



# HAWAII COUNTY AQUACULTURE

Aquaculture Extension Specialist: James P. Szyper



## Introduction

While just 14 percent of Hawai'i's population resides on Hawai'i Island, its 35 active aquaculture businesses represent more than 30 percent of the state's aquaculture businesses and produce half of Hawai'i's annual aquaculture sales revenue.

Hawai'i Island's aquaculture businesses, which include the state's largest aqua-business (Cyanotech Corp.), produce diverse products such as micro- and macro-algae, ornamental fishes, invertebrates and plants, and marine and freshwater food fishes. Small scale producers are increasing in number, and there is strong public interest in aquaculture.

University of Hawai'i Sea Grant aquaculture research and extension efforts on Hawai'i Island address the broad national Sea Grant Theme of Economic Leadership and Hawai'i state's aquaculture industry development initiatives by:

- Informing the business and aquaculture communities about aquaculture technology and business opportunities

## 1999-2003 Sea Grant Funding

UH Sea Grant: \$174,971; matching funds: \$141,219

## Current Activities

The UH Sea Grant Extension on Hawai'i Island:

- Serves current and potential business operators through consultation and referrals
- Visits farms and provide on-site assistance
- Explores research and development projects such as low cost biofiltration
- Produces original technical publications



*The Leafy Sea Dragon is an ornamental product under development by a Natural Energy Laboratory of Hawai'i Authority Company under a grant from the Pacific Tropical Ornamental Fish Program.*

- Produces the monthly newsletter *Big Island Aquaculture News*, which is sent to more than 300 recipients
- Provides quarterly public workshops that introduce basic concepts of aquaculture and offer networking opportunities with others in the aquaculture industry to encourage new entrepreneurs.

## Results and Impacts

- Trained seven potential aquaculturists in catfish spawning and production methods



*Assessing egg maturity for spawning Chinese catfish*

- Assisting aquaculture businesses to increase productivity, obtain grant assistance and become increasingly profitable and sustainable
- Collaborating on the teaching and research missions of UH Hilo and other University of Hawai'i units
- Identifying areas for commercial expansion
- Obtaining external funding for research and development activities



*Harvest of freshwater ornamentals in East Hawai'i*



*Above: New producers spawning Chinese catfish in East Hawai'i*

- Two new producers of Chinese catfish and one buyer/shipper have marketed and sold their products throughout Hawai'i
- Informed aquaculture businesses and the public of the Pacific Tropical Ornamental Fish Program and its grant proposal process
- Federal grants—some of which promote expanding the quantity and type of fish available to give the state improved access to mainland markets—were awarded to 22 new and existing ornamental producers between 2001 and 2002



*Moi (Pacific threadfin), are a high-value marine food fish. ~ADP photo*

K. Fitzsimmons and J. Carvalho Filho, eds., Rio de Janeiro, Brazil.

Szyper, J.P., K. Brittain, C. Tamaru, and H. Ako, 2000. Copepod nauplii: not-so-new food for "new" species of marine ornamental fish larvae. *Makai* 22(1):3 (January 2000).

Szyper, J.P., B.A. Yoza, J.R. Benemann, M.R. Tredici, and O.R. Zaborsky, 1998. Internal gas exchange photobioreactor: development and testing in Hawaii. In: *BioHydrogen*, O.R. Zaborsky, ed., p. 441-446. Plenum Press, New York.

## Selected Publications and Presentations

Szyper, J.P., 2003. Live Feeds: Production of the Brine Shrimp *Artemia* Without Natural Sea Water or Microalgae. UNIHI-SEAGRANT-AB-02-01, University of Hawai'i Sea Grant College Program, Honolulu, HI, 6 p.

Szyper, J.P., 2002. Water temperature regimes in aquaculture systems in East Hawaii. *Journal for Hawaiian and Pacific Agriculture* 12: 15-27.

Szyper, J.P., C.S. Tamaru, R.D. Howerton, K.D. Hopkins, A.W. Fast, and R.P. Weidenbach, 2001. Maturation, hatchery, and nursery techniques for Chinese catfish, *Clarias fuscus*, in Hawaii. *Aquaculture Extension Bulletin*, UNIHI-SEAGRANT-AB-01-01, University of Hawai'i Sea Grant College Program, Honolulu, HI, 8 p.

Szyper, J.P., K.D. Hopkins, W. Malchow, and W.Y. Okamura, 2000. History and prospects of tilapia stocks in Hawai'i, U.S.A., pp. 663-672. In: *Tilapia Culture in the 21st Century - Proceedings from the Fifth International Symposium on Tilapia Aquaculture*,



*Cyanotech Corp. aquaculture facilities (before expansion) at the Natural Energy Laboratory of Hawai'i Authority ~ADP photo*

## Partners

- Pacific Aquaculture and Coastal Resources Center, UH Hilo
- Aquaculture Program, UH Hilo College of Agriculture, Forestry and Natural Resource Management
- UH Cooperative Extension Service, College of Tropical Agriculture and Human Resources
- Aquaculture Development Program, State of Hawaii Department of Agriculture
- Department of Research and Development, County of Hawai'i



UH Sea Grant Aquaculture Extension Specialist James P. Szyper interacts with the Hawai'i community to enhance aquaculture efforts by providing information, educational opportunities, technical assistance, referrals and connections.

His experience includes: researcher at the Hawai'i Institute of Marine Biology; research scientist and affiliated faculty member at the Asian Institute of Technology in Thailand; aquatic biologist with the Hawai'i Department of Land and Natural Resources; and principal investigator of the Hawaiian Backyard Aquaculture Program at Windward Community College, resulting in his 1989 book, *Backyard Aquaculture in Hawai'i: A Practical Manual*.

Szyper has taught at UH Mānoa; the Asian Institute of Technology; UH Hilo; Windward, Hilo, Honolulu and Kapi'olani community colleges, Hawai'i Pacific University and Chaminade University.

His research interests include mass culture of microalgae and forage organisms, and aquatic food production systems.

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