# BRIDGING SCIENCE AND MANAGEMENT in the Pacific Remote Islands Marine National Monument

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## INTRODUCTION

**The Pacific Remote Islands Marine National Monument (PRIMNM)**, one of the Marine National Monuments co-managed by NOAA and U.S. Fish and Wildlife Service, was established in 2009 and later expanded in 2014. Spanning the central Pacific, the seven islands protected under the Monument - Baker, Howland, Jarvis, Johnston, Kingman, Palmyra, and Wake - are relatively uninhabited and support intact and unique coral reef ecosystems. Although not subject to direct human pressures, the marine communities face threats from climate change.

Coral reefs at Palmyra Atoll. USFWS.

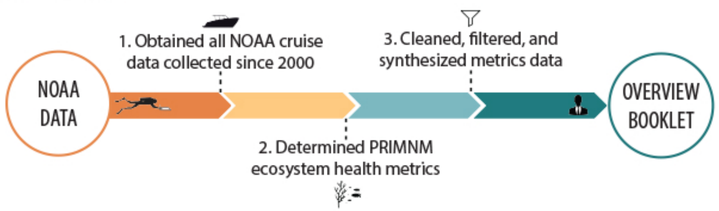
Since 2000, NOAA has conducted monitoring surveys in the PRIMNM spanning biological, chemical, and physical parameters. These data are used by scientists and managers to better understand coral reef ecosystem health. Due to the recent designation of the PRIMNM, the data collected was not synthesized prior to this project. The newly synthesized data will inform managers in their creation of a management plan. Agencies must foster effective communication between all stakeholders in order to successfully manage large-scale marine protected areas such as the PRIMNM. Therefore to better protect and preserve this Monument, it is important to have effective communication between scientists, managers, and the public. This study is an effort to bridge the gaps identified between all stakeholders.

### Objectives

- Communicate ecosystem health to resource managers
- Identify public perceptions and increase awareness of Pacific Marine National Monuments

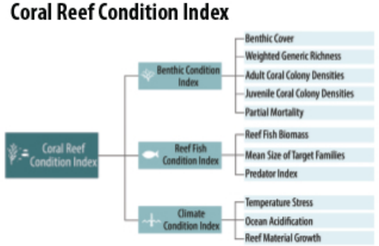
## APPROACH

### Overview Booklet



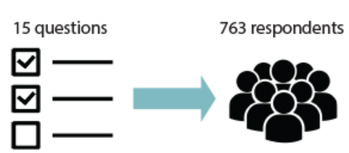

An overview booklet was created to communicate ecosystem health to PRIMNM managers. Three different levels of synthesis were conducted: Pacific-wide comparisons, Monument comparisons, and unique island highlights.

### Coral Reef Condition Index




A multi-metric coral reef condition index was developed to better understand overall ecosystem health. Each metric was equally weighted.

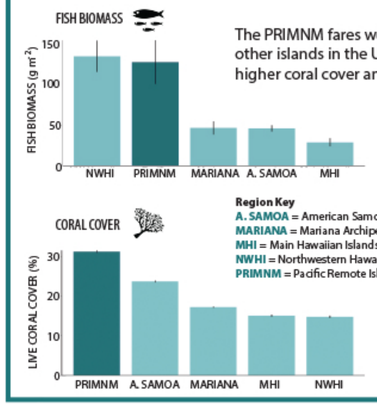
### Survey




We distributed a 15 question survey to 763 respondents on SurveyMonkey to better understand the public's perception of marine conservation and threats facing our oceans.

## ECOSYSTEM HEALTH

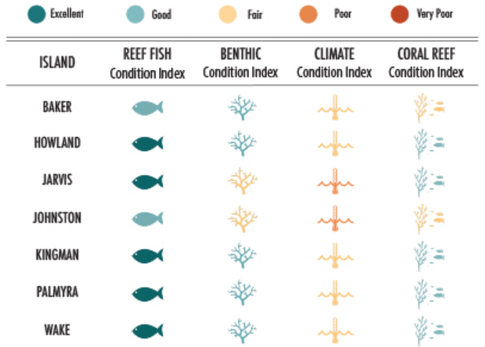
### Pacific-wide Comparison




The PRIMNM fares well when compared to other islands in the U.S. Pacific, often having higher coral cover and fish biomass.

**Region Key**
**A. SAMOA** = American Samoa
**MARIANA** = Mariana Archipelago
**MHI** = Main Hawaiian Islands
**NWHI** = Northwestern Hawaiian Islands
**PRIMNM** = Pacific Remote Islands Marine National Monument

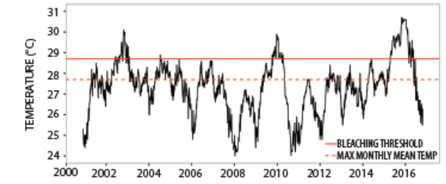
### Monument Comparison

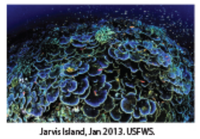



Overall, the benthic and fish communities are relatively healthy within the PRIMNM. Climatic conditions pose a threat to these coral reefs.

### Island Highlight: Jarvis

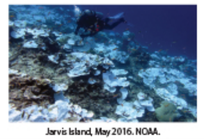
During the 2015-2016 El Niño, Jarvis surpassed the coral bleaching threshold for 43 consecutive weeks. This led to a 98% decrease in live coral cover.



Jarvis Island, Jan 2013. USFWS.

98% MORTALITY



Jarvis Island, May 2016. NOAA.

## PUBLIC PERCEPTIONS

From our survey, we identified the public's baseline understanding of marine protected areas, threats our oceans face, and overall ocean health. Five communication materials were then developed to target the awareness gaps identified through survey analysis.

**94%** have never heard of the Pacific Remote Islands Marine National Monument

**THE PACIFIC REMOTE ISLANDS MARINE NATIONAL MONUMENT**
an introductory film

**UNAWARE** of benefits offered by marine protected areas

**MARINE PROTECTED AREA SUCCESS STORIES**
an ESRI StoryMap

**59%** believe they have very little to no personal impact on the ocean

**FROM HOME TO HABITAT: WHAT WE CAN DO AT HOME TO PROTECT CORAL REEFS**
an educational infographic

**2/3** have never heard of a Marine National Monument

**EXPLORING U.S. PACIFIC MARINE NATIONAL MONUMENTS**
an ESRI StoryMap

**25%** believe climate change poses little to no threat to coral reefs

**REEFS IN PERIL: A CHANGING CLIMATE FOR CORAL REEFS**
an ocean threats film

## CONCLUSION

Our findings indicate that the biological communities within the PRIMNM are relatively healthy; however, climate change poses a threat. Our survey revealed that the American public is largely unaware of their role as a stakeholder in federal marine conservation in the Pacific. To effectively manage large-scale marine protected areas, such as the PRIMNM, it is essential for agencies to foster effective communication between scientists, managers, and the public. This will aid in the continued support for the PRIMNM and other critical marine habitats around the world.

Manta ray at Jarvis Island. NOAA.

## ACKNOWLEDGEMENTS

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## FURTHER INFORMATION

For further information on our project and to view our communication materials, visit our website:
www.primnmcorals.weebly.com

To view the complete version of the overview booklet *Coral Reef Ecosystems of the Pacific Remote Islands Marine National Monument: a 2000-2016 Overview*, visit:
www.pifsc.noaa.gov/cred/coral_reef_ecosystem_monitoring_reports.php