

**U.S. Department of the Interior
National Park Service**

**Record of Decision
Coral Reef Restoration Plan/Programmatic Environmental Impact Statement
Biscayne National Park
Florida**

The Department of the Interior, National Park Service (NPS) has prepared this Record of Decision on its Coral Reef Restoration Plan/Final Programmatic Environmental Impact Statement (Plan/PEIS) for Biscayne National Park (BISC) in accordance with the requirements of the National Environmental Policy Act of 1969, as amended (NEPA), its implementing regulations (40 Code of Federal Regulations [CFR] 1500-1508), and Director's Order #12 (DO-12), Conservation Planning, Environmental Impact Analysis and Decision-Making and accompanying DO-12 Handbook. This Record of Decision includes a summary of the purpose and need for action, a description of the selected action, requirements and mitigation measures to minimize environmental harm, a synopsis of the other alternative considered, the basis for the decision, and an overview of public and agency involvement in the decision-making process. A determination that the selected alternative will not cause impairment of park resources or values, as prohibited by the NPS Organic Act, is attached.

PURPOSE AND NEED FOR TAKING ACTION

Many vessel groundings occur annually in BISC, causing injuries to submerged park resources. When such injuries occur, and the responsible party is identified, the NPS may seek damages under the Park System Resource Protection Act to restore the injured coral reef. The goal of coral reef restoration actions in the park is to create a stable, self-sustaining reef environment similar to that which existed prior to injury, such that natural recovery processes, enhanced through mitigation, if needed, will lead to a coral reef community with near-natural complexity, structure, and make-up of organisms that provide near-natural ecosystem services. Performing restoration is intended to assist the NPS in fulfilling its purpose of preserving and protecting the coral reef resources located within the park.

It can take decades for coral reefs to recover from grounding injuries, and in some areas, they may never grow back. Because of this slow, and sometimes incomplete, natural recovery phase, there may be a need to perform active restoration to help accelerate reef recovery. Timely implementation of restoration projects can prevent injuries from expanding in size or increasing in severity and ensure site conditions necessary to expedite recovery to pre-incident conditions. In addition, decreasing the time it takes to plan and implement coral reef restoration reduces the interim ecosystem service losses that result from injuries.

The Plan/PEIS provides a systematic approach to addressing injuries to coral reefs caused by vessel groundings within BISC. Restoration typically involves a planning phase and an implementation phase. The purpose of the Plan/PEIS is to assist the NPS during the planning phase of future reef restoration projects by guiding the selection of restoration actions. The Plan/PEIS identifies a set of

restoration actions to address restoration of a variety of coral reef injuries. This “toolbox” of restoration actions is proposed as a guide for planning future coral reef restoration projects in BISC. Once an injury occurs, the NPS can use the guidelines in the Plan/PEIS to determine the need for action more rapidly. Decreasing the time needed for planning and implementation can prevent injuries from expanding in size or increasing in severity and can expedite recovery.

DECISION (SELECTED ACTION)

The NPS has selected Alternative 2, Restoration Using a Programmatic Approach, as described fully and identified as both the NPS preferred alternative and the environmentally preferred alternative in the Plan/PEIS. Detailed analyses of both this alternative and the No Action alternative were presented in the Plan/PEIS, which was released to the public for the required 30-day no-action period beginning May 6, 2011, and ending June 6, 2011. The selected action, as described in the Plan/PEIS, involves the use of a systematic approach to select suitable coral reef restoration actions from a toolbox containing viable restoration actions previously analyzed and judged suitable under specified conditions. Table 1 summarizes the toolbox of restoration actions and lists restoration objectives, actions, and methods evaluated for each of the injury types typically caused by vessel grounding incidents. It also presents additional issues for consideration for each of the restoration actions.

As restoration technology advances and as new restoration actions are identified, the NPS may choose to evaluate options not included in the toolbox under the selected action. Consideration of restoration options outside of those listed in the toolbox or any future action to expand the restoration toolbox from the restoration actions in Table 1 will be done in compliance with NEPA and DO-12.

Prior to implementing restoration actions at any injury site within BISC, NPS will undertake an evaluation process to identify the appropriate restoration actions. That evaluation process will include a resource injury assessment performed by park biologists to characterize and quantify the injuries and the loss of services that the injured resources had provided. Once the resource injury assessment is complete, park biologists will use the toolbox to determine which restoration actions are appropriate for the specific conditions at the injury site. A site-specific restoration plan will then be developed that specifies the restoration actions and methods to be used. A monitoring plan to evaluate restoration progress is included in each site-specific restoration plan developed following a vessel grounding. Detailed monitoring plans are based upon site-specific restoration objectives.

Table 1. Restoration Objectives, Actions, and Methods by Injury Type under Selected Alternative

Injury Type	Restoration Objective	Restoration Action	Restoration Method
Surficial scarring	Healing of lesions	Monitor natural recovery	<ul style="list-style-type: none"> Quantitative photography to document lesion size Qualitative photography to document lesion size Direct measurement of lesions
Fractured/dislodged biota	<ul style="list-style-type: none"> Maximize chance of survival of injured organisms Return biotal cover to pre-injury levels 	Reattach biota	<ul style="list-style-type: none"> Attachment with bonding agent (cement, epoxy, etc.) Attachment with mechanical anchoring devices (rebar, cable ties) Consideration of source of material (from site, 'corals of opportunity,' nursery)
		Biological seeding	<ul style="list-style-type: none"> Field settlement or wild-caught larvae Outplanting of laboratory-reared larvae Consideration of larval source (wild-caught, nursery-reared) Consideration of settlement substrate (natural substrate, tiles, rubble) Consideration of larval attractants (naturally occurring crustose coralline algae, engineered chemical attractant [flypaper])
Deposition of toxic substances	Eliminate source of toxicity	Remove bottom paint/fouling substance from reef	<ul style="list-style-type: none"> Scraping of material from substrate with hand tools Removal of fouled rubble Consideration of disposal of paint, fouled material
Fractured substrate	Abate or minimize erosional processes	Seal fractures	<ul style="list-style-type: none"> Injection of bonding agent (e.g., cement grout) into fractures Filling fractures with rubble Electroaccretion Consideration of augmenting fracture fill with non-native substrate (e.g., quarried limestone)
Displaced substrate	<ul style="list-style-type: none"> Prevent additional injury from movement of substrate pieces Restore altered topography (e.g., high points) Uncover buried biota 	Stabilize displaced substrate	<ul style="list-style-type: none"> Attachment to substrate with bonding agent (cement, epoxy) Attachment to substrate with mechanical anchoring devices (rebar, cable ties) Electroaccretion (Seacrete™, Biorock™, etc.) Consideration of how to move material (individual pieces by hand or with aid of lift bags, containerized material in nets/buckets moved with aid of lift bags, large pieces/containers with surface davit/winch/crane) Consideration of reattachment site (stable areas, flat-topped areas, holes/depressions, areas devoid of organisms) Consideration of augmenting displaced substrate with non-native substrate (e.g., quarried limestone)

Table 1. Restoration Objectives, Actions, and Methods by Injury Type under Selected Alternative (Concluded)

Injury Type	Restoration Objective	Restoration Action	Restoration Method
Displaced substrate (Continued)		Stabilize displaced substrate with artificial structures	<ul style="list-style-type: none"> ▪ Attachment of structure to substrate with bonding agent (cement, epoxy) ▪ Create pre-fabricated and <i>in situ</i> fabricated artificial structures ▪ Pre-fabricated structures of native and non-native materials stabilize reef substrate and form platform for reattachment of hard corals ▪ Create coral reattachment modules mimicking natural substrates; design with openings to increase microhabitat; or include limestone boulders or natural substrate embedded on exposed surfaces ▪ <i>In situ</i> structures created from concrete and substrate material such as calcium carbonate boulders ▪ Consideration of design, materials, and fabrication method of reef site modules to promote flexibility in size, shape, and internal structure to mimic naturally occurring outcrops ▪ Consideration of how to place <i>in situ</i> fabricated structures; deployment by single diver with no need for a barge and crane
Crushed substrate (rubble)	<ul style="list-style-type: none"> ▪ Prevent additional injury from movement of rubble ▪ Restore altered topography (e.g., fill blowholes) ▪ Uncover buried biota 	Stabilize rubble	<ul style="list-style-type: none"> ▪ Attachment of rubble to substrate with bonding agent (cement, epoxy) ▪ Creation of rubble patches and attachment to substrate with bonding agent and/or mechanical anchoring devices ▪ Creation of reef modules and attachment to substrate with bonding agent and/or mechanical anchoring devices ▪ Placement of articulating revetment mats ▪ Electroaccretion ▪ Use sponges to bind and consolidate rubble. Consideration of how to move material (individual pieces by hand or with aid of lift bags, containerized material in nets/buckets moved with aid of lift bags, large pieces/containers with surface davit/winch/crane, suction dredge) ▪ Consideration of augmenting displaced substrate with non-native substrate (e.g., limestone boulders)
		Remove rubble from injury site	<ul style="list-style-type: none"> ▪ Consideration of how to move material (individual pieces by hand or with aid of lift bags, containerized material in nets/buckets moved with aid of lift bags, large pieces/containers with surface davit/winch/crane, suction dredge) ▪ Consideration of disposal sites (terrestrial, marine) ▪ Consideration of alternative uses (restoration of another reef site, shoreline stabilization, etc.)
Scraped/gouged substrate	Colonization of scrapes/gouges	Monitor natural recovery	<ul style="list-style-type: none"> ▪ Qualitative photography to document colonization ▪ Qualitative photography to document colonization

Site-Specific Restoration Plans

Site-specific restoration plans (plans) shall direct restoration actions implemented at BISC coral reef restoration sites. An outline that may be used to develop a site-specific plan is included in the Plan/PEIS. The preparation of a plan is required under Director's Order #14 (DO-14) and ensures NEPA compliance under both DO-12 and DO-14.

A typical plan addressing site-specific coral reef injury at BISC will state that the environmental impacts of the proposed restoration action have already been analyzed in a previous NEPA analysis (i.e., the Plan/PEIS). However, if coral reef restoration technologies have changed and/or the site conditions are not addressed in the Plan/PEIS, then further NEPA analysis may be required. If restoration technologies have not changed and conditions at the site to be restored are addressed in the Plan/PEIS, a Memo to File may be prepared. That memo should be approved by the BISC Superintendent in consultation with the Regional Environmental Coordinator.

Mitigation Measures

The selected alternative includes all practical means to avoid or minimize environmental harm. Mitigation measures will include best management practices (BMPs). To mitigate the environmental impacts of restoration work under the selected alternative, numerous management actions common to many of the restoration methods will be performed before and during restoration implementation. Mitigation measures will be prepared by the contractor in consultation with NPS with a site-specific restoration implementation plan. General mitigation measures include:

- An anchoring plan will be prepared and approved by BISC resource managers to minimize the potential damage from anchoring, vessel movement, and staging during restoration activities. Anchoring and spudding shall be in areas devoid of resources.
- Contractors selected to perform reef restoration work should be able to provide restoration plans, monitoring reports, and references for similar projects to demonstrate their experience and success at performing coral restoration work.
- Any native or non-native materials brought to the site for placement will be from a local quarry or direct from the manufacturer to ensure the placement of only clean materials.
- Care will be taken to prevent spilling of any bonding agents used as necessary.
- Divers will take care to minimize contact with the biota, the reef structure, and any surrounding habitats.
- Disturbance to the sediments will be minimized during the selected restoration actions.
- Turbidity screens will be used as necessary.
- Laydown areas will be minimized.
- Standard construction conditions (included in the Plan/PEIS) for the protection of manatees, sea turtles, and smalltooth sawfish will be followed.

- The BISC Cultural Resources Manager, or a qualified NPS archeologist, will determine whether a cultural resources survey will be necessary to identify whether historic properties are present within the area of potential effects prior to implementing any selected restoration action. This determination will be based upon a review of NPS GIS and archeological site files that indicate the locations of known cultural resources in the park. If area of potential effect is found to have not been previously surveyed, then then a survey of the area of potential effect will be carried out prior to restoration activities.
- Special precautions will be taken to prevent disturbance of archeological resources within the area of potential effects. If previously unidentified archeological resources are found within a restoration site, or if known resources are found to have been impacted, then a full archeological site inventory and documentation project will be undertaken. The results of this project will be utilized to ensure that no further damage or disturbance of cultural resources is brought about by restoration activities.
- In the event that cultural resources are found within or near a restoration site, then a BISC Resource Management technician trained in the identification of submerged cultural resources will oversee all restoration activities to confirm that no artifacts and/or archeological structures or features are disturbed or inadvertently removed from the site.
- Information about cultural resources at the site is confidential. Those performing the work will agree not to divulge any information about these resources to any individual or entity unless otherwise notified by BISC Cultural Resources Manager.
- A Notice to Mariners will be advertised with the United States Coast Guard.
- Construction sites will be limited to the smallest feasible area.
- Protective fencing and barricades will be provided for safety and to preserve natural and cultural resources.
- Solid, volatile, and hazardous wastes will be stockpiled, transported, and disposed of in compliance with federal, state, and local laws and regulations.
- Construction equipment will be in satisfactory condition and all materials imported into the park will be free of undesirable species.

Restoration Implementation Requirements

All activities during restoration efforts, whether performed in-house or by a qualified contractor with NPS oversight, will meet the following BISC and NPS requirements, many of which are established to mitigate implementation impacts:

- Restoration operations within BISC will not proceed without the presence of a representative from the park's Resource Management Division unless prior approval from the park has been obtained.

- The park's Resource Management Division must be notified and grant approval for any and all changes from the site-specific Plan.
- Park Resource Management Division personnel will approve the size and number of vessels to be used before restoration work proceeds as documented in the site-specific Plan.
- All vessels involved in restoration activities must maintain, at a minimum, a draft clearance of 0.5 meter (m) (18 inches) while working within BISC. The 0.5-m (18-inch) clearance will be measured from the lowest part of the vessel to the bay/sea floor. Any variances to this measurement will be identified in the site-specific Plan.
- Fracture filling, rubble relocation and removal, and fill placement will be controlled and turbidity monitored at all times during restoration activities.
- All restoration work will be performed during suitable tides unless prior approval from the park's Resource Management Division has been obtained.
- Anchoring may be allowed, but the park's Resource Management Division must approve the anchoring method documented in the site-specific Plan before work commences. Vessels would be anchored outside the injury area with minimal anchor points. Anchor placement and security would be monitored to reduce possible resource damage.
- Compliance with all federal, state, and county regulations and permits is required.
- All restoration sites will be marked with buoys during restoration activities, and notification and/or bulletins will be given to the United States Coast Guard to issue to local mariners when restoration work is in progress. The park's Resource Management Division must be alerted when the United States Coast Guard is notified.
- Before transplantation of biotal material from previously displaced material, a suitable donor site, or a nursery, within the park, approval by the Chief of Resource Management Division for BISC is required.
- Characterization of site conditions should occur prior to any field implementation activities unless prior approval is granted by the park's Resource Management Division.
- Standard construction conditions (included in the Plan/PEIS) for the protection of manatees, sea turtles, and smalltooth sawfish will be followed.
- Any sediment placement operations in shallow areas will only be conducted on calm or nearly calm days (seas less than 2 ft and winds less than 5 miles per hour) using skilled vessel operators, marker buoys, and personnel inspection unless specialized mitigation procedures are planned for, approved by the park's Resource Management Division, and implemented.
- Donor material will be collected in a manner to ensure that the donor locales are not degraded, including, but not limited to, the removal of previously displaced biota.
- If transplantation is required, only species native to BISC may be utilized.

Project Completion Report

After implementation of coral reef restoration at a site, including monitoring and achievement of success criteria, a Project Completion Report will be written to document pertinent restoration activities, key project milestones, and success in achieving restoration goals.

OTHER ALTERNATIVE CONSIDERED

Alternative 1: No Action

The No Action alternative for coral reef restoration would not implement a programmatic approach to restoring coral reefs after injuries. Instead, feasible restoration actions, including relying on natural processes, would be examined, analyzed for environmental impacts according to NEPA requirements, and selected on an individual basis. This process would be used for each injury event using the restoration procedures currently in effect in BISC.

BASIS FOR DECISION

To identify the selected alternative, the interdisciplinary team (IDT) evaluated each alternative based on its ability to meet restoration objectives and the potential impacts on the environment. Based on those criteria, Alternative 2 (Restoration Using a Programmatic Approach) was selected. Under this alternative, the most appropriate coral reef restoration actions and specific restoration methods will be selected from a toolbox after each coral injury. Because the impacts of these restoration actions are evaluated in the Plan/PEIS, the required impact analysis for NEPA compliance can be tiered off that document. The timeframe required to evaluate environmental impacts of restoration actions after site-specific injuries have occurred will be minimized substantially under the selected alternative, resulting in fewer adverse effects and/or more beneficial effects to park resources.

Alternative 1 would not meet the purpose and need to reduce the time for implementation of restoration projects to prevent injuries from expanding and reduce interim service losses. Under Alternative 1 environmental planning and compliance after coral reef injuries would continue to occur on a case-by-case basis and not through a programmatic approach.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The National Park Service has identified Alternative 2, Restoration Using a Programmatic Approach, as the environmentally preferable alternative. The environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. Both Alternative 1 and Alternative 2 would result in the protection, preservation, and enhancement of resources through restoration. However, Alternative 2 will result in more efficient and expedient restoration activities, making it environmentally preferable.

PUBLIC AND AGENCY INVOLVEMENT

Under NEPA, federal agencies are required to consider all environmental impacts associated with the proposed action and evaluate all reasonable alternatives. NEPA also stipulates that agencies

cooperate with other federal agencies, and involve state and local governments and interested stakeholders in the decision-making process.

The NPS divides the scoping process into two parts: internal scoping and external or public scoping. Internal scoping involved discussions among NPS personnel regarding the purpose of and need for management actions, issues, management alternatives, mitigation measures, the analysis boundary, appropriate level of documentation, available references and guidance, and other related topics. Public scoping is the early involvement of the interested and affected public in the environmental analysis process. The public scoping process helps ensure that people have an opportunity to comment and contribute early in the decision-making process. For this planning and assessment process, project information was distributed to individuals, agencies, and organizations early in the scoping process, and people were given opportunities to express concerns or views and to identify important issues or other alternatives.

Internal Scoping

The NPS IDT conducted internal scoping in a workshop format on October 26 and 27, 2004, at BISC Headquarters. The scoping was conducted systematically to identify purpose and need for coral restoration actions to address grounding-related injuries, establish objectives and goals for restoration, determine the types of geological and biological injuries to the BISC coral reef tracts that are caused by groundings for which restoration methods would be evaluated, inventory an initial array of possible restoration techniques and methods for consideration, identify key environmental issues and analysis topics, and set screening and evaluation criteria against which method effectiveness would be judged and impacts would be analyzed.

Public Scoping

The public was provided several opportunities to comment on the development of the Plan/PEIS. The Notice of Intent (NOI) to prepare the Plan/PEIS was published in the *Federal Register* on February 17, 2006. The public was encouraged to comment on any issues associated with the proposed action within 60 days of publication of the NOI by U.S. mail or the internet by posting comments on the Planning, Environment and Public Comment (PEPC) website (<http://parkplanning.nps.gov>). No public comments were received in response to the NOI.

While not an official part of the NEPA process for this document, during public meetings held for the Allie B and Igloo Moon Plan/Environmental Assessments (EAs) in 2006 in Homestead, Florida the NPS gave verbal notice to individuals there that the NPS was planning to prepare the Plan/PEIS. The public feedback at the meeting related to this announcement was positive.

Public Review and Comment

On April 26, 2010, the NPS published a notice of availability of the Draft Plan/PEIS in the *Federal Register*. A 60-day public comment period began on April 30, 2010, with the U.S. Environmental Protection Agency's (EPA's) publication of a notice of availability of the Draft Plan/PEIS in the *Federal Register*. On June 10, 2010, the NPS held a public meeting in Florida City, Florida, to present information on the Draft Plan/PEIS and accept comments. Additionally, the NPS accepted comments on the Draft Plan/PEIS via mail and the NPS's web-based PEPC system throughout the 60-day comment period.

In total, the NPS received 14 pieces of correspondence on the Draft Plan/PEIS, seven of which were from the general public and the remainder of which were from consulting and coordinating agencies. The NPS reviewed all correspondence and responded to substantive comments on the Draft Plan/PEIS. Those responses, and copies of all correspondence received, appear in the Final Plan/PEIS. The EPA published the Notice of Availability of the Final Plan/PEIS in the *Federal Register* on May 6, 2011. The 30-day no-action period ended on June 6, 2011.

Agency and Tribal Consultation and Coordination

National Oceanic and Atmospheric Administration, Florida Department of Environmental Protection

While not an official part of the NEPA process for this document, the NPS coordinated with other agencies on restoration methods that ultimately informed the selection of methods described in this Plan, on October 1–2, 2003, at a Coral Reef and Seagrass Restoration Workshop held at BISC in Homestead, Florida and sponsored by NPS and NOAA. At the workshop, restoration managers discussed common goals, issues, and techniques including coral reef restoration methods. The workshop included scientists and managers from federal and state agencies with jurisdiction over submerged marine resources in south Florida, the Florida Keys, and the Caribbean. Thirty-six participants attended the workshop representing NPS, NOAA, and Florida Department of Environmental Protection (FDEP). The organizations represented included NOAA Florida Keys National Marine Sanctuary (FKNMS); NOAA Center for Coastal Fisheries and Habitat Protection (CCFHP); NOAA Damage Assessment and Restoration Program (DARP); FDEP Lower Keys Sanctuary Program and Upper Keys Sanctuary Program; and Florida Park Service. The NPS received comments on the Draft Plan/EIS from the Florida Department of Environmental Protection's Coral Reef Conservation Program.

U.S. Fish and Wildlife Service and NOAA National Marine Fisheries Service

Section 7 of the Endangered Species Act, Interagency Cooperation, is the process used to ensure that the actions taken by federal agencies do not jeopardize the existence of any listed species. This process is intended to involve the identification and resolution of species conflicts in the early stages of project planning. To ensure compliance with ESA, the NPS initiated consultation with the USFWS and the NOAA National Marine Fisheries Service in letters sent on March 19, 2009. In a letter dated December 8, 2010, the USFWS concurred with the NPS's determination that the preferred alternative may affect, but is not likely to adversely affect, the West Indian manatee. On November 30, 2011, the NOAA National Marine Fisheries Service issued a Biological Opinion stating that the preferred alternative is not likely to jeopardize the continued existence of elkhorn or staghorn corals, or adversely modify *Acropora* critical habitat.

Florida State and Tribal Historic Preservation Officers

In letters sent on March 19, 2009, the NPS initiated Section 106 consultation with the Florida SHPO. The NPS also sent Section 106 consultation letters to the THPOs for the Seminole Tribe of Florida, the Seminole Nation of Oklahoma, and the Miccosukee Tribe of Indians of Florida. On April 22, 2010, the NPS submitted a copy of the Draft Plan/PEIS to the SHPO with a letter requesting concurrence with the NPS's assessment that the preferred alternative would have No Adverse Affect on historical and cultural resources. In a letter dated May 24, 2010, the SHPO concurred with the NPS's determination. On April 22, 2010, the NPS also submitted copies of the Draft Plan/EIS to the THPOs for the Seminole Tribe of Florida, the Seminole Nation of

Oklahoma, and the Miccosukee Tribe of Indians of Florida with letters requesting comment. In a letter dated May 17, 2010, the THPO for the Seminole Tribe of Florida expressed no objection with the NPS's findings in the Draft Plan/PEIS.

Tribal Coordination

In addition, scoping letters were mailed in March 2009 to the Miccosukee Tribe of Indians of Florida, the Seminole Nation of Florida, and the Seminole Nation of Oklahoma. The NPS received a response from the Miccosukee Tribe of Indians of Florida indicating that the tribe had no scoping comments related to the Plan/PEIS. No other comments were received from agencies or tribes involved in scoping. Copies of the Draft Plan/PEIS were also mailed to several tribes in April 2010. The NPS received no comments from tribes on the Draft Plan/PEIS.


U.S. Environmental Protection Agency

In accordance with NEPA and Section 309 of the Clean Air Act, the EPA reviewed the Draft and Final Plan/PEIS. In their response letter dated June 28, 2010, the agency rated the Draft Plan/PEIS as Lack of Objections (LO). The agency indicated it supports the proposed project and had not identified any potential environmental impacts requiring substantive changes to the preferred alternative.

CONCLUSION

The selected action meets the purpose and need of the Plan because it implements a programmatic approach to coral reef restoration, which will assist the NPS by guiding the selection of restoration actions following vessel groundings. In addition, implementation of Alternative 2 will enable the NPS to respond to injuries with necessary restoration more quickly. Timely implementation of restoration projects will prevent injuries from increasing in size or severity.

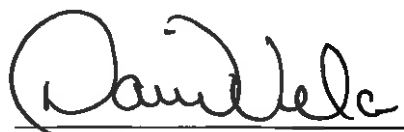
Recommended:



Mark Lewis
Superintendent, Biscayne National Park

5/24/12
Date

Approved:



David Vela
Regional Director, Southeast Region, National Park Service

5-31-12
Date

Attachment: Non-Impairment Determination

For each of the natural and cultural resource impact topics analyzed in the Coral Reef Restoration Plan/ Final Programmatic Environmental Impact Statement (Plan/PEIS), the NPS makes a determination of whether the impacts of the selected alternative on those topics constitute an impairment prohibited by the NPS Organic Act. *NPS Management Policies 2006*, Section 1.4.5 defines impairment as “an impact that, in the professional judgment of the responsible manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.” *Management Policies 2006* further states that impacts are more likely to constitute impairment to the extent that they affect a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park’s general management plan or other relevant NPS planning documents as being of significance.

Impacts are less likely to constitute impairment when they are unavoidable results of an action necessary to preserve or restore the integrity of park resources or values. Impairment determinations are not made for impact topics such as recreation and visitor experience, human health and safety, and park operations, as these are not generally considered to be Park resources or values according to the Organic Act.

Geology

Physical resources are essential to the function and health of the marine ecosystem within BISC. The Park’s marine biological resources are directly affected by the natural abundance, biodiversity, and the ecological integrity of the reef system habitat. Changes to the physical environment of the coral reef system could potentially affect biological and physical components of the reef and reef organisms. The Plan/PEIS describes the impacts that the selected alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on the physical environment of the coral reef ecosystems, specifically geology.

Geological resources are necessary to fulfill the purposes for which BISC was established and are key to the natural integrity of the Park and providing recreational opportunities to the public. The effects on geology associated with implementation of a programmatic approach to restoration were evaluated. No impairment to geology will occur under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be minor or less, meaning that geology within BISC will remain stable. Under the selected alternative, the most appropriate restoration actions and specific restoration methods will be selected from a “toolbox” of methods that already have had their impacts evaluated programmatically. No impairment to geology will occur from implementation of restoration actions under the selected alternative, because any adverse impacts

(direct, indirect, and cumulative) will be moderate or less, meaning that geology within BISC will remain stable.

Water Quality

Physical resources are essential to the function and health of the marine ecosystem within BISC. Changes to the physical environment of the coral reef system could potentially affect biological and physical components of the reef and reef organisms. The Plan/PEIS describes the impacts that the selected alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on the physical environment of the coral reef ecosystems, specifically water quality.

Physical resources such as water quality are necessary to fulfill the purposes for which BISC was established, are key to the natural integrity of the Park, and provide recreational opportunities to the public. The effects on water quality associated with implementation of a programmatic approach to restoration were evaluated. No impairment to water quality will occur under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be moderate or less, meaning that water quality within the Park will not be significantly altered. Under the selected alternative, the most appropriate restoration actions and specific restoration methods will be selected from a “toolbox” of methods that already have had their impacts evaluated programmatically. No impairment to water quality will occur from implementation of restoration actions under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be minor or less, meaning that water quality within the Park will not be significantly altered.

Epibenthic Biota

BISC provides habitat for a diverse array of epibenthic biota, and these biological resources are an integral part of the Park’s environment. The evaluation of epibenthic biota includes stony corals (scleractinian corals), soft corals (octocorals), sponges (porifera), macroalgae, and other epibiotic sessile reef inhabitants (e.g., bryozoans, zoanthids, tunicates, and hydroids). The Park’s marine biological resources are directly affected by the natural abundance, biodiversity, and the ecological integrity of the reef system habitat and ecosystems. Invertebrates may sequentially use multiple habitats during different stages of their lifecycle. It is the Park’s purpose to protect these resources, and therefore important to identify and analyze any potential impacts that could affect these resources. The Plan/PEIS describes the impacts that the selected alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on the epibenthic biota component of the coral reef ecosystems.

Healthy marine epibenthic communities are necessary to fulfill the purposes for which the Park was established and are key to the natural integrity of the Park and providing recreational opportunities to the public. The effects on epibenthic biota associated with implementation of a programmatic approach to restoration were evaluated. No impairment to epibenthic biota within BISC will occur under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be minor or less, meaning that epibenthic biota populations will remain stable and viable. Under the selected alternative, the most appropriate restoration actions and specific restoration methods will be selected from a “toolbox” of methods that already have had their impacts evaluated programmatically. No impairment to epibenthic biota will occur from implementation of restoration activities under the selected alternative because any adverse impacts (direct, indirect, and cumulative)

will be negligible, meaning that epibenthic biota populations within BISC will remain stable and viable.

Other Invertebrates

The commercially and recreationally important Florida spiny lobster is found throughout BISC, along with other motile invertebrates such as hermit crabs and shrimp, echinoderms, long-spined sea urchins, anemones, mollusks, and worm species. The Park's marine biological resources are directly affected by the natural abundance, biodiversity, and the ecological integrity of the reef system habitat and ecosystems. Motile invertebrates may sequentially use multiple habitats during different stages of their lifecycle. It is the Park's purpose to protect these resources, and therefore important to identify and analyze any potential impacts that could affect these resources. The Plan/PEIS describes the impacts that the selected alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on the motile invertebrate component of the coral reef ecosystems.

Healthy marine invertebrate communities are necessary to fulfill the purposes for which the Park was established and are key to the natural integrity of the Park and providing recreational opportunities to the public. The effects on motile invertebrates associated with implementation of a programmatic approach to restoration were evaluated. No impairment to motile invertebrates will occur under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be moderate or less, meaning that motile invertebrate populations within BISC will remain viable. Under the selected alternative, the most appropriate restoration actions and specific restoration methods will be selected from a "toolbox" of methods that already have had their impacts evaluated programmatically. No impairment to motile invertebrates will occur as a result of restoration activities under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be moderate or less, meaning that motile invertebrate populations within BISC will remain stable and viable.

Ichthyofauna

Many fish utilize multiple habitats within BISC waters. Coral reef formations in BISC support an abundance of ichthyofauna, with more than 500 species reported to inhabit the BISC reefs. For example, reef-associated species utilize reef habitat for shelter and seagrass habitat for feeding grounds. On a longer time scale, fish, as well as invertebrates, may sequentially use multiple habitats during different stages of their lifecycle. The maintenance of healthy fish populations and fish habitat is important to the ecology of Biscayne Bay as well as to the public. The Plan/PEIS describes the impacts that the preferred alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on the ichthyofauna of the coral reef ecosystems.

Healthy fish populations are necessary to fulfill the purposes for which the Park was established and are key to the natural integrity of the Park and providing recreational opportunities to the public. The effects on ichthyofauna associated with implementation of a programmatic approach to restoration were evaluated. No impairment to ichthyofauna will occur under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be moderate or less, meaning that fish species within BISC will remain viable. Under the selected alternative, the most appropriate restoration actions and specific restoration methods will be selected from a "toolbox" of methods that already have had their impacts evaluated programmatically. No impairment to ichthyofauna will occur with the implementation of restoration actions under the selected alternative because any

adverse impacts (direct, indirect, and cumulative) will be moderate or less, meaning that fish species within BISC will remain viable.

Seagrasses

BISC's seagrass communities are valuable natural resources that provide important benefits to the marine environment. Seagrass beds cover more than 40 percent of the Park and are an integral part of the mosaic of submerged aquatic communities within BISC. The seagrass beds provide shelter from predators, breeding and nursery areas for many fish and invertebrates, and forage for other species such as the manatee. The beds also absorb nutrients from coastal and estuarine systems, stabilize substrates, and minimize the effects of wave action. These communities provide important habitat to their respective species including fish, reptiles, birds, and mammals that are listed for protection by state and federal regulations. The Plan/PEIS describes the impacts that the preferred alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on BISC's seagrass communities.

Healthy seagrass communities are necessary to fulfill the purposes for which the Park was established and are key to the natural integrity of the Park and providing opportunities to the public. The effects on seagrass communities associated with implementation of a programmatic approach to restoration were evaluated. No impairment to seagrasses will occur under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be minor or less, meaning that seagrasses within BISC will remain viable. Under the selected alternative, the most appropriate restoration actions and specific restoration methods will be selected from a "toolbox" of methods that already have had their impacts evaluated programmatically. No impairment to seagrasses will occur from implementation of restoration activities under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be moderate or less, meaning that seagrasses within BISC will remain viable.

Essential Fish Habitat

BISC's biological and natural resources are an integral part of the Park's environment. The reef system within BISC encompasses a diverse mosaic of aquatic communities and habitats that make the area ecologically rich and biologically diverse. Critical habitat that is necessary to fish and invertebrates to spawn, breed, feed, or grow to maturity is denoted Essential Fish Habitat (EFH) and must be identified and protected. Essential Fish Habitat-Habitat Area of Particular Concern (EFH-HAPC) is the EFH designation for high value habitats that are rare, considered particularly vulnerable to degradation, environmentally stressed, or especially ecologically important. The Plan/PEIS describes the impacts that the selected alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on EFH and other ecologically critical areas of the coral reef ecosystem.

Ecologically critical areas are necessary to fulfill the purposes for which the Park was established and are key to the natural integrity of the Park and providing recreational opportunities to the public. The effects on EFH associated with implementation of a programmatic approach to restoration were evaluated. No impairment to EFH within BISC will occur under the selected alternative because any adverse impacts will be moderate or less, meaning that EFH within BISC will remain viable. Under the selected alternative, the most appropriate restoration actions and specific restoration methods will be selected from a "toolbox" of methods that already have had their

impacts evaluated programmatically. No impairment to EFH will occur with the implementation of restoration actions under the selected alternative because any adverse impacts (direct, indirect, and cumulative) will be moderate or less, meaning that EFH within BISC will remain viable.

Threatened and Endangered Species

The NPS Management Policies require that potential effects of agency actions on threatened and endangered (T&E) species be considered. NPS is required to control access to important habitat for such species and to perpetuate the natural distribution and abundance of these species and the ecosystems upon which they depend. The habitat of T&E species takes on special importance because of these laws, and conservation of these species requires careful management. Only federally listed T&E species that utilize the reefs in BISC were considered for analysis. Federally listed marine T&E species identified within BISC include sea turtles, smalltooth sawfish, elkhorn and staghorn corals, West Indian manatee, and pillar corals. The Plan/PEIS describes the impacts that the selected alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on these federally listed T&E species and important habitat within BISC.

Viable populations of T&E species are necessary to fulfill the purposes for which the Park was established and are key to the natural integrity of the Park and providing recreational opportunities to the public. The effects on federally listed T&E species and important habitat within BISC associated with implementation of a programmatic approach to restoration were evaluated. No impairment to T&E species or habitat will occur under the selected alternative.

Historical and Cultural Resources

Through legislation the NPS is charged with the protection and management of historical and cultural resources in its custody. Management of historical and cultural resources and consultation with Park, regional, and national NPS specialists as well as the SHPO are independent from, but can be simultaneous with, the NEPA process, and are therefore suitable for a combined approach to impacts analysis. The Plan/PEIS describes the impacts that the selected alternative, Alternative 2 (Restoration Using a Programmatic Approach), is predicted to have on historical and cultural resources.

Protection and preservation of historical and cultural resources are necessary to fulfill the purposes for which BISC was established and are key to the natural integrity of the Park. To address the unique characteristics of historical and cultural resources compared to other resource topics, the analysis of impacts for the programmatic approach and each restoration action under the selected alternative are combined. No impairment to historical and cultural resources will occur under the selected alternative because historical and cultural resources within BISC will not be adversely affected.

Summary

As described above, adverse impacts anticipated as a result of implementing the preferred alternative on Park resources or values, including those whose conservation is necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Park, key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or identified as significant in the Park's General Management Plan or other relevant NPS planning documents, will not rise to levels that would constitute impairment.