



Letter from the Director

Aloha!

CTSA just held its annual IAC/TC meeting on Oahu, where committee members reviewed 27 pre-proposals and selected the projects to move forward to the full proposal stage in our development process. I would like to thank our members for their participation, as well as the researchers for sharing their ideas. I congratulate the working groups whose projects were selected by our IAC/TC, and encourage those whose projects were not selected to continue sharing their thoughts with us. Due to CTSA's limited budget, some of the pre-proposals that the industry panel expressed interest in were not able to move forward in this cycle.

Since the inception of the Regional Aquaculture Centers, the level of funding for the program has been an obstacle to supporting all of the projects deemed important by industry representatives. Considering the rising costs of operations, particularly in the remote Pacific Island region, we are finding it increasingly difficult to keep up with the level of aquaculture development required to meet our future seafood needs. This makes it critical to support work that will efficiently utilize local resources to maximize project impacts on food security and island economies, and at the same time preserve natural resources.

I recently had the opportunity to check in on a couple of CTSA-supported projects that are making strides in aquaculture development in the Western Pacific. In Pohnpei, I was pleased to see the technicians trained under former CTSA extension agent

Masahiro Ito independently running the hatchery operations and actively training the next generation of college and high school students. In the Marshall Islands, I was impressed with the progress of the burgeoning moi farming operation, which is mostly run by local technicians; I would like to see more training of local college students and other interested youth.



Moi cages in Majuro, Republic of Marshall Islands

I look forward to the positive impacts that the next round of CTSA-funded projects will have on our regional aquaculture industry. As always, I welcome your comments, questions, and suggestions.

Mahalo,
Cheng-Sheng Lee

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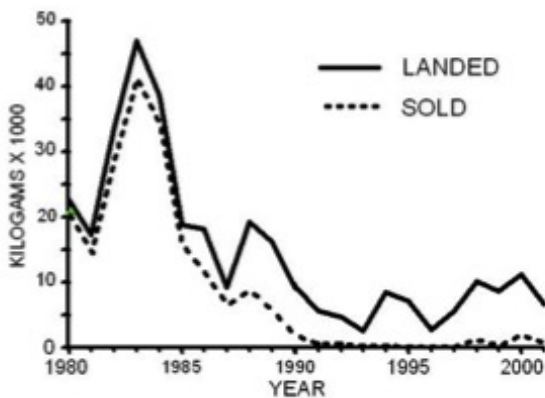
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New CTSA Extension Publication: Differences Between Cultured or Captured Kāhala in Hawai'i

CTSA has supported many years of research on aquaculture techniques for amberjack, known in Hawaii as kāhala. We are pleased to release a new extension publication from University of Hawaii CTAHR researchers discussing the differences between cultured and captured kāhala. The following is the introduction section of the publication; [click here to download the complete publication.](#)

INTRODUCTION

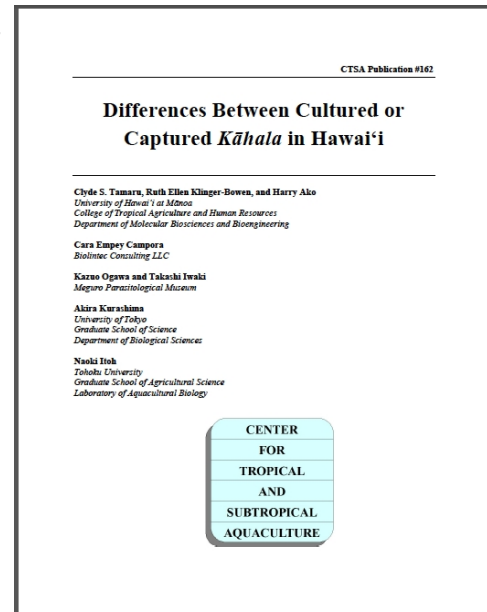
In 1995, a multi-year project entitled "Hawaiian Fisheries Development" supported by the National Oceanic and Atmospheric Administration (NOAA) began to systematically address development of hatchery technologies for species having the greatest potential for aquaculture and stock enhancement (Ostrowski, 1997). The amberjack more commonly known as *kāhala* was identified as being a good candidate for culture because of its rapid growth rate, high commercial value, adaptability to sea cages and tanks, and tolerance to handling. Although initially fed fresh fish, they have since been shown to readily adapt to commercial pelleted feeds. The *kāhala* and in particular, the Almaco Jack, *Seriola rivoliana*, are commercially cultivated at aquaculture facilities in Hawai'i and are target species for the expansion and diversification of the open ocean aquaculture activities that started in Hawai'i (e.g., what was Kona Blue Water Farms (KBWF) is now known as Blue Ocean Mariculture <http://www.bofish.com/>).



a dramatic decrease in total commercial landings and for those that are caught that actually are marketed (Figure).

This publication was prepared by research and extension personnel at the University of Hawaii at Manoa (along with their collaborative partners) to summarize decades of research that underscores the advantages of cultured versus wild caught *kāhala*. It also provides a glimpse of the research and extension activities that will be needed to support the continued growth of this new industry.

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



Two species of amberjack are found in Hawaiian waters, the Greater amberjack, *S. dumerili* and the Almaco Jack, *S. rivoliana*, both of which are commonly known in Hawai'i as *kāhala*. Historically, they were very important commercial species and an excellent food fish taken from the deeper coastal waters between 40-100 fathoms. Although popular as a food fish, the *kāhala* is known to be ciguatoxic in some areas of the Pacific and continues to be a primary source of ciguatera poisoning in Hawai'i (Anderson et al., 1983; Myers, 1991; Randall, 1996). Subsequently, retailers have excluded amberjacks from commercial markets and restaurants, resulting in

Apply Now! Aquaculture Researcher Position at University of Hawaii Manoa

The University of Hawaii's College of Tropical Agriculture and Human Resources (CTAHR) is seeking to hire an **Assistant Researcher** for the Human Nutrition, Food and Animal Sciences department. The duties and responsibilities of the position include the following:

- Develop an interdisciplinary research and extension program related to the genetics, nutrition and physiology of commercially important aquacultured species and applications to production challenges, especially in Hawaii and the Pacific region.
- Teach undergraduate and graduate classes related to aquaculture and animal science in line with departmental priorities.
- Advise undergraduate and graduate students. Provide leadership for the Certificate in Aquaculture program.
- Obtain extramural funding for research and extension programs in aquaculture.
- Work with faculty, extension educators in the field, producers and aquaculture organizations.
- Participate in departmental, college, and university affairs.

The position will begin approximately January 2016, or soon thereafter. For best consideration, all application materials should be submitted by September 1, 2015. [Click here for more information and to apply for the position.](#)

Apply Now! SeaGrant Extension Agent at University of Guam

The University of Guam is seeking an **Assistant to Associate Professor** in Extension and Outreach who will provide high quality, responsive, science-based, and effective programs under the CNAS SeaGrant portfolio. Applications due by August 31, 2015. Employment period to begin on November 1, 2015 or earlier. For more information and to apply for this position, [please click here.](#)

The Importance of Giant Clam Aquaculture in the Pacific Islands: Watch Gerald Heslinga's TEDx Talk on YouTube

Gerald Heslinga, owner and operator of Indo-Pacific Sea Farms based at NELHA, participated in the independently organized TEDx Talk in Kamuela, Hawai'i last year. In his presentation "**Sunlight, Symbiosis, and Sustainable Seafood**," Heslinga discusses the importance of giant clams in the Pacific Islands, and details the process and benefits of giant clam farming in a captivating fashion. [Click here to watch.](#)

AquaClip ~ New 3D Simulator Lets You Swim With the Farmed Fishes

by Madelyn Kearns, www.seafoodsource.com. July 20, 2015

The aquaculture experience has turned digital thanks to a group of researchers and technologists from the Norwegian University of Science and Technology (NTNU).

Now, those interested in taking a tour of a salmon farm no longer have to travel or set foot on a boat to do so - they need only to strap on a pair of Oculus Rift 3D-goggles and grab an applicable video game controller to start exploring the ins and outs of the farmed fish world.

Partnering with Måsøval salmon farms in Frøya, Sør-Trøndelag, NTNU project members were able to create an effective aquaculture simulator, which they soon hope to develop further into what could become Norway's first virtual breeding simulation program.

"We're working on establishing a center around the simulator on Frøya, and have ambitions to develop Norway's first aquaculture simulator for breeding," said Monicha Seternes, head of environment and development for Måsøval fish farming industries, to World Fishing and Aquaculture.

By donning the Oculus goggles, a participant can make the rounds both above the water's surface and below; swimming with the salmon, controlling the feeding machine, and inspecting the cage and its anchoring are all available functions within the simulator.

The simulator is part of an effort to promote the Norwegian fish farming industry, according to Seternes. When paired with a visit to an actual fish farm, it will provide inspectors, students and onlookers with a well-rounded conception of the myriad of components that combine to create an efficient aquaculture operation.

[Click here to read the full article.](#)

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 2010-38500-20948, 2012-38500-19566, and 2014-38500-22241. 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 and the University of Hawaii.

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