

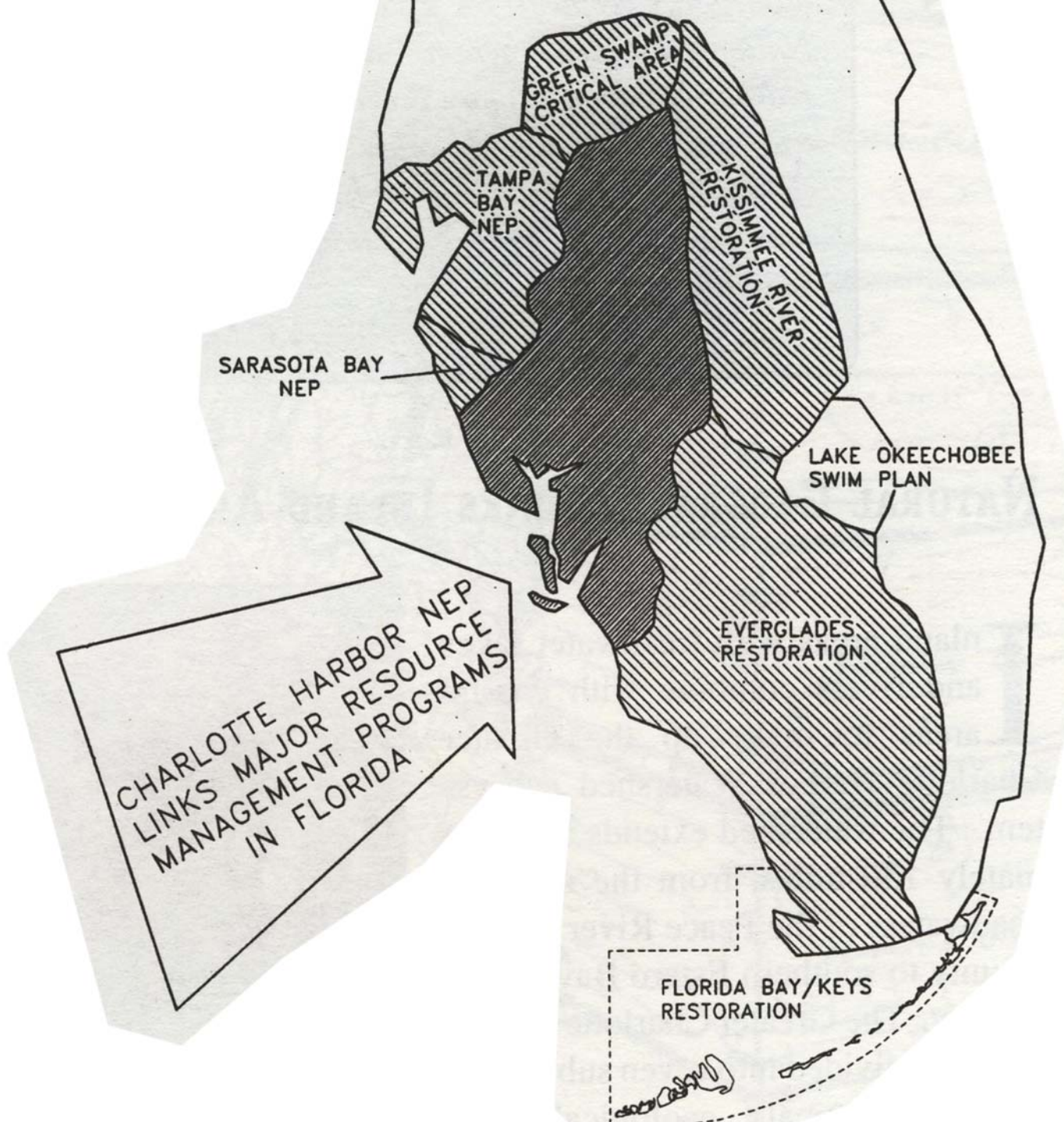
Charlotte Harbor National Estuary Program & Lemon Bay



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)

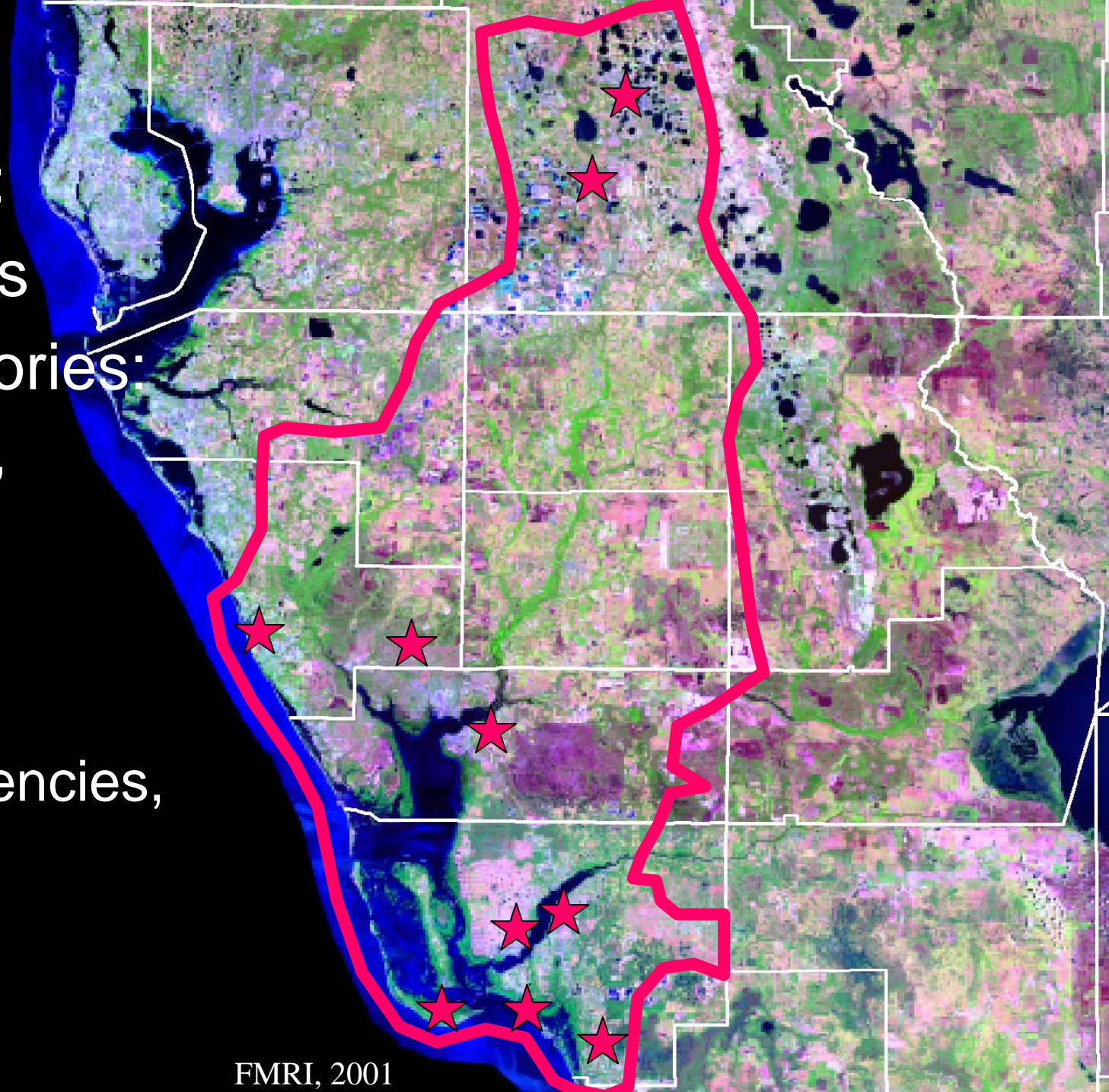
Citizens Adv. Committee
Citizens and agency Public Outreach Specialists

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

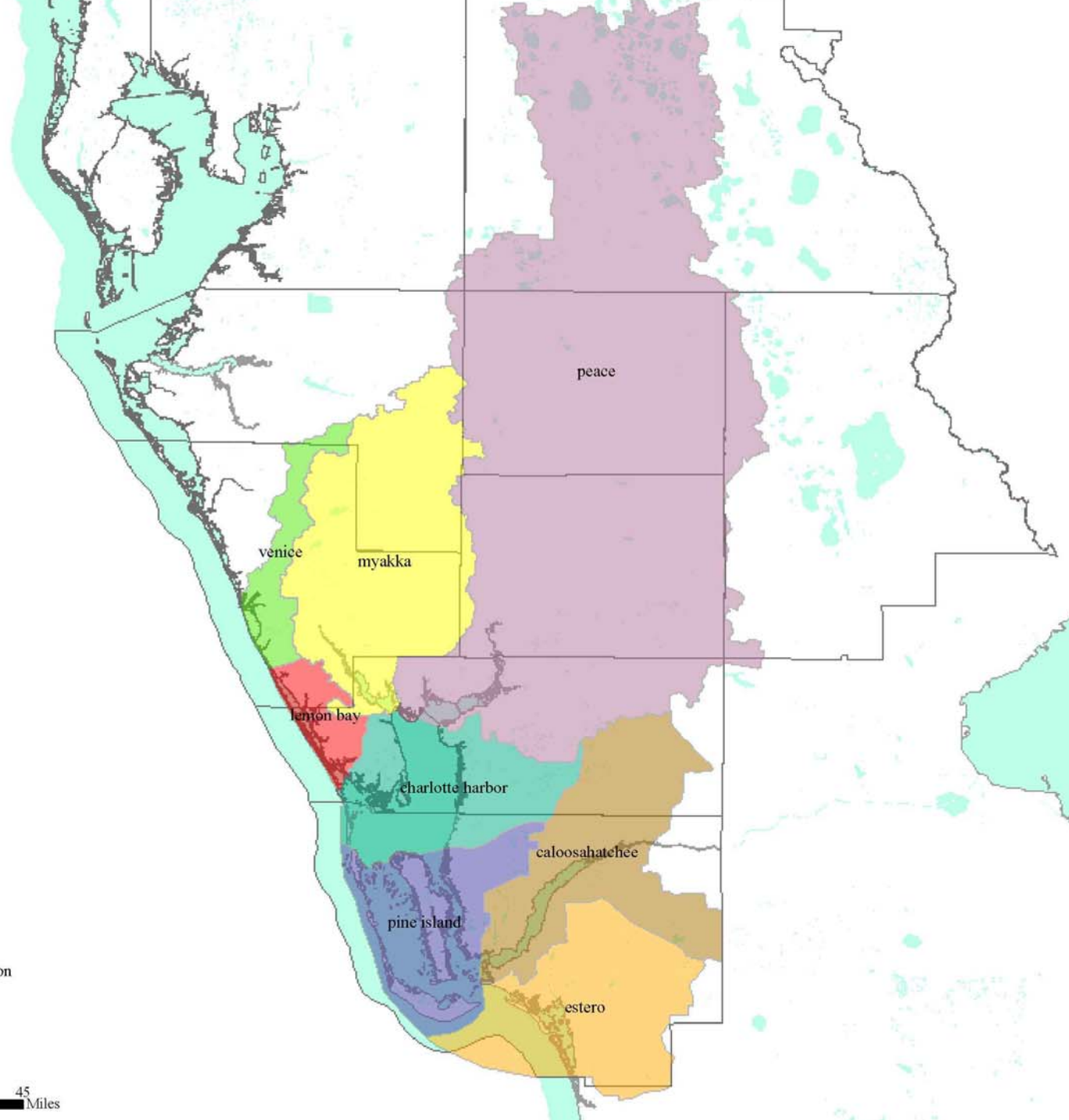
NAME

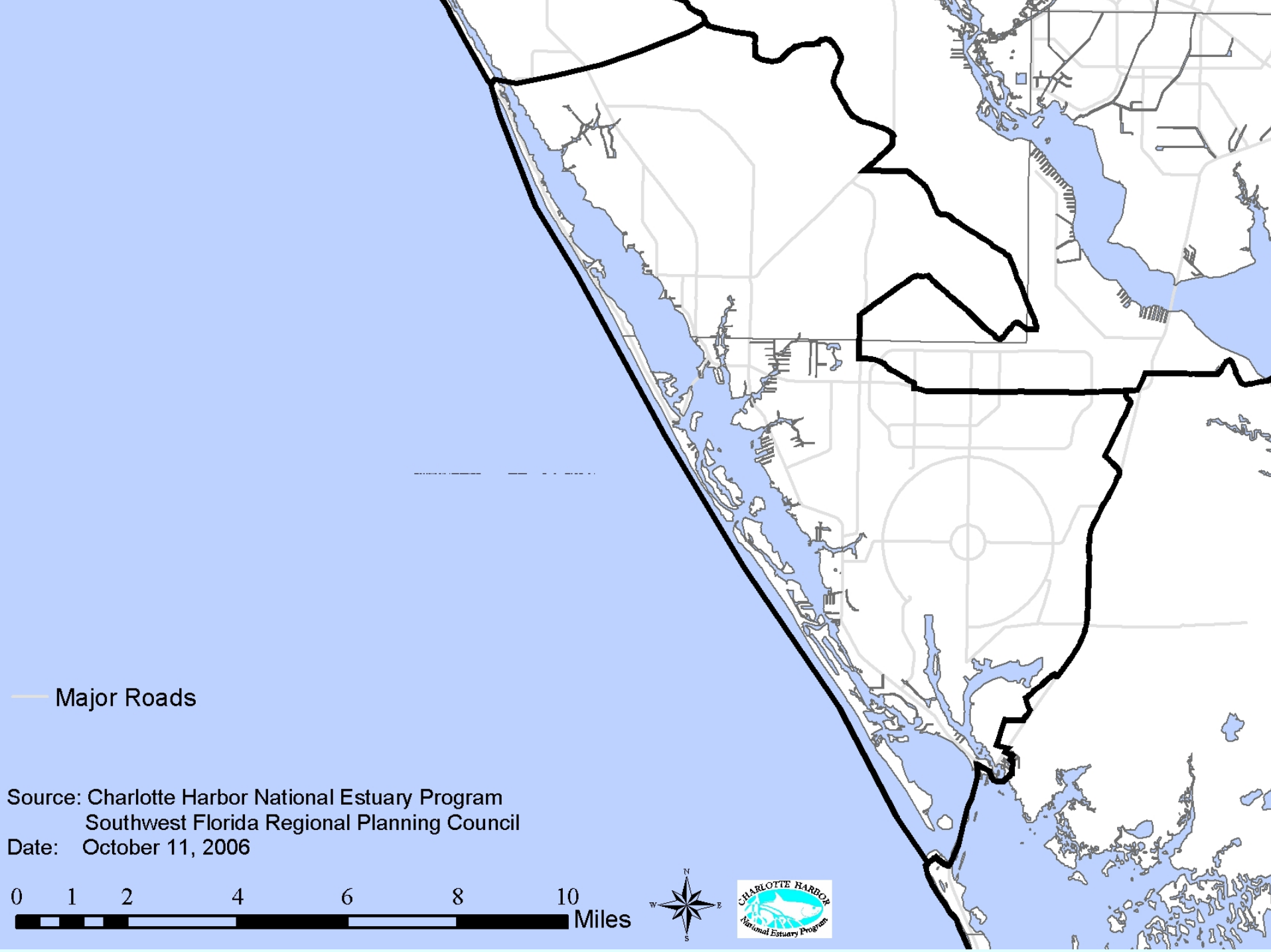
-  Caloosahatchee
-  Charlotte Harbor
-  Estero
-  Lemon Bay
-  Myakka
-  Peace
-  Pine Island
-  Venice



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

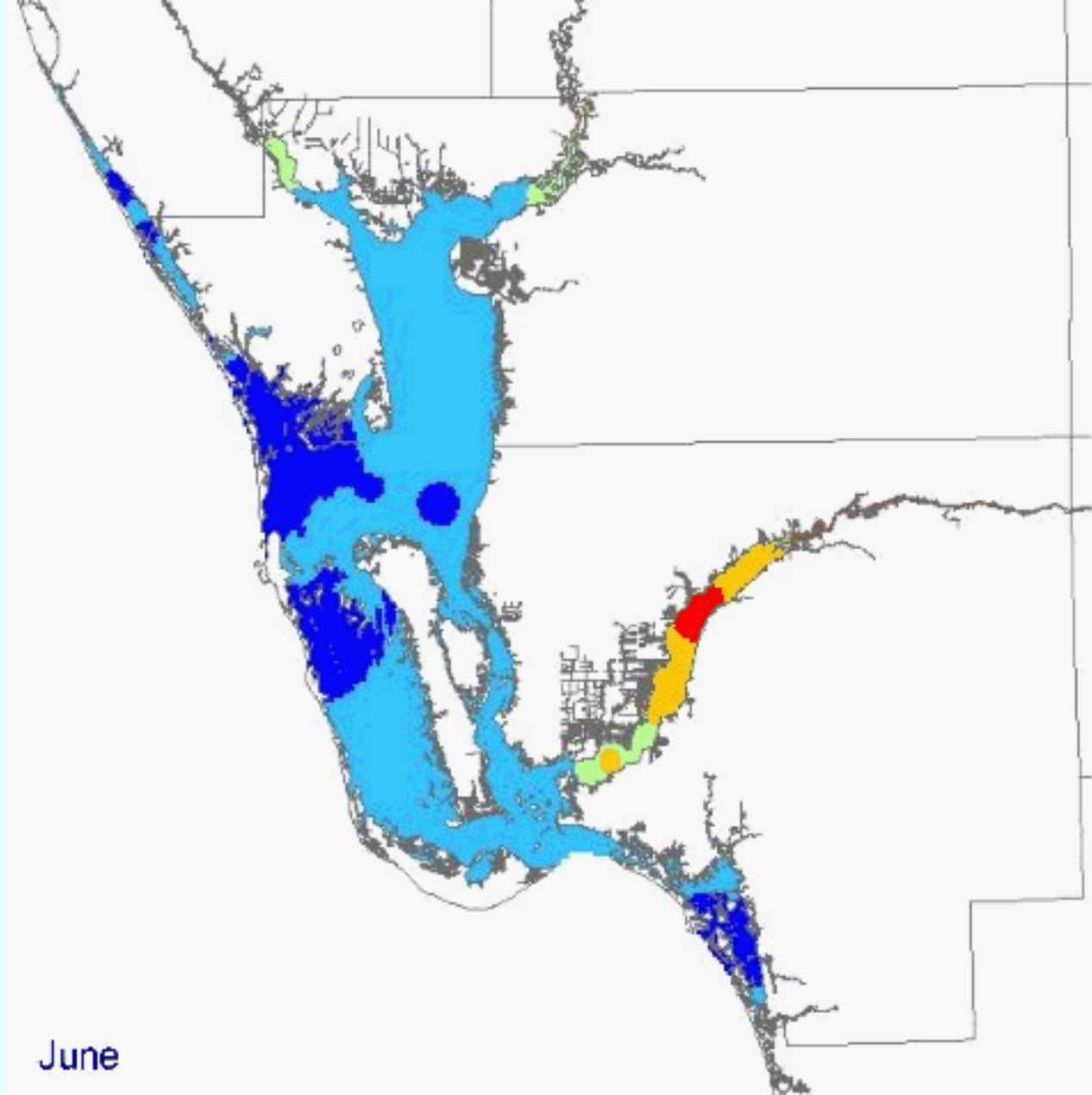












June

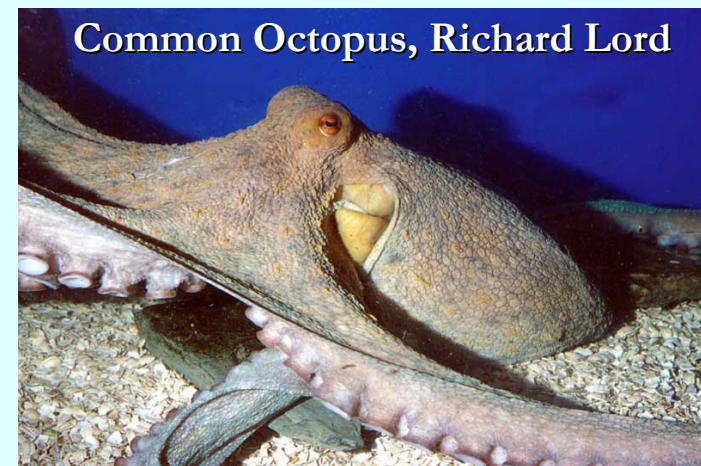
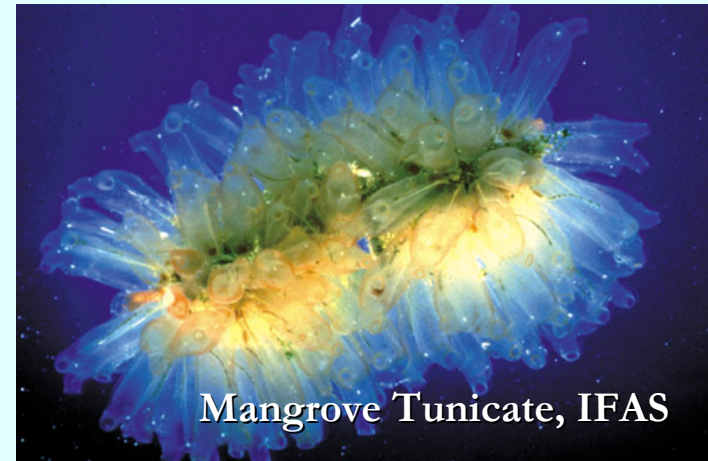


Salt
Parts Per Thousand

Source: Charlotte Harbor Environmental Center Watershed Resource Center

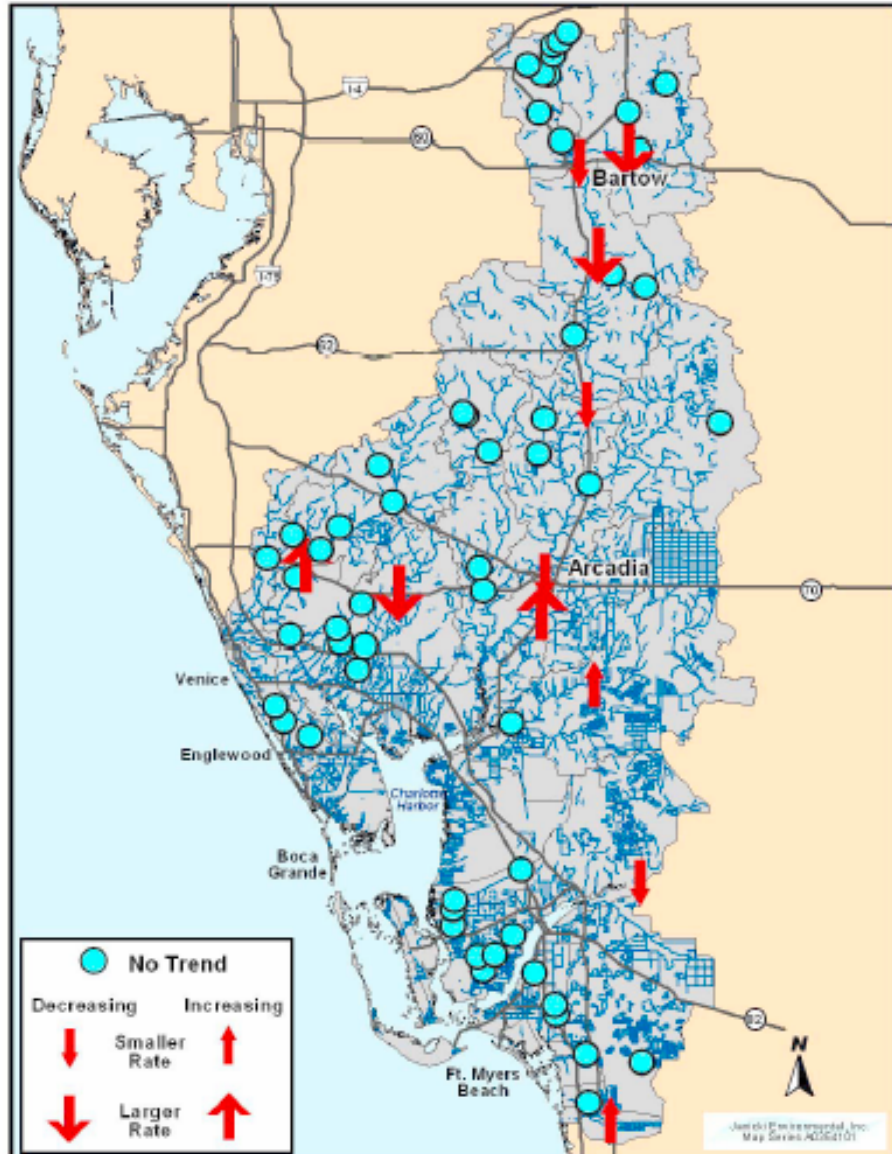
Freshwater Flows & Timing

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

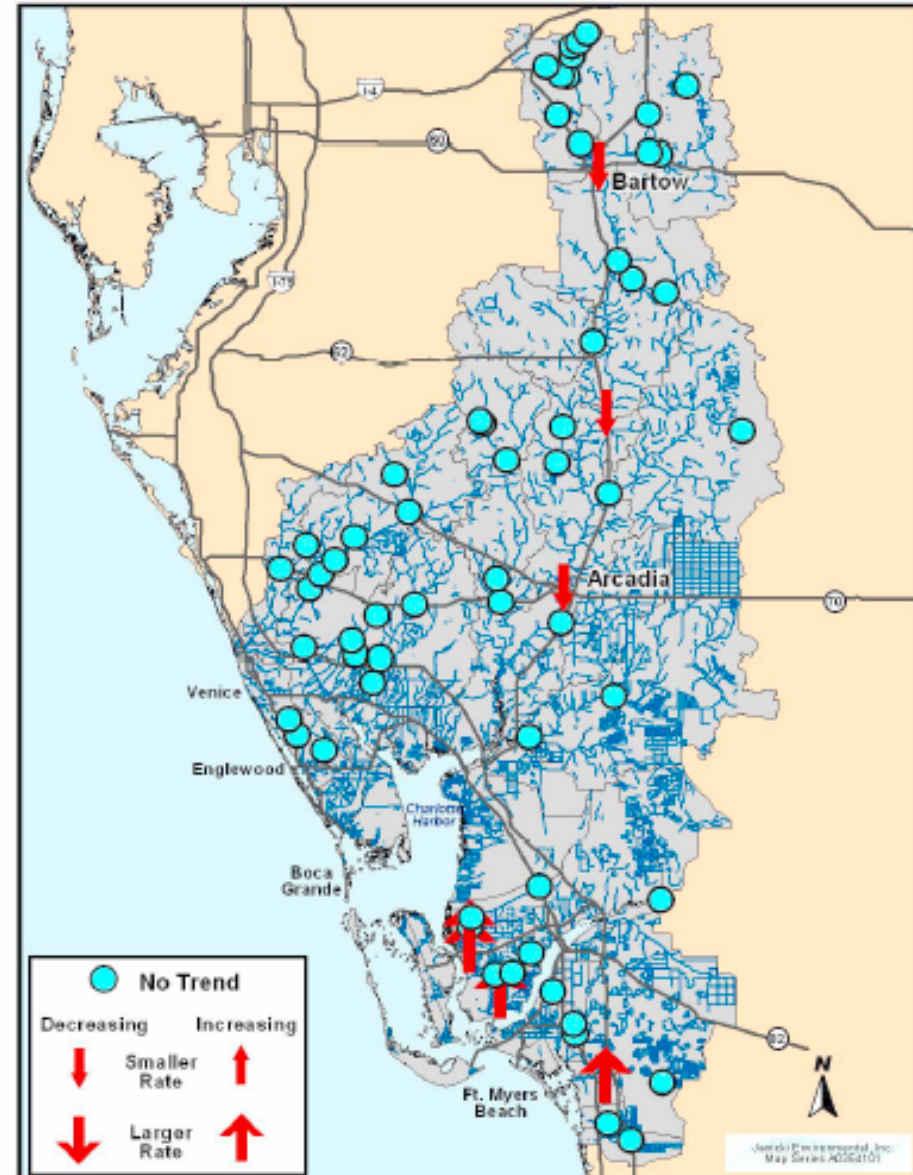


Changing Flow Regimes

Annual Minimum (7 Day)



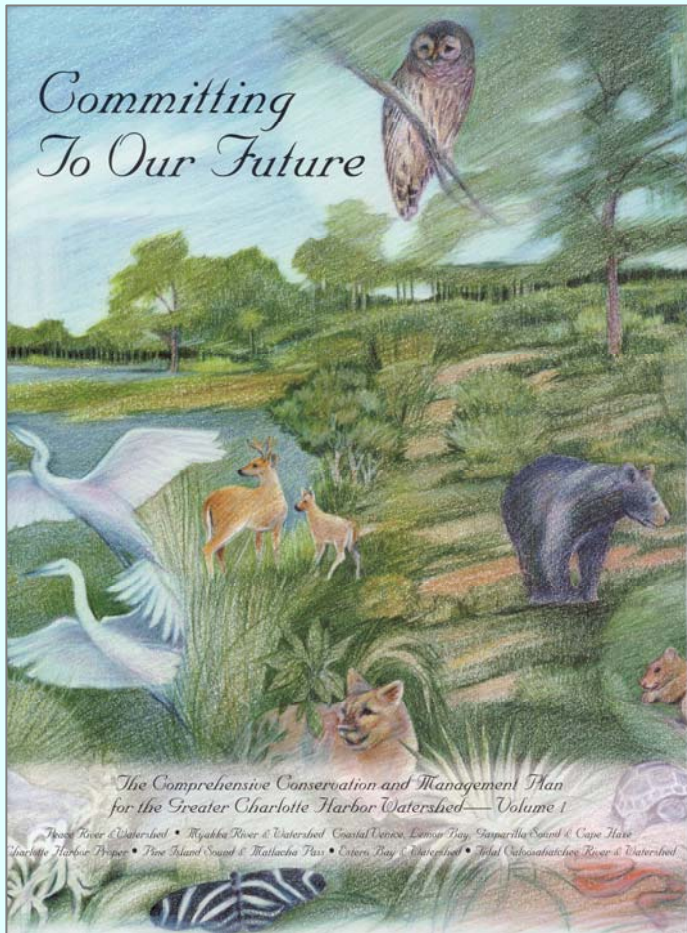
Annual Maximum (7 Day)



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:

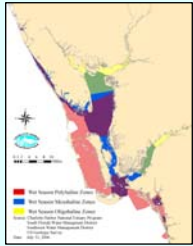
Water Quality Degradation

Hydrologic Alteration

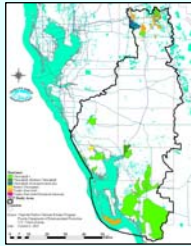
Habitat Loss

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.

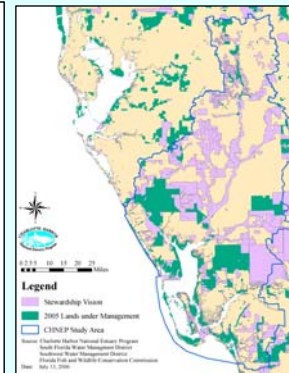
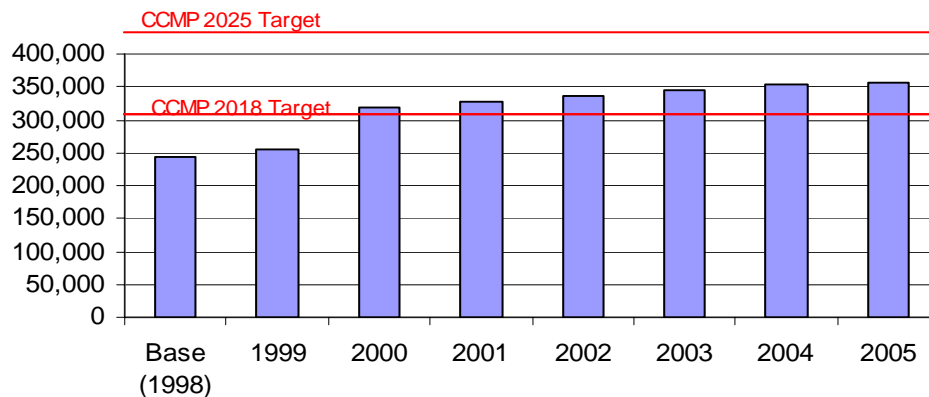
WQ-J: Implement the Florida Yards and Neighborhoods program and similar programs in all counties.

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



CCMP	Problem Areas
	Graphic Vision
Report	Quantifiable Objective
	Priority Action
	Env. Indicator
State of Watershed	Performance Target
	Graphics of Performance

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

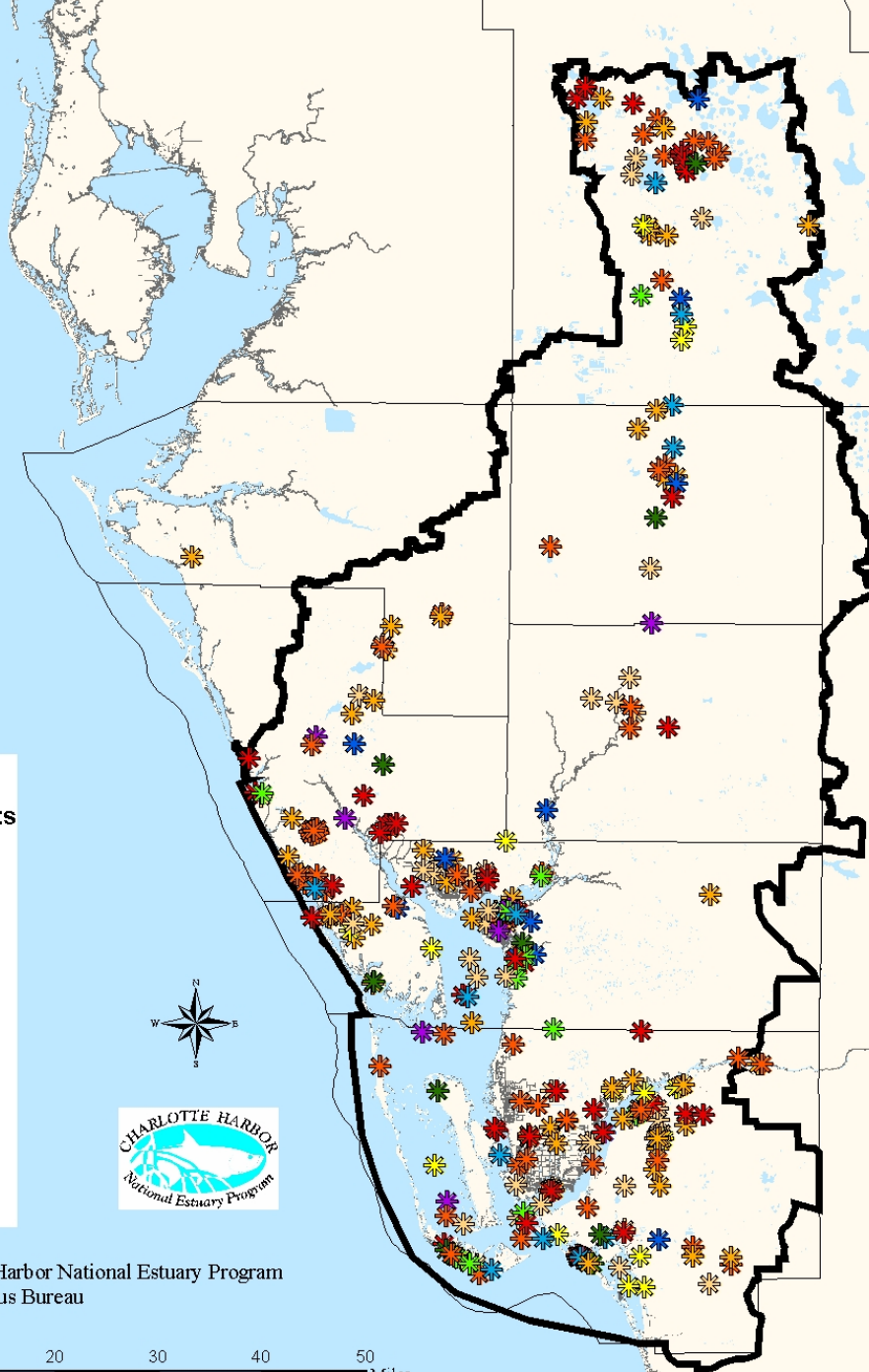
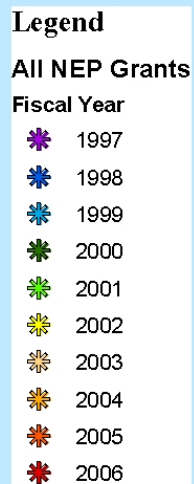
- Public Outreach Grants

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

- Micro-Grants

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





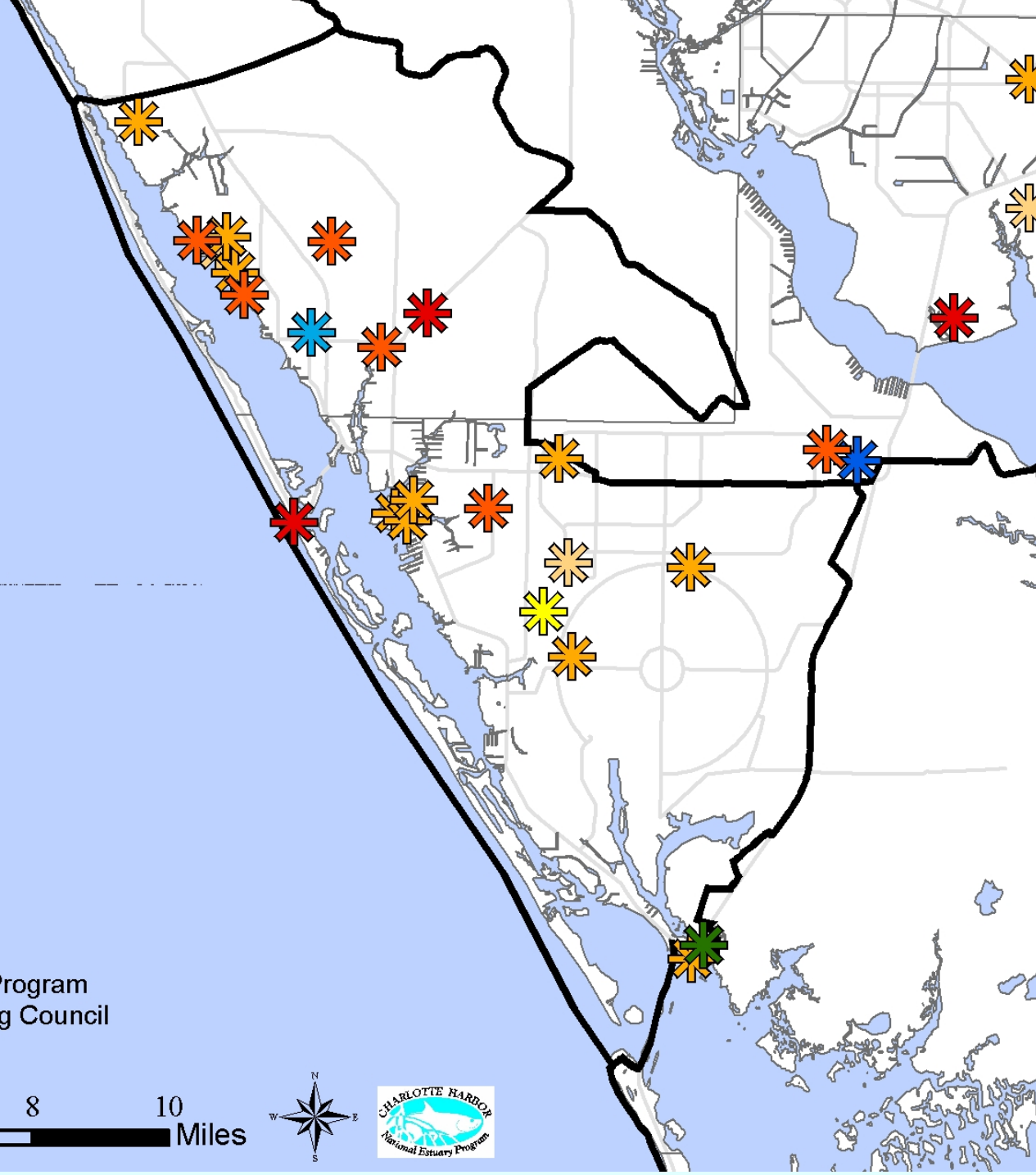
Source: Charlotte Harbor National Estuary Program
 U.S. Census Bureau
 Date: 5/19/06



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



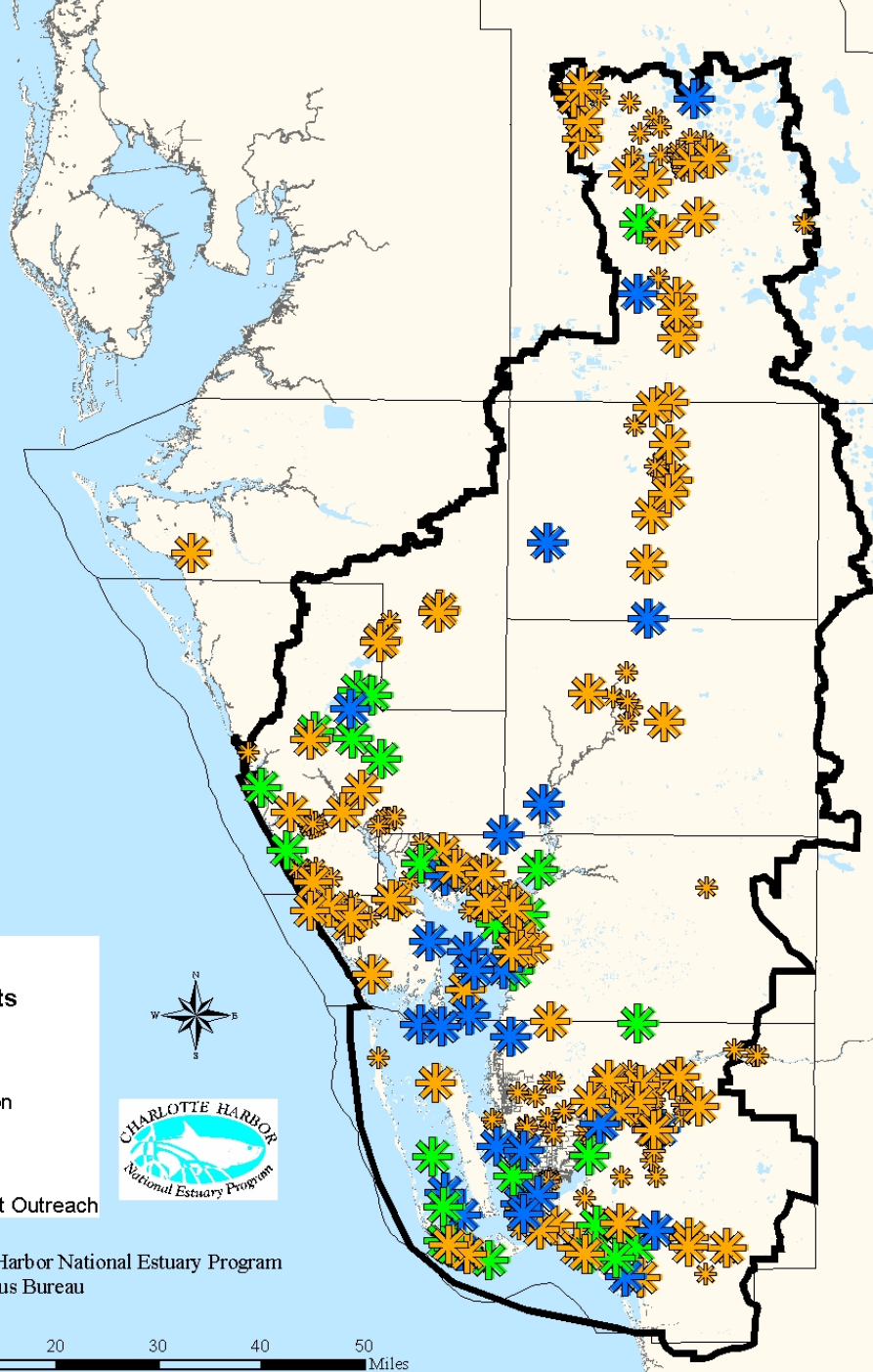
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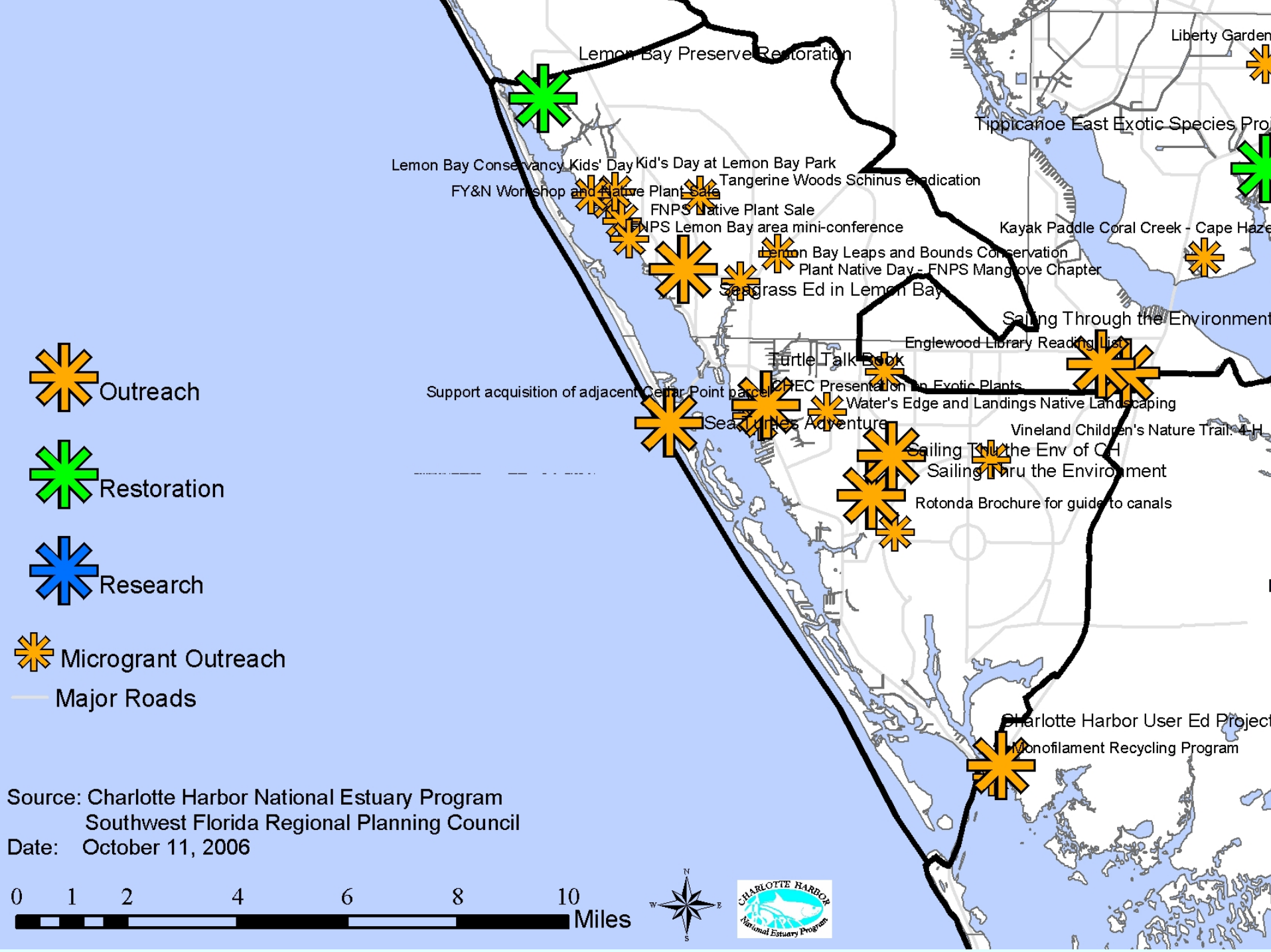
All NEP Grants

-  Outreach
-  Restoration
-  Research
-  Microgrant Outreach



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, 4th Floor
North Fort Myers FL 33917-3909
(239) 995-1777

www.charlotteharbornep.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

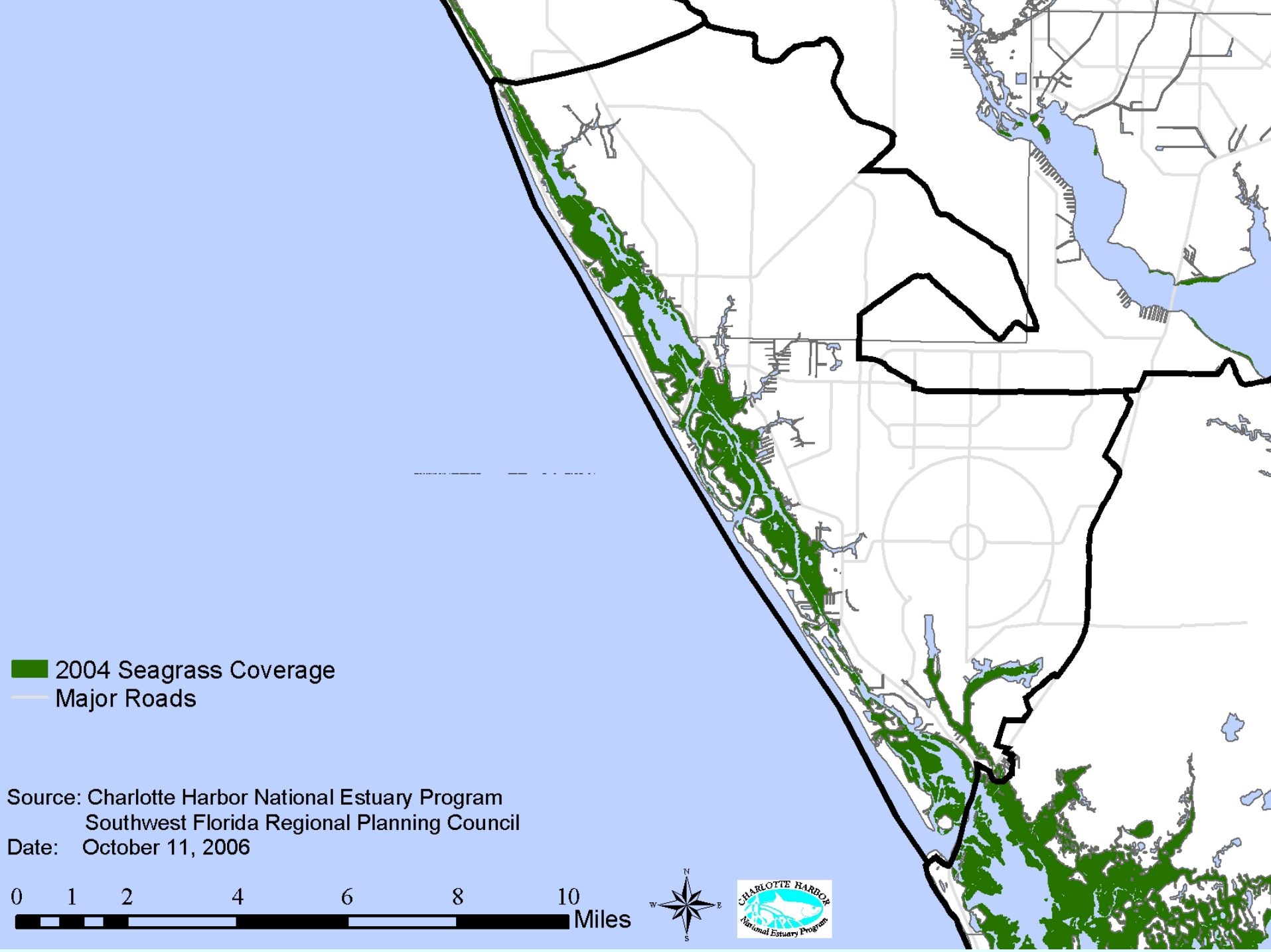
Long term monitoring stations with Significant Improvement minus those with Sig. Degradation

A man in a white short-sleeved button-down shirt and khaki pants stands in a laboratory. He is looking towards the left. The lab bench is cluttered with various pieces of equipment, including a large white machine with a digital display showing '0090', several glass flasks, beakers, and bottles. In the background, there are more lab supplies, a skull and crossbones warning sign, and a window with blinds. The text 'Storet Upload' is overlaid in a large, white, serif font at the bottom of the image.

Storet Upload

Producers

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

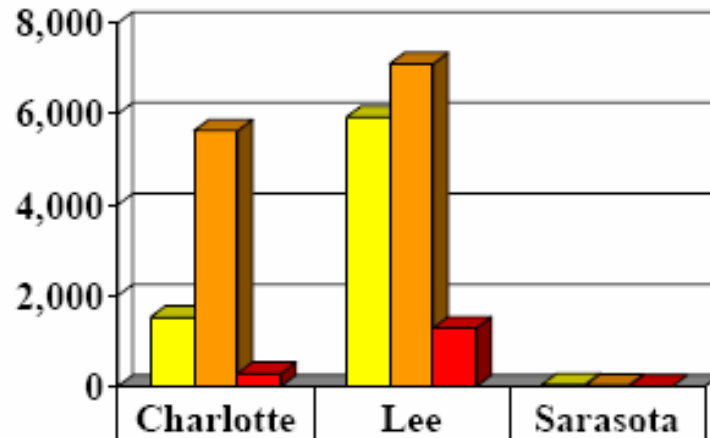


2004 Seagrass Coverage
Major Roads

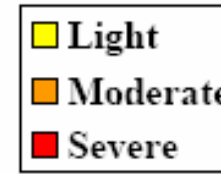
Source: Charlotte Harbor National Estuary Program
Southwest Florida Regional Planning Council
Date: October 11, 2006



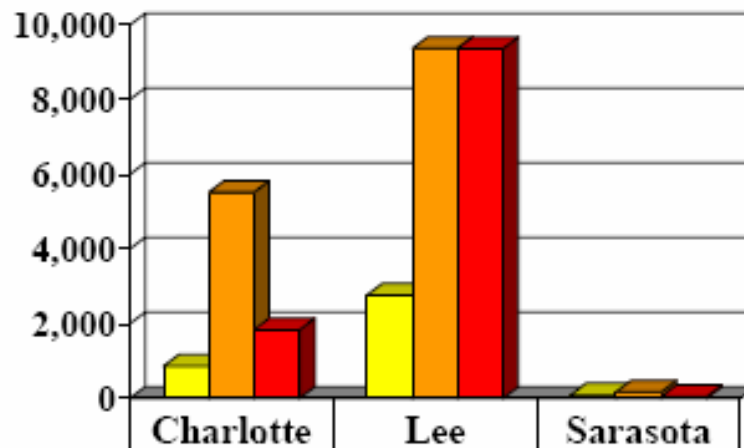




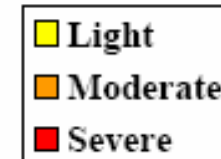
1993



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



2003



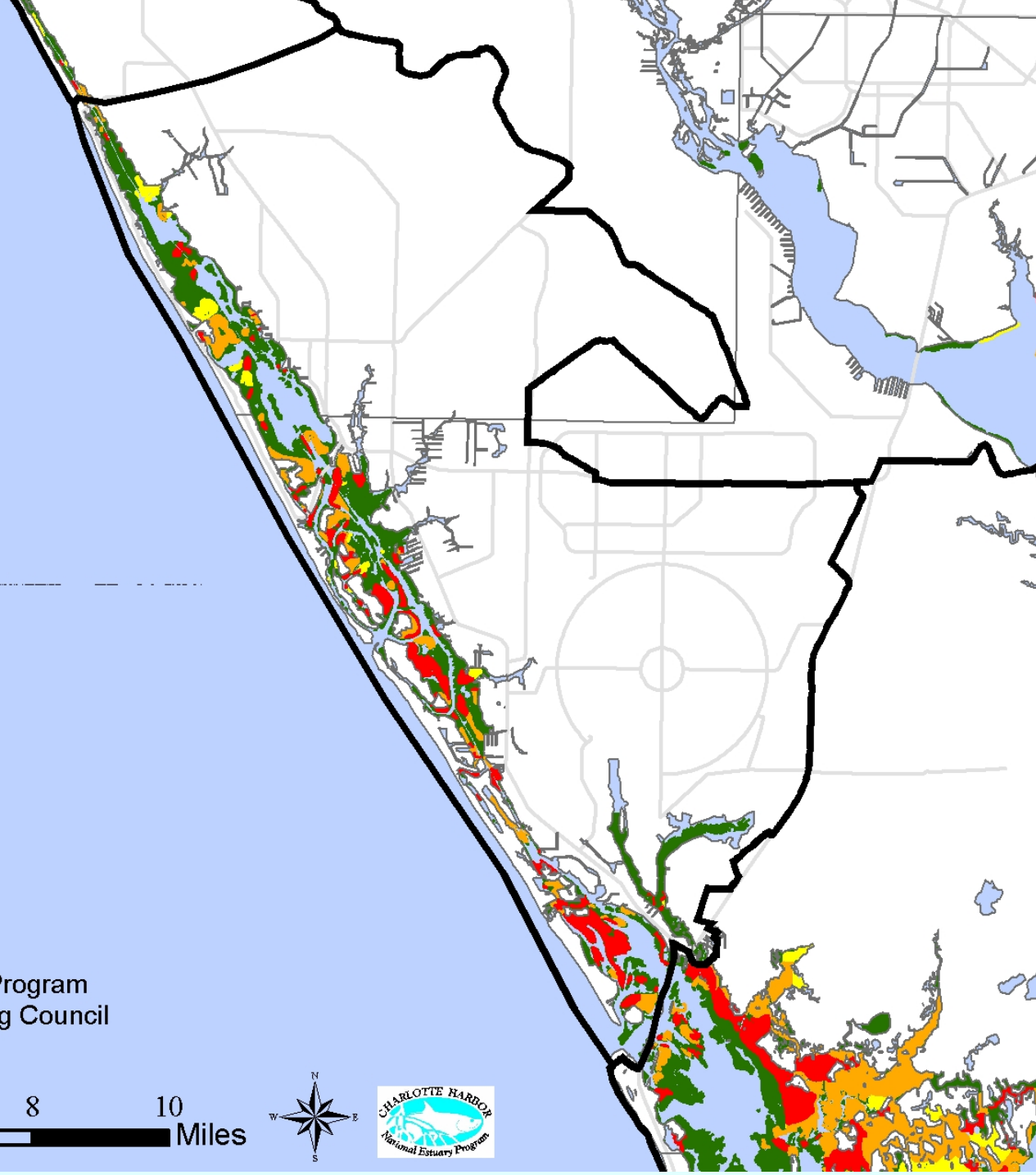
Light	869	2,768	95
Moderate	5,527	9,374	176
Severe	1,840	9,365	50

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

0 1 2 4 6 8 10 Miles



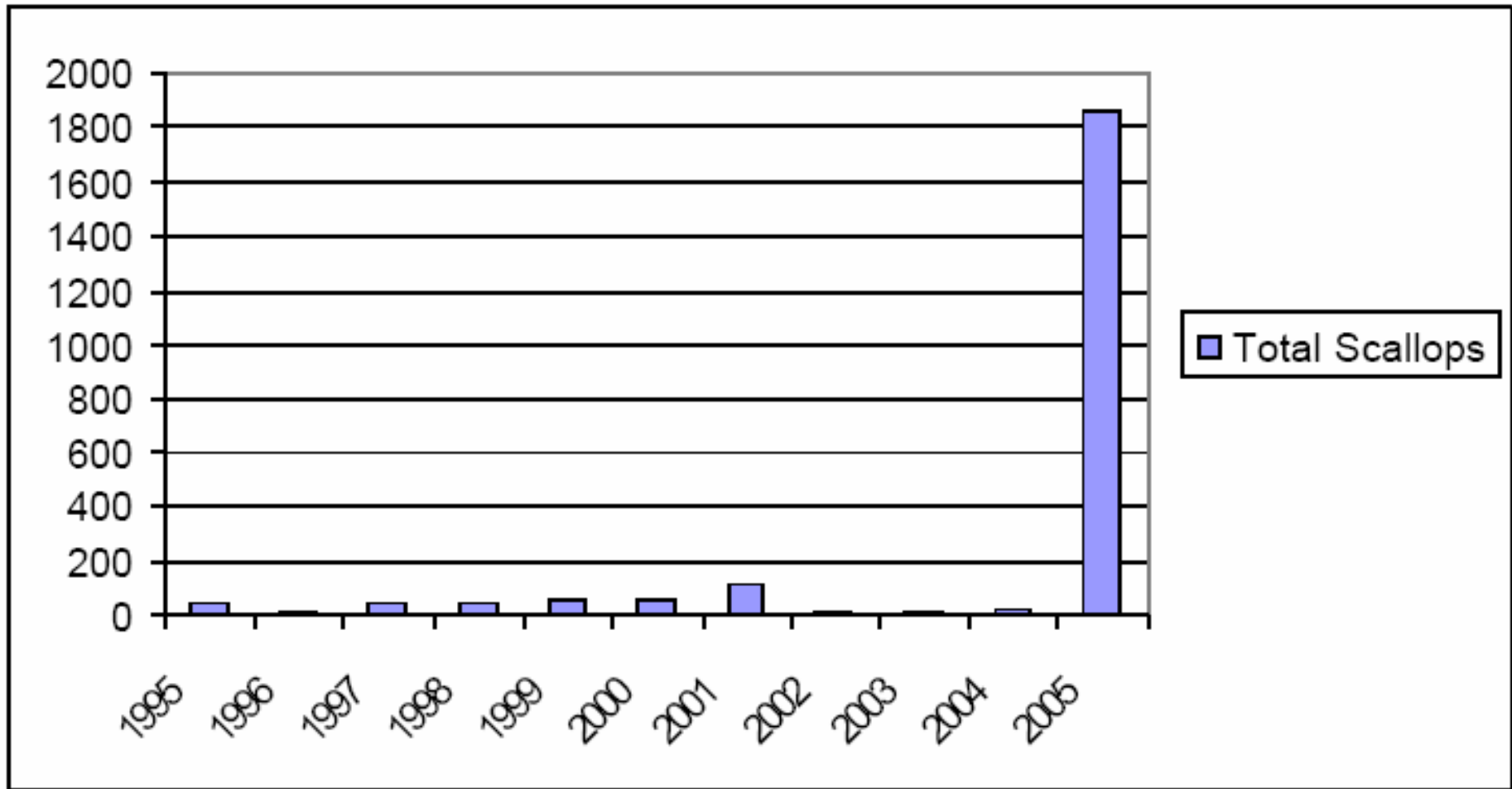
Benthic Invertebrate Abundance and Diversity



Research Partners Grants

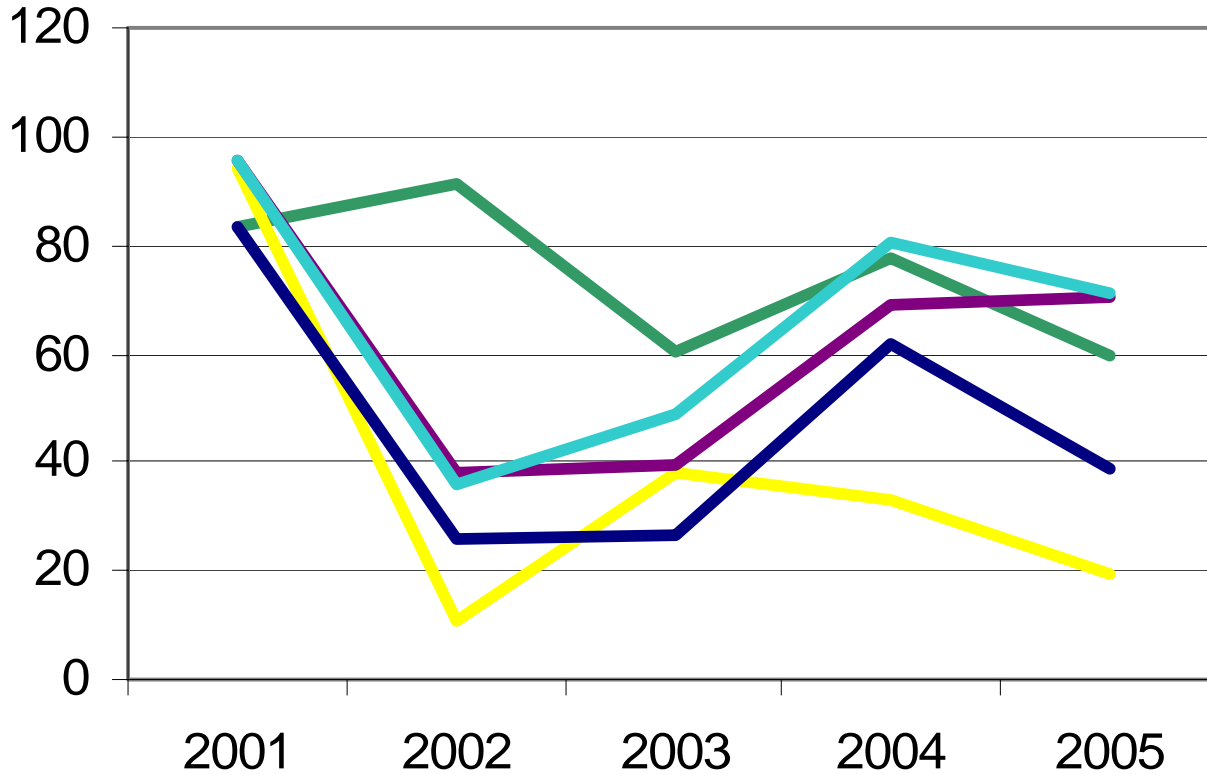


Charlotte Harbor had 100 times more scallops than in previous years thanks to Mote Marine Laboratory study with CHNEP funding.



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

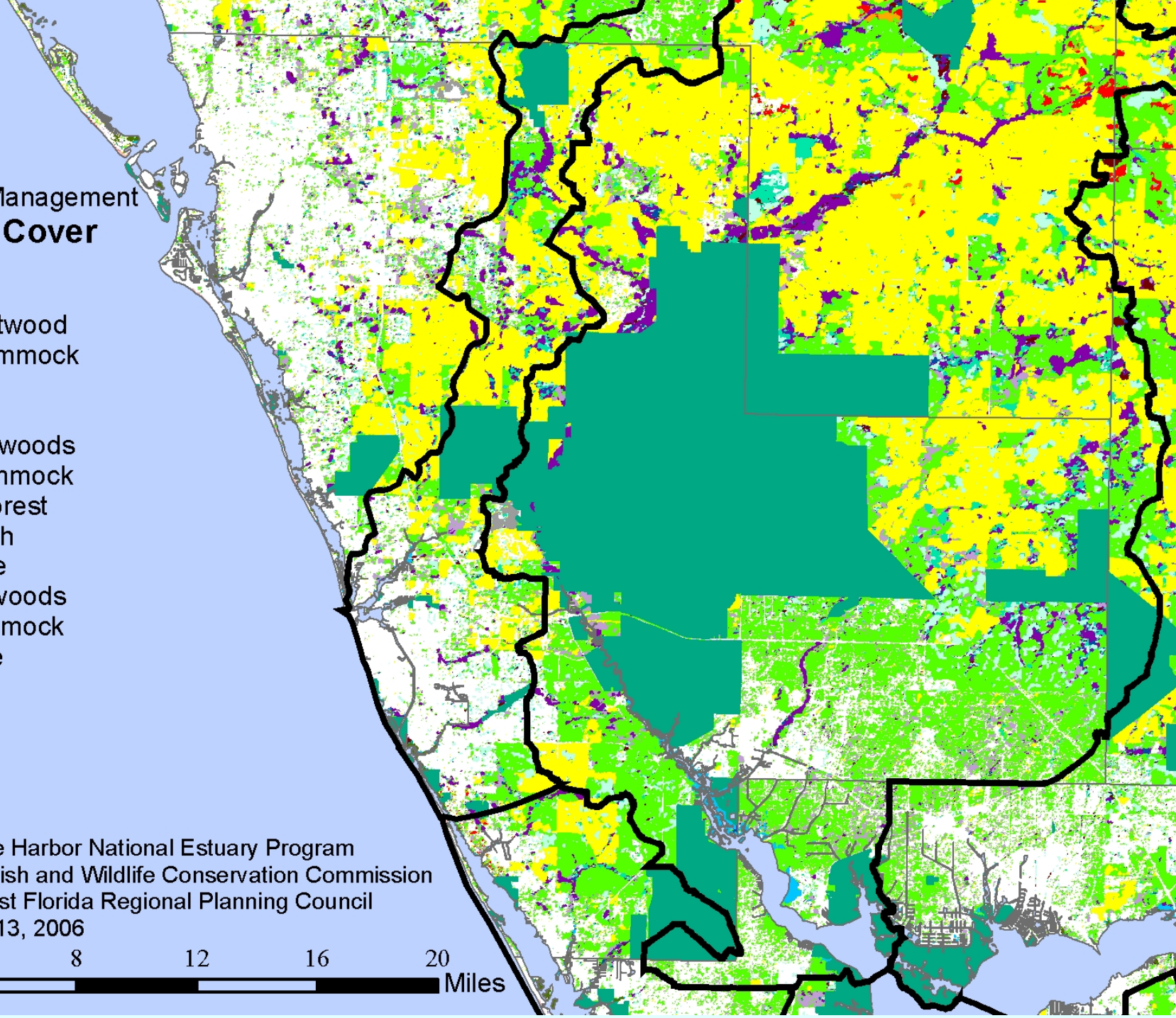


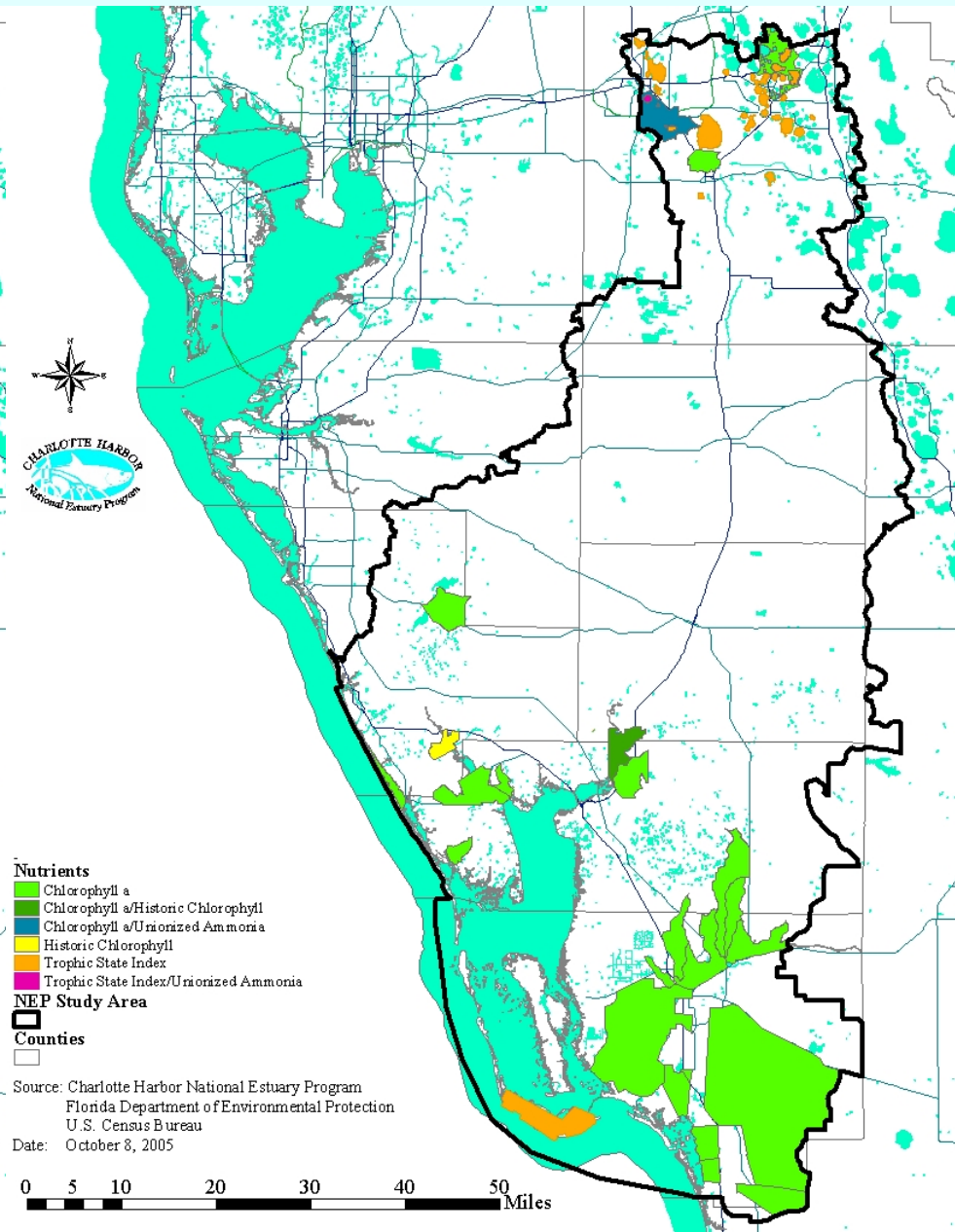
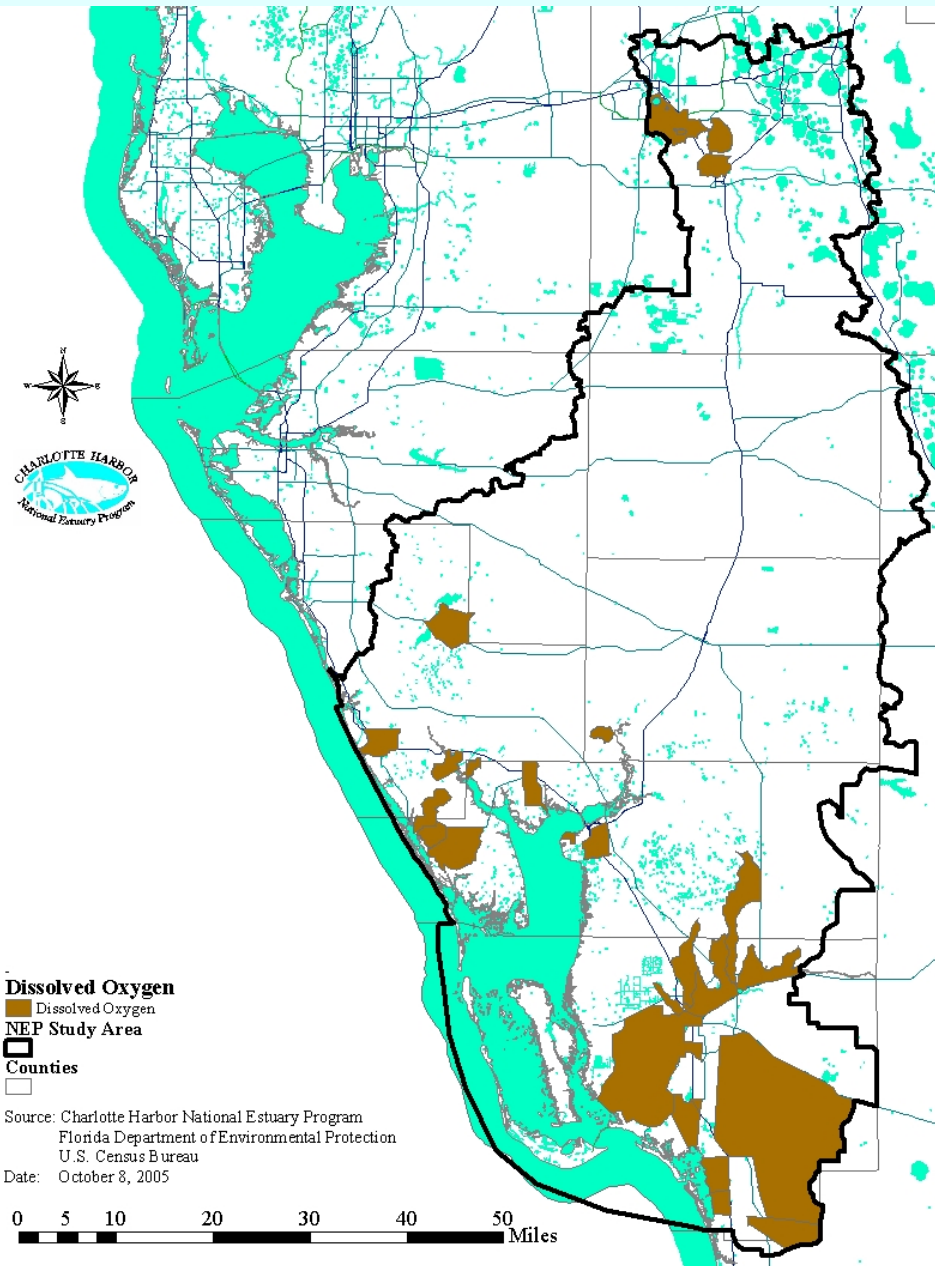
Lands in Management
2003 Land Cover

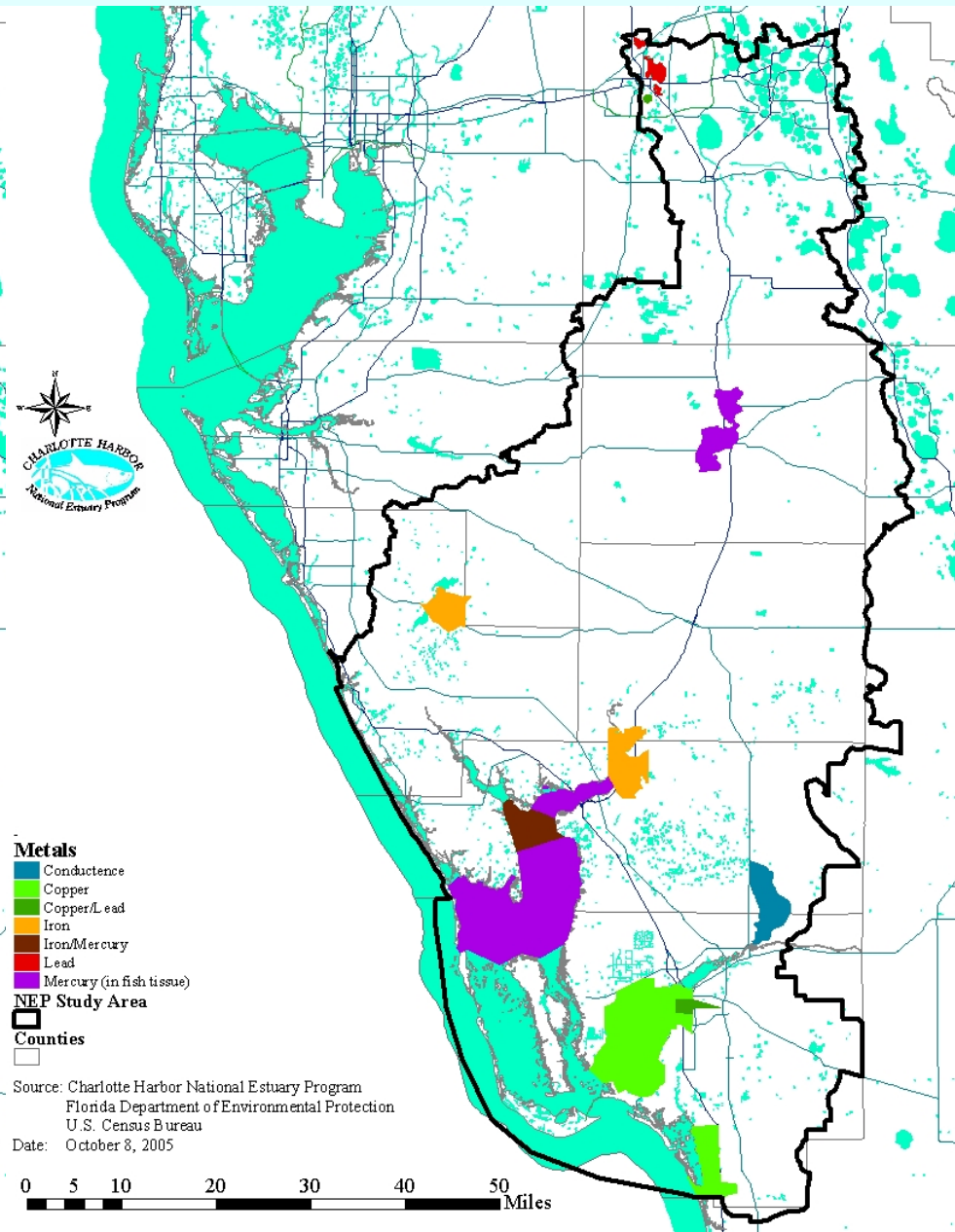
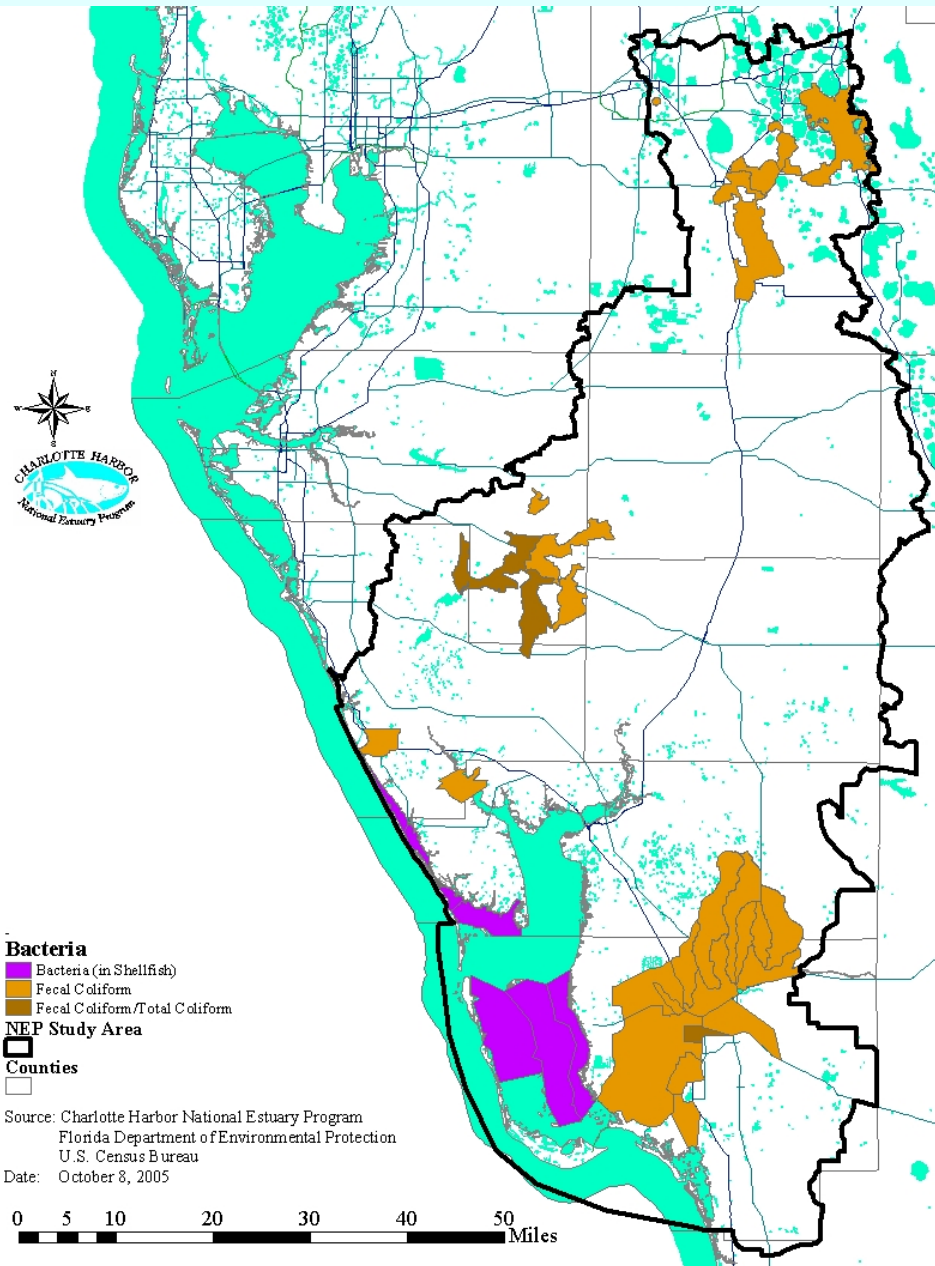
-  Lands in Management
-  Beach
-  Cypress
-  Hydric Flatwood
-  Hydric Hammock
-  Mangrove
-  Marsh
-  Mesic Flatwoods
-  Mesic Hammock
-  Swamp Forest
-  Tidal Marsh
-  Wet Prairie
-  Xeric Flatwoods
-  Xeric Hammock
-  Agriculture
-  Exotics
-  Mining
-  Urban

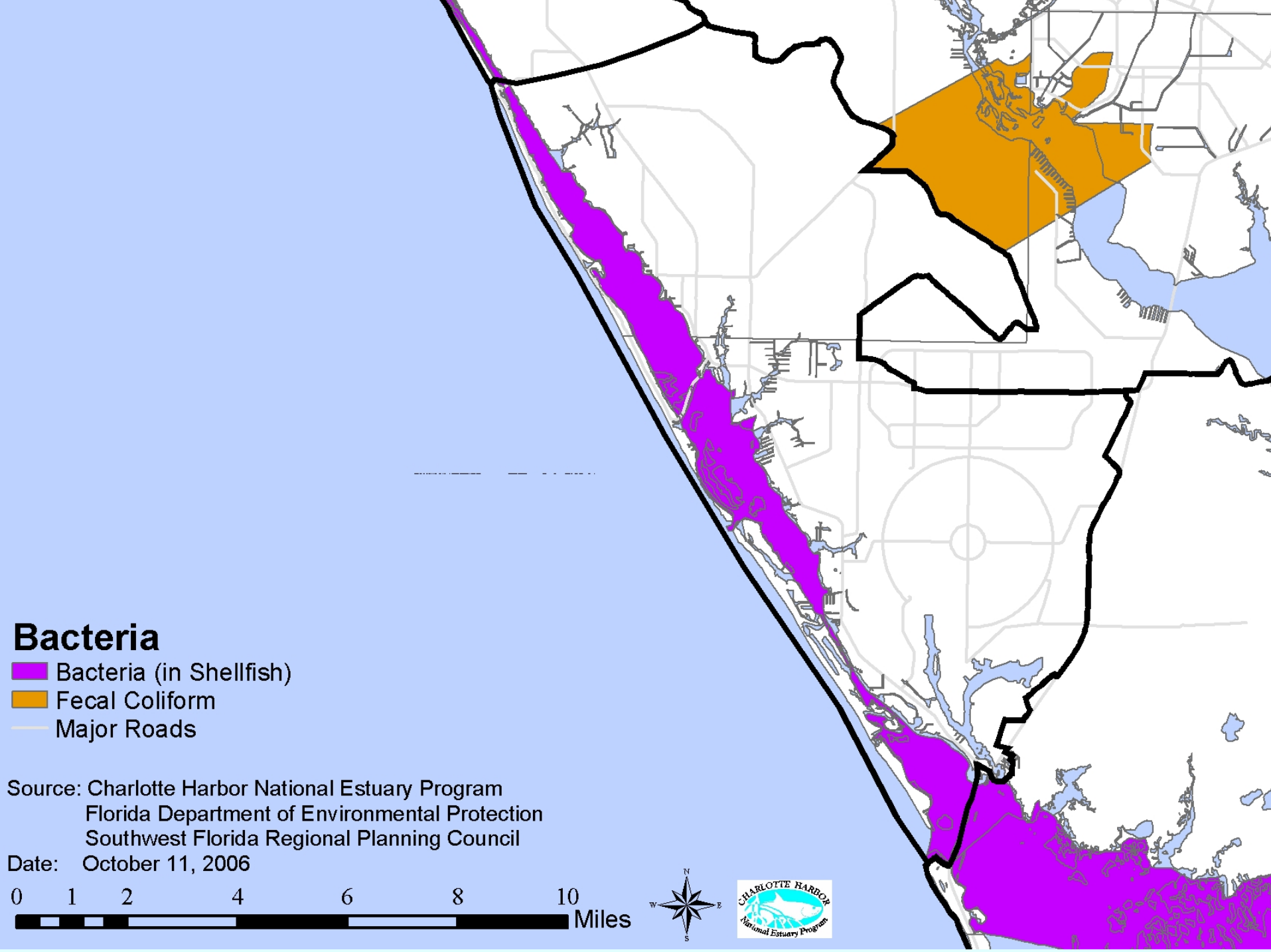
Source: Charlotte Harbor National Estuary Program
Florida Fish and Wildlife Conservation Commission
Southwest Florida Regional Planning Council

Date: October 13, 2006





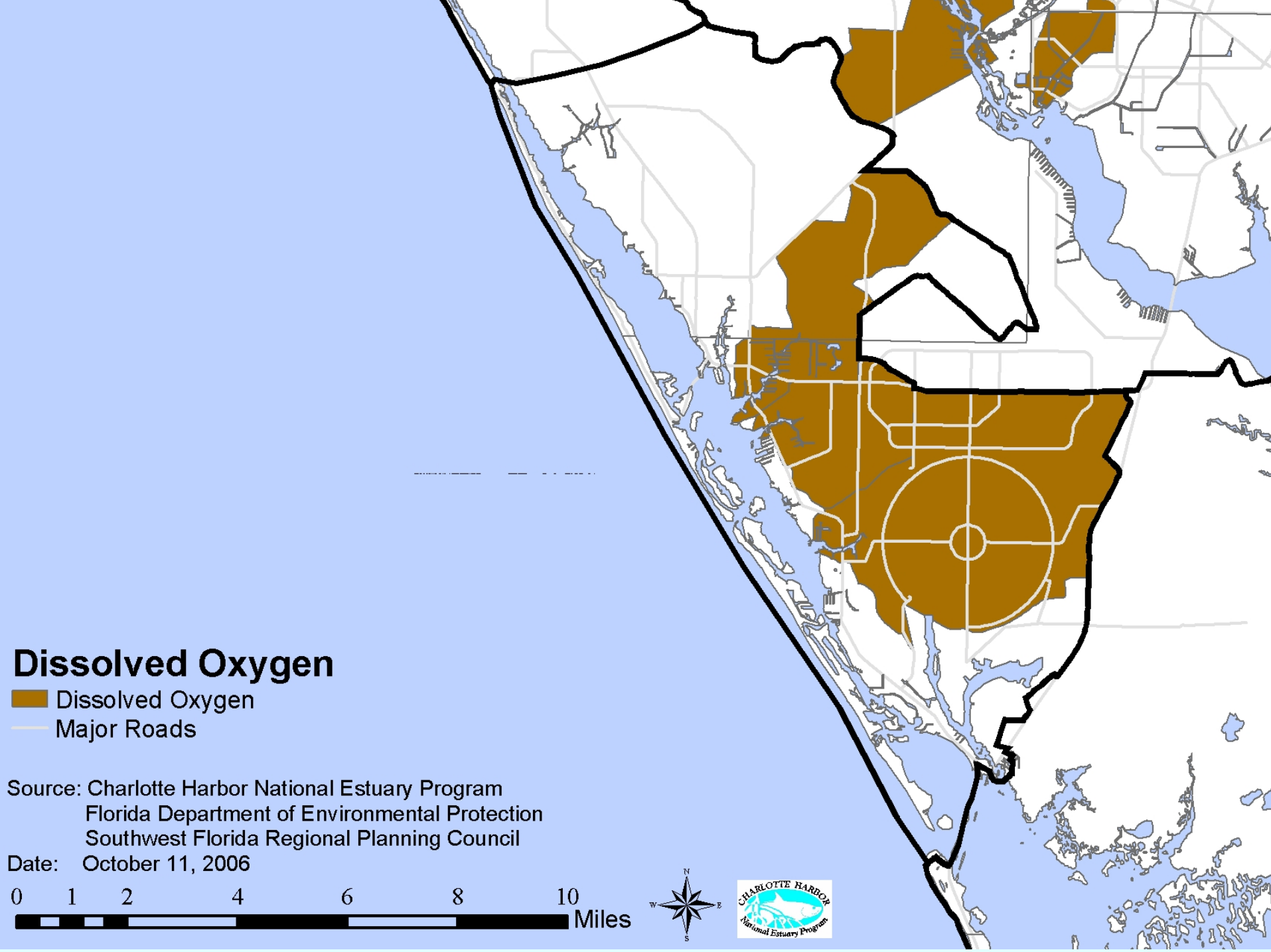




- Bacteria**
- Bacteria (in Shellfish)
- Fecal Coliform
- Major Roads

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

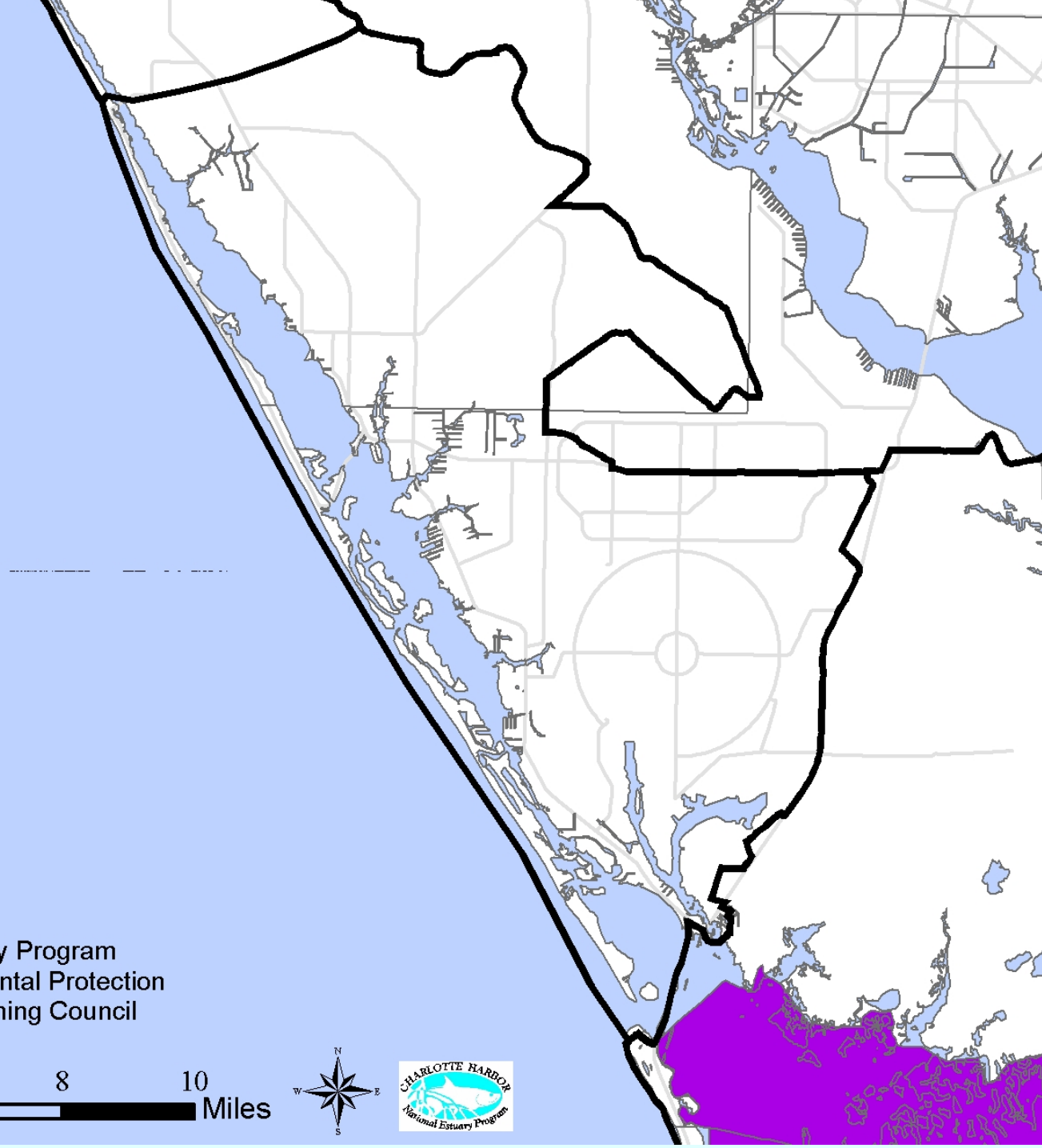
Source: Charlotte Harbor National Estuary Program
Florida Department of Environmental Protection
Southwest Florida Regional Planning Council
Date: October 11, 2006

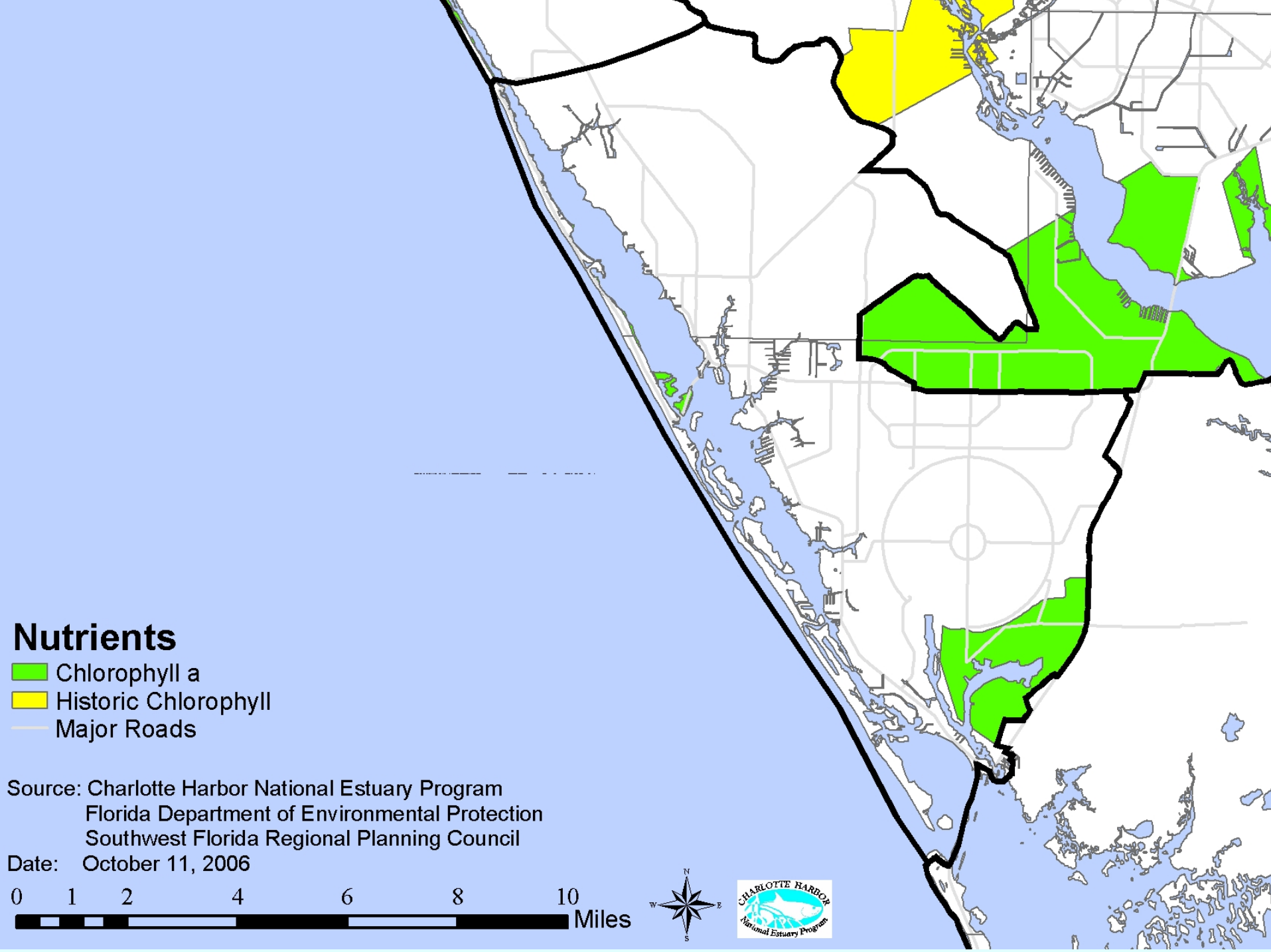


Metals

- 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



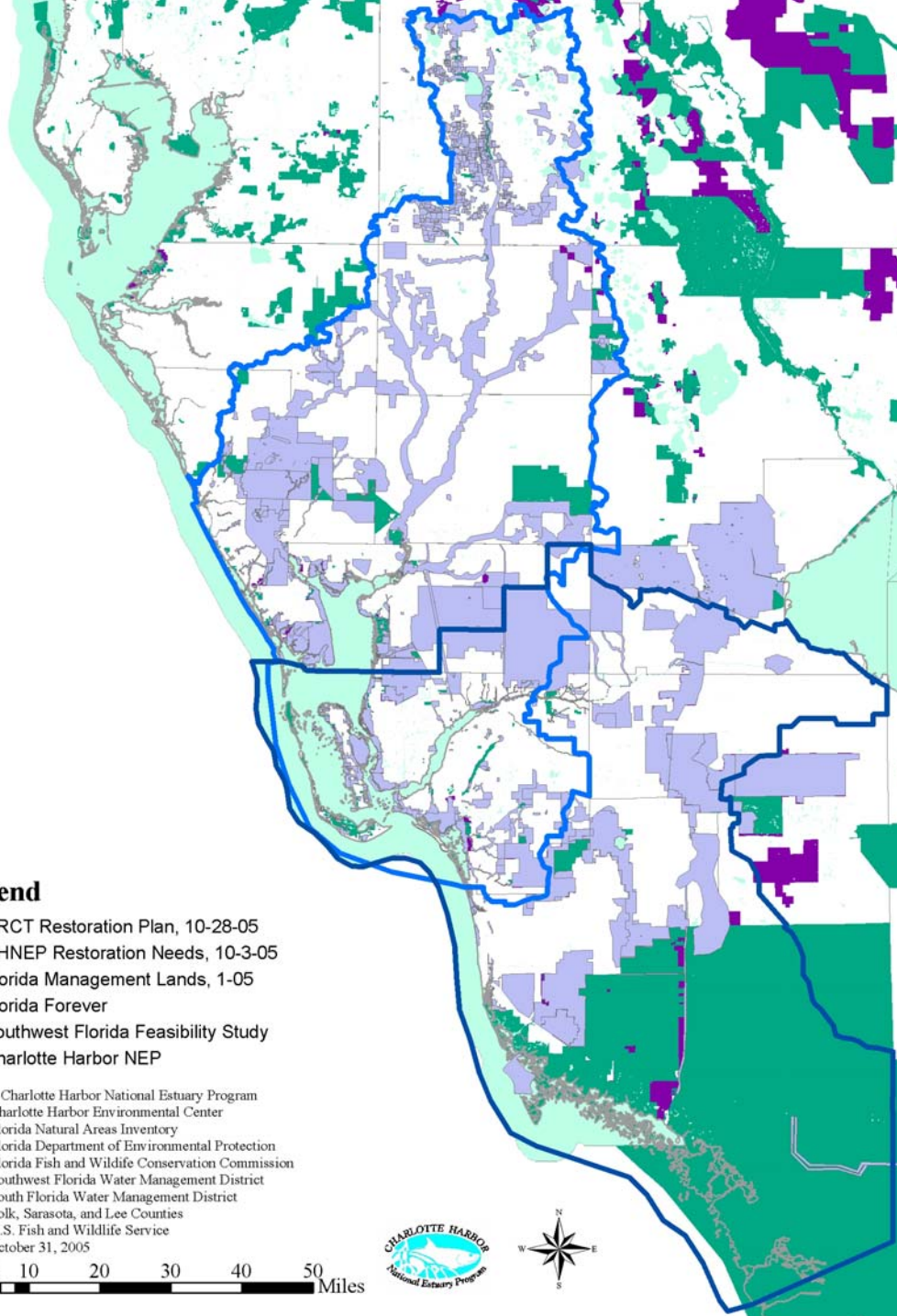
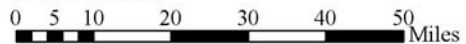
Calusa RCT – Tidal Caloosahatchee
3/10/03

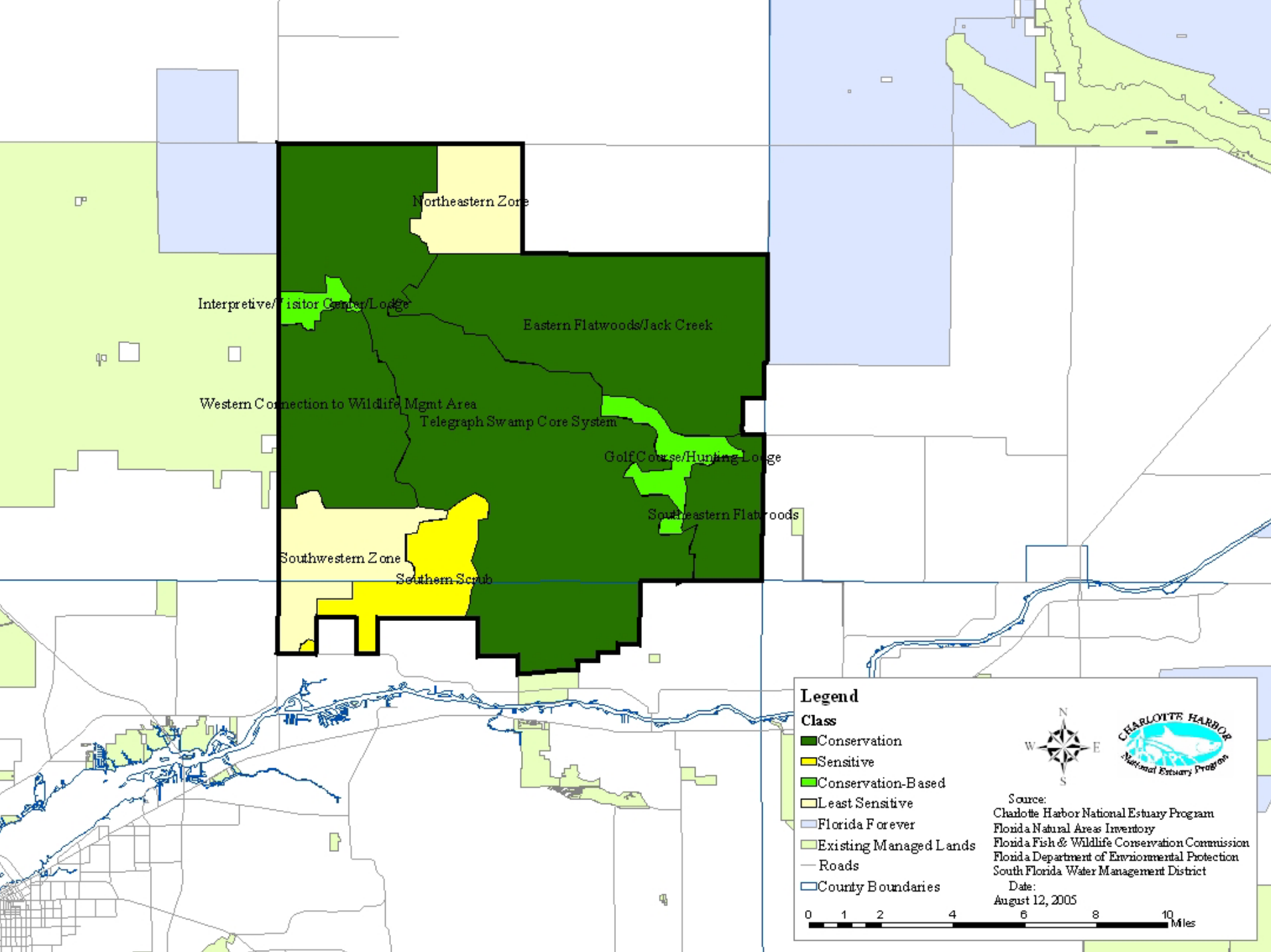
Legend

-  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

Southeastern Flatwoods

Southwestern Zone

Southern Scrub

Legend

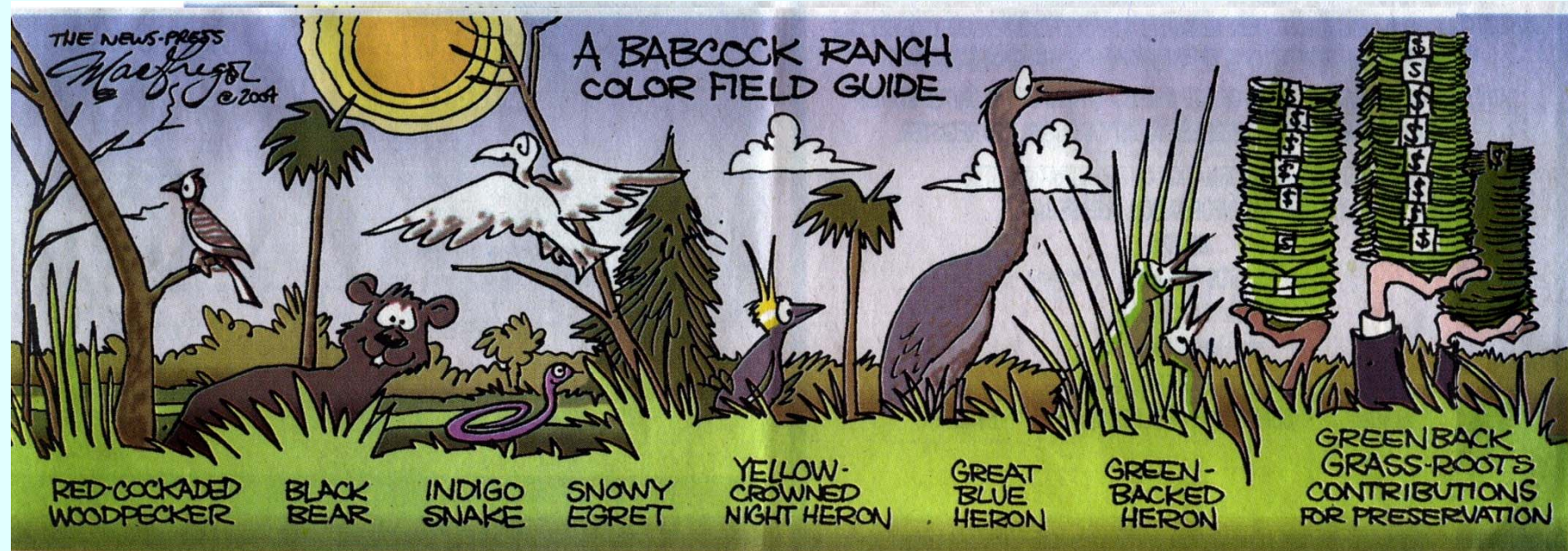
- Conservation
- Sensitive
- Conservation-Based
- Least Sensitive
- Florida Forever
- Existing Managed Lands
- Roads
- County Boundaries



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





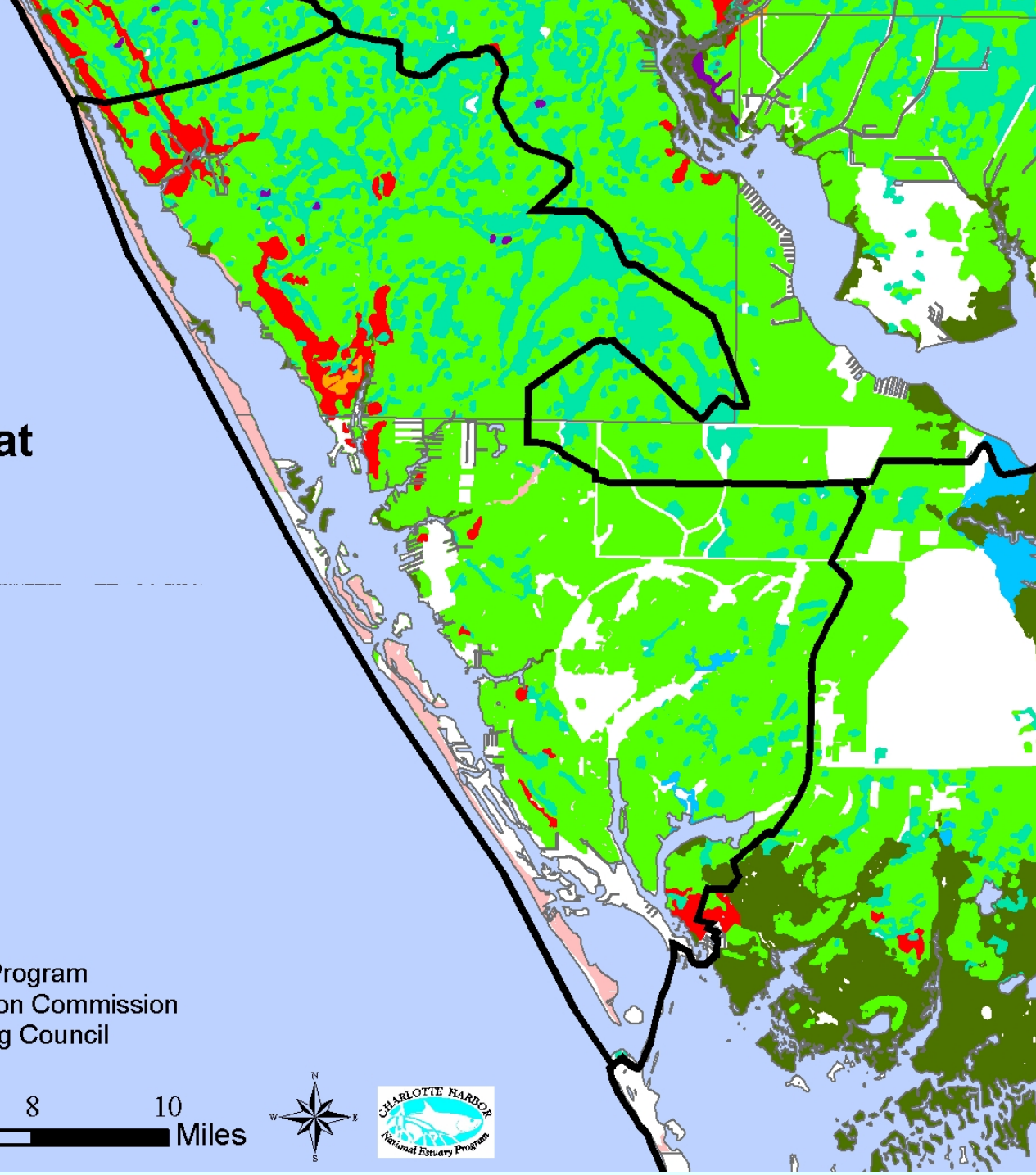
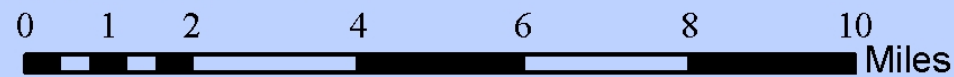
Babcock Preservation Partnership, Inc. Jim Fowler, spokesman
www.babcockranch.org \$200,000 in donations

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

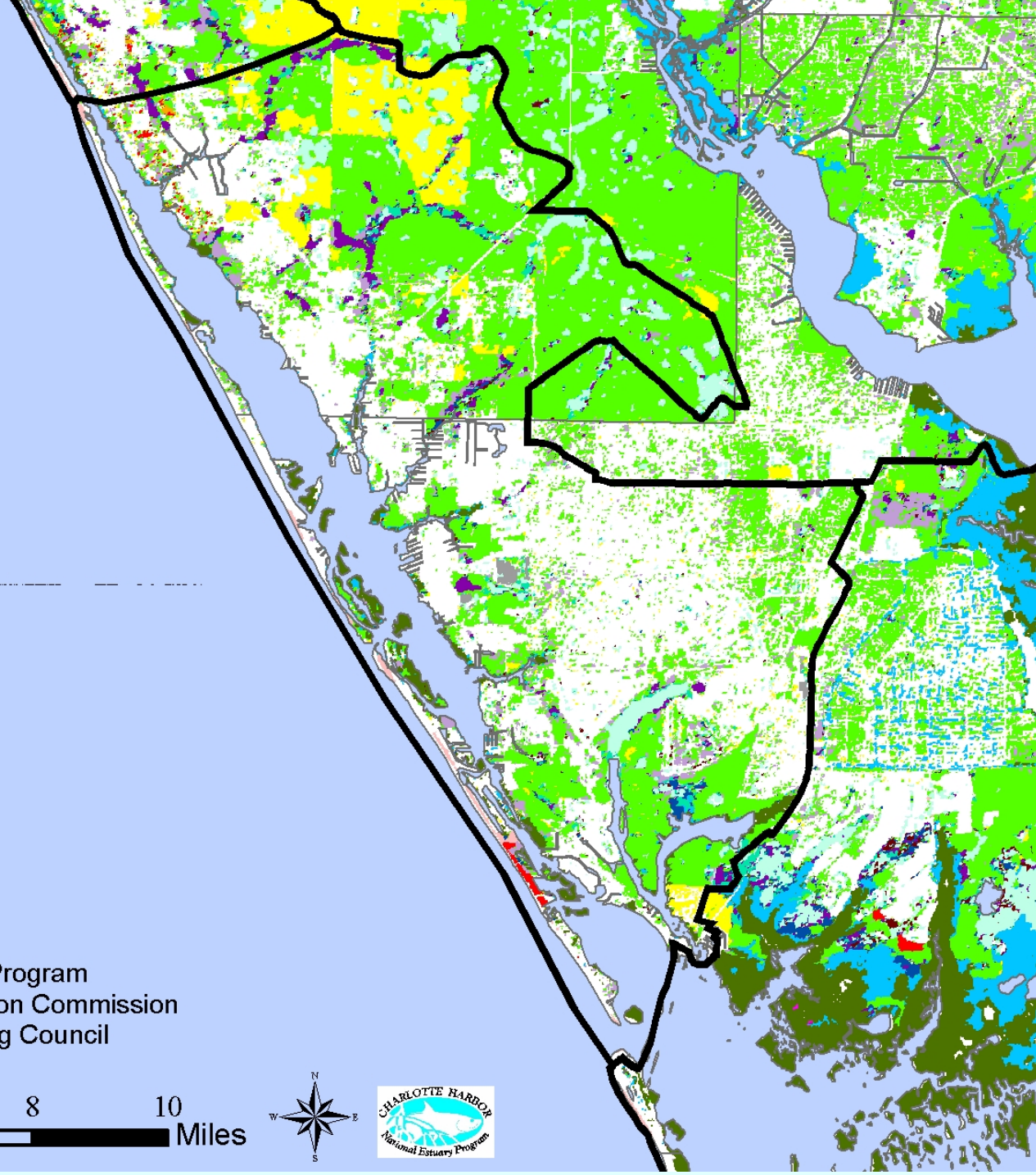
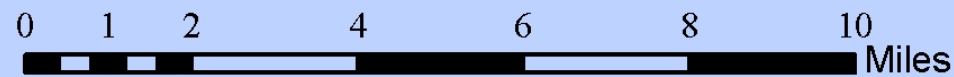


2003 Land Cover

- 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 11, 2006



Lands in Management

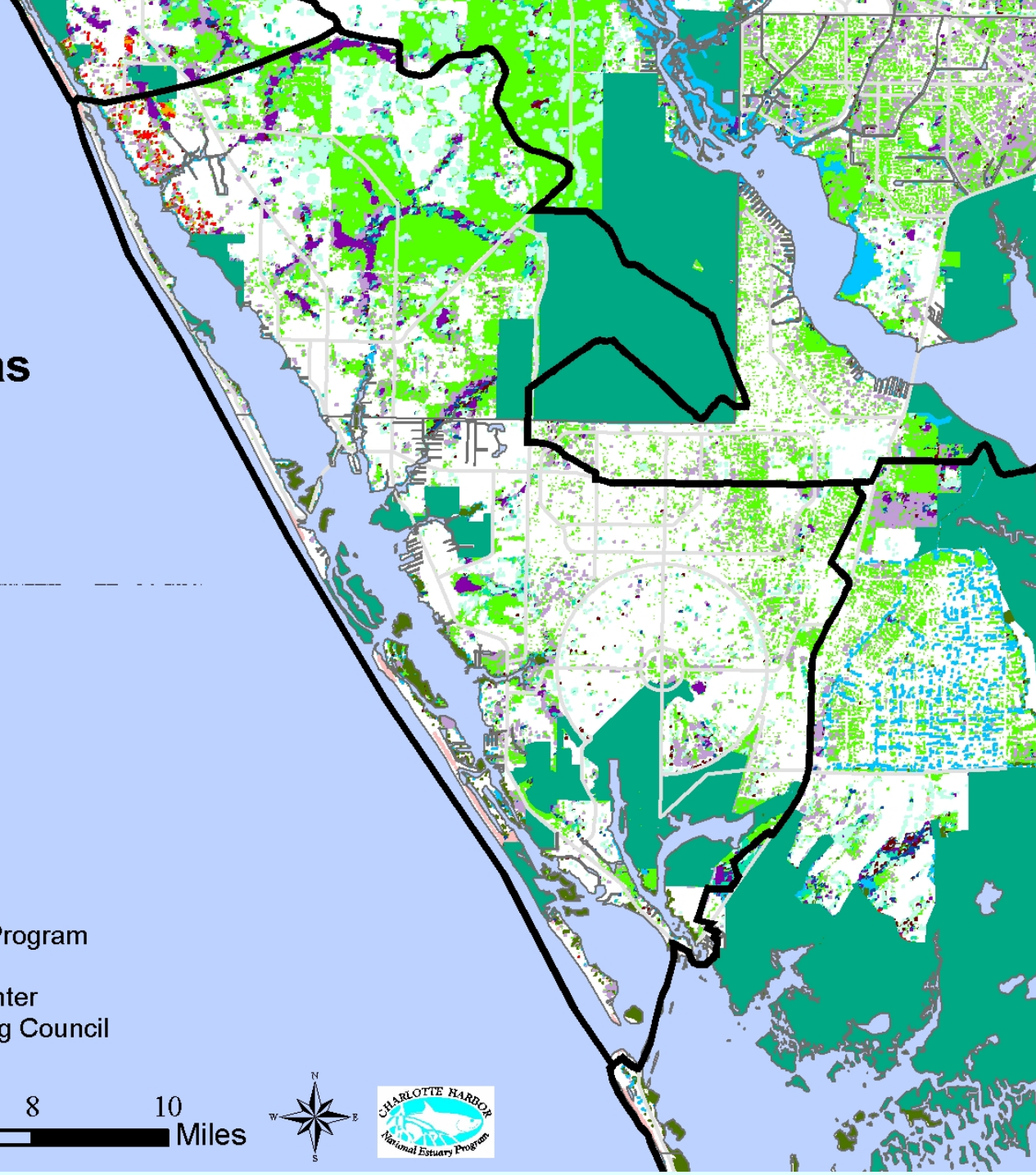
Remaining Natural Areas

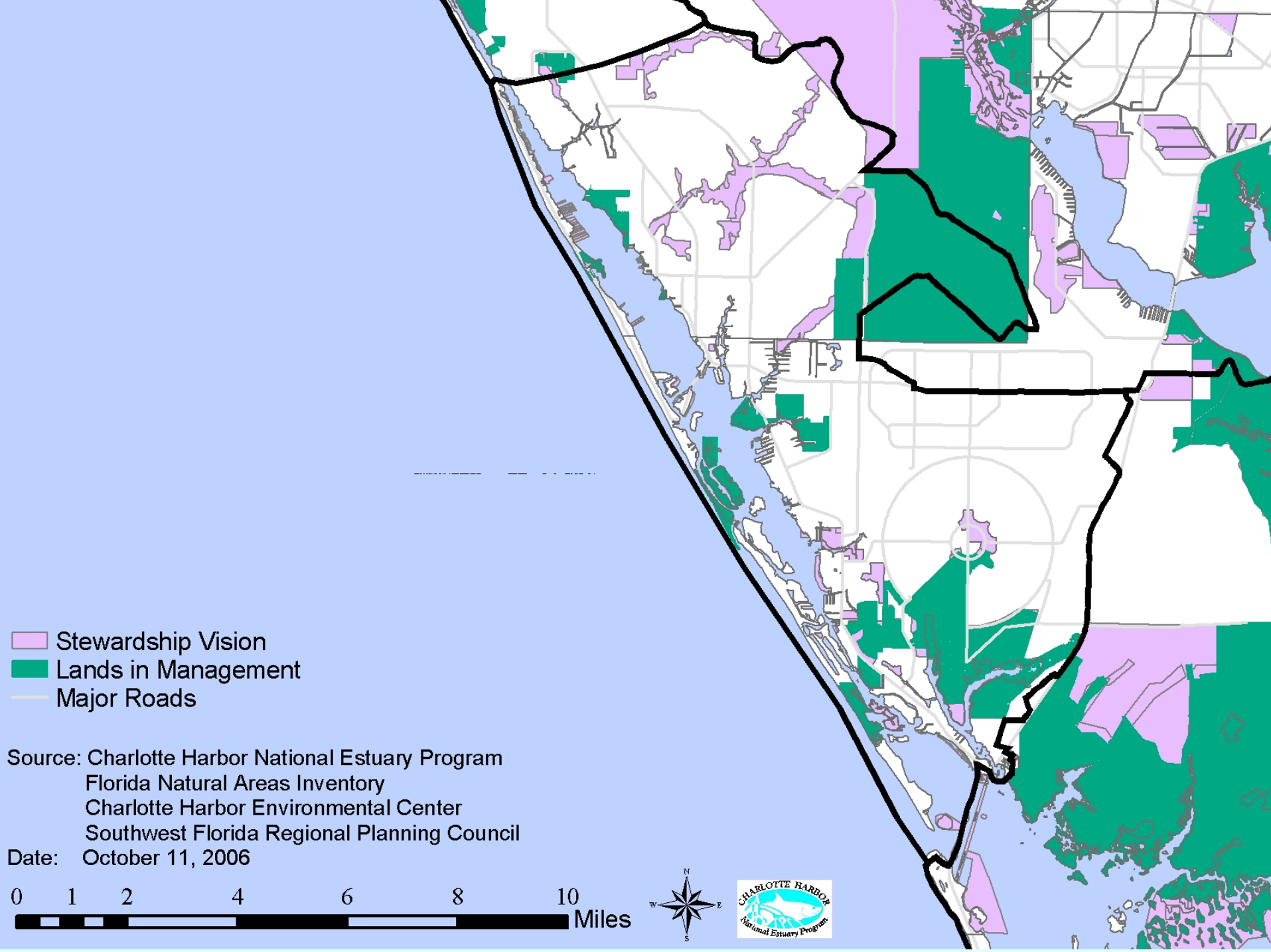
- Beach
- Cypress
- Hydric Flatwood
- Hydric Hammock
- Mangrove
- Marsh
- Mesic Flatwoods
- Mesic Hammock
- Swamp Forest
- Tidal Marsh
- Wet Prairie
- Xeric Flatwoods
- Xeric Hammock
- Major Roads

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

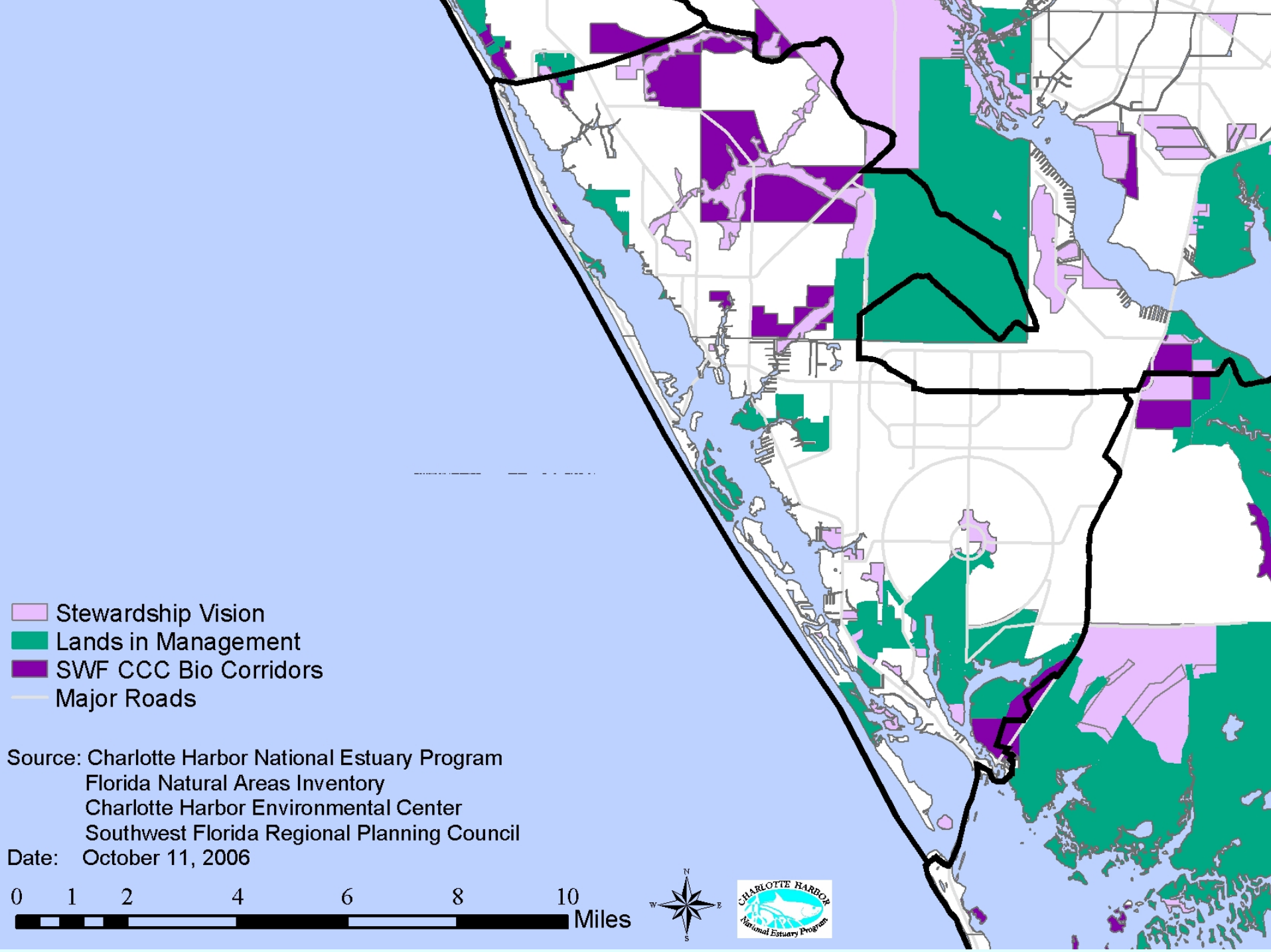




Stewardship Vision
Lands in Management
Major Roads

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





- 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



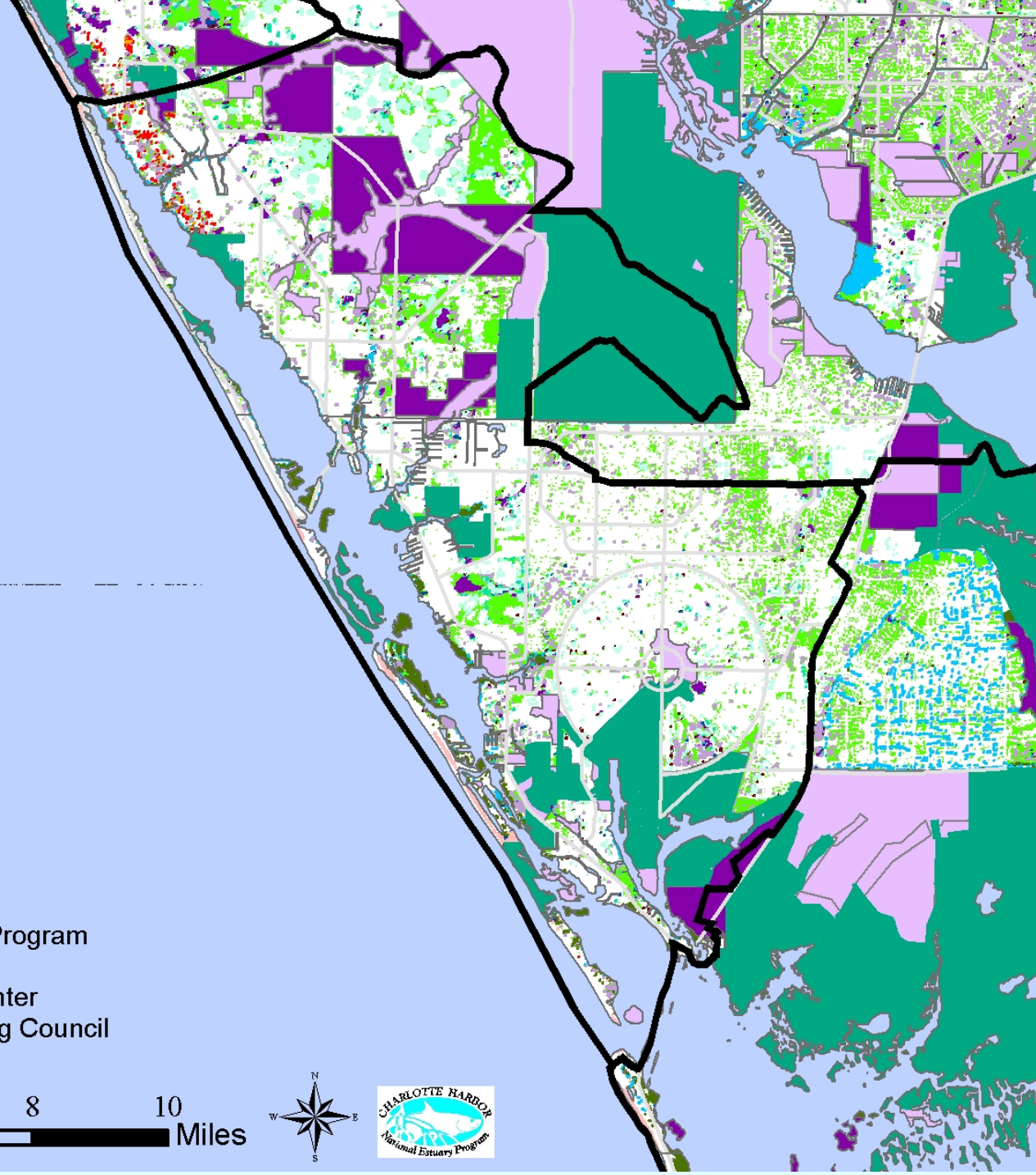
-  Stewardship Vision
 -  Lands in Management
 -  SWF CCC Bio Corridors
- Remaining Natural Areas**

Habitat

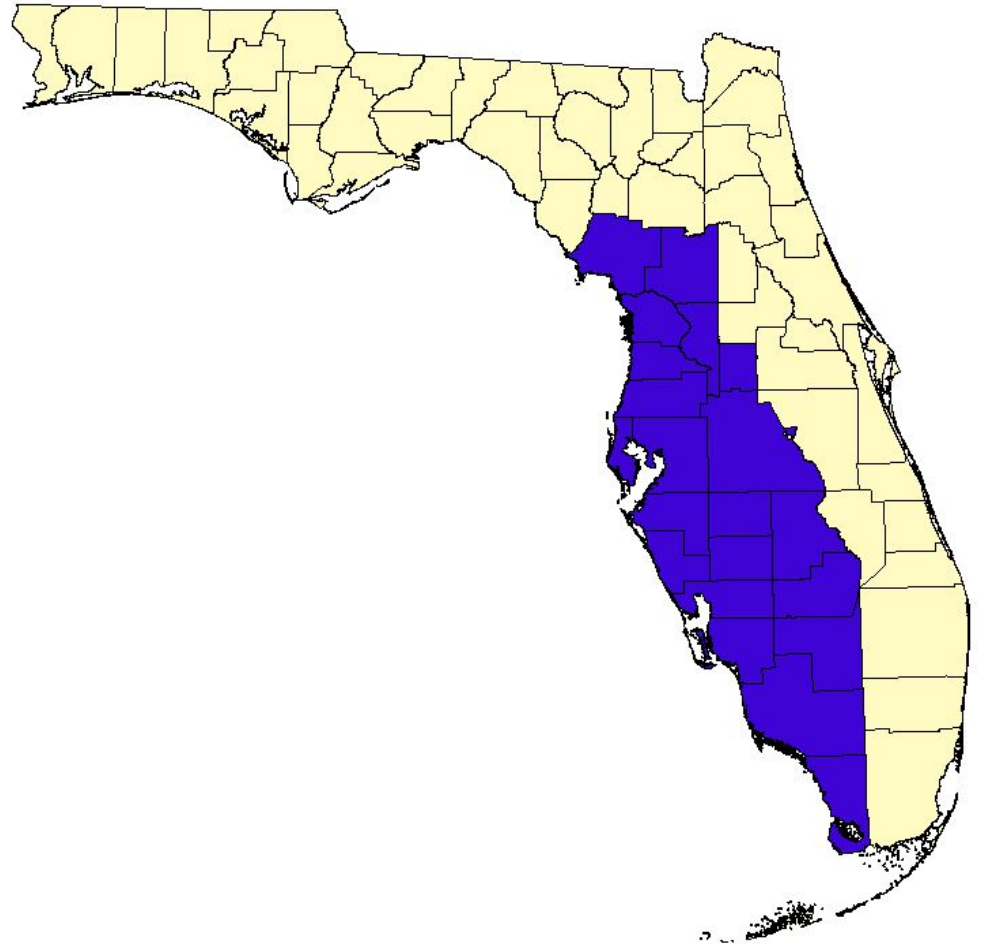
-  Beach
-  Cypress
-  Hydric Flatwood
-  Hydric Hammock
-  Mangrove
-  Marsh
-  Mesic Flatwoods
-  Mesic Hammock
-  Swamp Forest
-  Tidal Marsh
-  Wet Prairie
-  Xeric Flatwoods
-  Xeric Hammock
-  Major Roads

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

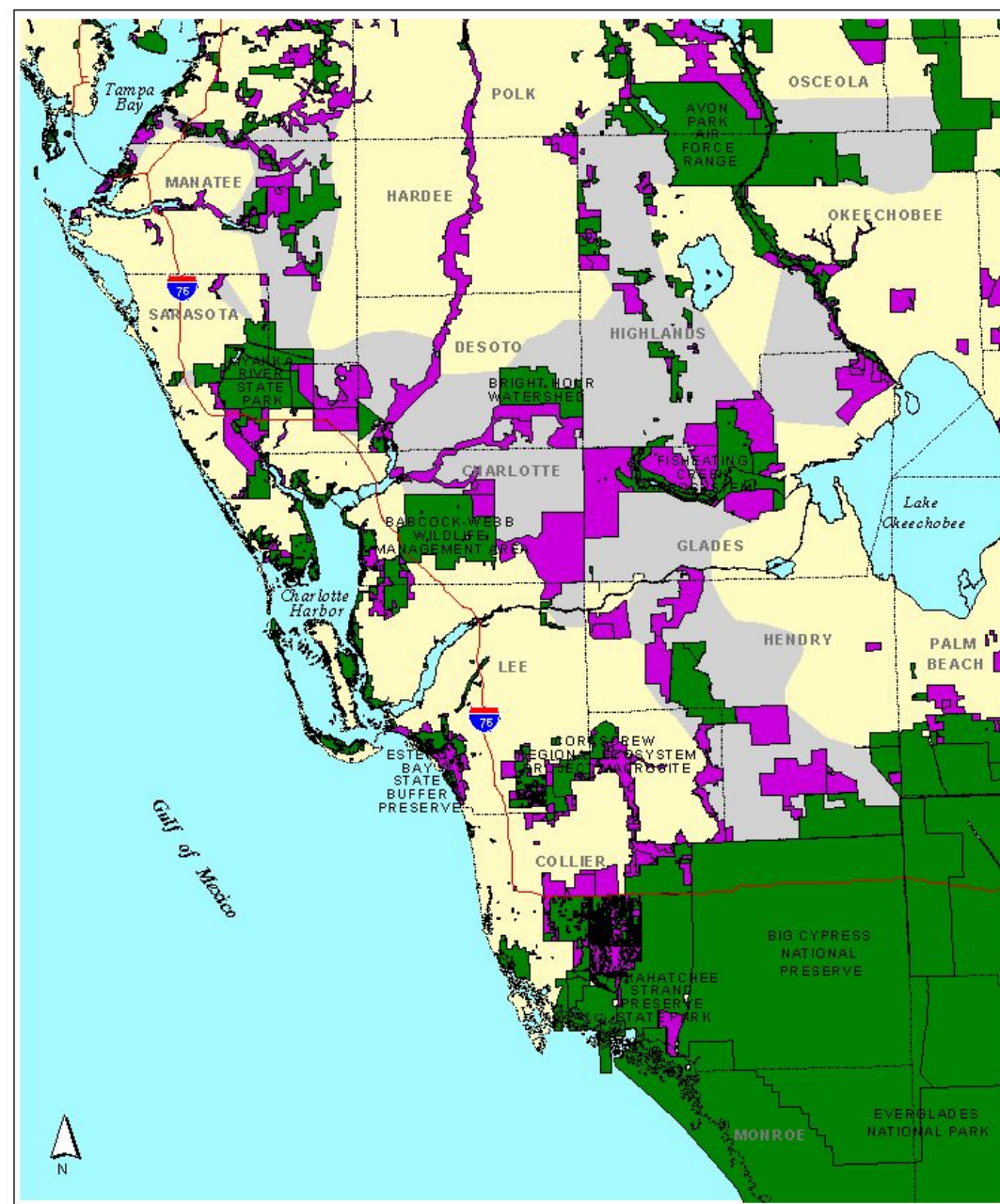




*Florida Panther in
Sarasota County*

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

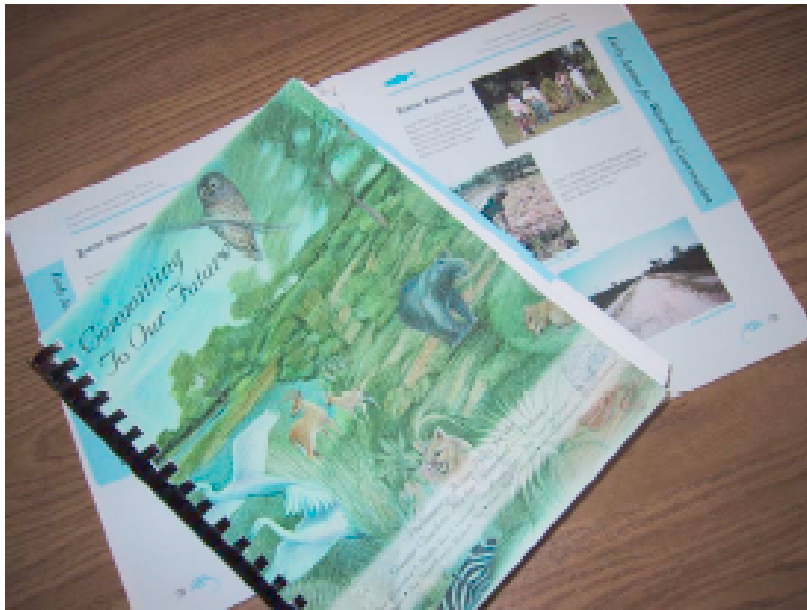
Do not establish Water Markets

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



4980 Bayline Drive, 4th Floor
North Fort Myers FL 33917-3909
(239) 995-1777
www.charlotteharbornep.org

Legislative Agenda



Charlotte Harbor National Estuary Program Technical Report 03-5

Adopted: November 17, 2003

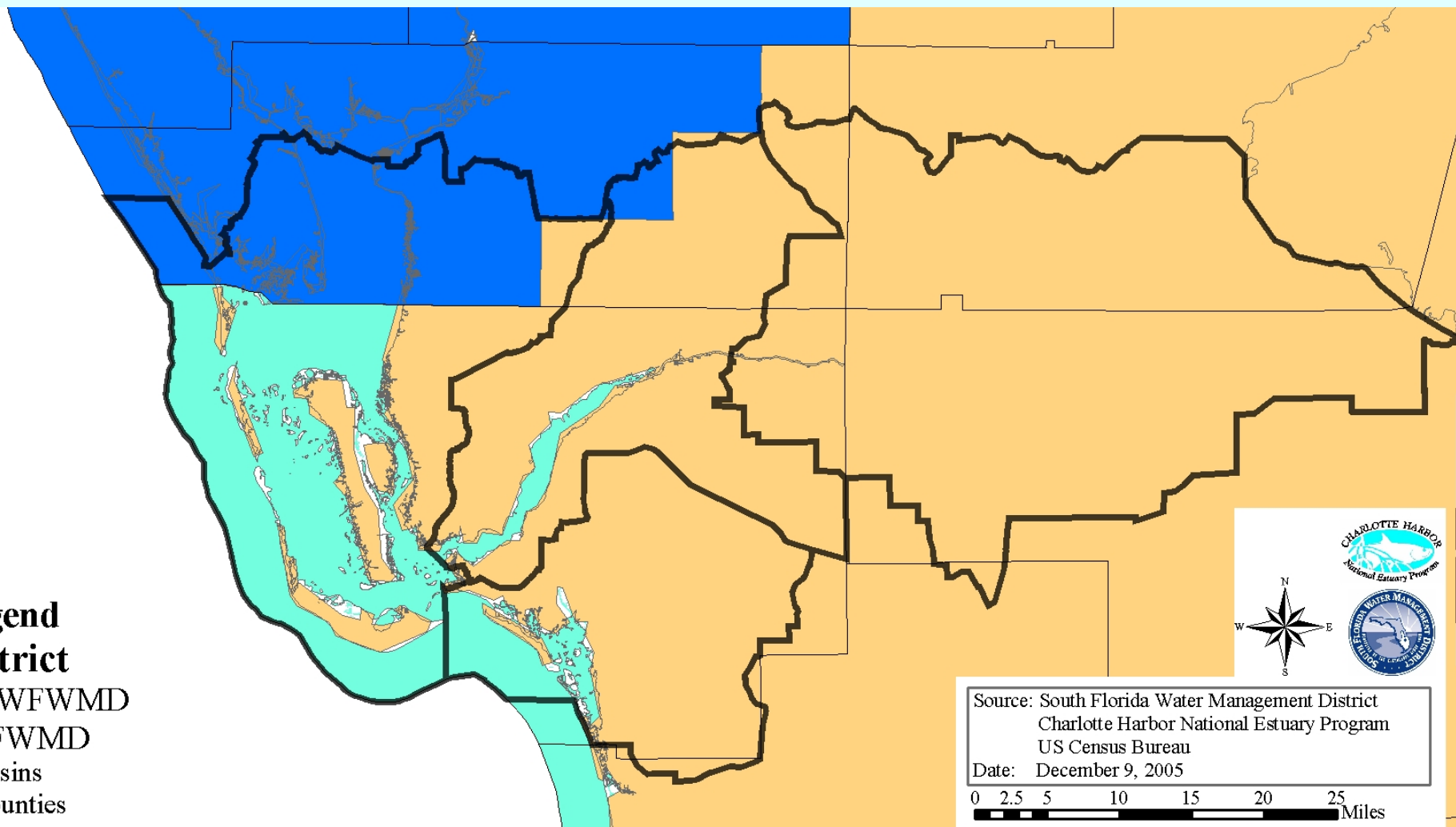
Prepared by:



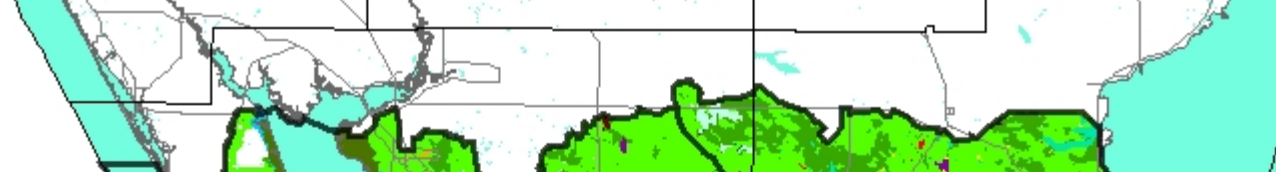
4980 Bayline Drive, 4th Floor
North Fort Myers FL 33917-3909
(239) 995-1777
www.charlotteharbornep.org

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

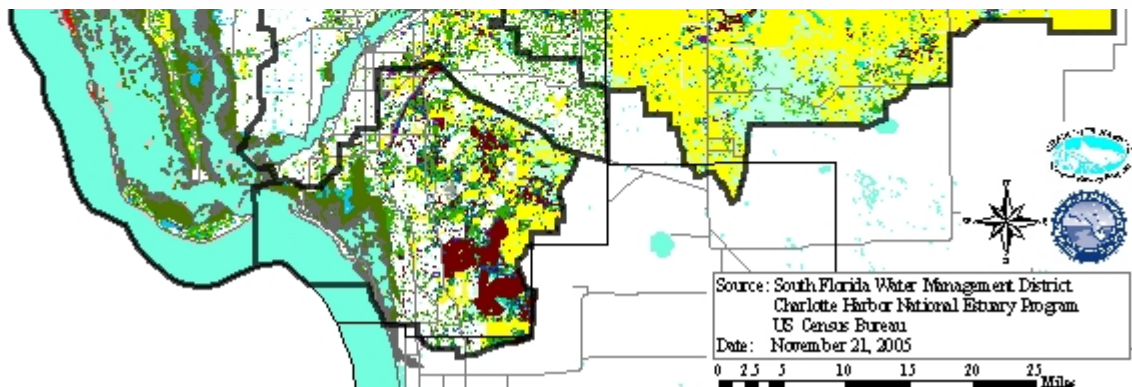
- Habit**
- Beach
 - Cypress
 - Hydric
 - Hydric
 - Mangr
 - Marsh
 - Mesic
 - Mesic
 - Swamp
 - Tidal I
 - Wet P
 - Xeric I
 - Xeric I
 - Count
 - Basins
 - Major

	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
Total	457,992	288,474	608,270	213,252	1,567,988	1,560,165	

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

Native Land Habitats	130,003	121,988	237,539	88,244	577,774	1,239,582	-53%
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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



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

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



Laura M. Comer
Florida Department of Environmental Protection
and Disaster

Natalie Stratta
Marine Industries Association

Ken Stead
Marine Industries Association

NEEDS ASSESSMENT — help determine — SMART OBJECTIVE
is first step in
PROJECT EVALUATION

Project Evaluation
Project Description
Project Goals

Project Description

Project Description



FLORIDA LANDSCAPE

HOME | CREATE A HABITAT | MEET OUR HOST & EXPERT | WATCH FL LANDSCAPE | PLANT DIRECTORY | RESOURCES | FEEDBACK |

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.



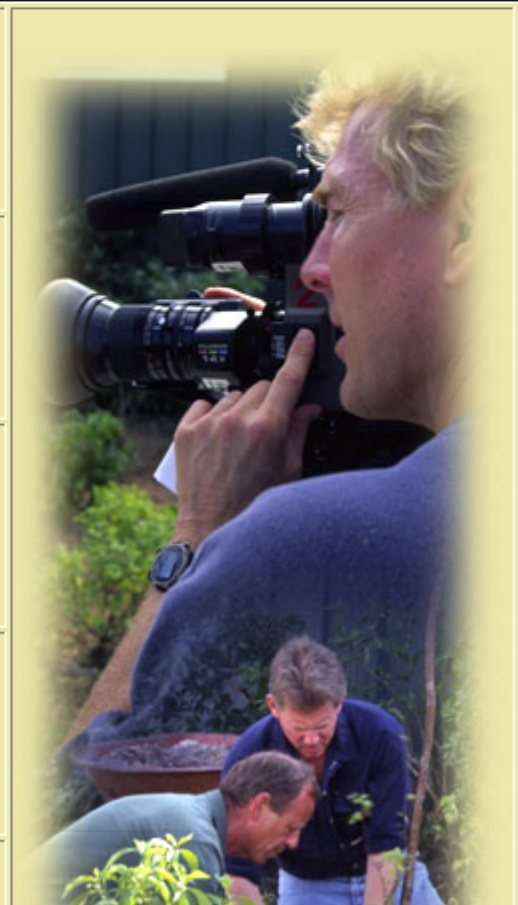
Show 3
This segment tells you about steps 3 - 5. Identifying your planting zone and the habitat around your house. And, the importance of getting the soil in your yard tested.



Show 4
This segment teaches you the best way to eliminate your grass.



Show 5



Florida Friendly Yards Workshops-Rural Communities

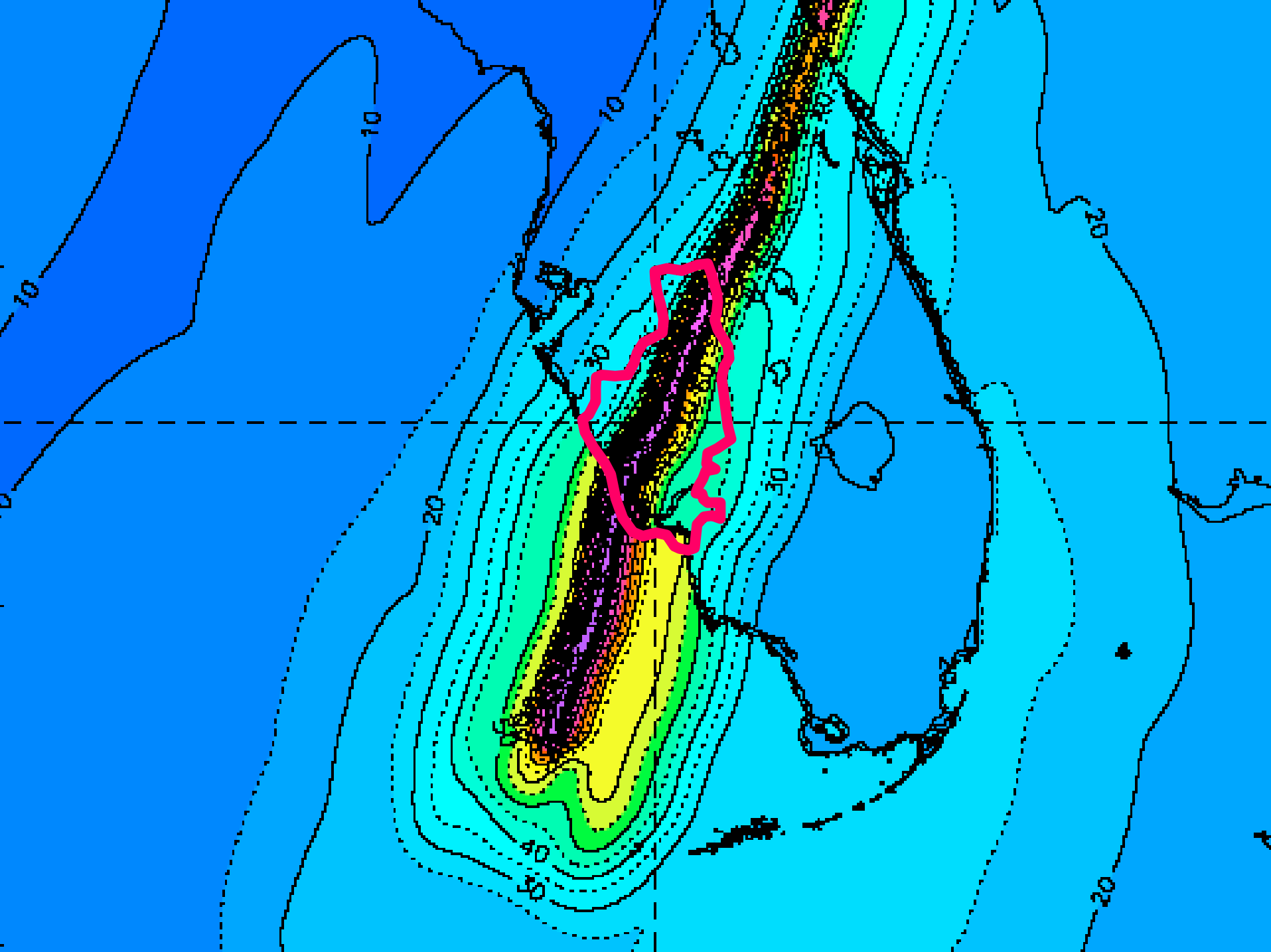
A partnership with WGCU





Public Outreach Grant

Reaching all 7th Grade Students at 1 of 4 Middle Schools in Charlotte County





A map of the state of Florida, outlined in blue. The word "FLORIDA" is written in yellow at the top. Three locations are marked with red asterisks and labeled in red: "PORT CHARLOTTE" in the central-western part of the state, "PUNTA GORDA" just south of it, and "FORT MYERS" on the southwestern coast.

FLORIDA

* PORT CHARLOTTE

* PUNTA GORDA

* FORT MYERS

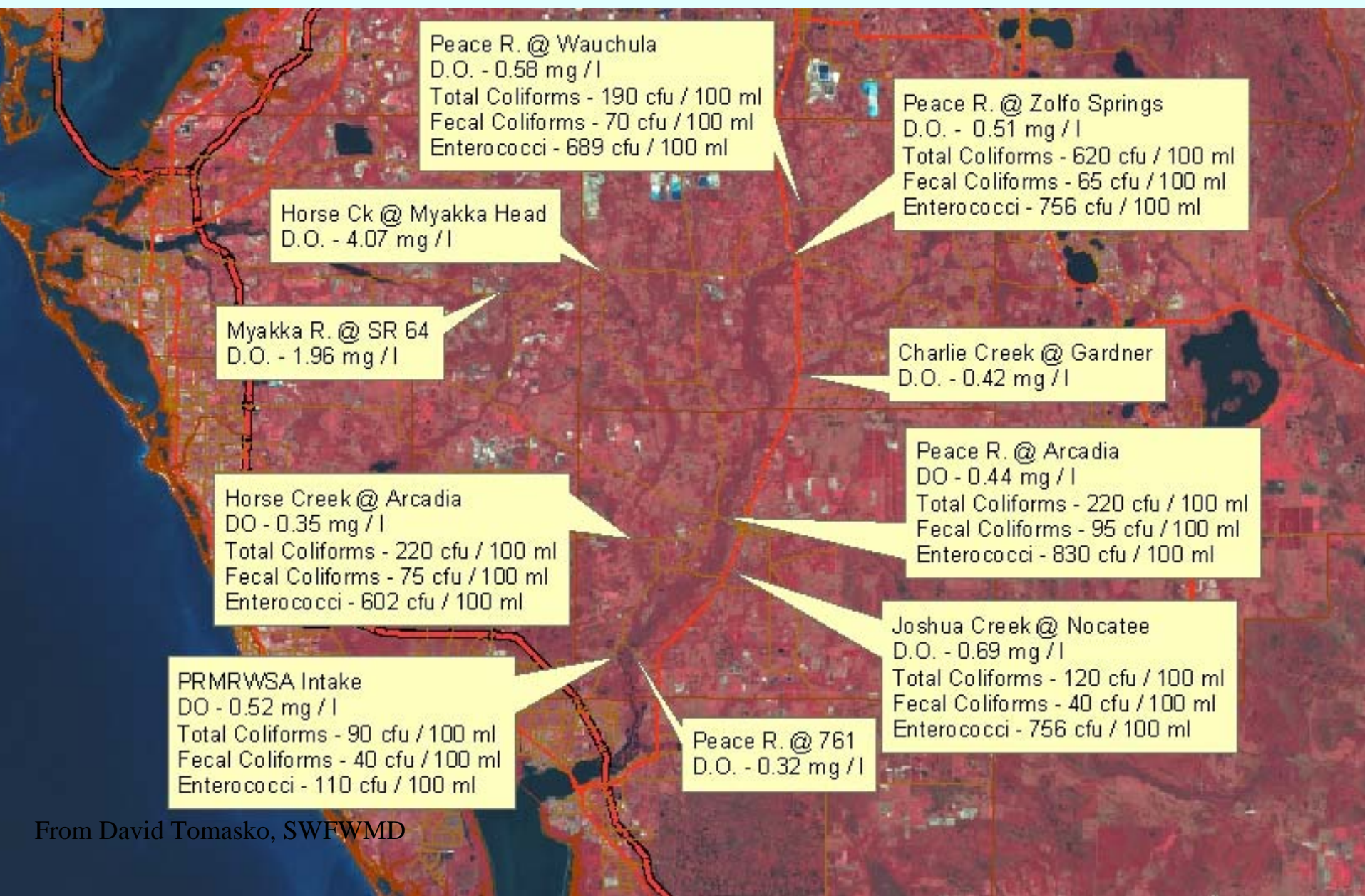
HURR CHARLEY 13 AUG 04 @ 18:15 UTC



**Oily Sheen
Foul Smelling
Death**

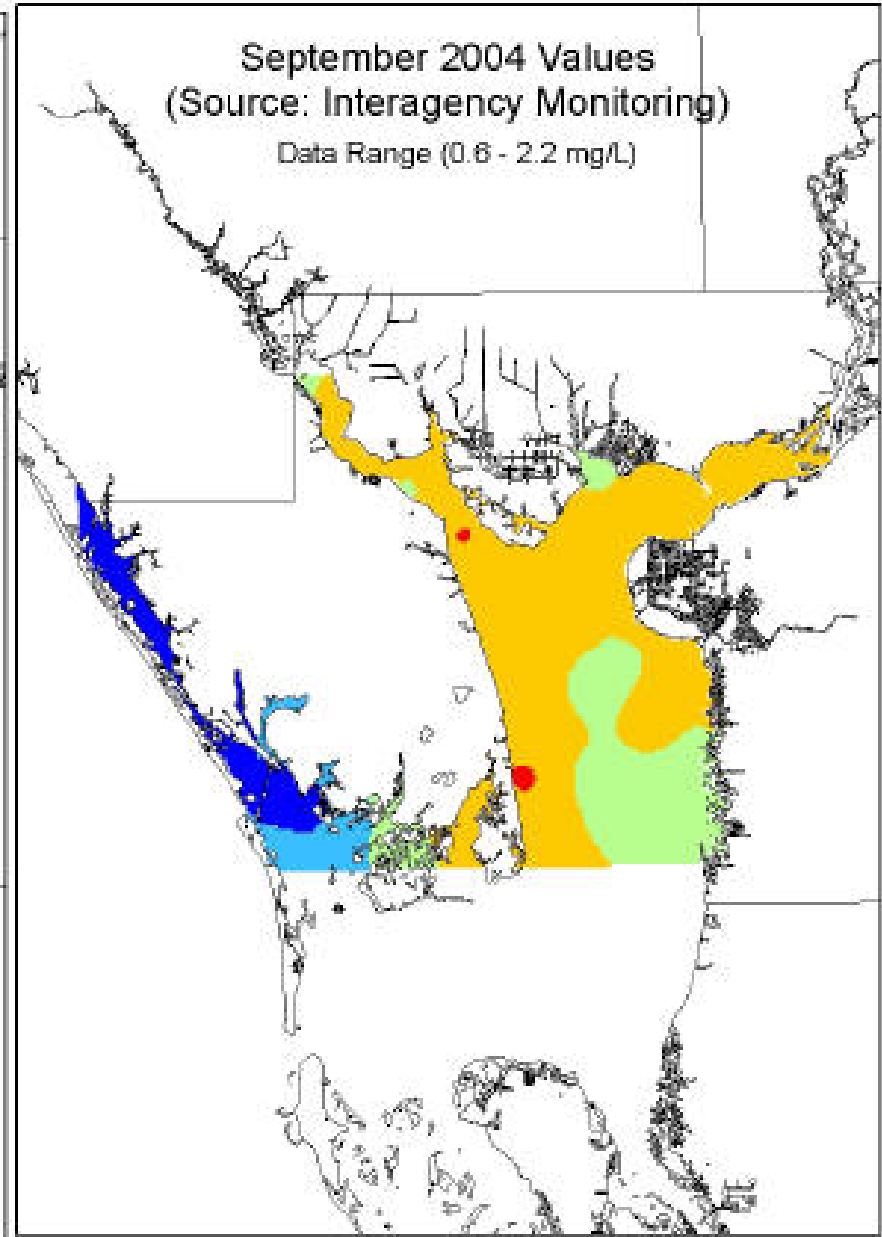
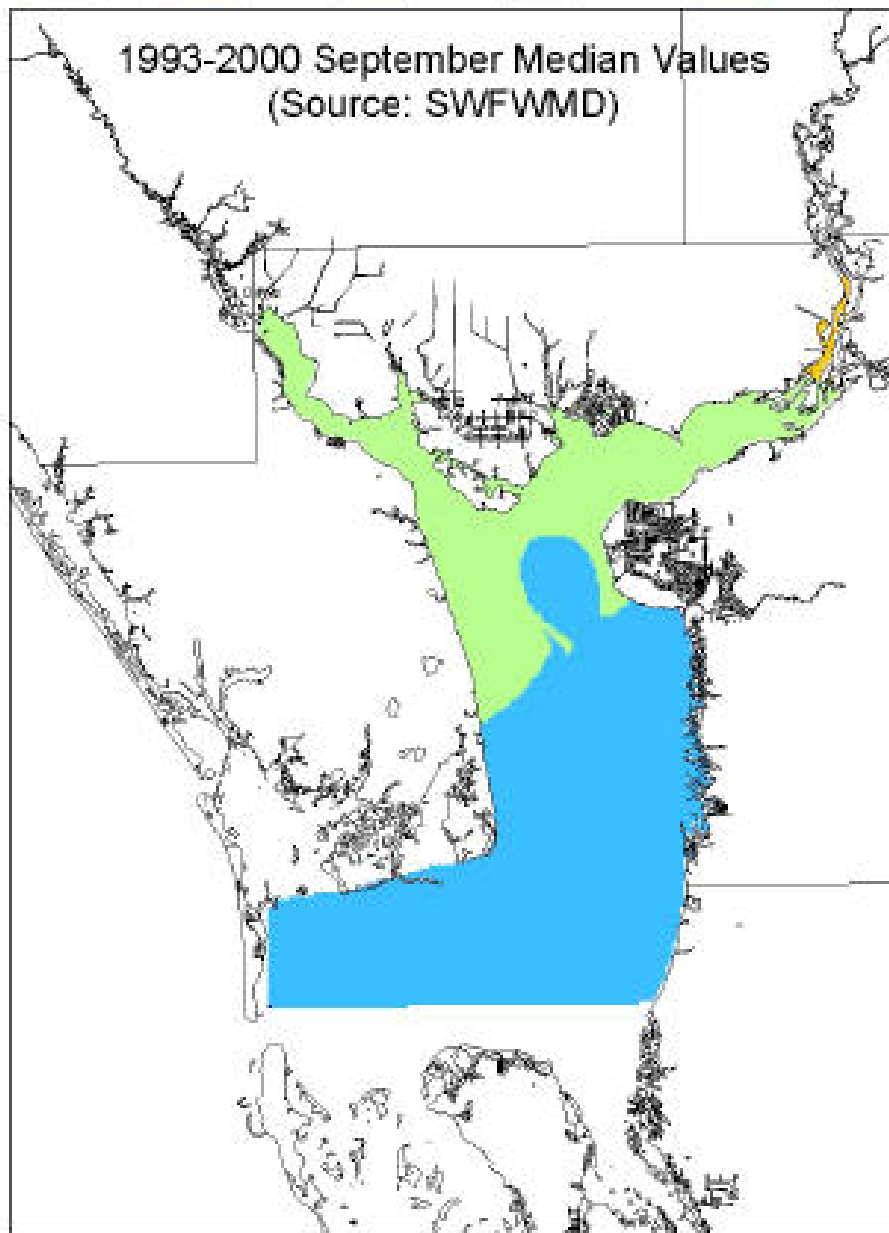
Photo by Catherine Corbett, CHNEP

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

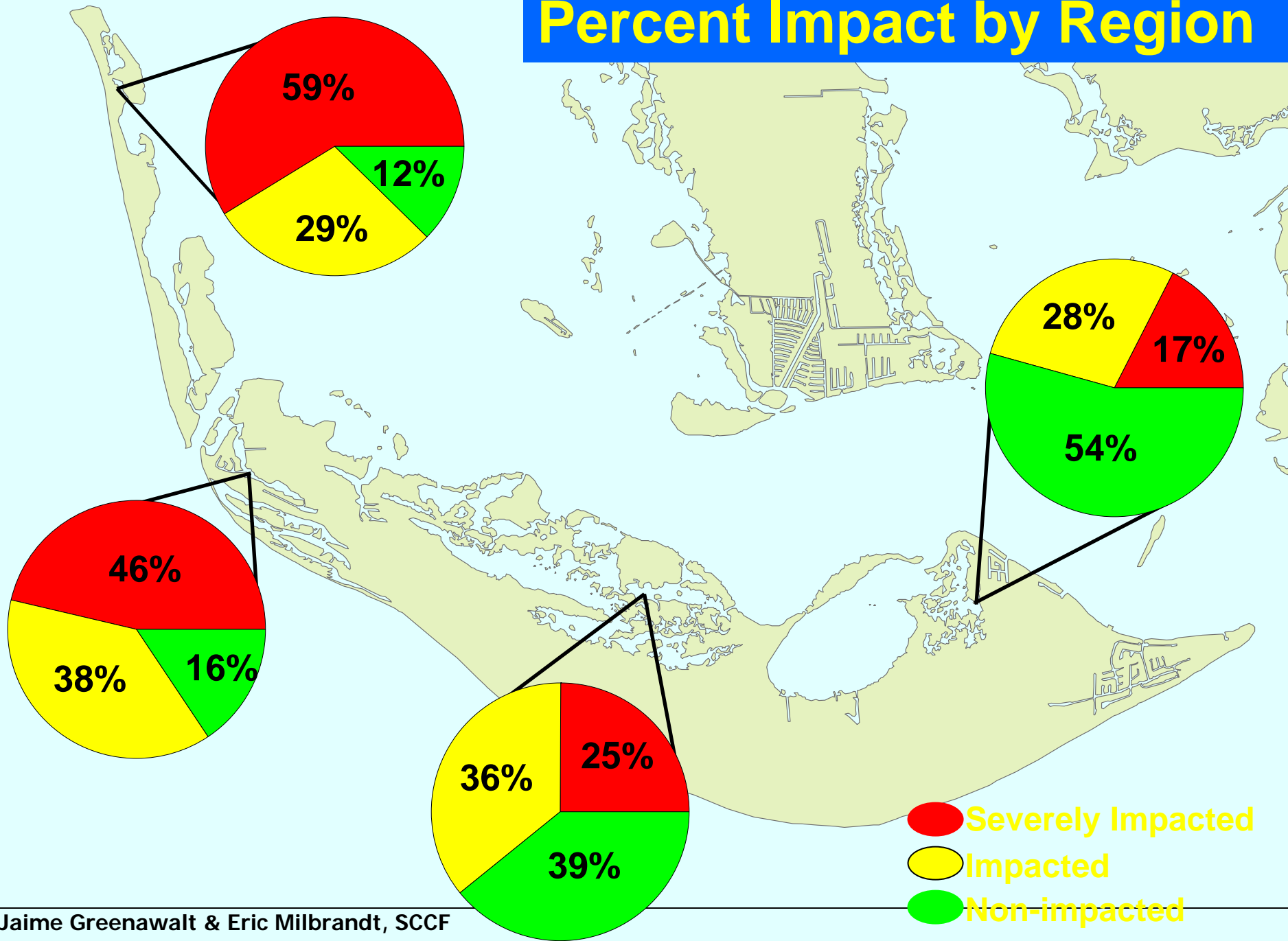


Near Surface Total Nitrogen Values For the Month of September

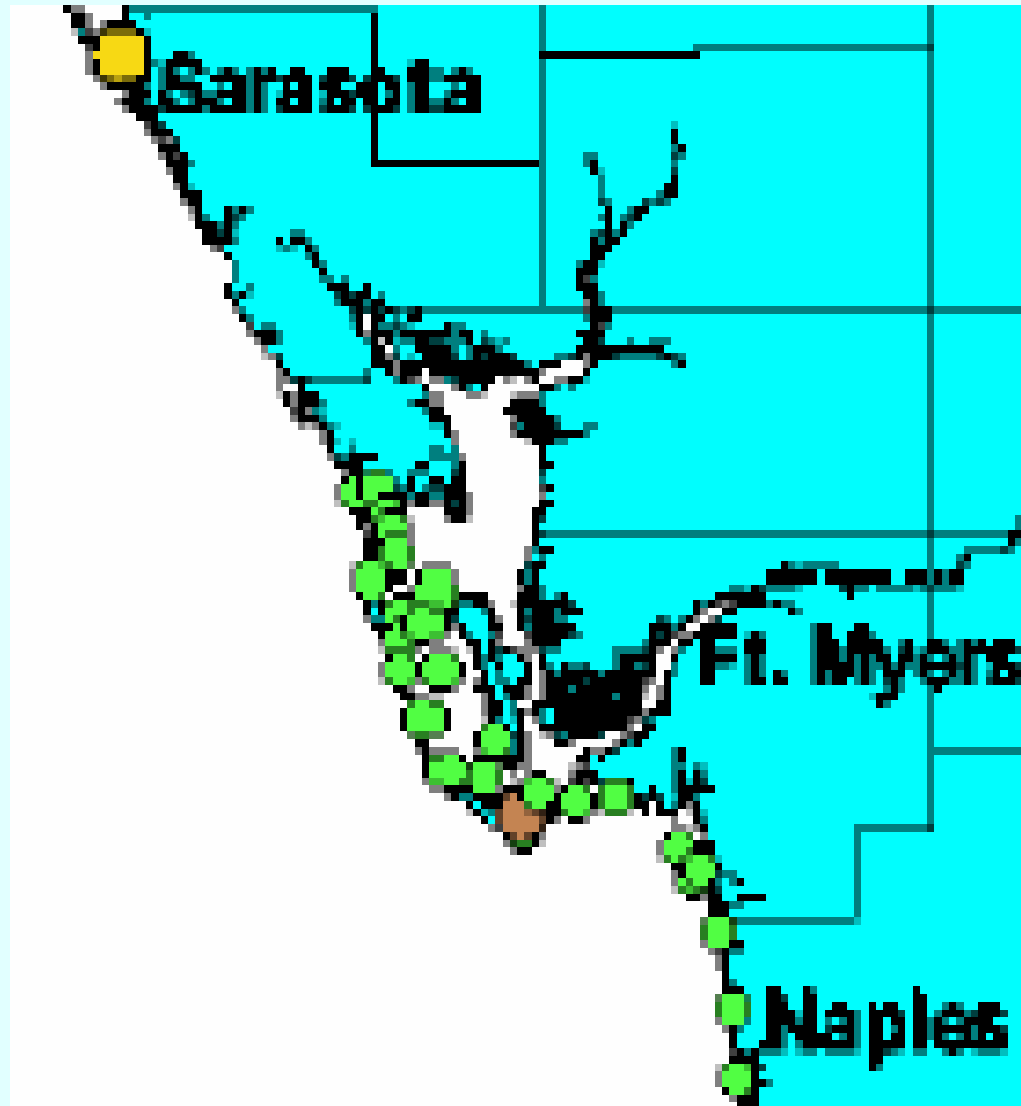
TN (mg/L)



Percent Impact by Region



Red Tide Incidents



- NOT PRESENT
- PRESENT <1001
- VERY LOW A <5000
- VERY LOW B <10,000
- LOW A <50,000
- LOW B <100,000
- MEDIUM <1,000,000
- HIGH 1,000,000+ CELLS/LITER

6/15/03





MARINE IS TOPS

LOTTE HARB

Charlotte Harbor National Estuary Program

Director: Lisa B. Beever, PhD, AICP

Senior Scientist: Catherine Corbett

Communications Manager: Maran Hilgendorf

Grants and Contracts Manager: Liz Donley

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www.CHNEP.org