



Letter from the Director

Aloha,



It is becoming common knowledge that sustainable seafood is good for our health, our planet's health, and for our economy's health. As we prepare to usher in Seafood Month (October), I am pleased to see bipartisan legislation in the form of the 'Advancing the Quality and Understanding of American Aquaculture (AQUAA) Act (S. 4723),' co-introduced by our U.S. Senator Brian Schatz. "Hawaii leads the nation in modern and traditional aquaculture practices," stated Senator Schatz. "With this bipartisan bill, we can expand aquaculture opportunities, opening suitable federal waters for responsible growers. It will create new jobs, spur economic growth in our coastal communities, and ensure our oceans are managed sustainably now and in the future."

I encourage you to join me in taking this opportunity to reflect on the importance and value of seafood for humans, and the impact that marine life has on our planet. Earlier this month, I participated in a few different virtual meetings related to seafood. One was a Zoom webinar on offshore aquaculture in Hawai'i and how partnerships and sound management can support the needs of communities, industry, and the environment through the production of local seafood. Another meeting organized by the Seafood Nutrition Partnership featured presentations by medical and nutrition scientists that were focused on the importance and value of seafood nutrients. The nutrients found in seafood are critical for human health, including lean protein, vitamins, and minerals, and most notably omega-3 fatty acids EPA and DHA. Not only do these nutrients support long-term health and development, but some key nutrients for antiviral immunity (Vitamin D, Zn and Se) are also in seafood. A recent study has found that a negative correlations between mean levels of vitamin D (average 56 mmol/L, STDEV 10.61) in each European country and the number of COVID-19 cases/1 M (mean 295.95, STDEV 298.7, and mortality/1 M (mean 5.96, STDEV 15.13). (<https://doi.org/10.1007/s40520-020-01570-8>).

Currently, the U.S. imports at least 85% of its seafood, about half of which comes from aquaculture in other countries. Also, less than 36% of Americans eat the recommended two seafood meals per week. In an effort to increase seafood consumption, a coalition of seafood organizations has banded together to create Eat Seafood America!, a consumer outreach campaign aimed at boosting the seafood economy and helping Americans stay healthy during the COVID-19 crisis. The campaign has been successful with their messaging, which is increasing as we prepare to enter Seafood Month, and has released a digital toolkit that includes key seafood messaging, seafood and human health data, recipes, and more. [Click here to view or download the Eat Seafood America! digital toolkit.](#)

One of the most holistic approaches to meeting the increasing global consumer demands for seafood is aquaculture, the capacity for which is expanding rapidly. Even politicians are talking more about the importance of aquaculture for the economy and environment, including Honolulu mayoral candidates who have declared strong support for increasing the farming of seafood in Hawai'i. Since our inception over three decades ago, CTSA has been proud to support the development of aquaculture research, development and production in our region to help meet

both community and market needs for seafood. We are currently in the midst of our FY20 development process and are processing external reviews. The next step in this annual process will be ranking proposals and requesting proposal revisions in order to prepare...[Read More](#)

New Aquaculture Drugs Factsheet from Hawai'i Department of Agriculture



As the aquaculture industry continues to grow and diversify throughout the Pacific region, safe and effective drugs are needed to treat sick aquatic animals.

In an effort to increase understanding and answer questions that the industry might have about aquaculture drugs, Lei Yamasaki of the Hawai'i Department of Agriculture has prepared a factsheet that is now available for download on the CTSA website.

The factsheet includes a review of products that are FDA-approved, conditionally approved, or indexed for use in aquaculture. There is also a list of prohibited drugs, and details on drugs that require veterinary supervision or oversight.

[Click here to download the factsheet on the CTSA website.](#)

Available Now! Coral Grouper Fingerlings from CTSA Project

The research team leading the CTSA project "Optimizing coral grouper (*Plectropomus leopardus*) culture to promote rapid commercialization in the U.S.-Affiliated Pacific Islands" has experienced a series of highly successful larval runs, and currently has a surplus of coral grouper fingerlings available for distribution. **There is no charge for the fish, but the recipient must arrange cargo and import/export logistics, and pay for shipping costs and materials.**



Approximately 2,500 fully weaned 60-day old fish (on dry food) are available for immediate distribution within the next 30 days.

In addition, another ~5,000 fish that are 30 days old (still on live feeds) will be available for distribution in 30-60 days.

As previously stated, these fingerlings are the surplus output of a CTSA-funded project; accordingly, there is no charge for the fish. However, the recipient will need to pay for and arrange cargo and import/export logistics. **This includes any and all applicable government permits and/or approvals that must be obtained to bring the fish to your location.**

Please note, CTSA does not support the introduction of non-native species into any location in our region; the coral grouper were brought to Hawai'i under a permit for **land-based research purposes only** in conjunction with research in Palau. Accordingly, this species of grouper cannot be distributed within Hawai'i.

If you are interested, please contact Dr. Chatham Callan at the Oceanic Institute of Hawai'i Pacific University (ccallan@hpu.edu, 808-259-3149). Dr. Callan estimates the cost per box is ~\$25 (for materials), and that about 50-100 fish can fit into each box at the intended shipping

size, depending on estimated transit duration. OI has shipped over 10,000 fish from HNL to Palau (36h transit on United Cargo) using this method.

Aquaculture Announcements

New video highlights aquaculture activities at Oceanic Institute of Hawai'i Pacific University

Oceanic Institute of HPU has released a new video highlighting the aquaculture research and development activities taking place at their campus on the windward side of O'ahu. If you watch closely, you will notice several current and recent CTSA project in action! [Click here to watch](#).

This video and others like it will be featured on our forthcoming re-designed CTSA website as part of our efforts to share a comprehensive catalog of resources and information about our regional institutions and partners. Please email mbrooks@ctsa.org to share any appropriate videos that you would like to see added to our collection!

Register now for the virtual Marine Alliance for Science and Technology for Scotland (MASTS) Annual Science Meeting

The Marine Alliance for Science and Technology for Scotland (MASTS) Annual Science Meeting will be conducted online October 5-9, 2020. The organizers of this online meeting have allocated free registration slots to interested participants who come from ODA countries, which include the United States. The meeting is expected to cover topics of interest in the fields of marine science and aquaculture. [Click here](#) to register for this meeting.

Request for Public Input on Hawai'i 2050 Sustainability Plan

The State of Hawai'i's Office of Planning (OP) is updating the Hawai'i 2050 Sustainability Plan to serve as the State's climate and sustainability strategic action plan; align the state's goals, policies, and actions with the United Nations (UN) Sustainable Development Goals (SDGs); and develop a roadmap of sustainability and climate change actions for 2020-2030.



OP is seeking input now and your perspective can help shape Hawai'i's future.

The plan will be updated to determine future actions to guide the coordination and implementation of Hawai'i's sustainability and climate adaptation goals, principles, and policies (per Hawai'i Revised Statutes §226-65). It will also identify local socioeconomic shocks and stresses and provide recommendations for a sustainable and resilient economic recovery for Hawai'i.

You can learn more about this effort and provide initial feedback through Virtual Statewide Information Sharing Sessions. These sessions will provide information on the update process and planned improvements as well as solicit feedback regarding ongoing sustainability and climate change initiatives, gaps in existing policies and efforts, and recommended actions that the government, organizations, communities, and individuals can take to achieve the plan's goals over the next 10 years.

Comprehensive Sessions (click on the session headline to register):

- [Wednesday, September 30 from 10-11:30 am](#)
- [Tuesday, October 13 from 2-3:30 pm](#)
- [Tuesday, October 27 from 7-8:30 pm](#)

Topic-focused Sessions (click on the session headline to register):

- **[Climate Action and Resilience](#)**
Friday, October 2 from 9-10:30 am
(aligned with the UN SDGs: Affordable and Clean Energy and Climate Action)
- **[Natural Environment](#)**
Monday, October 5 from 1-2:30 pm
(aligned with the UN SDGs: Life Below Water and Life on Land)
- **[Rural Livelihoods and Traditional and Customary Practices](#)**
Friday, October 9 from 11 am-12:30 pm
(aligned with the UN SDGs: Zero Hunger and Quality Education)
- **[Social Stability and Human Health](#)**
Friday, October 16 from 1-2:30 pm
(aligned with the UN SDGs: No Poverty; Good Health and Well-Being; Gender Equality; Good Jobs and Economic Growth; Reduced Inequalities; and Peace, Justice, and Strong Institutions)
- **[Urban Communities and the Built Environment](#)**
Wednesday, October 28 from 3-4:30 pm
(aligned with the UN SDGs: Clean Water and Sanitation; Industry, Innovation and Infrastructure; Sustainable Cities and Communities; and Responsible Consumption)

AquaClip - Study finds menthol can enhance resistance against stressful conditions in tilapia

Nile tilapia is a species with high tolerance to stressful conditions induced by super-intensive rearing systems. One of the dangers of these systems is the high ammonia water concentrations that led to low growth rate, feed efficiency and survival. Dietary supplementation of herbal essential oils is recommended for aquatic animals due to their growth-promoting, immune and antioxidative potential.

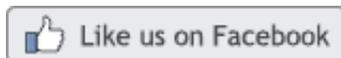
A team of researchers evaluated the feed inclusion of menthol essential oil from 0.1 - 0.4% on growth performance, digestive enzyme activity, immunity and antioxidative responses in Nile tilapia. After eight weeks, fish were exposed to acute ammonia challenge.

Researchers found that the optimum rate of dietary menthol essential oil required for the best growth is 0.26% and 0.30%. Dietary menthol enhanced the protease activity while lipase and amylase activities were influenced. Before and after the ammonia challenge, lysozyme, phagocytic activities, phagocytic index, superoxide dismutase, catalase and glutathione peroxidase were higher in fish fed menthol than fish fed menthol-free diet. On the other hand, cortisol, glucose, and malondialdehyde were decreased by dietary menthol.

Ammonia stress induced a reduced lysozyme, phagocytic activity and phagocytic index but increased the superoxide dismutase, catalase, glutathione peroxidase, malondialdehyde, cortisol and glucose levels. The related inflammatory genes were reduced by dietary menthol either before or after the ammonia exposure, and the mRNA levels of these genes were increased after ammonia stress.

"Menthol essential oil inclusion at the rate of 0.22% to 0.30% is recommended to increase the growth performance, protease activity, immunity, antioxidative response and the resistance against ammonia exposure in Nile tilapia," researchers said.

www.ctsa.org



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 Oceanic Institute of Hawaii Pacific University and the University of Hawaii.

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