

# National Marine Sanctuary of American Samoa

## Recovery and Resilience

### Management Issue

The National Marine Sanctuary of American Samoa (NMSAS or Sanctuary) is home to a diverse community of species and habitats. Understanding how these resources respond to natural and anthropogenic disturbances and their ability to recover is fundamental to enabling the NMSAS to predict changes, support recovery, and take appropriate management actions.

### Description

Marine resources are often impacted by natural and anthropogenic disturbances. Marine resources in American Samoa have been largely impacted by natural disasters such as: tropical cyclones, tsunamis, earthquakes, crown of thorns starfish outbreaks and severe coral bleaching. There have been a handful of long-term monitoring studies in Fagatele Bay and around Tutuila that have provided an invaluable record of recovery and resilience of coral reefs. As Fagatele Bay itself is unique, it is important for managers to have access to data that considers other sanctuary areas.



*Storm Damaged Coral Colonies in Fagatele Bay.  
Image credit: Chuck Birkeland*

### Questions and Information Needs

- 1) How do benthic assemblages recover from physical disturbance by tropical cyclones or tsunamis?
- 2) How do benthic assemblages recover from coral bleaching?
- 3) How do reefs at atolls and fringing reefs recover from disturbance in comparison to those in Fagatele Bay?
- 4) How do benthic assemblages recover from disease outbreaks?
- 5) How does recovery correlate with type and intensity of disturbance?

### Scientific Approach and Actions

- Continue long-term monitoring studies
- Target new long-term monitoring studies at Rose Atoll, Swains Atoll, Manu'a and fringing reefs of Tutuila and Aunu'u, that include diverse habitat types such as seagrass meadows and mangrove stands
- Closely track individual coral colonies from severe bleaching events
- Analyze past recovery data and compare damage, recovery time, any significant ecological changes with type and intensity of disturbance

### Key Partners and Information Sources

Hawai'i Institute of Marine Biology; NOAA/NMFS/PIFSC/Coral Reef Ecosystems Division; NOAA/NMFS/PIFSC/CRED/Pacific Benthic Habitat Mapping Program; NOAA/NMFS/Pacific Islands Fisheries Center; NOAA/NOS/National Center for Coastal Ocean Science; NOAA/NMFS/PIRO, US Fish and Wildlife Service; US Geological Survey/Biological Resources Division; USGS/BRD/National Biological Information Infrastructure/Pacific Basin Information Node; Territorial Government of American Samoa, American Samoa Department of Marine and Wildlife Resources, The National Park Service of American Samoa

*Updated: 5/26/2011*

*For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>*

## Management Support Products

- *Acanthaster planci* monitoring dataset
- Recovery with type and intensity of disturbance model
- Long-term survivorship of bleached coral colonies

## Planned Use of Products and Actions

- Guidelines of resilience for a type of disturbance
- Management access to data in a form that is easily used and can be tailored to specific management questions
- Increased content of education and outreach products

## Program References

### NMSAS Management Plan

- Action Plan 4.1 Marine Conservation Science
  - Strategy MCS-5: Continue to enhance research and monitoring programs throughout the life of the plan
- Action Plan 5.1 Climate Change

### NMSAS Condition Report

- These activities will support all questions of the NMSAS Condition Report



*Crown of Thorns Starfish on Acropora sp. coral in Fagatele Bay. Image credit: Chuck Birkeland*

*Updated: 7/26/2010*

*For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>*