NORTHWESTERN HAWAIIAN ISLANDS CORAL REEF ECOSYSTEM RESERVE
# RESERVE ADVISORY COUNCIL



June 17, 2019

Mr. John Armor, Director
Office of National Marine Sanctuaries
1305 East-West Highway, 11th Floor
Silver Spring, MD 20910

c/o Ms. Athline Clark, Superintendent
Papahānaumokuākea Marine National Monument
NOAA/DKIRC
NOS/ONMS/PMNM
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

RE: Access to Papahānaumokuākea Marine National Monument for management operations and research

Aloha mai Director Armor,

Thank you for the opportunity to draw your attention to the necessity of maintaining vessel access to Papahānaumokuākea Marine National Monument (PMNM) and the need for more days at sea for management operations and research. As you know the Monument is in dire need of a new ship to replace the soon-to-be decommissioned *Hi`ialakai*. Fulfilling this need should be given top priority. Given the remoteness of the Monument, it is a challenging area to access; yet, the ability to explore such a relatively pristine, vast marine expanse across a range of oceanographic disciplines is becoming increasingly central to our understanding of the complex nature of our oceans and our ability to predict future change.

Research vessels serve as essential platforms for conducting scientific research at sea. This research may include mapping and charting, marine biology, fisheries, geology and geophysics, physical processes, marine meteorology, chemical oceanography, marine acoustics, underwater archaeology, ocean engineering, and related fields. Modern technological development has made it possible to use sophisticated equipment such as satellites, drifting buoys and land-based drones for the study of the sea. But this technology can only collect data at or near the ocean surface, leaving the deployment of research vessels as the only viable way to explore the ocean depths.

A single deep-water expedition to PMNM in 2003 aboard the *Ka'imikai-o-Kanaloa* discovered more than 20 new species of corals and sponges, while an expedition aboard the *Okeanos Explorer* in 2015 collected 35 species that are either new to science or were not previously known from the region. This extraordinarily high rate of new species discoveries indicates that the

Monument's deep-sea fauna still contains many undiscovered species and represents an enormous opportunity for scientific exploration.
Collectively, *Okeanos Explorer* has completed 26 ROV dives to survey over 17 kilometers of seafloor within PMNM, collected over 60,000 square kilometers of high-resolution multibeam bathymetry, identified 15 high-density biological communities, and documented dozens of new species or records. Expedition results demonstrated that deep waters in PMNM represent important reservoirs of biodiversity and provided scientific support for expansion of the Monument. Furthermore, all data collected as part of this effort are publicly available, thereby supporting science, management, and conservation of deep-sea ecosystems by providing a repository of information that is widely accessible to resource managers, scientists, policymakers, economists, educators, and the public. This research benefits more than just the Monument. It promises to help the global effort to protect and preserve coral reefs in this time of global warming and climate change.

The *Kaimikai-O-Kanaloa* (KOK) has supported research in PMNM since 2007 serving as the primary platform for deploying the manned submersibles, Pisces IV and V, for conducting deep sea research. Specific projects the KOK has supported include: Frank Parrish (NOAA PIFSC) research on gold coral colonies (Gerardia spp) in 2007; Chris Kelley (University of Hawaii, Hawaii Undersea Research Laboratory) deep sea biological voucher specimen collections in 2007 and 2009; Robert Dunbar (Stanford University) deep sea coral research in 2007; David Clague (Monterey Bay Aquarium Research Institute) studies of past climate change on development and drowning of submerged reef terraces at Gardner Pinnacles (2010); and Amy Baco-Taylor (Florida State University) research on recovery potential for deep sea coral and sponge communities impacted by trawling (2016 and 2017).

The *Hi'ialakai* is renowned for more than a decade's worth of work assessing the health of coral reefs throughout the Pacific Islands. Scuba diving operations play a major role in the ship's mission, and *Hi'ialakai* is equipped for both shallow and deep-water dive projects. In recent years, NOAA divers have characterized deep coral reefs by conducting fish and benthic surveys in the mesophotic zone using closed circuit rebreathers. New species were found not previously known to science or to the PMNM. In addition, over the years *Hi'ialakai* has supported the surveying and removal of hundreds of tons of derelict fishing gear and other marine debris in the Monument.

For the near future, research vessels will be the primary method of oceanographic investigation in PMNM through direct observation and via autonomous vehicles. Moreover, these vessels can support a wide array of important PMNM activities unrelated to scientific research, from marine debris removal to ocean science education to preservation of Native Hawaiian cultural traditions.

William Aila, Jr.
Chair, Reserve Advisory Council