

**Papahānaumokuākea Marine National Monument
Agency Report to the Reserve Council
October 2023 - January 2024**

Agency: NOAA/NOS/ONMS/PMNM
Presented by: Eric Roberts, Superintendent
Date: January 29, 2023

Agency Accomplishments & Recent Activities

Education, Outreach and Mokupāpapa Discovery Center Highlights

Mokupāpapa Weekly Report

During the week of October 10-14, 2023 MDC engaged 1108 people. With the majority of schools out for fall break, the week was busy with local families, cruise ship and other visitors alike. Staff took advantage of the respite from school field trips to participate in outreach activities and exhibit updates. Our partners, the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center served 78 people.



Newly installed walls provide the beginnings of an exhibit space highlighting our Pacific Islands Region. (Credit: Justin Umholtz/NOAA)

NOAA BWET - 'Imi Pono Exchange

On October 10th, PMNM Educator Hōkū Pihana participated in a field exchange with the 'Imi Pono Fall Break program through the NOAA BWET grant. Students were hosted by the Nā Wa'a Mauō Marine Stewardship Program and learned how to use wa'a (canoes) to study and care for our oceans. MDC hosted the plankton lab in the field where students deployed plankton nets for sample collection and gathered water properties data using a water probe from the wa'a to analyze and discuss on the beach. Through this partnership, MDC engaged 15 participants (11 students and 4 staff members) in meaningful marine stewardship practices that are scientifically rigorous and culturally rooted.



Photos: 'Imi Pono students examining their plankton samples (pc: Hōkū Pihana)

PMNM Participates in Outreach Event at SOEST Open House

On October 21, PMNM staff Kanoe Morishige, Sara Wood, Brian Hauk, and Jason Leonard represented ONMS at the University of Hawai'i's open house.. This event showcased research, education, and service programs by School of Ocean and Earth Science and Technology (SOEST) and other partners in the scientific and environmental community. PMNM's table's theme was *Building Pilina (relationships) to the Kai Lipo (deep sea) of Papahānaumokuākea*. The focus was on educating attendees about the use of technical diving and 'Ōiwi (Native Hawaiian) nomenclature initiatives of the Papahānaumokuākea Cultural Working Group to grow our collective knowledge of the mesophotic ecosystems of Papahānaumokuākea. This well attended event connected Papahānaumokuākea to a variety of students, families and community members.

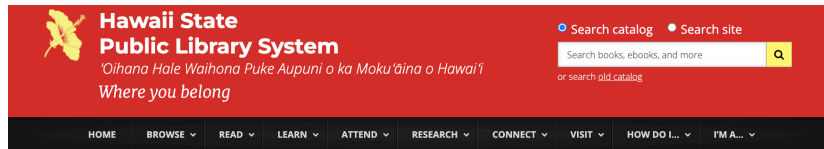


Photos: PMNM SOEST Outreach table. (Photos: NOAA).

PMNM Overview and Sanctuary Designation Presentation at Honoka'a Public Library

On October 23, Acting Deputy Superintendent Andy Collins gave a presentation on PMNM, the latest research and management activities, and sanctuary designation for PMNM to an audience of 22 at the Honoka'a Public Library. The presentation focused on how the public can engage in the sanctuary designation, what the benefits are, and what the co-trustees, and partners are doing to manage PMNM. The presentation went well over an hour with many great questions and a very engaged audience.

Event page for presentation. (Credit: HSPLS)



[All Events](#)

This event has passed.

EXPANDING PROTECTIONS FOR PAPAHAŪAUMOKUĀKEA MARINE NATIONAL MONUMENT

October 23, 2023 @ 5:30 pm - 6:30 pm



Papahānaumokuākea Marine National Monument is the single largest, fully protected conservation area on Earth. Papahānaumokuākea is a habitat for monk seals, sea turtles, over 14 million seabirds, and more. Come and learn about this remote part of Hawaii, as well as Native Hawaiian cultural reconnection with these islands, from NOAA Education Coordinator and Honoka'a resident Andy Collins.

Anyone who requires an auxiliary aid or service for effective communication or a modification of policies or procedures to participate in a program, service, and activity should contact library staff as soon as possible. Advance requests 48 hours or more before the event are encouraged, but not required. All programs are subject to change. For a list of upcoming library events, visit www.librarieshawaii.org/events.

Hawai'i Artist Holds Fund Raiser for "Fish Pono: Save Our Reefs" Campaign

On Oct. 25, nationally recognized artist Jana Ireijo launched a fund-raiser called "Vanishing Murals: Hawai'i Ocean NFTs". About 70 people attended the gallery opening and fund-raiser, held to benefit the "Fish Pono" campaign. Led by PMNM RAC research member Dr. Mark Hixon, "Fish Pono" encourages local fishers to take only what they need, with an emphasis on preserving stocks of herbivorous fishes whose lawnmower-like ecology enables coral reefs to recover from bleaching events and other climate-driven impacts. Artist Jana Ireijo creates NFTs (non-fungible tokens), a combination of digital and conventional media that enables images to change over time. Driven by real-time climate data from the Hawai'i Institute of Marine Biology, the NFT images of coral reef life will darken as ocean temperatures rise, fading to a dark sea of stars until only Polaris and the Southern Cross remain. Both constellations were key landmarks for Polynesian celestial navigators, and, in a world increasingly threatened by climate change, the stars may help us as a society to navigate a path back to sustainability. As sea surface temperature data indicate ocean temperatures have again dropped, the NFT images reappear from the starry sky.



(Left): Fish Pono Ambassadors Mark Cunningham (legendary bodysurfing champion), Randy Kosaki, artist Jana Ireijo, and Dr. Mark Hixon (PMNM RAC). (Right) “Pilina” NFT by Jana Ireijo. Photos: Lance Royle

Mokupāpapa Weekly Report

During the week of October 15-21, MDC engaged 828 people. The week was designated with facility care as a focus. In addition to general maintenance, staff improved the Art for Conservation exhibit gallery and prepared a new meeting room to support our national and regional ONMS colleagues, as well as in-house needs. Our partners, the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center served 58 people. For more information, contact Andy.Collins@noaa.gov

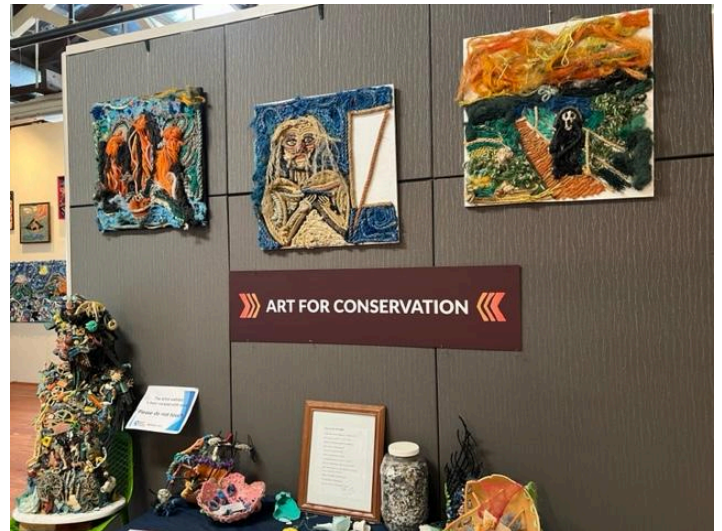


Photo: Don Elwing's marine debris art reorganized in the evolving gallery space. (Credit: Justin Umholtz/NOAA)

‘Ōlelo Hawai‘i, Hawaiian Language Inreach Classes For PMNM Staff

“O ka ‘ōlelo ke ka‘ā o ka maui - Language is the fiber that binds us to our cultural identity. ‘Ōlelo Hawai‘i is at the core of our way of life in Hawai‘i.” Part of the legacy of NOAA PMNM is creating an equal platform for Kānaka ‘Ōiwi (Native Hawaiians) at the table of co-management within the daily operations within NOAA PMNM, weaving knowledge systems, values, practices, and language, through all programs of co-management. Recently, Papahānaumokuākea ‘Ōiwi staff

have reignited the effort to create a safe space for PMNM staff on O‘ahu and in Hilo (virtual participation) to strengthen foundational cultural competency through learning and practicing the core fundamentals of ‘Ōlelo Hawai‘i (Hawaiian language). We are beginning with the correct pronunciation of commonly known Hawaiian words and the group sharing of place names from where staff members reside. Part of the class focuses on practicing the oli (chant) that were composed by Keoni Kuoha, Kainani Kahaunaele, and Halealoha Ayau, in honor of Papahānaumokuākea as an ‘Āina Akua, that staff regularly recite at the Kauhale (staff meetings). This is just the beginning of a new Inreach Program within Papahānaumokuākea.

Mokupāpapa Weekly Report

During the busy week of October 24-28 MDC engaged 1482 people, welcoming visitors and working with multiple field trips and at outreach events. Educators welcomed 70 sixth graders from Keonepoko Elementary, who made the one hour bus ride to Mokupāpapa for the Earth, Sea, Sky program. We continue to be grateful for our National Park Service partnership, whose grant covers the transportation costs of our rural, less resourced schools. MDC managers Andy Collins and Virginia Branco worked with a University of Hawai‘i Conservation Biology and Environmental Science graduate class to discuss exhibit design and visitor engagement. Andy also continued his PMNM and sanctuary designation outreach through a community presentation at the Honoka‘a Library, while Justin Umholtz joined other local nonprofits, agencies, and businesses to connect with 680 high school students from across East Hawai‘i for the annual Career Expo. The week closed out with a haunting of trick-or-treaters as families joined us for a jack-o-lantern scavenger hunt as part of a larger community activity with our local museum partners. Hilo High School students from the AVID club were also on hand to educate families on Halloween traffic safety. The [Hawai‘i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center was closed this week as volunteers participated in competitions. Shout out to the “Poi Dogs” for placing 3rd in the elementary age robotics qualifiers - all of their practice paid off!



Students from 15 different high schools learned about the diversity of career pathways available through NOAA and ONMS, with an emphasis on careers in the PIR. (Credits: Justin Umholtz/NOAA)

San Francisco Exploratorium Exhibits Evaluation Training at Mokuapāpapa

On November 7, Mokuapāpapa, in coordination with UH Hilo's Tropical Conservation Biology and Environmental Science (TCBES) Graduate Program and Program Coordinator Lisa Canale, hosted an exhibit evaluation training with the San Francisco Exploratorium's Meghan Kroning. The training was focused on techniques the Exploratorium uses to evaluate exhibits, and address bias. The 19 attendees included Hilo Museum Square and other partners, 'Imiloa, Pacific Tsunami Museum, the East Hawai'i Cultural Center, and TCBES students.



San Francisco Exploratorium's Exhibit Evaluation Director Meghan Kroning shares her expertise on evaluating museum exhibits and limiting bias. *(Credit: Andy Collins/NOAA)*

Hawai'i Corals Identification Workshop at Mokuapāpapa

On November 6, Mokuapāpapa hosted a Hawai'i corals identification workshop for staff and agency partners and led by the author of *Corals of Hawai'i*, Pacific corals expert, and NOAA contractor Dr. Douglas Fenner. The all-day workshop, based on the newly released second edition of *Corals of Hawai'i*, focused on coral taxonomy, identification of Hawaiian corals, and many personal reflections on a lifetime of coral taxonomy work. The workshop was attended by 25 participants and included NPS Pacific Parks Inventory Team members, State of Hawai'i

Division of Aquatic Resources and other partners.



Pacific corals expert Dr. Douglas Fenner entranced the Hawai'i corals workshop attendees with many stories of a lifetime working with and identifying corals. (Credit: Andy Collins/NOAA)

Hilo Bayfront Black and White Night at Mokupāpapa

On November 3, Mokupāpapa hosted another fabulous Black and White Night celebration with 1,085 visitors during the evening event. Black and White Night is a major event on Hilo Bayfront where businesses stay open late and have food and live entertainment while promoting local businesses. Mokupāpapa once again started the night off with a hula performance, hosted the Big Island BeeKeepers annual honey tasting competition with over 80 honeys from across Hawai'i, and closed out the night with the East Hawai'i Veterans Blues and Jazz Festival Allstars concert and a benefit for the East Hawai'i Veterans Association. Our in-house partner, the UH Hilo MEGA Lab, also hosted visitors and highlighted the coral reef visualization work they are doing. A great time was had by all, and we deployed our giant octopus tentacles to entice visitors to come in!



A hula performance opens the evening (top left). Our octopus was trying to escape (top right). East Hawai'i Veterans Jazz and Blues Festival Allstars concert (bottom). (Credits: Andy Collins/NOAA)

Mokupāpapa Weekly Report

During the busy week of October 31–November 4, MDC engaged **1939** people, welcoming visitors to MDC and participating in multiple events. MDC provided meeting space for the National Park Service meeting that included 10 participants from various NPS agencies. Additionally, we hosted the annual Black & White night that hosted **1085** attendees and featured hula, honey tasting, music, and keiki activities. This event was another successful community experience for Hilo, Hawai'i. Finally, MDC participated in two community outreach events, hosting outreach education tables at the 'Ōhi'a Love Fest at the UHM Komohana Extension Center and Ikuwā Festival, Wa'a Day, at Hilo One (Bay Front). The 'Ōhi'a Love Festival hosted more than 150 participants throughout the day with **70** participants interacting with our PMNM table. At the Ikuwā Festival, Wa'a Day, at Hilo One the Nā Wa'a Mauō (NWM) program hosted an educational table that introduced participants to the MDC plankton lab and showed them how we conduct research using nā wa'a kaukahi (single-hull canoes). The event showcased 5 wa'a kaulua (double-hull canoes) and 1 wa'a kaukahi as well as hosted more than 200 people with **90** participants engaging in the MDC/NWM education activities. Collectively, the MDC educational hui engaged with more 1939 people through community outreach and annual events. The [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center also hosted 63 visitors this week.



Conducting marine research using a traditional sailing canoe. (Left). PMNM Super Volunteer Ty Shimabukuro shares his extensive knowledge of native plants at the PMNM booth for the 'Ōhi'a Love Fest. (Middle) Some visitors dressed up for the honey tasting during Black and White Night at Mokupāpapa. (Right) Photo Credits: Hōkū Pihana/NOAA

PMNM Team Members Speak at Waipahu Intermediate School Career Fair

On November 09, PMNM Education and Outreach Specialist, Malia Evans & Sanctuary Resource Specialist Brian Hauk gave two 60-minute presentations to 50+ students at Waipahu Intermediate School's Career Fair. The 7th and 8th grade students took a break from their usual classroom studies to enjoy discussions on education and marine science careers available in NOAA. Ms. Evans and Mr. Hauk explained the educational qualifications needed for their positions and emphasized the importance of being a steward of the environment. The students were enamored with their description of PMNM as both a home to diverse array of life and a culturally significant place for Native Hawaiians. Ms. Evans chronicled her pathway and employment history leading to her current position and Mr. Hauk described his career journey to PMNM's Closed Circuit Rebreather (CCR) diving program.



Photos: (Left) Malia Evans describes her career path and current duties at PMNM (photo: B. Hauk).

(Right) Brian Hauk explains what a CCR is and how marine scientists use tools like these to study PMNM (photo: M. Evans)

Mokupāpapa Weekly Report

During the week of November 2-11 (closed Friday, Nov 10 in honor of Veterans Day), MDC engaged 682 people, including 64 students from two field trips. Education programs focused on developing stewardship connections with PMNM as well as a deeper understanding of the important role the monument plays for different organisms. MDC also hosted a University of Hawai'i sponsored training on exhibit evaluation as well as a Hawai'i Coral identification workshop with Dr. Douglas Fenner (refer to separate reports). On Saturday, the Hawai'i Chapter of the United Nations Association used the event space to learn more about Hawai'i County's climate change action plan. Our in-house partners the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center hosted 126 visitors this week.

Kamehameha Schools Pi'ihonua Campus Preschool learning a Papahānaumokuākea song from Kumu Justin and Hōkū that integrates body motion and stewardship activities together. Credit: Andy Collins/NOAA ONMS

Mokupāpapa Weekly Report

During the week of November 14-18, MDC engaged 741 people, including 69 4th graders from Hilo Union. Two cruise ships came to Hilo this week that brought a lot of visitors from across the nation. The education team held an initial meeting to discuss the wa'a exhibit upgrade and the development of lessons centered around voyaging and wa'a characteristics and practices. Our in-house partners the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center was closed to visitors this week because they were competing in a Robotics tournament.



Sharing Career Opportunities in Papahānaumokuākea

Papahānaumokuākea Marine National Monument staff member Malia Evans engaged with over 60 young cadets from the Hawaii National Guard Youth Challenge Academy during their Career Readiness Fair on November 17. The federal and state funded program focuses on At-Promise Youth between the ages of 16-18 with a mission to empower the youth; a disproportionate percentage of whom descend from Native Hawaiian and Pacific Islander heritage. The 22-week Residential Phase of the program is followed by a year-long mentoring relationship with a specially trained member from each youth's community. The career readiness fair provides opportunities for the youth to explore entry-level, vocational, workforce development, academic careers, and expand their awareness of job opportunities within Hawai'i.



Many local employers including NOAA/ONMS/PMNM provided information to the cadets as they set their sights on graduation in December and pursue potential job opportunities. (Credit: Malia Evans/NOAA)



Mokupāpapa Weekly Report

The week of November 21–25 was a short week due to the Thanksgiving holiday. MDC engaged 564 people. We welcomed visitors from one cruise ship on Tuesday and hosted one school group on Wednesday from Hawai'i Academy of Arts and Sciences (HAAS); 36 students from 1st and 3rd grade. The students learned the impacts of marine debris on our reefs

through mele (song) and discovery. This new lesson taught students about the marine life of Papahānaumokuākea and how they are impacted by marine debris. Our in-house partners the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center was open this Saturday and hosted 89 participants.

Hawai'i Academy of Arts and Sciences students learn the impacts of marine debris on our reefs through mele (song) and discovery (*Credits: Justin Umholtz/NOAA*)

Mokupāpapa Weekly Report

The week of November 28–December 2, MDC engaged 849 people. We welcomed visitors from the cruise ships throughout the week and hosted 31 middle school students from Parker Middle School in Waimea with the Ke Kai Ola program. The students explored Papahānaumokuākea using the Liquid Galaxy 3-dimensional mapping program, learned about the art of Kilo (environmental observations) by engaging all of their senses to understand the environmental processes of Hilo One (bay), and explored the impacts of marine debris by examining and documenting the contents of the marine debris art. This collaborative experience enabled students to learn about Papahānaumokuākea and our efforts to care for this place. Our in-house partners the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center was open this Saturday and hosted 70 participants.

Mokupāpapa Weekly Report

The week of December 12-16, 2023, MDC engaged 849 people, including 97 seventh and eighth grade students from Hawai'i Academy of Arts and Sciences participating in the Nā Kokua o Ke Kai curriculum with our partner the Ke Kai Ola Monk Seal Conservation and Rehabilitation Center. Students built an understanding of the Hawaiian archipelago and the special significance of Papahānaumokuākea Marine National Monument. In particular, they examined the impact of marine debris through activities, discussions with local nonprofit leaders, and exploration of positive actions. MDC also hosted an Office of Hawaiian Affairs wreath-making event on Saturday attended by 24 community members. Our in-house partner the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center was closed this Saturday for a robotics competition.

Mokupāpapa Weekly Report

The week of December 19-23, 2023, MDC engaged 893 people, including 30 third and fourth grade students from Nā Wai Ola Public Charter School. Students built an understanding of the Hawaiian archipelago and the special significance of Papahānaumokuākea Marine National Monument through Polynesian voyaging practices such as knot tying and virtual exploration of PMNM using the Liquid Galaxy. Our in-house partner the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center hosted 83 this Saturday for a robotics competition. Mokupāpapa was closed 12/25/23 - 1/1/24.

Mokupāpapa Weekly Report

During the week of January 9-13, 2024, MDC engaged 1045 people. Educators welcomed three schools totalling 84 students and parents, with many traveling over an hour from Kona and Laupahoehoe. Activities helped students build a better understanding of the monument and its

resources while encouraging a deeper practice of stewardship with the ocean environment. Our in-house partner the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center was closed for a state competition, but offered a free workshop on model building and special effects.



Students examine art made from marine debris as part of a larger stewardship discussion and practice the Kai Hula (right) as a way to learn and remember the different tides and ocean conditions. (Credits: Justin Umholtz/NOAA)

Mokupāpapa Weekly Report

During the week of January 1-6, MDC engaged 1,282 people. While the community and visitors flocked back to the facility, staff also gathered to plan the upcoming year. PMNM O'ahu Education and Outreach Coordinator Malia Evans joined the MDC team to build a cohesive approach to outreach, setting goals for improved youth career pathway products, resources and relationships. ONMS Chief of Staff Matt Stout and new National Marine Sanctuary Foundation President/CEO Joel Johnson spent an afternoon with the team, touring the facility, meeting partners, and discussing goals for the facility, exhibits, and the overall NMSF/ONMS relationship. Our in-house partner, the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center, hosted 163 visitors.

Mokupāpapa Weekly Report

The week of January 2-7, 2024, MDC engaged 1024 people, including a first time visit by CEO and President of the National Marine Sanctuary Foundation Joel Johnson, and ONMS Chief of Staff Matt Stout. It was a busy week with several cruise ships in port, and a self-guided visit by the Boys and Girls Club. Our in-house partner the [Hawai'i Science and Technology Museum](#) Kenyan K. Beals Community Robotics Center hosted 102 visitors for public robotics explorations.

Research and Field Operations

New Publication on Integrating Hawaiian Culture into the Management of PMNM

On October 2nd the journal Ecology and Society published a paper by current and former co-managing PMNM staff and advisors, entitled 'Mai Ka Pō Mai: applying Indigenous cosmology and worldview to empower and transform a management plan for Papahānaumokuākea Marine National Monument'. The paper describes the extensive process by which the Mai Ka Pō Mai Native Hawaiian guidance document was developed, provides examples of early implementation, and discusses how the process of developing Mai Ka Pō Mai might inform management planning in other places. The publication itself is available in open-access format at <https://ecologyandsociety.org/vol28/iss3/art21/> and Mai Ka Pō Mai can be viewed at www.oha.org/maikapomai.

PMNM Field Team Conducts Oahu Acoustic Mooring Deployment

On October 31, PMNM Field Team members Colt Davis and Jason Leonard prepared and deployed an acoustic mooring package for the Sanctuary Soundscape Monitoring Project (SanctSound) in the waters off Makapu'u. The data collected from this device will help HIHWNMS researchers identify the frequency of humpback whale occurrences off of O'ahu. The mission also allowed Davis to conduct small boat drills to increase proficiency, and retrieve marine debris while increasing his navigation skills.



Photo: (Left) Davis with a sound monitoring buoy package at the Makapu'u site. (Right) Davis with Marine Debris he picked up.(Photos: J. Leonard).

PMNM Field Team Completes Proficiency Dives and Hull Inspection

On November 7th, PMNM Field Team members LT Brianna Evancoe, Brian Hauk, Chelsie Counsell, Colt Davis, and Jason Leonard completed boat and dive proficiency operations. As part of the mission, divers Counsell, Hauk, and Leonard completed a proficiency deep dive to maintain their depth certifications, while coxswain Davis increased his small boat proficiency including tending divers. The team then completed a hull inspection of the NOAA ship Reuben Lasker, with divers Hauk and Leonard using full faced masks with underwater comms. Hull inspections are critical to minimizing the risk of species transport on ship hulls from Pearl Harbor into PMNM.



Photo: (Left) Hauk and Leonard during proficiency dive, Leonard using full face mask (Photo: C. Counsell). (Right) Field team out on the small boat. (Photo: J. Leonard).

PMNM and NOAA Diving Program Partner on Rebreather Development Proposal

On November 8, PMNM and the NOAA Diving Program submitted a joint proposal to NOAA Ocean Exploration to support the development of a bailout rebreather for safer mesophotic coral ecosystem research. PMNM Research Ecologist Randy Kosaki, Field Operations Coordinator (and Unit Diving Supervisor) Jason Leonard, and NOAA Diving Program Director Joe Hoyt submitted the \$450k proposal to OER. The PIs will partner with the University of Miami and Sub-Gravity Rebreathers to develop and test a smaller, redundant life support unit for rebreather divers to wear. This so-called “bail-out” unit would only be used if the diver’s primary life support unit failed. Currently, a rebreather diver’s redundant bail-out need is met by carrying multiple extra scuba cylinders with a variety of gas mixes, whose sole function is to get the diver safely through decompression and to the surface in the event of a primary rebreather failure. However, the bulk and weight of the extra bail-out cylinders (up to five 80 cu.ft. scuba cylinders) is considerable, and a second bail-out rebreather would not only be much smaller with much greater capacity, it would also increase the diver’s safety by a significant margin. The CCR bail-out units will be field tested on a mesophotic research cruise to PMNM.



SubGravity rebreather systems, including a standard, back-mounted CCR (left), a side-mount CCR (center), and a chest-mounted CCR (right). The project intends to modify one of the smaller units to work as an integrated emergency bail-out CCR for emergency use.

PMNM Research Expedition Series Hits Social Media

PMNM research supervisor, Dr. Chelsie Counsell, developed a 23-day social media series to represent the 23 days of our July 2023 research expedition into Papahānaumokuākea. The series is currently showcasing each of the science projects through a daily post, highlighted by narratives and photos. Chelsie teamed up with Acting Deputy Superintendent Andy Collins who oversees PMNM's social media presence to share the posts with the [Papahānaumokuākea Marine National Monument's](#) Facebook group's 15,000 followers.



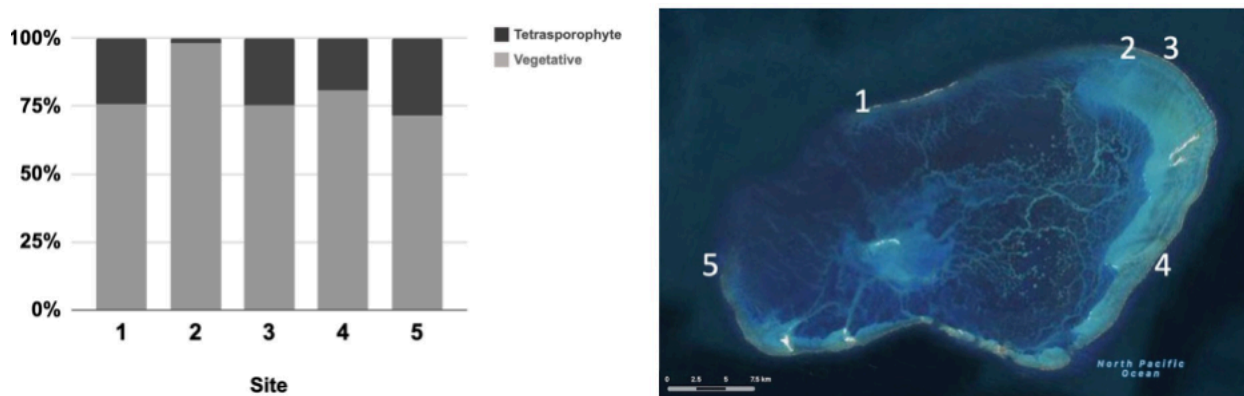
Photo: (Left) Hauk driving one of PMNM's small boats - part of post 4 from the series (Photo: K. Fuller). (Right) Counsell collecting photos to map the seafloor - part of post 15 from the series (Photo: M. Kent).

Scientists Document Reproductive Cycle of Invasive Alga in PMNM

On December 12, the journal *Phycologia* published an article describing the relative contributions of sexual and asexual (clonal) reproduction in the recently discovered invasive

alga, *Chondria tumulosa*, at Manawai (Pearl and Hermes Atoll). *C. tumulosa* was first documented in low abundance in 2015, but by 2019 had formed large mats of up to 10,000 m² each. Repeated genotypes and other genetic signatures were indicative of high rates of asexual reproduction, and these findings support the hypothesis that the rapid establishment of *C. tumulosa* was aided by its capacity for rapid and widespread asexual reproduction via vegetative fragmentation. Almost 80% all samples were vegetative at the time of collection. A few had reproductive tetrasporophytes indicative of meiosis-driven reproduction, but no gametophytes were observed. These data point to the importance of phycological expertise to accurately identify not only novel species, but also stages within complex life cycles. Taylor Williams, the first author on the paper, is a current Nancy Foster Scholar and a veteran of several PMNM research cruises.

Williams TM, Kreuger-Hadfield SA, Hill-Spanik KM, Kosaki RK, Stoekel S, and Spalding HL. The reproductive system of *Chondria tumulosa* (Florideophyceae) at Manawai, Papahānaumokuākea Marine National Monument. *Phycologia*. Photos: (Left) NOAA and USCG conduct a safety briefing before a day of operations. (Right). PMNM and NMFS team conducts on-water search for an entangled whale (Photos: J. Leonard_NOAA)



Proportion of tetrasporophyte individuals (black bar) and vegetative individuals (gray bar) by site across Manawai (n=375 samples).

PMNM Staff Explore Options For Contract Vessels

On 12.12.23 PMNM staff toured the *F/V Iwa Kai* to assess the vessel's charter potential for accessing PMNM. Access to PMNM is of the most pressing needs for managers in order to conduct research, monitoring, outreach and resource protection activities. Capacity losses for NOAA ships in the Central Pacific and lack of contract options in Hawaii makes access to the PMNM very challenging. Discussions on capacity, edurance and workspace were reviewed with the vessel's Captain. *Iwa Kai* has conducted operations in the Northwestern Hawaiian Islands with the Fish and Wildlife Service in the past. This historical work and the vessel's charter cost make it an option for specialized work in the PMNM. Other vessels are also being considered

based upon a comparison of their various capacity, safety and cost aspects that would best support PMNM's mission.



Photos: PMNM Staff discuss and compare contact vessel options at Kewalo Basin Harbor (Photos: J. Leonard).

PMNM Field and Research Team Conduct New Year Field Operations

During the second week of 2024, the field team headed out onto the water to complete field proficiency tasks as well as training for reef surveys. Divers Jason Leonard and Brian Hauk successfully completed a Closed Circuit Rebreather (CCR) dive. CCR dives take a lot of preparation and break down; conducting dives regularly is critical to ensure diver safety and gear functionality. Diver Chelsie Counsell led fish survey training dives for Colt Davis in which they practiced fish identification, underwater size estimation, and counting individuals in fish schools. These training dives are the first steps in preparing Colt to be a Hawai'i reef fish survey diver. We enjoyed hearing humpback whales during the dive operations and a quick glimpse of humpback whales passing by. These were well outside of the size estimation range we train for, but with confidence we can say the count was two.



Photos: Divers Counsell, Davis, and Hauk prepare for operations (Top left, PC: J. Leonard). Divers Leonard and Hauk conduct a proficiency CCR dive (Top right, PC: C. Counsell). Two humpback whales swim past the divers (Bottom, PC: C. Counsell).

PMNM Field and Research Team Participates in Survey Statistics Workshop

PMNM Field & Research Team members Drs. Chelsie Counsell & Atsuko Fukunaga participated in a NMFS, PIFSC 3 day statistical workshop focused on best practices for working with ecosystem monitoring data. Most of the coding and conversations were focused on the stratified random sampling design we utilize for our Reef Assessment Monitoring Program surveys. The PIFSC Ecosystem Science Division will be conducting surveys within PMNM this summer. Having our team join in and contribute to these conversations is a great way to strengthen our collaborative working relationships with the PIFSC team and to ensure our methods and analyses are the most statistically responsible way to address our monitoring goals and work with these data.



Photo: Team of science partners at a statistical workshop at PIFSC. Dr. Fukunaga joining virtually, Dr. Counsell - front right in pink. (Photo credit: C. Couch).

Agency Coordination

Coast Guard Co-locates Two New Response Units with ONMS PIR

The U.S. Coast Guard Marine Environmental Response Regional Activities Center (MER RAC) and the Illegal Unreported Unregulated Fisheries Center of Expertise (IUUF COE) were established during a ceremony October 11 at the NOAA Inouye Regional Center in Honolulu, Hawaii. The two new units are co-located with ONMS PIR and PMNM staff, further strengthening the relationship between the USCG and ONMS in the Pacific Islands Region. The MER RAC was created to assist Indo-Pacific countries with preparing for and responding to marine pollution incidents. The MER RAC will provide subject matter experts to engage with regional response personnel and enhance preparations for national incidents within the region for our pacific partners. The IUUF COE will serve as the international engagement arm for combating illegal fishing activities in the Indo-Pacific, and further promote regional coordination to combat IUUF and better equip partner nations. The intent of the IUUF COE is to increase maritime domain awareness, exchange valuable information, increase interoperability, and share best practices related to IUUF activities.



Photo credits: U.S. Coast Guard

PMNM Participates in World Heritage USA Symposium in San Antonio

From November 1–3, PMNM Superintendents Eric Roberts and Jared Underwood (USFWS) represented Papahānaumokuākea at the World Heritage USA symposium in San Antonio, Texas. This year’s theme was “Affirming Cultural Identity: World Heritage in the 21st Century” and included a presentation on indigenous co-management within PMNM. Other attendees included representatives from the 24 World Heritage sites across the United States, as well as from the Monte Albán World Heritage site in Oaxaca, Mexico. Multiple sessions focused on World Heritage and U.S. cities, Collaboration with U.S. and Mexico, Recognizing the Indigenous Cultural Values in Natural Area World Heritage Sites, and Understanding and Utilizing the World Heritage Nomination Criteria and Process.



Photos: Former director from Monte Albán (left) and Native American descendants of the San Antonio Missions (right) present at the symposium (Credit: Roberts/ONMS)

PMNM Kicks off Multi-Agency Integrative Education Project with ‘Aikahi Elementary School

On November 2, PMNM staff delivered an outreach presentation at ‘Aikahi Elementary School, highlighting themes of marine debris, seabird and marine mammal protection, and weaving ‘Ōiwi knowledge systems and Indigenous science in multidisciplinary research to understand Papahānaumokuākea from the kai lipo (deep sea) to the kahakai (intertidal) of this biocultural

seascape. Co-presenting were Kelli Ann Kobayashi (Legal Research Specialist, Hawai'i Department of Land and Natural Resources - Division of Aquatic Resources), Alyssa Miller (NOAA PMNM Planning Policy Specialist), Malia Evans (NOAA PMNM Outreach & Education Coordinator), Brenda Becker (NOAA-NMFS Biological Technician), and Kanoë Morishige (NOAA PMNM Native Hawaiian Program Specialist). This presentation was the kick-off event for a collaborative multi-agency project engaging the entire 5th grade (approximately 50 students) at 'Aikahi Elementary School. Future events include additional presentations, and a hands-on learning module with U.S. Fish and Wildlife staff about sea bird conservation, marine debris, and climate change. The objective of the project is to bring foundational awareness to these students as a start to building their pilina (relationship) to Papahānaumokuākea as an important part of ko Hawai'i Pae 'Āina (Hawaiian Archipelago). .

PMNM Participates in Large Whale Entanglement Response

On January 5-6, PMNM trained whale response members Sara Wood, Colt Davis, Jason Leonard, Brian Hauk, and Eric Roberts participated in a Large Whale Entanglement Response effort off O'ahu. This was a multi-agency effort with USCG, NMFS, and ONMS support, led by HIHWNMS Staff. This operation used members from PMNM's field team that are trained under NOAA Fisheries' Marine Mammal Health and Stranding Response Program. This on-water effort utilized PMNM's 19' Safeboat *Kaku* and a USCG 45' response boat. Responders were unable to locate the entangled whale, but the operations were an excellent opportunity to mobilize and train the our team in a real-world situation.



Photos: (Left) NOAA and USCG conduct a safety briefing before a day of operations. (Right). PMNM and NMFS team conducts on-water search for an entangled whale (Photos: J. Leonard_NOAA).

[PMNM In The News](#)

<https://knowablemagazine.org/article/food-environment/2023/in-great-pacific-garbage-patch-new-marine-ecosystems>

In the Great Pacific Garbage Patch, new marine ecosystems are flourishing

<http://www.milwaukeeindependent.com/newswire/footage-pacific-ocean-floor-provides-first-clear-views-aircraft-carriers-lost-battle-midway/>

Footage from Pacific Ocean floor provides first clear views of aircraft carriers lost in Battle of Midway

<https://www.civilbeat.org/2023/10/haunani-kane-is-inspiring-the-next-generation-of-hawaiian-scientists/>

Haunani Kane is inspiring the next generation of Hawaiian scientists

<https://www.dailykos.com/stories/2023/10/15/2198938/-Weekly-spotlight-on-DK-climate-eco-diar-ies-9-15-23-Crabs-to-rescue-coral-Suing-Big-Oil>

Coming up for air off Kauai and Lehua

<https://laughingsquid.com/casper-octopus/>

Rare ROV footage of a tiny ghostly casper octopus

[National Science Foundation grant funding deepwater seaweed research at University of Hawai'i](#)

Maui Now... Papahānaumokuākea. PC: University of Hawai'i at Mānoa. The mesophotic zone is home to organisms such as seaweeds that are not well-understood ...

[Deep-water seaweed focus of \\$892K research grant | University of Hawai'i System News](#)

University of Hawaii System-Martensia lauhiekoeloa was discovered in deep reefs of Papahānaumokuākea. Collecting, identifying, describing and naming new species of seaweed

<https://www.discovermagazine.com/environment/in-the-great-pacific-garbage-patch-new-marine-ecosystems-are-flourishing>

Discover: In the Great Pacific Garbage Patch, new marine ecosystems are flourishing

<https://sanctuaries.noaa.gov/news/nov23/ecosystems-under-stress.html>

Ecosystems Under stress: Restoring S Florida's Everglades and Coral Reefs

<https://www.hawaiipublicradio.org/podcast/manu-minute/2023-11-30/manu-minute-the-nihoa-finch>

Manu Minute: The Nihoa finch

NOAA Fisheries proposes habitat protection for threatened corals in Northwestern Hawaiian Islands

Maui Now... Papahānaumokuākea Marine National Monument. (Photo by: James Watt/NOAA Office of National Marine Sanctuaries). NOAA Fisheries has proposed a rule

NOAA Fisheries proposes critical habitat for five Indo-Pacific corals - Kauai Now

Kauai Now-American Samoa – Ofu-Olosega; Tutuila and Ta`u in the National Marine Sanctuary of American Samoa; and Rose Atoll, in the Rose Atoll Marine

<https://www.sailworldcruising.com/news/269388/Coral-reef-fish-predictably-change-with-depth>

Coral reef fish predictably change with depth, except when people are present.

Office of Hawaiian Affairs names Ke'ōpū Reelitz director of advocacy - Maui Now

<https://maui.now.com/2023/12/08/office-of-hawaiian-affairs-names-ke%CA%BBopu-reelitz-director-of-advocacy/>

World's Largest Sea Sponge, world record in Hawaii

World Record Academy-They believe the 12 foot by 7 foot creature to be the largest known sponge on the planet. It was found within the Papahānaumokuākea Marine ...

<https://response.restoration.noaa.gov/2023-accomplishments-year-review>

2023 Accomplishments (OR&R) marine debris removal from PMNM

<https://www.staradvertiser.com/2023/12/12/breaking-news/nihoa-millerbird-now-a-step-above-critically-endangered/>

Nihoa Millerbird now a step above critically endangered

<https://www.hawaiipublicradio.org/local-news/2023-12-18/blnr-approves-new-rules-for-catching-and-selling-nearshore-reef-fish>

HPR: BLNR approves new rules for catching and selling nearshore reef fish (Randy Kosaki)

<https://phys.org/news/2024-01-calibrating-native-hawaiians-pacific-islanders.html>

Re-calibrating the sail plan for Native Hawaiians, Pacific Islanders in ocean sciences

[Under the sea: 47 breathtaking images from our oceans](#)

... Papahānaumokuākea Marine National Monument. A killer whale jumping from the water is still one of the most. Ivkovich / Getty. Blackfish. A killer whale

[Prepare For Your National Park Adventures With These Books](#)

... Papahānaumokuākea Marine National Monument. Long can turn a pithy phrase, as in her observation that “National monuments are like the scrappy younger..

[Four women embark on grueling race across the Pacific Ocean for a good cause](#)

They are rowing to raise awareness for two non-profit organizations: Play Like a Girl and the Papahānaumokuākea Marine Debris Project. Get Hawaii's latest...

[Column: Kakuā pa'u, 'ahua na kipulu, he kuina pa'u no Papahānaumoku | Honolulu Star-Advertiser](#)

Honolulu Star-Advertiser-A portion of Midway Atoll in the Papahānaumokuākea Marine National Monument is seen on Sept. 1, 2016. Synopsis: In following the latest trends in ...

<https://www.hawaii.edu/news/2024/01/08/island-people-ocean-sciences/>

UH authors: ‘Where are all our island people in the ocean sciences?’

[Under the Sea: One NC educator's month of deep sea exploration - EdNC](#)

EdNC-As a science communication fellow, Hunt joined the E/V Nautilus on its expedition within Papahānaumokuākea Marine National Monument, one of the ..

https://www.havasunews.com/lifestyle/almanac-thursday-jan-18-2024/article_68a6ffa0-b5b4-11ee-a376-97e2516206d4.html

Almanac: Thursday, Jan 18: Today’s number: 582,578 square miles of Pacific Ocean encompassed by Papahānaumokuākea Marine National Monument