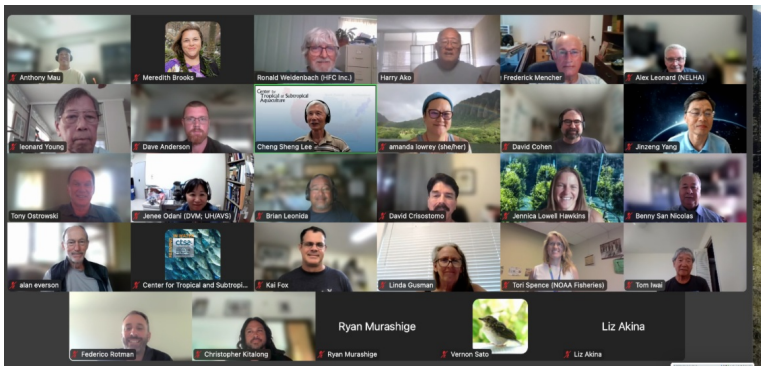
CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

Regional e-Notes ~ July 2025 ~ Volume 17, Issue 7

Letter from the Director



Aloha,

Earlier this month, CTSA held the annual Industry Advisory Council (IAC) and Technical Committee (TC) meeting to discuss and vote on the 25 pre-proposals we received in response to our FY25 RFP-P. I would like to extend a sincere Mahalo to everyone who participated in this year's meeting; we had nearly 30 members in attendance (pictured), which made for thought-provoking discussions. I would also like to thank the members who volunteered to serve in leadership positions for the IAC and TC. CTSA procedures mandate that we hold leadership elections every three years. This year, in consideration of the very close voting results and the unique needs of our program, we will be implementing IAC and TC leadership teams each consisting of three co-chairs. Being in IAC and TC leadership requires a significant commitment to meet regularly throughout the year, and we greatly appreciate the co-chairs' willingness to volunteer their time in this extended capacity to help carry out the CTSA mission.

During the annual meeting, the IAC and TC completed their most essential task by voting on pre-proposals. The next stage of development will be requests for full proposals based on the voting results. As I have shared in recent letters, CTSA development this year is focused on supporting projects that expand the impacts of previous program investments in industry-determined priority species and areas. Accordingly, we are scrutinizing pre-proposals to ensure they align with those priorities. If a pre-proposal shares a good idea but is not in alignment with the priority areas described in the FY25 Request for Pre-Proposals, should our limited funds be allocated to support it instead of a good pre-proposal that directly addresses a priority area(s)? These are decisions we cannot take lightly. We anticipate sending out the requests for full proposals in the next few weeks, aiming to support projects in Hawaii and the Western Pacific region.

On that note, I just returned from Majuro, RMI, where Dr. Harry Ako and I hosted an aquaponics workshop to provide technical transfer to the local community. The workshop was co-sponsored with the College of Micronesia (CMI); we would like to extend our gratitude to Dr. David Newnham and his team for their support. Over 20 residents attended the workshop (pictured below), and two private sector entrepreneurs indicated their intent to build aquaponics operations on the island. Harry and I visited both sites to provide advice and assistance; I appreciate Harry donating his time to help. In addition, a successful entrepreneur in Majuro has committed to support local aquaculture development. I also visited the Marshall Islands Marine Resources Authority (MIMRA) and toured their new analytical laboratory, which has expanded their capacity to analyze the quality of their seafood products and ensure safety for the consumer. Overall, I am very pleased to see the potential for new aquaculture growth in the RMI and Western Pacific region. I am, however, sad to note the sudden passing of one of the leaders in aquaculture in the region. Mike Ogo worked on many CTSA projects and served on our IAC for ten years. His research partner Dr. Chatham Callan has shared a heartfelt memorial below. We extend our deepest sympathies to Mike's family and friends. Here, I want to encourage everyone to get your annual physical and make health a top priority.

Mahalo,
Dr. Cheng-Sheng Lee
Executive Director, CTSA

In Memoriam: Michael M. Ogo

CTSA and our regional aquaculture community are saddened by the sudden passing of our friend and colleauge, Michael Ogo. We worked with Mike for many years, from his time at NMC CREES to his most recent post at the University of Guam. In addition to his many contributions to regional aquaculture, Mike served for ten years on the CTSA IAC and worked on numerous CTSA-funded projects. His collaborator and friend Dr. Chatham Callan has shared the following:

The Pacific has lost a true champion for aquaculture with the passing of Mike Ogo. Since 2008, I have worked with Mike to expand marine aquaculture opportunities in the CNMI. Over the nearly two decades of my experiences with him, I never once saw him back down from a challenge or be unable to overcome insurmountable odds. Just in the time I worked with him, he and his team had to rebuild their hatchery not once, but twice from devastating typhoons, one of which was also shortly before COVID. This back-to back disaster, followed by a global pandemic would have sunk even the most seasoned aquaculture veterans; but Mike and his team persisted and persevered. In fact, shortly before his recent move to Guam, Mike helped oversee a major feasibility study for expanding marine aquaculture opportunities across the CNMI, and started the ground work for marine fish farming demonstration in Saipan. While we are saddened he won't be able to see the fruits of this long-term labor of love, we plan to honor his legacy in the execution of this important work. Mike was truly passionate about seeing aquaculture succeed in the CNMI and we will do all we can to ensure his pioneering efforts are continued with success and in the positive spirit he would wish.

CTSA FY24 Projects Begin This Summer

The following new projects included in the CTSA FY24 Plan of Work have been approved and are set to begin this summer:

Development of Artificial Intelligence-assisted Mobile Robotic Systems for Hawaiian Aquaculture Assessment
P.I. Tianlu Wang, University of Hawaii at Manoa, College of Engineering
The overall goal of this project is to develop an intelligent mobile robotic system equipped with an onboard AI-enhanced computer vision module that can be flexibly used for fish analytics, including assessing counts and feeding status. Intelligent aquaculture systems to supplement traditional human operations for water quality and produce status monitoring, feeding, and cleaning can notably improve aquaculture production efficiencies. While a surging amount of fixed intelligent sensors have been integrated into different sectors of Hawaiian

aquaculture, there are limited cost-effective and flexible mobile systems that can provide robust production analytics. This project aims to address the lack of effective mobile systems by creating cost-effective onboard real-time imaging techniques for robust underwater fish analytics, including assessing fish counts and feeding status, in three representative Hawaiian aquaculture sectors: onshore fish production, artificial estuary, and open-water mariculture systems. The anticipated output of the project is a capable mobile robotic platform with an Artificial Intelligence (AI)-assisted onboard imaging system and algorithms. Leveraging the PI's research expertise in developing cutting-edge robotic systems and the application of AI in object detection from complex scenes, the research will first develop a customized mobile platform composed of a commercial remotely operated vehicle (ROV), camera setup, and an AI computation unit ready for the integration of AI algorithms. They will meet with aquaculture experts to further confirm the specific monitoring tasks most productive for the industry within the duration of this project. Then, to notably enhance the algorithm's robustness in unstructured and complex environments, they will utilize domain randomization techniques to process the collected data and prepare synthetic data.

Developing Immune Response Assessment Tools and Vaccination Approaches to Enhance Finfish Aquaculture
P.I.s: Andre P. Seale, University of Hawaii at Manoa, CTAHR and Jennifer M. Kishimori, Vetmed Aquatic, LLC
The overall goal of this project is to develop health management tools for finfish producers to improve production. Hawaii finfish producers experience infectious disease outbreaks that often preventable by vaccination. Autogenous approaches, where via veterinary support, the inciting pathogen is isolated from a fish herd, vaccine generated and subsequently delivered to the fish cohort, are attractive for Hawaii's unique aquacultured species that do not have licensed and commercially available products. However, because there are no means to assess the benefit of vaccination for producers, they may be hesitant to employ such measures. Classically, Enzyme-Linked Immunosorbent Assays (ELISA) is employed to measure the antibody response to vaccination in most vertebrate models, but this requires species-specific reagents such as custom mammalian anti-fish IgM, which are labor, cost, and time intensive to generate. This project aims to fill this gap with molecular tools such as qPCR using published immune response genes, as they are rapid to generate once protocols and approaches are established, and pathogen-specific field immunoassays, which are not species-specific and can offer point-of-care or fish health lab use. The project focuses on 1) addressing the immune response assessment capability gap experienced by finfish practitioners when considering vaccination; and 2) addressing the *Neobenedenia* sp. Mitigation strategy information gap highlighted by aquaculture stakeholders. Specifically, this project will use *Neobenedenia* sp. injectable vaccination in a saltwater-adapted tilapia model in Year 1 to 1) develop molecular immune response assessment tools (qPCR on published immune response genes) and 2) assess the feasibility of using pathogen-specific immune response techniques for field use (microtiter agglutination test or MAT development). IgM in-situ hybridization (ISH) will be used to gain increased understanding of IgM development. If successful in eliciting an immune response and qPCR tool development, this project will continue work in Year 2 with the same animal model and associated qPCR, MAT and ISH to conduct an initial feasibility study of a potential *Neobenedenia* sp. vaccine (immersionor per os vaccination) compared to bacterial immersion and oral vaccines and a negative control (PBS).

Production of Feeds from Local Fish Waste To Support Hawaii's Aquaculture Industry
P.I.: Ryan Murashige, Diamond Head Seafood
The overall goal of this project is to develop and test aquatic feeds at Diamond Head Seafoods (DHS) using processed fish waste as a protein source in fishmeal-based formulations. A reliance on imported feed is one of the major barriers to developing sustainable aquaculture in Hawai'i. The cost of transportation of ingredients and feeds is very expensive, and the current economic situation and tariffs make imported feeds even more costly. As a major seafood processor, DHS generates a wide variety of fish waste, which can be utilized for protein and lipid ingredients in feed development for local aquaculture farming. Over the last two years, DHS has established the feasibility of producing local feeds at their feed manufacturing plant, which can produce batches of feeds, 50 lb to 300-pound-per-hour pellets using a twin-screw extruder that applies heat and pressure. However, to develop commercial-scale production, the project needs to improve feed quality and fish production technologies. Therefore, this project aims to establish viable tilapia feed manufacturing from local fish waste by first formulating nutritionally optimal feeds for tilapia using the fishmeal/fish waste, and then conducting feeding trials to investigate optimal feeds for tilapia and the efficacy of the feed. The project will also train new aquaculture workers and conduct industry outreach based on research results.

GoFish Hawai'i: Developing New Opportunities for Integrated Aquaculture in Hawai'i
P.I. Theodore Radovich, University of Hawaii at Manoa, CTAHR
The goal of the GoFish Hawaii (GFH) project is to address Hawai'i's critical food security challenge by developing and supporting farmers interested in integrating aquaculture into their agricultural businesses. With 85-90% of its food and over 60% of its seafood being imported, Hawai'i is vulnerable to supply chain disruptions. Additionally, the state's agricultural sector faces challenges such as an aging farmer population, lack of farm labor, and a decline in sustainable farming practices. Although there is a market demand for locally-produced fish in Hawai'i, the health, growth, and financial sustainability of the small-scale aquaculture industry is constantly tested by more competitive products from larger international sources. This project --based on the popular GoFarm Hawaii framework-- invests collective expertise and access to specialized facilities to address the challenges that Hawaii aquaculture faces with cost of production and competition. The GFH project focuses on training a new generation of farmers in integrated agri-aquaculture systems, particularly aquaponics. The project employs a holistic approach to integrate aquaculture with traditional agriculture through several key activities. Through this 2-year project, GFH will

train and provide continuing support for 50 participants who will continue on to help reduce Hawai'i's dependence on imported food and increase the state's food sustainability.

Addressing Biosecurity Risks for Hawai'i's Shellfish Industry
P.I. Maria Haws, University of Hawaii at Hilo, PACRC
The overall goals of this project are to test the efficacy of an oyster disease sentinel program to assure Hawaii's shellfish biosecurity, and to develop treatments for *Polydora* spp. infestation to improve Hawaii's oyster farming efficiency, prevent spread, and protect Hawaii's reputation as a seed supplier. Hawai'i's bivalve aquaculture, commercial and restorative, depends on maintaining biosecure stocks. Its hatcheries provide a significant amount of eyed-larvae and spat to local producers, and a significant portion of the entire West Coast shellfish industry. The ability to export seed to the West Coast is contingent on the ability to demonstrate that the seed is free from notifiable diseases and pests. Hawai'i producers and practitioners of restorative aquaculture also need to reduce risk through maximizing biosecurity. Good practices protect wild stocks which could be infected by external pathogens. However, despite its isolated geographic location, there are multiple routes for the transfer of pathogens and pests from external sources and through intra-state transport. This work will focus on developing and piloting an oyster sentinel program to allow for early detection of introduced pests and pathogens through deploying oyster spat (certified as disease free) in one of the most heavily utilized water bodies in the State: Pearl Harbor. The other issue this project will address is a major and persistent problem with bivalve grow out in Hawai'i: infestation by *Polydora* spp., i.e. blister or mud worms. These worms burrow into the oyster shell forming extensive U-shaped tunnels. The burrows fill with excreta and sediment. When broken, the oyster tissue is contaminated with odiferous material, thus reducing the value. Other damage may include slower oyster growth, weakened shells that break when shucked, and reduced condition index. Although multiple control methods including heat, chilling, brine, salting, drying, and combinations of these have been developed, none are ideal due to lack of effectiveness or costs. Previous research at the PACRC demonstrated that Ivermectin was highly effective not only for treating *Polydora* spp. infestation, but had promise to be a valuable research tool and thus deserves further refinement. Therefore, this project focus on determining the required dose of Ivermectin to treat infestation for two oyster species at different spat sizes in the laboratory and in the field.

Workforce Development to Support a Growing Aquaculture Industry
Elsa van Hall, Hawaii Pacific University
The overall goal of this project is to address the shortage of skilled workers in Hawai'i's aquaculture industry by training up to 36 undergraduate students over two years. Hawaii's aquaculture industry is rapidly expanding, driven by increased market demand for cost-effective and innovative sustainable food production. Although aquaculture in Hawai'i is projected to expand from a $90 million valuation in 2022 to $600 million by 2034, this growth may be stymied by the lack of skilled labor. Businesses struggling with staffing end up relying on mainland hires who often leave after a short time, creating high turnover rates and instability within the workforce. The scarcity of skilled workers who are familiar with local aquaculture practices and committed to staying in Hawai'i creates a significant barrier to industry growth. This project aims to address the critical shortage of skilled workers by building a stable pipeline of trained, local workers who will support the expansion of aquaculture in Hawai'i. The work group will do so by 1) generating interest and enthusiasm for careers in aquaculture by recruiting students from higher learning institutions across Hawai'i; 2) providing comprehensive, hands-on, station-based training across multiple aquaculture disciplines, ensuring students acquire a variety of practical skills required in commercial aquaculture and enhance partnerships with local aquaculture businesses to offer students real world experiential learning opportunities; and 3) connecting graduates to industry placements.

Request for Hawaii's Aquaculture Industry to Participate in Workforce Development Survey

A research study funded by the Hawai'i Department of Agriculture is exploring educational pathways that support workforce development in Hawai'i's aquaculture industry. The research group is especially interested in how secondary educators and educational institutions can contribute to preparing students for emerging careers in this field. They are inviting all interested stakeholders to participate in a brief online survey as part of this research. Your insights as an aquaculture industry member or a faculty or staff member within aquaculture education are critical to identifying existing resources, gaps, and opportunities for aligning education with aquaculture industry needs. Please fill out the appropriate survey based on your experience. Each survey takes 10-15 minutes to complete. Note, the deadline to participate in August 8.

Industry Members Survey Link:
https://qualtricsxm34rwqjdnl.qualtrics.com/jfe/form/SV_d0BEKbe0Sh0zKTQ

Educators Survey Link:
https://qualtricsxm34rwqjdnl.qualtrics.com/jfe/form/SV_0812m1OXI6QcOIS

Participation in this survey is voluntary, and all responses will be kept confidential. No identifying information will be included in any reports or publications resulting from the study. The project has been

reviewed and approved under appropriate research ethics guidelines (IRB Approval: IRB2025-00488). Your insights will directly support the development of relevant, industry-informed educational pathways across Hawai‘i. If you have any questions about the survey or the research, please contact Alyssa MacDonald (Leeward Community College) at amh4@hawaii.edu.

AquaClip: Guam Plans to Establish Community-Based Aquaculture Task Force

Grant funding for the Guam Department of Agriculture's clam farm project has dried up but the effort will continue under the leadership of Frank Roberto, Division of Aquatic and Wildlife Resources biologist, investigator and acting assistant chief, who believes the most valuable resource for the project is the “community.” The clam farm project began in January 2022, and the grant period officially ended on April 30, 2025. Despite the end of funding, DAWR was able to obtain the nationwide permit allowing marine construction until March 16, 2026, enabling continued work.

“I feel that our most valuable resource right now is the community. Our division, we're just starting. It's just me and Shane (McDonald). … We're basically the division starting from the ground up. We have no resources. We don't really have anything. So, I feel like right now, what we need to depend on is basically the community. You guys are really the only resource that we have,” Roberto said during a community clam farming town hall meeting in Inalåhan on Wednesday.

Materials were acquired before the grant expiration to support further development. However, the project was challenged with the deaths of two major contributors: Jason Biggs, the assistant chief of DAWR, who died in December 2024, and Mike Ogo, the chief of the Division of Aquaculture, who died last week. Roberto has since been detailed to take Biggs' place to carry forward with their legacy and project leadership.

Given the limited internal staffing and resources, Roberto emphasized the community’s important role moving forward and plans to establish a community-based aquaculture task force.

“That's something that I will do to coordinate and establish. And I feel like that's the first step that we need in order to accomplish any type of aquaculture here. I know that there is the aquaculture task force, … but I also want to have a task force that's within the community, not something that's just with the government officials, but something that involves entirety,” Roberto said.

Roberto wants to develop an aquaculture roadmap that will be crucial in moving forward the initiative and guiding future projects to ensure alignment with community needs and environmental safeguards during a time when aquaculture is just emerging.

“We can put together this community-based aquaculture plan, which is something that we create so that any time any future aquaculture initiatives are to emerge, they would have to be aligned with this aquaculture plan. And this is something that we'll work on together. It's not just something that I'll put together and you guys just have to follow. I want the community’s input,” Roberto said.

Short-term plans include building an experimental clam enclosure near the Salagula Pools using simple materials like rebar, cement and barrier netting; refining enclosure designs based on local conditions and community input; and possibly extending the permit if the design proves successful.

“Right now, with the resources we do have, I do want to at least try to outplant some clams into the ocean. Even though the funding has ended, the grant period has ended. ... It's going to be a very low-tech type of enclosure. And from now until the time we're able to bring more clams in, I want us to be able to refine our enclosure design,” Roberto said.

Roberto said he has already coordinated with the Inalåhan mayor to pick up the materials for the clam enclosure.

“And once I coordinate with the community, we can design this enclosure closely to how Palau does it, or differently, (it) doesn't matter. But we just want to refine this enclosure to see if it withstands the tides (and) whether it’s effective. So, once we're able to refine and establish this enclosure, we have until basically March 16 of 2026,” Roberto said.

If the design build is successful, Roberto said he can request an extension for the nationwide permit so that the enclosure can continue beyond March 2026.

Since starting the project in 2022, DAWR has learned several lessons about clam farming and the environmental factors that need to be considered to ensure the viability of the clams, including switching to full-spectrum lights to improve light conditions and clam survivability in future batches and doing strict

quarantine and parasite monitoring before outplanting the clams in Guam's waters.

Roberto confirmed that of the 300 clams that were imported from Palau, only two survived and are currently thriving at the Salagula Pools.

Source: The Guam Daily Post // Read Original Article

This newsletter is written and prepared by the CTSA Information Specialist Meredith Brooks.
The Center for Tropical and Subtropical Aquaculture (CTSA) is one of five regional aquaculture centers in the United States established and funded by the U.S. Department of Agriculture's National Institute of Food and Agriculture (NIFA) under active grants 2020-38500-32559 and 2022-38500-38099. The regional aquaculture centers integrate individual and institutional expertise and resources in support of commercial aquaculture development.
CTSA was established in 1986 and is administered by the University of Hawaii.

Center for Tropical and Subtropical Aquaculture
www.ctsa.org

Center for Tropical and Subtropical Aquaculture | University of Hawaii at Manoa 1955 East West Road, Ag. Sci. 216 | Honolulu, HI 96822 US

Unsubscribe | Update Profile | Constant Contact Data Notice

Constant Contact

Try email marketing for free today!