

**Papahānaumokuākea Marine National Monument**  
**Agency Report to the Reserve Council**  
October 22 – December 9, 2020

**Agency:** NOAA/NOS/ONMS/PMNM  
**Presented by:** Athline Clark, Superintendent  
**Date:** December 9, 2020

**Agency Accomplishments & Recent Activities**

*Agency Coordination*

**Agencies Coordinate on Nuisance Alga at Manawai (Pearl and Hermes Atoll)**

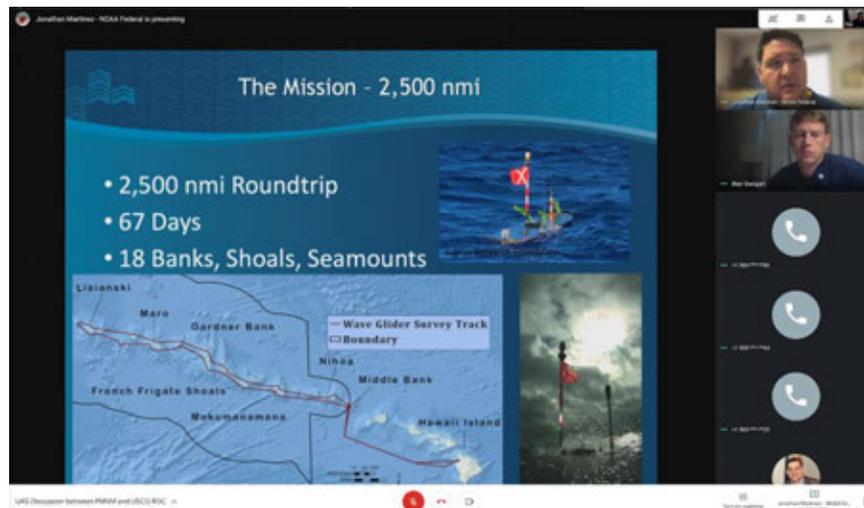
On October 21, a webinar and brainstorming session was held between PMNM/ONMS, the Hawai‘i Division of Aquatic Resources, representatives from NASA Ames Research Center and researchers from the College of Charleston, SC to discuss some of the known characteristics of the newly described nuisance alga *Chondria tumulosa*. Ongoing studies to try to map the spread of the alga using satellite technology, and discussions about possible mechanisms that could be employed to remove the alga were a part of the discussion. Interagency collaborations to address this threat to marine resources across the archipelago are continuing. Representatives from the US FWS, who were in the field, collected samples that will be used to further many of these research efforts. For more information contact: [athline.clark@noaa.gov](mailto:athline.clark@noaa.gov)



*Taylor Williams (College of Charleston) with a mat of Chondria tumulosa. Photo: Heather Spalding/College of Charleston*

**PMNM Participates in Meeting with USCG Research and Development Center**

On October 26, several PMNM staff members participated in a virtual meeting with members from the USCG R&D Center in New London, CT. Engineers from the Modeling Simulation and Analysis Branch were in Hawaii for a 30-day demonstration testing Maritime Domain Awareness capabilities using the Saildrone technology off Oahu. PMNM staff shared historical uses of UAS in the monument, including the most recent use of the Wave Glider that supported SanctSound, while learning more about the USCG's current testing of multi-mission UAS technologies. For more information, contact [eric.roberts@noaa.gov](mailto:eric.roberts@noaa.gov)



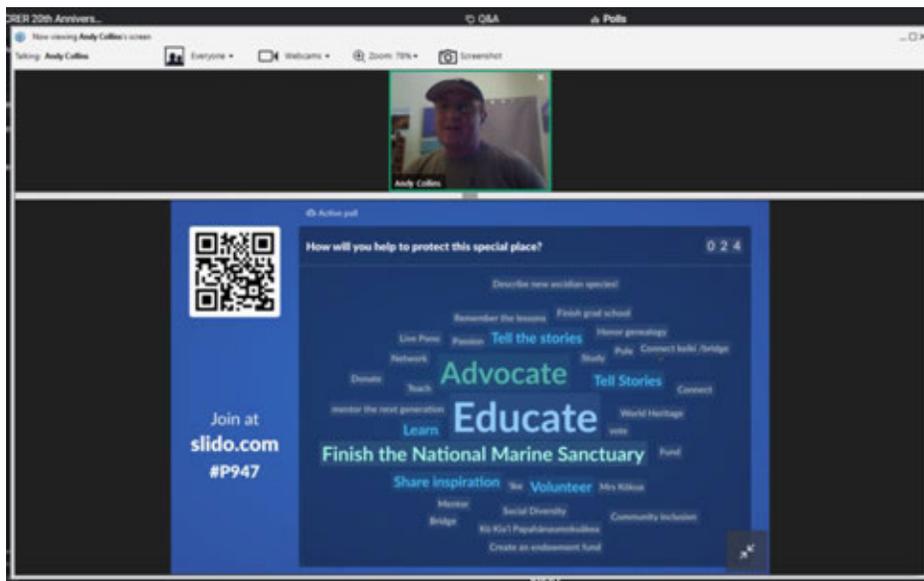
*PMNM Research Specialist Dr. Jonathan Martinez presents the recent Wave Glider survey while USCG CDR Brian Sweigart, PhD, Chief, Modeling Simulation and Analysis Branch looks on.*

### *Constituency Building and Outreach*

#### **Northwestern Hawaiian Islands (NWHI) Coral Reef Ecosystem Reserve Celebrates 20 Years**

On Friday 4 December, the NWHI Coral Reef Ecosystem Reserve (Reserve) celebrated 20 years with a webinar and lively audience participation. A series of short videos that took participants down memory lane were interspersed with a panel discussion featuring Athline Clark, current Superintendent, Aulani Wilhelm, past Superintendent and William Aila Jr., Chair of the Reserve Advisory Council. The webinar also featured John Armor, Director ONMS. In addition to the webinar, a web story about the creation of the NWHI CRER was also featured on the Papahānaumokuākea website. For more information, contact [Athline.Clark@noaa.gov](mailto:Athline.Clark@noaa.gov).

*Significance: Milestone events such as this ensure that we reflect on where we have come to best understand where we are going and give us a chance to thank all those who have been a part of the process.*



*Photo of the word cloud that was developed with input from participants when asked 'how will you protect this special place?' during the webinar*

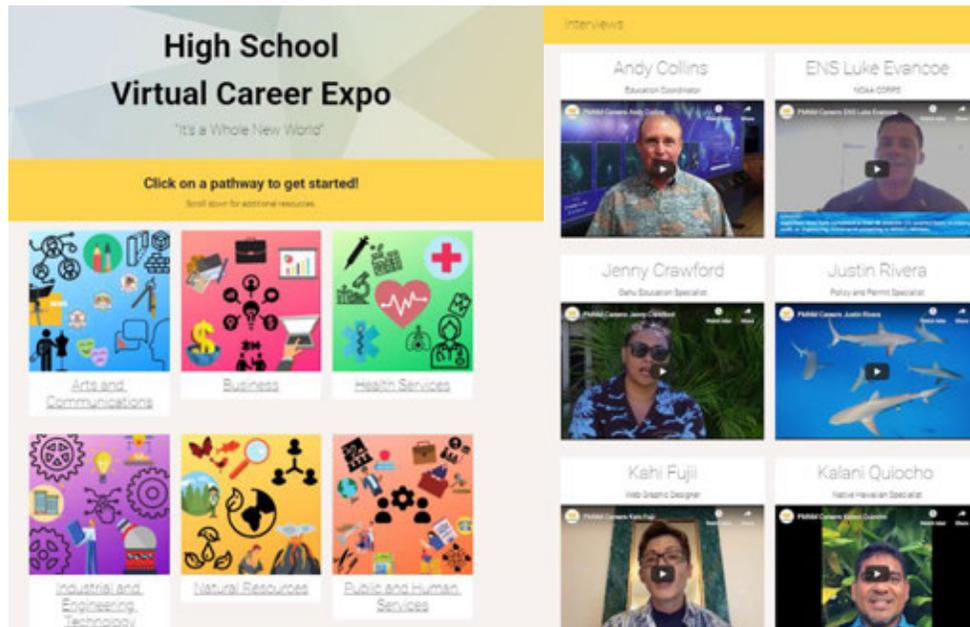
## ***Education***

### **PMNM Scientist Gives Online Guest Lecture for Bishop Museum**

On November 6, Research Coordinator Dr. Randy Kosaki gave a guest presentation in the Bishop Museum's weekly series of Friday happy hour lectures. Discoveries resulting from exploration of deep coral reefs in PMNM were highlighted. Approximately 30 people attended the online event. For more information, contact [randall.kosaki@noaa.gov](mailto:randall.kosaki@noaa.gov).

## Papahānaumokuākea staff provide virtual series for Hawai‘i Island Careers Expo

PMNM staff provided a [series of engaging videos](#) to Hawai‘i Island high school students, showing them the diversity of career pathways available when working for the monument. The [Hawai‘i Island Careers Expo](#) is a major annual event for middle and high schools across the island. The shift to virtual experience now opens the opportunities across Hawai‘i. For more information, contact [Justin.umholtz@noaa.gov](mailto:Justin.umholtz@noaa.gov)



## Mokupāpapa Discovery Center (MDC) Report

### Revealing the Secret Lives of Sharks webinar attracts widespread attention

Mokupāpapa Discovery Center was proud to host Dr. Carl Meyer, Associate Researcher with the Hawai‘i Institute of Marine Biology, for the Third Thursday by the Bay Webinar, Revealing the Secret Lives of Sharks. Dr. Meyer provided an engaging look at large predator research in Papahānaumokuākea Marine National Monument and the Hawaiian archipelago as a whole. 698 people registered, with 385 people attending the live presentation. Participants represented a diverse range of agencies, universities, nonprofits, K-12 schools, and private citizens from all regions of the United States as well as most continents of the world. If you are interested in being a guest presenter or would like more information about this webinar series, please contact [andy.collins@noaa.gov](mailto:andy.collins@noaa.gov)



*Photo: Carl Meyer*

### **Ocean Guardian School Connects for Virtual Bolus Dissection and Tour**

Volcano School of Arts and Sciences third grade students joined MDC Educator Justin Umholtz for a virtual visit to the Discovery Center before “voyaging” to Papahānaumokuākea and examining bolus contents collected from Hōlanikū/Kure Atoll. Students discussed the issue of marine debris and learned about NOAA resources to help them carry forward some of their ideas. For more information contact [Justin.umholtz@noaa.gov](mailto:Justin.umholtz@noaa.gov)

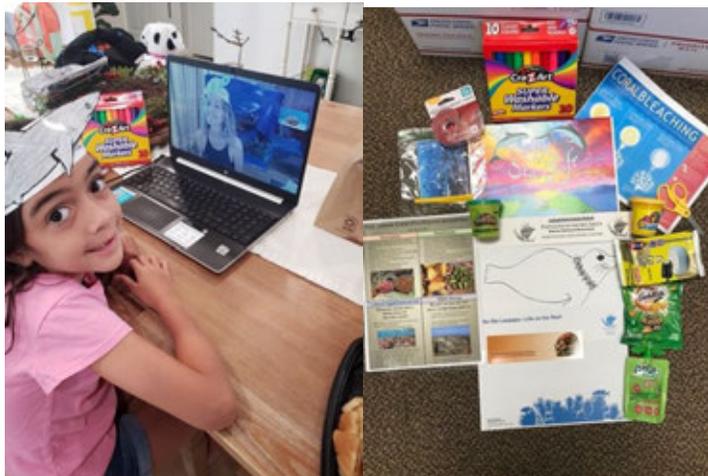


*Students helped identify bolus contents and shared their own school-related shoreline cleanup experiences. (Photo: Justin Umholtz/NOAA)*

### **Mokupāpapa Partners with Native Hawaiian Organizations on Distance Learning Lessons and Kits**

An educational initiative between MDC educator Malia Evans and the University of Hawai‘i at Hilo Kīpuka Native Hawaiian Student Center and Nā Pua No‘eau integrates science and traditional ecological knowledge (TEK) via a series of online lessons. The first lesson was delivered on November 21st. The 37 participants included K-3<sup>rd</sup> grade students, siblings, parents and grandparents engaged in place-based, experiential learning and kinesthetic activities grounded in Hawaiian values, culture and science. By sharing resources, networks and

programming, the message of conservation, cultural resiliency and stewardship is reaching the community in innovative ways. For more information, contact [Malia.Evans@noaa.gov](mailto:Malia.Evans@noaa.gov).



*Photos: Coral was the topic of the 90-minute inter-generational lesson that included NOAA, PMNM and MDC educational resources along with hands-on activity supply kits mailed to each registered student (Credit: Celeste Sison and Malia Evans/NOAA).*

### **Native Hawaiian Cultural Heritage Webinar Reaches Broad Local and International Audience**

As part of the National Marine Sanctuaries Webinar Series and Mokupāpapa's Third Thursday by the Bay Lecture Series, 746 people registered for Reframing wahi kūpuna: The tangibles and intangibles of cultural heritage in Papahānaumokuākea by V. Kalani Quiocho, Native Hawaiian Program Specialist for Papahānaumokuākea Marine National Monument (PMNM) and World Heritage Site. 376 people attended the live presentation on November 19, 2020, representing Native Hawaiian organizations and cultural groups, other first people's organizations, government agencies, nonprofits, schools and universities. The webinar highlighted the continued active engagement of Native Hawaiian leaders in advocating, protecting, managing and interpreting the cultural and natural resources within PMNM. For more information about this webinar series, please contact [Andy.Collins@noaa.gov](mailto:Andy.Collins@noaa.gov).



(Photo credit: Virginia Branco/NOAA)

### *Research & Field Operations*

#### **Two New Species of Black Coral Described from PMNM**

On October 28, the journal *Zootaxa* published a description of two new species of black coral (Anthipatharia) collected from seamounts in PMNM during NOAA ship *Okeanos Explorer's* CAPSTONE cruises in 2015. *Antipathes sylosporgia* was collected off Nihoa and Kapou (Lisianski Is.) at depths of approximately 1,400-1,800 m. *Umbellapathes litocrada* was collected on St. Rogatien bank at a depth of approximately 1,500 m. The first author on the paper, Dennis Opresko, is the world expert on black corals. Opresko recently named a new species of black coral from Elvers Bank (in the proposed FGBNMS expansion area), *Distichopathes hickersonae*, after FGBNMS research coordinator Emma Hickerson. Daniel Wagner, a co-author on the PMNM paper, was a Research Specialist at PMNM at the time and was involved in the collection of the specimens. The open-access article is available at <https://www.mapress.com/j/zt/article/view/zootaxa.4868.4.5/41678>. For more information, contact [randall.kosaki@noaa.gov](mailto:randall.kosaki@noaa.gov)



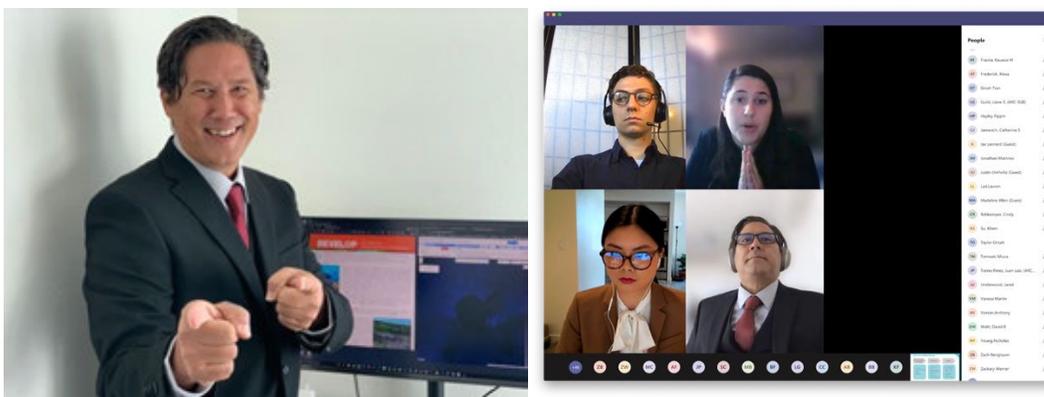
*Left: Antipathes sylosporgia* growing on a sponge, 1400 m. Black substrate is manganese crust, highly prized by the deep-sea mining industry. *Right: Umbellapathes litocrada* holotype specimen with an unidentified hitchhiker, 1529 m. Photos: NOAA Office of Ocean Exploration and Research.

#### **PMNM Scientists Publish Paper Linking Reef Complexity to Fish Assemblage Structure**

On November 15, PMNM scientists Drs. Atsuko Fukunaga and Randy Kosaki, along with Univ. of Hawai'i at Hilo collaborators, published a peer-reviewed article entitled "Fish Assemblage Structure in the Northwestern Hawaiian Islands Is Associated with the Architectural Complexity of Coral-Reef Habitats" in the journal *Diversity*. PMNM has been using 3D photogrammetry techniques to reconstruct coral-reef habitats of the Monumen for several years, and has now used the techniques to investigate associations between reef's architectural complexity and reef fish assemblage structure. Using data from the annual PMNM Reef Assessment and Monitoring (RAMP) cruises, the researchers found that higher levels of architectural complexity supported greater numbers of fish species, with varying effects on different trophic groups. PMNM's ecological research statistician, Dr. Atsuko Fukunaga, is the first author of the publication. The article can be accessed online at <https://www.mdpi.com/1424-2818/12/11/430>. For more information, contact [Atsuko.Fukunaga@noaa.gov](mailto:Atsuko.Fukunaga@noaa.gov).

### **PMNM NASA DEVELOP Internship Closeout Week**

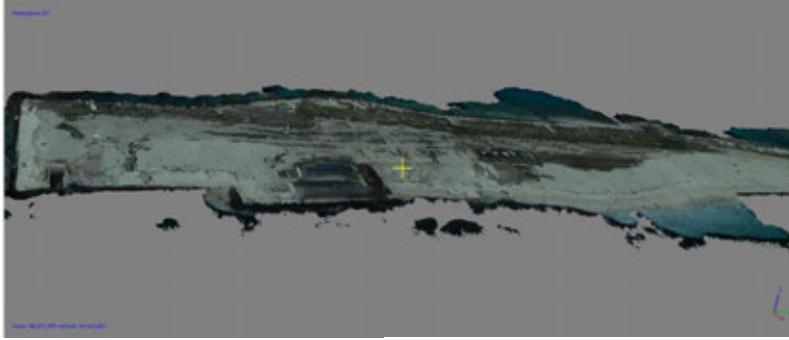
On November 16, 2020, JIMAR/PMNM Field Logistic Coordinator Keolohilani H. Lopes Jr. and the NASA DEVELOP team of Anna Ballasiotes, Taylor Orcutt, and Ginah Tran delivered their virtual closeout presentation. This NASA sponsored internship allows remote sensing students to work on a project with partnering agencies on solving real world problems. This particular project investigated oceanographic conditions that could potentially be driving the widespread growth of the nuisance algae, *Chondria tumulosa* at Manawai (Pearl and Hermes Atoll in PMNM). This talented team created a Google Earth Engine tool that tracks sea surface temperature, chlorophyll-a, and salinity in oceans surrounding the major atolls of PMNM. The public release of this tool is expected to be approved in about 6 months by the NASA IT team. To get a more in depth look at the tool and its capabilities please attend the Mokupapapa Discovery Center, virtual presentation on December 17<sup>th</sup>, 2020 at noon HST. For more information contact: [Keolohilani.Lopes@noaa.gov](mailto:Keolohilani.Lopes@noaa.gov).



*Photo: (Left) Mr. Lopes preparing for the final NASA DEVELOP presentation (Photo: Anna Mikkelsen). (Right) DEVELOP team presenting the results of the 10-week program (Photo: Randall Kosaki)*

### **PMNM UAS and Remote Sensing Program Funds**

PMNM, OR&R, and DARRP partnered to launch an Unpiloted Aerial System (UAS) and remote sensing program for Papahānaumokuākea Marine National Monument. With guidance from Athline Clark, Dr. Randall Kosaki, and JIMAR lead, Brian Hauk, Keolohilani H. Lopes Jr. was able to contribute to a proposal describing a collaborative framework spanning three agencies and acquire funding to meet the various needs of the partners. This funding will provide UAS aircrafts to respond to marine emergencies and coral reef damage assessments that result from groundings and other mishaps at sea. This program will also look at biological markers in coral reef ecosystems within the monument, like coral bleaching, and the relatively new threat of the nuisance algae, *Chondria tumulosa*, plaguing, Manawai (Pearl and Hermes atoll). For more information contact [keolohilani.lopes@noaa.gov](mailto:keolohilani.lopes@noaa.gov)



MATRICE 210 RTK

*Photo: (top)) Image of a 3D rendered image of Tern Island in 2018. This is an example of the type of products we will be able to create from UAS collected images (Photo: Keolohilani H. Lopes Jr.). (Bottom) Images of potential UAS platforms, DJI Matrice 210 v2 RTK and the Parrot ANAFI (photo: DJI and Parrot ANAFI).*