

Testimony of
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Subcommittee on Insular Affairs, Oceans and Wildlife
Committee on Natural Resources
U.S. House of Representatives

Hearing on the
Marianas Trench Marine National Monument Visitor Facility
Authorization Act of 2009 (H.R. 3511)
and the
Marine National Monument Management Enhancement Act of 2010/Bonitan Tasi
(H.R. 4493)

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Introduction

Good morning Chairwoman Bordallo and other distinguished members of the Subcommittee, and thank you for the opportunity to speak with you today about the Marianas Trench Marine National Monument.

My name is Nancy Knowlton and I hold the Sant Chair of Marine Science at the Smithsonian Institution's National Museum of Natural History. I have been a marine biologist for over thirty years, with special expertise on coral reefs, which includes work done in collaboration with scientists at the University of Guam. In addition, I have dived on the reefs of the Northern Line Islands, also protected by the Presidential declaration of 2009, and have seen at first hand the spectacular nature of these habitats – knowledge that I presented to the White House Council on Environmental Quality prior to the Monument's designation. Finally, I have worked closely with Smithsonian education and exhibits experts to increase public understanding of the oceans via the National Museum of Natural History's Sant Ocean Hall and the new web-based Ocean Portal.

State of the Oceans and Consequences for People

As you all know, ocean ecosystems around the planet are suffering. Locally, in place after place, overfishing, destructive fishing, pollution and invasive species have taken a heavy toll. Globally, ocean warming, sea level rise, and ocean acidification associated with increasing concentrations of carbon dioxide in the atmosphere are increasingly threatening the health of ocean habitats and organisms. Although near-shore, shallow

water environments have been especially impacted, changes associated with human activities reach to the deep sea as well.

These changes affect not only ocean organisms but the welfare of people who depend on them. The people of Guam and the Northern Mariana Islands are more intimately connected to the welfare of the ocean than almost any other group of people. Loss of productive fisheries impacts food security, and loss of coral reefs exposes coastal populations to waves from typhoons and tsunamis. Healthy marine ecosystems also bring in financial resources via the ever growing tourism industry. In sum, healthy oceans and human welfare go hand in hand, particularly in the part of the world that is the focus of the bills before the Subcommittee.

Unique Value of the Marianas Trench Marine National Monument

The Marianas Trench Marine National Monument represents an extraordinary resource for the people who live there, and the world as a whole.

- 1) Located near the epicenter of marine diversity, the Monument includes coral reefs of exceptional beauty and richness. Many of these reefs are relatively unimpacted by human activities, making them an invaluable source of baseline data for monitoring the performance of other reefs in the area. This baseline information will be of increasing importance to assess the effects of increases of carbon dioxide in the atmosphere.
- 2) Also within the Monument are exceptional marine communities associated with underwater volcanoes. Life there depends on chemical energy derived from molten rocks, and the acidic water that is released from the vents provides a living laboratory for understanding the consequences of human-derived ocean acidification.
- 3) The Monument also notably contains the deepest point on the planet, deeper than Mount Everest is high. Visited by man only once, it is truly more remote than the moon and represents a last frontier for planetary exploration. The genetic resources of organisms that live in these frigid, lightless waters under crushing pressures also have enormous potential to inspire biotechnical advances (as do the organisms of the vent waters mentioned above).
- 4) The cultural wealth of the peoples of the Monument provides inspiration for those who wish to celebrate and learn from cultures who have lived with and depended on the ocean for thousands of years.
- 5) The physical scale of the Monument, one of the biggest in the world, makes it exceptionally valuable. Protection of large swaths of marine habitat brings benefits to ocean dwellers that are not evident when only smaller areas can be protected and terrestrial habitats may also benefit.

Research to Better Understand the Monument

This extraordinarily valuable Monument requires careful management, and management requires understanding. At the most basic level, most of the marine organisms that live within the monument have never been studied or even named by scientists. Not surprisingly, the interactions among these organisms that underpin these ecosystems are even less well understood.

Studies at another, newly created Monument in the Northern Line Islands clearly show that protected shallow water habitats, such as reefs, are much healthier than other nearby and otherwise similar areas where human pressures are high (i.e. the Kiribati Republic). What are less well understood are the mechanisms that underpin the greater resilience of these remote reefs, and how one might achieve this resilience in areas where people are present. The Monument can provide both the ability to understand the critical features of healthy reefs and to apply this knowledge. These waters also are home to economically important fishes and other organisms whose biological requirements for sustainable harvest remain poorly known.

Public Education about the Monument

In order for people to support the management of resources that lie so close but beneath the surface, they need to understand their value and the threats they face. Many people do not understand how the ocean works, how it has changed, and what is needed to conserve and restore its health. Public education is critical for this.

People are also drawn to the sheer excitement of the unknown. There is no more unknown place on earth than the depths of the Marianas Trench. Engaging people in the process of discovery has many benefits beyond the most immediate need to manage resources – citizen scientists better appreciate other technically complex issues that society faces, and discovery brings excitement into people's lives. At the Smithsonian, staff scientists often use volunteers to assist with data collection in the field. Having citizen scientists participate in the research and discovery process leads to a strong interest in research and the use of results for policy decisions.

Lessons from the Smithsonian Experience

In September 2008, the National Museum of Natural History opened the Sant Ocean Hall. This exceptional exhibit, supported by Congress and private donors, has already hosted more than five million visitors. Press interest has been exceptional and overwhelming positive. The exhibit also provides the opportunity for hands-on ocean learning, as with the events associated with World Ocean Day that reached 40,000 people. It provides an inspirational setting for public lectures and other family events.

The bottom line is that people from all walks of life from around the planet are interested in and care about the ocean, and that they are hungry for information.

The Smithsonian has also invested heavily in electronic education and communication. The Encyclopedia of Life (EoL) is a website that will eventually contain up to date information on every known species of life on earth, and adding entries about ocean organisms has been a priority for the last year. The EoL gets 400,000 visitors every month, clearly showing that people find this information interesting and important. Soon, the Smithsonian's ability to reach even more people will come to fruition with the web-based Ocean Portal. This virtual ocean experience challenges students, teachers and ocean enthusiasts to learn more about the ocean and become engaged with ensuring its future health.

The resources developed and lessons learned by the Smithsonian in the course of creating these educational opportunities are available to help the peoples of Guam and the Northern Mariana Islands create their own educational facilities and resources. Moreover, the Smithsonian can bring the biological and cultural wealth of the Marianas to a vast audience by featuring the results from efforts at the Monument in the Ocean Hall, the Encyclopedia of Life, and the Ocean Portal. Speaking as a scientist who has spent her career studying the ocean and making the fruits of science available to the public, I look forward to being able to help in this enterprise.