University of Hawai`i Aquaculture

Education
Research
Training
Extension

Ansel Adams, 1958, Molokai


Kaua'i Community College
University of Hawai'i-West O'ahu
Windward Community College
University of Hawai'i at Mānoa
Leeward Community College
Honolulu Community College
Kapi'olani Community College
Maui College
University of Hawai'i at Hilo
Hawai'i Community College
UNIVERSITY of HAWAI'I®
SYSTEM

Pacific Aquaculture & Coastal Resources Center
CAFNRM

UNIVERSITY of HAWAI'I® HILO

Goals of the PACRC

To encourage conservation and sustainable development in coastal communities throughout the world by:

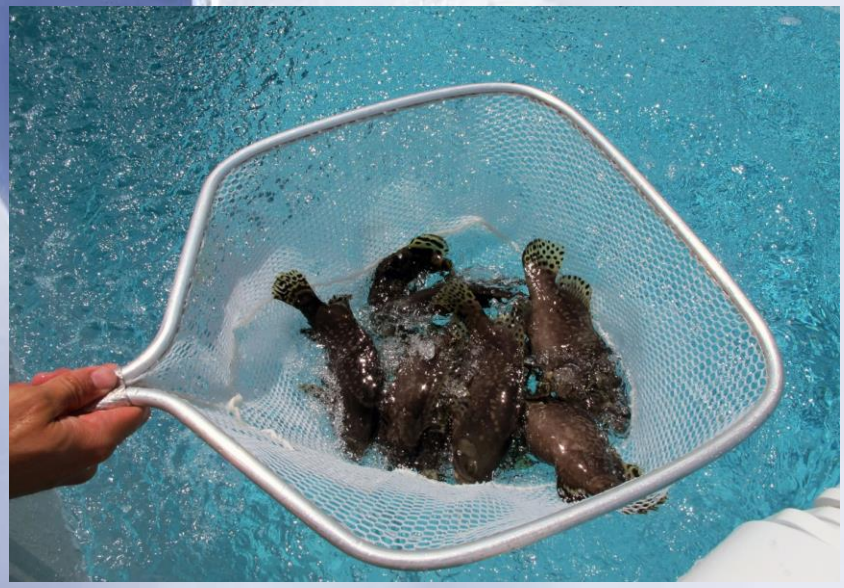
- Building support for sustainable aquaculture development
- Supporting undergraduate and graduate education in aquaculture and fisheries
- Collaborative research and development projects
- Increasing awareness of opportunities for careers in aquaculture and fisheries
- Stimulating demand for local aquaculture products

History

- Concept originated in early 1990's
- Clean up started in 1998
- Final BOR approval 2006
- Founded as a partnership of: UHH, UH Sea Grant, Hawaii County, State, Economic Development Administration, Keaukaha Community Association and DHHL
- UHH co-founders: Kevin Hopkins and Sharon Ziegler Chong
- $21 million invested by partners

Microalgae & Mollusk Culture Facilities

Marine Fish



Freshwater Center – Panaewa

- Laboratory
- 2 Greenhouses
- Outside tanks (5m)
- Quarantine units
- Integration w/ agriculture

Workforce Training

- 20-30 students per year, 320 total since 2007
- Wages depend largely on production (fish, oysters)
- 2-3 years of commercial scale work experience
- High hiring rate, higher level jobs

Kevin Hopkins
Professor of Aquaculture

University of Hawaii at Hilo
College of Agriculture, Forestry & Natural Resources Management

- Current Degree Offering
  - B.S. Agriculture, specialization Aquaculture
- Proposed Future Offering (2018 or 2019)
  - B.S. Aquaculture
  - Aquaculture Minor
- Typically 15 to 20 students. Increase to 50.

Marine Agronomy

Seaweeds are a key to feeding & powering the world !

SEARCH

HOME | ABOUT MA | ANNOUNCEMENTS | DIGITAL LIBRARY | VIDEOS | USEFUL LINKS | NEWS & EVENTS | WHO WE ARE | CONTACT US | LOGIN

WORLD BANK GROUP
Environment & Natural Resources

Marine Agronomy Group, CAFNRM, UH-Hilo
200 W. Kawili st., HI 96720, USA
Contact: info@MarineAgronomy.org

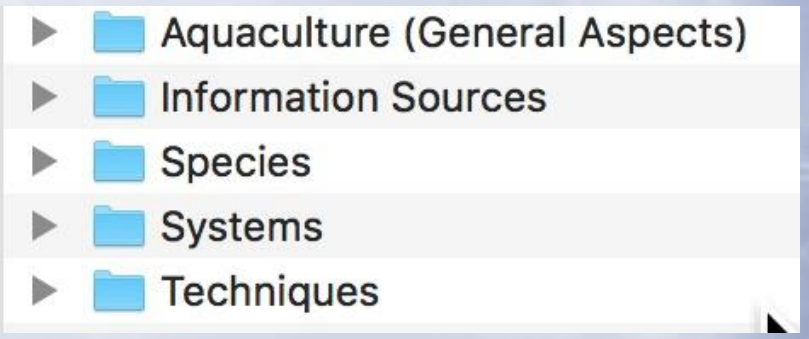
Funding for this web portal is provided by the World Bank and the University of Hawaii at Hilo.

UNIVERSITY of HAWAI'I HILO

Aquaculture Info

- A curated database of aquaculture publications
- Free access
- Both web-based and downloadable
- Over 3.5 GB already of files
- Emphasis on manuals and methods
- Available late 2018

- Organized both by function and commodity (100+ species)



- A.I. query engine under development

Armando Garcia Ortega
Associate Professor of Aquaculture

Research on aquaculture of local species of marine fish (mullet, kahala, grouper) **on land-based systems**
Aquatic Nutrition

Maria Haws
Associate Professor of Aquaculture
Director, PACRC

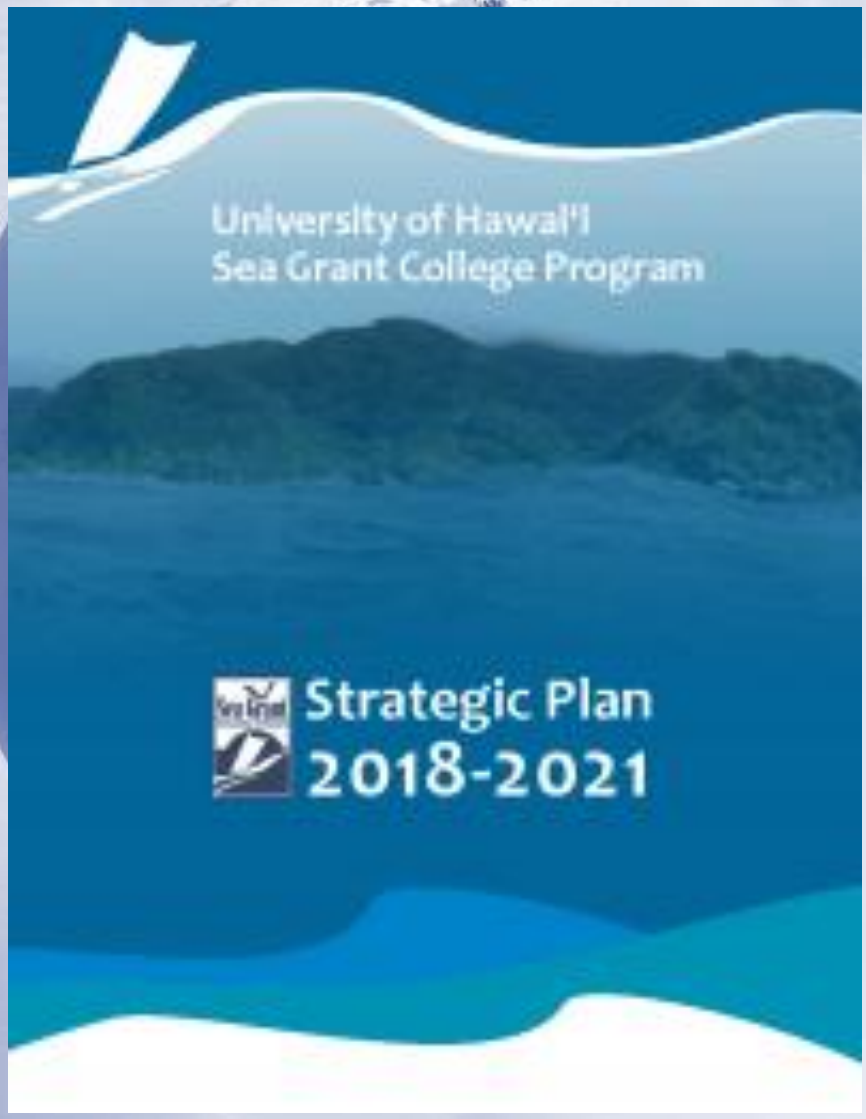
Invertebrate aquaculture
Pearl Culture
Physiology
International Development
Climate Change Adaptation

Na Kilo `Aina-Pelika Andrade

Aquaponics and food safety
Adrian Barnes

Marine and Environmental Research Institute of Pohnpei (MERIP)

University of Hawai`i Sea Grant Program



Darren Lerner
Director

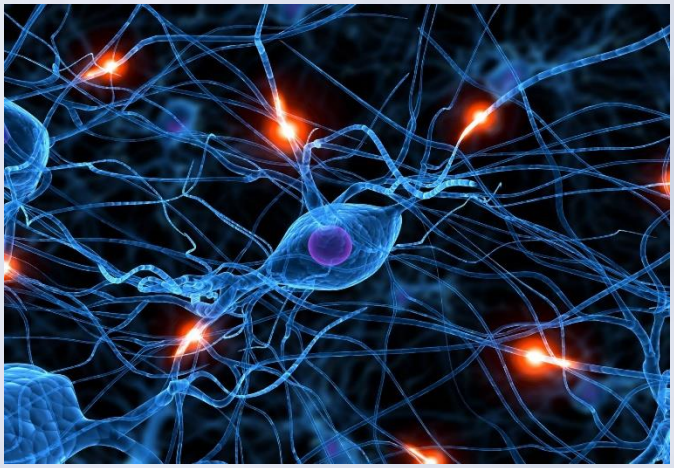
Darren Okimoto
Extension Leader

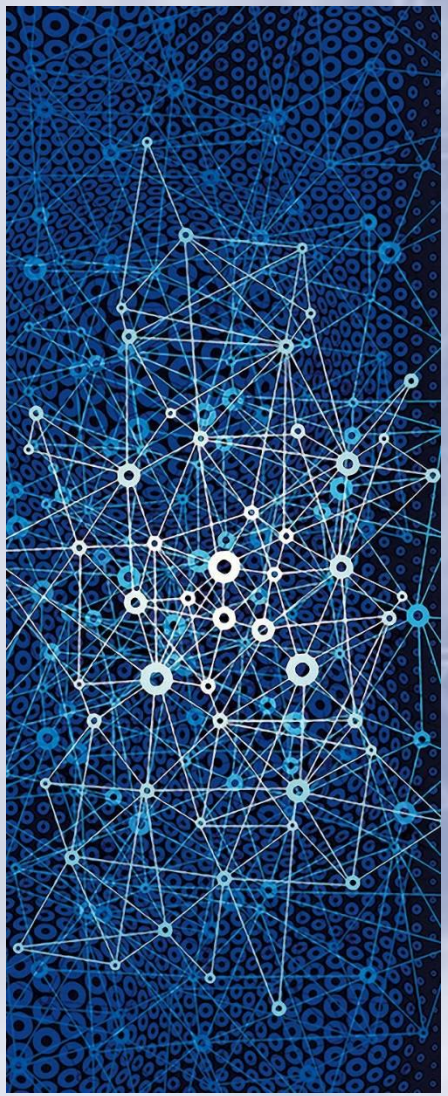
Centers of Excellence

Program Management & Organization

Centers of Excellence

- Provides higher level organization and integration of research, extension and education activities
- Promotes multi-, trans- and inter-disciplinary research
- Utilizes university expertise & scholarship
- Connects researchers with extension and community stakeholders
- Integrates local and regional needs with national focus areas





Center of Excellence

Sustainable Aquaculture and Coastal Resources

Other Centers of Excellence

CENTER FOR
SMART BUILDING &
COMMUNITY DESIGN

CENTER FOR
SUSTAINABLE
COASTAL TOURISM

CENTER FOR
MARINE SCIENCE
EDUCATION

CENTER FOR
COASTAL AND CLIMATE
RESEARCH AND RESILIENCE

CENTER FOR
INTEGRATED SCIENCE,
KNOWLEDGE AND CULTURE

CENTER FOR
WATER RESOURCE
SUSTAINABILITY

College of Tropical Agriculture and Human Resources CTAHR

Andre Seale
Assistant Research Professor
Department of Human Nutrition, Food & Animal Sciences

Establish recirculating aquaculture facility for research, education and extension

HNFAS / CTAHR

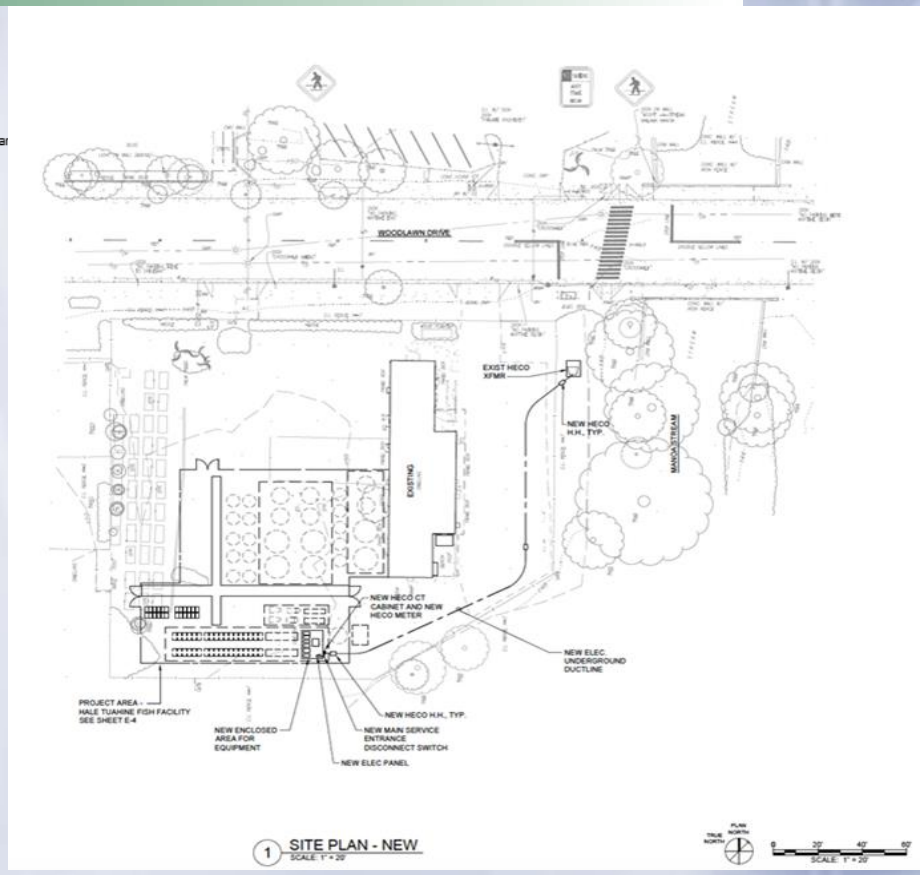


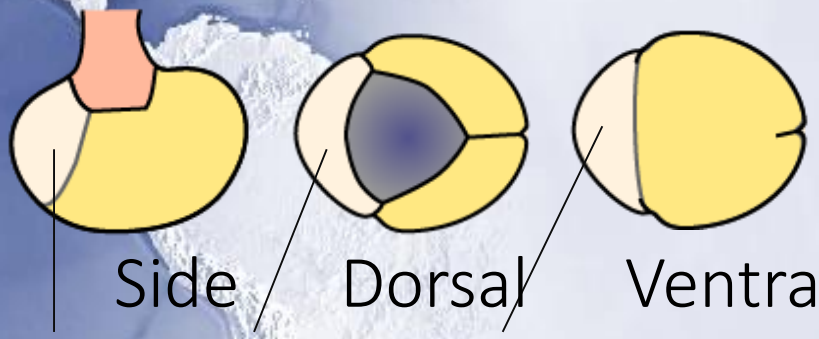
Diagram representing the original conceptual plan for the Tuahine Aquaculture Research and Education Center (TAREC)

Architectural rendering on the original conceptual plan for TAREC

Prolactin (PRL) cells from the pituitary of tilapia provide an excellent model to study how organisms acclimate to different salinities

Laboratory of Fish Endocrinology - Seale - HNFAS

Mozambique tilapia

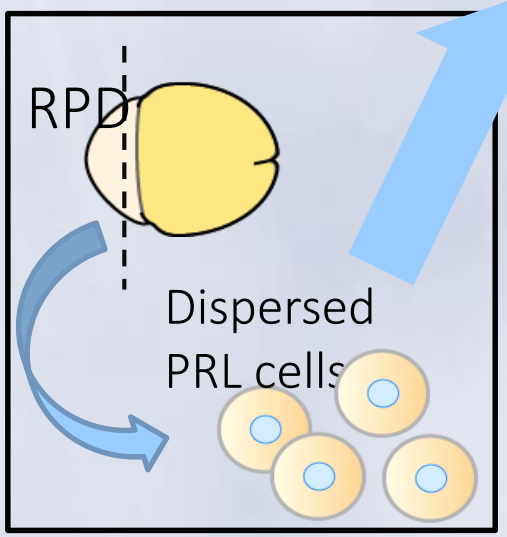


Rostral Pars Distalis (RPD)

Rostral part of anterior pituitary.

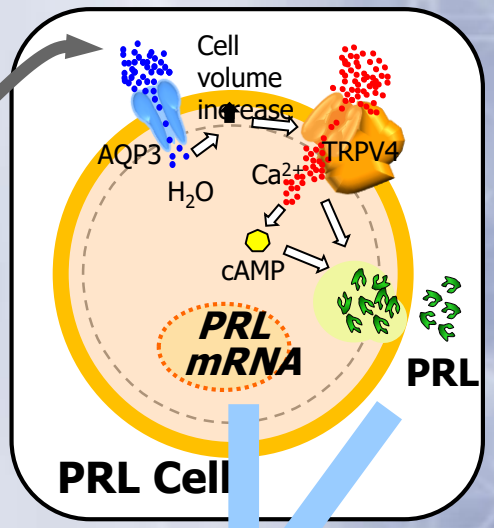
Unlike RPD in other species, in tilapia > 99% of RPD cells are prolactin cells.

Suitable for *in vitro* experiments



Seale et al. (2013) Gen. Comp. Endocrinol.

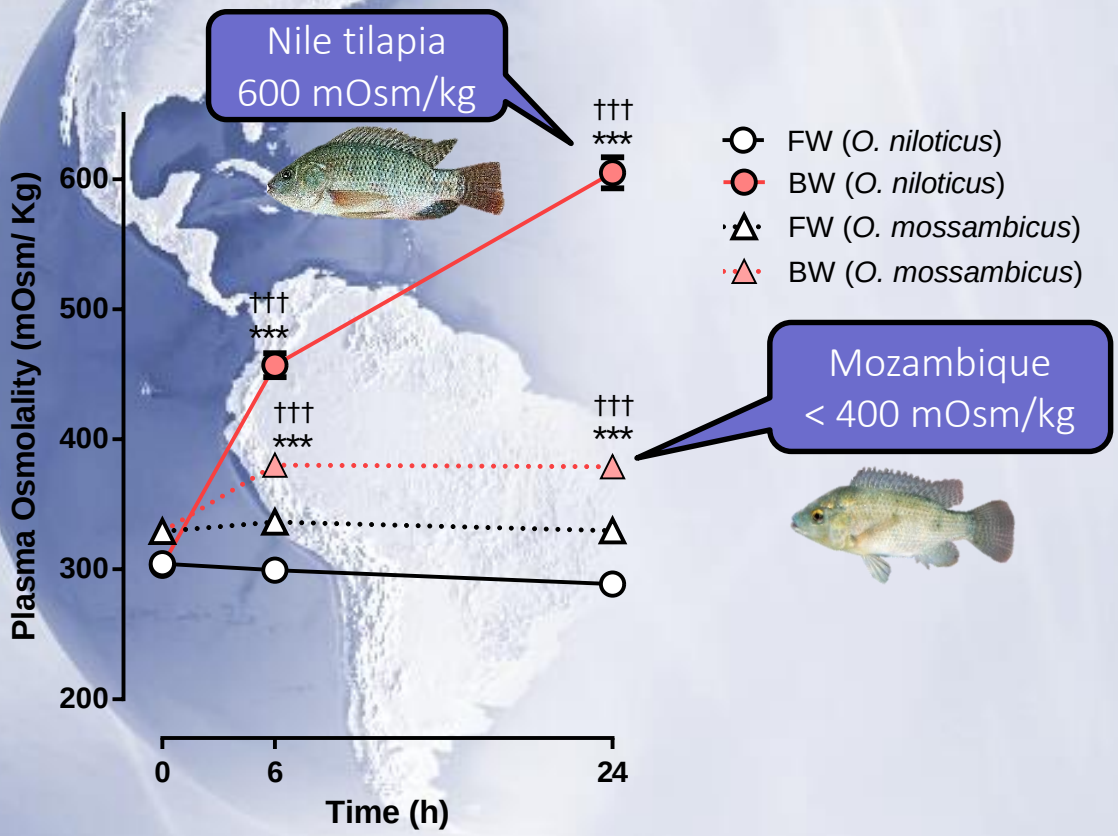
Osmotic stimulus

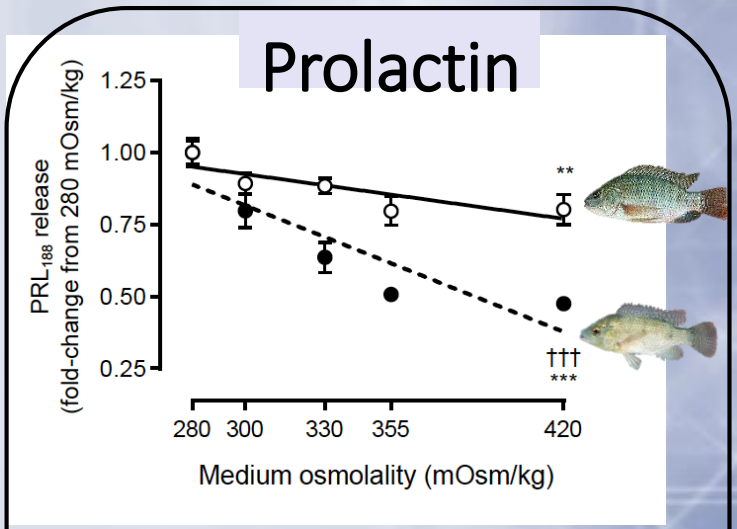


- Gene expression
- Hormone release

Ongoing Research

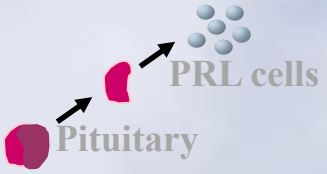
- **Hormonal basis for the distinct salinity tolerance between Nile and Mozambique tilapias**





- Prolactin cells of Nile tilapia are less sensitive to osmotic changes.

In vitro



Yamaguchi, Haws, Breves, Lerner, Grau, Seale (2017) *Gen. Comp. Endocrinol.*

PingSung Leung
Aquaculture Economics

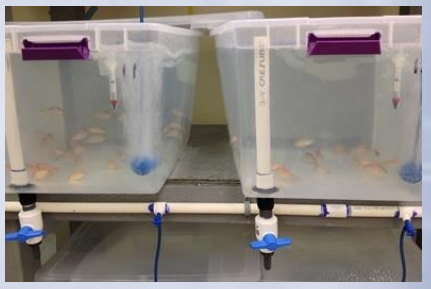
Animal Nutrition Lab - UH Manoa

(http://www.ctahr.hawaii.edu/rjha)

Rajesh Jha, PhD
rjha@hawaii.edu

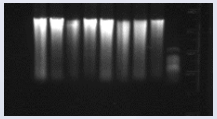
- Evaluation of **Novel feed ingredients** and **feed additives** (Enzymes, Prebiotics and Probiotics) for their effects on growth performance and gut physiology and health of fish

Aimed for nutrition programing for **cost effective**, **sustainable** and **healthy fish** production

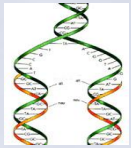


Tilapia

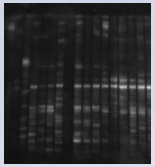
Hindgut contents sampled monthly



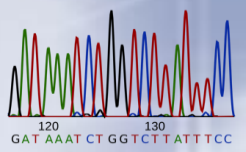
Genomic DNA extraction



16S V3 rDNA PCR U2 and U3



TGGE



Sanger Sequencing

Series of works on this theme…

RuthEllen Klinger-Bowen
Aquatic Diseases and Pathology

University of Hawai`i Maui College

Susan Miller

Center for Tropical and Subtropical Aquaculture (CTSA)

Regional e-Notes ~ August 2012 Vol 4, Issue 8

CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

Letter from the Director

Aloha,

I would like to take this opportunity to update you on the status of CTSA's FY12 plan of work development. In July, our Industry Advisory Council (IAC) and Technical Committee (TC) convened in their annual joint meeting to discuss the 25 Pre-Proposals CTSA received as part of our Call for Pre-Proposals. After careful consideration, the IAC selected seven Pre-Proposals to move to the next phase, and full proposals for those projects will be received early next month.

As with every year, the process of our annual plan development was competitive. CTSA's funding selections are dictated by the IAC, and it has been our experience that the proposals that are most often successful are those that will have the most immediate impact to regional and local aquaculture operations. We were happy to see the many innovative research suggestions in this year's Pre-Proposals, and we urge those researchers who were unsuccessful to try again next year.

In this month's issue, we present an update on the CTSA-sponsored Opihi project, which is aiming to introduce this valuable species into aquaculture. We also bid alohas to outgoing CTSA Board member Dr. Sylvia Yuen and incoming member Dr. Maria Gallo, CTAHR's newly-appointed dean.

Mahalo,

Cheng-Sheng Lee
Executive Director, CTSA

In This Issue

Letter from the Director
Development of Aquaculture Technology for Opihi
New CTAHR Dean
National Aquaculture Strategic Plan
Announcements & Reminders
August AquaClip

Quick Links

www.ctsa.org
www.oceanicinstitute.org

Join our Mailing List!

Development of Aquaculture Technology for Opihi

Nhan T. Hua and Harry Ako
Department of Molecular Biosciences and Bioengineering, Univ. of Hawaii

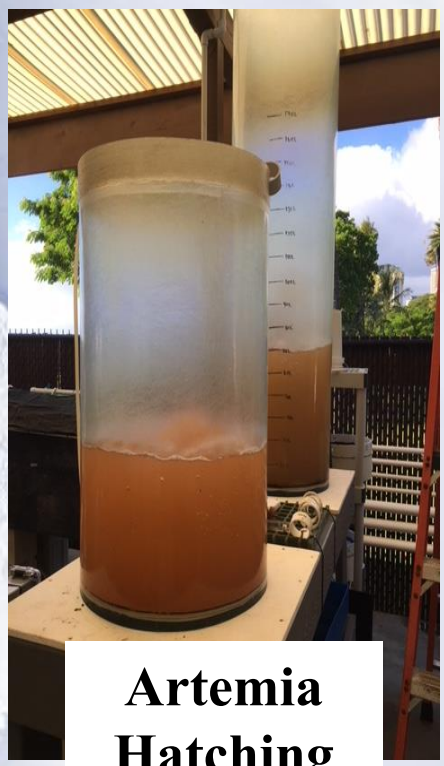
Developing aquaculture technology is essential for managing fisheries and sustaining aquaculture for opihi in the future. Opihi have been eaten as a delicacy in Hawai'i for centuries. According to Iacchei, the major annual commercial catch decreased significantly from 68,000 kg in the 1900s to about 4,500 kg in 1978. The scarcity has driven prices up and it is reported (by NOAA and DAR) as being the fifth most expensive seafood harvested in Hawaiian waters, at $6.80 per pound wholesale. To overcome these problems, the aim of this study was to develop aquaculture for giant Hawaiian opihi Cellana talcosa and later for yellow foot, Cellana sandwicensis. It was also included due to the danger of collecting the giant opihi in

Three common species of opihi

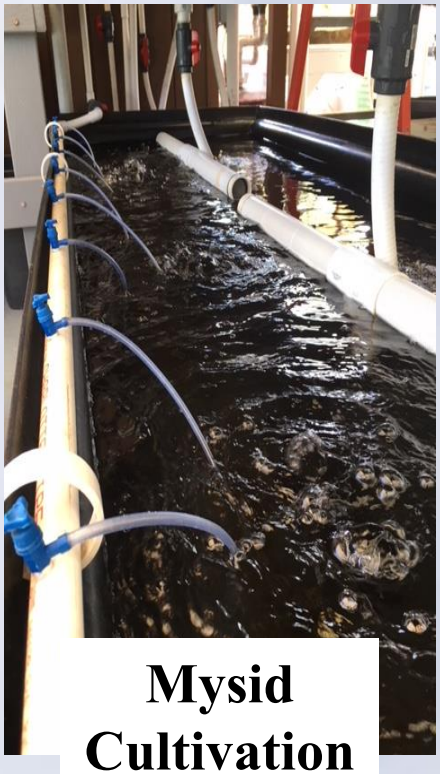
Co-administered by UH and HPU/OI

Waikiki Aquarium- Live Feeds Culture Deck

Micro-Algae / Copepod Cultures



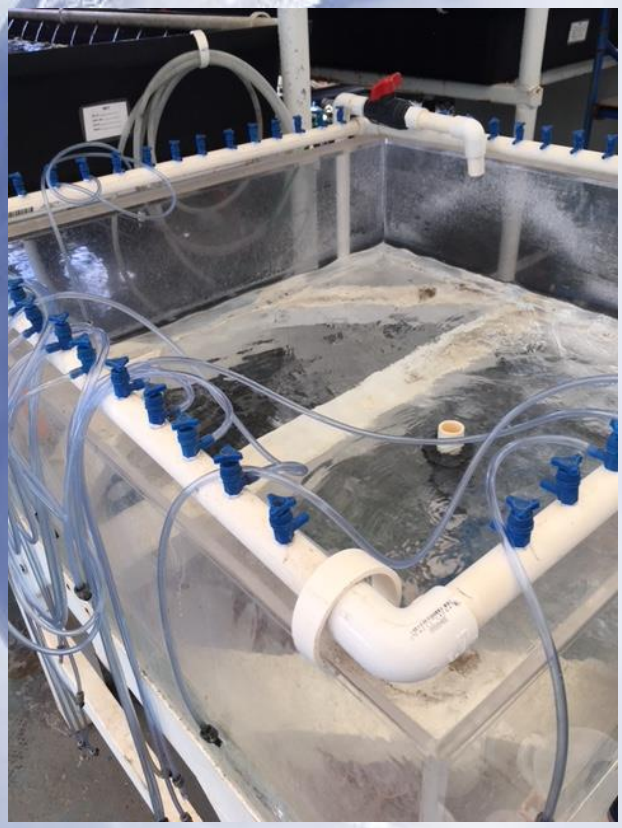
Artemia Hatching



Mysid Cultivation

Rotifer Production

Waikiki Aquarium- Live Feeds Culture Deck



Live Feeds are prepared daily each morning and set into the “Drive-thru” (water bath), where aquarium biologists pick up their feeds for the day. We supply the food needs for:

Jellyfish cultures

Syngnathid breeding- *H. abdominalis*, *H. whitei*, etc.

First feeds/ live feeds for small animals or for weening onto frozen feeds for our wild caught animals

Feeds for filter feeds deep sea gorgonians, etc.

Hawaii Institute of Marine Biology (HIMB)

For Further Information…

Contact Director Maria Haws, Ph.D., haws@hawaii.edu

Visit our Official PACRC Website

http://pacrc.uhh.hawaii.edu/