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# Recovery Plan for Elkhorn and Staghorn Corals

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# What is a Recovery Plan?

- Mandated by the ESA unless it will not promote conservation of the species
- Roadmap to species recovery that lays out where we need to go and how to get there
- Guidance document, not regulatory



Staghorn coral

# Components of a Recovery Plan

- Objective, measurable criteria
- Site-specific management actions
- Estimates of the time and the cost



Elkhorn coral

# Goal - *Acropora* Recovery Plan

- To increase the **abundance** and protect the **genetic diversity** of elkhorn and staghorn coral populations throughout their geographical ranges
- Sufficiently **abate threats** to warrant delisting of both species.



# Acropora Recovery Plan

## Population-Based Criteria

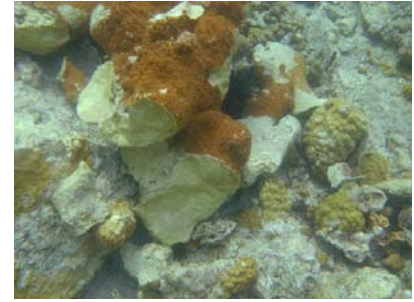
- Abundance
- Genetic diversity
- Recruitment

## Threat-Based Criteria

- Disease (Interim)
- Ocean Temperature and Acidification
- Loss of Recruitment Habitat
- Land-Based Sources of Pollution (Interim)
- Regulatory Mechanisms
- Abrasion and Breakage
- Predation (Interim)



# Abrasion and Breakage Criterion



- Appropriate and effective regulatory, response, restoration, and enforcement mechanisms are in place domestically and internationally for both **planned and unplanned impacts**.
- For planned impacts (e.g., marine construction), project planning should ensure **no net loss** of listed corals.
- Where natural or anthropogenic impacts do occur, an effective and complete **response plan**, including appropriate compensatory and site restoration, is executed.

# Recovery Approach

## 24 Recovery actions

- Research and monitoring
- Reduction or elimination of threats
- Population enhancement



# Recovery Actions – Threat Reduction

- Three Recovery Actions For Address Abrasion and Breakage:
  - Respond to 50 Percent of Known Physical Disturbance Events (Action 19)
  - Reduce Impacts from Planned Physical Disturbances — No Net Loss from Development Projects (Action 20)
  - Implement Protective and Preventative Measures to Reduce Physical Impacts (Action 21)



# Recovery

- Removal from the list of threatened and endangered species can only occur if the species are recovered **throughout their ranges.**
- Estimated cost > \$255 million dollars for actions in US jurisdiction
  - Severe underestimate due to costs of actions in foreign countries, and costs of some actions are undeterminable
- Estimated 400 years to achieve recovery

# Next Steps

- Assemble recovery implementation teams
  - Prioritize actions
  - Identify entities and funding sources to carry out actions
- International collaboration
- Track recovery actions



# More Information

## Website

[http://sero.nmfs.noaa.gov/protected\\_resources/coral/](http://sero.nmfs.noaa.gov/protected_resources/coral/)

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