

## PRE-DECISIONAL FOR SANCTUARY ADVISORY COUNCIL CONSIDERATION

**FKNMS Marine Zoning and Regulatory Review  
Coral Reef Ecosystem Restoration Working Group****Recommendations for Sanctuary Advisory Council Consideration**

For the purposes of this recommendation, active coral reef ecosystem restoration aims to recreate, initiate, accelerate, or augment the recovery of an ecosystem that has been degraded by a range of environmental and human-induced threats and events (including but not limited to storm events, disease outbreaks, boat groundings, overfishing, phase shifts, loss of keystone herbivores, etc.). Ecological restoration is a dynamic process and should allow for the use of innovative restoration techniques. Restoration activities may include the active ecological recovery or enhancement of keystone or foundation species that create or maintain habitat or ecosystem services upon which other marine species, and people, depend. Restoration may also include the removal of species that are harmful to the ecosystem as a means of restoring balance. Ecosystem-scale restoration includes other natural communities including but not limited to: seagrass communities, mangrove communities, and hard bottom communities.

Coral Reef Ecosystem Restoration Objectives:

1. Identify specific areas and zones for active restoration of coral reef ecosystems.
2. Identify regulatory impediments and appropriate permitting conditions for active restoration of coral reef ecosystem species.
3. Identify adaptive management measures and criteria for opening areas closed for restoration purposes

**Objective 1: Identify specific areas and zones for active restoration of coral reef ecosystems.**

When selecting specific areas for restoration activities those zones and sites should be determined based on the criteria developed by this working group.

Coral Reef Ecosystem Restoration Zones identified by this working group are high priority areas in which to conduct restoration activities. The working group recommends that the entire reef tract within the Florida Keys National Marine Sanctuary be restored and be eligible for restoration activities. However, the working group selected a suite of 105 zones for restoration and further prioritized those sites for a total of 34 priority zones. The priority zones identified are general areas within which more specific sites will be selected for actual restoration activities. When restoration activities take place:

- The actual restoration site(s) could be a much smaller area within the identified zone.
- The specific location and size of the site will be determined by the particular restoration goals and objectives for that site.
- The site will not have any additional managed access restrictions in place unless and until active restoration is underway (if site is within a current managed area (SPA, lobster Exclusion Zone, etc., those access restrictions will still apply). Any additional restrictions in place during active restoration would be lifted once the restoration goals and objectives are met.
- During site selection and permitting, managed access options selected should consider use and impact to various user groups.

**I: Coral Reef Ecosystem Restoration Zone Types**

Active coral reef ecosystem restoration zones will include a range of restoration activities including:

- Active (as opposed to passive) restoration:
  - aims to recreate, initiate, accelerate, or augment the recovery of an ecosystem that has been degraded (environmental and/or human induced changes have altered ecosystem

## PRE-DECISIONAL FOR SANCTUARY ADVISORY COUNCIL CONSIDERATION

structure and function). Ecological restoration is a dynamic process and should allow for the use of innovative restoration techniques. It may also involve the removal of opportunistic species that have colonized essential habitat for the target species.

- Manipulative research and restoration:
  - strategic science and manipulative experiments to advance the science of restoration

## II: Management and Access Options

Active coral reef ecosystem restoration zones will allow for a range of access options and potential access restrictions. These will be dictated by the overall goals and objectives of the restoration activities, and will manage the impacts to the efforts to conduct/ maintain restoration efforts. During site selection and permitting, managed access options selected will consider use and impact to various user groups. If any site is considering restricting access or closing access, zones and sites should be determined based on the criteria developed by this working group.

Access options could include:

1. Open demonstration site / incentive site
  2. Managed access (restricted access)
  3. Closed for research
1. Demonstration Site / Incentive Site
    - Demonstration sites could be more broadly open to public access.
    - Incentive access to promote ownership of and engagement in ensuring success of restoration efforts.
      - Innovative partnerships: partner organizations, businesses, etc. provide funding to support restoration activities through a range of mechanisms including donations, user fees, outplant site maintenance assistance including free rides to the sites for practitioners and/or training a mate on the boat to assist in maintenance activities, etc.
        - User fees
        - Mooring ball sponsorship programs
        - Identify demonstration sites within restoration areas to promote visitation (enhance an interest in reef restoration)
        - Develop reef etiquette program and guidelines
        - Dive proficiency testing or minimal certification levels
        - Dive Master guided tours from Blue Star operators
  2. Managed Access (restricted access) Options:
    - Restrict access for all activities while restoration is in progress and for a set duration of time following the restoration activities to allow the site to stabilize.
    - Restrict activities that could impact the success of restoration activities (i.e. activities that may impact the benthic community).
  3. Closed for Research and Restoration
    - Restrict access (i.e. potentially closed) to allow for undisturbed monitoring sites for research and control sites to help determine the effects of human activities. (SAC Goal B.3)
      - Closed to visitation and other activities to allow for scientific research, enhance restoration activities, provide control and comparative sites, and foster natural biodiversity for maintaining undisturbed historical ecological, biological and genetic refuges

PRE-DECISIONAL FOR SANCTUARY ADVISORY COUNCIL CONSIDERATION

**III: Marking and Mooring at Coral Reef Ecosystem Zones**

Active coral reef ecosystem restoration zones will be marked and have access buoys based on the types of managed or incentive access of the zone.

- Marker Buoys
  - Link regulations for restoration zones to the type of marker buoy used rather than specific locations such that the marker buoys and restoration zones can easily be moved as restoration activities are shifted over time and space. The markers and hence restoration zones can be moved without revising regulations.
- Mooring Buoys
  - Determine mooring buoys numbers based on restoration type and access options.
    - No mooring buoys in areas that are closed to visitation and only allow anchoring for research or restoration practitioners
    - Limited number of mooring buoys for incentive funding entities to utilize; which could include mooring buoy sponsorship labeling
    - install subsurface buoys in lieu of anchoring for research and restoration practitioners and for use by incentive access users

**IV: Criteria for Site Selection**

Restoration Zones will be selected using the criteria outlined below.

Other considerations when selecting restoration zones:

- Potentially be sited in existing zones with established access restriction, marker buoys, and mooring buoys
- Consider including existing federal trap exclusion zones and existing special management zones in John Pennekamp Coral Reef State Park

Category	Marine Zoning Goals & Objectives	Criteria
Likelihood of Success	Apply the best available science and balanced, conservation based management	<p>Try to choose areas that have the necessary biological and physical characteristics needed to support the natural biological diversity of a coral reef ecosystem.</p> <p>Try to choose areas that, when restored, will support the natural ecological processes of a coral reef ecosystem.</p> <p>Try to choose areas that are accessible to ensure restoration/research activities and potential promotion of public engagement.</p>
Biodiversity & Habitat	<p>To improve the diversity of natural biological communities in the Florida Keys to protect, and, where appropriate restore and enhance natural habitats, populations and ecological processes overall in each of these sub regions Tortugas, Marquesas, Lower, Middle, and Upper Keys.</p> <p>Improve/maintain the condition of the biologically structured habitats.</p> <p>Increase abundance and condition of selected key species including in-shore patch reefs, mid-channel patch reefs, off-shore patch reef, and reef margin/fore reef.</p>	<p>Try to choose areas that contain a range of natural biological diversity and habitats necessary to sustain that biodiversity and support ecological processes in coral reef ecosystems.</p> <p>Select areas in each of the sub-regions relevant to coral reef ecosystems (Tortugas, Marquesas, Lower, Middle, and Upper Keys).</p> <p>Select areas that improve/maintain the condition of biologically structured coral reef ecosystems across the range of coral reef ecosystem habitat types (in-shore patch reefs, mid-channel patch reefs, off-shore patch reef, and reef margin/fore reef).</p>

## PRE-DECISIONAL FOR SANCTUARY ADVISORY COUNCIL CONSIDERATION

<b>Sustainability / Connectivity</b>	Protect large, contiguous, diverse and interconnected habitats that provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life and protect and preserve all habitats and species.	Try to choose areas that contribute to protecting large contiguous, diverse and interconnected habitats that provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life.
<b>Sufficient Size</b>	<i>**Identify areas of sufficient size to achieve the goals of active coral reef ecosystem restoration.</i>	Try to choose areas that contribute to protecting large contiguous, diverse and interconnected coral reef ecosystem habitats.  Try to choose areas that provide the area necessary to realize significant coral reef ecosystem restoration, include a range of coral reef ecosystem habitat types, and allow for a range of research/restoration activities to be conducted.
<b>Allowable uses/ compatible uses</b>	Minimize conflicts among uses compatible with the National Marine Sanctuary.  Prevent heavy concentrations of uses that degrade Sanctuary resources.	Try to choose areas and craft regulations with the primary objective of coral reef ecosystem restoration and that minimize adverse impacts from human uses and promote achieving the above criteria.  Try to choose areas and craft regulations that minimize user conflict and prevent use related impacts to coral reef ecosystem restoration efforts or that further degrade Sanctuary resources.  Try to choose areas that are accessible to ensure restoration/research activities and potential promotion of public engagement.
<b>Reference Area/ Monitoring Sites</b>	Provide undisturbed monitoring sites for research and control sites to help determine the effects of human activities.	Try to choose areas that would serve as undisturbed monitoring sites for research, and control sites to help determine the effects of human activities.  Try to choose areas that contribute to protecting large contiguous, diverse and interconnected habitats that provide natural spawning, nursery, and permanent residence areas for the replenishment and genetic protection of marine life.
<b>Enforcement/ compliance</b>	<i>**Try to choose areas and craft regulations that would facilitate enforcement and encourage compliance.</i>	Try to choose areas and craft regulations that would facilitate enforcement and encourage compliance.  Try to choose areas and craft regulations that would promote public engagement, education, and support of the goals of coral reef ecosystem restoration zones.

## Objective 2: Identify regulatory impediments and appropriate permitting conditions for active restoration of coral reef ecosystem species

- Develop an On-line Permitting System (May be restricted by Office of Management & Budget rule related to collection of Personal Identifiable Information)
  - All agencies that are involved can review

## PRE-DECISIONAL FOR SANCTUARY ADVISORY COUNCIL CONSIDERATION

- Central reporting
- Information exchange
- Project status
- Simple process to extend, renew, or adapt permit
- Create and utilize an interdisciplinary advisory committee
  - To guide the permit process.
  - Create a more collaborative process for developing restoration work and reviewing prior to submitting for permitting
  - Develop restoration criteria that can be used for all groups
  - Develop best management practices
  - identify the range of potential activities and species that will be affected; both direct and indirect to inform the FKNMS Environmental Impact Statement
  - Permitting should allow for innovative/ adaptive restoration techniques
  - During site selection and permitting, managed access options selected should consider use and impact to various user groups.
  - Permitting agencies should review permit for impact to various uses and user groups.
- Streamline permit process
  - Allow for simple modifications
  - Potential ease of permitting if locations are predetermined
  - Establish “qualified” practitioner permitting requirements
  - Consider extending the length of permit period. Consider streamlining permit renewals
  - Consider more rapid ability to permit projects particularly when funding is time sensitive
- Consider use of the FKNMS permit through which “qualified” practitioners could operate (general Programmatic Environmental Impact Statement exists)
- Permitting should allow for innovative/ adaptive restoration techniques

### **Objective 3: Identify adaptive management measures and criteria for opening areas closed for restoration purposes**

Adaptive management is used as a systematic process for improving environmental management policies and practices and emphasizes the need to change with the environment and to learn from doing.

Adaptive management will be applied to managing active coral reef ecosystem restoration zones within the Sanctuary to change the status of existing zones and to add new zones as needed based on clear goals, objectives and adaptive management triggers.

#### **I: Restoration / Research Goals & Objectives**

Coral reef ecosystem restoration zones, when established, will have clear goals and objectives. These goals and objectives are intended to provide guidance for managing the zones and changing the management and access restrictions as appropriate. Goals and objectives will be specific to each zone and/or site.

#### **II: Adaptive Management Triggers and Criteria**

The following could provide a change in management of current active coral reef ecosystem restoration zones or provide the trigger to designate a new zone for active coral reef ecosystem restoration.

- New technology is developed that allows more species to be considered within the restoration scheme and/or new types of restoration activities to be conducted
- Change in the listing status of a species under the Endangered Species Act
- Changes in condition of an existing restoration zone or other area of the Sanctuary. Types of changes could include:
  - vessel grounding/anchoring

## PRE-DECISIONAL FOR SANCTUARY ADVISORY COUNCIL CONSIDERATION

- algae outbreak
- invasive species
- cold weather
- storms
- disease
- bleaching
- other human impacts (e.g., oil spills)
- Some measurable goals and/or objectives that were set as part of the restoration plan has been met
- Restoration effort fails to the point that the site is determined unsuitable for further restoration efforts.

**III: Adaptive Management Response**

Once the particular adaptive management triggers or criteria are met, a range of adaptive management responses could be implemented including:

- Change the access options based on shifting needs of restoration efforts (see Management and Access Options for details)
  - Restrict activities that could impact success of restoration activities
  - Restrict access during times of restoration effort
  - Restrict access (i.e. potentially closed) to allow for undisturbed monitoring sites for research and control sites to help determine the effects of human activities. (SAC Goal B.3)
  - Lift restrictions
- Monitor restoration zones to help increase understanding of the contribution of various stresses to the restored natural resources.