

2013 ACCOMPLISHMENTS



BIG OCEAN'S SHARED RESEARCH AGENDA FOR LARGE-SCALE MARINE MANAGED AREAS

In February 2013, Big Ocean, a network of the world's large-scale marine managed areas, released a collaborative research agenda outlining the unique scientific needs and challenges of large-scale MPAs. Big Ocean sites, consisting of the seven largest MPAs on Earth, account for more than half of the area protected by the world's MPAs. Lead by the monument, the plan encourages collaborative research among the large-scale sites. Big Ocean scientists conducted the first collaborative research expedition under the plan, published a scientific article and have begun developing ecological monitoring protocols specific to large-scale sites.



DEEP REEF EXPEDITION YIELDS NEW DISCOVERIES

In May 2013, the monument conducted NOAA's first dedicated, closed-circuit, rebreather expedition in order to explore the mesophotic coral ecosystems of the Northwestern Hawaiian Islands (NWHI). A rebreather is a scuba device that produces no bubbles and allows a diver to breathe his/her own air over again. This achievement places ONMS squarely at the forefront of NOAA's diving and exploration programs. These deep coral reefs (40 to 80 meters or more) are virtually unexplored, and have yielded many unexpected discoveries. Among these are more than 70 new species of algae, a 25% increase in the number of fishes known from the NWHI and the highest levels of endemism known of any marine ecosystem on Earth.



BRINGING THE MONUMENT TO THE PEOPLE

Through a unique public/private collaboration, the monument and Google have worked together to bring the Northwestern Hawaiian Islands to the world. In 2013, NOAA and U.S. Fish & Wildlife Service staff captured 360 degree panoramas from five atolls within the monument using the Google Street View Trekker. In total, with the additional imagery captured on Midway Atoll in 2012, more than ten thousand images have been captured within the monument, which has led to over one million unique visitors to its Street View pages.



RAPID INTERTIDAL ASSESSMENT USING MOBILE APP

Researchers can now quickly and accurately monitor the Hawaiian limpet ('opihi) on the rocky shorelines of the Northwestern Hawaiian Islands using a mobile app developed in partnership with Texas A&M University-Corpus Christi. The app, piloted in 2013, allows for detailed, rapid assessment of intertidal zones, which has enabled researchers to count all the 'opihi at La Perouse Pinnacles, as well as conduct DNA extraction in situ. This research will lead to better understanding of human harvesting impacts and how 'opihi move within different geographic areas.



Papahānaumokuākea Marine National Monument (PMNM) was created by Presidential Proclamation as the country's first Marine National Monument. With a specific aim to protect both the natural and indigenous cultural heritage of the vast 140,000 square mile area, PMNM has become a globally recognized, best practice model for the governance and management of large-scale, remote marine ecosystems. The monument encompasses a multitude of marine habitats including seamounts, abyssal plains, epipelagic oceanic waters, and the country's only true atolls. Native species abound, but in deep waters, coral reef fish communities are over 90% endemic – the highest recorded level of endemism from any marine ecosystem. With a focus on connecting land, people and the sea, PMNM has renewed an understanding of 'āina momona (abundance) – serving as a reminder of what the world's oceans were once like before the global baseline of wellness shifted. Established June 15, 2006.

LOOKING AHEAD

- PMNM is leading the collaboration between Big Ocean and the IUCN to develop *Guidelines for the Design and Management of Large-Scale Marine Protected Areas*, a publication aimed to help improve the design and management of large-scale marine sites.
- As part of a Pacific Region effort, PMNM will support the Polynesian Voyaging Society's Worldwide Voyage, which departs Hawai'i in May 2014 en route to American Samoa, with the mission of raising awareness about the importance of protecting the oceans.
- In 2014, PMNM staff and partners will collaborate with Schmidt Ocean Institute's R/V *Falkor* to take detailed, high-resolution sonar images of PMNM's largely-unmapped seafloor. This project leverages over \$2 million in non-NOAA ship time to produce critical research and management data.

NOAA's Office of National Marine Sanctuaries is committed to supporting lives and livelihoods across the nation and in sanctuary communities through socioeconomic research and monitoring to understand the economic and social drivers of sanctuary resources and improve management practices.

NATIONAL MARINE SANCTUARY SYSTEM



The Office of National Marine Sanctuaries serves as the trustee for a system of 14 marine protected areas encompassing more than 150,000 square miles of marine and Great Lakes waters from Washington state to the Florida Keys, and from Lake Huron to American Samoa. The system includes 13 national marine sanctuaries and the Papahānaumokuākea Marine National Monument. For more information on the National Marine Sanctuary System, visit: <http://sanctuaries.noaa.gov>