

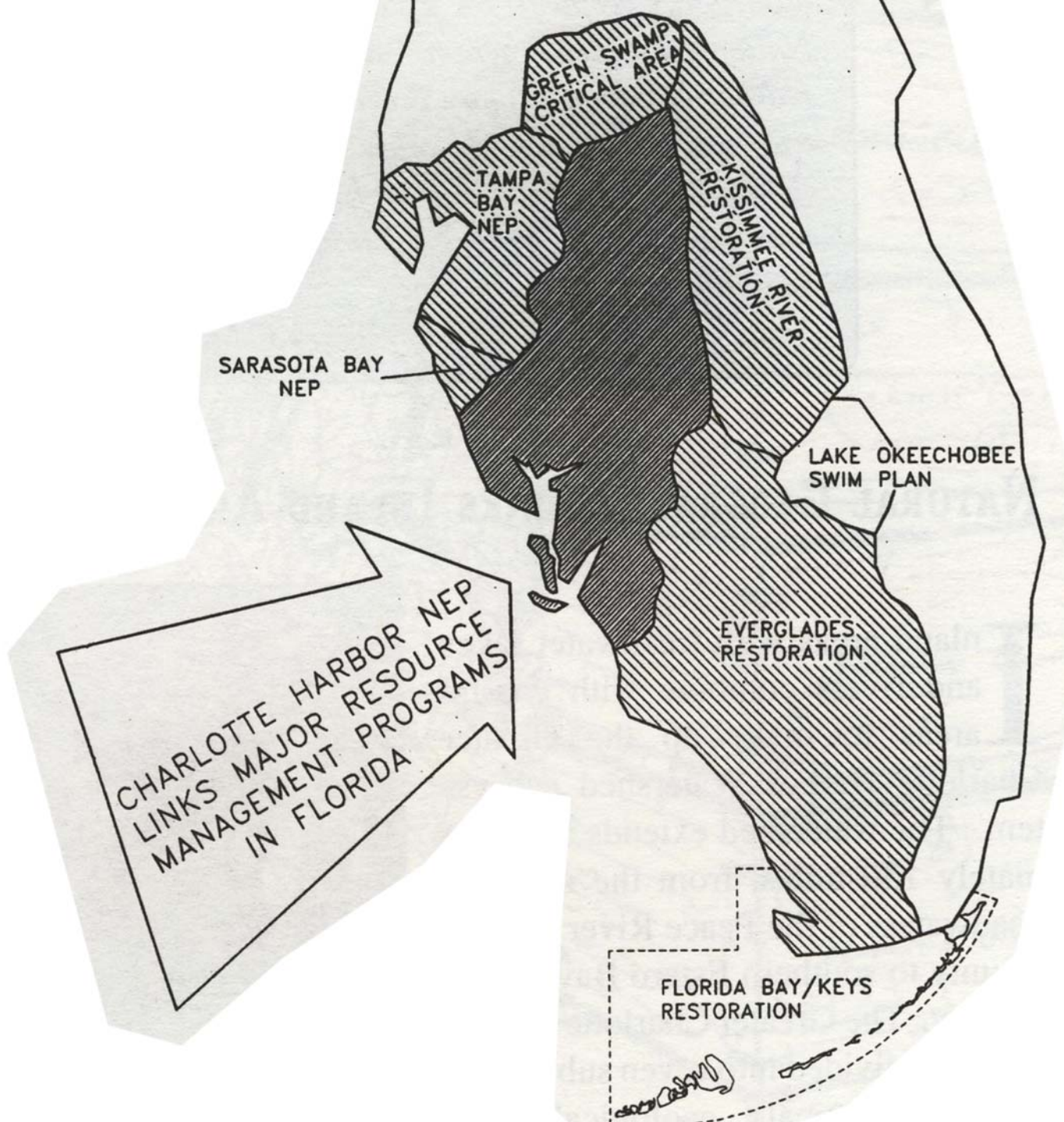
# Charlotte Harbor National Estuary Program & Lemon Bay



Lisa B. Beever, PhD, AICP  
October 17, 2006

# National Estuary Programs





GREEN SWAMP  
CRITICAL AREA

TAMPA  
BAY  
NEP

SARASOTA BAY  
NEP

KISSIMMEE RIVER  
RESTORATION

LAKE OKEECHOBEE  
SWIM PLAN

EVERGLADES  
RESTORATION

FLORIDA BAY/KEYS  
RESTORATION

CHARLOTTE HARBOR NEP  
LINKS MAJOR RESOURCE  
MANAGEMENT PROGRAMS  
IN FLORIDA

# Management Conference

## Policy Committee

Elected Officials and Agency Policy Makers

## Management Committee

Resource Managers

Budget

## Technical Adv. Committee

Scientists, Engineers, and Planners

Water Quality & Quantity Objective (WQQOS)  
Habitat Conservation (HCS)  
Hydrologic Alterations (HAS)  
RRPP Review  
Charlotte Harbor Regional Ambient Monitoring  
Program (CH-RAMP)

## Citizens Adv. Committee

Citizens and agency Public Outreach Specialists

Standing Rules  
Membership  
Nominating  
Environmental Indicators  
Mini-grant Review  
Workplan Progress & Proposal

Jurisdiction:  
7 Counties

NEP signatories:

7 Counties,

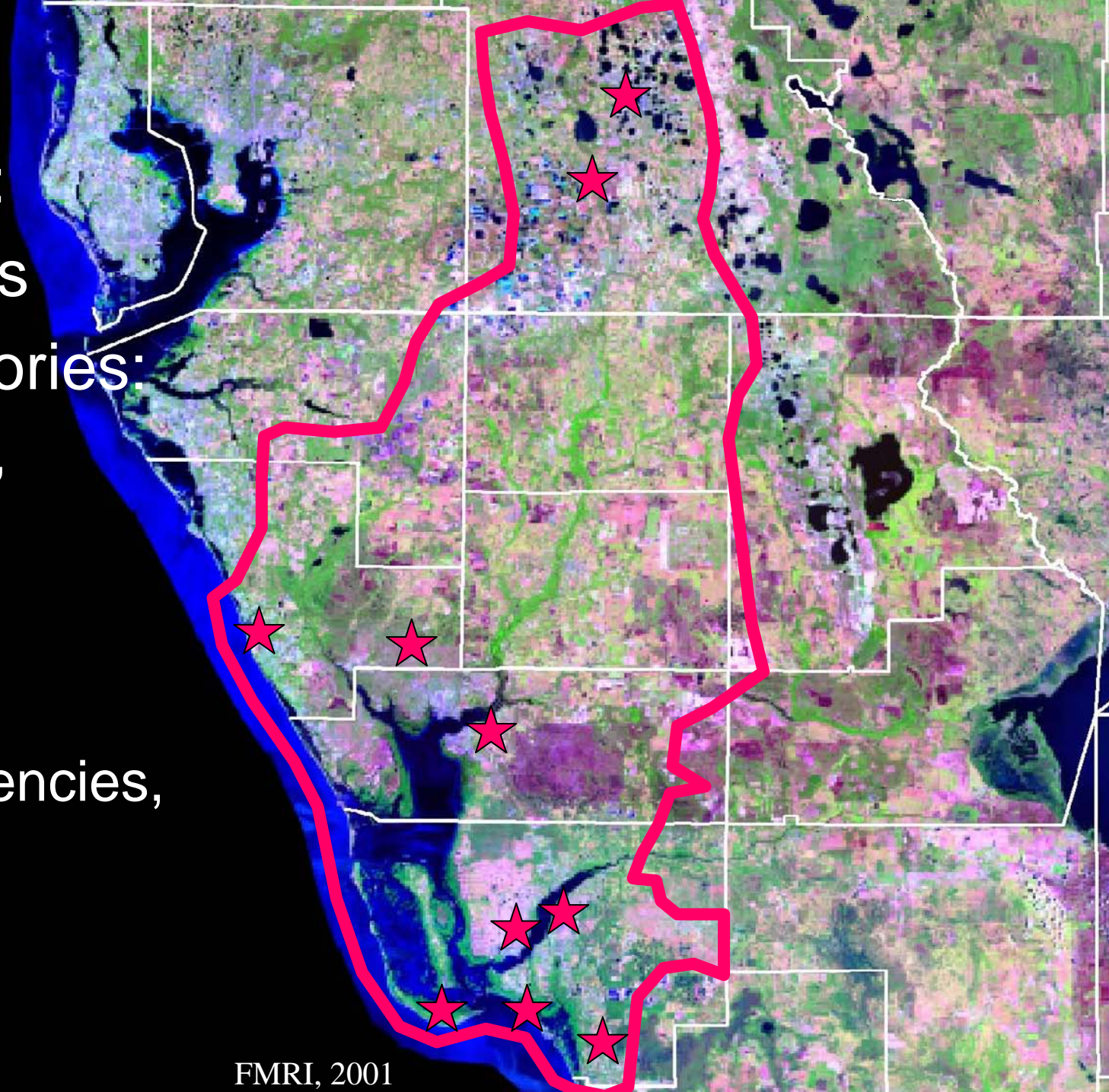
10 Cities,

2 RPCs,

2 WMD,

3 State Agencies,

EPA



**Legend**

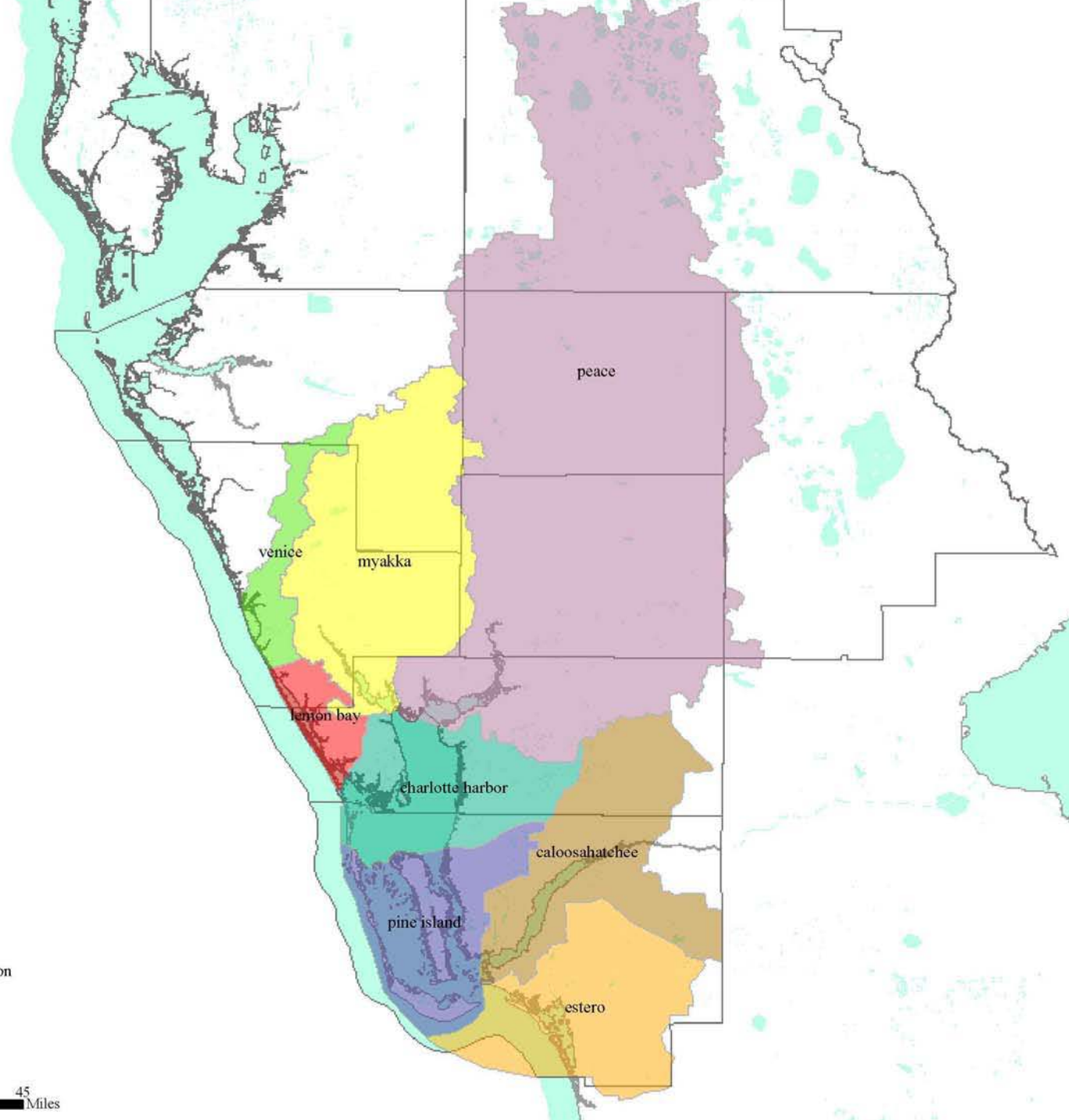
**NAME**

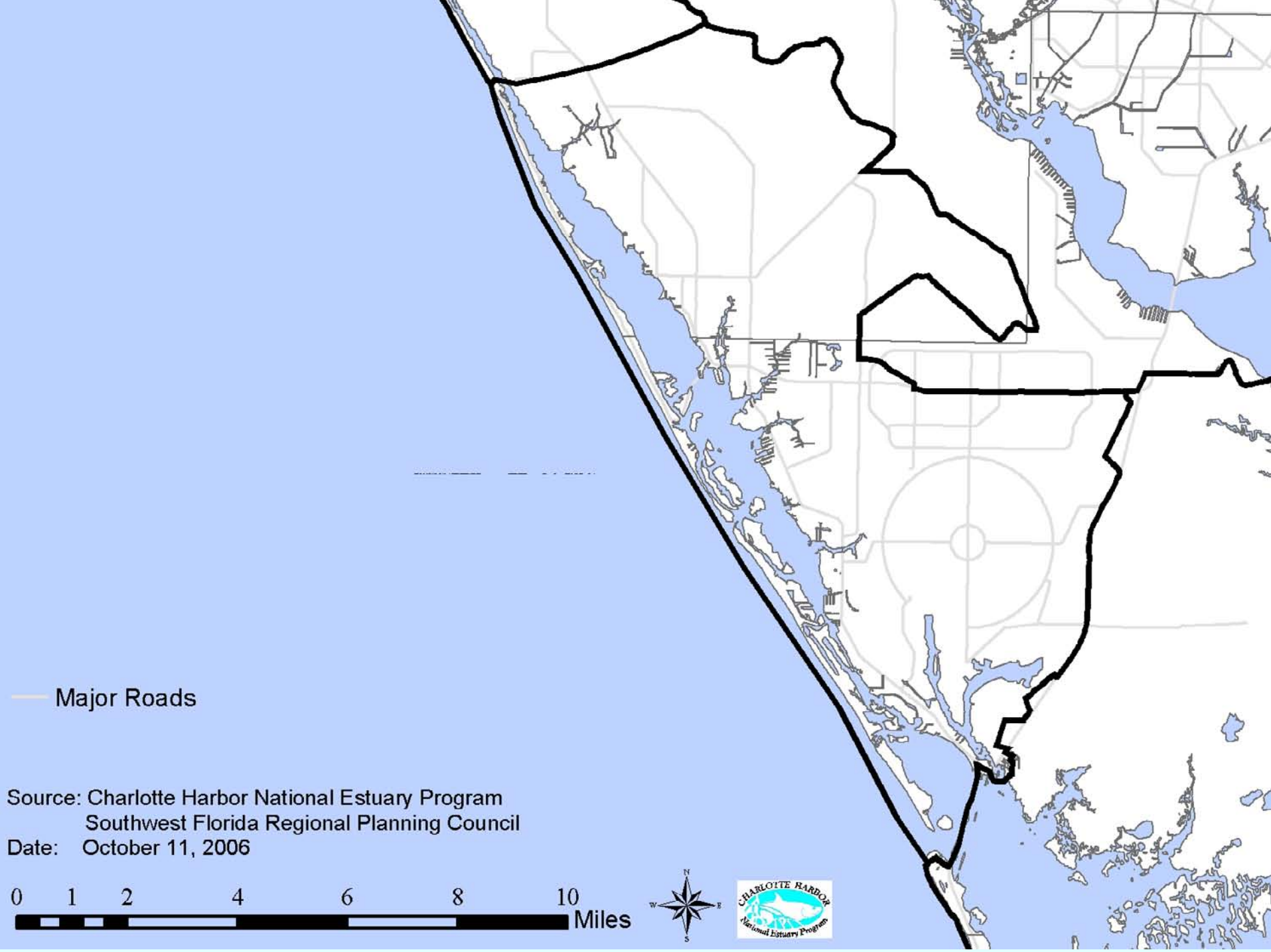
-  Caloosahatchee
-  Charlotte Harbor
-  Estero
-  Lemon Bay
-  Myakka
-  Peace
-  Pine Island
-  Venice



Source: Charlotte Harbor National Estuary Program  
The Nature Conservancy  
Florida Natural Areas Inventory  
Florida Department of Environmental Protection  
Florida Fish and Wildlife Conservation Commission  
Southwest Florida Water Management District  
South Florida Water Management District  
Polk, Sarasota, and Lee Counties

Date: August 14, 2003





— Major Roads

Source: Charlotte Harbor National Estuary Program  
Southwest Florida Regional Planning Council  
Date: October 11, 2006

0 1 2 4 6 8 10 Miles



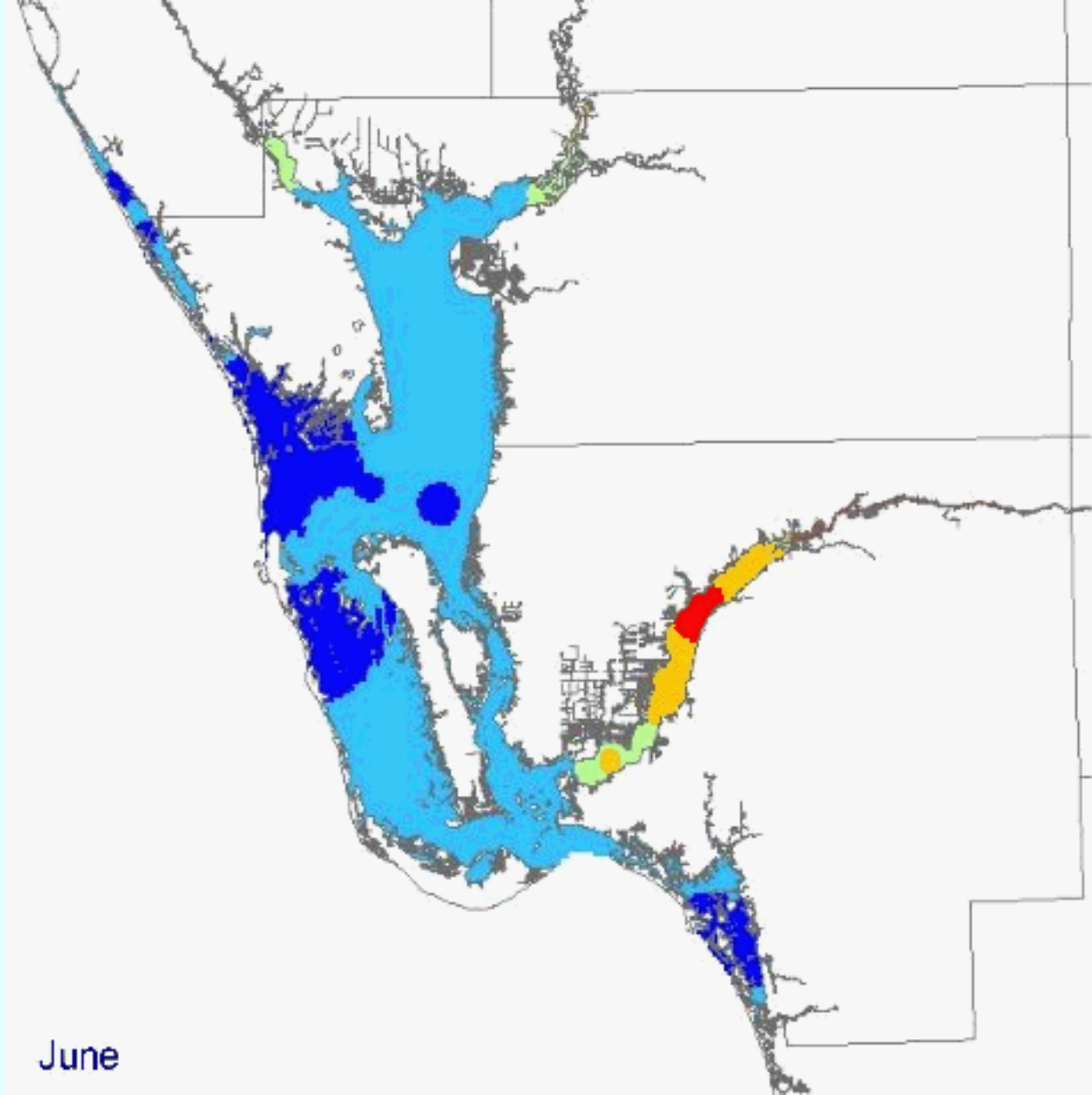








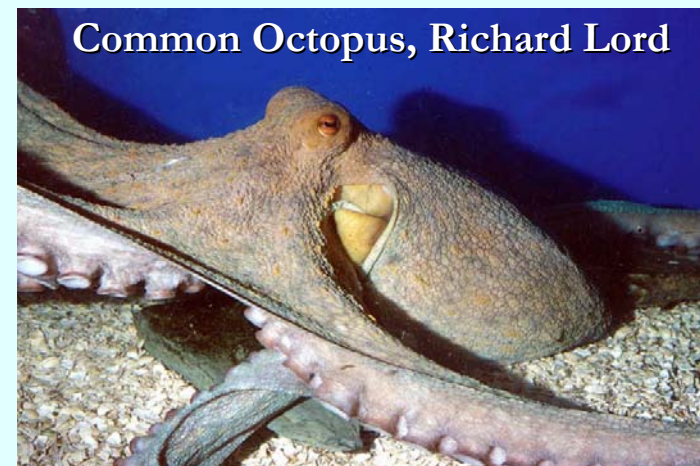
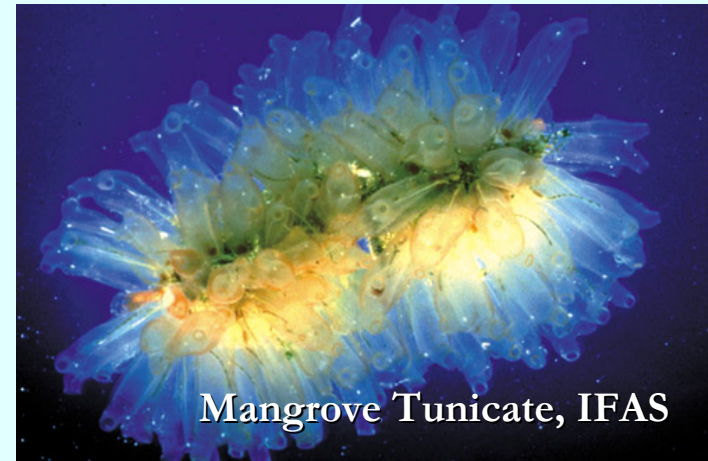




Source: Charlotte Harbor Environmental Center Watershed Resource Center

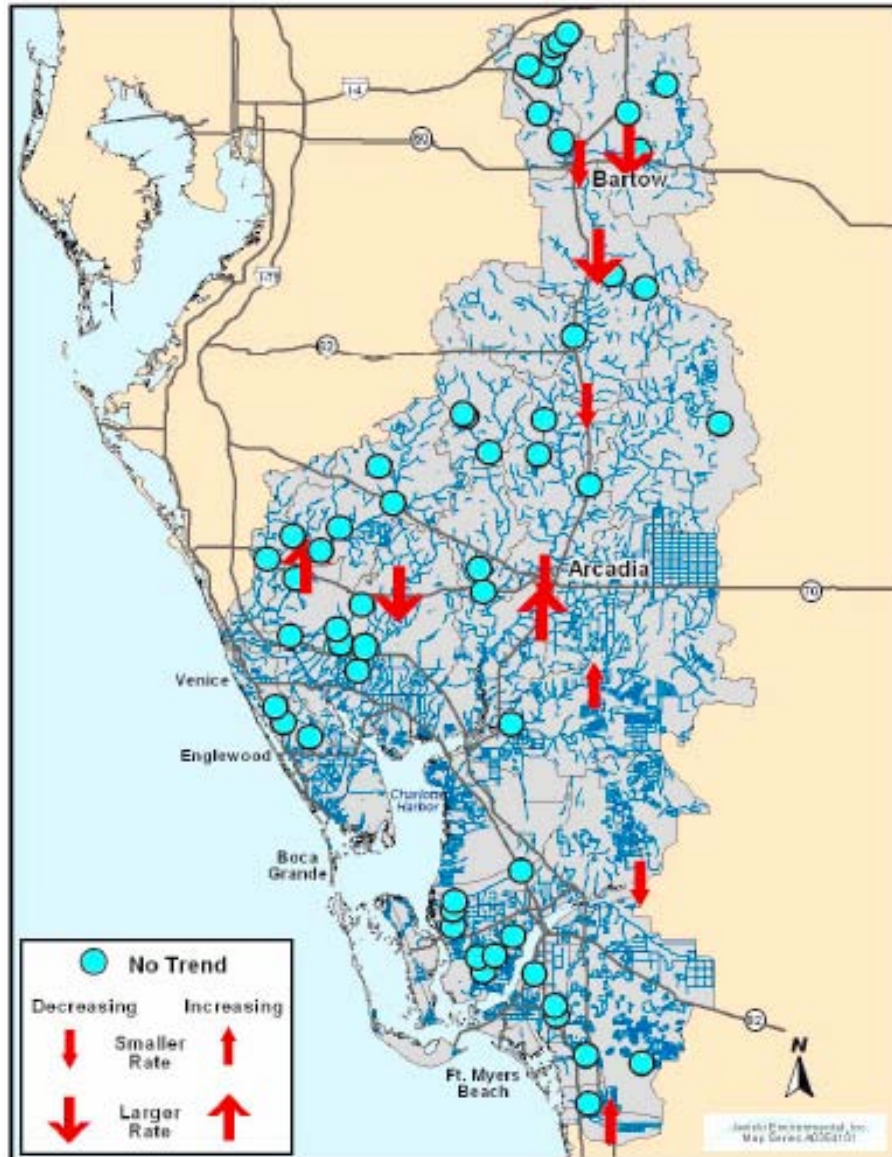
# Freshwater Flows & Timing

- Seagrasses
- Sea Trout
- Juvenile Fish
- Blue Crabs
- Fish Abundance
- Benthic Invertebrates
- Clam Industry
- Tourism
- Shells
- Swimming
- Economic Growth

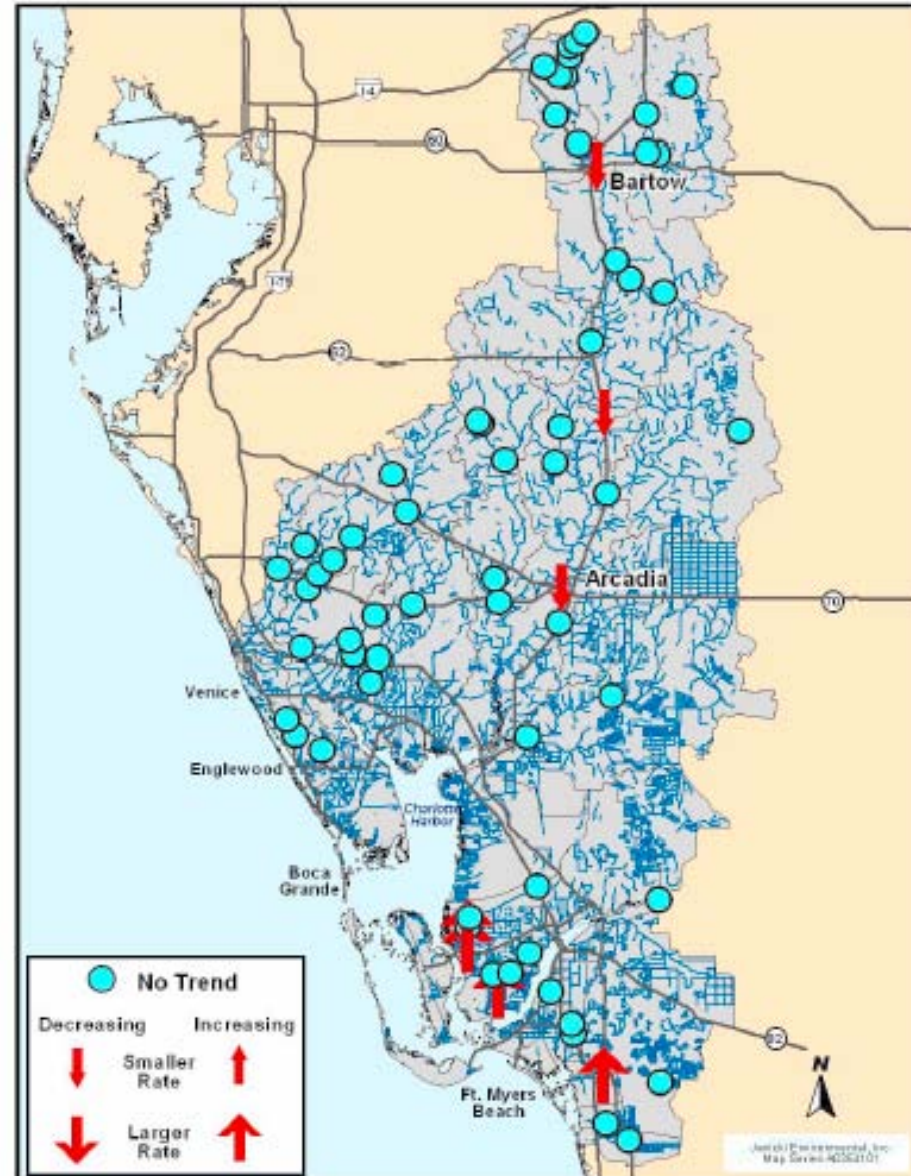


# Changing Flow Regimes

Annual Minimum (7 Day)



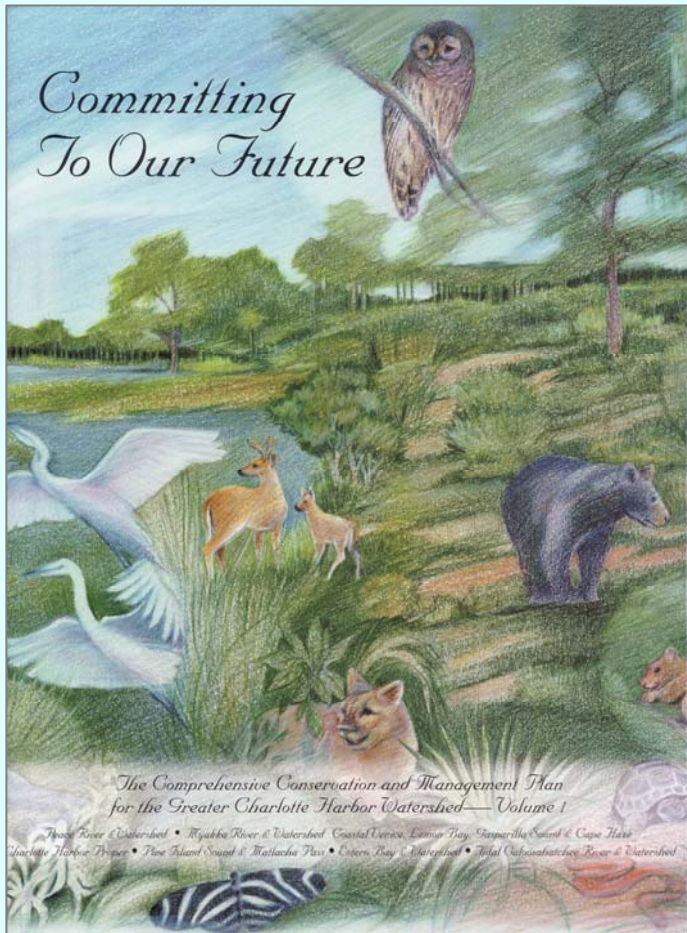
Annual Maximum (7 Day)



# A Healthy Estuary Needs

- Natural Hydrology
- Natural Water Quality
- Native Species
- A Variety of Native Habitats
- A Gradient of Salinity
- Good Stewardship

# Comprehensive Conservation & Management Plan (CCMP)



**Long-range plan**

**20-year horizon**

**Developed 1996-2000**

**EPA approve June 2001**

**Priority Problems:**

**Water Quality Degradation**

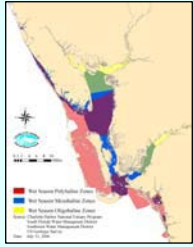
**Hydrologic Alteration**

**Habitat Loss**

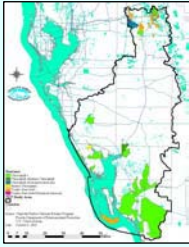
**Stewardship Gaps**



## Hydrology



## Water Quality



## Habitat



## Stewardship



**WQ-1:** Maintain or improve water quality from year 2000 levels. Bring all impaired waterbodies into a management program by 2011. Remove at least 2 waterbodies from the impaired list by improving water quality by 2015.

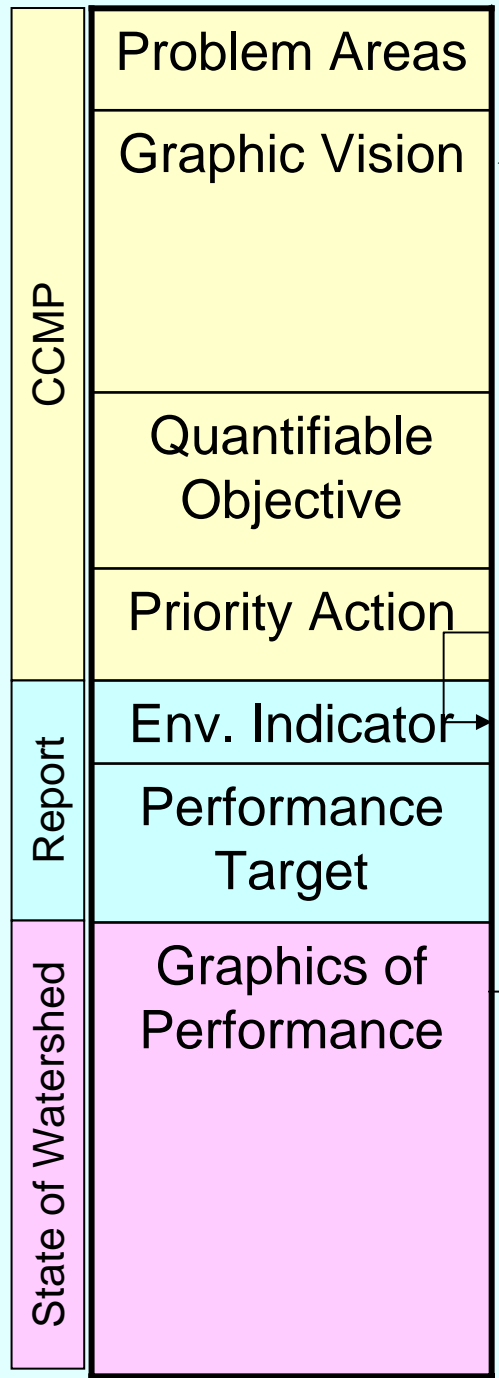
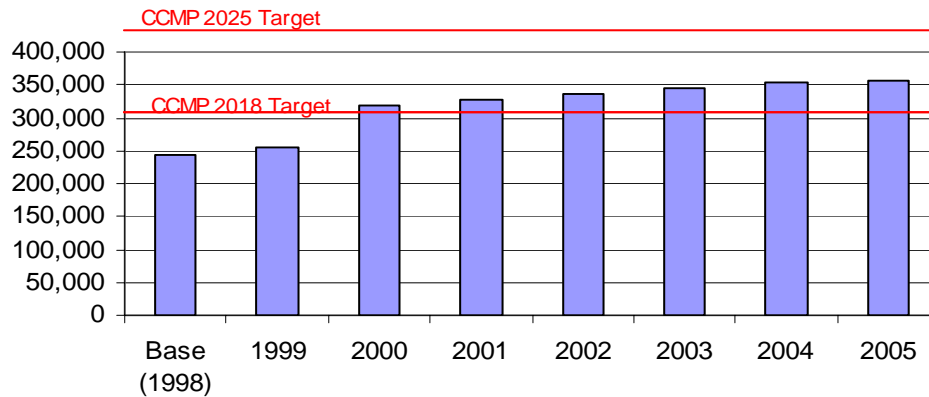
**WQ-J:** Implement the Florida Yards and Neighborhoods program and similar programs in all counties.

**Indicator:** Acreage in conservation status within study area and by basin.

**Target:** Increase of coverage for lands in conservation by 100% over 1998 levels by study area.

**Data:** Access design to take disparate seagrass transect data to answer questions.

FW-2 Conservation Acreage



# How do we Implement the CCMP?

- **Research**
- **Restoration**
- **Legislation**
- **Public Outreach**



**Citizens Advisory Committee -  
Sanibel**

# Grants

## Research and Restoration Partner Projects

- \$20,000 per project partner
- At least 50% match
- Annual application

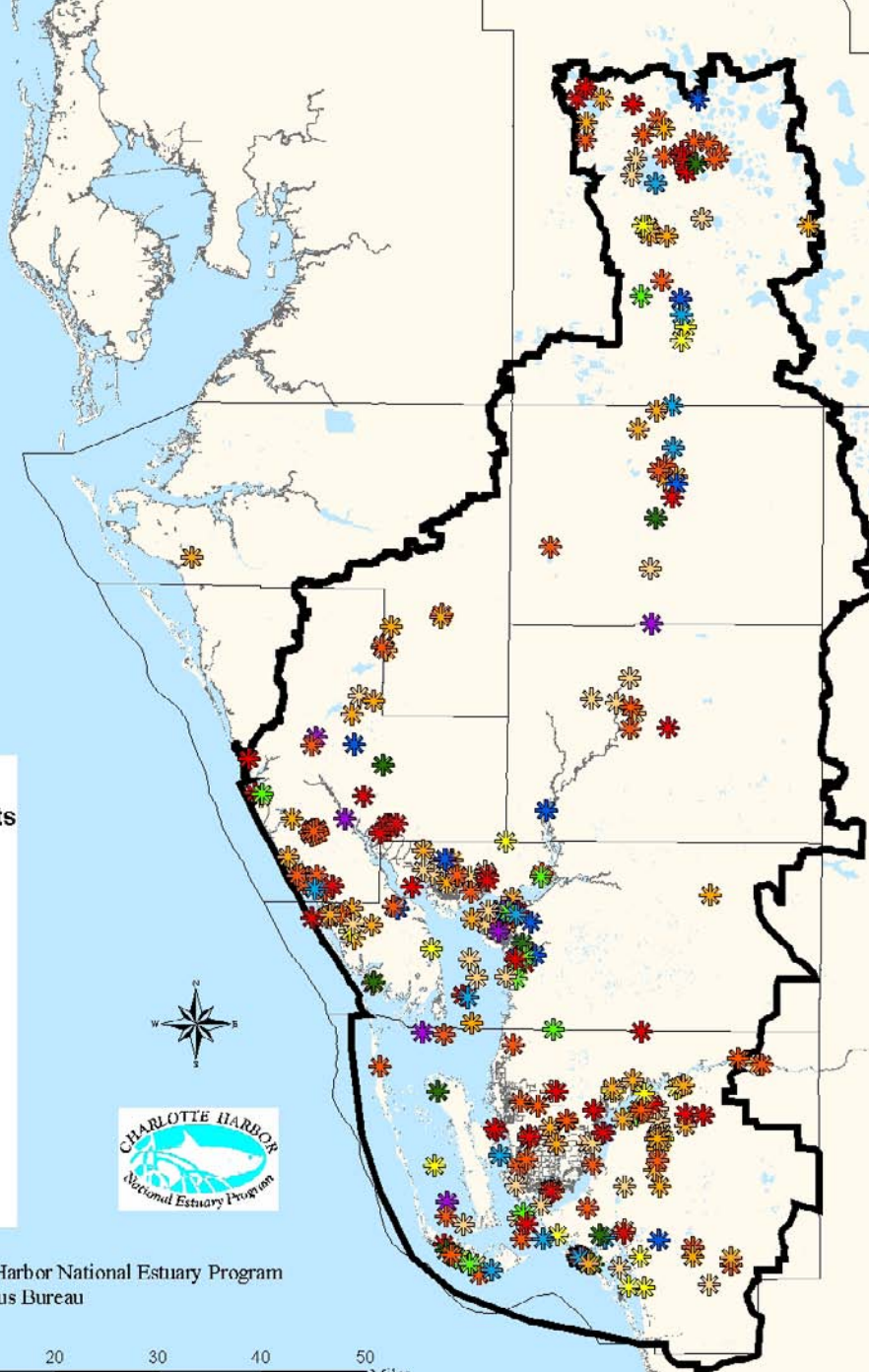
## Public Outreach Grants

- \$3,000
- no match
- Annual application

## Micro-Grants

- \$250
- No match requirement
- Informal requests through the year






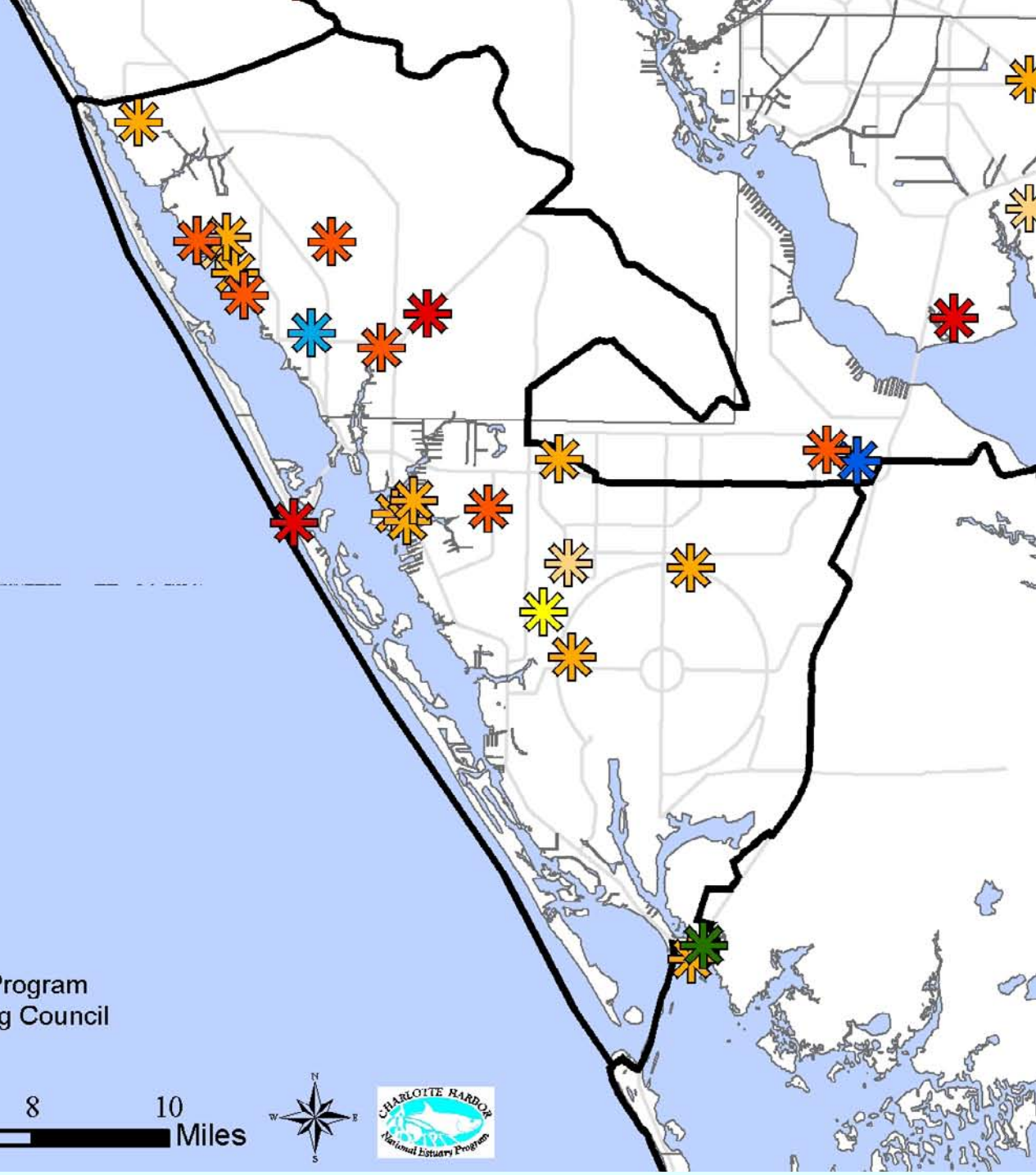
Source: Charlotte Harbor National Estuary Program  
 U.S. Census Bureau  
 Date: 5/19/06



# All NEP Grants Fiscal Year

-  1997
-  1998
-  1999
-  2000
-  2001
-  2002
-  2003
-  2004
-  2005
-  2006

— Major Roads

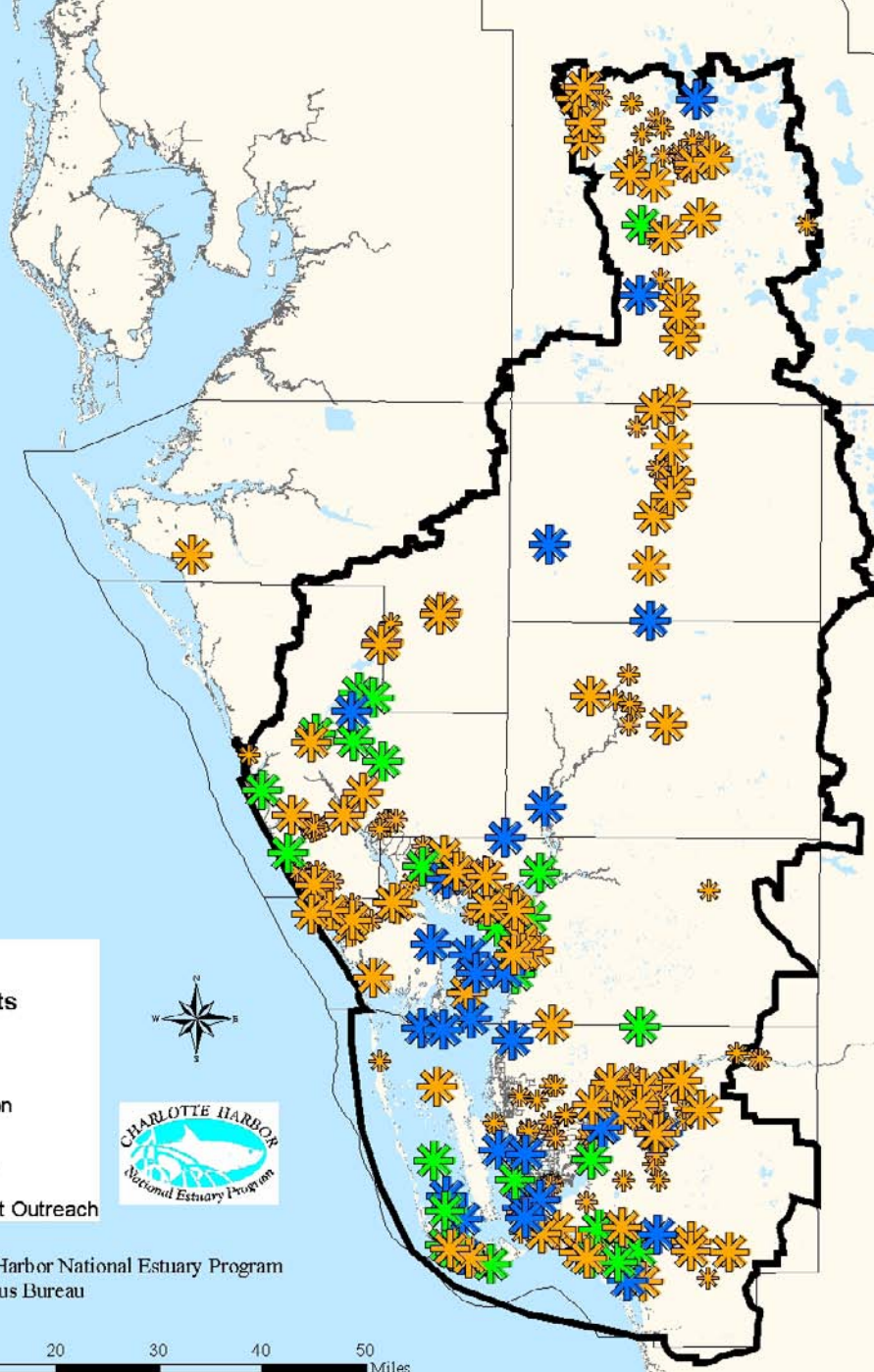


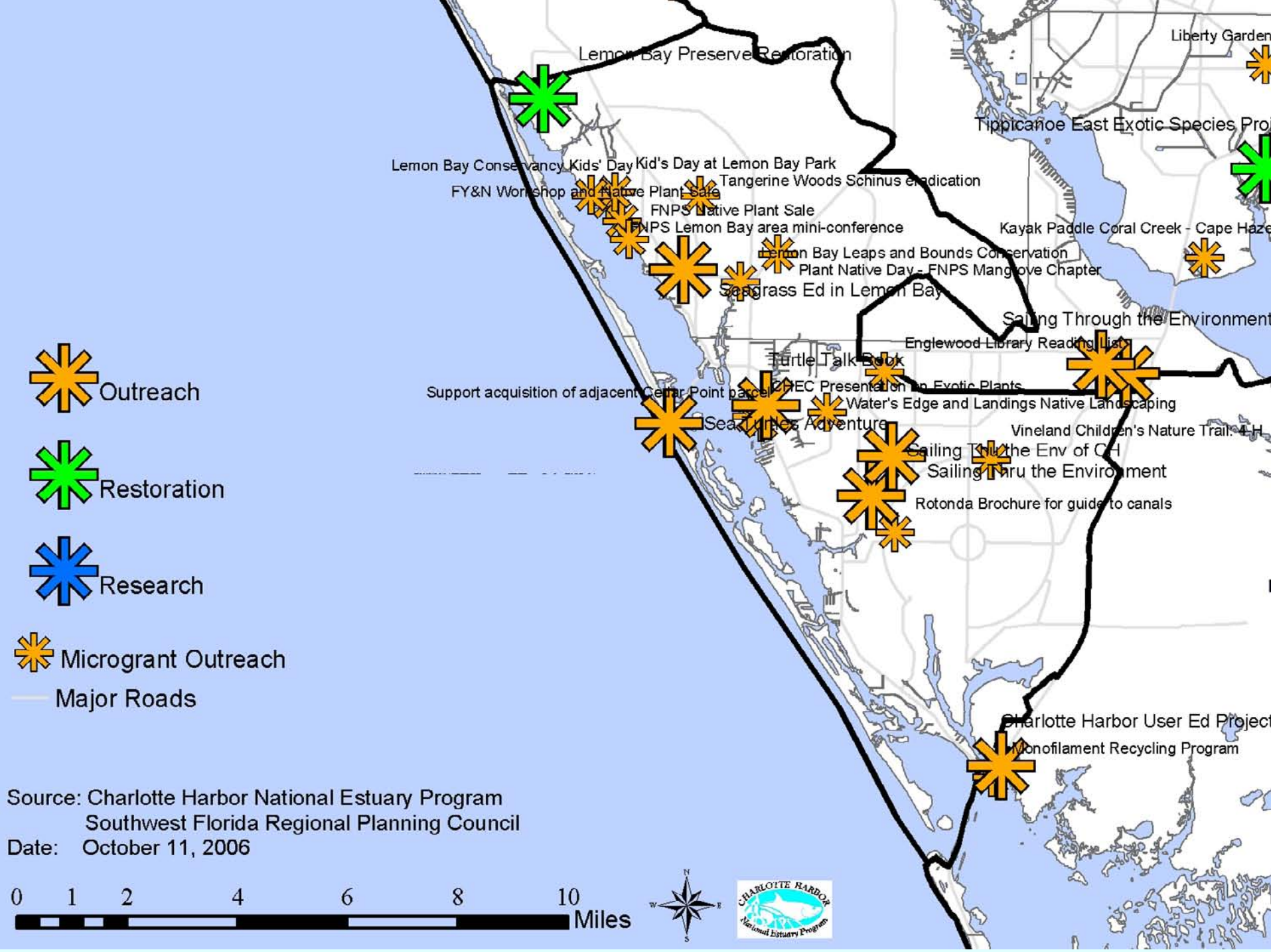
Source: Charlotte Harbor National Estuary Program  
Southwest Florida Regional Planning Council  
Date: October 11, 2006





Source: Charlotte Harbor National Estuary Program  
 U.S. Census Bureau  
 Date: 5/19/06







# Research

Analysis for entire  
Study Area and  
Special Studies

# 2004 Research Needs Inventory



Cape Coral Water Quality Laboratory- Photo by Lisa B. Beaver, PhD

## Charlotte Harbor National Estuary Program Technical Report 04-1

Adopted: May 4, 2004



4980 Bayline Drive, 4<sup>th</sup> Floor  
North Fort Myers FL 33917-3909  
(239) 995-1777

[www.charlotteharbornea.org](http://www.charlotteharbornea.org)

# Basin Trends to 2000

Parameter	Estero	Caloosahatchee	Pine Is S./M.L.P	Charlotte Harbor	Peace	Myakka	Lemon Bay
BOD	-5	-36	-12				
Chl a Corrected	1	0		0	-2	0	
Cl	7	5	2	-1	-2	-1	
Color	-2	0		0	0	1	
Cond	-3	-10	7	0	-14	-5	
DO	-18	-34	2	-1	5	2	6
Fcoli	4	-8	-2				
F1					0		
NH3	-1	-2	0		-1		
NO23	-4	-4	0		1		
pH	-3	0	-7	10	41	3	
PO4	-6	-2	0		1		
Salinity		-4	-5	0	-5	0	-1
SO4	0	0			-1		
Tcoli					-1	1	
Temp	13	5	-39	-17	6	-18	-24
TkN	0	-13	-6	1	1		
TN	0	-19	-8		-1		
TOC				1	3	0	
TP	3	-2	0	2	7	0	
TSS	-5	-33	-4	-4	-5	-2	
Turbidity	-13	-19	2	2	8	0	
Average	-2	-9	-4	-1	2	-1	-6

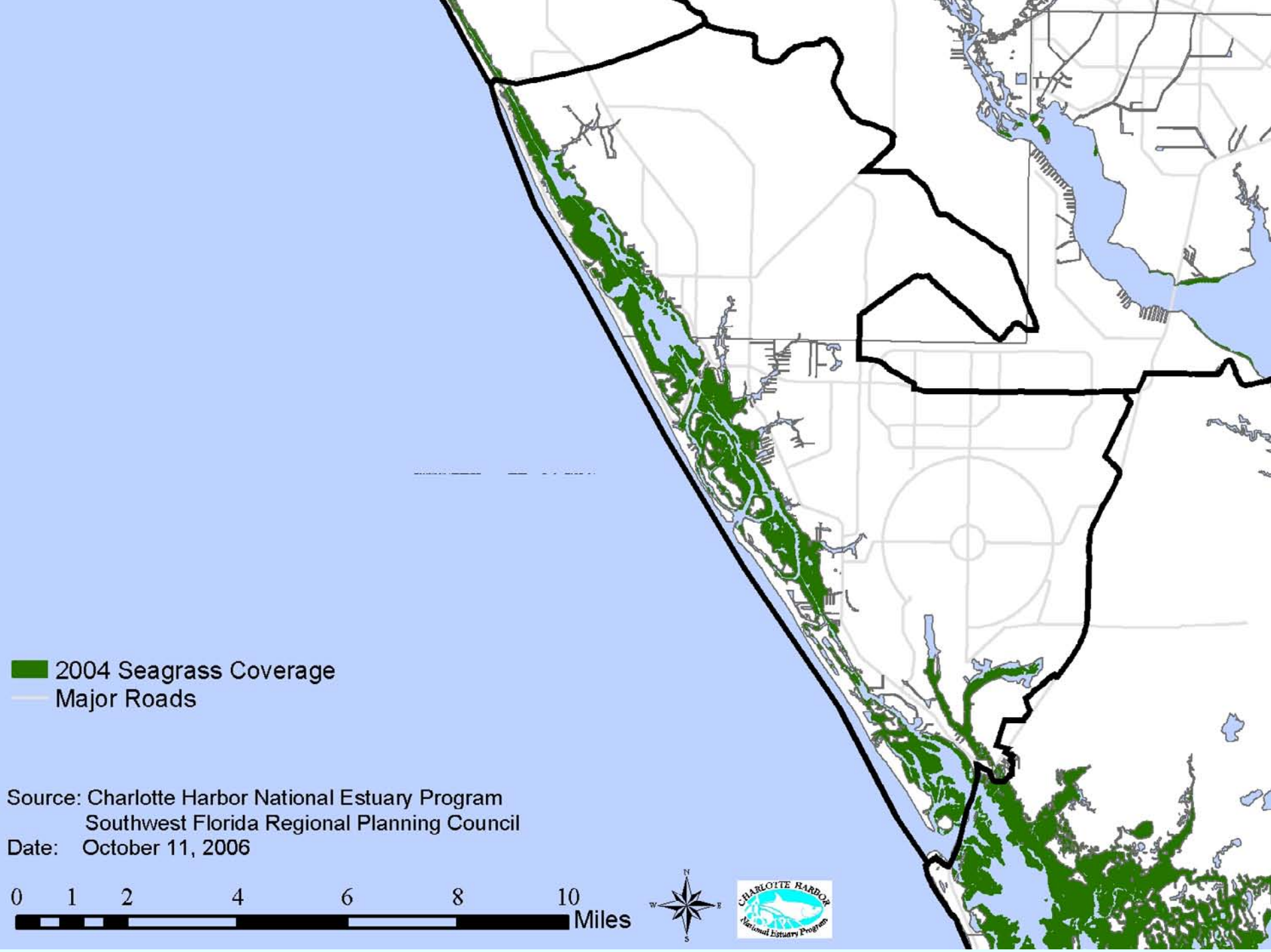
Long term monitoring stations with Significant Improvement minus those with Sig. Degradation



**Storet Upload**

# Producers

- **Algae**
- **Phytoplankton**
- **Sea Grasses**
- **Mangrove**
- **Salt Marsh**
- **River Detritus**

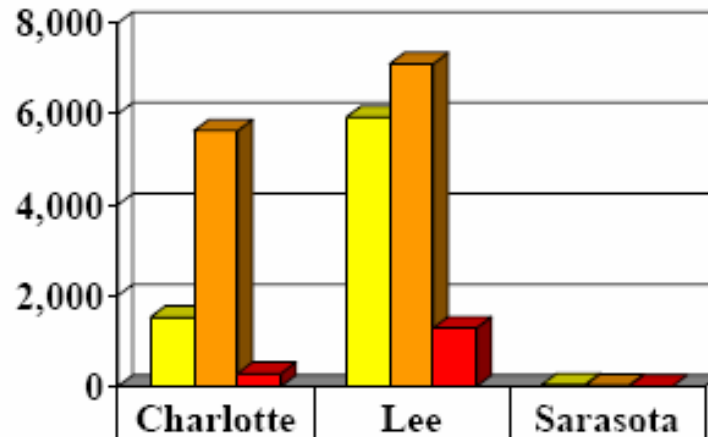


2004 Seagrass Coverage  
Major Roads

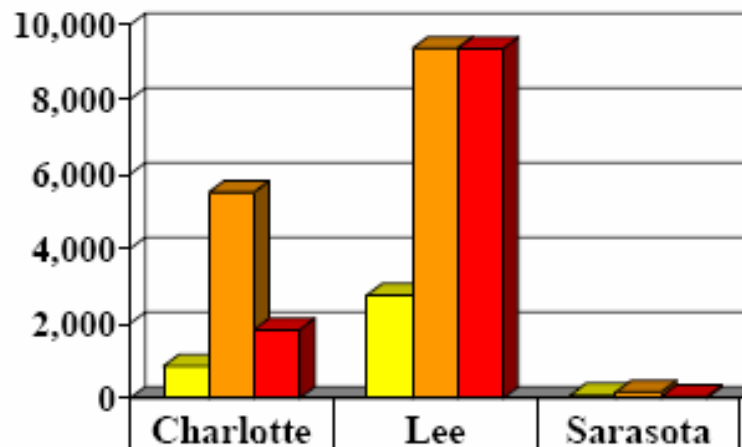
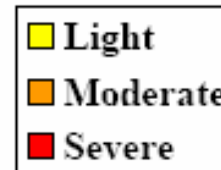
Source: Charlotte Harbor National Estuary Program  
Southwest Florida Regional Planning Council  
Date: October 11, 2006



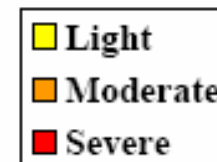




	Charlotte	Lee	Sarasota
Light	1,529	5,925	39
Moderate	5,628	7,098	21
Severe	286	1,288	2



	Charlotte	Lee	Sarasota
Light	869	2,768	95
Moderate	5,527	9,374	176
Severe	1,840	9,365	50

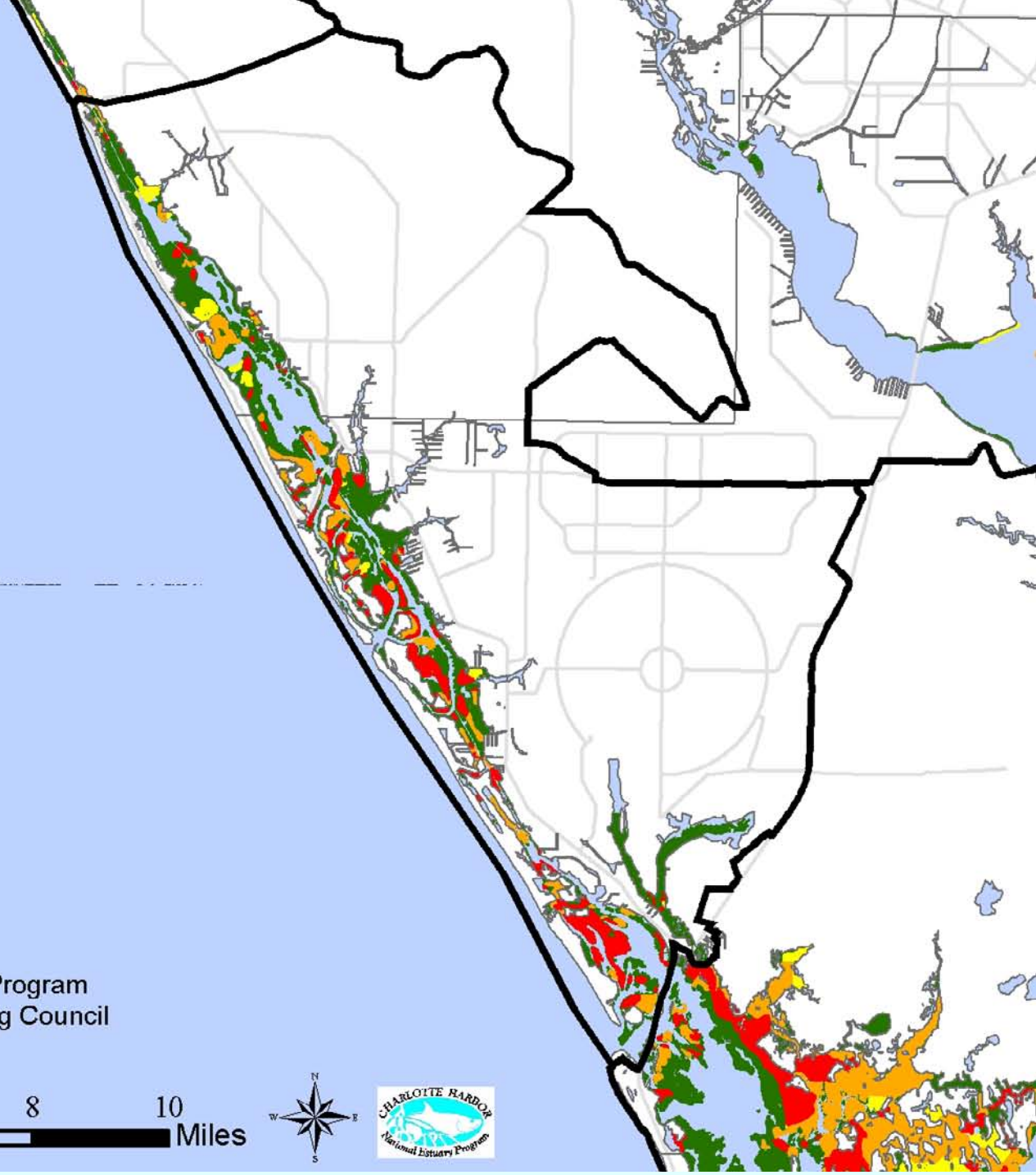




## Scar Severity

- Light Scarring
- Moderate Scarring
- Severe Scarring
- 2004 Seagrass Coverage
- Major Roads

Source: Charlotte Harbor National Estuary Program  
Southwest Florida Regional Planning Council  
Date: October 11, 2006



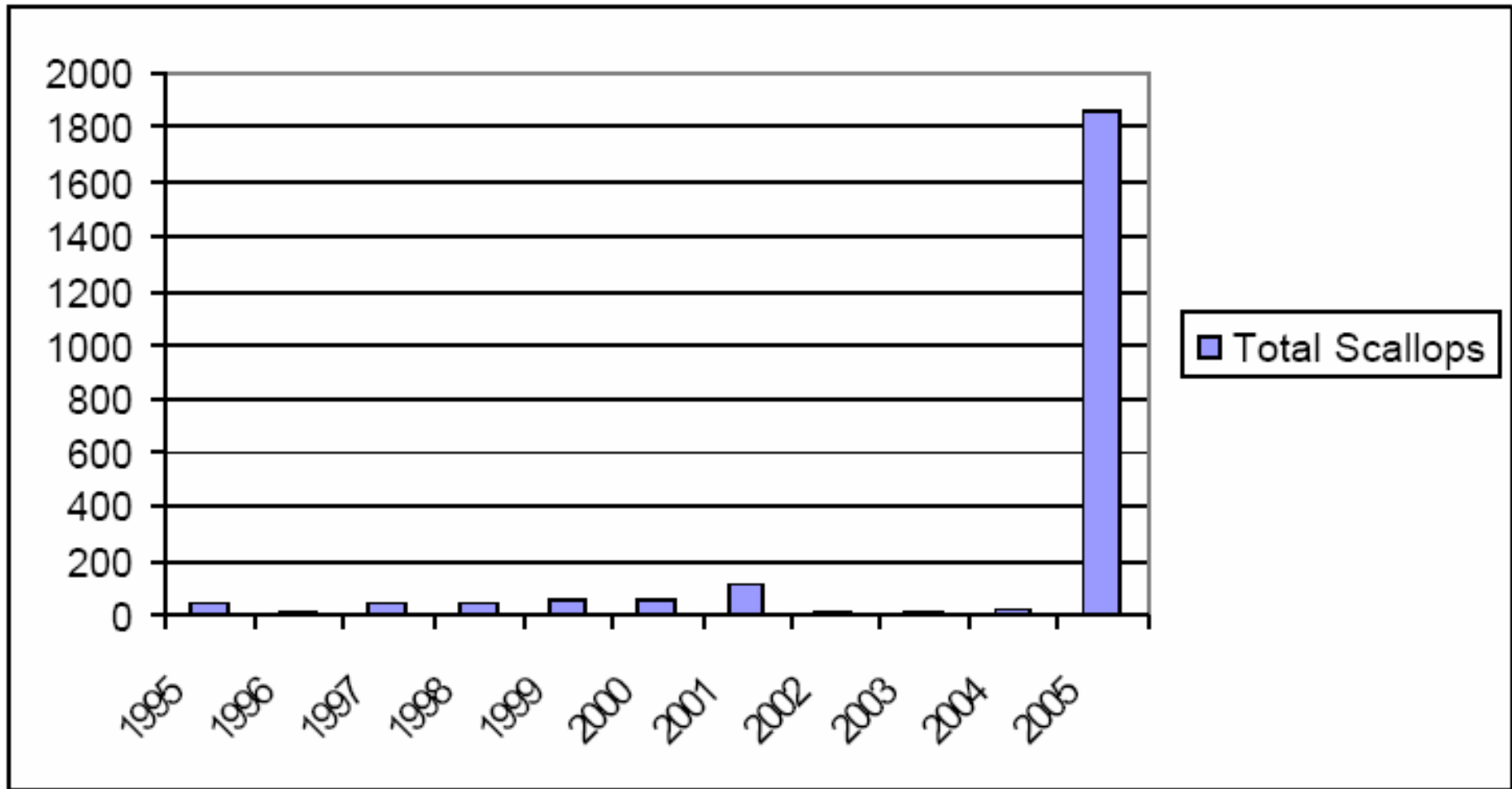
# Benthic Invertebrate Abundance and Diversity



# Research Partners Grants

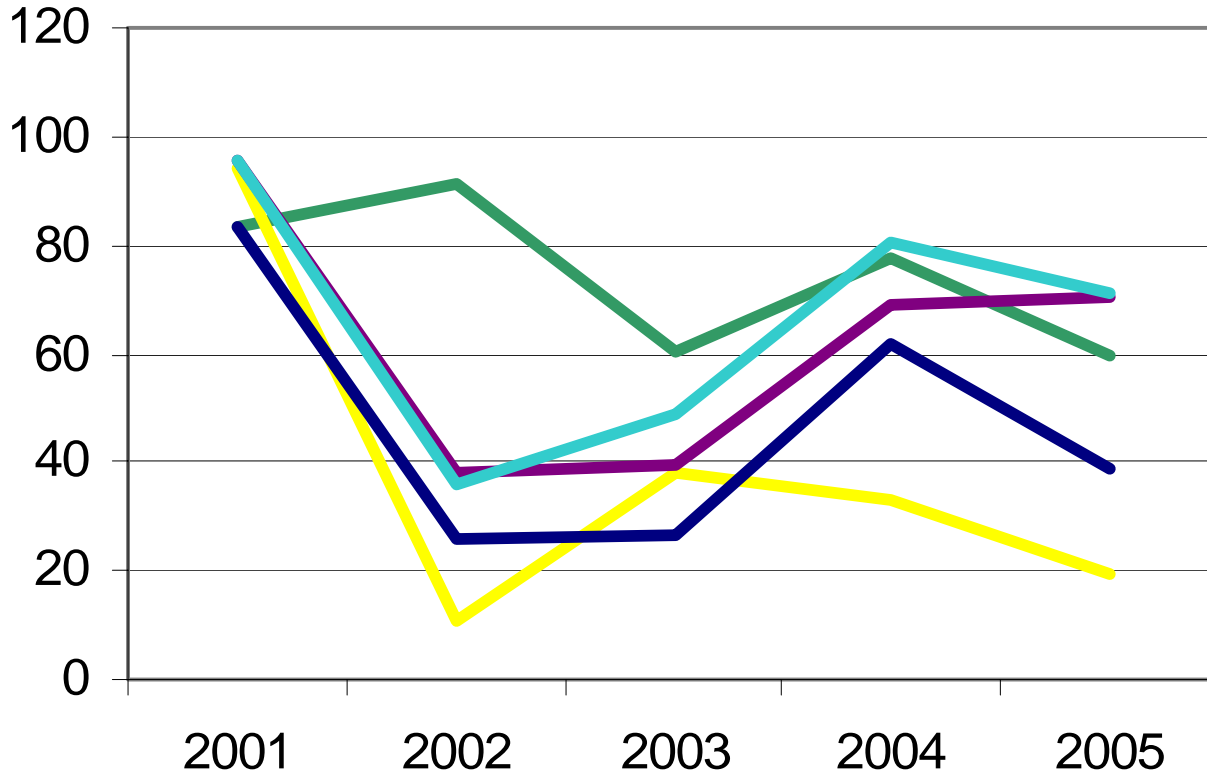


Charlotte Harbor had 100 times more scallops than in previous years thanks to Mote Marine Laboratory study with CHNEP funding.



**Myakka is the only shellfish area open more than 50% of available time each year.**

## Percentage Days Harvest Areas Open



- Myakka River  
Conditionally  
Approved
- Lemon Bay  
Conditionally  
Approved
- Gasparilla Sound  
Conditionally  
Approved
- Pine Island Sound  
Conditionally  
Approved Western
- Pine Island Sound  
Conditionally  
Approved Eastern



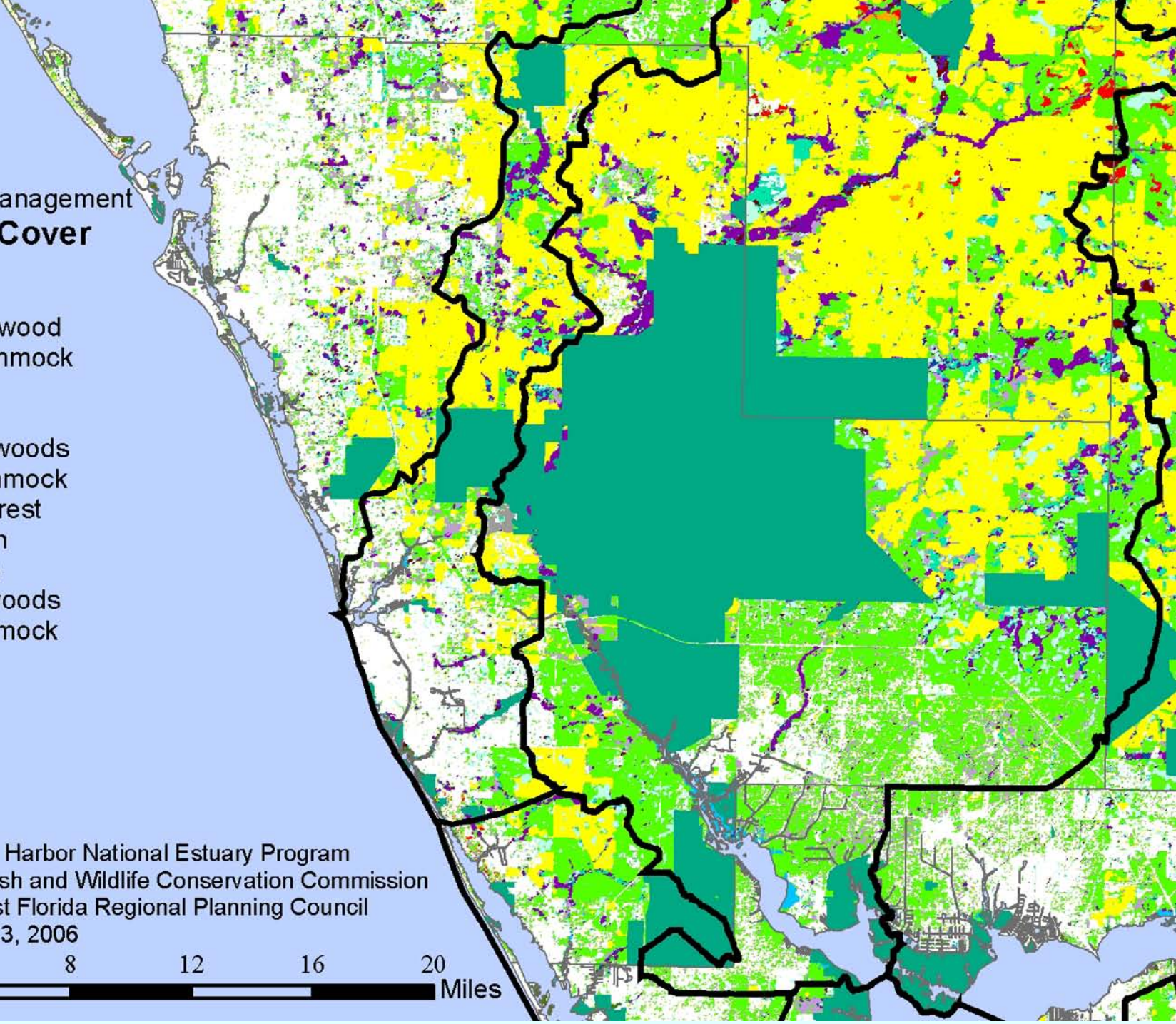
**Lands in Management**

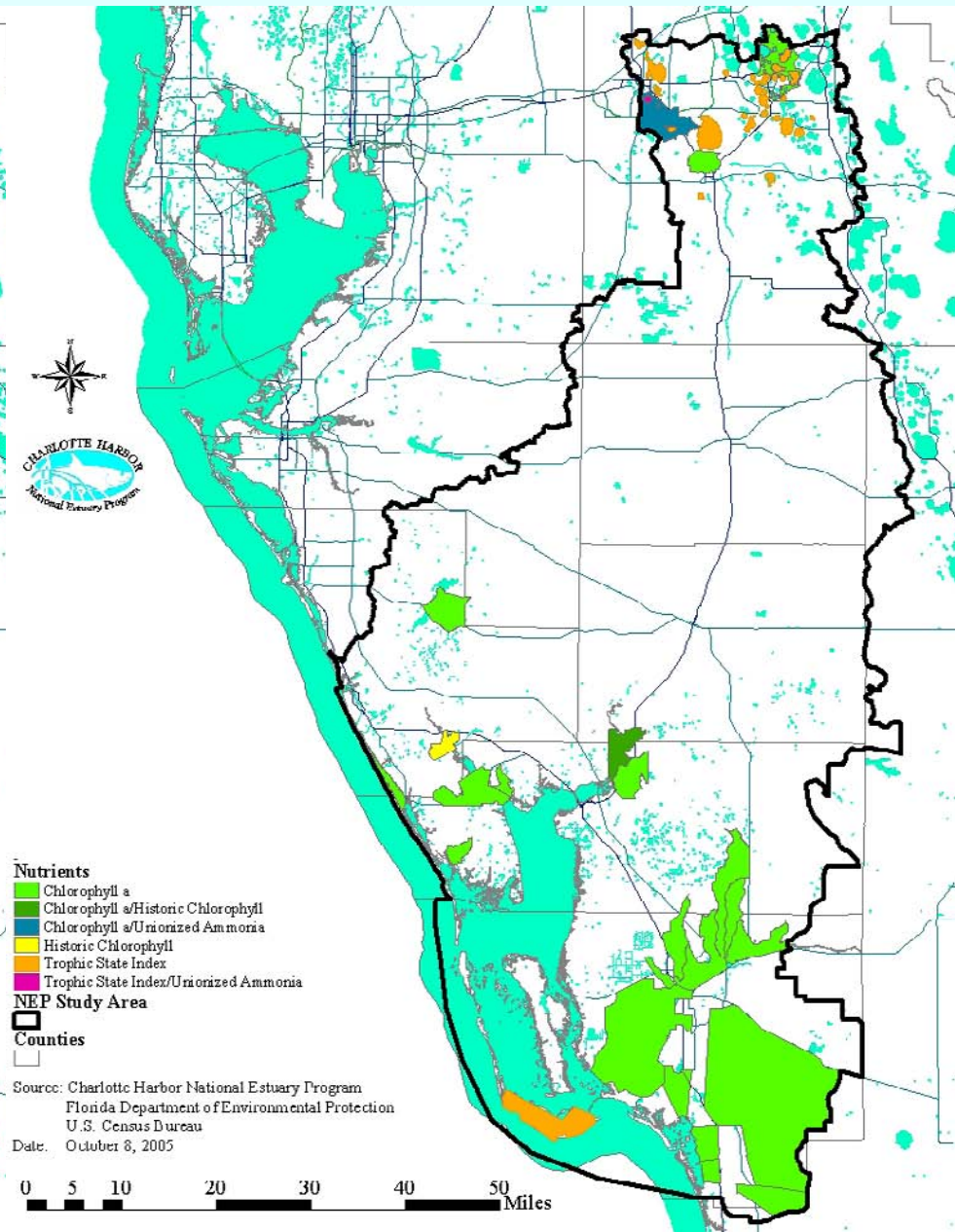
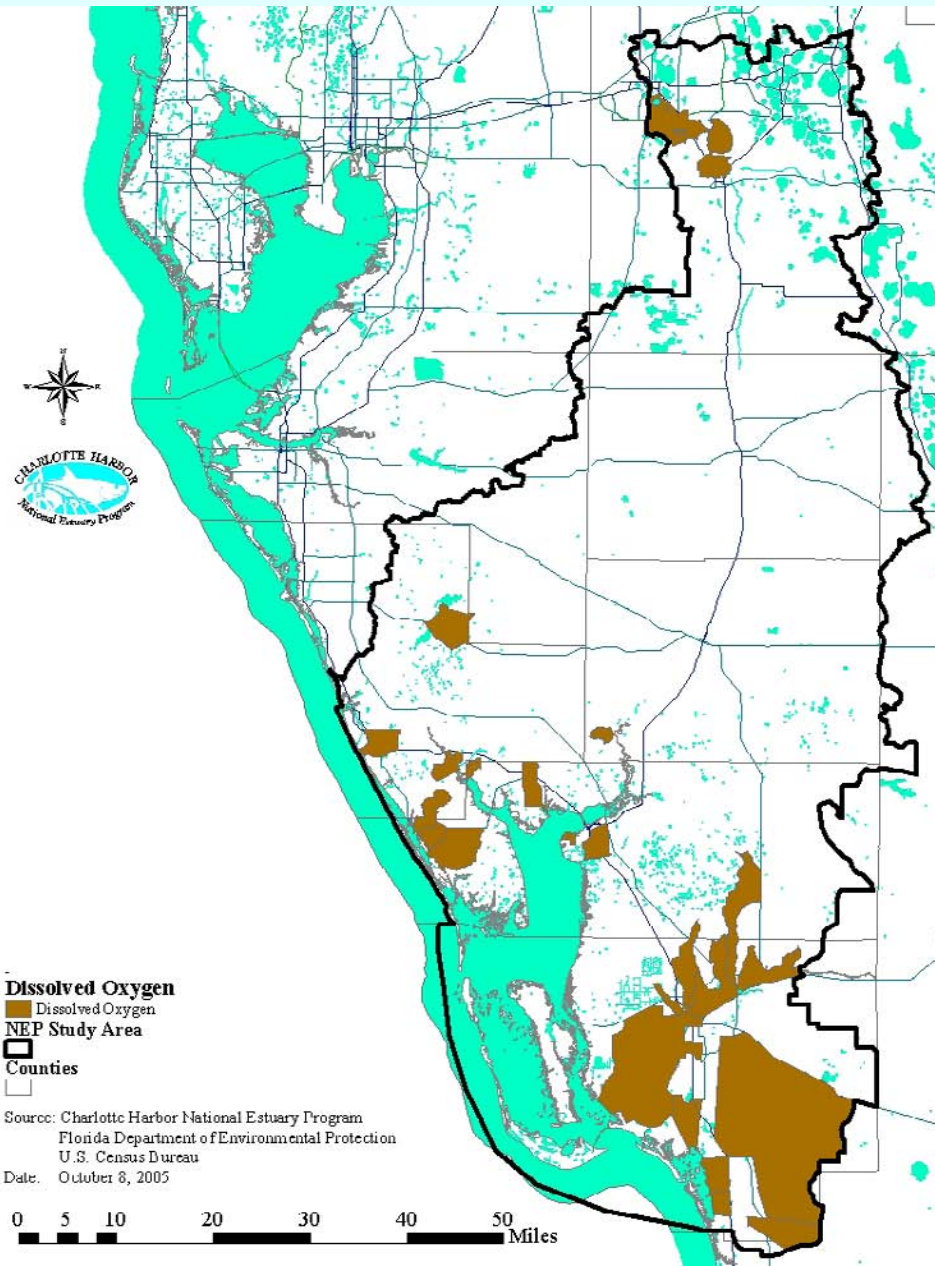
**2003 Land Cover**

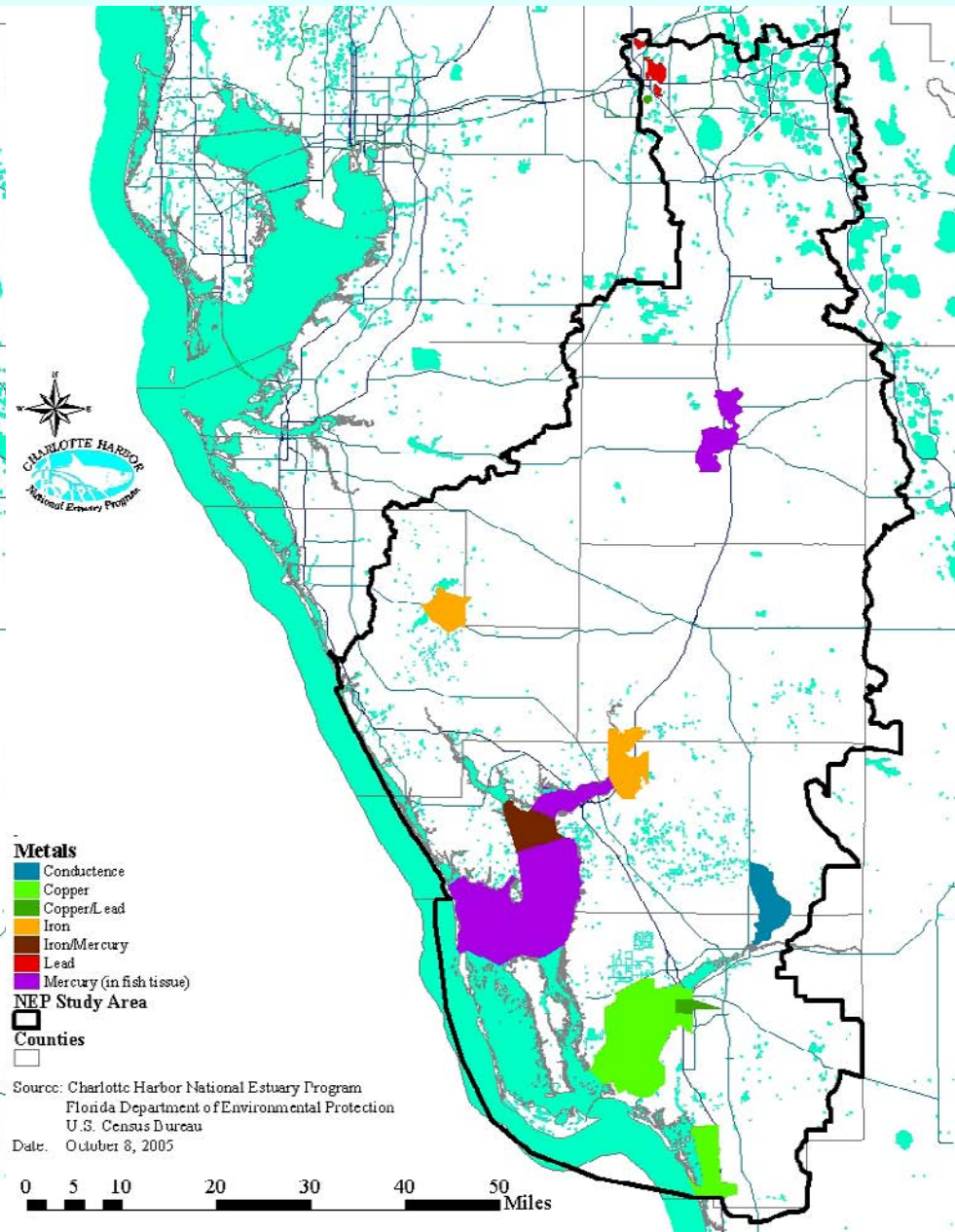
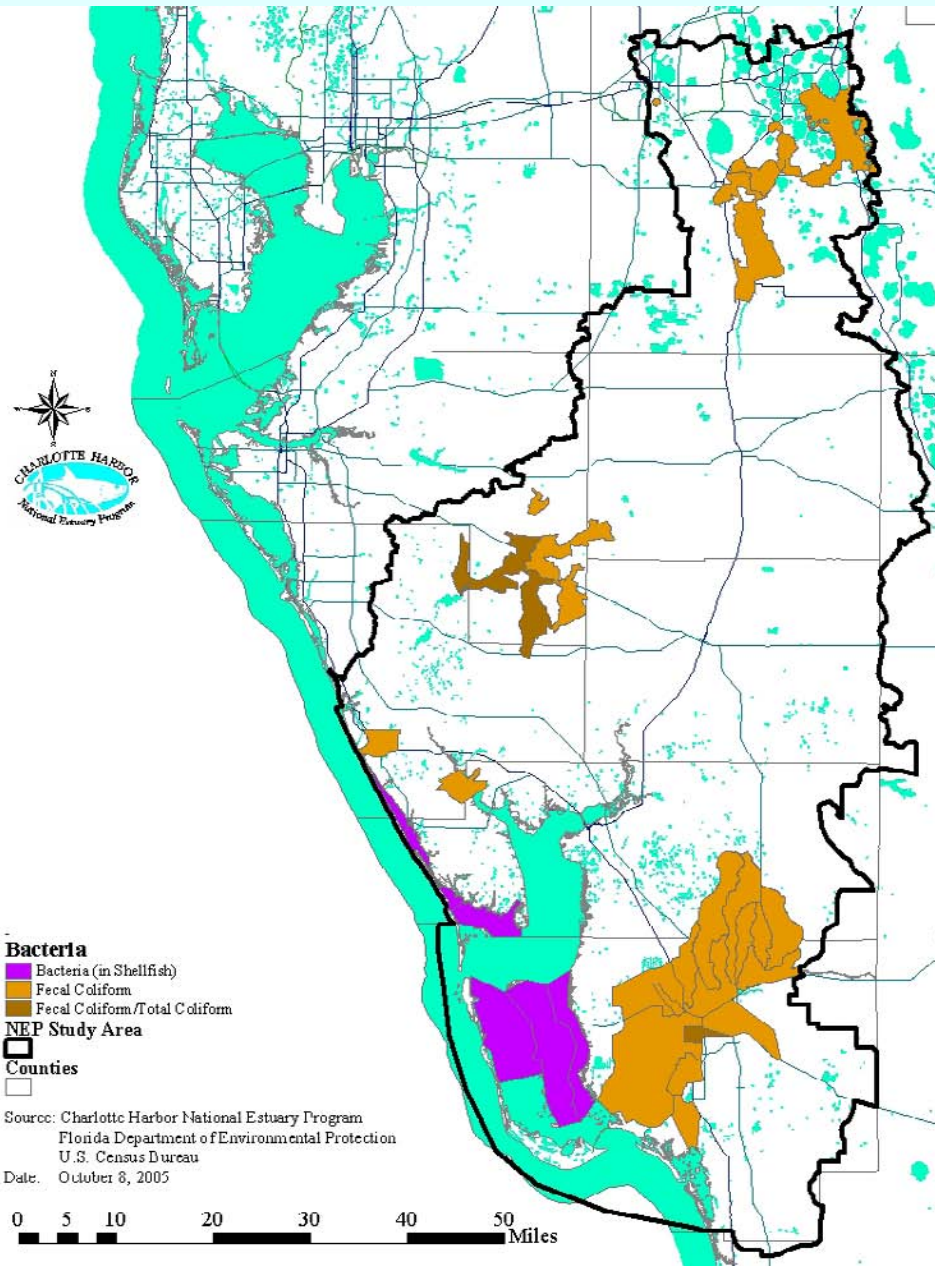
-  Beach
-  Cypress
-  Hydric Flatwood
-  Hydric Hammock
-  Mangrove
-  Marsh
-  Mesic Flatwoods
-  Mesic Hammock
-  Swamp Forest
-  Tidal Marsh
-  Wet Prairie
-  Xeric Flatwoods
-  Xeric Hammock
-  Agriculture
-  Exotics
-  Mining
-  Urban

Source: Charlotte Harbor National Estuary Program  
Florida Fish and Wildlife Conservation Commission  
Southwest Florida Regional Planning Council

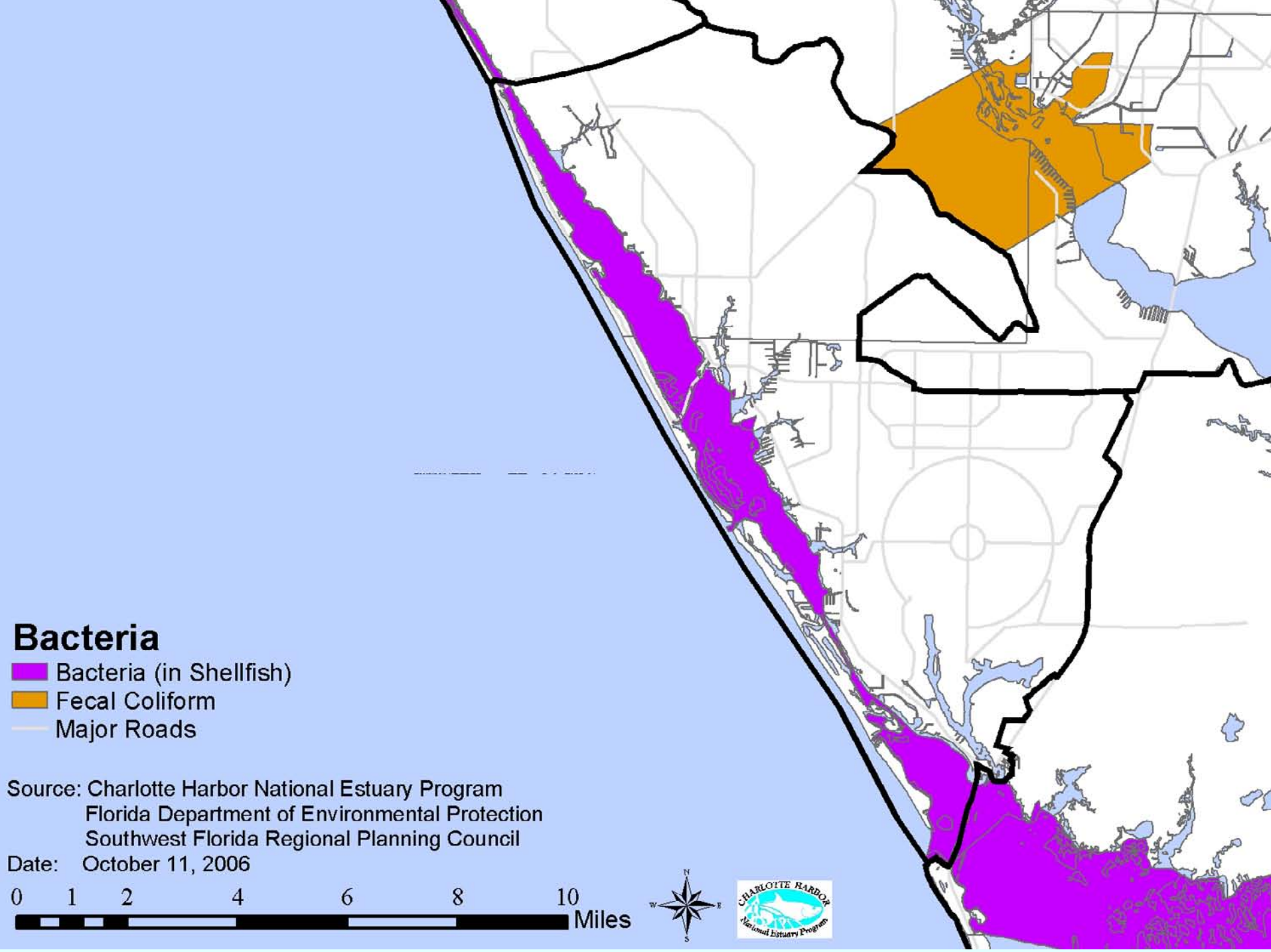
Date: October 13, 2006









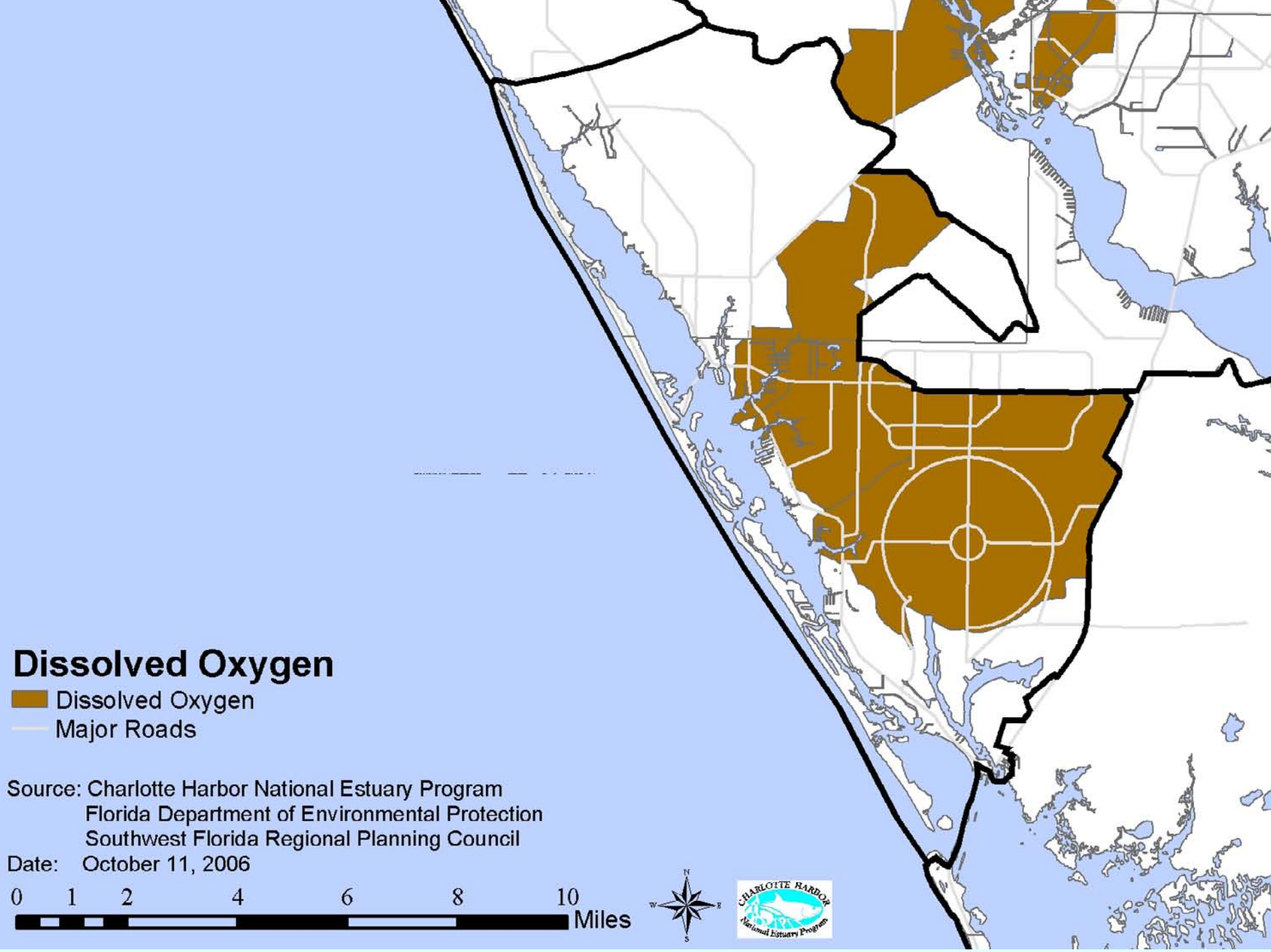


# Bacteria

- Bacteria (in Shellfish)
- Fecal Coliform
- Major Roads

Source: Charlotte Harbor National Estuary Program  
Florida Department of Environmental Protection  
Southwest Florida Regional Planning Council  
Date: October 11, 2006





# Dissolved Oxygen

- Dissolved Oxygen
- Major Roads

Source: Charlotte Harbor National Estuary Program  
Florida Department of Environmental Protection  
Southwest Florida Regional Planning Council

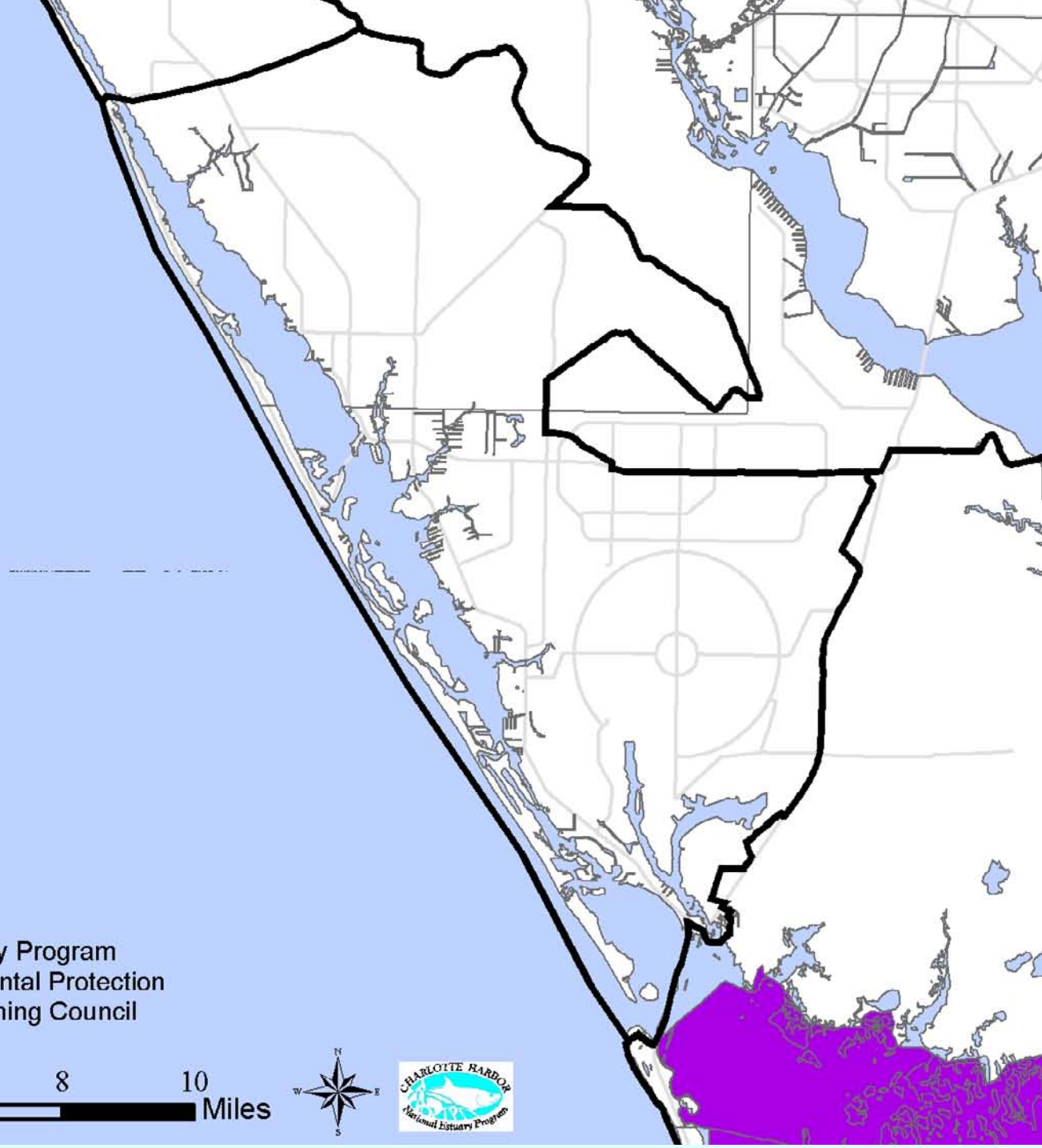
Date: October 11, 2006

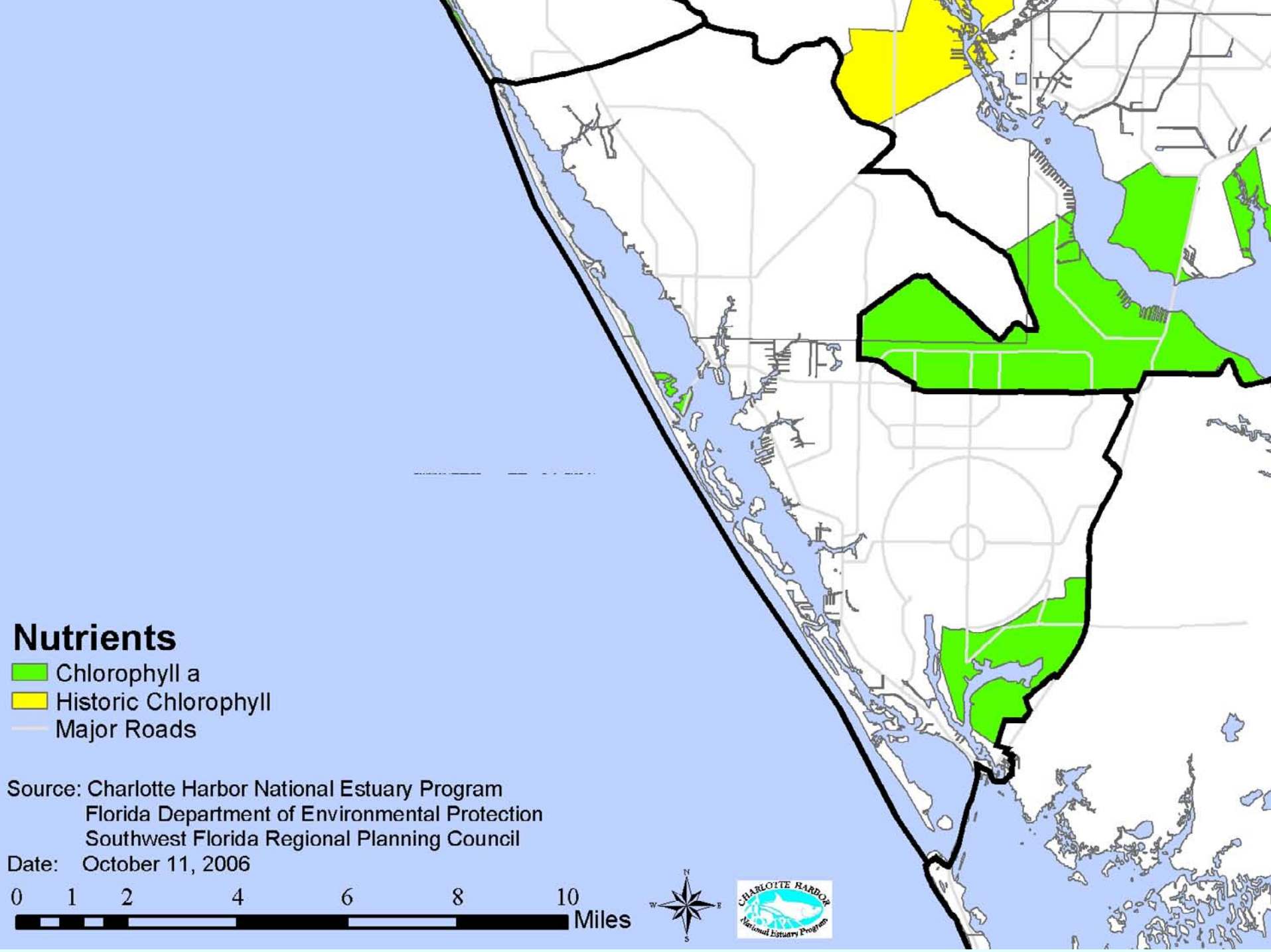


## Metals

- Mercury (in fish tissue)
- Major Roads

Source: Charlotte Harbor National Estuary Program  
Florida Department of Environmental Protection  
Southwest Florida Regional Planning Council  
Date: October 11, 2006





# Nutrients

- Chlorophyll a
- Historic Chlorophyll
- Major Roads

Source: Charlotte Harbor National Estuary Program  
Florida Department of Environmental Protection  
Southwest Florida Regional Planning Council  
Date: October 11, 2006





# Restoration



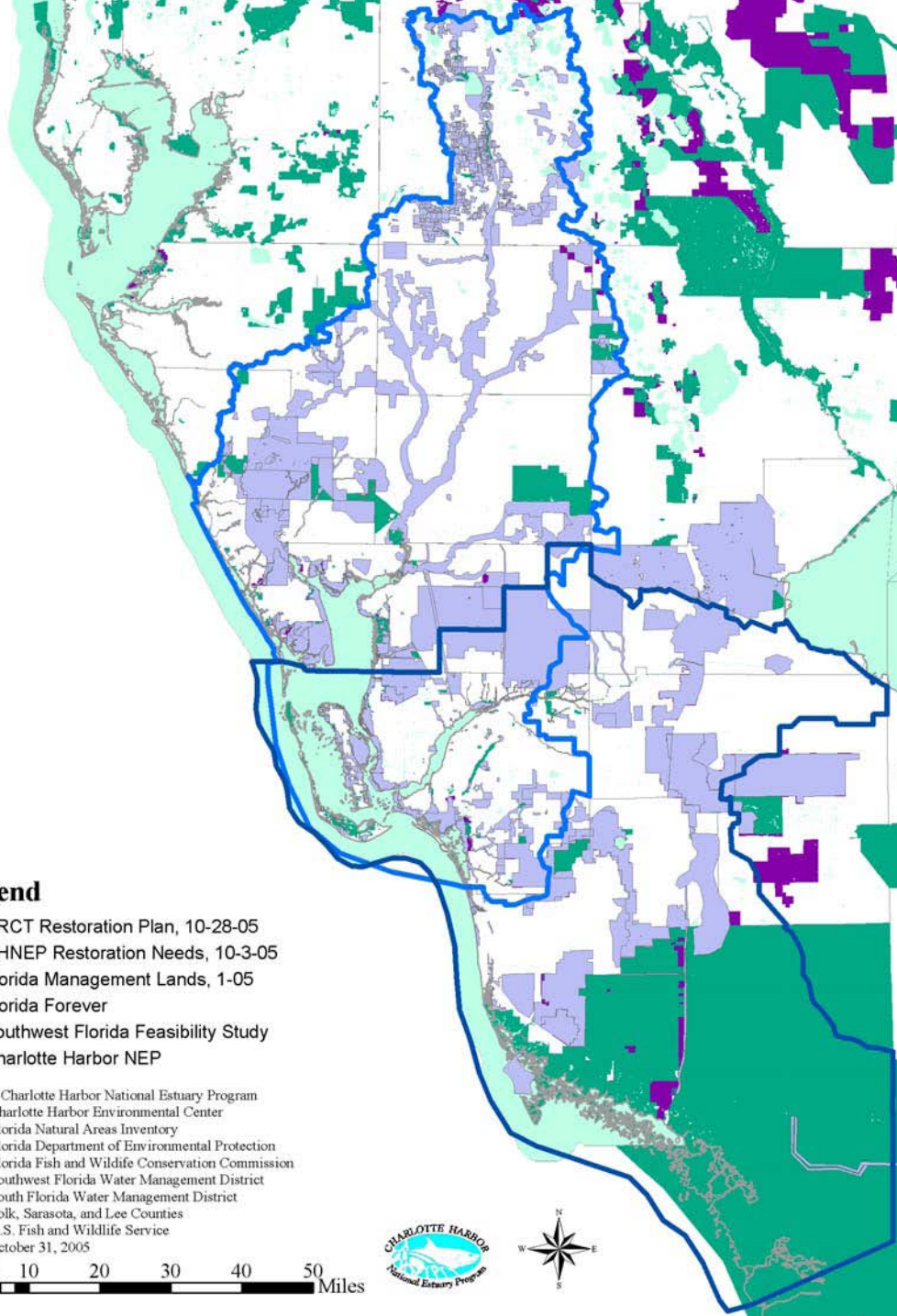
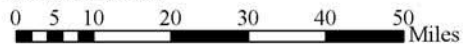
Calusa RCT – Tidal Caloosahatchee  
3/10/03

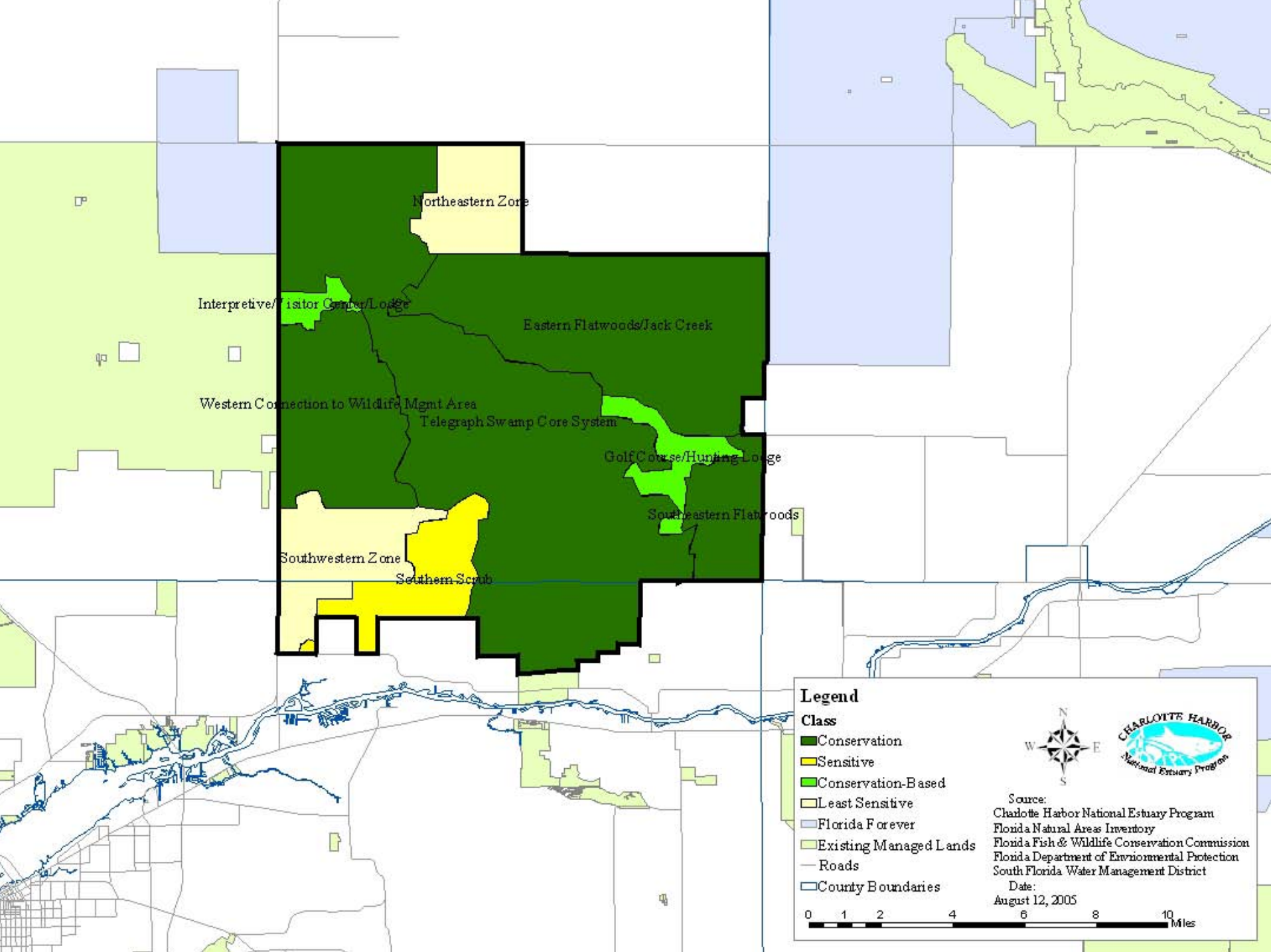
## Legend

-  RRCT Restoration Plan, 10-28-05
-  CHNEP Restoration Needs, 10-3-05
-  Florida Management Lands, 1-05
-  Florida Forever
-  Southwest Florida Feasibility Study
-  Charlotte Harbor NEP

Source: Charlotte Harbor National Estuary Program  
Charlotte Harbor Environmental Center  
Florida Natural Areas Inventory  
Florida Department of Environmental Protection  
Florida Fish and Wildlife Conservation Commission  
Southwest Florida Water Management District  
South Florida Water Management District  
Polk, Sarasota, and Lee Counties  
U.S. Fish and Wildlife Service

Date: October 31, 2005





Northeastern Zone

Interpretive/Visitor Center/Lodge

Eastern Flatwoods/Jack Creek

Western Connection to Wildlife Mgmt Area

Telegraph Swamp Core System

Golf Course/Hunting Lodge

Southwestern Zone

Southern Scrub

Southeastern Flatwoods

**Legend**

- Conservation
- Sensitive
- Conservation-Based
- Least Sensitive
- Florida Forever
- Existing Managed Lands
- Roads
- County Boundaries

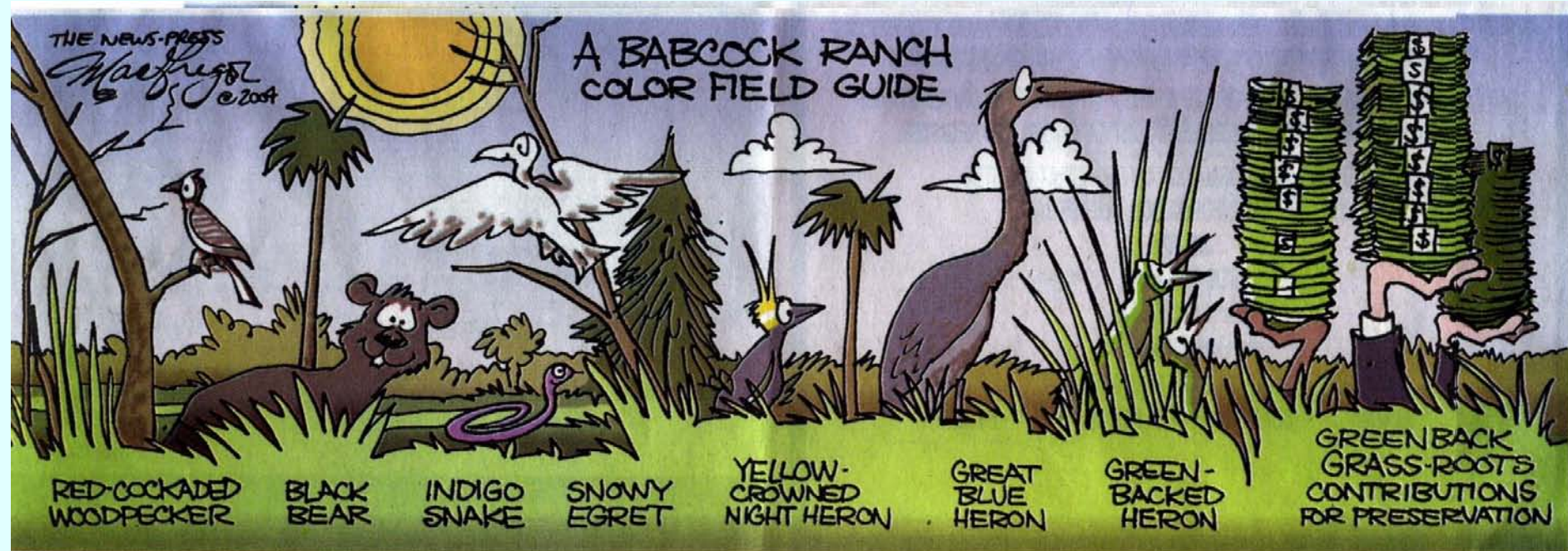


Source:  
 Charlotte Harbor National Estuary Program  
 Florida Natural Areas Inventory  
 Florida Fish & Wildlife Conservation Commission  
 Florida Department of Environmental Protection  
 South Florida Water Management District

Date:  
 August 12, 2005







**Babcock Preservation Partnership, Inc. Jim Fowler, spokesman**  
**[www.babcockranch.org](http://www.babcockranch.org) \$200,000 in donations**

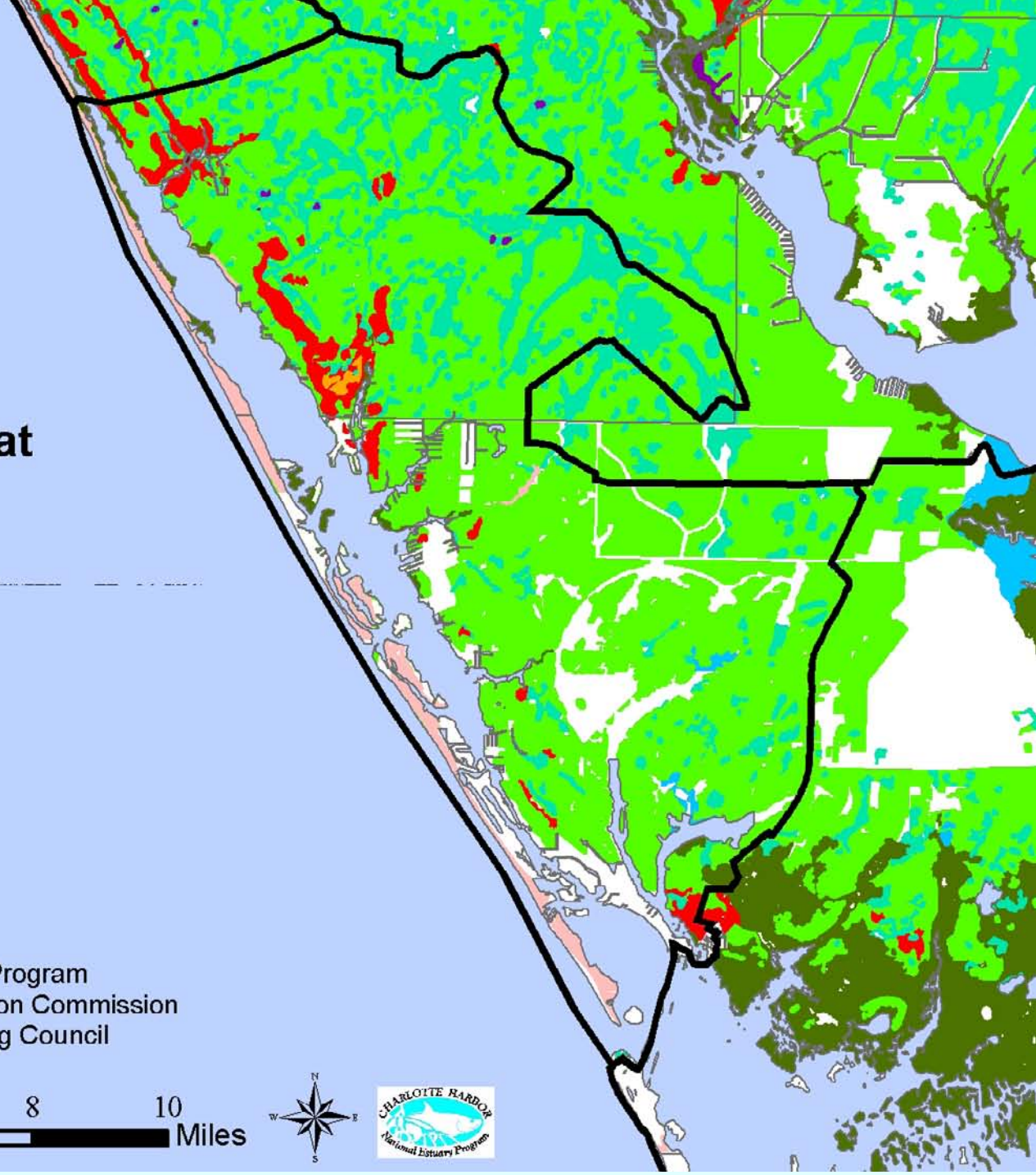
## Pre-Development Habitat

- Beach
- Cypress
- Hydric Flatwood
- Hydric Hammock
- Mangrove
- Marsh
- Mesic Flatwood
- Mesic Hammock
- Swamp Forest
- Tidal Marsh
- Wet Prairie
- Xeric Flatwood
- Xeric Hammock

Source: Charlotte Harbor National Estuary Program  
Florida Fish and Wildlife Conservation Commission  
Southwest Florida Regional Planning Council

Date: October 11, 2006

0 1 2 4 6 8 10 Miles

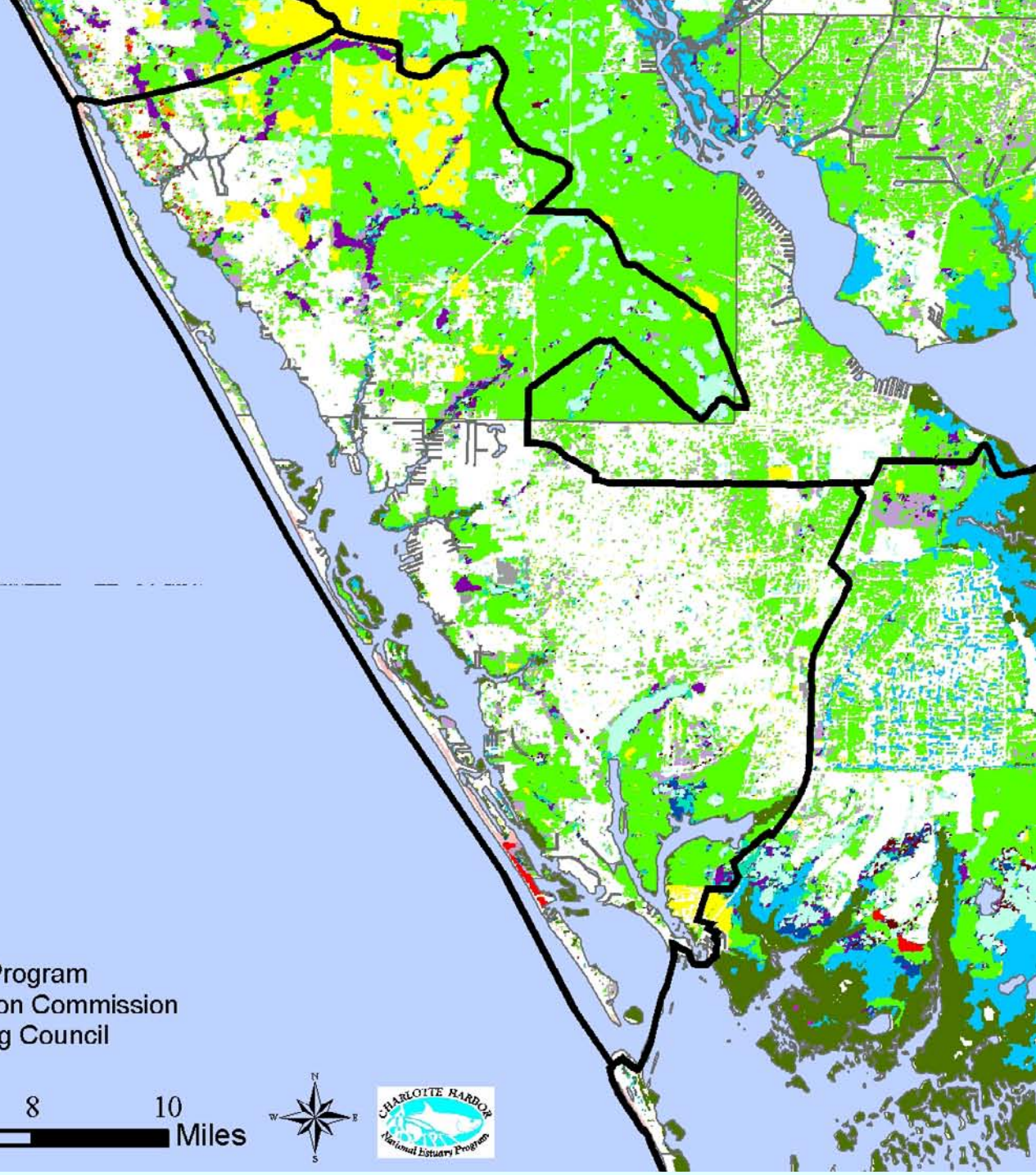


## 2003 Land Cover



Source: Charlotte Harbor National Estuary Program  
Florida Fish and Wildlife Conservation Commission  
Southwest Florida Regional Planning Council

Date: October 11, 2006



Lands in Management

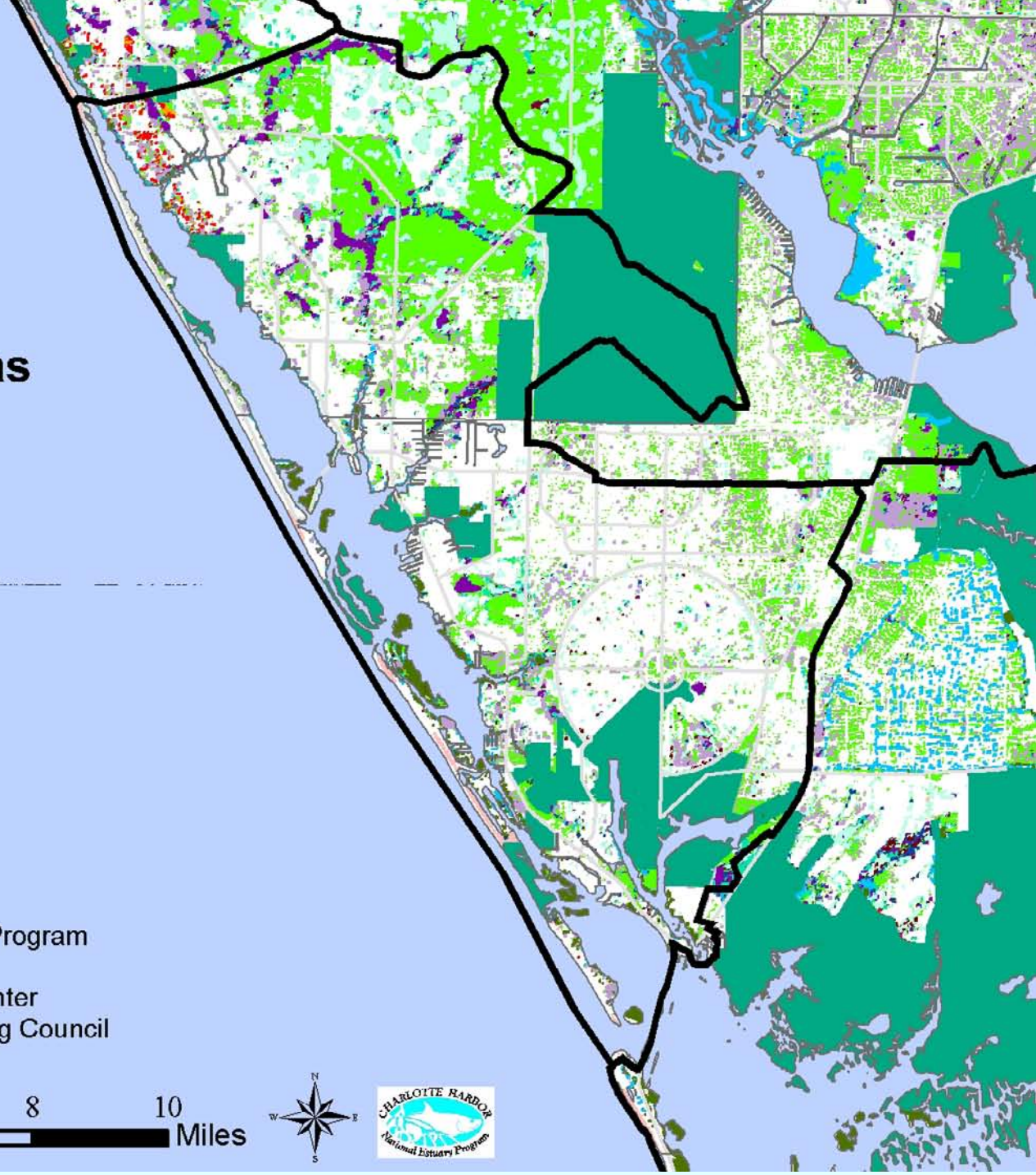
## Remaining Natural Areas

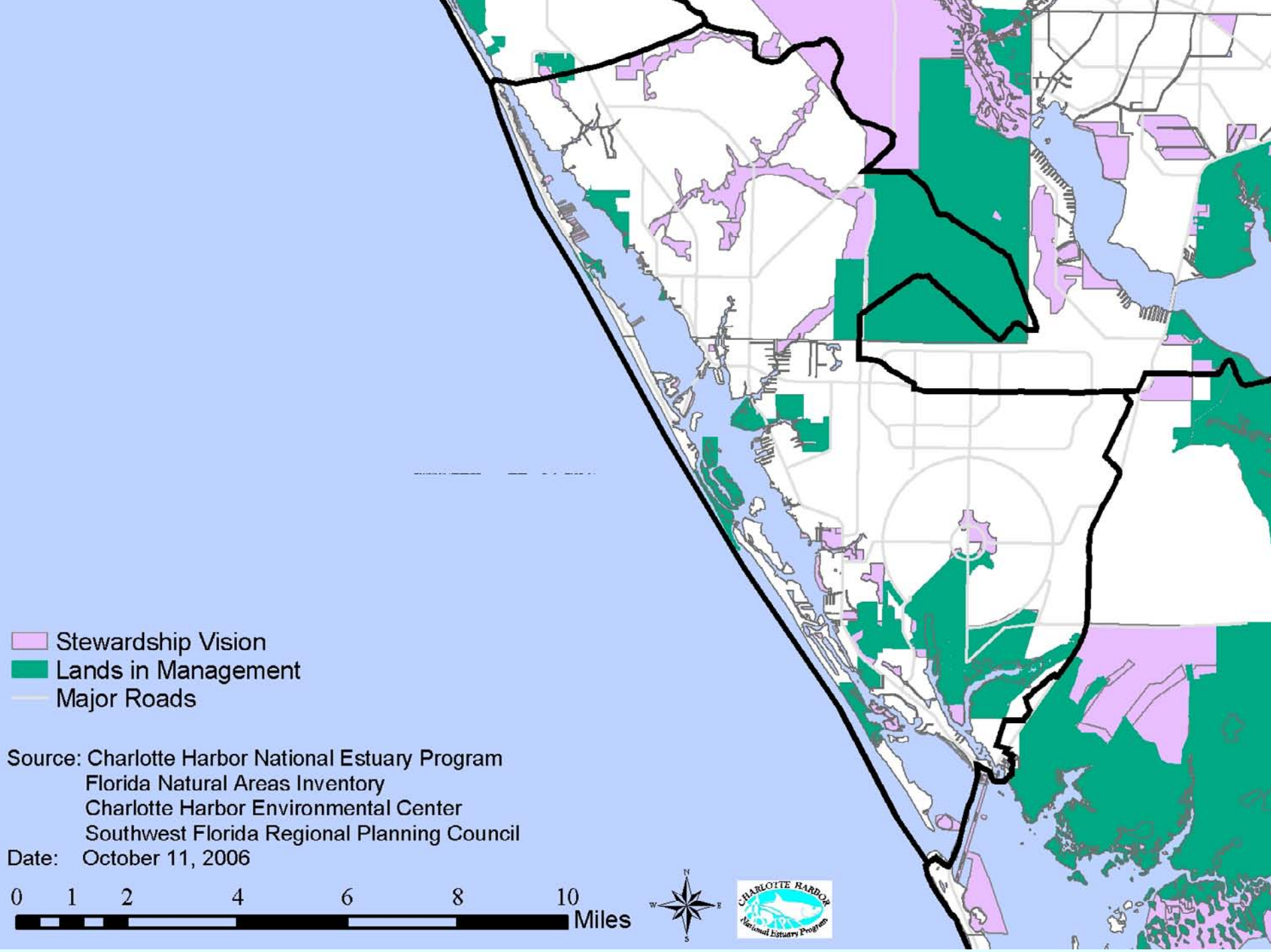
-  Beach
-  Cypress
-  Hydric Flatwood
-  Hydric Hammock
-  Mangrove
-  Marsh
-  Mesic Flatwoods
-  Mesic Hammock
-  Swamp Forest
-  Tidal Marsh
-  Wet Prairie
-  Xeric Flatwoods
-  Xeric Hammock
-  Major Roads

Source: Charlotte Harbor National Estuary Program  
Florida Natural Areas Inventory  
Charlotte Harbor Environmental Center  
Southwest Florida Regional Planning Council

Date: October 11, 2006

0 1 2 4 6 8 10 Miles



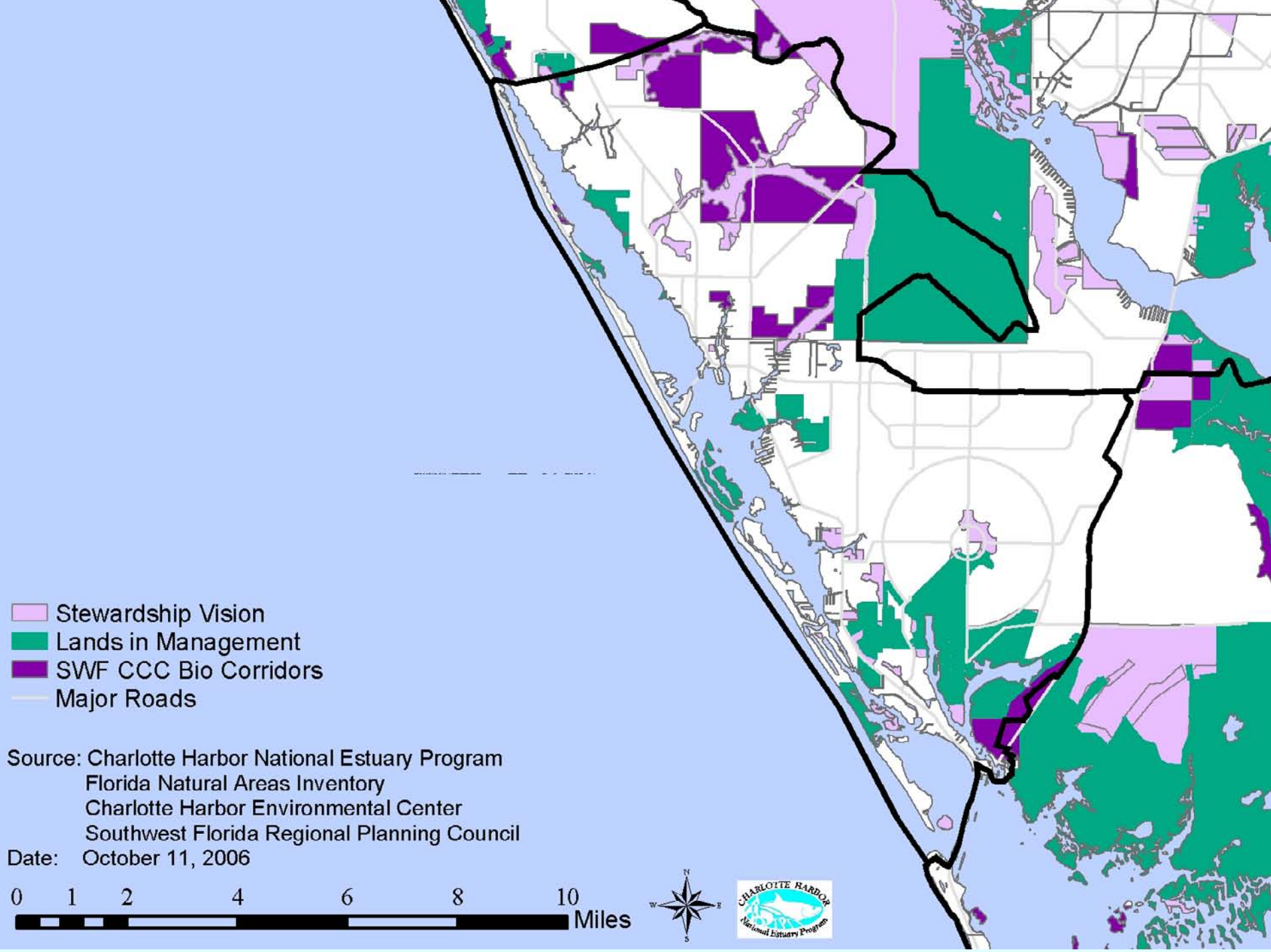


Stewardship Vision  
Lands in Management  
Major Roads

Source: Charlotte Harbor National Estuary Program  
Florida Natural Areas Inventory  
Charlotte Harbor Environmental Center  
Southwest Florida Regional Planning Council  
Date: October 11, 2006

0 1 2 4 6 8 10 Miles





- Stewardship Vision
- Lands in Management
- SWF CCC Bio Corridors
- Major Roads

Source: Charlotte Harbor National Estuary Program  
Florida Natural Areas Inventory  
Charlotte Harbor Environmental Center  
Southwest Florida Regional Planning Council  
Date: October 11, 2006



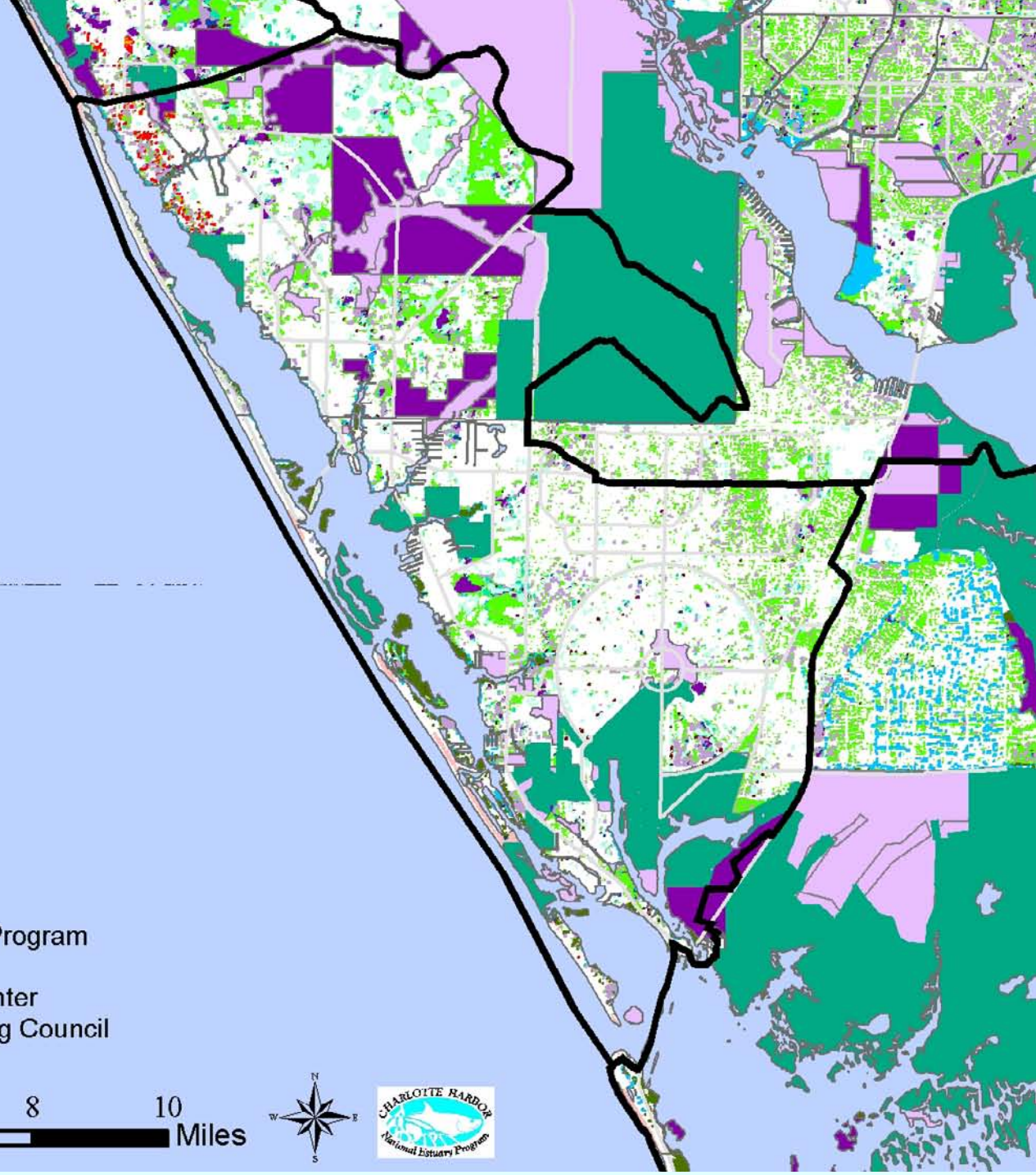
- Stewardship Vision
- Lands in Management
- SWF CCC Bio Corridors

**Remaining Natural Areas**

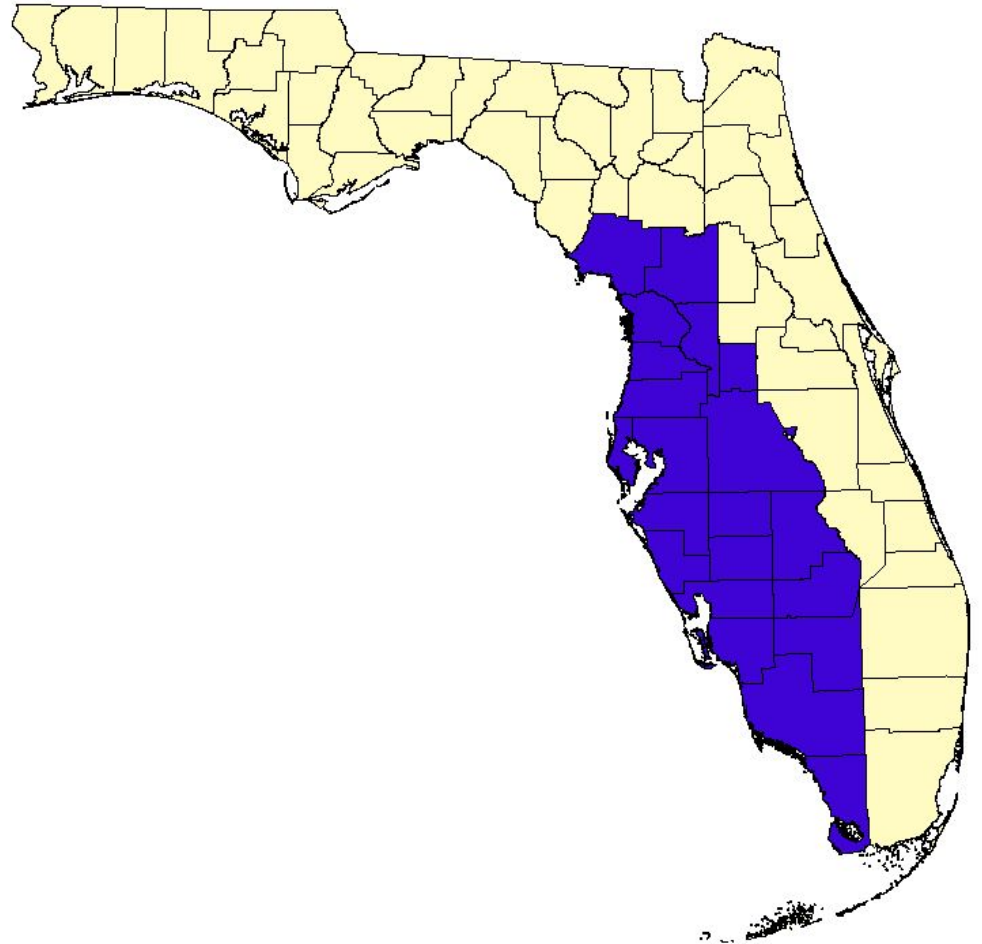
**Habitat**

- Beach
- Cypress
- Hydric Flatwood
- Hydric Hammock
- Mangrove
- Marsh
- Mesic Flatwoods
- Mesic Hammock
- Swamp Forest
- Tidal Marsh
- Wet Prairie
- Xeric Flatwoods
- Xeric Hammock
- Major Roads

Source: Charlotte Harbor National Estuary Program  
 Florida Natural Areas Inventory  
 Charlotte Harbor Environmental Center  
 Southwest Florida Regional Planning Council  
 Date: October 11, 2006



- 3 National Estuary Programs
- 1 National Estuarine Research Reserve
- 21 Counties
- 3 Water Management Districts
- 3 Regional Planning Councils
- 2 State Agencies
- 3 Federal Agencies
- 7 Non-Profit Conservation Groups



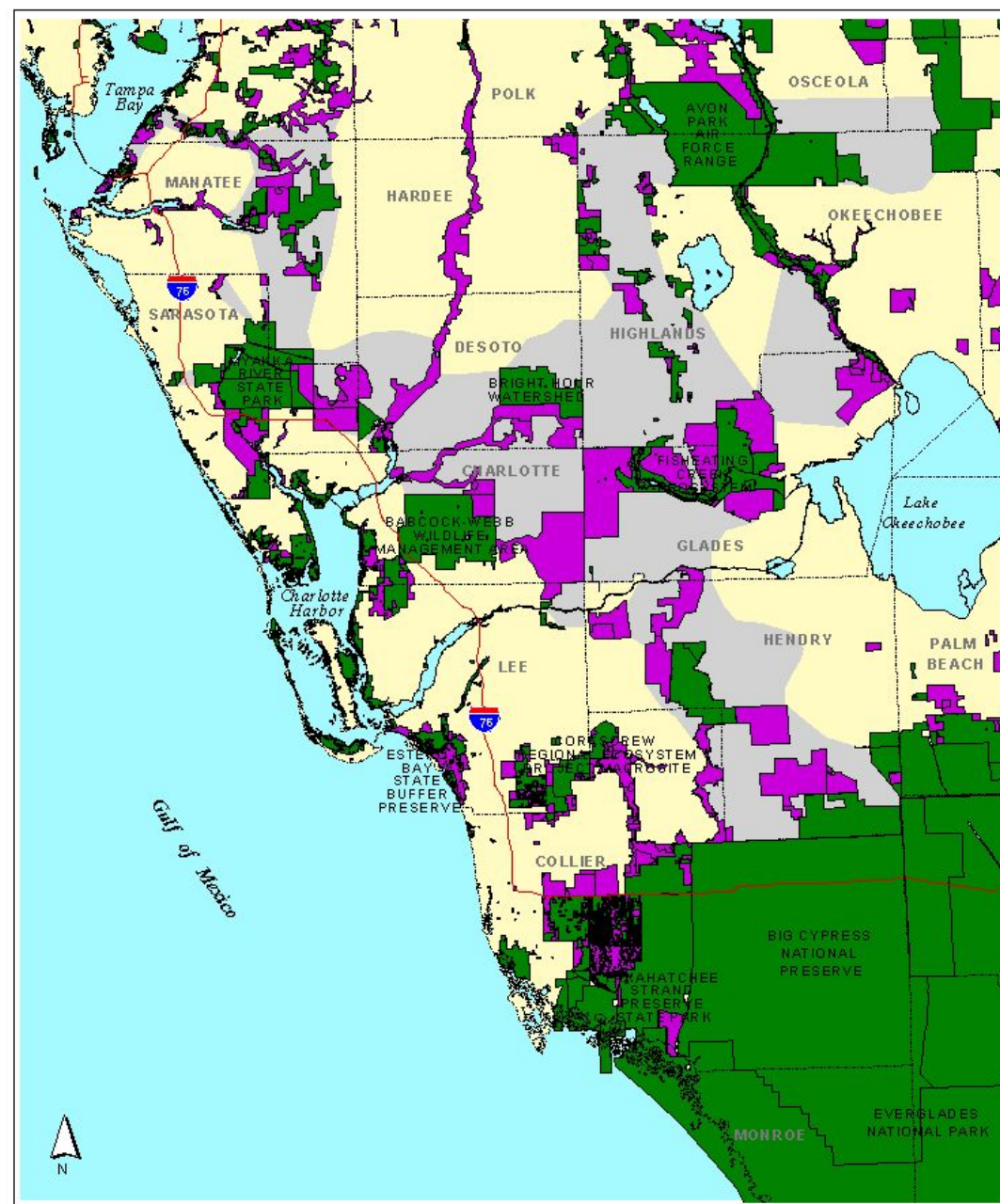




*Florida Panther in  
Sarasota County*

# Panther Paths

*Grey area illustrates potential panther corridor.*



## Conservation in Southwest Florida





Restoration Partners Grants

# Legislative Issues and Advocacy

Acquire the Babcock Ranch

Establish Water Reservations

Revise the WSE rules for Lake Okeechobee

Amend Maintenance Dredging Exemptions

Fund SFWMD Initiatives

Do not establish Water Markets

Set goals to stop & reverse salt water intrusion of Floridan

SWIM Designation for Lower Charlotte Harbor

Continued Federal Funding of NEPs

## Advocacy and Review Procedures



### Charlotte Harbor National Estuary Program Technical Report 03-1

Adopted: February 21, 2003



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(239) 995-1777  
[www.charlotteharbornep.org](http://www.charlotteharbornep.org)

## Legislative Agenda



### Charlotte Harbor National Estuary Program Technical Report 03-5

Adopted: November 17, 2003

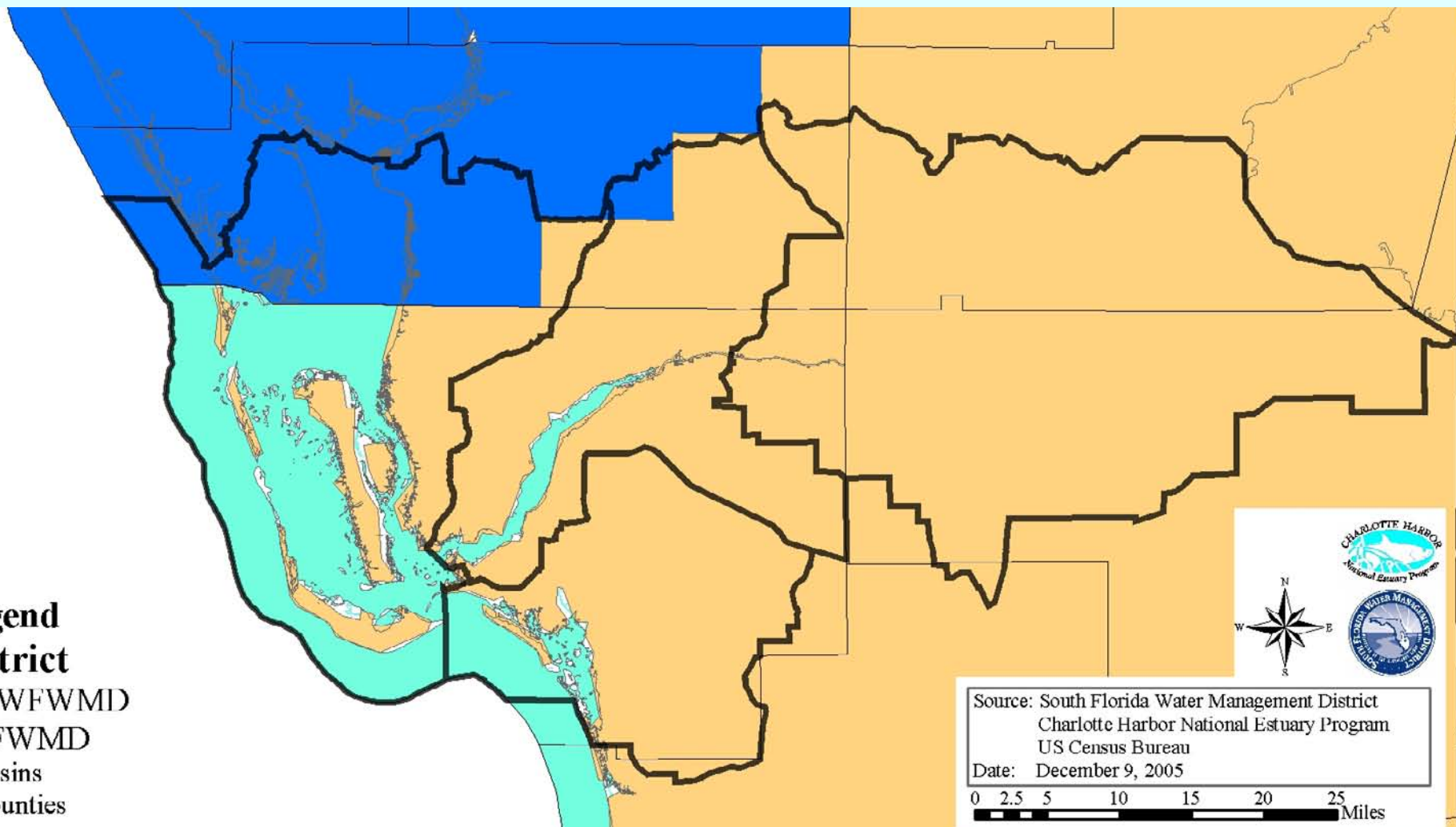
Prepared by:



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(239) 995-1777  
[www.charlotteharbornep.org](http://www.charlotteharbornep.org)

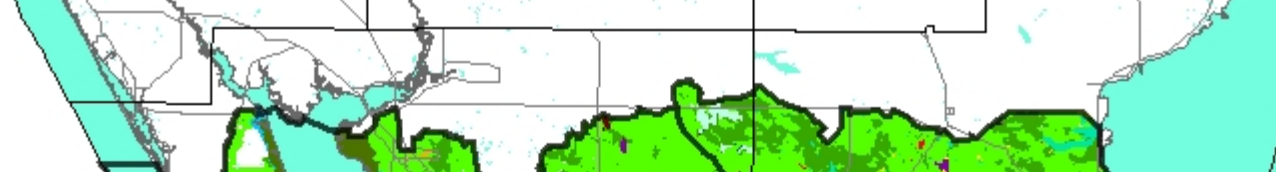
**Legend**  
**District**

-  SWFWMD
-  SFWMD
-  Basins
-  Counties



Source: South Florida Water Management District  
Charlotte Harbor National Estuary Program  
US Census Bureau  
Date: December 9, 2005

0 2.5 5 10 15 20 25 Miles



### 2003 Land Cover Compared to Pre-Development Vegetation

**Legen**

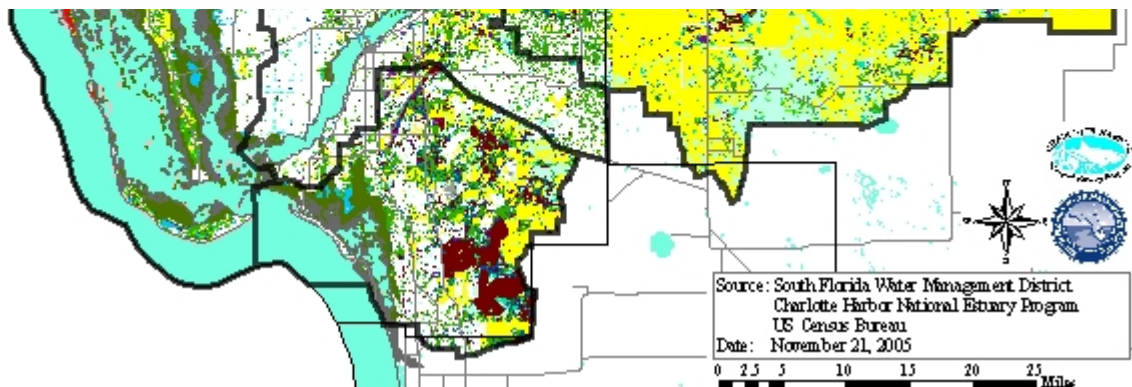
- Habit**
- Beach
  - Cypress
  - Hydric
  - Hydric
  - Mangr
  - Marsh
  - Mesic
  - Mesic
  - Swamp
  - Tidal I
  - Wet P
  - Xeric I
  - Xeric I
  - Count
  - Basins
  - Major

	Charlotte Harbor	Caloosahatchee Estuary	Freshwater Caloosahatchee	Estero Bay	Total	PDV Total	Percentage Change
Beach	1,832	9	0	231	2,072	819	153%
Cypress	2,431	9,008	7,667	16,353	35,459	62,782	-44%
Flatwood	56,347	81,705	134,821	37,754	310,627	888,730	-65%
Hydric Hammock	1,507	1,250	3,414	584	6,756	6,636	2%
Mangrove	41,492	3,286	1	11,969	56,747	64,247	-12%
Mesic/Xeric Hammock	3,900	4,540	14,866	2,444	25,749	7,343	251%
Swamp/Marsh	22,495	22,189	76,771	18,909	140,365	209,025	-33%
Open Water	269,846	26,262	7,349	42,450	345,907	320,583	8%
Exotics	170	131	1,014	41	1,355	N/A	N/A
Agriculture	10,931	35,156	320,126	30,396	396,609	N/A	N/A
Urban	46,970	104,613	42,058	51,301	244,942	N/A	N/A
Mining	72	324	184	820	1,400	N/A	N/A
<b>Total</b>	<b>457,992</b>	<b>288,474</b>	<b>608,270</b>	<b>213,252</b>	<b>1,567,988</b>	<b>1,560,165</b>	

**Legen**

- Land C**
- Beach
  - Cypress
  - Hydric
  - Hydric
  - Mangr
  - Marsh
  - Mesic Flatwoods
  - Mesic Hammock
  - Swamp Forest
  - Tidal Marsh
  - Wet Prairie
  - Xeric Flatwoods
  - Xeric Hammock
  - Exotics
  - Agriculture
  - Urban
  - Mining
  - Counties
  - Basins
  - Major Roads

<b>Native Land Habitats</b>	<b>130,003</b>	<b>121,988</b>	<b>237,539</b>	<b>88,244</b>	<b>577,774</b>	<b>1,239,582</b>	<b>-53%</b>
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Source: South Florida Water Management District  
 Charlotte Harbor National Estuary Program  
 US Census Bureau  
 Date: November 21, 2005

0 2.5 5 10 15 20 25 Miles



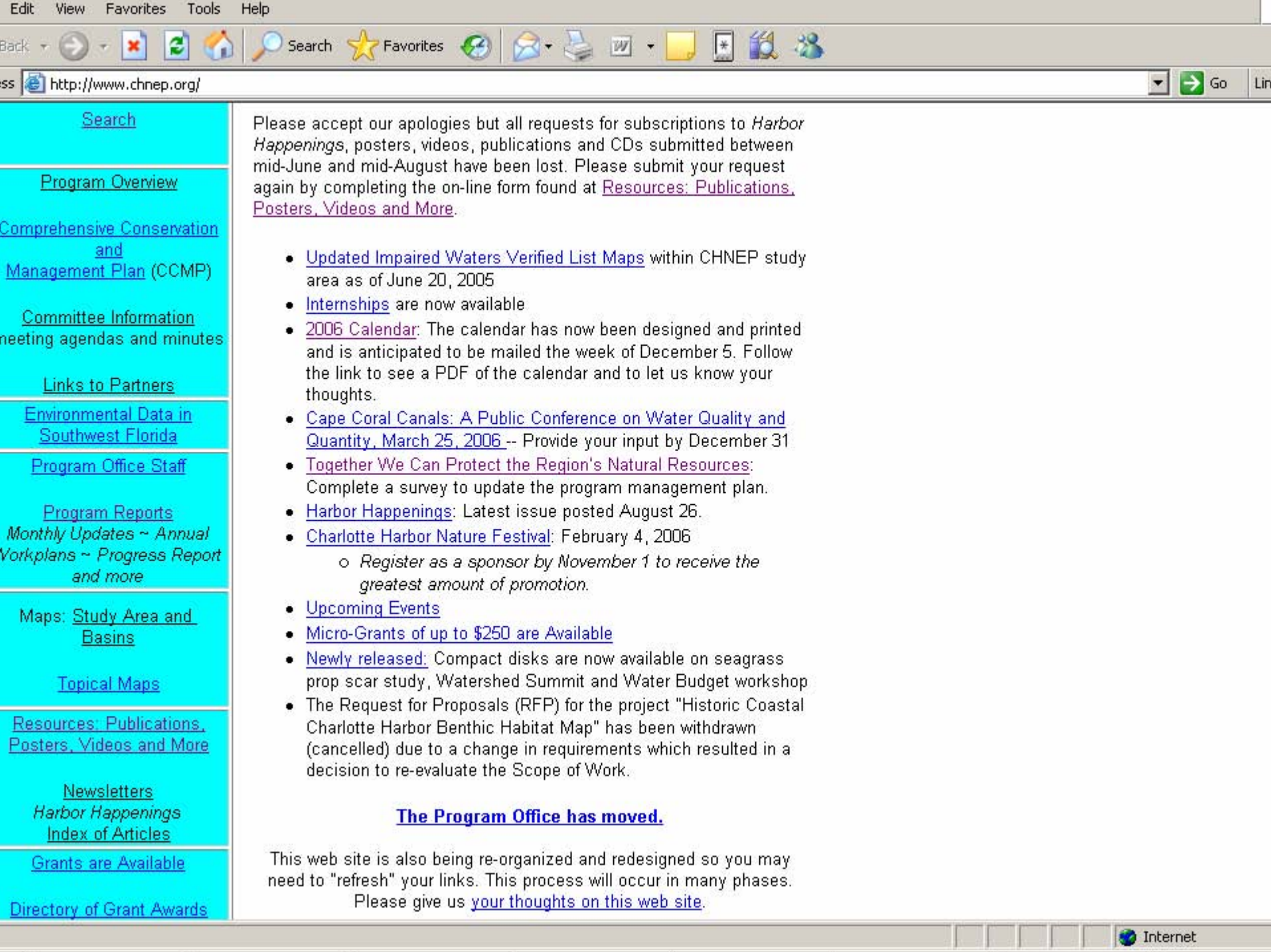
# *Environment & Natural Resources*

Lisa Beever	<i>Charlotte Harbor National Estuary Program</i>
Andrew Dickman	<i>Conservancy of Southwest Florida</i>
Alice Carlson	<i>South Florida Water Management District</i>



# Public Outreach





<a href="#">Search</a>
<a href="#">Program Overview</a>
<a href="#">Comprehensive Conservation and Management Plan (CCMP)</a>
<a href="#">Committee Information</a> meeting agendas and minutes
<a href="#">Links to Partners</a>
<a href="#">Environmental Data in Southwest Florida</a>
<a href="#">Program Office Staff</a>
<a href="#">Program Reports</a> Monthly Updates ~ Annual Workplans ~ Progress Report and more
Maps: <a href="#">Study Area and Basins</a>
<a href="#">Topical Maps</a>
<a href="#">Resources: Publications, Posters, Videos and More</a>
<a href="#">Newsletters</a> Harbor Happenings Index of Articles
<a href="#">Grants are Available</a>
<a href="#">Directory of Grant Awards</a>

Please accept our apologies but all requests for subscriptions to *Harbor Happenings*, posters, videos, publications and CDs submitted between mid-June and mid-August have been lost. Please submit your request again by completing the on-line form found at [Resources: Publications, Posters, Videos and More](#).

- [Updated Impaired Waters Verified List Maps](#) within CHNEP study area as of June 20, 2005
- [Internships](#) are now available
- [2006 Calendar](#): The calendar has now been designed and printed and is anticipated to be mailed the week of December 5. Follow the link to see a PDF of the calendar and to let us know your thoughts.
- [Cape Coral Canals: A Public Conference on Water Quality and Quantity, March 25, 2006](#) -- Provide your input by December 31
- [Together We Can Protect the Region's Natural Resources](#): Complete a survey to update the program management plan.
- [Harbor Happenings](#): Latest issue posted August 26.
- [Charlotte Harbor Nature Festival](#): February 4, 2006
  - *Register as a sponsor by November 1 to receive the greatest amount of promotion.*
- [Upcoming Events](#)
- [Micro-Grants of up to \\$250 are Available](#)
- [Newly released](#): Compact disks are now available on seagrass prop scar study, Watershed Summit and Water Budget workshop
- The Request for Proposals (RFP) for the project "Historic Coastal Charlotte Harbor Benthic Habitat Map" has been withdrawn (cancelled) due to a change in requirements which resulted in a decision to re-evaluate the Scope of Work.

**[The Program Office has moved.](#)**

This web site is also being re-organized and redesigned so you may need to "refresh" your links. This process will occur in many phases. Please give us [your thoughts on this web site](#).



February 1, 2003





# FLORIDA LANDSCAPE

## Watch Florida Landscape



### Show 1

**This segment looks at the benefits of creating a native habitat.**



### Show 2

**This segment covers the first two steps to creating a native habitat - choosing a location and sketching a design.**



### Show 3

**This segment tells you about steps 3 - 5. Identifying your planting zone and the habitat around your house. And, the importance of getting the soil in your yard tested.**



### Show 4

**This segment teaches you the best way to eliminate your grass.**



### Show 5



# Florida Friendly Yards Workshops-Rural Communities

## A partnership with WGCU

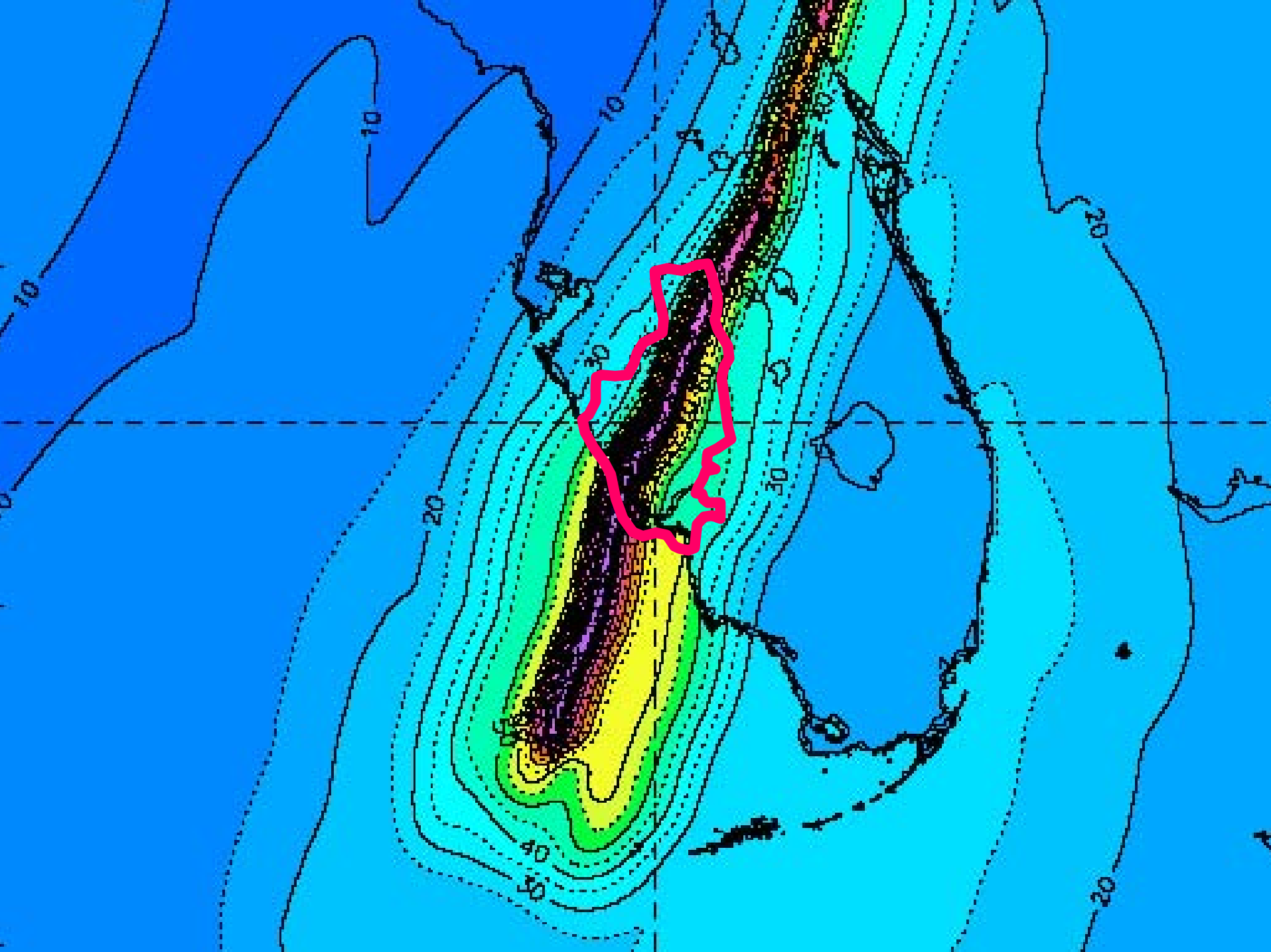




# Public Outreach Grant

Reaching all 7<sup>th</sup> Grade Students at 1 of 4 Middle Schools in Charlotte County







A map of the state of Florida, outlined in blue, set against a grayscale satellite-style background. Three specific locations are marked with red asterisks and labeled in red text: Port Charlotte, Punta Gorda, and Fort Myers. The word 'FLORIDA' is written in yellow text at the top of the state.

**FLORIDA**

\* **PORT CHARLOTTE**

\* **PUNTA GORDA**

\* **FORT MYERS**

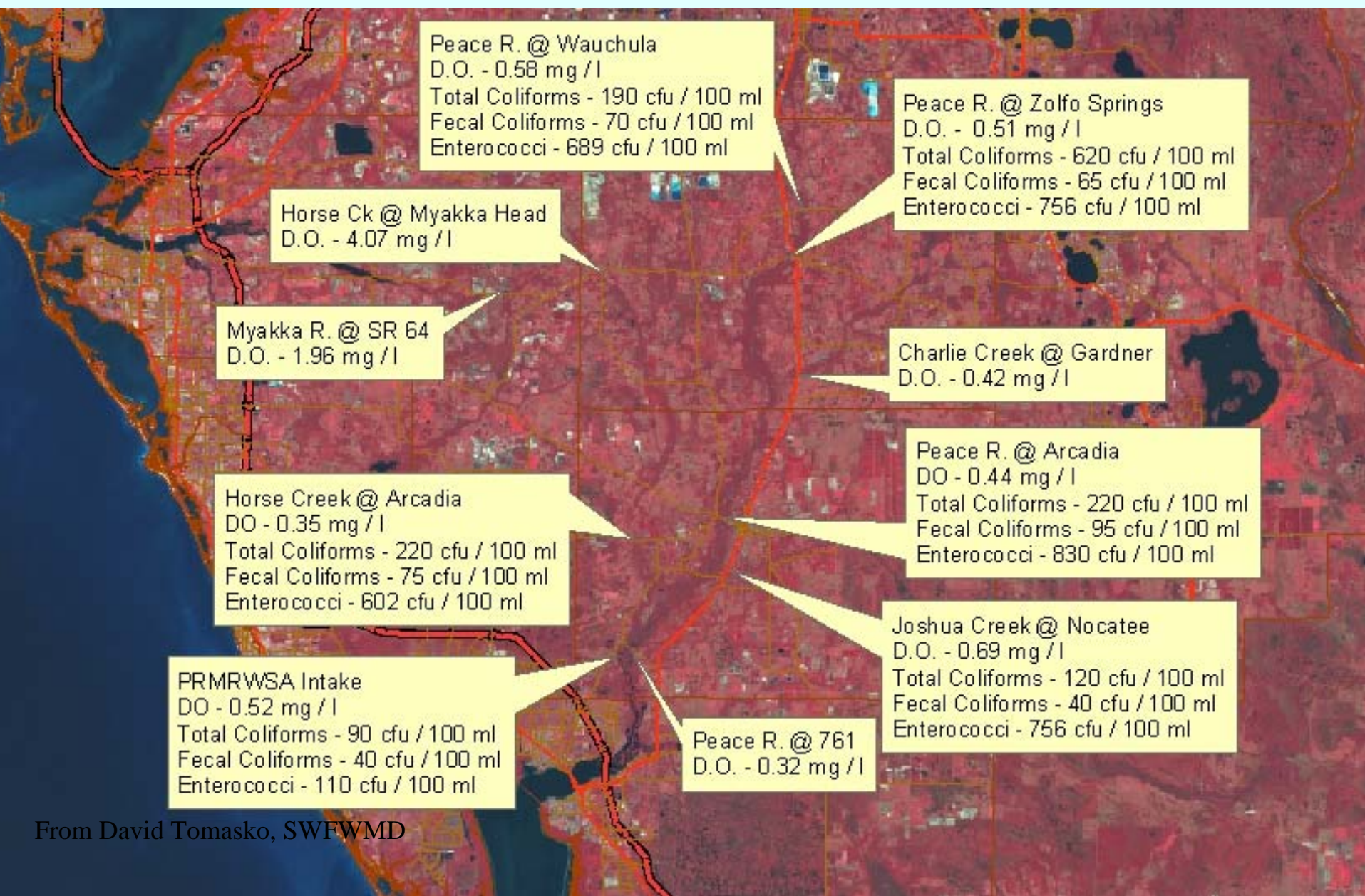
**HURR CHARLEY 13 AUG 04 @ 18:15 UTC**



**Oily Sheen  
Foul Smelling  
Death**

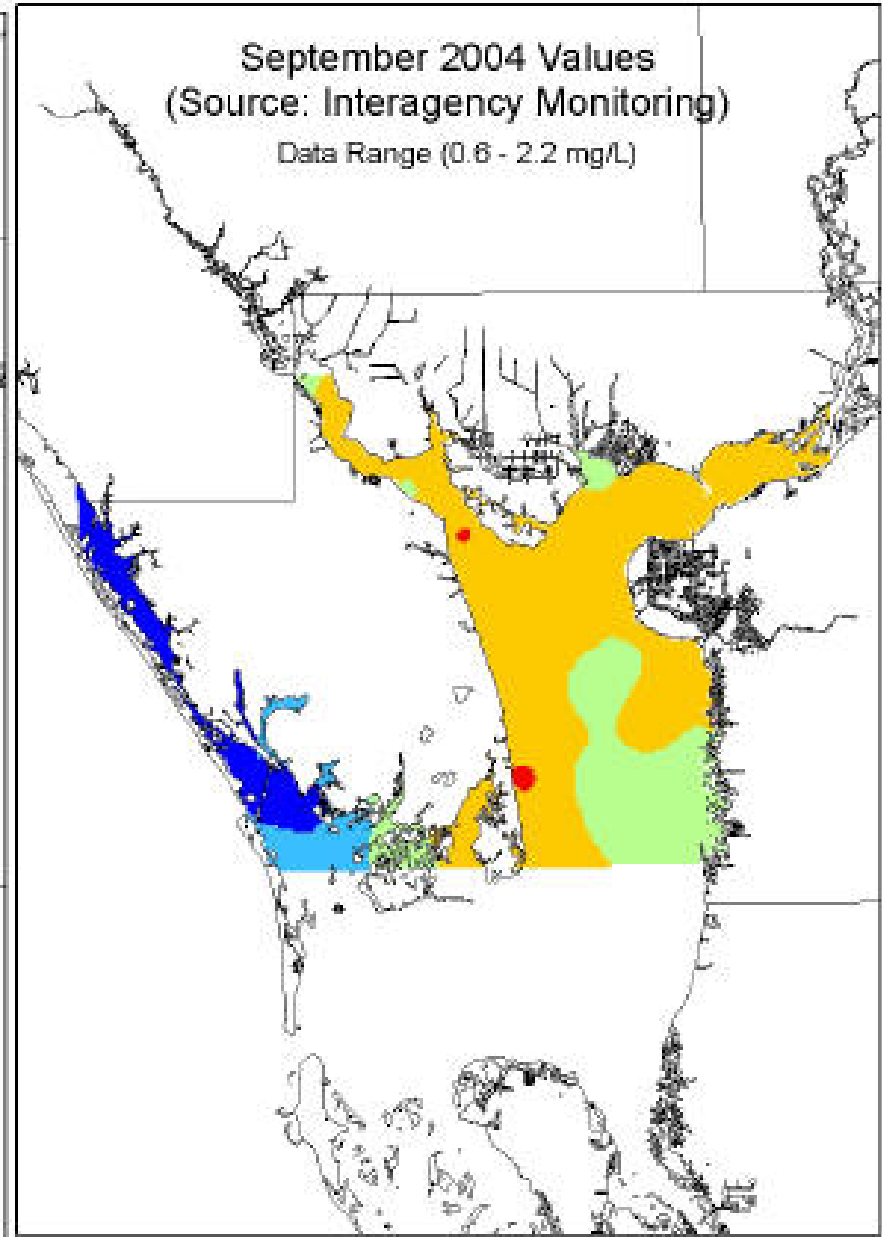
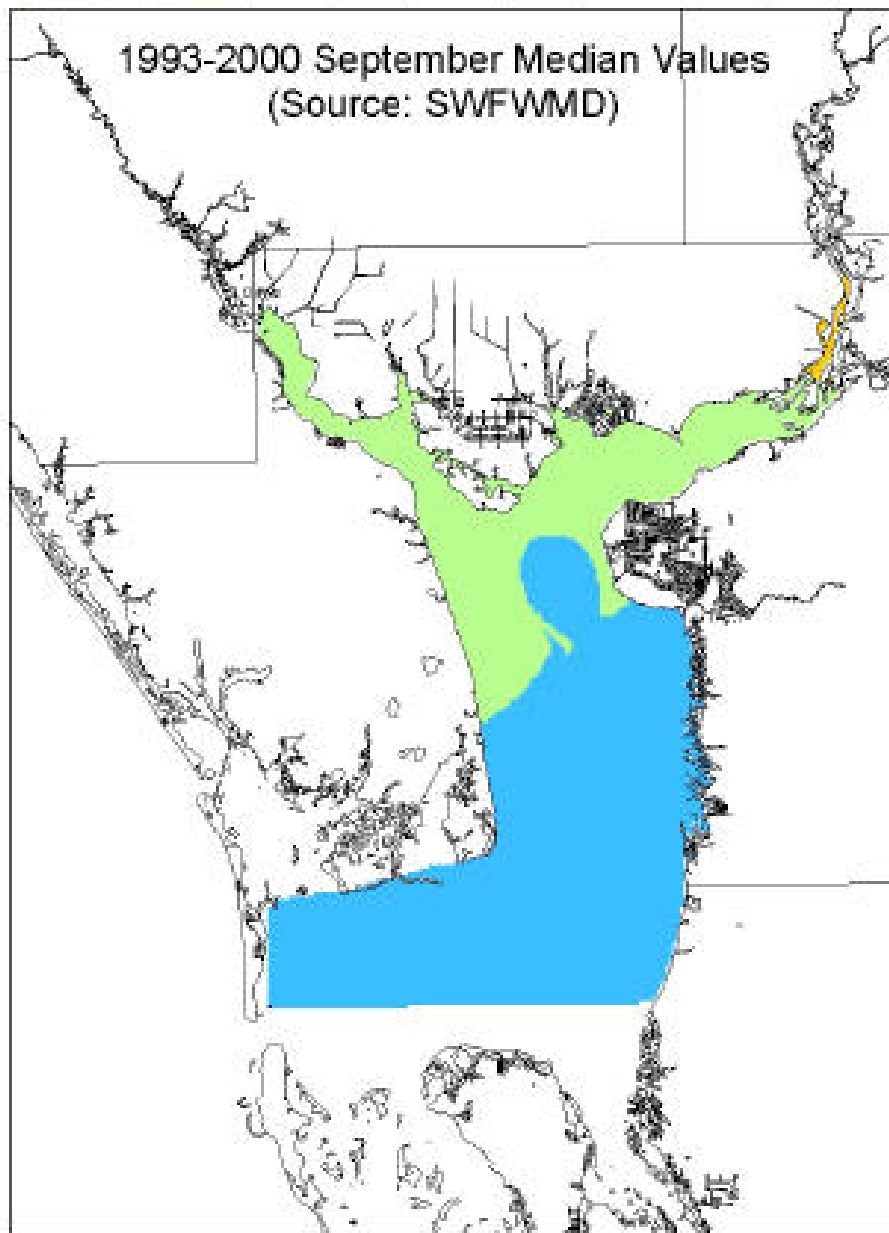
Photo by Catherine Corbett, CHNEP

# One week after Charley (08/22/04), complaints of “foul-smelling” water prompted a non-scheduled sampling effort

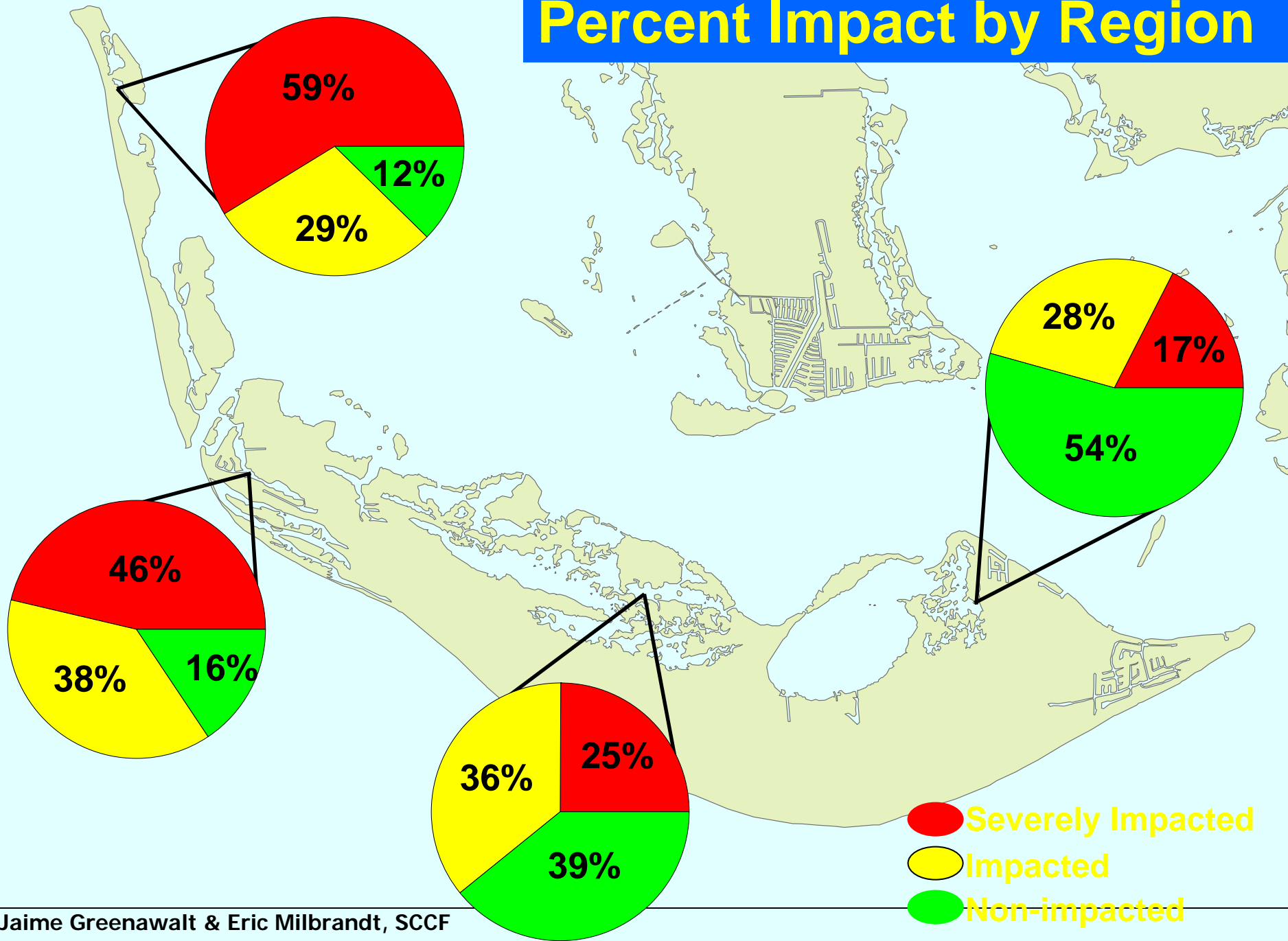


# Near Surface Total Nitrogen Values For the Month of September

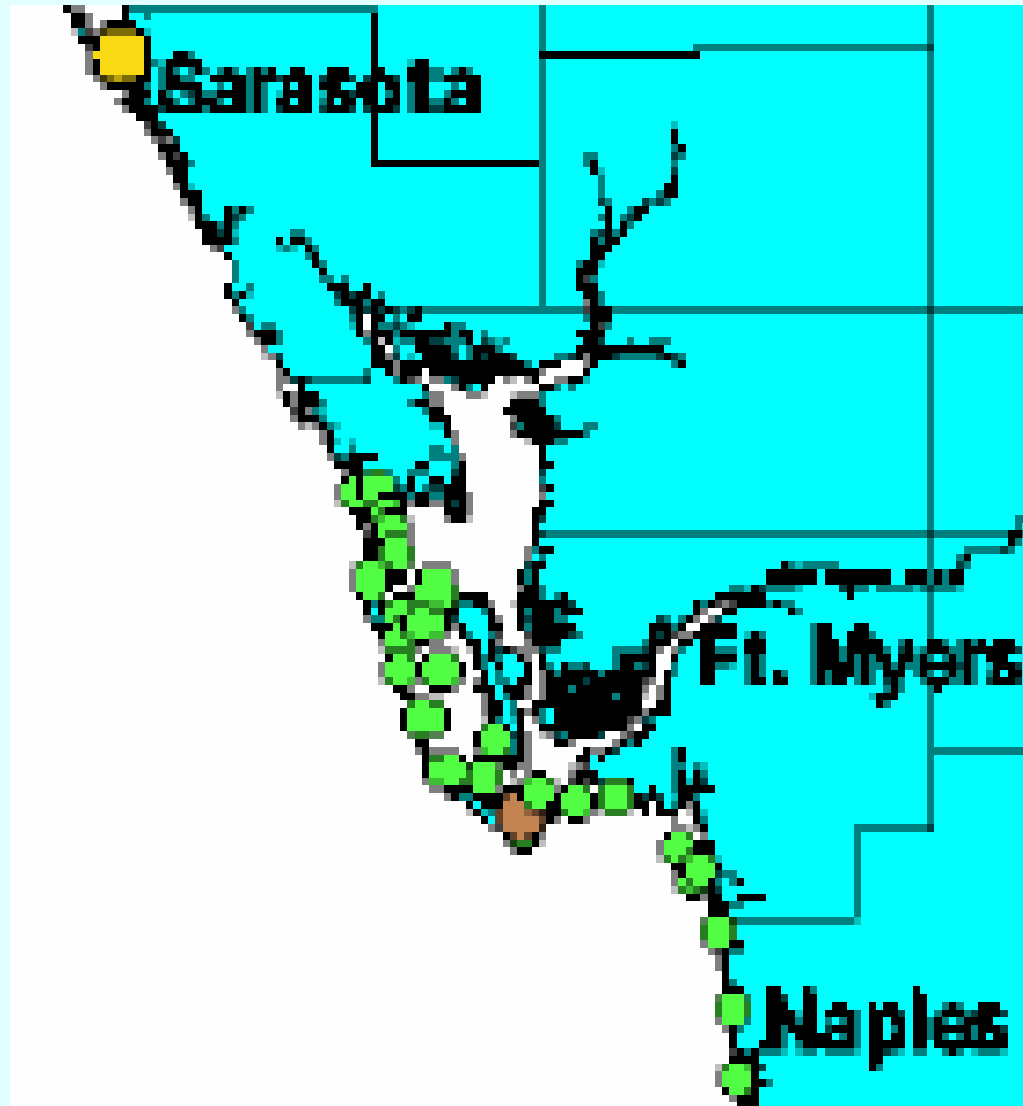
TN (mg/L)



# Percent Impact by Region



# Red Tide Incidents



6/15/03







LOTTE HARB

National Marine is POP

# **Charlotte Harbor National Estuary Program**

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**Senior Scientist: Catherine Corbett**

**Communications Manager: Maran Hilgendorf**

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