

Letter from the Director

Aloha & Happy Earth Month,

You've likely heard it before: Earth day should be every day! Although annual Earth Day (April 22) and Month events are joyous occasions to celebrate our planet and it's wondrous natural resources, the sentiment that we must take strong daily actions to preserve those resources is becoming more relevant with each passing year. Like many organizations in the natural resources and food production fields, CTSA strives to honor Earth and its ecosystems through our daily work. It is our hope that in collectively doing so, we will catalyze changes within our communities to actively participate in creating a healthier environment and more sustainable food systems.



Aquaculture presents many opportunities to sustainably produce food on small to large scales --from aquaponics to integrated multi-trophic aquaculture (IMTA)-- and is often considered one of the most environmentally friendly methods to produce protein. That being said, we cannot overlook the potential burden on the environment from aquaculture operations, and must consider this in our industry development plans. To this end, the annual CTSA Request for Pre-Proposals (included in this newsletter) lists priority areas that are in line with 'regenerative' aquaculture, which is the idea of simultaneously producing food, reducing waste and providing beneficial environmental impacts. These priorities include IMTA, Recirculating Aquaculture Systems (RAS), and other innovative technologies. We look forward to reading your proposed ideas for these and the other FY21 priorities.

I was pleased to watch many world leaders commit to reducing carbon footprints during President Biden's Earth Day summit on climate change. It is my hope that they will put their words into action and create infrastructure and jobs that address the most critical problems facing our environment. A great example of this can be found in Denmark, where the government is well on its way to meeting a goal of producing 100k metric tons of salmon through land-based RAS farming. The country currently imports most of its salmon, so this could prove to be a cost effective model for the future reduction of carbon footprints in protein production. I also want to encourage you to read the article in the Global Aquaculture Alliance April Newsletter about the important role our industry plays in mitigating climate change; it is so nice to read about how advancements in aquaculture are reducing potential negative environmental impacts.

As I regularly express in my monthly letters, we all must work together to maximize our positive impacts on the environment and our food systems, both of which are essential to our survival.

Mahalo,

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

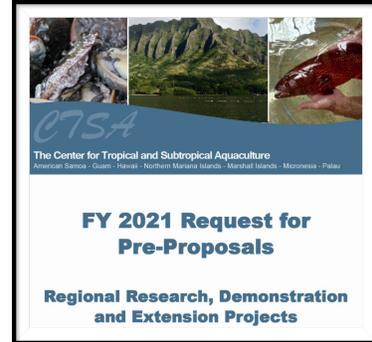
CTSA FY21 Request for Pre-Proposals

CTSA is pleased to release the [FY2021 Request for Pre-Proposals](#). The Request lists the top priority areas and species as identified by industry stakeholders in Hawaii and the U.S. Affiliated Pacific Islands, as well as instructions for submitting a pre-proposal by the deadline of 5pm HST on Friday, June 4. As of last year, CTSA is using a standard form for all pre-proposal submissions. Pre-proposal forms can be downloaded on the CTSA website or via request to mbrooks@ctsa.org.

Pre-proposals received by the deadline will be reviewed by CTSA's Industry Advisory Council (IAC) and Technical Committee (TC). Pre-proposals that receive a majority of votes will move forward with

requests for a full proposal.

CTSA's mission is to support aquaculture research, development, demonstration, and extension education in order to enhance viable and profitable aquaculture in the United States. Our main focus is on funding projects that will have immediate, positive impacts on the regional aquaculture industry. FY 2021 Strategic Areas & Priority Species include Finfish Farming Technology, Macroalgae/ Microalgae, Aquatic Animal Health, Innovations in Aquaculture Technology, Hawaiian Fishponds, and...[Read More](#)



Hawaiian Fishponds: Connecting Communities to Food, Place, and Culture through Regenerative Aquaculture



By Meredith Brooks, CTSA

Traditional Hawaiian fishponds (loko i'a) have been an integral part of food production in Hawaii for centuries. As one of the oldest and most efficient systems of aquaculture, the fishponds have long been places for fish and other aquatic species to be captively cultured in harmony with the environment, by and for the community. There are many varieties of fishponds throughout the islands but they were commonly built along the shoreline and expertly designed to naturally recruit juvenile fish such as mullet, awa (milkfish), and other species through sluice gates called makaha. Loko i'a were one part of the traditional ahupua'a, an intricate system of land division and management of natural resources from the mountains to the ocean. Aquaculture, agriculture and fishing in each ahupua'a sustained a large population of Hawaiians while respecting and caring for the environment. Though the use of fishponds declined with increased western contact, there has been a growing resurgence in recent decades to restore and utilize loko i'a for cultural, education, and food security purposes. Hawai'i currently imports 90% of its food supply, including seafood. With an increasing global focus on regenerative aquaculture, producing food in the fishponds presents ideal opportunities to increase the local supply of sustainable seafood while restoring ecosystems, relieving pressure on wild fisheries, and educating the next generation of environmental stewards.

The revival of aquaculture in fishponds has been led and supported by collaborative efforts from communities, researchers, and funders, with most of the credit going to grassroots community-based organizations and practitioners. One of the most active and essential partners in the restoration of fishponds has been Kua'āina Ulu 'Auamo (KUA), an organization that serves as a backbone for multiple community-based networks across Hawai'i. KUA's Hui Mālama Loko I'a is a growing network of fishpond practitioners and organizations from across Hawai'i. The Hui was formed as an opportunity for practitioners to empower each other and leverage their skills, knowledge and resources related to restoration and management of loko i'a. During a recent interview with CTSA, Hui Mālama Loko I'a Coordinator Brenda Asuncion explained that KUA works to serve the needs of the community by trying to understand the common and priority issues across communities and then helping them work together to identify ways to address those issues. "We try to harness the energy of everyone together to identify ways that lift up everyone's work collectively." For the fishponds network, that means helping coordinate activities across fishponds, identifying opportunities, and facilitating information sharing and discussion about priority needs between practitioners from the various loko i'a. "We want to create the channels so they can teach each other."

Fishponds range in biology and size from one to over 100 acres; some are in a state of disrepair while others have been skillfully restored for uses including cultural practice, education, and commercial food production. Although the dozens of active fishponds have varying ecologies and production goals, their shared purpose is a critical and unique aspect of their revival. “What unites the practitioners is the work they do to take care of these places,” explained Asuncion. “Even though they have different goals, there is an agreement that the function of fishponds was to provide food. That starting point supports educational efforts to teach the lesson that these places were built to optimize food production and they fit into a bigger food system and ahupua’a system. The fishponds provide an opportunity for connection to place, food and culture.”

Connection to food is a shared value and core part of the CTSA mission, and as such the program has supported research that has directly benefited the fishponds. Over a decade of CTSA-funded work on oyster production has led to the development of a shellfish certification program, local hatchery technology, and commercial and cultural production of oysters in multiple fishponds. Other current and upcoming CTSA projects on macroalgae (seaweed), sea cucumbers, and nenua are seeking to help diversify the species available for production, which has been identified as a priority among fishpond practitioners. As part of its FY20 Plan of Work, CTSA will be supporting two new projects to investigate the potential of commercially growing sea cucumber and nenua in different loko i’a.

In addition to species diversification, KUA has identified that the top aquaculture priorities for fishponds are the cost-effective availability of fingerlings for desirable species --namely mullet-- and technical support. “The fingerling shortage is an issue because of decreased populations of prized species like mullet and awa,” stated Asuncion. “Fishponds traditionally recruited from the wild because they were protected nursery areas. Now that the wild populations are depleted, even practitioners who have permits to collect from the wild have expressed its inappropriateness because it takes away from already unhealthy populations.” Hatchery produced fingerlings are the best option to stock fishponds given the current situation. In terms of technical support, the Hui is starting to build bridges within the contemporary aquaculture industry to address opportunities for technical support on animal husbandry and water quality monitoring. They are also looking into marketing channels and opportunities for fishpond products, as well as outreach on the value of traditionally prized fishpond species such as mullet.

Looking to the future, fishponds will continue to shape aquaculture in Hawaii, as they have for centuries. CTSA stakeholders from all breadths of the aquaculture industry agree that Hawaiian fishponds remain a top priority for regional funding; accordingly, they are included in the priority areas listed in the FY21 Request for Pre-Proposals. CTSA looks forward to continued collaboration with fishpond researchers, practitioners, KUA, and other stakeholders to meet our shared goals of increasing food security and facilitating community-based connections to food across the Hawaiian Islands.



Aquaculture Announcements

NSF Blue Economy Funding Opportunity

The NSF is offering a [Convergence Accelerator - Networked Blue Economy](#) funding opportunity that could be a good fit for aquaculture proposals. They are looking for multi-disciplinary research work, included but not limited to the following examples:

- Oceanographers, veterinarians, modelers, HABs researchers and remote sensing experts teaming up to advance ocean epidemiological and threat forecasting models
- Economists, marine mammal experts and engineers teaming up to develop aquaculture structures that are cost-effective and do not pose entanglement risks
- Spatial planners, modelers, economists, biologists and engineers teaming up to model trade-offs and techno-economic feasibility for offshore aquaculture

Letters of intent are due May 5, 2021. A letter of intent is required to apply. It is used to assess requirements for NSF proposal review. No feedback will be provided to the submitters and letters of intent are non-binding. Full proposals due June 14, 2021.

Remembering Richard Fassler

Richard Fassler, a former member of the State Aquaculture Development Program (ADP) team and the Hawaii Aquaculture and Aquaponics Association, passed away on March 15, 2021 at his home in Manoa; his wife Karen and daughter Kim at his side. [Click here](#) to read a moving tribute by CTSA IAC Co-Chair and former ADP manager John Corbin.



AquaClip: How Farmed Seafood Can Support Climate Action

All industries, including fisheries, agriculture and aquaculture are susceptible to climate change. However, aquaculture is uniquely positioned not only to withstand impacts of climate change, but to even help mitigate its effects.

The siting of fish farms has much to do with resilience to climate change. As many aquaculture sites are located in natural bodies of water, they are inherently much less likely to be impacted by land-based extreme weather events such as tornadoes, droughts, floods, etc. These weather events are on the rise in the face of climate change, so this element is particularly important when considering global food security. In addition to the consideration of siting, water-based aquaculture frees up land to be developed for other food-producing activities, thereby increasing the productivity of the food systems. The more that fish farms are able to withstand climate change, the more people will have stable, reliable access to seafood in the coming years.

Apart from the siting of aquaculture, greenhouse gas emissions are another consideration when thinking about climate change. Although fisheries and aquaculture are small global contributors, the seafood industry has a responsibility to lower emissions, like all industries do. There are many areas of opportunity to achieve this: reducing energy consumption or increasing alternative energy sources (solar, hydro, and wind power); better feeds and feed management, embracing low-impact feeds such as algae-based and vegetable-based feeds; encouraging local consumption to reduce transportation of seafood products; and utilizing fuel-efficient technologies and engines.

The increased amount of carbon in Earth's atmosphere is a large contributing factor to the exacerbation of climate change. Therefore, areas like forests that can sequester, or contain, carbon are increasingly valuable. Some bodies of water can sequester up to five times the amount of carbon that tropical forests do. Supporting these ecosystems and the industries within them, such as fisheries and aquaculture, is incredibly important to realizing this potential in the fight against climate change.

Source: Global Aquaculture Alliance // [Full 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 2016-38500-25751 and 2018-38500-28886. The regional aquaculture centers integrate individual and institutional expertise and resources in support of commercial aquaculture development. CTSA was established in 1986 and is jointly administered by the University of Hawaii and the Oceanic Institute of Hawaii Pacific University.

Center for Tropical and Subtropical Aquaculture
www.ctsa.org

