Restoration Research & Programs

Cluster 1 Coral Reef Restoration

Reef Restoration Planned for the *Wellwood* Site

1. What is the purpose of the restoration module?

2. What design features are built into the modules and how do these features mimic the natural reef?

3. In what ways did Hurricane *Georges* make the damage worse at the injury site?

4. If the modules were not placed on the damaged site, what might occur during the next hurricane or tropical storm?

5. What restoration steps were taken by the Sanctuary shortly after the grounding?

6. Where did the funds to restore the *Wellwood* site originate?

Biological Restoration Begins at Molasses SPA

1. What event marked the completion of the physical restoration at the Wellwood site on Molasses Sanctuary Preservation Area (SPA)?

2. What is the goal of the restoration process?

3. Why is it important to design an aesthetically pleasing restoration solution for this site?

4. What have biologists done to foster the settlement of young corals onto the uncolonized site?

5. What is the purpose of the five-year reef REEF fish monitoring project at the injured site?

Reef Medics to the Rescue

1. What is the reef medics program?

2. What is the primary focus of Reef Medic Volunteers during a grounding incident?

Cultured Corals Transplanted to *Wellwood* Site

1. Describe how the staghorn corals were cultured before being transplanted?

2. Where were the corals transplanted and how were they fixed onto the modules already placed on the restoration site?

3. What did the author observe during about the cultured corals during an outbreak of an unidentified disease?

Rescued Corals Transplanted to Aquarium

1. Why did these corals have to be rescued from their habitat along the seawall?

2. What are research scientists studying using the rescued corals?

3. What happened to corals that were not donated for research purposes?

Reef Restoration Takes on Many Forms at M/V *Wellwood* Site

1. How long has the sanctuary been involved in restoration of damaged reef sites?

2. What kind of scientific research is being conducted on the Wellwood site?

3. What is encouraging about the findings from this study?

4. What do surveys of fish and lobsters show about the reef restoration modules?

5. What is being transplanted to the site and why?

Discussion Questions

1. What is the difference between biological and physical restoration?

2. Describe what you would expect to see in time after physical and biological restoration methods have been used to restore a damage coral reef site.

3. Do you think it is possible to restore the coral reef to 100% of its original condition? Why or Why not?

4. What benefits are derived from monitoring the growth of new corals and fish populations at the site? (Hint: How does this help biologists working on restoration projects in the future?)

Extension Ideas

1. Investigate and describe the kinds of coral culture work that is being conducted regarding Florida's coral reefs.

2. Investigate and describe the kinds of research being conducted using coral specimens living in aquaria (as opposed to those in nature).

Cluster 2 Seagrass Restoration

Seagrass Prop Scarring Photo Essay

1. How were the parallel prop scar created in the example given in the photo essay?

2. What action taken by the boat operator created the blow-hole in the sediment?

3. What happened to the sediment excavated by the propwash?

4. What features are visible in an aerial photograph of the damaged site?

Damage Assessment Team Surveys Groundings

1. What activity follows the initial site inspection after a grounding incident?

2. What do the Sanctuary Damage Asssessment and Restoration Biologists use the Global Positioning System (GPS) receiver for?

3. What is the purpose of a flyover?

4. What system is used to store map and site data?

5. What information is used by Sanctuary Damage Assessment and Restoration Biologists to predict recovery rates?

Scientist Shares Research on Seagrass Restoration

1. Why are Cuban shoal grass and Manatee grass considered to be the "shrubs and ground cover" species of seagrass?

2. Why is turtle grass considered to be the “redwood” of seagrasses?

3. Discuss the many things that could prevent a seagrass injury from healing on its own.

4. The “modified compression succession technique” is used to “jump start” the restoration process at the injury site. What is the primary tool used in water three feet or less when using this restoration technique?

5. Which seagrass grows first at the base of the bird stakes and how does this new growth promote healing at the site?

6. When are sediment tubes used and how do they help promote regrowth?

Biologists and Birds Restore Seagrass Injuries

1. What supplies the jolt of fertilizer to promote the growth of colonizing shoal grass beginning to grow at the base of the bird stakes?

2. What does the National Marine Sanctuaries Act authorize NOAA to do in the event of a grounding that results in loss of seagrass habitat?

3. Why are seagrass meadows important for marine life?

4. What should boaters do if they make contact with the sea bottom? Why shouldn’t boaters attempt to “power off” the flat?

Discussion Questions

1. In your opinion, is it possible to restore damage done to either a seagrass or coral reef site to exactly what it was before the damage occurred? Why or why not? Support your opinion.

2. Describe how the damage done to coral reefs/seagrasses by boaters could have been prevented. What actions could be taken by boaters to reduce their impacts? What actions could be taken by the Sanctuary to reduce damage?

3. Why is it preferable to prevent damage from ever taking place as compared to restoring a damaged area?

Extension Ideas

1. Investigate restoration being carried out on a land community. Describe how this restoration is achieved and what challenges are faced in the process. Compare the process involved in land-based restoration with what is involved in restoring a seagrass habitat?