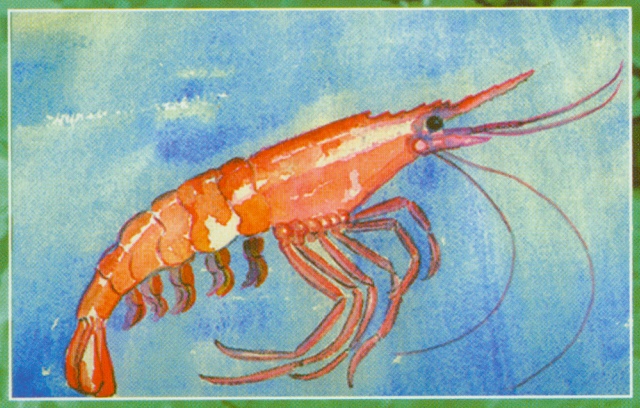
1999 Florida Aquaculture Plan

Current Status Opportunities and Future Needs



from Florida

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II. Florida Aquaculture

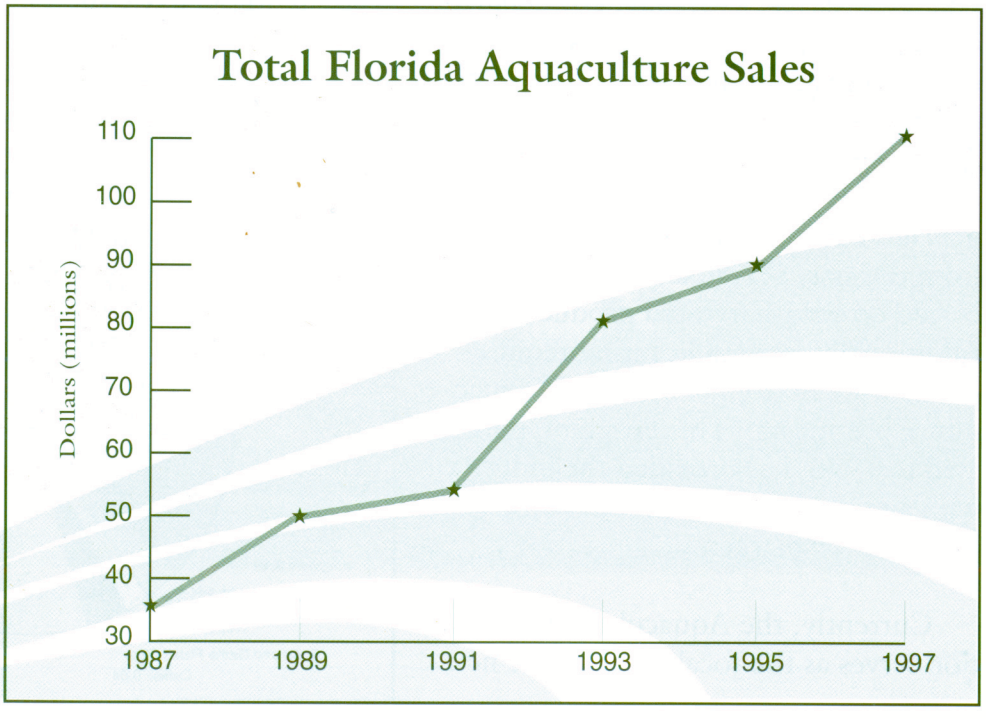
A. Introduction

Aquaculture is most simply defined as the cultivation of aquatic organisms. This form of farming has existed for centuries but has recently become one of the fastest-developing forms of agriculture in the world. Aquaculture products currently in culture range from plants to food fish to clams and even ornamental fish.

The development of aquaculture is fueled in part by the ever-growing demand for seafood. Consumption of seafood continues to increase as the status of wild fishery harvest approaches its limits. The worldwide demand for seafood and aquatic products will continue, requiring a growing dependence on aquaculture production. A study by the Food and Agriculture Organization of the United Nations[1] describes the world's production of aquaculture products. During 1995, the value of worldwide production of cultured finfish, shellfish and aquatic plants was $42.3 billion and reached a record 27.8 million metric tons, an increase of nearly 10 percent and 5 percent over 1994 production in quantity and value, respectively. During the same period, the wild-harvest fisheries showed near zero or negative growth.

Globally the United States ranks seventh, contributing 1.5 percent of the world's aquaculture production. The leading North American aquaculture products are catfish, oysters, salmonids (salmon and trout species), crayfish, clams, mussels, cyprinids (some bait fish species) and tilapia. U.S. aquaculture production during 1995 was 414,000 metric tons and is the fastest growing segment of U.S. agriculture with a value of $729 million. Statistics clearly indicate the importance of the aquaculture industry to the world and U.S. economy.

Florida currently ranks fourth among the states in total aquaculture sales and leads the nation in product diversity with hundreds of species in commercial cultivation. Industry surveys conducted by the Florida Agriculture Statistics Service[2] (FASS) have documented the impressive growth of the industry since 1987. Results of the 1997 survey indicated total farm-gate sales of $102 million which compares to $79 million in 1995, $73 million in 1993, $54 million in 1991, $51 million in 1989 and $35 million in 1987.



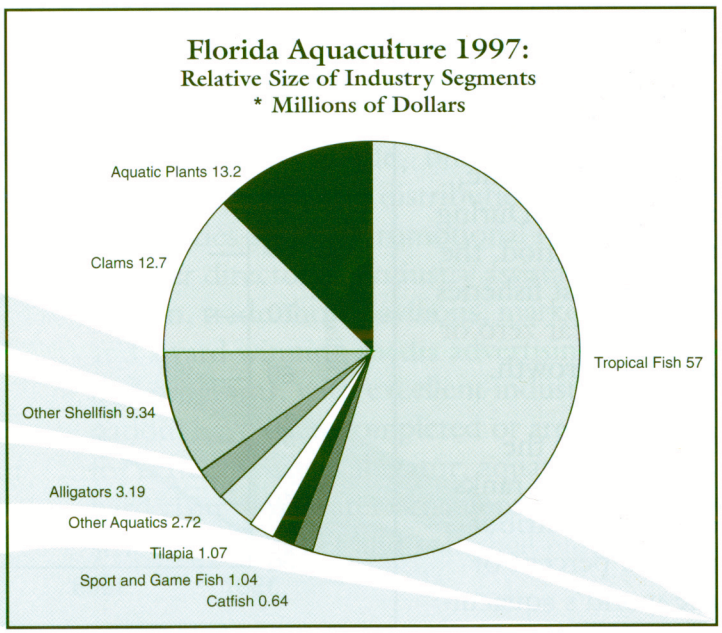
A hybrid striped bass facility bulk feed tanks

The 1997 survey identified 696 active producers and an additional 109 growers who expect to have sales for the first time in 1998 or later. Aquaculture retraining programs in three regions of the state have added many additional growers (clam farmers) who began to market products in the last two years. The increase in total production of Florida aquaculture products is expected to continue.

Coincident with the documented production increases in the most recent years, the Florida Legislature has made sweeping changes to aquaculture regulations, resulting in removal of some barriers to development. The creation of an Aquaculture Certification to identify aquaculture producers and their products has exempted aquaculture products from the size, season and bag limits placed on wild-harvested products. Additionally, certain licensing requirements were no longer applied to aquaculture producers. This program, initiated in 1996, has provided the industry with a means to move product more efficiently to market.

Currently, the Aquaculture Certification serves as the focal point of the new Best Management Practices (BMP) program for aquaculture. Beginning July 1, 1998, all regulation of aquaculture was transferred from other state agencies to the Florida Department of Agriculture and Consumer Services (see Appendix E). These BMPs will enable aquaculturists to customize their facility design and production techniques to be most efficient while still maintaining environmental safeguards. BMPs are being developed in concert with industry, state agencies, the legislature and the environmental community. For culture facility designs and species which still are in the BMP development process, the Department is providing assistance to producers, enabling them to comply with previous requirements.

Much of the future growth in Florida aquaculture can be expected to occur in rural coastal and inland counties. The industry currently employs 1,000 full-time, 500 part-time and 446 unpaid (family) workers. On-farm labor is held to minimums typical of agriculture, but industry growth promises to provide on-farm and off-farm employment in the high unemployment regions of the state. Ornamental fish, hard clam and alligator farming, as examples, positively impact re-



gions of the state in search of employment and economic activity.

Hillsborough County documented the economic contribution of various business sectors to the rural portions of the county over a 50-year period on a per-acre basis. The production of ornamental fish yields $11.4 million per acre per 50 years versus $1.0 million per acre per 50 years from residential construction and home resales. Clam farming in rural, coastal communities provides only one or two jobs as on-farm employment but triggers a ripple effect of job creation in support industries such as boat, engine and farm equipment suppliers, marinas and clam handling, packaging, transportation and sales. Most of Florida's actively producing alligator farms are located in rural counties and are scattered throughout the state. A recent analysis[3] of their economic impact by the Florida Game and Fresh Water Fish Commission found that, during 1995, they employed 117 people and contributed $7.6 million to local economies in addition to the $4.6 million generated by the sale of hides, meat and curio products. These are three limited examples of the widespread and little noted economic impact of aquaculture. Unfortunately, each industry segment has not been examined to determine its contribution, but business diversification is an important objective of state and local governments and aquaculture can be an important generator of needed jobs and income.

B. Primary Industry Segments

Ornamental Species

Ornamental fish for the home aquarium are Florida's most valuable aquaculture commodity, accounting for 56 percent of total aquaculture sales. The 1997 survey of the Florida Agricultural Statistics Service reported 203 producers and farm gate sales which totaled $57.2 million, an increase of $4.7 million from 1995. An additional $3.4 million was generated from the resale of imported fish by farmer-shippers. Farming operations are concentrated in Hillsborough and Polk counties with smaller concentrations in Dade and Palm Beach counties. These areas have convenient access for air shipment and make farm-raised ornamental fish the largest volume air-freight item shipped from Tampa International airport.

A great number of species are raised by commercial ornamental fish farmers. These fall into two main categories: livebearers and egg layers. Approximately 80 percent of

Fancy goldfish

III. Research Priorities

A. Short-term Research and Development Priorities Submitted by Members of the Florida Aquaculture Review Council[1]

ALLIGATOR

1. Identify factors contributing to hide and leather quality problems, to improve the international competitiveness of American alligator skins.

2. Maintain egg quality on public lakes that are used by alligator farmers for egg collection.

3. Identification of disease outbreaks on Florida alligator farms.

4. Marketing and promotion to develop new markets.

AQUATIC PLANT

1. Research to increase the number of pesticides labeled for use in controlling pests.

2. Research to determine the nutritional needs of aquatic plants.

3. Research to determine production methods of new plants not presently being cultivated.

COMMERCIAL FISHING

1. Classification of all, or as many as possible of the unclassified state waters.

2. Reduction of restrictions on shellfish harvest to cooler time; which is currently causing Florida shellfish to have a poor shelf life.

FOOD FISH

1. The Florida catalog of aquaculture development potential.

2. Use of digital computer technology to optimize feeding rates, growth and survival in aquacultured crops.

3. Development of non-chemical treatments to control diseases and maintain health in aquacultured fish and crustaceans.

4. Florida tilapia production and recirculation in ponds: A demonstration of the economic viability of developing an industry to compete with foreign imported tilapia.

5. Integration of aquaculture with water management; a demonstration project to replace tax revenues lost from public works projects with new economic activity.

6. Development of aquaculture techniques for sustainable fingerling production of the Southern flounder, *Paralicthys lethostigma*.

7. Develop culture techniques for sturgeon as food fish.

[1] *Commodity groups are listed alphabetically. Within each commodity group, research needs are ranked according to priority.*

INDUSTRY AT-LARGE

1. Identify markets and marketing strategies for shellfish.

2. Nutritional studies to develop a high quality, economical food source for penaeid shrimp.

SHELLFISH

1. Research the biology of harmful algae blooms.

2. Develop systems for the cultivation of Penaeid shrimp in freshwater in Florida.

3. Extend the shelf life of farmed shellfish.

4. Disease detection and treatment in shellfish.

5. Develop a micro-encapsulated diet for shellfish.

6. Develop an information transfer system, including Internet and CD-ROM-based aquaculture research content for farm use.

TROPICAL FISH

1. Special local needs permit in Florida for Dylox.

2. FDA drug approval of oxytetracycline.

3. FDA drug approval of metronidazole.

4. New species production, such as clown loach and fancy guppies.

5. Water quality management and conservation to include research on recirculating aquaculture systems.

6. Marketing and education to expand awareness and popularity among children.

B. Research Priorities Identified by State Agencies, Public and Private Research Organizations, and Extension Programs.

Public and private research organizations provided aquaculture research priorities. Information provided by each organization is divided into short-term projects that can be completed in 12 to 18 months, and long-term projects that will require dedicated funding for two or more years. This information is intended for use by the Florida Legislature, state agencies, and the Florida Aquaculture Review Council in guiding future investments in aquaculture research and development.