

Papahānaumokuākea Marine National Monument

Biodiversity

Management Issue

Managers require adequate information on the status of biodiversity in order to effectively protect resources of the Papahānaumokuākea Marine National Monument (PMNM or Monument).

Description

The Monument is the single largest conservation area under the U.S. flag, encompassing 137,797 square miles of the Pacific Ocean. The reefs of the Monument are considered to be in nearly pristine condition. Comprehensive information on the biodiversity of the Monument is needed in order to protect these valuable resources. As an example of how little is known about biodiversity in the Monument, a 2006 Census of Marine Life cruise which focused on non-coral invertebrates and algae found hundreds of new records and several new species. Given that this work occurred only within three miles of French Frigate Shoals, it is reasonable to expect that a similar intensive effort at other areas of the Monument would likely yield comparable results. Furthermore, to date much of the work that has been completed has been focused on shallow-water (<100 ft.) reef ecosystems, research focused on underexplored habitats such as deep reefs, sand habitats, and algal beds will certainly also reveal new records and species. It is clear that much more effort needs to be put into establishing baseline biodiversity data as an essential first step to understanding the ecosystems of the Monument.

Questions and Information Needs

- 1) What is the baseline biodiversity at different sites within the Monument?
- 2) How does the biodiversity change over time?
- 3) What data sets exist from which biodiversity information can be extracted?
- 4) Are there biodiversity hot spots which require added protection or increased sampling effort?



Schooling fish at French Frigate Shoals. Photo credit: James Watt

Scientific Approach and Actions

- Conduct a literature search of biodiversity related information to evaluate what is already known about biodiversity in the Monument
- Solicit contributions of unpublished data sets for use in determining biodiversity indices
- Develop databases into which biodiversity related data can be stored for analyses
- Conduct field biodiversity assessments
- Convene a biodiversity workshop to determine: 1) what data sets exist and what work has been accomplished related to biodiversity; 2) what methodologies should be used to gather additional biodiversity information; and 3) where future biodiversity surveys should be conducted within the Monument (site selection)
- Gather information on human use of the Monument to determine if those activities are impacting biodiversity
- Evaluate impacts from human activities on biodiversity

Updated: September 2014

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

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Potential Key Partners and Information Sources

NOAA/NMFS/Pacific Island Fisheries Science Center, Coral Reef Ecosystem Division; US Fish and Wildlife Service; University of Hawai'i's Sea Grant College Program; State of Hawai'i Department of Land and Natural Resources, Division of Aquatic Resources; Native Hawaiian Cultural Practitioners; Hawai'i Institute of Marine Biology; Census of Marine Life/Census of Coral Reefs; Bernice P. Bishop Museum; National Museum of Natural History, Smithsonian Institution.

Management Support Products

- Annotated bibliography of literature related to biodiversity in the Monument
- Database of existing information related to biodiversity
- GIS layer of biodiversity information
- Analysis of human impacts on biodiversity

Planned Use of Products and Actions

- Education and outreach products that utilize biodiversity information to educate the public on the unique and valuable natural resources of the Monument
- Incorporate biodiversity information into management decisions about the use of the Monument
- Identify areas of high biodiversity for increased protection



Coral, Macro Algae, and Crustose Coralline Algae, Lisianski Island. Photo credit: James Watt

Program References

PMNM Management Plan

- Action Plan 3.1.1 Marine Conservation Science
- Strategy MCS-1: Continue and expand research, characterization and monitoring of marine ecosystems for the life of the plan.
- *Other Action Plans:*
 - o 3.2.1 - Threatened and Endangered Species
 - o 3.2.2 - Migratory Birds
 - o 3.2.3 - Habitat Management and Conservation
 - o 3.1.1 - Marine Debris
 - o 3.3.2 - Alien Species
 - o 3.5.1 - Agency Coordination
 - o 3.6.2 - Information Management
 - o 3.6.3 - Coordinated Field Operations

PMNM Condition Report

- Question 9 (biodiversity)

ONMS Performance Measures

- Number of sites in which select living marine resources, based on long-term monitoring data, are being maintained or improved.
- Number of sites in which habitat, based on long-term monitoring data, are being maintained or improved.

Other Documents

- Monument Goals 1, 2, and 5

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