



International Aquaculture Development with links to Hawai'i Aquaculture



Aquaculture Extension Specialist: Maria C. Haws

Pacific Aquaculture and Coastal Resources Center; Pacific Coordinator: Simon Ellis

Introduction

Pearl culture and other forms of mariculture offer tremendous potential for Hawai'i and the U.S.-affiliated Pacific Islands, which possess unique, high-value species, pristine waters and residents who value careers in sustainable marine resource use. A nascent mariculture industry is currently flourishing in this region and is poised for accelerated growth in the near future.

Despite its promise, mariculture is faced with a series of obstacles that currently hinder development, including dependence upon the status of the surrounding marine and terrestrial resources. This is particularly true in Hawai'i and the Pacific Islands as aquaculture is still closely linked to wild capture fisheries, is conducted in sensitive coastal habitats, frequently uses rare or threatened species and is affected by the ability to manage marine resources.

Operating as part of the Pacific Aquaculture and Coastal Resources Center at the University of Hawai'i at Hilo and partially funded by the UH Sea Grant College Program, the Pearl Research and Training Program is a partner-based program that emphasizes a cost-effective, holistic approach to aquaculture development in pearl, sponge, coral and giant clam farms, and associated support systems to improve conservation and sustainable utilization of tropical marine resources.

The program provides private and public sectors in Hawai'i and U.S.-affiliated Pacific Islands, and its international partners with policy analysis and development, small business assistance, economic analysis, education, outreach, demonstration facilities development, training, extension and applied research.

The program also provides mariculture expertise of coastal zone management initiatives to Mexico and other Latin American countries.

1999-2003 Sea Grant Funding

UH Sea Grant: \$93,505



Activities

- Increase regional institutional coordination and collaboration as a basis for more effective joint planning, extension and training
- Development and implementation of strategic plans for species, systems, training initiatives and other topics of interest to guide selected stakeholder activities in mariculture industry development
- Partnership efforts to develop Best Management Practices for mariculture that encompass technical, environmental and social aspects of mariculture development for key species, and dissemination through publications and extension activities
- Work with partners toward national and state policies and regulations that foster an enabling environment for sustainable and culturally appropriate forms of mariculture in Hawai'i, the Federated States of Micronesia and the Republic of the Marshall Islands
- Develop a better understanding of economic forces on the production and demand sides of mariculture species of interest; including research for bioeconomic models of pearl and sponge farming to improve management
- Development of a five-year research plan for key aspects of pearl oyster biology, culture and ecology; including focus on improved production efficiency for pearl culture and marketing
- Provide an institutional mechanism to deliver collaborative technical assistance to current and potential South Pacific aquaculture industries



Results and Impacts

- Freshwater and marine species aquaculture demonstration facilities have been built and equipped in several locations and support has been provided to other existing demonstration facilities
- Extension assistance and Training-of-Trainers programs are increasing the availability of technical assistance at educational and government institutions
- Bioeconomic studies and business management skills building have improved the decision-making capabilities of aquaculture producers and extension agents

- Business management training has helped farmers improve overall company stability and efficiency
- Direct and long-distance marketing skills training are increasing sales and profits for unique mariculture products
- Aquaculture farmer revenues have increased through value added skills that include pearl grading, pearl jewelry setting, shell handicrafts and packaging
- Workforce development and vocational training have strengthened the regions aquaculture workforce
- Research results and policy frameworks have been combined to produce Best Management Practices for pearl culture
- Best Management Practices for other aquacultured species such as sponges and giant clams are under development to lower production risks, optimize production and protect the marine environment



Education

Secondary and higher educational institutions in Hawai'i and the Pacific Islands collaborate more closely to ensure that more students enter relevant programs and are supported through their educational careers.

The program has also directly mentored and supported 17 students for internships, senior thesis or post-graduate research, while supporting development of two master's programs at the University of Hawai'i to strengthen the regional educational capacity for aquaculture and marine resource management.

Selected Publications

Paynter, K. and M.C. Haws. 2003 (submitted). Natural growth enhancers to accelerate pearl formation in the Black-lip pearl oyster, *Pinctada margaritifera*. Abstract. World Aquaculture Society. Honolulu, HI March 1-4, 2004.

Wise, D., S.C. Ellis, and M.C. Haws. 2003. Hatchery methods for spawning and larviculture of black-lip pearl oysters (*Pinctada margaritifera*). College of the Marshall Islands. 40pp.

Haws, M.C. and S. Ellis. 2003. Pearl farming and coral reefs in Micronesia. Extension Brochure produced at the Pacific Aquaculture and Coastal Resources Center.



Yamada, T. and M.C. Haws. 2002. Pearl farming and coral reef conservation. Video produced at the Pacific Aquaculture and Coastal Resources Center, UH Hilo.

Haws, M.C. 2002. Pearl production: a manual of basic methods. University of Hawai'i Sea Grant College Program. Honolulu, HI.

Haws, M.C., C.E. Boyd and B.W. Green. 2002. Methods for Improving Shrimp Culture in Central America. Universidad Centroamericana University Press. 292 pp.

Haws, M.C. and 20 co-authors. 2001. Tanzania Mariculture Guidelines Source Book. Tanzania Coastal Management Partnership. Dar es Salaam, Tanzania. 206 pp.

Partners

- Pacific Aquaculture and Coastal Resources Center/UH Hilo
- College of the Marshall Islands
- Ponape Agriculture and Trade School
- University of the South Pacific
- Marshall Islands Marine Resource Authority
- College of Micronesia
- University of Alaska-Kodiak/ Fisheries Industry Technology Center
- University of Rhode Island Coastal Resources Center
- Conservation Society of Pohnpei
- Pohnpei Marine Resources Division
- UH Mānoa Pacific Business Center Program
- Land Grant
- Conservation International-Mexico
- Robert Reimers Enterprises
- Black Pearls of Micronesia
- Nukuoro Pearl Farm
- Ocean Reefs & Aquariums
- USDA Small Farms Program and Regional Network of Colleges
- Ministry of Education-Republic of the Marshall Islands
- National Minority Institution Serving Grant for Vocational Training in Marine Science
- David and Lucille Packard Foundation
- Center for Tropical and Subtropical Aquaculture
- Pond Dynamics/Aquaculture Collaborative Research Support Program



University of Hawai'i Sea Grant Aquaculture Extension Specialist Maria C. Haws works toward national and state policies and regulations that foster an enabling environment for sustainable and culturally appropriate mariculture, while collaborating with partners to develop integrated mariculture training programs, outreach efforts and related events that improve the regional capacity for mariculture. Haws also works with Integrated Coastal Zone Management in Latin America and the Pacific Islands.

Haws is the director of the Pearl Research and Training Program-Pacific Aquaculture and Coastal Resources Center at UH Hilo, which is the only university-based international program providing training in pearl farming and pearl grafting to producers and researchers, and supporting improvement of production through research initiatives. She is also an associate professor of aquaculture at UH Hilo.

Haws obtained her Ph.D. in Wildlife and Fisheries Sciences at Texas A&M University in 1993.

Maria C. Haws
University of Hawai'i Sea Grant
College Program
PACRC/UH Hilo
200 W. Kawili St.
Hilo, HI 96720
Phone: (808) 933-0707
Fax: (808) 933-0704
haws@aol.com
<http://www.soest.hawaii.edu/SEAGRANT/>

