

Papahānaumokuākea Marine National Monument
Agency Report to the Reserve Council
September – November 2022

Agency: NOAA/NOS/ONMS/PMNM

Presented by: Eric Roberts, Superintendent

Date: November 18, 2022

Agency Accomplishments & Recent Activities

Education, Outreach and Mokuāpapa Discovery Center Highlights

US Coral Reef Task Force Fellows Talk Education at Mokuāpapa Discovery Center

The [US Coral Task Force Management Fellows team](#) took time out from the 45th US Coral Task Force (USCTF) meeting in Kailua-Kona to join MDC staff for an in-depth exploration of science communication, community outreach, and coral-related teaching resources. PMNM Education Coordinator Andy Collins shared existing and upcoming exhibits that could serve as effective tools across the seven USCTF jurisdictions. The Fellows joined educator Justin Umholtz to review different coral teaching tools and outreach products, including a series of high resolution coral reef images printed on portable banners that allow participants to compare changes to a section of reef over a three year period. This project came out of the recent E Kū Ana Ka Paia: Teacher Workshop for Building Climate Change Resilience, and elicited much interest from the Fellows to create their own local reef versions. The Fellows also met with new MDC partner The Mega Lab, a consortium of artists, coral scientists, surfers, and divers who shared their new strategies and digital storytelling tools to engage the public in coral conservation efforts.



PMNM staff with US Coral Reef Task Force and Coral Reef Conservation Program members. (Credit: Virginia Branco/NOAA)

NOAA Global Monitoring Laboratory Directors Visit Mokupāpapa

NOAA [Global Monitoring Laboratory](#) (GML) program directors visited Mokupāpapa with staff from the Mauna Loa Observatory. Brian Vasel, Chief of Observatory Operations for GML, Colm Sweeney, Associate Director, GML, and Lead Scientist for NOAA/ESRL Carbon Cycle Aircraft Group, and Ariel Stein, Director of NOAA Air Research Laboratory and Acting Director of GML were on Hawai'i Island to visit the NOAA atmospheric facilities and took the opportunity to visit Mokupāpapa and talk about future exhibit partnerships to highlight NOAA's climate and atmospheric research. Mokupāpapa has had an active partnership with Mauna Loa Observatory and their staff have participated in several programs and presentations at our facility. A potential exhibit will highlight all the data collected and processed at NOAA's Mauna Loa Observatory since few visitors have the opportunity to visit the facility in person.



From Left, Aidan Colton, MLO Atmospheric Technician, Darryl Kunyuki, MLO Station Chief, Brian Vasel, Chief of Observatory operations for GML, Colm Sweeney, Associate Director, GML, and Lead Scientist for NOAA/ESRL Carbon Cycle Aircraft Group, and Ariel Stein, Director of NOAA Air Research Laboratory and Acting Director of GML. (Credit: Andy Collins/NOAA)

PMNM Hosts Virtual Reserve Advisory Council Meeting

On August 31, the Reserve Advisory Council (RAC) for the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve (NWHICRER) held a virtual meeting with forty people in attendance. Council members heard a presentation from the Planning, Evaluation, and Sanctuary Designation (PES) Subcommittee on their recommendations for the Western Pacific Regional Fishery Management Council's (WPRFMC) draft fishing regulations for sanctuary designation. The RAC agreed to summarize the recommendations in a letter to share with the Office of National Marine Sanctuaries and WPRFMC. The next RAC meeting is scheduled to take place within the last two weeks of November.

Utilizing a Biocultural Lens to Build Pilina (relationships) to the Kai Lipo (deep sea ecosystems)

On September 15, as part of the [National Marine Sanctuaries Webinar Series](#) and the Mokupāpapa Third Thursday by the Bay Lecture Series, Hōkūokahalelani Pihana, Executive Director of Nā Wa‘a Mauō Marine Stewardship Program; Kainalu Steward, Ph.D. student at Arizona State University; and J. Hau‘oli Lorenzo-Elarco, Instructor of Hawaiian Language at Honolulu Community College shared their experiences developing a partnership with the Ocean Exploration Trust (OET) during deep ocean mapping and exploration within PMNM and Johnston Atoll. They shared about the breadth of their participation and contributions as members of the Papahānaumokuākea Native Hawaiian Cultural Working Group (CWG), facilitated by the Office of Hawaiian Affairs to collectively grow an equitable partnership with the OET. The OET is working closely with PMNM staff and CWG members to inform research priorities, ensure culturally-grounded collection protocols, and connect with local communities through ship-to-shore connections and the development of education resources in ‘Ōlelo Hawai‘i (Hawaiian language). There were 546 scientists, educators, students, and families registered for the webinar with 209 attending.



The panelist's stories provided different lenses to weave a powerful experience for webinar participants. (Credits: Hōkū Pihana, Hau‘oli Lorenzo-Elarco, OET)

ONMS Director John Armor Visits Mokupāpapa

ONMS Director John Armor and Special Assistant Michelle Burt visited Mokupāpapa Discovery Center (MDC) on Monday, September 19th. John was given an update on MDC’s new exhibits and partnerships, and the projects staff worked on during the COVID pandemic closure. John met with our Kenyan K. Beals Robotics Center partner Christian Wong, and learned about the new partnership with University of Hawai‘i, Hilo’s Multiscale Environmental Graphics Laboratory (MEGA Lab) space co-located within MDC. John was excited to hear about these new partnerships, their investments in MDC, and our shared programs to provide a career pathway for Hawai‘i island youth to work for NOAA and other resource management agencies. John was also briefed on the sanctuary designation progress for PMNM by Acting Superintendent Eric Roberts, and met with the Office of Hawaiian Affairs (PMNM Co-trustee) Public Policy Advocate Kealoha Pisciotta along with ONMS Pacific Islands Region staff Kristina Kekuewa, Kalani Quiocho, and Hoku Ka‘aekuahiwi Pousima.



ONMS Director John Armor, and Special Assistant Michelle Burt meet with University of Hilo Associate Professor and Director of the MEGA Lab John Burns about the new partnership with Mokuāpapa. (Credits: Andy Collins, NOAA ONMS)

PMNM Scientist Holds Q&A Session for DreamWakers Live

On September 16, PMNM research ecologist Randy Kosaki gave a presentation to, and fielded questions from, 10th and 11th grade students at Maui Preparatory Academy. The session was staged by DreamWakers (www.dreamwakers.org), a national non-profit organization that connects professional role models with under-resourced classrooms around the country. Dreamwakers' motto is, "Kids can't be what they can't see."

Papahānuamokuākea Receives MCI Blue Parks Award

On September 28, Dr. Lance Morgan of the Marine Conservation Institute (MCI) presented the Blue Parks award to the co-managers of Papahānuamokuākea. In 2017, Papahānuamokuākea was one of three inaugural Blue Parks award winners, an award designed to celebrate effective MPAs and incentivize governments, managers, communities and leaders to achieve effective conservation. This was the first opportunity since 2017 for members of MCI to visit Hawaii and present the award in-person.



Papahānuamokuakea co-managers, Reserve Advisory Council members, and MCI science advisors and staff gather to receive the Blue Parks award. (Photo credit: Jason Leonard/NOAA)

Papahānuamokuākea Bids Fair Winds and Following Seas to Superintendent Clark

On September 30, PMNM and Pacific Islands Regional staff gave a fond farewell to Athline Clark as she completed 25 years of dedicated service to the northwestern Hawaiian Islands, and seven years with ONMS as the site superintendent. Athline was among the founding members of the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve, the precursor to Papahānuamokuākea Marine National Monument, while she worked for Hawaii's Division of Aquatic Resources, later becoming the state's first co-manager before eventually finding her way to ONMS as the superintendent. Best wishes to Athline from all of us in the Pacific Islands Region as she embarks on the next chapter of her life.



Members of Papahānaumokuākea and the Pacific Islands Region with Athline as she prepares to sail off into the sunset. (Photo credit: unidentified patron at the restaurant)

The MEGA Lab Grand Opening at Mokupāpapa

Over the past several months the Mokupāpapa Discovery Center has been partnering with the University of Hawai'i at Hilo and their Multiscale Environmental Graphical Analysis (MEGA) laboratory to build out a community science space within the center. The new 2,000 square foot multimedia space is intended to connect the public with cutting edge research and researchers, hold events that engage the public with the marine realm, and provide local mentors for students so that they can see themselves pursuing careers in marine related fields. The MEGA Lab has invested over \$75,000 in building out the space and multimedia equipment, and will work to connect donors such as Sony and Patagonia to support ongoing work. For the opening weekend, over 400 people attended two film screenings and mixers. The first film, supported by REEF, highlighted the MEGA Lab project to digitally map Fiji's famous Cloudbreak surf spot, and the second film, sponsored by Patagonia, was titled "The Science of Nose-Riding." Over the coming months the MEGA Lab and Mokupāpapa will host more events, talks, art shows, and technical demonstrations. Dr. John Burns and the MEGA Lab have been long-term research partners with Papahānaumokuākea, and have developed high resolution digital maps of several coral reefs within the monument to analyze change over time.



Over 400 people attended the Grand Opening of the Multiscale Environmental Graphical Analysis MEGA Lab community space at Mokupāpapa. Two films were shown over the weekend of events to celebrate the opening of the space. (Credit: Andy Collins)

Hawai'i Teacher Climate Chat on Coral Resilience

The E Kū Ana Ka Paia: Teacher Workshop for Building Climate Change Resilience held this past July launched a Hawai'i teacher Community of Practice (COP), coordinated by NOAA staff in collaboration with a cohort of NOAA Climate Teacher Fellows selected from the different islands. On October 27, the COP led its first teacher "climate chat," featuring Dr. Tom Oliver, research ecologist with NOAA's Pacific Islands Fisheries Science Center. The virtual experience was attended by 30 teachers and included introductions to NOAA's [Data in the Classroom](#) Coral Bleaching Module, the ONMS [Coral Check-up Lesson Series](#), the [Hawai'i Institute of Marine Biology](#) coral fragment hands-on bleaching activity, an introduction to the citizen/community science coral monitoring [Ko'a Card program](#), and an invitation to participate in an upcoming coral survey event at [Hanauma Bay](#). The breakout sessions led to rich conversations between teachers as they shared their own experiences with the various resources.

HAWAII CLIMATE CHANGE HUI

WHAT SCHOOL COULD BE

National Marine Sanctuary Foundation

NOAA

Climate Chats: Coral Bleaching

Thursday, October 27, 2022 @3:30pm hosted by Debbie Milliken and Larra Cummings

Dr. Tom Oliver, NOAA

Dr. Paulo Maurin, NOAA

Maddie Sherman, HIMB
Coral Resilience Lab

Justin Umholtz, NOAA

Anne Rosa, Hawai'i
Sea Grant

The climate chats will continue throughout the school year with the intent to keep an active community of teachers informing and co-creating Hawai'i-centric NOAA climate education resources, data, and activities. (Credit: NOAA)

PMNM Supports Inaugural Community Festival Celebrating Stewardship of Pu'uloa (Pearl Harbor)

PMNM staff participated in the first Annual Mālama Pu'uloa Festival on October 29. The festival signals the culmination of Mālama Pu'uloa Month, a legislated, annual event.

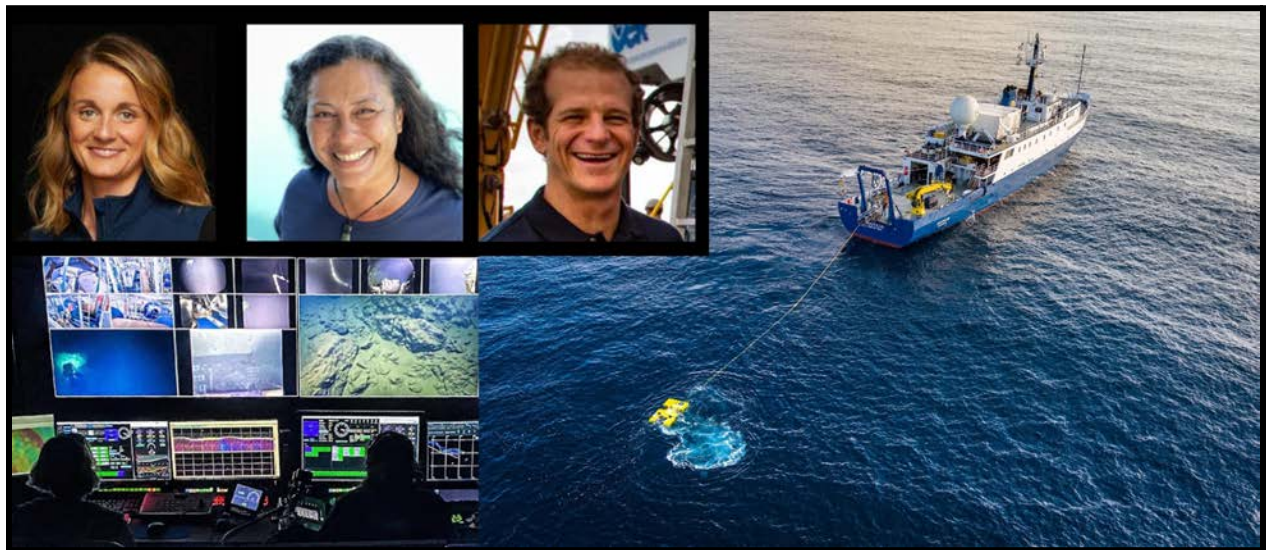
The festival raises awareness about the vital importance of Pu'uloa (Pearl Harbor), and celebrates the ways in which communities and partners have come together to steward and restore its biocultural resources. The festival offered an interactive day for hundreds of locals and visitors alike. The PMNM booth provided information about Papahānaumokuākea and the proposed National Marine Sanctuary designation. The booth theme was the 2022 Year of the Limu (seaweed), and featured informational materials and a hands-on gyo-taku activity using stamps of native limu, fish and invertebrates. The PMNM booth is included in an informational video about the festival. <https://www.malamapuuloa.org/m257lama-puuloa-festival.html>.



Left to Right: Kahi Fujii shares about the significance of Papahānaumokuākea and highlights the Year of the Limu through the local partnership with community non-profit organization, Kua 'Āina Ulu 'Auamo. (Credit: Alyssa Miller/NOAA)

What Have We Learned? The Last Year of Deep-Sea Explorations of Papahānaumokuākea Webinar

On October 20, as part of the [National Marine Sanctuaries Webinar Series](#) and the Mokupāpapa Third Thursday by the Bay Lecture Series, Hōkūokahalelani Pihana, Executive Director of Nā Wa'a Mauō Marine Stewardship Program, Allison Funds, Chief Operating Officer with Ocean Exploration Trust, and Daniel Wagner, Chief Scientist with Ocean Exploration Trust discussed the three telepresence-enabled expeditions aboard E/V Nautilus to explore never-before-surveyed areas within the Papahānaumokuākea Marine National Monument. The team summarized the deep-sea scientific discoveries over this past year and discussed the collaborations that helped educators co-develop culturally-relevant science, outreach and education products, particularly those targeting communities in Hawai'i and across the Pacific. There were 439 scientists, educators, students, and families registered for the webinar with 174 attending.



(Credit: Ocean Exploration Trust)

PMNM Team Members Speak at Waipahu Intermediate School Career Fair

On November 4, PMNM Sanctuary Resource Specialist Brian Hauk and Vessel Operations Coordinator LTJG Luke Evancoe gave four 45-minute presentations to 80+ students at Waipahu Intermediate School's Career Fair. The 7th and 8th grade students took a break from their usual classroom studies and enjoyed a presentation on both the civilian and uniformed service careers available in NOAA. Mr. Hauk and LTJG Evancoe 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. LTJG Evancoe

chronicled his different assignments as a NOAA Corps officer, and Mr. Hauk described his career journey and PMNM's exciting closed circuit rebreather diving operations. The kids were also astonished to hear about the cutting edge research conducted in the monument, including studies on the recently discovered invasive alga, *Chondria tumulosa*.



Photos: (Left) LTJG Evancoe describes his career as a NOAA Corps officer (photo: B. Hauk). (Right) Brian Hauk explains the borders of PMNM (photo: L. Evancoe).

Hilo's Black and White Night a Hit at Mokupāpapa Discovery Center

Downtown Hilo was packed Friday, November 5, as thousands of people dressed up in their best and joined the annual Black and White Night celebrations for the first time since the pandemic started. Mokupāpapa welcomed 1209 people for hula, honey tasting, games, and a jazz and blues concert to benefit East Hawai'i Veterans! Partners from Hawai'i Volcanoes National Park, the Mega Lab, East Hawai'i Veterans, and the Kenyan K. Beals Community Robotics Center all joined the evening, highlighting the many resources and activities available

at the Mokupāpapa. In addition to deepening our relationships in the community, this event brings in many new people unfamiliar with what the center has to offer. The event was also used to highlight the 50th Anniversary of the National Marine Sanctuary System, and showcased the new ONMS 50th Anniversary USPS stamps.



(Credits: Andy Collins / Hōkū Pihana / NOAA)

Exhibition Evaluation Workshop with The Exploratorium

On November 1, Megan Kroning from the Evaluation Team at the Exploratorium in San Francisco presented a training on exhibit evaluation for Hilo Museums. The training was held at the 'Imi Loa Astronomy Education Center, and Andy Collins, PMNM Education Coordinator, attended. The training focused on exhibit evaluation design, limiting bias, and how to integrate results into future exhibits. The free training was followed up by a visit to Mokupāpapa to discuss our exhibits. This connection will be invaluable for ideas and practices on evaluating exhibits since the Exploratorium freely shares most of their research and practices.

<https://www.exploratorium.edu/education/visitor-research/what-we-do>

Mokupāpapa Discovery Center Report

During the weeks of September through November, MDC welcomed 6523 visitors to the facility. Educators worked with 98 high school and middle school students representing two local and two international schools. Activities connected students with PMNM and ocean conservation through the lenses of marine debris, squid, plankton, island life cycles, and an exploration of the Hawaiian creation chant—the Kumulipo. Staff also participated in the Virtual Speed Teacher PD organized by our sister sanctuary in American Samoa, sharing education resources with 56 teachers. HIHWNMS Hawai'i Island Program Coordinator Cindy Among-Serrao joined the MDC team to hand out free ONMS grab-and-go kits sharing sanctuary and partner resources and activities about caring for the ocean - a big hit with local families. MDC also had the pleasure of working with 260 students in different PMNM education programs. Thanks to funding efforts via the Museum Square partnership, students from Na'alehu Elementary made the 60 mile journey

to visit the center, many for the first time. Kamehameha School 7–8th graders dove into an exploration of marine debris through the eyes of the albatross and journeyed through time as they followed the lifecycle of the Hawaiian Islands. Educators served seventy-seven students during the week, with highlights including an interactive visit with St. Joseph Middle School students. The students learned about climate change, deep sea exploration, and Native Hawaiian voyaging. The weekly visit with the United HI College students occurred on Tuesday and Thursday, virtually engaging students and teachers from Japan. Finally, there were three cruise ships in town bringing many visitors to the discovery center. The Kenyan K. Beals Community Robotics Center also welcomed fifty-five community members to connect with their activities.

We celebrated the 30th anniversary of the Hawaiian Islands Humpback Whale National Marine Sanctuary and the 50th anniversary of national marine sanctuaries. The Kenyan K. Beals Community Robotics Center continued with training new robotic educators and also welcomed 200 community members to engage in ongoing robotic activities. Families had extra fun on Halloween for a “Spooky Square” event organized with our Hilo Museum Square partners. 522 people participated in the two-hour event which included staff from the MEGA Lab. Students from Hilo High School’s AVID Program also joined the Saturday team to promote Halloween traffic safety, and handed out safety lights and information.



(Left) Students explore MDC exhibits as they look for inspiration for research projects. (Right) United Hawaii College staff introduce PMNM to students in Japan as part of the new live virtual class pilot. (Credits: Andy Collins/NOAA)



(Left) Students observe characteristics of different beach sands and gather evidence of parent material. (Right) Cindy shares the rich resources provided in the “grab-and-go” kits. (Photo credits: Justin Umholtz/NOAA)



The Spooky Square event was flooded with families who enjoyed playing our scary ocean pumpkin scavenger hunt and exploring our new partner exhibits. (Credits: Virginia Branco/NOAA)



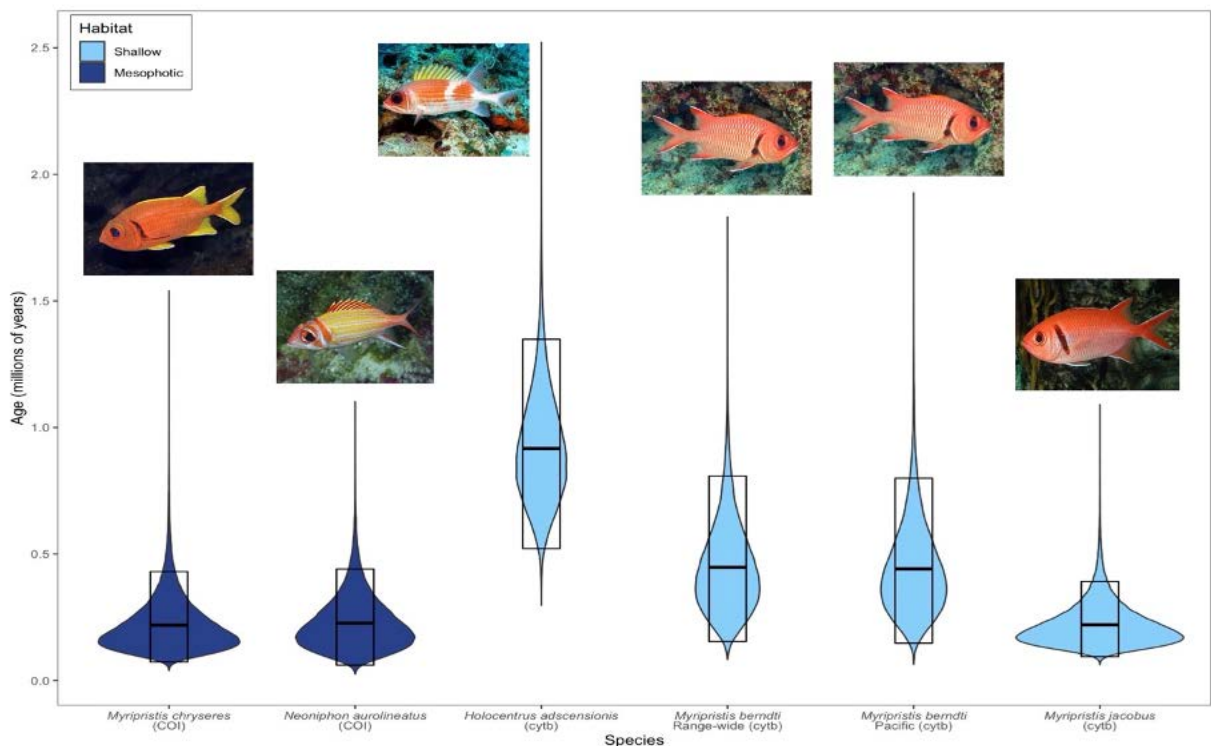
Mega Lab educator Alex Spengler engages students in a fish count based on their popular [live-stream feed](#) as part of a joint program with MDC educators (Credit: Justin Umholtz/NOAA)

Research and Field Operations

Scientists Publish First Multi-Species Analysis of Mesophotic Phylogeography

Mesophotic coral ecosystems (MCEs: ~30 to 100+ m depth) have been hypothesized to be older and more stable than shallow coral ecosystems that are more prone to disturbances on both the long term (glacial sea level cycles) and short term (heavy weather and anthropogenic disturbances). Hypothesizing that such stability over geological time may lead to enhanced levels of endemism in MCEs, scientists from PMNM, Bishop Museum, and Univ. of Hawai'i assessed the comparative phylogeography of three shallow and two MCE (deep reef) squirrelfishes in the family Holocentridae. Genetic population coalescence times did not differ significantly between the shallow and deep reef species, indicating that all populations sampled share an evolutionary past with comparable levels of habitat stability, regardless of depth. Thus, the high levels of endemism known from MCEs are more likely due to proximate environmental factors (temperature, light, currents, etc.) than habitat stability over evolutionary or geological time. This paper was published posthumously from the dissertation of Dr. Joshua Copus, veteran University of Hawai'i rebreather diver and long-time PMNM collaborator who was lost on a 400 ft. research dive in the Solomon Islands in 2019.

Copus JM, Walsh CAJ, Lee AM, Ka'apu-Lyons, C, Hoban, ML, Pyle RL, Kosaki RK, Toonen RJ, Bowen BW. 2022. Phylogeography of mesophotic reef ecosystems: squirrelfish and soldierfish (Holocentriformes: Holocentridae). *Diversity* 14(8):691 <https://doi.org/10.3390/d14080691>



Average ages of populations of squirrelfish species compared using genetic coalescence analyses. Dark blue species are mesophotic; light blue species are shallow reef inhabitants. Average population ages do not differ significantly between congeners from shallow and deep reefs.

PMNM Partners Recover Sincerity Ace Lifeboat from Manawai

On October 12, The Papahānaumokuākea Marine Debris Project (PMDP) returned from a 30 day at sea mission collecting derelict fishing gear and debris from the reefs and shores of Papahānaumokuākea. These efforts were indirectly funded by ONMS from the monument's contributions to the National Fish and Wildlife Foundation (NFWF). PMDP is a U.S. 501(c)(3) non-profit organization created to protect the sensitive wildlife and critical habitats of the Papahānaumokuākea from the threats of marine debris. See [PMDP webpage](#) for additional details. During this mission, PMDP was able to remove 100,000 lbs of marine debris. Additionally, they were able to recover an abandoned liferaft from Seal & Kittery Island on Manawai (Pearl and Hermes Atoll) that was discovered by monument staff on July 20, 2021. Since the lifeboat's discovery, staff have been unsuccessfully working with partners to try and salvage the vessel from this isolated atoll. Thanks to PMDP's efforts, the vessel has now been recovered and has been returned to O'ahu for disposal along with tons of marine debris which could endanger protected species such as monk seals and turtles.



Images: (Left) Sincerity Ace Lifeboat after being salvaged and brought back to O'ahu for disposal by PMDP (photo: Brian Hauk). (Right) Sincerity Ace Lifeboat ashore Seal & Kittery Island in July 2021 (photo: Brian Hauk)

PMNM Field Team Participates in Large Whale Entanglement Response Training

In October, PMNM Field Team members Brian Hauk, Keo Lopes and Jason Leonard participated in classroom and field training for large whale entanglement response. Training focused on safety, equipment, roles, and chain of command which is critical in responding to these large animals. These operations require trained responders that are authorized under NOAA Fisheries' Marine Mammal Health and Stranding Response Program. Acting PMNM Superintendent Eric Roberts also participated in joint on-water training with the USCG and NMFS. This allowed for familiarization and response efforts with the USCG 45' rescue boat and

crew. This type of cooperative work and resource sharing across NOAA and USCG field teams increases the capacity and safety of field operations in the Pacific.



Photos: (Top) NOAA and USCG Large Whale Disentanglement Training. (Bottom). NOAA and USCG Large On Water Whale Disentanglement Training (Photos: J. Leonard_NOAA).

Policy & Programs

PMNM's VOC selected to the 2022 Class of SEE Ambassadors

LTJG Luke Evancoe, PMNM's Vessel Operations Coordinator, was recently selected to the 2022 Class of Sustainability, Energy, and Environmental (SEE) Ambassadors and recognized at a virtual awards ceremony. The SEE Ambassadors program recognizes individual departmental employees for their outstanding performance in implementing exceptional, cost-saving projects and/or programs that help improve the department's sustainability, energy and water efficiency, climate change adaptation, resilience, and environmental performance. LTJG Evancoe received this award for his leadership and commitment in facilitating environmental stewardship. This included assisting the NOAA Ship Oscar Elton Sette with the three-day cleaning of their ship's

hull prior to the ship sailing into the protected waters of the PMNM. This cleaning process is critical to the biosecurity, sustainability, and environmental management of the remote islands, ensuring the ship does not compromise the environmental health of PMNM by bringing unwanted marine species into its waters.



Photo: PMNM Field Team led by LTJG Evancoe giving a tour and training as part of Girl Scout Troop 2026 Science/Technology/Engineering/Math (STEM) Badge that focused on environmental stewardship. (Photo: J. Leonard/NOAA).

Agency Coordination

PMNM Supports State Department's International Visitors Leadership Program

On October 18, Papahānaumokuākea Acting Superintendent Eric Roberts, along with USFWS Deputy Superintendent Amanda Boyd, and NOAA Pacific Islands Region Collaboration Team Coordinator Pua Kamaka, hosted a roundtable discussion with the State Department's International Visitors Leadership Program QUAD partners (i.e. Australia, Japan, India). The State Department was interested in having the international attendees learn more about our role in managing marine protected areas in the Pacific, and some of the challenges we experience relating to marine debris, climate change, and Illegal, Unreported, and Unregulated fishing activity.



NOAA's Pau Kamaka and Eric Roberts, along with USFWS Amanda Boyd and members of the State Department's International Visitors Leadership Program following the roundtable discussion. (Credit: Erin Hoshibata, PACC Hawaii)

Hawai'i Team Attends NASA Climate Communication Earth to Sky Academy

Building upon regional climate change education efforts, a team consisting of representatives from ONMS/NOAA, the National Park Service, the University of Hawai'i Sea Grant program, and a NOAA Hawai'i Climate Change Teacher Fellow joined other cohorts from across the nation for a week-long NASA training on climate change. "The [Earth to Sky Academy](#) brings together teams of experienced interpreters and climate communication leaders who have a strong commitment to furthering climate literacy within their respective regions." The Hawai'i team will work with other local partners to create regional Earth to Sky courses and connect the budding Hawai'i climate change teacher network with the larger national community of practice. Participation in the academy provided the team with access to funding, coaching, NASA climate scientists, and NASA satellite data and data visualizations that will be integrated with NOAA climate resources and local knowledge and expertise.



The 2022 NASA Earth to Sky Academy cohort, consisting of regional teams from across the nation. (Credit: Earth-to-Sky/NASA)

Papahānuamokuākea Supports OHA's Ocean Policy Development Public Meetings

From October 11 through November 17, Papahānuamokuākea Marine National Monument representatives staffed education and outreach displays during the Office of Hawaiian Affairs Developing OHA's Ocean Policy statewide public meetings. Papahānuamokuākea staff participation directly supported our joint ONMS and OHA Memorandum of Agreement while giving us the opportunity to share information about our current sanctuary designation process.



PMNM staff members Malia Evans, Oahu Education and Outreach Specialist (left) and Kanoe Morishige, Native Hawaiian Program Specialist (right) awaiting visitors at the Kāne'ohē meeting. (Photo: Eric Roberts, PMNM)