

# **Marine Protection & Management**

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## **Cluster 1 Management History of the FKNMS**

### **Origins of the Florida Keys National Marine Sanctuary & Zoning Map**

1. What threats did the Florida Keys face in the 1980's?
2. What impacted the reef tract in the fall of 1989?
3. How did Congress address the critical role that water quality plays in maintaining a healthy marine ecosystem in the Florida Keys?
4. What “threats” to the resources were addressed in the National Marine Sanctuary Act?
5. What was/is the purpose of the Sanctuary Advisory Council (SAC)?
6. Why is management of the sanctuary a cooperative effort between state and federal agencies?
7. Who was involved in the development of the final management plan? What role did each entity play?
8. Why is the Florida Keys National Marine Sanctuary so important to the citizens of the United States?
9. What kind of zones did the management establish within the boundaries of the Sanctuary?

### **Plan released for Tortugas Ecological Reserve**

1. What is contained in the Draft Supplemental Environmental Impact Statement (DSEIS)?
2. What period began with the release of the DSEIS?
3. What Sanctuary regulations would be applied to the ecological reserve and what does this entail?
4. In what ways will the establishment of the Tortugas Ecological Reserve help protect habitat complexity and water quality in the Tortugas?
5. Why is the Tortugas an ideal place for the establishment of an Ecological Reserve?

### **Other Planning Efforts for the Tortugas**

1. What national park is in the vicinity of the proposed Tortugas Ecological Reserve (TER)?
2. What did the Florida Fish and Conservation Commission (FWC) vote to do in December 1999?
3. What is the Gulf of Mexico Fishery Management Council planning to do in federal waters that are part of the proposed ecological reserve?
4. What did the agencies involved in the Tortugas process seek from individual citizens and user groups?

### **Tortugas 2000 Milestones**

1. What was the name given to the working group established to make recommendations on the proposed Tortugas Ecological Reserve?
2. What action was taken by the SAC in June 1999?

### **International Designation (Particularly Sensitive Sea Area PSSA)**

1. What does the proposal ask of the International Maritime Organization (IMO) with respect to the Florida Keys?
2. How will the adoption of the no-anchoring areas in the plan for the Florida Keys help protect the coral reefs from being damage by large international ships?
3. What must nautical charts throughout the world display now that the IMO has adopted the new designation and protective measures?

### **Tortugas: A Legacy of Ocean Wilderness**

1. Why is it fitting for focus to be placed on the coasts and oceans in the 21st century?
2. What does marine zoning do in terms of human activities?
3. What are three types of zones used in the Sanctuary since 1997?
4. What role did scientific information play in designing the new Tortugas Ecological Reserve?

5. What about input from the public and user groups?
6. What has shown that single-species issues or single-issue policies not successful for managing complex ocean resources?
7. When can marine reserves serve to restore ecological function to an area?
8. How do adjacent areas benefit from marine reserves?
9. What is probably the most important reason for establishing a reserve to protect the Tortugas area?
10. What points to the diversity of the Tortugas Reserve?

### **Florida Cabinet Supports Sanctuary Management Plan**

1. What does the accepting of the Sanctuary's five-year report on implementation of the management plan by the Governor and Cabinet signify?
2. What did the Governor and Cabinet stipulate when the management plan was adopted in 1997?
3. What management actions will be taken in the new five-year management plan?

### **Fishcount Marks Dedication of New Reserve**

1. Where are the Tortugas located and what natural resources are found there?
2. Why is protecting Riley's hump important to snapper, grouper and other fish?
3. What threatened even the remote reefs of the Florida Keys National Marine Sanctuary?
- 4a. What kinds of activities are permitted and prohibited in Tortugas North?
- 4b. What activities are permitted in Tortugas South?

### **Governor and Cabinet Approve Dry Tortugas Regulations**

1. Who had to approve the new managing regulations of the Dry Tortugas National Park?
2. What two zones are in place in the Dry Tortugas National Park and what activities are allowed in each of these zones?
3. Why is the Dry Tortugas important for Florida's ecology?

4. What was established in 2001 and what agency manages this zone?
5. What two agencies co-manage the state and federal waters of the Florida Keys National Marine Sanctuary?

### **Discover the Keys at the New Eco-Discovery Center**

1. Where is the Eco-Discovery Center located?
2. Who is the audience for the center and what does it attempt to convey to visitors?
3. What model is found in the center and what does the real structure allow scientists to do?

### **Discussion Questions**

1. Why do you think it is important to monitor coral reefs and fish populations in the newly protected Tortugas Ecological Reserve?
2. Why do you think it was important to have input from fishermen, the public, and scientists in formulating the plans for the Florida Keys National Marine Sanctuary and Tortugas Ecological Reserve? Who else might be involved?
3. What is the value of a management plan? Explain why such a plan is important.

### **Extension Ideas**

1. Use internet resources to describe the process of designating the Northwestern Hawaiian Islands Coral Reef Reserve. Do plans exist to establish this area as a new National Marine Sanctuary? If so, what is involved in this process?
2. Investigate the ocean currents that influence the distribution of marine larvae from the Tortugas region. Explain why currents are important to maintaining healthy populations of marine organisms in the vicinity of the Keys.
3. The Florida Keys National Marine Sanctuary is part of the National Oceanic Atmospheric Administration (NOAA) in the Department of Commerce. The Dry Tortugas National Park is managed by the National Park Service in the Department of Interior. In what ways are the two agencies different and in what ways are they similar? Research the origins of the National Park Service and the National Marine Sanctuaries Program.

## **Cluster 2 Reef Management Issues and MPAs**

### **Sister Sanctuary in China Installs Mooring Buoys**

1. Who designed and installed the first mooring buoy?
2. What is the name of the sister Sanctuary of the Florida Keys National Marine Sanctuary (FKNMS) and where is it located?
3. Explain the cooperative agreement signed between the National Oceanic and Atmospheric Administration (NOAA) and the State Oceanic Administration (SOA) of China's State and Technology Commission.
4. What kinds of projects are taking place between Rookery Bay National Estuarine Reserve and their sister nature reserve in China?
5. What was the original basis for the agreement between China and the US?

### **Sanctuary Collaborates with International Partners**

1. What does the Florida Keys National Marine Sanctuary have to offer to international marine managers?
2. What is a MPA?
3. What can be said about the strategies employed by FKNMS in managing the resources of the Sanctuary?
4. What else does the Sanctuary offer to international visitors?

### **Reef Users Support Sanctuary Preservation Areas**

1. What method was employed to find out the economic contribution of coral reefs to four counties in southeastern Florida?
2. Who was surveyed to obtain data for the study?
3. What was learned about the perceptions and attitudes of Monroe County residents toward the fully protected no-take zones known as Sanctuary Preservation Areas (SPAs)?
4. Would Monroe County residents be willing to extend the no-take zone management tool? If so, how much would they like to extend the zone management tool?
5. What was learned about the attitudes of residents living in other southeastern counties in Florida toward the fully protected ("no-take") zones?

## **Mooring Buoys**

1. What is the involved in installing and maintaining mooring buoys in the Florida Keys National Marine Sanctuary?
2. What other kinds of buoys are maintained by the buoy team?
3. Why are buoys an important management tool in the Sanctuary?

## **Restored Reef Chosen as Site for Underwater Geodetic Marker**

1. How will the marker benefit local boaters and local natural resources?
2. What is unusual about the site chosen for the underwater marker?

## **MPA Advisory Committee Issues Report**

1. What is the MPA Federal Advisory Committee and why was it established?
2. What are some of the purposes that MPAs have been established?
3. What are some examples of MPAs?
4. Marine zoning is sometimes used as a tool for managing marine resources in MPAs. What kinds of activities might be prohibited in a marine zone?

## **Seaflower MPA Protects Marine Resources in the Caribbean**

1. What are the Seaflower MPAs and where are they located?
2. What other designation by the United Nations has the area received?
3. What is CORALINA and why was it established?
4. What was the objective of the International Advisory Board (IAB)?
4. What recommendations did the IAB make?

## **Discussion Questions**

1. What is the value of collaborating with international partners who also manage marine resources?

2. What is the value in knowing that citizens of South Florida counties are willing to have new fully protected zones set aside?
3. Explain the ways that a system of marine zones might be a useful tool when managing a Marine Protected Area.

### **Extension Ideas**

1. Investigate the role that the United Nations plays in protecting and managing coral reefs of the world.
2. Choose a marine protected area that is not in the US or its territorial waters. Investigate the natural resources and how they are managed by the agency designated by the foreign government.

## **Cluster 3 Water Quality Management Issues and Education**

### **People Can Make a Difference in Water Quality**

1. Why has the Sanctuary Advisory Council (SAC) of the Florida Keys National Marine Sanctuary named water quality as its number one priority?
2. What characteristic of the limestone makes it easy for chemicals or other substances deposited on the ground to reach the groundwater and eventually the nearshore waters?
3. How is Advanced Wastewater Treatment (AWT) of sewage expected to benefit marine ecosystems in the Keys?
4. What kind of organisms can undergo a sudden population explosion when there are excess nutrients in nearshore waters? What can be detrimental about this kind of event?
5. Why shouldn't residents who live on canals or coastal areas throw lobster and fish carcasses into the water?
6. What can boaters do to reduce impacts to water quality in Keys waters?
7. How can residents and business owners reduce runoff from their properties into nearshore waters?

### **Sanctuary Reaches Higher Level of Protection**

1. What designation has been given to the state waters of the FKNMS?
2. What was the role of the US Environmental Protection Agency in forming the NDZ?

3. What did the Sanctuary's Water Quality Steering Committee propose for federal waters?
4. How do Type I and Type II MSDs (Marine Sanitation Devices) contribute to poor water quality?
5. Under what conditions do coral reef ecosystems thrive?
6. Why is it important to eliminate a source of nutrients into Keys waters?
7. What can marina owners do if they want to install a pump-out station at their marina?
8. What will be included in the NDZ implementation plan and who is involved in developing it?

### **Coral Reef Task Force Passes Water Quality Resolution**

1. What is the US Coral Reef Task Force and how was it established?
2. According to the "Wider Caribbean Water Quality" resolution, what is responsible for nutrient rich wastewater entering the nearshore coral reef ecosystem of the Keys?
3. What watershed to the north contributes to Keys waters?
4. How will the implementation of the Comprehensive Everglades Restoration Program (CERP) affect flows into the Keys from the Everglades?  
(What factors will be controlled?)

### **TNC's Keys Watch Volunteers Test Keys Canal Waters**

1. What do high levels of enterococcus bacteria in Keys canal waters indicate?
2. What agency has set a recommended guideline for levels of this bacterium and why was this guideline set?
3. How did heavy rains appear to affect the level of enterococcus in canals?
4. The six sites with high bacterial levels are being screened further for viral pathogens. What do scientists expect to learn from the results of this screening?

### **Keys Community Outfitted with Advanced Wastewater Treatment**

1. What does advanced wastewater treatment remove from sewage ?

2. What standards have been set for sewage treatment in the state of Florida and by what date are those standards expected to be met?
3. What agencies were involved in securing funds for this plant? For each agency, indicate whether it is a local, state or federal entity.
4. Describe what is involved in the scientific study that is being conducted on the treatment plant (before and after installation)?
5. How is this plant expected to improve nearshore water quality?

### **Water Quality Answers for the Florida Keys**

1. What term is used to describe the condition of water found in the nearshore areas of the Florida Keys?
2. What does a coral reef look like when it has been exposed to nutrients in high levels?
3. What causes a coral reef or seagrass bed to become eutrophic?
4. In your own words, describe why water quality is important to the people and ecosystem of the Florida Keys.
5. What can the individual person do to reduce impacts to nearshore waters?
6. What is the Water Quality Protection Program and who administers this program?
7. You live in a house on a canal. You apply fertilizer to your lawn. A few minutes later, it rains heavily for several hours. The next day, the canal water is pea green and you can't see the bottom like you usually can. What caused the water to turn green? (What is taking place in the water?)
8. You are a scientist who has been called to the scene of a "fish kill", where you observe dead fish floating on the surface and fish coming to the surface to gasp for air. You have your test kit and equipment with you. What will you measure first to see why the fish are dying and why did you measure it?
9. You are a scientist who is sent to test the water quality of Keys beaches. After getting a very high reading of fecal coliform bacteria, you post a sign closing the beach to all swimmers. What does the presence of fecal coliform indicate and why is it important to close the beaches to bathers?

## **Discussion Questions**

1. Why has water quality been identified as one of the major concerns of the Sanctuary Advisory Council (SAC)? What are the specific concerns that people have? Support your answer with information and examples.
2. What are some of the ways that poor water quality is being addressed in the Florida Keys National Marine Sanctuary?

## **Extension Ideas**

1. Describe the process used to treat sewage to Advanced Wastewater Treatment standards.
2. Investigate the effects of phosphorus waste from agricultural practices on the plant community of the Everglades wetlands.
3. Investigate to find the most recent results from testing canal waters in the Keys. Explain what these results suggest in terms of water quality in Keys canals.
4. Use internet resources to investigate what caused micro-algal (phytoplankton) blooms in Florida Bay in the early 1990's. What wide-spread mortality events were associated with the microalgal blooms(also called phytoplankton blooms) coming out of Florida Bay?

## **Cluster 4 Miscellaneous Management Issues**

### **Personal Watercraft Issue Addressed by SAC**

1. What did the Sanctuary Advisory Council (SAC) ask the Superintendent of the Sanctuary to do in regards to Personal Watercraft (PWC)?
2. What did the Personal Watercraft (PWC) Working group recommend after meeting twice?
3. Describe the steps involved in the process of establishing a workable strategy.
4. What are the two additional steps that the Sanctuary has taken recently to alleviate user conflicts and natural resource violations associated with PWC use?

### **Exotic Batfish Become Part of Educational Exhibit**

1. Where do the Pacific batfish removed from Sanctuary waters now reside? What is the purpose of the exhibit?

2. How did the batfish most likely arrive at Molasses Reef in the Florida Keys?
3. What could happen if several batfish were released in Keys waters and survived?

### **Seagrass Outreach Partnership**

1. What issue does the Seagrass Outreach Partnership (SOP) address?
2. What is the purpose of the Seagrass Outreach Partnership?
3. Who are the partners in the partnership (do not name them specifically)?
4. What should you do if you find that you are in water too shallow to operate?
5. Who should you contact if you need assistance?

### **Seagrass Awareness Month Celebrated in Florida**

1. What did the proclamation signed by the Governor of Florida state about seagrass?
2. What is the purpose of Seagrass Awareness Month?
3. Describe why seagrasses are important ecologically.
4. According to a 1995 aerial survey, what has happened to 30,000 acres of seagrass in Monroe County?
5. What can boaters do to prevent damage to seagrasses?
6. What methods are the seagrass outreach partnership (SOP) using to get the word out about protecting seagrass from boating damage?

### **SAC Finds Consensus on Marine Mammal Issue**

1. Who asked the Sanctuary Advisory Council (SAC) to become involved in the local stranding network for dolphins and whales?
2. Who is charged with overseeing stranding coordination and what act designated this agency?
3. What were the two recommendations made by the SAC after listening to and asking questions of the local marine mammal rescue organizations?

### **Cousteau Kicks off Seagrass Celebration**

1. What did Jean-Michel Cousteau point out about coral reef and seagrass meadows?
2. Why was World Wide Sportsman a perfect location for the Seagrass Festival?
3. Describe some of the things that people attending the event could learn and observe.

### **Big Boat on Patrol in Tortugas Waters/Law Enforcement from ATBA to Wildlife Violations**

1. Where does the FWC big boat patrol and why is it necessary to patrol this area?
2. Who is cross-deputized and what does that mean?
3. Why was the vessel named the R/V *Peter Gladding*?

### **Discussion Questions**

1. How does the sanctuary deal with "conflicts" or competition between "users" of the natural resources? Give specific examples.
2. Why is the role of the Sanctuary Advisory Council (SAC) an important one in terms of managing resources and outreach and education? Explain.
3. What are some of the ways that the Seagrass Outreach Partnership is reaching out to boaters and others about the seagrass damage issue?
4. What else do you think could be done to reduce the seagrass damaged by boaters?
5. What are some of the management "tools" used by the Sanctuary and how does each tool protect the natural resources?
6. What is the value in having a celebrity promote awareness about a particular resource issue?
7. What are some of the other educational and outreach methods used to disseminate a resource message to the public?

### **Extension Ideas**

1. Investigate the effects of an exotic marine species on native marine life. Some possible examples would be the zebra mussel, spiny waterfleas, sea lampreys, etc.).

2. Investigate and describe the ways in which user conflicts are addressed in other National Marine Sanctuaries or National Parks.