

SHC Implementation for the Florida Manatee



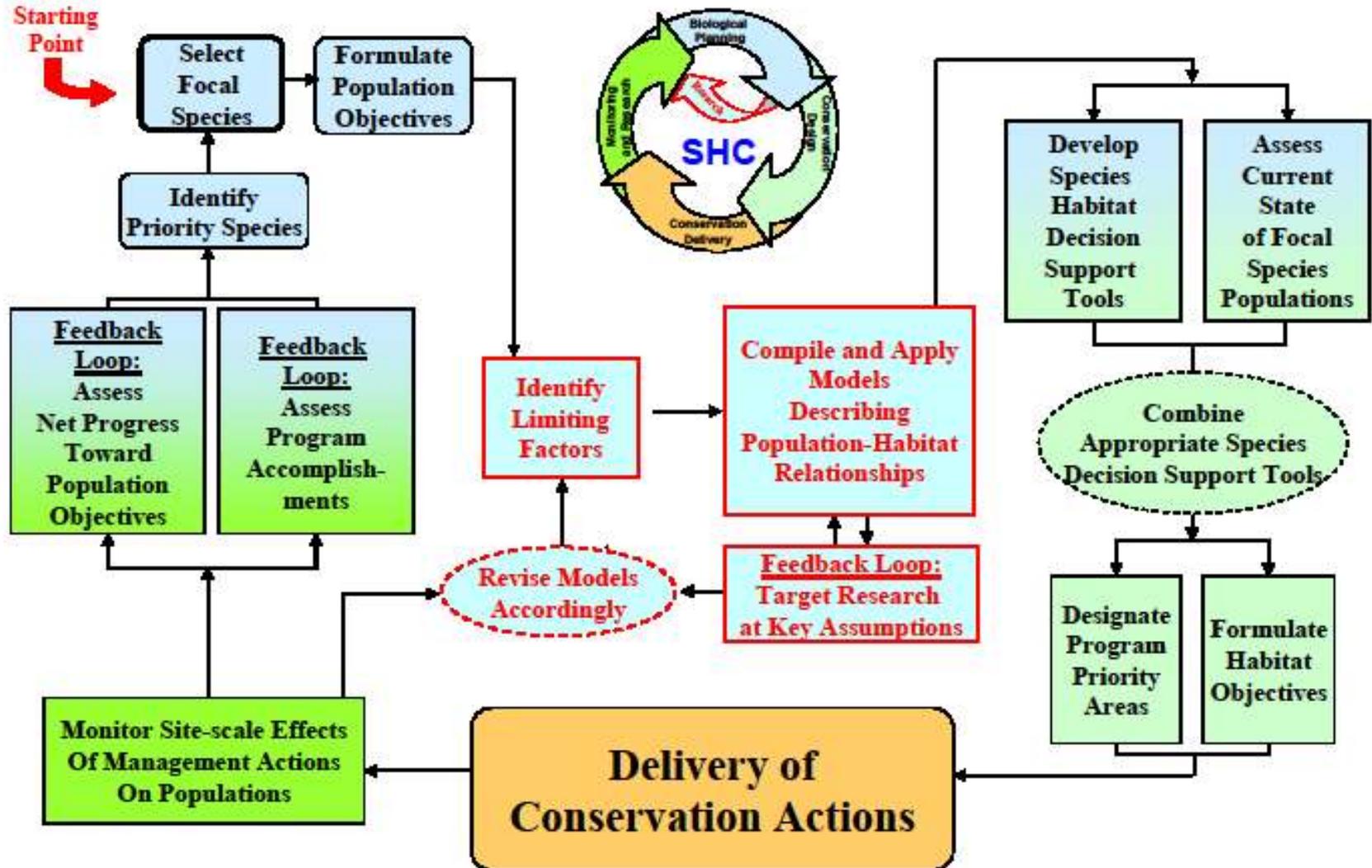
Peninsular Florida LCC Workshop

December 8-10, 2009



Strategic Habitat Conservation – current flow chart

Intuitive Starting Point



Biological Planning

Priority & Focal Species



Ecological & Management Significance

Legal Mandates

Feasibility of Implementing LT Adaptive Mgmt

Biological Planning

Priority & Focal Species

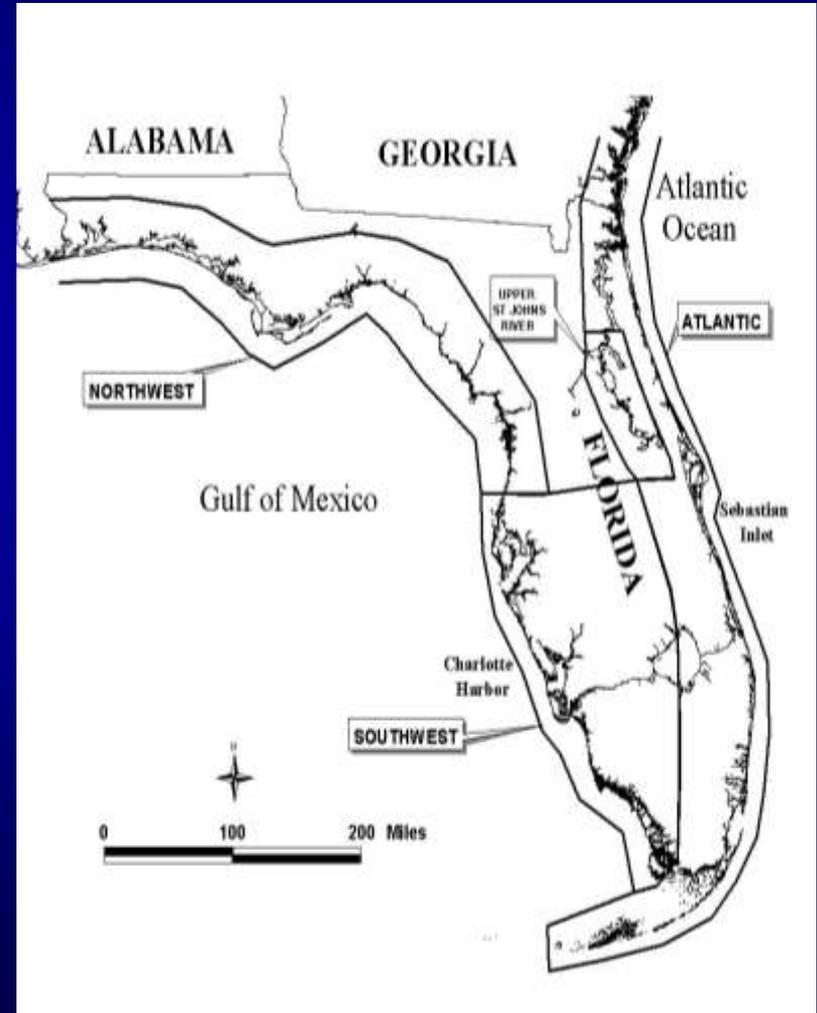


E - Marine Mammal

**FW, Estuarine &
Marine Habitats**

Herbivore

Min 3800 in FL



Research & Monitoring ➔ Biological Planning

Population Objectives

2001 Manatee Recovery Plan

- Adult survival $\geq 90\%$
- Adult females with 1st-2nd year calf $\geq 40\%$
- Population growth rate ≥ 0

All @ 95% level of statistical confidence

For each management unit over most recent
10-year period

Research & Monitoring → Biological Planning

Population Objectives

- Adult survival $\geq 90\%$
- Adult females w/calf $\geq 40\%$
- Population growth rate ≥ 0

???

???

All @ 95% level of statistical confidence

For each management unit over most recent
10-year period

Research & Monitoring ➔ Biological Planning

Population Objectives

2007 Manatee 5-Year Review

- Adult survival \geq 90%
- Stable growth rate

Over most recent 10 year period

- Model results indicate at least a 95% probability of persistence over 100 years



Population Objectives

2007 FWC Manatee Management Plan

- mature population size > 2,500 individuals
- sufficient regional adult survival rates to ensure a less than 1% probability of population declines greater than 30% (~ 60 years), given available warm-water resources;
- sufficient regional warm-water carrying capacity to ensure a less than 1% probability of population declines greater than 30% over the next three generations, given estimates of adult survival.

Research & Monitoring ➔ Biological Planning

Population Status

Management Unit	Population Growth Rate (per year)	Adult Survival Rates
NW	4.0%	96%
USJ	6.2%	96%
ATL	3.7%	96%
SW*	-1.1%	91%

Population Status & Limiting Factors

Quantitative Analysis: A First for the Five ESA Factors and for Manatees



A Quantitative Threats Analysis for the Florida Manatee (*Trichechus manatus latirostris*)

Michael C. Runge
U.S. Geological Survey, Patuxent Wildlife Research Center
12100 Beech Forest Road, Laurel, MD 20708
mrunge@usgs.gov

Carol A. Sanders-Reed
IAP World Services, Patuxent Wildlife Research Center
12100 Beech Forest Road, Laurel, MD 20708

Catherine A. Langtimm
U.S. Geological Survey, Florida Integrated Science Center
2201 NW 40th Terrace, Gainesville, FL 32605

Christopher J. Fonnesebeck
Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute
100 Eighth Avenue SE, St. Petersburg, FL 30308

Open-File Report 2007-1086
U.S. Department of the Interior
U.S. Geological Survey

March 23, 2007

THIS INFORMATION DOES NOT REPRESENT AND SHOULD NOT BE CONSTRUED TO REPRESENT ANY DETERMINATION OR POLICY OF THE DEPARTMENT OF INTERIOR OR THE FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION.

Citation:

Runge MC, Sanders-Reed CA, Langtimm CA, Fonnesebeck CJ. 2007. A quantitative threats analysis for the Florida manatee (*Trichechus manatus latirostris*). U.S. Geological Survey Open-File Report 2007-1086. 34 pp.

Biological Planning

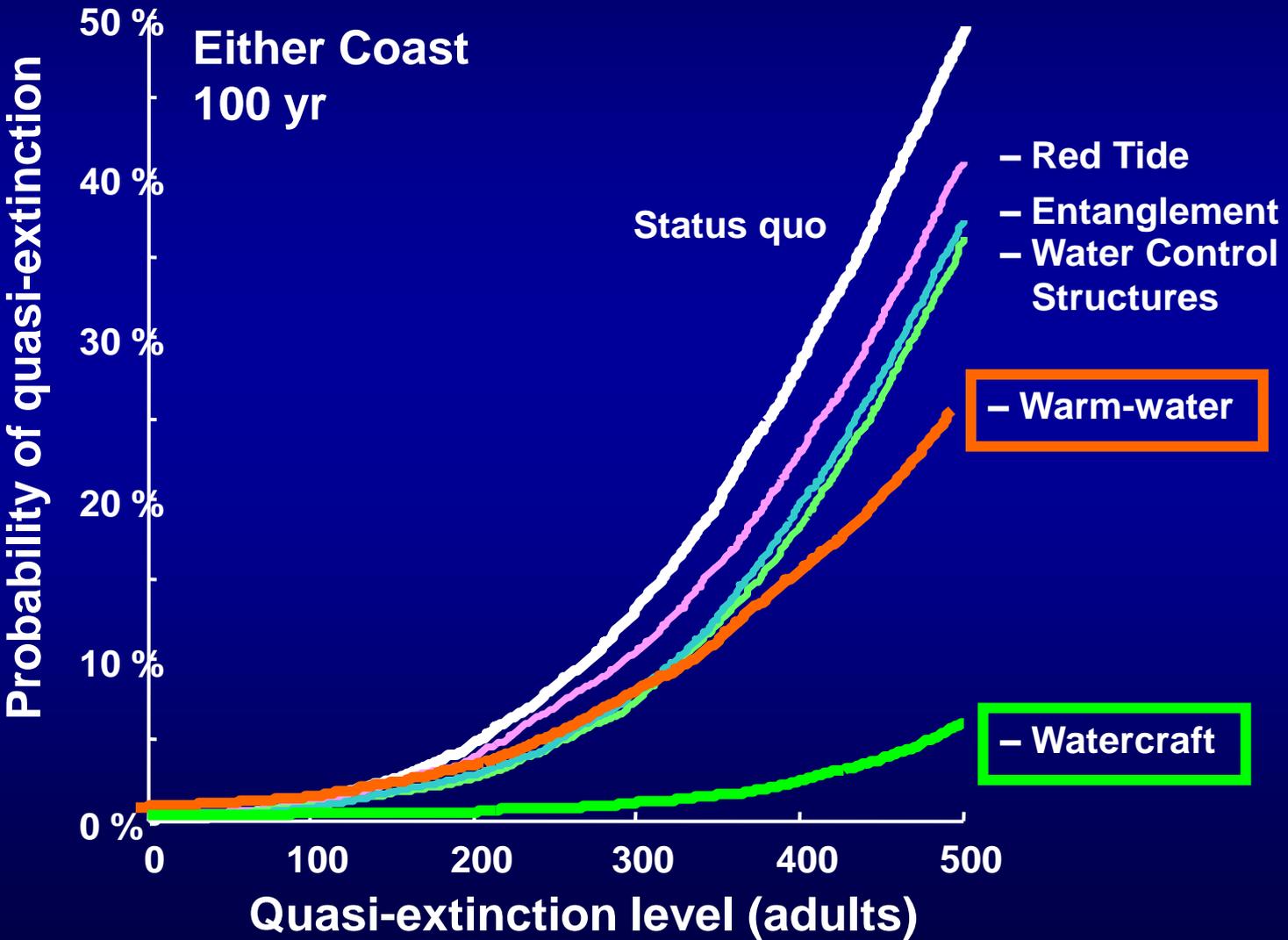
Limiting Factors

2007 Manatee 5-Year Review

Watercraft strikes
Entanglement
Entrapment / Crushing
Habitat loss



Threats Analysis Results



Biological Planning

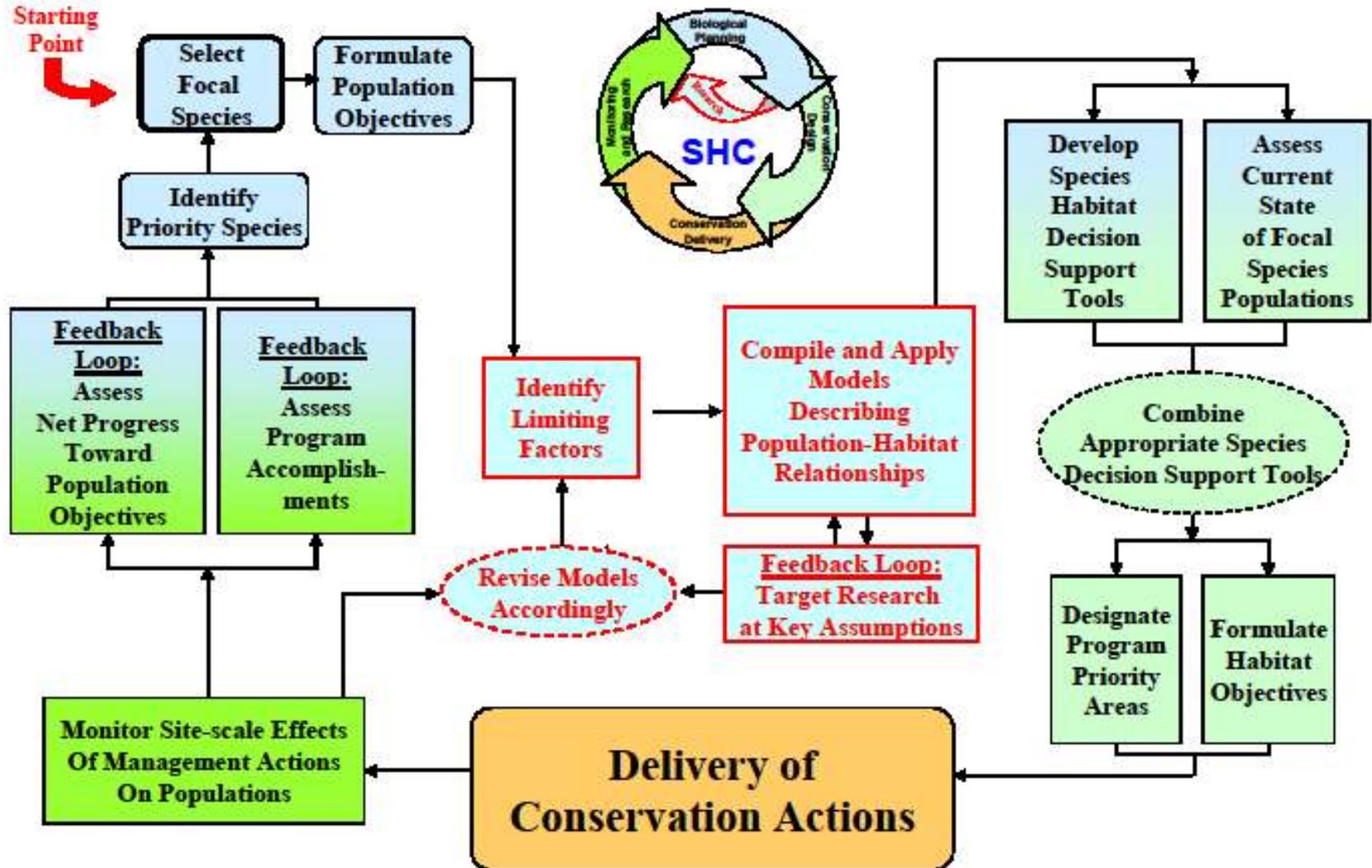
Limiting Factors

2007 Manatee 5-Year Review

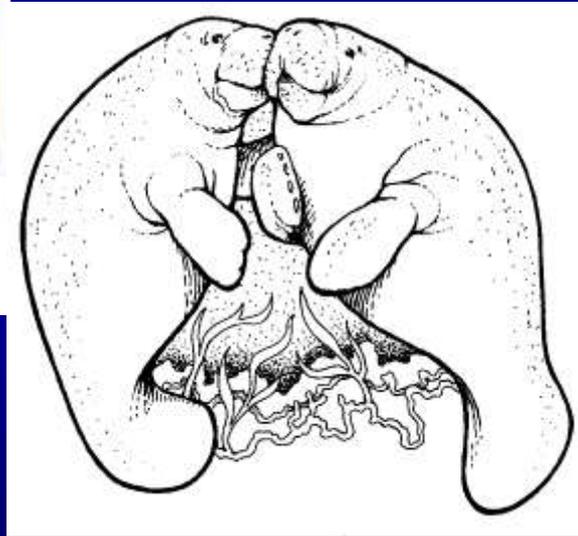
Scenario	Adult Threshold Either Coast	50 yr	100 yr
Status quo	250	2.46 %	8.60 %
–Watercraft	250	0.12 %	0.38 %
–Warm-water	250	1.66 %	4.20 %
–Red tide	250	1.84 %	6.90 %
–Water Control Struc.	250	1.18 %	4.34 %
–Entanglement	250	1.36 %	4.58 %
–Watercraft & WW	250	0.08 %	0.12 %

Strategic Habitat Conservation – current flow chart

Intuitive Starting Point



Partnering for Manatee Conservation



Reducing Watercraft Injury & Mortality

Manatee Protection Plans

Manatee Protection Zones

Law Enforcement

Education

Streamlining Permitting



Protecting & Conserving Manatee Habitat

Seagrasses

SAV

Water quality

Warm water



Conservation Design



Subtropical species with little tolerance for cold

Move into thermal refuges at temperatures ~ 68 F

Conservation Design





Conservation Design

Winter Counts 2008-2009:

FPL Ft Myers = 563

FPL Canaveral = 540

FPL Riviera = 454

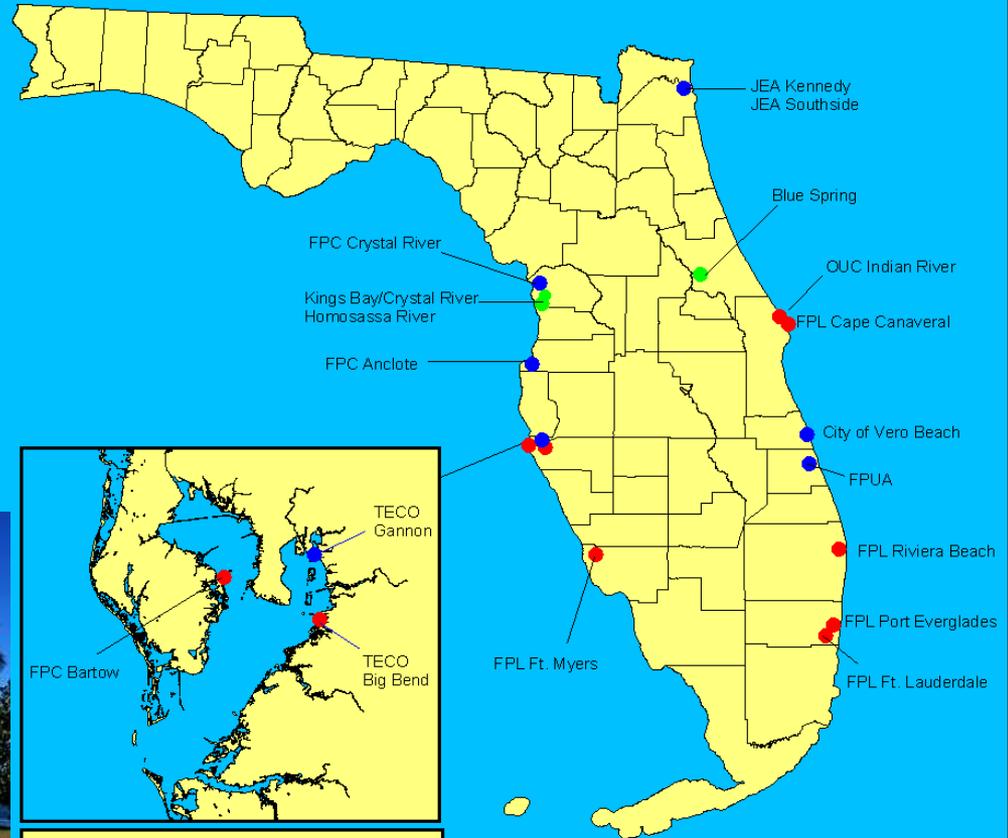
FPL Pt Everglades = 454

FPL Ft. Lauderdale = 394



Figure 3

Primary and Secondary Industrial Warm-Water Refuges in Florida

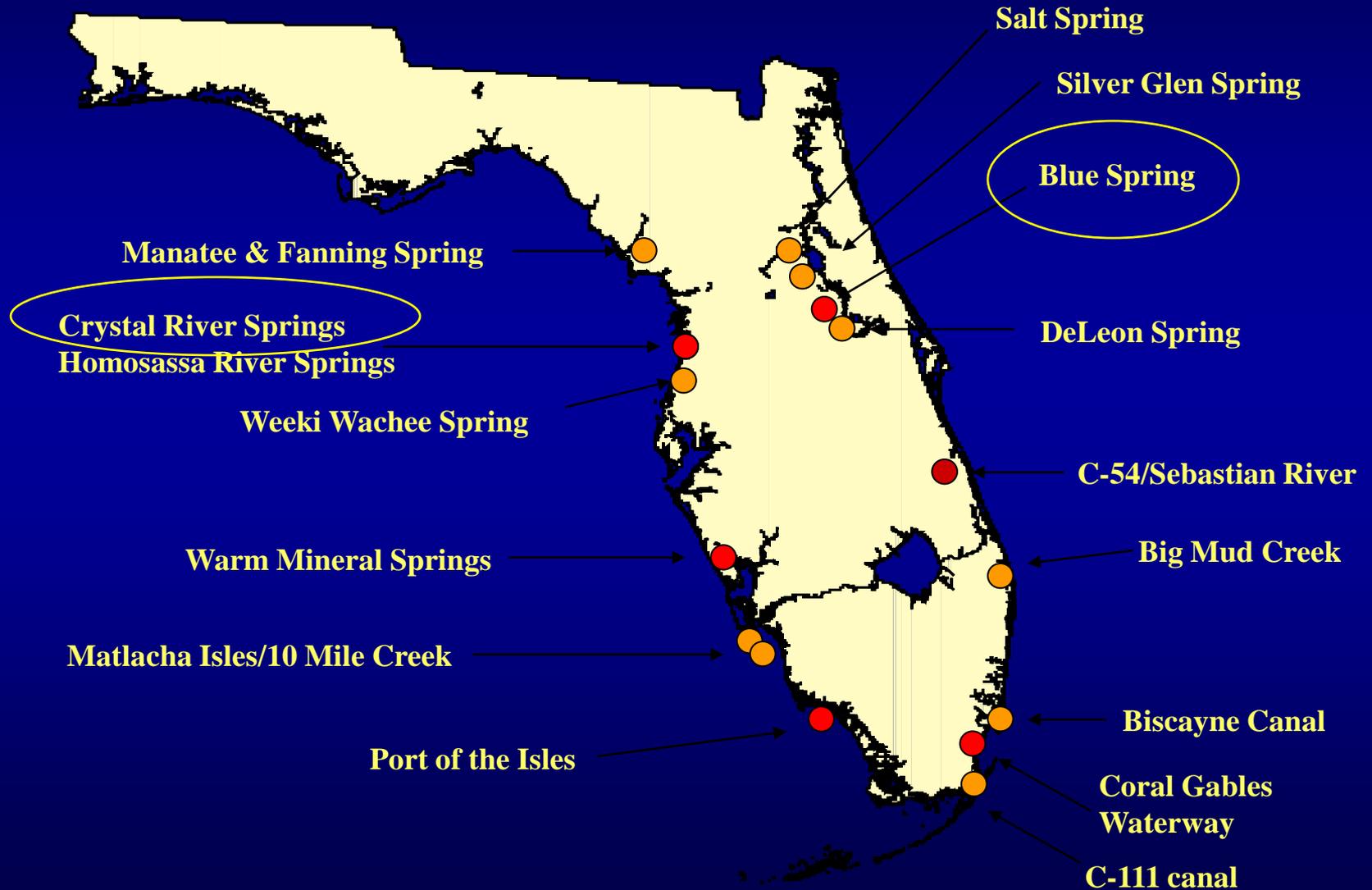


Legend

- Natural Warm-Water Manatee Refuge
- Primary Warm-Water Refuge
- Secondary Warm-Water Refuge

FPC - Florida Power Corporation
FPL - Florida Power & Light
FPUA - Ft. Pierce Utilities Authority
OUC - Orlando Utilities Commission
TECO - Tampa Electric Company
JEA - Jacksonville Electric Authority

Develop a long-term network of natural warm-water habitat



Conservation Design



Establish MFLs at Florida Springs
Increase access to springs
Benefits manatees and other species

01.09.2006

Conservation Design

Future Desired Condition



Balance natural resource conservation with human use

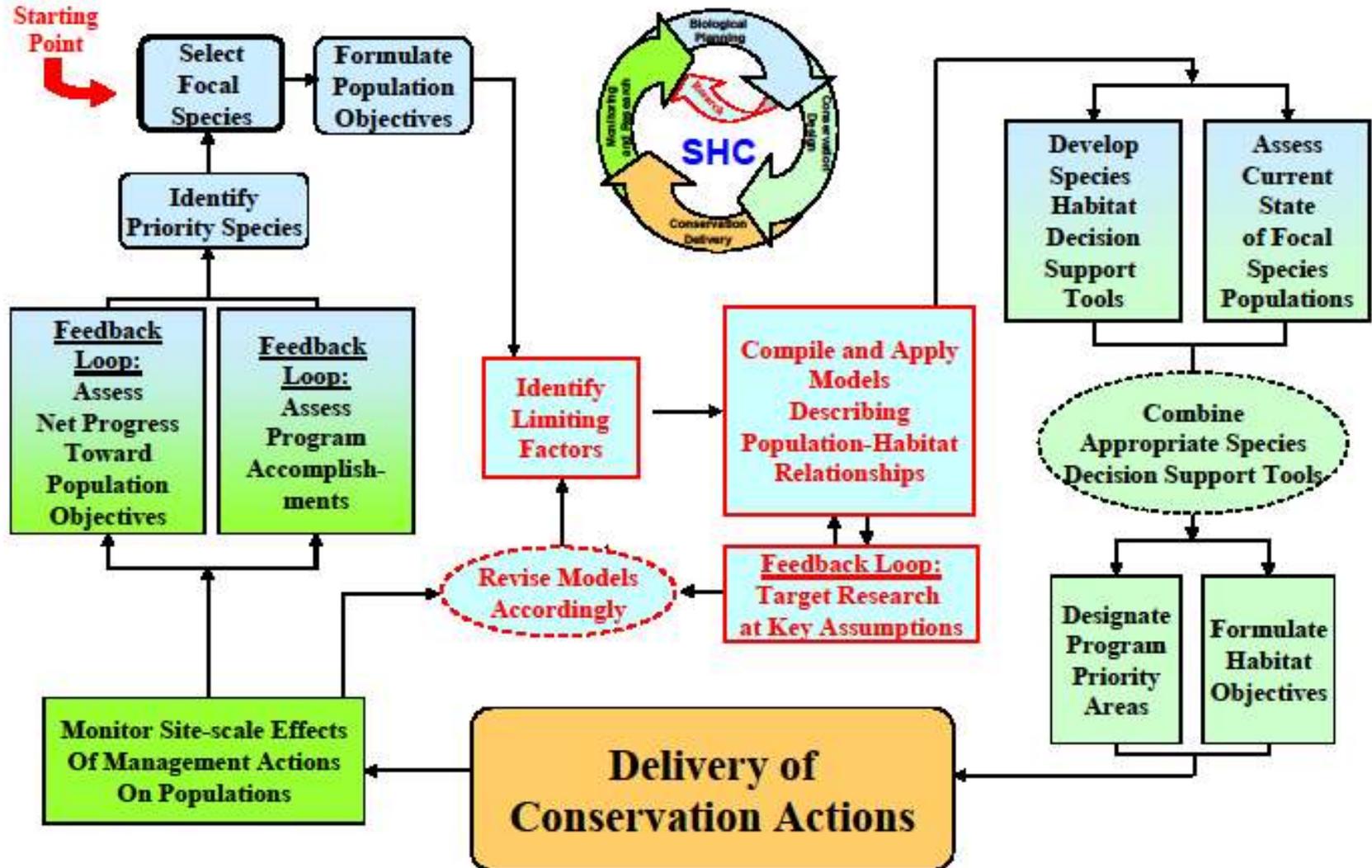


Whew, I'm
ready for a
nap...



Strategic Habitat Conservation – current flow chart

Intuitive Starting Point



Manatee Forum Membership

Boating Groups

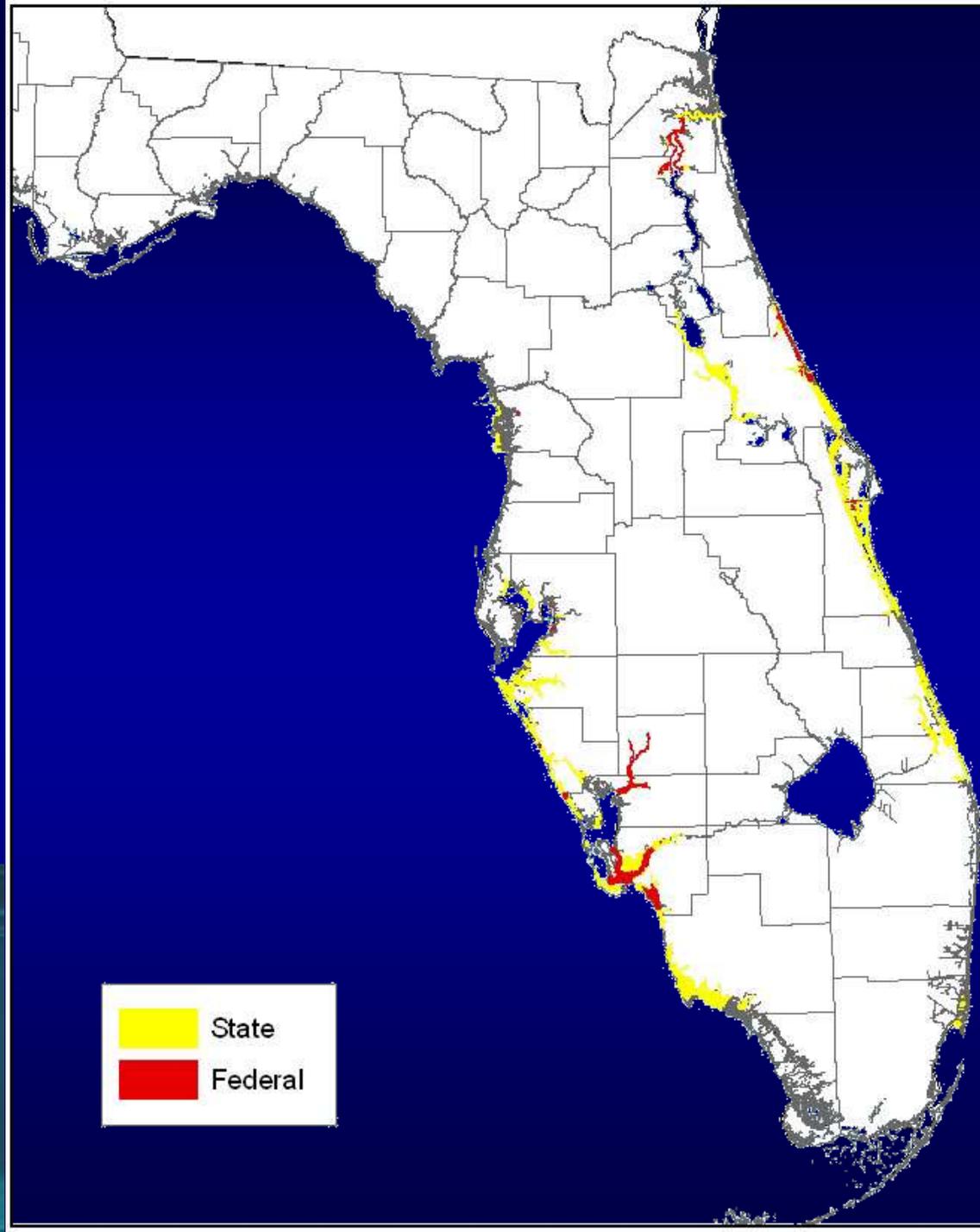


Conservation Organizations



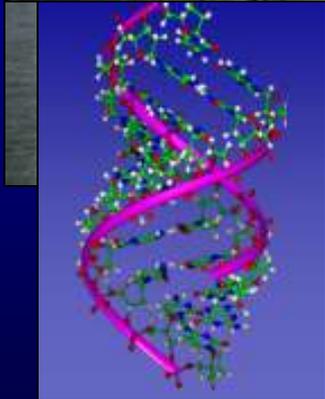
Conservation
Delivery

Manatee Protection Zones





Ongoing and Future Research Partnerships



Another Example: Anastasia Island Beach Mouse

Element 1 – Biological Planning

- 1.3 Formulate Population Objectives - **YES**
- 1.4 Assess the Current State of Species Population - **STABLE**
- 1.5 Identify Limiting Factors- **Habitat Specialist**
- 1.6 Compile and Apply Models describing pop/habitat relationships – **NO**

Element 2 – Conservation Design

- 2.1 Develop Species Habitat Decision Support Tools - **NO**
- 2.2 Designate Priority Areas – **YES, Anastasia SP, Fort Matanzas NM, GTMNERR**
- 2.3 Formulate Habitat Objectives – **NO**

Element 3 – Conservation Delivery

Partnerships – **DEP, St. John's Co, NPS**

Element 4 – Monitoring and Research

- 4.1 Target research towards resource management – **YES, Anastasia State Park**
- 4.2 Establish monitoring activities to support inferences - **YES**
- 4.3 Use Monitoring and Research in a Feedback loop-Adaptive Management - **YES**



Questions?