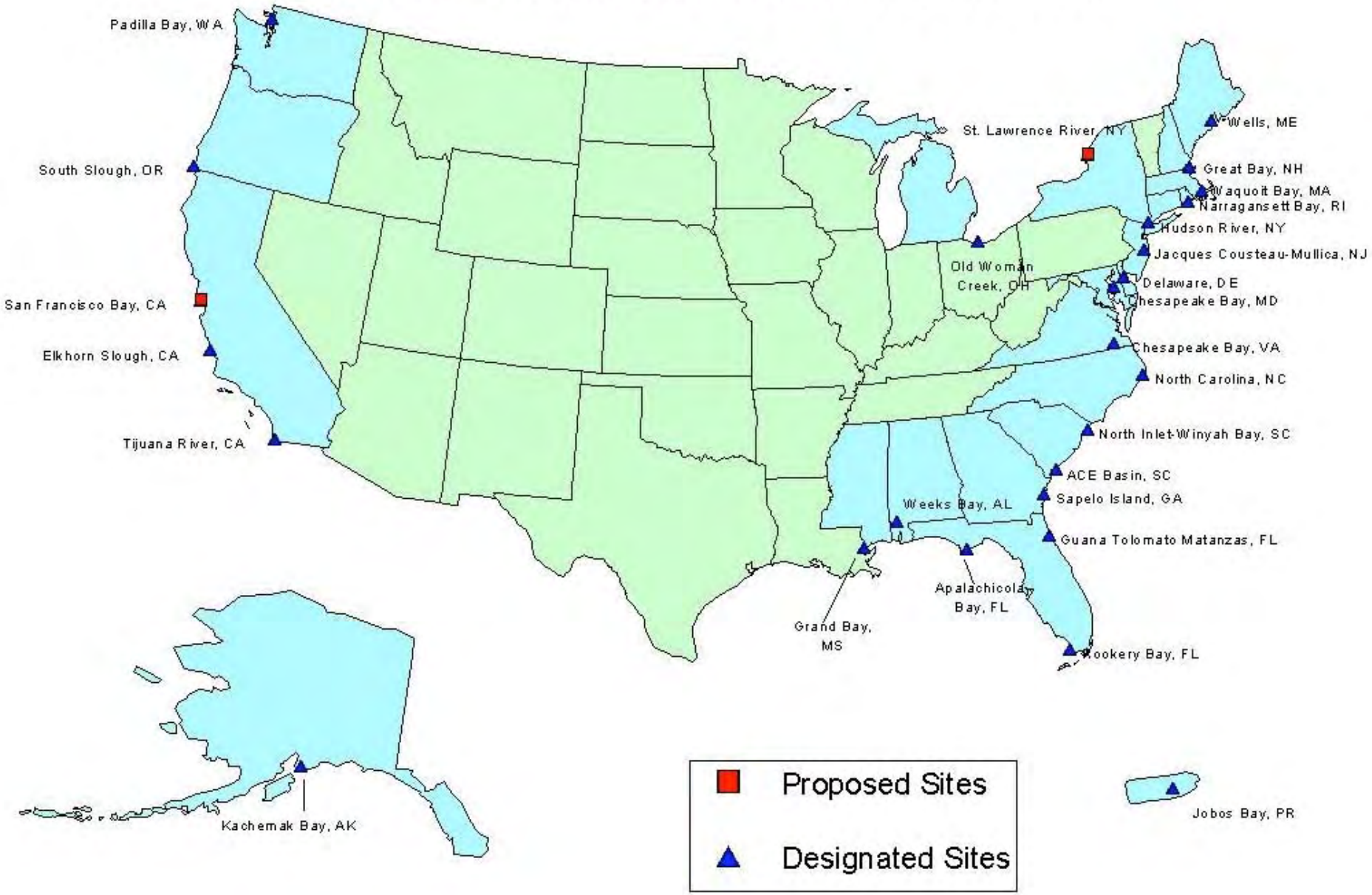
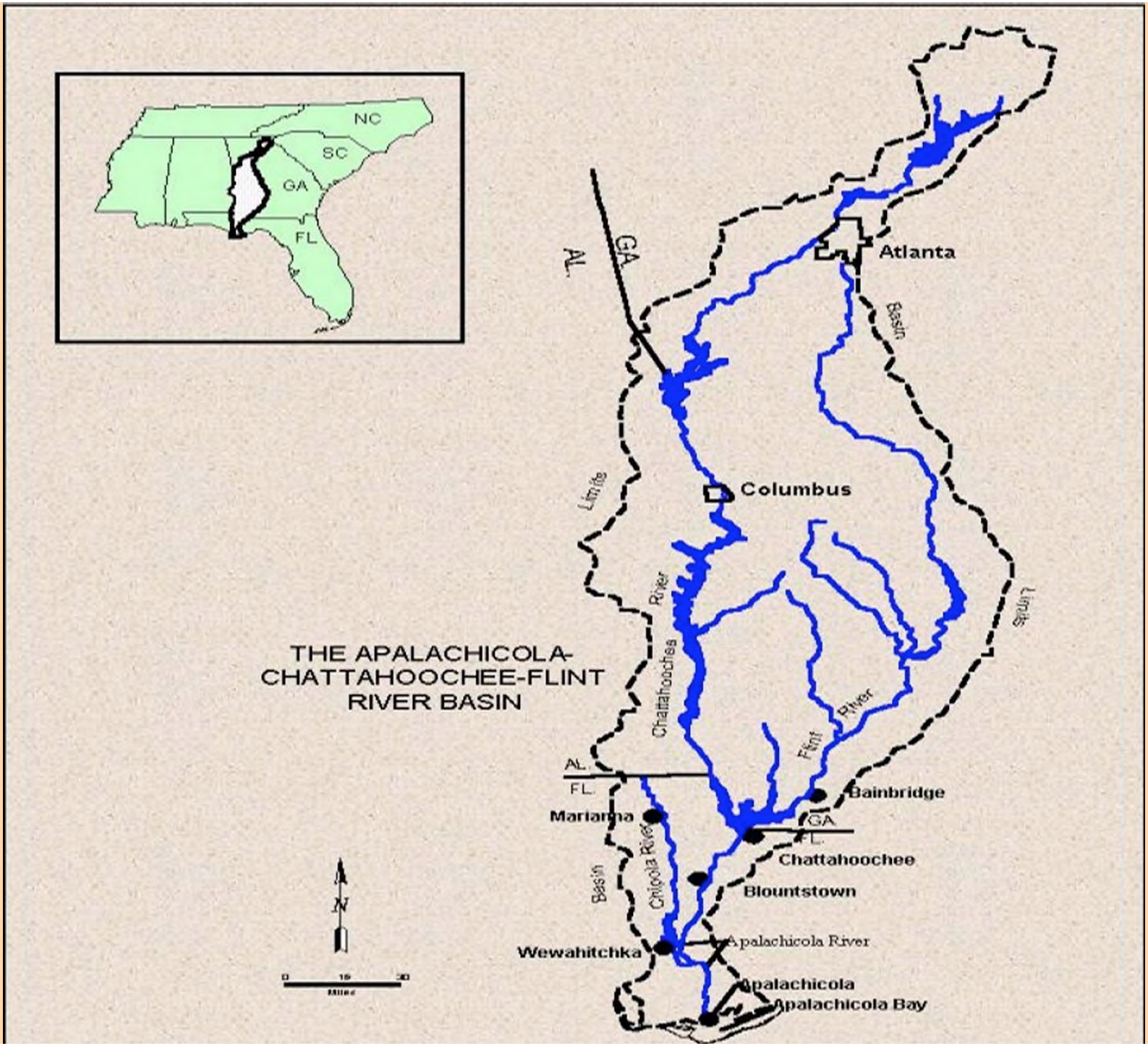
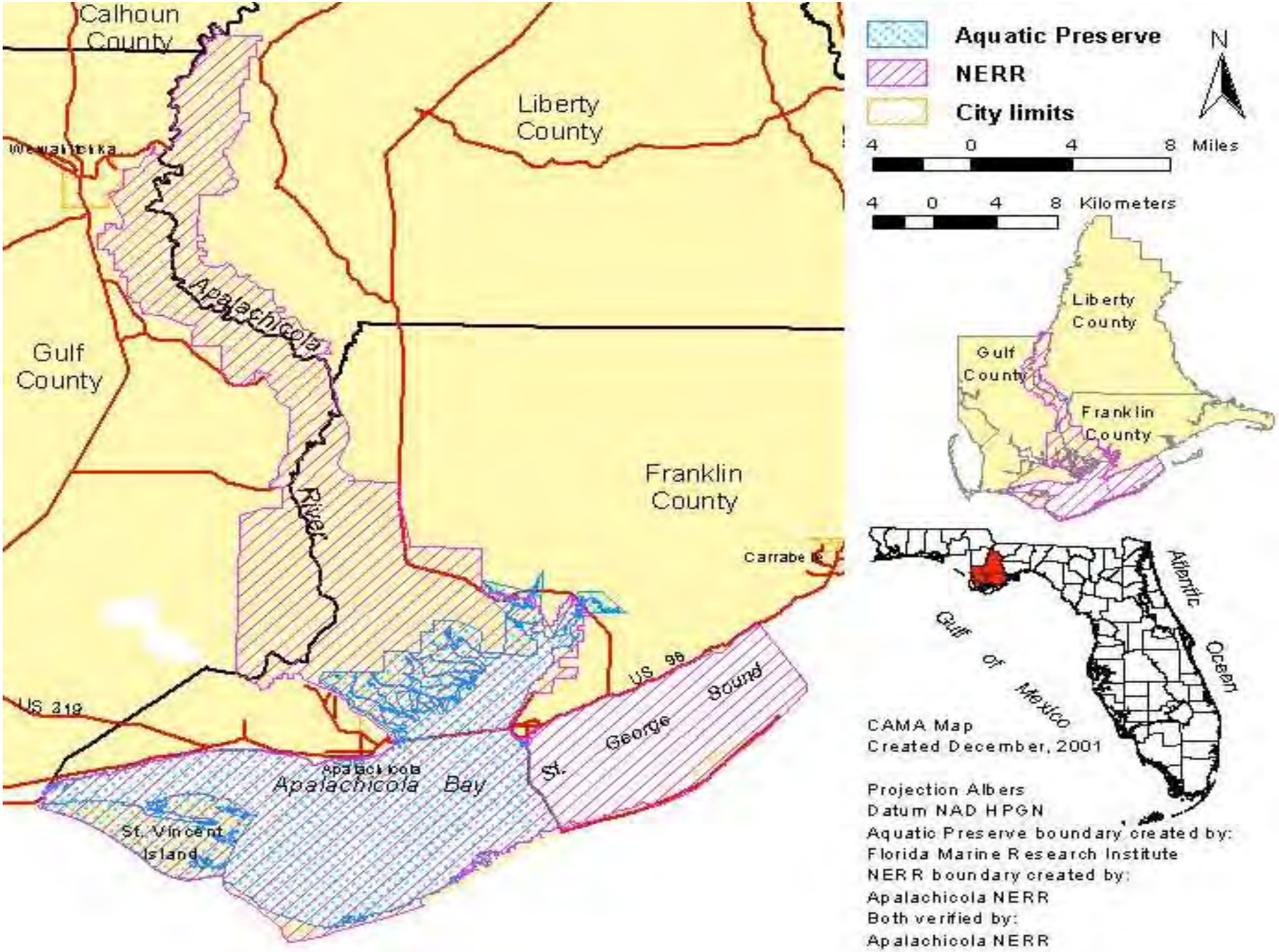
The Apalachicola National Estuarine Research Reserve

National Estuarine Research Reserve Locations




NC
SC
GA
FL
AL
GA
Atlanta
Basin
Limits
Columbus
River
Chattahoochee
Flint
River
Limits
THE APALACHICOLA-
CHATTAHOOCHEE-FLINT
RIVER BASIN
AL
FL
Bainbridge
Marianna
GA
FL
Chattahoochee
Basin
Chipola River
Blountstown
Apalachicola River
Wewahitchka
Apalachicola
Apalachicola Bay
N
0
15
30
Miles


Calhoun County
Liberty County
Gulf County
Franklin County
Apalachicola River
US 319
US 98
St. George Sound
Apalachicola Bay
St. Vincent Island
Aquatic Preserve
NERR
City limits
N
4 0 4 8 Miles
4 0 4 8 Kilometers
Liberty County
Gulf County
Franklin County
Atlantic Ocean
Gulf of Mexico
CAMA Map
Created December, 2001
Projection Albers
Datum NAD HPGN
Aquatic Preserve boundary created by:
Florida Marine Research Institute
NERR boundary created by:
Apalachicola NERR
Both verified by:
Apalachicola NERR

Apalachicola Bay System

Florida Dept. of Environmental Protection

Office of Coastal and Aquatic Managed Areas

- **Manages coastal lands and waters that have been designated as Aquatic Preserves, State Buffer Preserves, National Estuarine Research Reserves and the Florida Keys National Marine Sanctuary**
- **CAMA's mission is to protect, conserve, and manage Florida's coastal and aquatic ecosystems through environmental education, resource management, scientific research and monitoring, and partnerships.**
- **Approach: to consider the relationships and the needs of animals, plants and humans**

Apalachicola NERR

- 246,766 acres (river, floodplain, uplands, bay, barrier islands) Drainage basin - 19,600 sq.mi.
- Over 1,300 plant species (103 T&E)
- Over 40 species amphibs & 80 species of reptiles
- Over 50 species of mammals
- Over 300 species of birds (22 T&E)
- Over 180 species of fish (river & bay)
- Important commercial fishing industry

Priority Research Issues for the Apalachicola Reserve

- Upstream water diversion (ACF Water Wars)
  - Productivity impacts
  - Biodiversity impacts (river, floodplain, bay)
  - Economic impacts (commercial fishing)
- Local Coastal Development
  - Nutrient enrichment
  - Coliform increase (oysters)
  - Habitat/Species loss
  - Contaminants

Important concepts

- River flow is the most important determinant of salinity in Apalachicola Bay:
  - River flow is variable annually and seasonally
  - Low river flow means higher salinities in the bay
  - The impact of river flow is variable throughout the bay
  - Salinity is variable throughout the bay
  - Organisms and habitats found in the bay can tolerate variable salinities
  - River flow affects/controls residence time in the bay (very important)

Why worry about salinity?

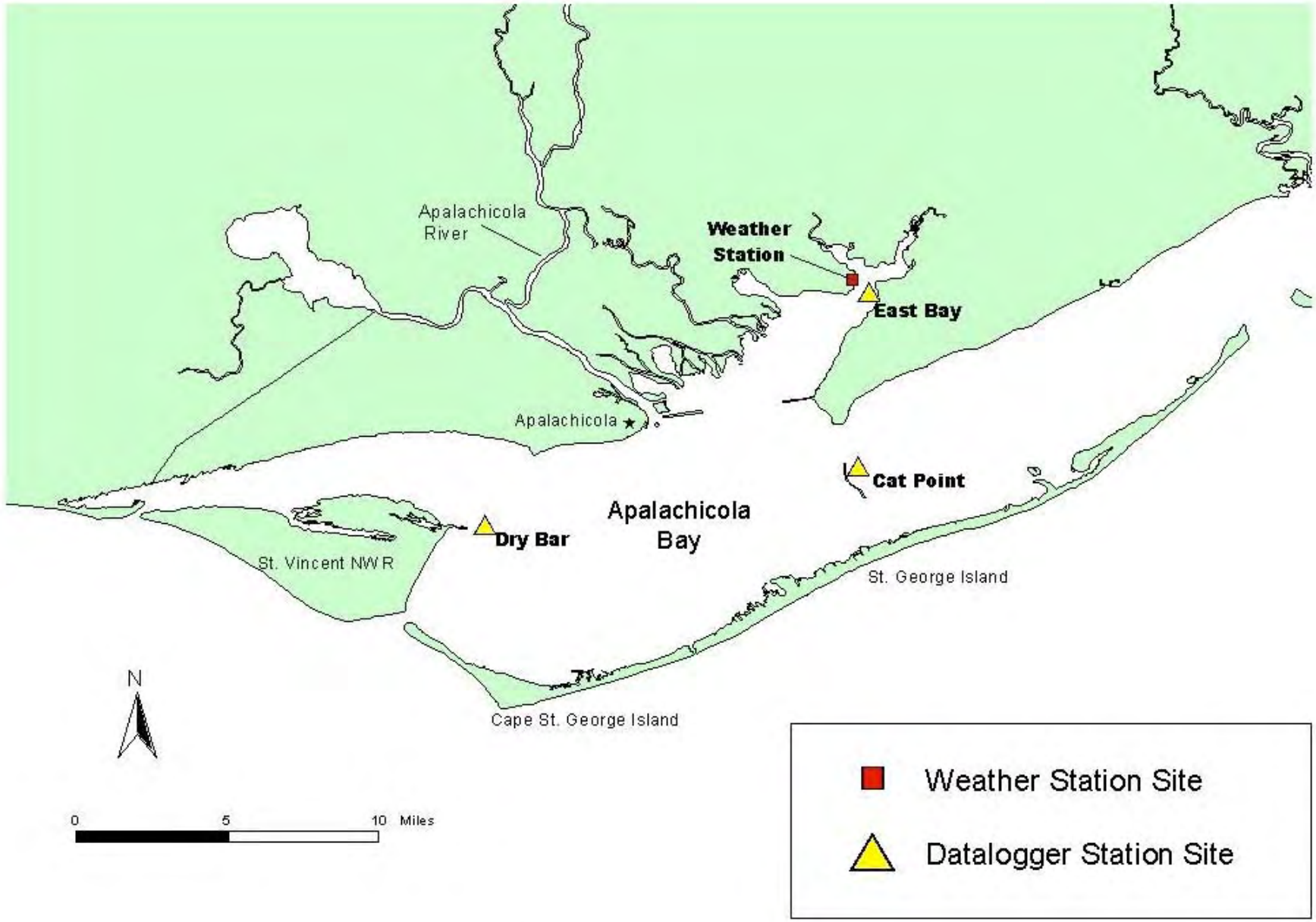
- Determines the species, distribution, and density of organisms found in the bay.
- Determines what and where predators are found in the bay.
- Influences the location of juvenile organisms.
- Indicative of nutrients & organic material coming down river (ie. Food).
- Bay not the same all over – very dynamic and variable
- Ex.- St. Joe Bay vs. Apalachicola Bay.

Possible impacts of reduced river flow on the bay

- **Decreased turbidity, increased water clarity with a shift to seagrass & macroalgae (loss of fresh SAV's).**
- **Decrease in nutrients to the bay and a loss of productivity**
- **Increased salinity with an increase in oyster predation & mortality.**
- **Shift in where oyster bars are found.**
- **Shift in fish species in the bay.**
- **Loss of some of the dynamic nature of bay**
- **Effects will occur over long term and will be subtle, not drastic.**

System-wide Monitoring Program (SWMP) :

Water Quality/Meteorological Data

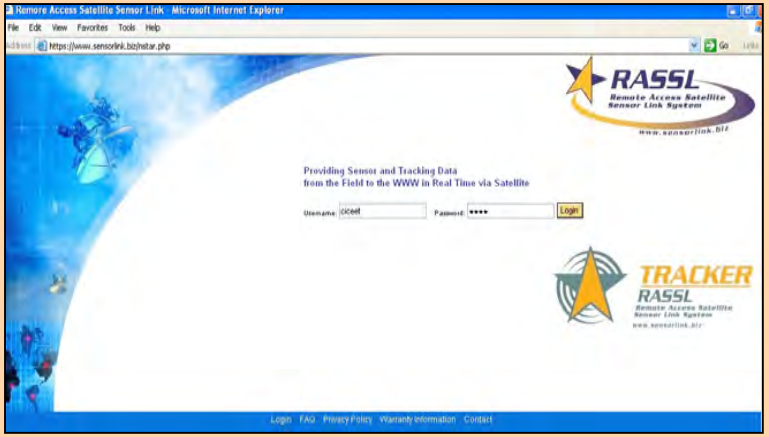


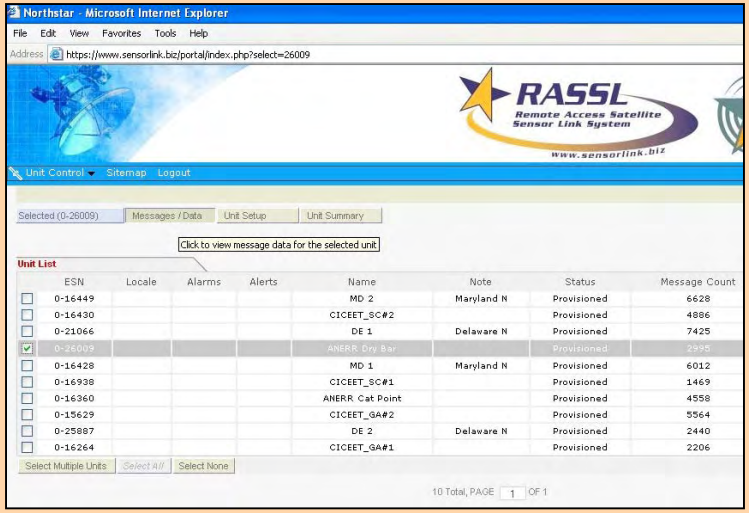
Location of datalogger deployment sites and weather station site.

Dry Bar and Cat Point Datalogger Telemetry

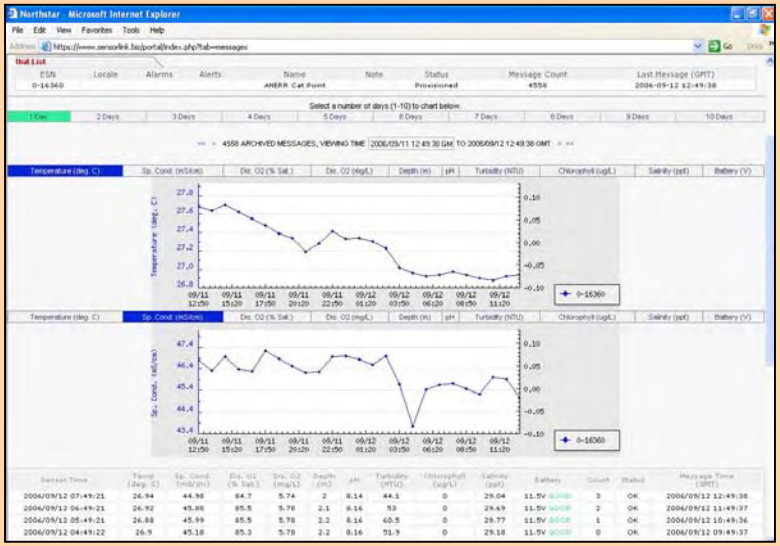
https://www.sensorlink.biz/nstar.php

Username: ciceet
Password: demo





-Select ANERR Cat Point or ANERR Dry Bar from the unit list
-Click on the Messages/ Data tab

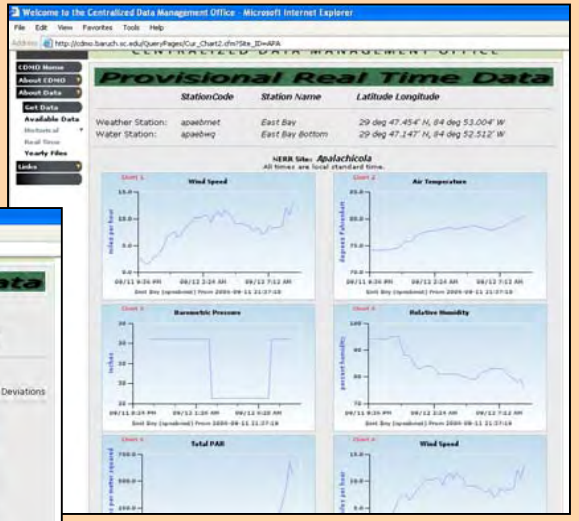


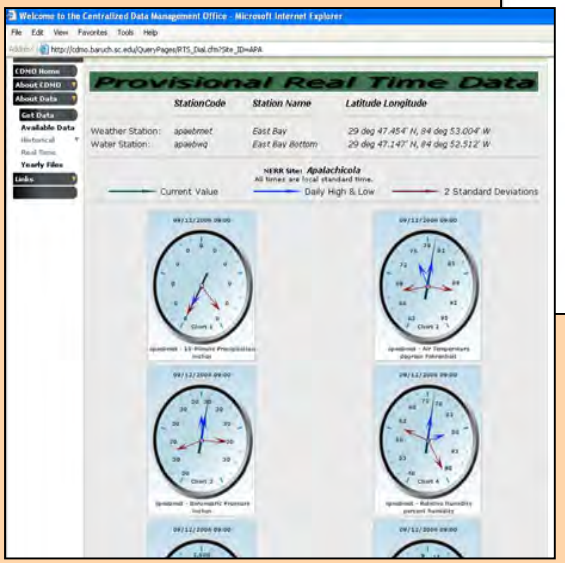
-Select a number of days (1-10) to chart
-Select the parameters to be graphed
(Water Temperature, Conductivity, Dissolved Oxygen, Depth, pH, Turbidity, and Salinity)

East Bay Datalogger and Weather Station Telemetry

http://cdmo.baruch.sc.edu/QueryPages/RTSmap.cfm

-Select Apalachicola, FL
-Select the Weather or Water Tab
-Select Interactive Gauges or Graphing





-Select Number of Gauges or Charts
-Select Parameters
(Air/ Water Temperature, Barometric Pressure, Wind Speed/ Direction, Relative Humidity, pH, Total PAR, Precipitation, Conductivity, Depth, Dissolved Oxygen, Turbidity, and Salinity)
-Click on Generate Gauges or Charts

The ANERR promotes research within and adjacent to the Reserve by outside investigators

- **Research program provides setting and basic equipment to attract and assist researchers from universities, government agencies and private institutions to the area**

- **Outside researchers are directed to priority research topics which address important coastal management issues**

Funding Opportunities Through the NERRS/NOAA

- **Graduate Research Fellowships (GRF's)**
  - **Two per Reserve (50 Nationally) available**
  - **$20,000/yr for MS & PhD candidates**
  - **Applied research & management projects**
- **Cooperative Institute for Coastal & Estuarine Environmental Technology (CICEET)**
  - **$ 2 million funding available annually**

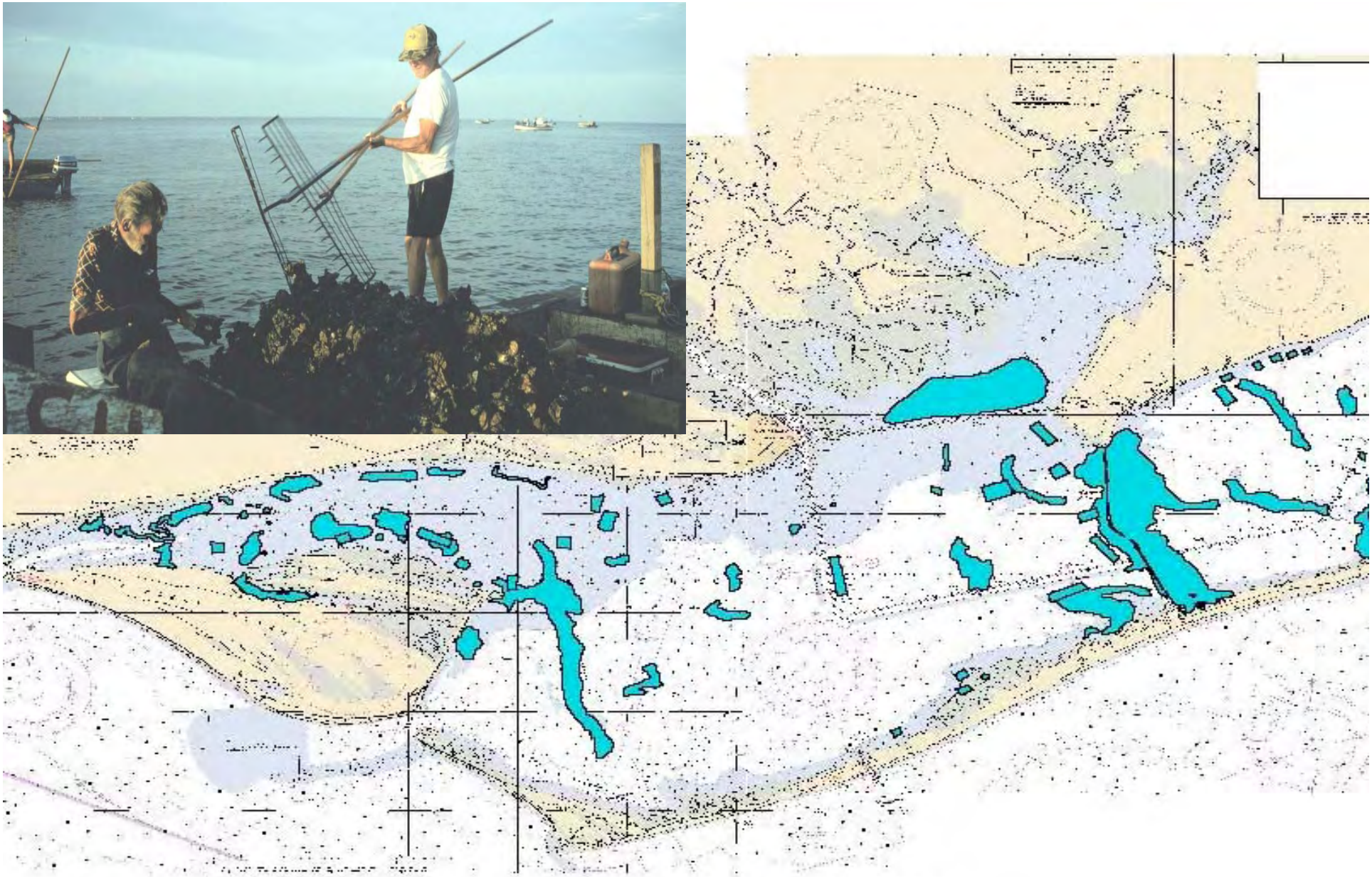
ECSC

Environmental Cooperative Science Center

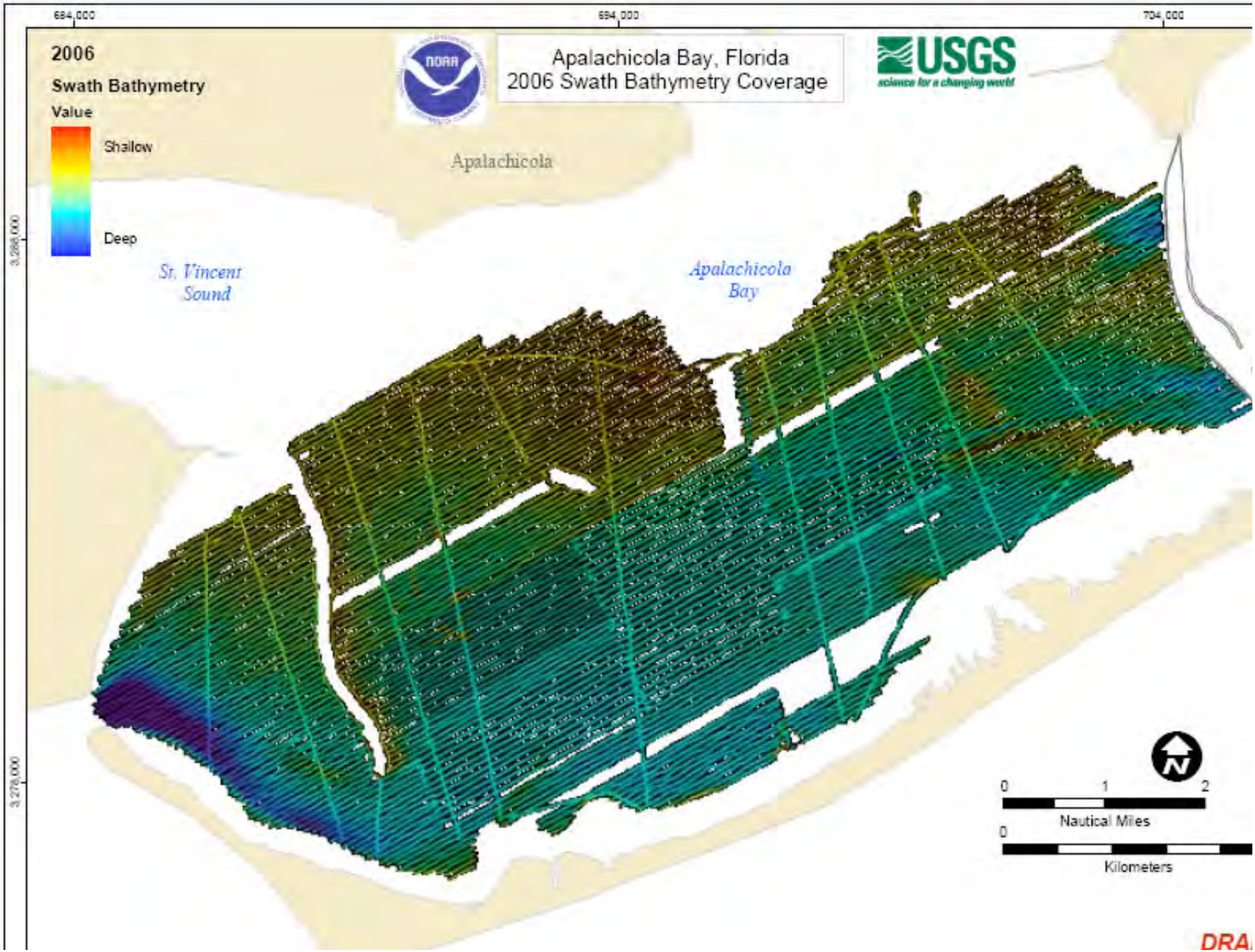
- **Develop tools, including conceptual models, to assess the response of coastal ecosystems and communities to perturbation, and to develop measurement programs to monitor critical system attributes**
- **Improve the scientific basis for coastal resource management.**
- **Facilitate community education and outreach relating to the function and significance of coastal ecosystems.**
- **Increase the number of students, particularly underrepresented minorities, in the environmental, coastal, and oceanic sciences by training students and expanding the capacity of faculty from member institutions to participate in NOAA-related research.**

Broad-Scale Acoustic Mapping of Apalachicola Bay

- **NOAA's Coastal Services Center and USGS Marine Geology Program**
- **Using Interferometric swath bathymetry, side-scan sonar and seismic reflection**
- **Groundtruthing**



Oyster Bars in Apalachicola Bay


684,000
694,000
704,000
3,286,000
3,278,000
2006
Swath Bathymetry
Value
Shallow
Deep
Apalachicola Bay, Florida
2006 Swath Bathymetry Coverage
USGS
science for a changing world
Apalachicola
St. Vincent Sound
Apalachicola Bay
N
0
1
2
Nautical Miles
0
Kilometers

ANERR Long-term Research and Monitoring Projects

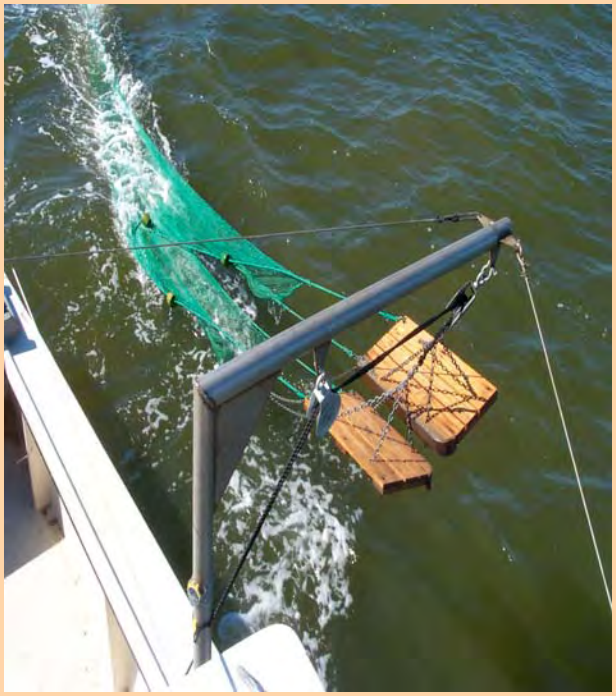
- Listed Species Monitoring
- Trawling Program
- Submerged Aquatic Vegetation Monitoring
- Oyster Growth Project

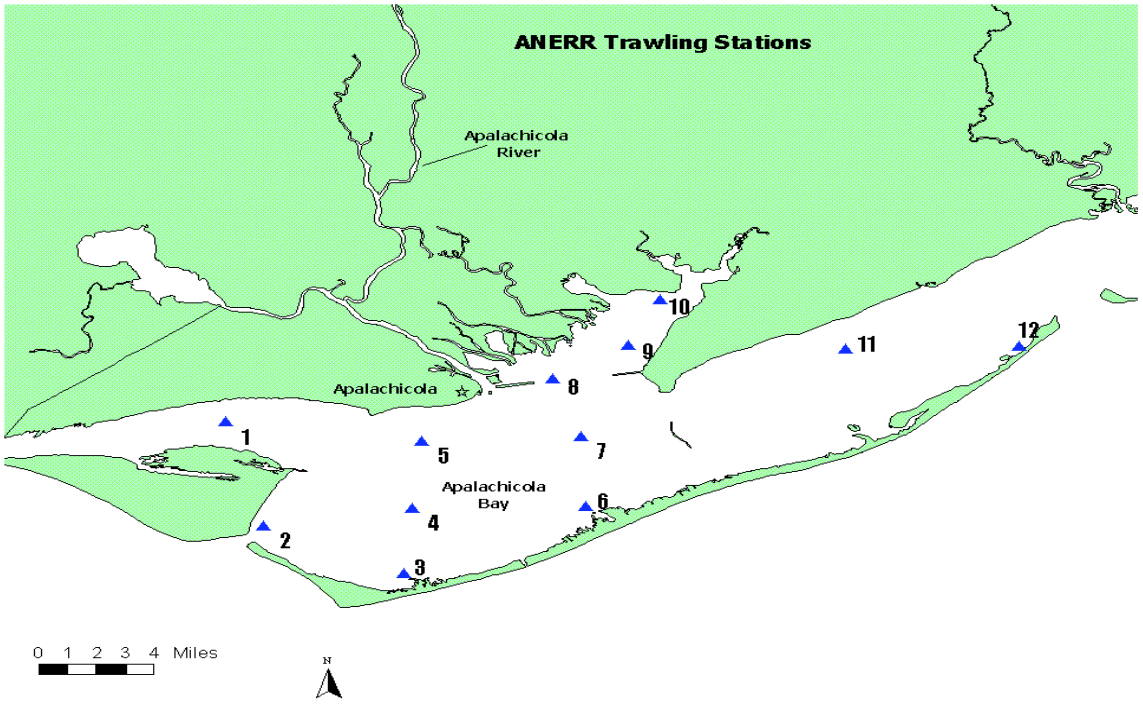
Listed Species Monitoring and Protection Within and Adjacent to the Reserve

•Long term projects to monitor population trends for state and federally listed species

- Important seasonal and migratory species
- Management plans implemented to protect, conserve, and increase the viability of these species

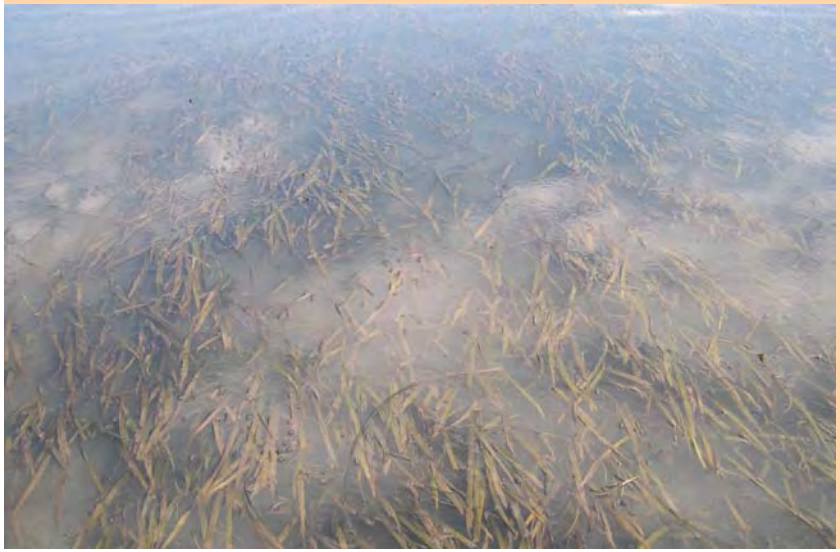
Trawling Program

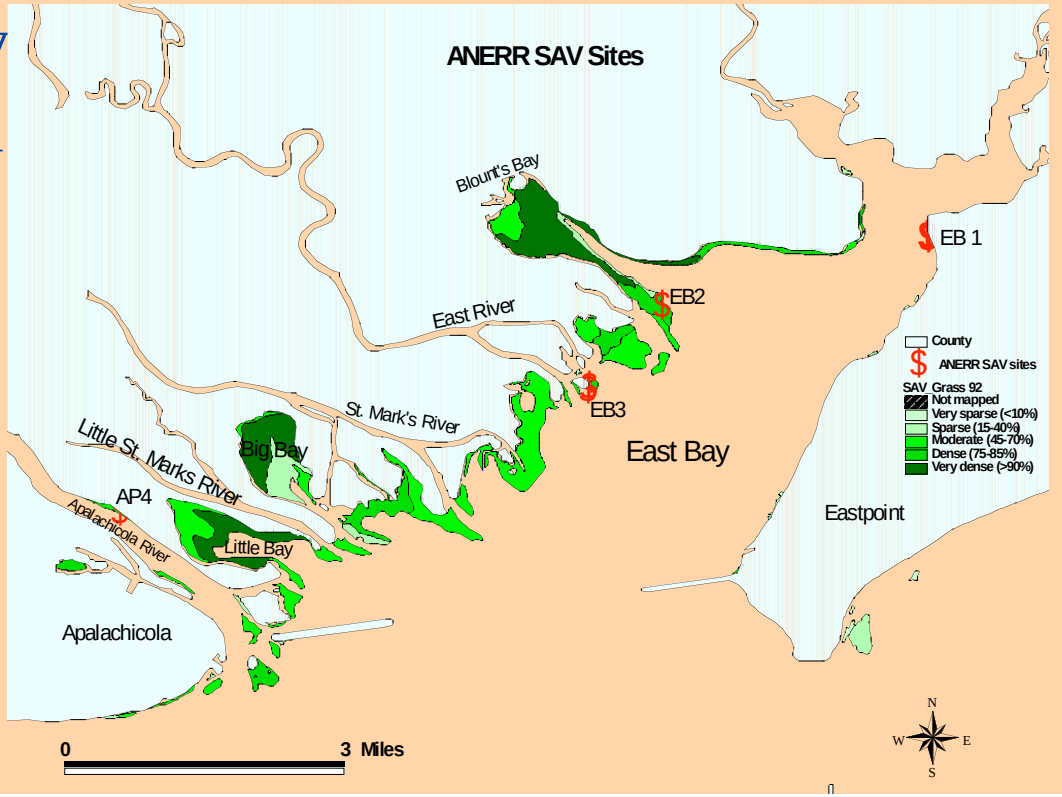




Submerged Aquatic Vegetation Monitoring in East Bay and the Apalachicola River

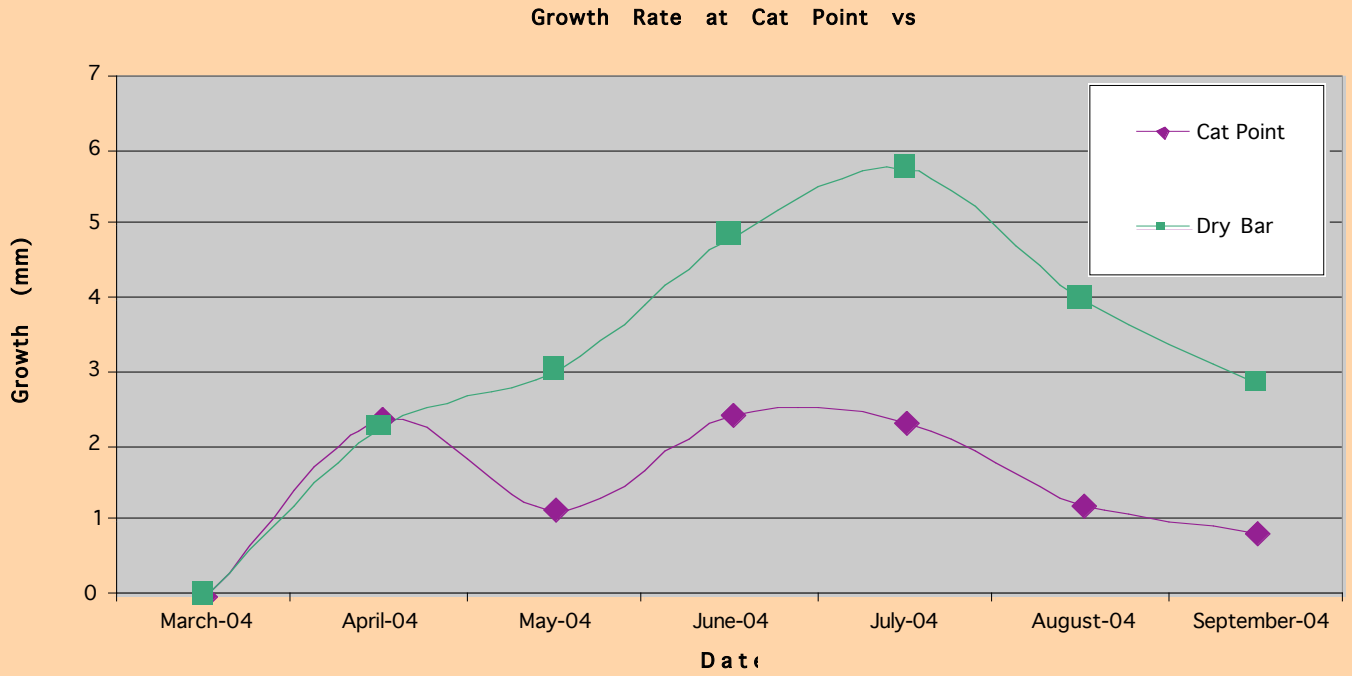
- Fixed-transect monitoring beginning in 2003
- Fresh water, brackish and marine species
- To determine changes in SAV health associated with long term changes in water quality





Oyster Project

- Oysters are kept in bags suspended on pilings where dataloggers are located – Two commercial oyster bars: Cat Point and Dry Bar
- Oysters are measured monthly
- Mortality, spat recruitment, and fouling organisms are also recorded



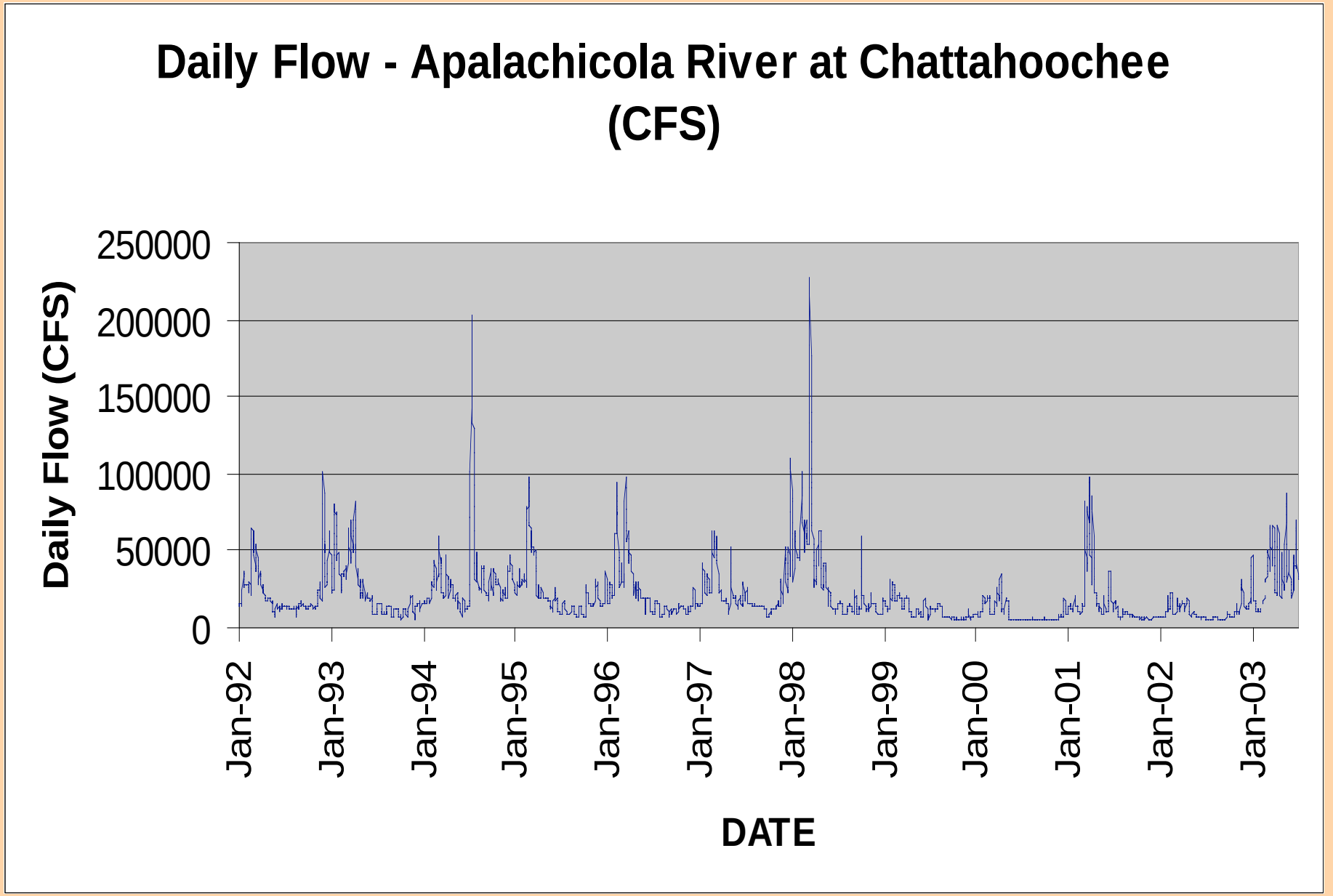
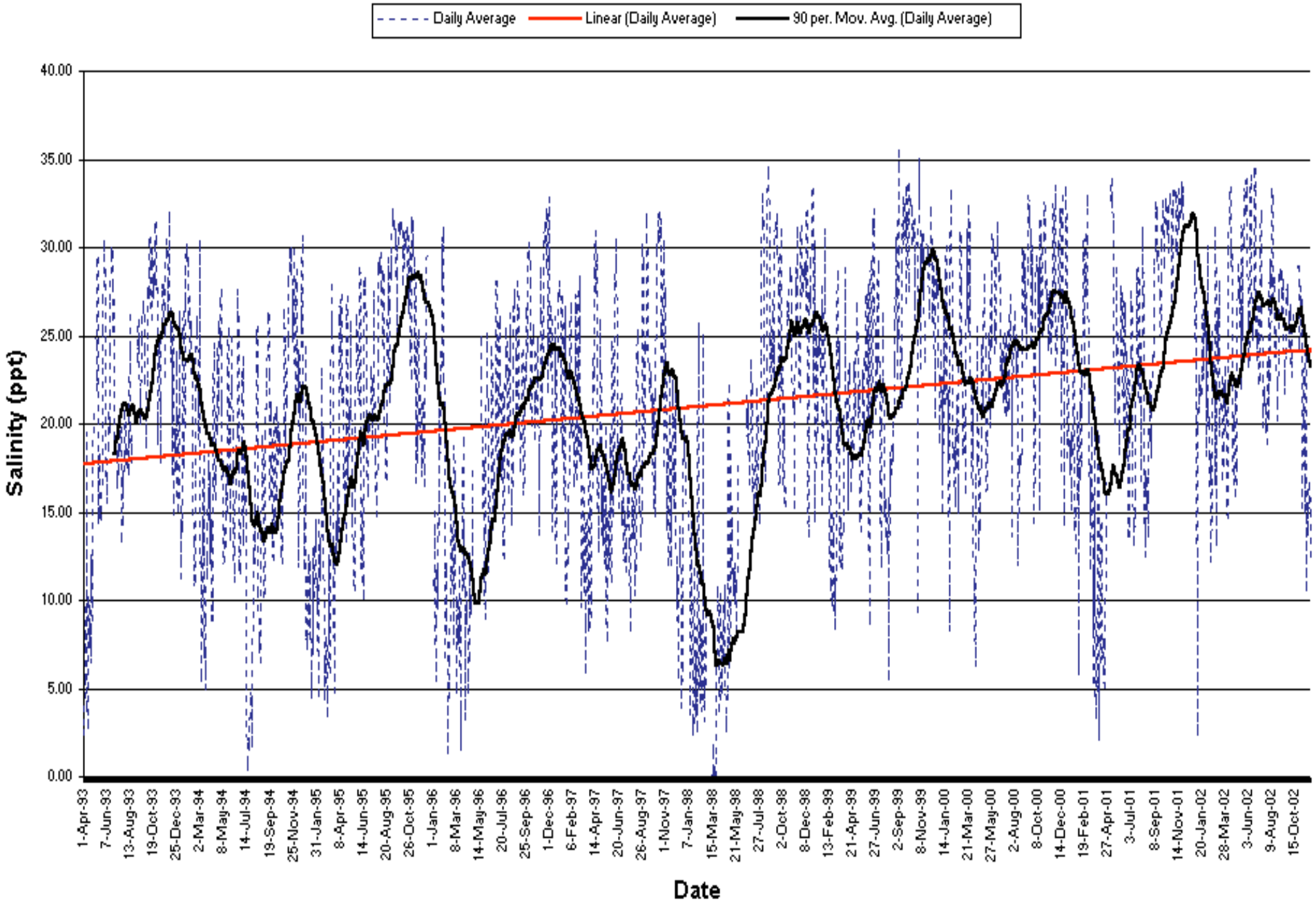

Daily Flow - Apalachicola River at Chattahoochee (CFS)
Daily Flow (CFS)
250000
200000
150000
100000
50000
0
Jan-92
Jan-93
Jan-94
Jan-95
Jan-96
Jan-97
Jan-98
Jan-99
Jan-00
Jan-01
Jan-02
Jan-03
DATE

Figure 14. Cat Point Salinity 1993-2002



Questions?

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jennifer.wanat@dep.state.fl.us
(850) 670-4783 ext. 119