

Implementing SHC at the Refuge Level



Cooperative Management of the Florida Manatee

Crystal River National Wildlife Refuge

- Manatees are marine mammals able to live in salt or fresh water
- They are susceptible to cold and hypothermia and can't survive for extended periods in water below 68°F
- Warm water springs are essential to their survival



Crystal River NWR

- Located in Kings Bay (headwaters to the Crystal River)
- Established in 1983 for the protection of the endangered manatee
- 46 acres of islands, water bottoms, and seven manatee sanctuaries
- Provides critical habitat for more than 300 manatees during the winter.



Florida Refuges



**Each year, over 100,000 visitors
come to CRNWR to swim with the
manatees**





CRYSTAL RIVER

CITY HALL

123

STRATEGIC HABITAT CONSERVATION

- BIOLOGICAL PLANNING
- CONSERVATION DESIGN
- CONSERVATION DELIVERY
- MONITORING AND RESEARCH

Biological Planning

- Refuge Purposes:
 - Refuge established in 1983 under the ESA and LWCFA
 - Primarily for the protection of the endangered West Indian manatee



Biological Planning

- Comprehensive Conservation Plan currently under way



Biological Planning: Future Challenges

- How does refuge management tie into state-wide or international population goals?
- Work more closely with Ecological Services, USGS and the state to determine how refuge operations fit into overall recovery goals.

Conservation Design: Future Challenges

- No models have been developed to predict long term manatee population trends
- Work with USGS and universities to model how protecting warm springs will impact manatee recovery
- Work with partners to determine what level of human interaction manatees can tolerate

Conservation Delivery

- Like most refuges, this is probably where we contribute most to Strategic Habitat Conservation
- We participate in a variety of specific management actions to protect manatees and their habitats
- We cooperate with a large and diverse set of partners to implement these actions

Habitat Protection



**Manatee
Sanctuary**

**Nov-15
Mar-31**



Manatee sanctuaries are determined through consultation with Ecological Services and the state

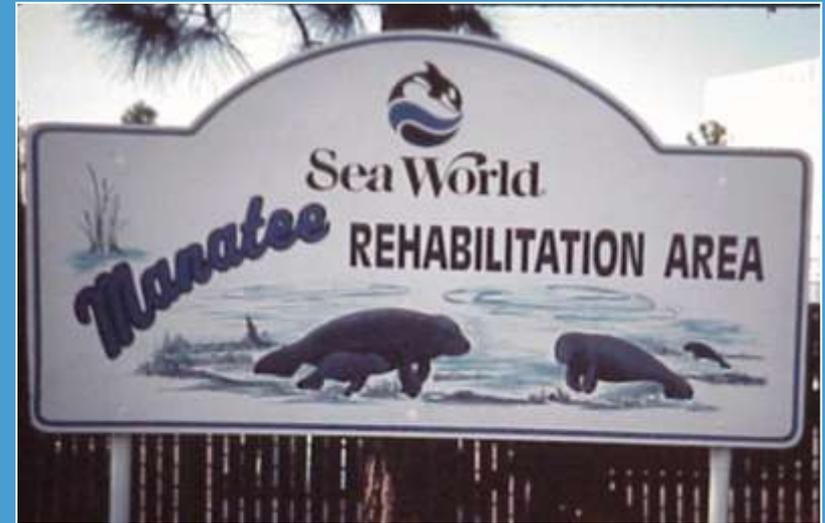
Manatee Rescue



Injured manatees are rescued in cooperation with the state, USGS and volunteers



- Once rescued, the manatee is transported to a rehabilitation center such as Sea World in Orlando or Lowry Park Zoo in Tampa.



- At the rehab center, manatees are examined and treated by state or private veterinarians. When recovered, they are released back into the wild and tracked.



Education and Outreach

- The Refuge issues Special Use Permits for commercial “swim with” operations.
- Visitors are required to watch the “Manatee Manners” video
- Manatee Watch uses volunteers to provide information about the refuge and proper ways to interact with manatees.



Law Enforcement

- Law enforcement officers from the USFWS (Refuge Officers and Special Agents), FFWCC, USCG, and County Sheriff's Dept. help to enforce the speed regulations and prevent manatee harassment.



Habitat Conservation

Three Sisters Springs



Three Sisters Project

Crystal River Florida

A partnership project of:

- The Conservation Fund
- The City of Crystal River
- The Friends of Chassahowitzka
- The Save the Manatee Club
- The U.S. Fish and Wildlife Service
- The National Wildlife Refuge Association



The Conservation Fund
America's Conservation Partner



Conservation Delivery: Future Challenges

- Are we protecting the most critical habitat?
- Are we giving the manatees enough protection? What constitutes “harassment”?
- Are we working closely enough with non-traditional partners, like dive shop owners?



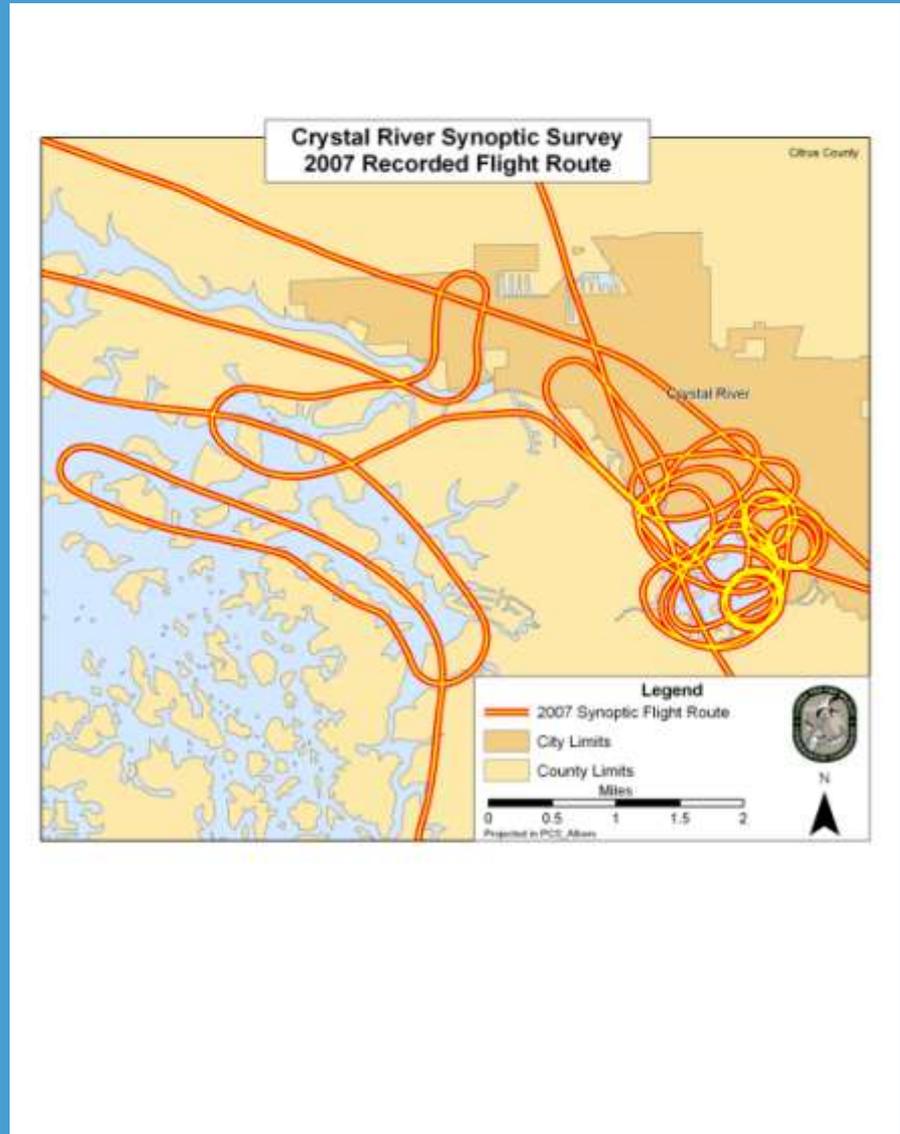
Monitoring and Research

- The refuge monitors populations and human interactions
- The refuge supports research by USGS, the state and numerous universities



Aerial Survey Monitoring

- There are estimated to be at least 3,800 manatees in Florida waters today.
- State-wide aerial surveys are conducted annually in a partnership with FFWCC, USFWS, NPS, and universities.



Manatee Health Assessments

Conducted in cooperation with USGS, the state, several universities and Ecological Services.



Monitoring and Research: Future Challenges

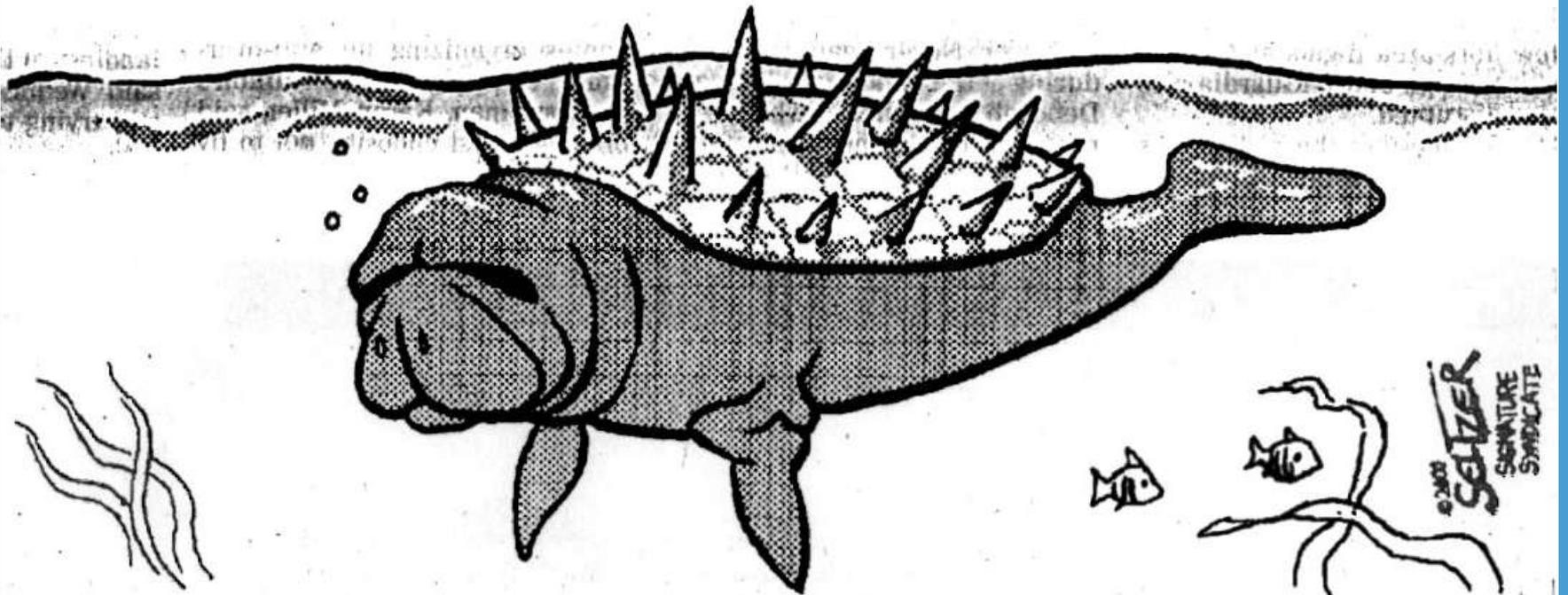
- Are we just keeping track of what's out there, or is our monitoring designed to address the success of specific management actions?
- Are we supporting research that will assist in conservation design and delivery, or simply what the researchers find interesting?

Future Partnering to Fulfill SHC

- Are we missing the “Big Questions”?
 - Is growing salt water intrusion in the bay caused by climate change?
 - If so, who can model long term effects on manatee habitat?
 - Is there any research looking into the effects on increased salinity on food availability and general health?
 - What’s causing the 2/3 reduction in fresh water spring flow?
 - How will this affect available manatee habitat?
 - Do we need to be partnering more with the state to reduce groundwater withdrawal?

The New Frontier in SHC: Genetically Enhanced Manatees!

THIS IS THE NEW GENETICALLY ENHANCED MANATEE.



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SEITZER
SIGNATURE
SYNDICATE

IF THIS DOESN'T GET YOU TO SLOW DOWN WE'RE GONNA GIVE 'EM TORPEDOES!