REPORT ON THE ACTIVITIES
OF THE
AQUACULTURE DEVELOPMENT PROGRAM

1986

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
AQUACULTURE DEVELOPMENT PROGRAM

AQUACULTURE DEVELOPMENT PROGRAM
1985 - 1986

The Aquaculture Development Program (ADP) was established in 1977 to stimulate the growth of Hawaii's aquaculture industry. Support services focus primarily on the beginning aquaculturist although considerable help is provided the existing farmer. In addition, as international aquaculture has increased in popularity and importance, ADP has expanded assistance to Hawaii-based consultants in locating business opportunities overseas. Indeed, Hawaii's reputation as a center of tropical aquaculture expertise brought a record number of foreign visitors to the ADP office in fiscal year 1985-1986.

Growth of the Industry

Hawaii's aquaculture industry consists of two components: commercial production, and research, training and technology transfer (RT&TT). The 1985 total value of the industry increased to an estimated $12.7M, a 15% gain over 1984. RT&TT continued to dominate commercial production in value, but the gap narrowed. Product value was up 21% over 1984.

INDUSTRY STATUS, 1984-1985

1984

County	Farms	Acres	Production	Value
Kauai	5	34	45.6	244.8
Oahu	23	369	332.2	1,831.0
Maui	5	26	26.5	97.4
Big Island	14	45	36.9	126.5
TOTAL:	47	474	441.2	2,299.7

1985

County	Farms	Acres	Production	Value
Kauai	6	35	34.6	193.9
Oahu	24	333	485.4	2,255.2
Maui	6	43	29.5	134.9
Big Island	12	54	33.4	196.5
TOTAL:	48	465	582.9	2,780.5

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INDUSTRY STATUS

In fiscal year 1985-1986, the industry continued to diversify into the raising of additional species, and more farmers (14) were practicing "polyculture" - the growing of several cash crops together.

AQUACULTURED SPECIES
1985-1986

Species	Number of Farms Raising this Species
Freshwater Prawns	20
Tilapia	12
Chinese Catfish	8
Marine Shrimp	5
Channel Catfish	5
Chinese Carp	4
Rainbow Trout	4
Ornamental Fish	4
American Bullfrog	3
Mullet	3
Microalgae	3
Baitfish	2
Seaweed (Ogo)	2
Abalone	1

Note: Many farms are now raising more than one species.

AQUACULTURED SPECIES

Amorient Aquafarms, the State's largest freshwater prawn farm, cut prawn acreage drastically to concentrate on marine shrimp, but production of other species more than made up for the loss. The past year marked the first commercial scale of marine shrimp by two farms, and abalone and *Spirulina* algae by two others. By the end of the fiscal year, for the first time in the history of the industry, several aquacultured products (prawns, marine shrimp, red tilapia and ogo) were being produced in sufficient quantities to be regularly available to Hawaii consumers at the largest supermarket chains.

PROGRAM ACTIVITIES

In fiscal year 1985-1986, Aquaculture Development Program activities were focused in three areas: 1) planning, coordination and communication; 2) support services, including information collection and dissemination, species and site counseling, employment counseling, business planning assistance, seafood marketing and economics, permit assistance, and disease diagnosis and prevention; and 3) research and development to increase the profitability of existing aquafarms and develop new species and systems.

Planning, Coordination and Communication

ADP's 1978 report, Aquaculture Development for Hawaii, has served to guide program activities for the past eight years. During the year, final information acquisition and analysis were completed for preparation for the publication of an update of this plan.

ADP staff worked closely with the University of Hawaii and the Oceanic Institute in planning for a regional aquaculture center in Hawaii. The new center, will be established by the U.S. Department of Agriculture at the direction of Congress and is expected to bring substantial research funding to the State.

ADP also provided input into other planning efforts. Staff assisted a Congressional Office of Technology Assessment study entitled, "Integrated Renewable Resource Management in U.S. Insular Areas;" planned and co-sponsored (with the University of Hawaii Sea Grant College Program) a series of technical workshops for farmers; and assisted the Western Council of State Legislatures in preparing an issue paper on aquaculture development in the Western Region. In addition, ADP assisted a planning workshop for the Federated States of Micronesia and provided comments to the National Research Council on a draft aquaculture report.

ADP continued to play a key role in establishing commercial and experimental aquaculture projects at the State's Natural Energy Laboratory of Hawaii (NELH) at Keahole Point on the Big Island. Commercial facilities now in production include Hawaiian Abalone Farms, culturing abalone (and kelp), and Cyanotech Corporation, which is growing two species of valuable microalgae. Pilot demonstration projects involving the culture of nori (*Poryphra*) and Giant Clams are also underway. Formal approvals for a major American Lobster culture facility and an opihi demonstration project were granted, with groundbreaking for both scheduled for November, 1986. In addition, staff assisted the State High Technology Development Corporation in preparing an Environmental Impact Statement and a marketing plan for the proposed Hawaii Ocean Science Technology (HOST) Park, which will provide sites for commercial mariculture projects.

During the fiscal year, ADP was appointed to two University of Hawaii committees: the University of Hawaii Aquaculture Coordinating Committee and the Advisory Group of the Mariculture Research and Training Center. ADP staff organized the first meeting of the Hawaii Aquaculture Advisory Council, which advise the Board of Land and Natural Resources on statewide aquaculture development. The Program will provide on-going staff support for this body.

Support Services

In fiscal year 1985-1986, ADP responded to numerous requests for information, participated in seminars, conferences, and exhibitions, and worked closely with various members of the industry to satisfy permit problems, develop business proposals, secure financing, locate technical expertise, and find suitable sites for development.

ADP began formal planning for two important aquaculture conferences to be held in Hawaii: the Third International Conference on Warm-Water Aquaculture (co-sponsored by Brigham Young University Hawaii and scheduled for 1987), and the World Aquaculture Society (WAS) conference scheduled for Honolulu in 1988. This meeting may attract up to a thousand WAS members from around the world, including both scientists and investors, and presents a major promotional opportunity for the State.

The ADP display at the 1986 Farm Fair featured a mini-hatchery where visitors could view thousands of baby shrimp, prawns and red tilapia. A new product, farmed ogo received the most attention. Staff updated the aquaculture display at Maui Plantation, one of the State's leading tourist attractions. ADP also "spread the word" on aquaculture by speaking at conferences and assisting the media. Aquaculture in Hawaii was featured on local TV and radio stations and in the press, and nationwide on Public Broadcasting Service's Nightly Business Report. Staff presented the status of the industry at the Hawaii State Association of Counties' annual conference in Hilo in June and - also in Hilo - discussed the employment needs of the aquaculture industry at a conference sponsored by the Hawaii Economic Development Board and the University of Hawaii at Hilo.

During the year, ADP assisted numerous visitors from overseas by discussing: 1) investing in Hawaii, 2) availability of consulting services, and 3) training of technicians at local aquaculture facilities. Staff aided the American Soybean Association in planning tours for feedmill executives from Latin America and Japan. United States Mainland visitors included a delegation of State legislators from South Carolina.

ADP's aquaculture veterinarian made 60 trips into the field to advise farmers on methods of disease prevention and control, and assisted the Department of Agriculture with the importation of aquatic species. He authored or co-authored five articles for scientific journals. ADP technicians received 305 submissions for laboratory analysis.

Research, Development and Demonstration

ADP provides direct funding and matching support for research projects that improve production or reduce operating costs. A major cost item has been feed. Accordingly, during the year, the Program funded projects aimed at lowering feed costs and increasing production levels for freshwater prawns, marine shrimp and Rainbow trout. Funding also supported studies involving various commercial production systems and techniques. For example, polyculture offers excellent opportunities for the more efficient utilization of limited freshwater resources. Studies were initiated to determine the feasibility of polyculturing oysters and shrimp, as well as carp and prawns. In addition, ADP matched funding from the University of Arizona to prepare a Handbook of Normal Marine Shrimp Histology and continue a project to identify worldwide sources of disease-free marine shrimp brood-stock.

Notable achievements were also made in the development of mahimahi culture. Investigations on the effects of water quality, diet, growth promoters, and feed selection by larval and juvenile mahimahi have significantly advanced the commercial potential of mahimahi culture. Advances were also made in developing methodologies utilizing multi-species macroalgal systems to remove pollutants from aquaculture effluent waters while producing secondary crops of commercial value.

In summary, in 1985-1986, the aquaculture industry made substantial gains over 1984-1985 and progress is expected to be even greater in 1986-1987 as several commercial projects expand production. The wide array of species being raised is noteworthy, with many more opportunities now for persons to enter the industry. In 1986-1987, ADP will complete the update of the Aquaculture Plan, a document that is expected to successfully guide State aquaculture activities into the next decade.

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