

N E W S
L E T T E R



Shellfish Aquaculture

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A Newsletter for the Shellfish Aquaculture Industry in Florida

2001 Florida Aquaculture Survey: Clam Sales Down Slightly

Results from the aquaculture survey conducted by the Florida Agricultural Statistics Service (FASS) over the past few months have just been released. Here are highlights of the 2001 production year which may be of interest to the Florida shellfish aquaculture industry:

Total Florida aquaculture sales were valued at over \$99 million.



Clams ranked third in the state for aquaculture sales with \$15.0 million (dockside or farm gate) reported, compared to \$15.9 million in 1999.



At an average reported price of 10.6 cents per market size clam, an estimated 142 million clams were produced and sold in 2001.



336 active growers reported selling clams in 2001.



Survival rate to harvest was reported to average 54% in 2001, the same as in 1999.



Planting in 2002 is uncertain with preliminary intentions estimated at around 390 million, compared to 350 million in 2001 and 290 million in 2000.



An additional \$3.3 million was associated with clam seed sales. 478 million seed were sold by 30 producers.



Fourteen years of clam culture in Florida

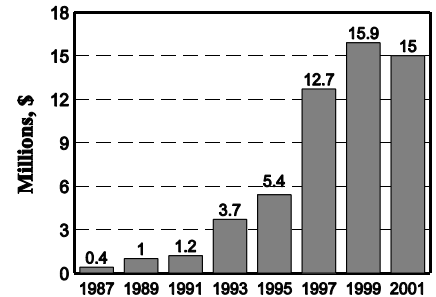
The FASS aquaculture survey has been sponsored by the FL Department of Agriculture and Consumer Services (DACs) since 1987. In that year, 13 growers reported around 2.4 million clams produced in the Indian River area (Brevard and Indian River Counties) with a sales value of \$0.4 million. Average price per clam sold was 18.3 cents. Clam farming began to take off in 1993 with the number of growers increasing to 173. Many were recent graduates of job retraining programs in the Cedar Key area (Levy and Dixie Counties). The average price per clam dropped to a 14-year low of 9.6 cents that year. Since then, clam farming has

expanded to other counties (Charlotte, Lee, and Volusia). During 1995 through 1999, number of growers, sales, and production continued to rise significantly; whereas, average dockside prices dropped from 12.8 to 11.4 cents per clam sold.

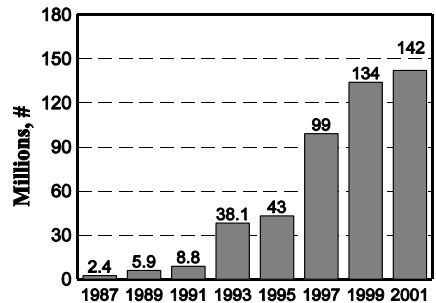
The results of the 2001 survey reflect the trying times this new industry has recently experienced. Based on growers responses, many did not sell clams last year. Of the 450 growers certified through DACs, about 75% reported sales. Demand for luxury seafood items, such as clams, has been negatively affected by the nation's economic recession and aftermath of September 11. Further, clam production has increased in other states as well adding to overall product supply. Warmer weather experienced in the northeast over the past few winters has allowed for increased natural sets in those states as well as extended harvest seasons. On a regional basis, red tide closures in southwest Florida limited growers to a harvest period of less than 7 months last year. Nonetheless, clams produced and sold in 2001 did increase by 6% over 1999 results with sales value declining by 5%.

The 2001 aquaculture survey is available from the Florida Agricultural Statistics Service by calling (800) 344-6277 or electronically by visiting their web site located at www.nass.usda.gov/fl.

Florida Clam Sales



Florida Clam Production



\$100,000 Appropriated for Marketing Farm-Raised Clams

Results of the 2001 Aquaculture Survey indicate the most challenging issues affecting the sustainability of the clam culture industry is market development and product promotion. When the industry began growing rapidly during the mid-1990s, these were the same issues of concern. An appropriation from the state legislature in 1998 resulted in \$50,000 being directed towards marketing efforts. The Department of Agriculture and Consumer Services (DACS) created an *Open Up to Florida Farm-raised Clams* campaign to introduce Florida consumers to

the new seafood product being grown in the state. Results of their promotional activities are reflected in an economic impact study recently published by Florida Sea Grant (see the



Florida Steamed Clams

February 2002 issue of the *Shellfish Aquaculture Newsletter*), in which shellfish wholesalers indicated that of the clams sold in 1999 about half, or 70 million, were to destinations within Florida.

Last month the Governor approved the 2002-3 state budget in which \$100,000 was designated for marketing farm-raised clams. A workshop was held by the DACS Division of Marketing and Development in Orlando late June. This allowed industry members to provide guidance to the Division regarding a new marketing campaign. About 28 clam farmers and wholesalers attended and evaluated the industry's strengths, weaknesses, and threats. A marketing business plan will be developed by the Division this month for industry to review.

Recipe Brochure and Handling Poster Reprinted

Some of the "point of purchase" materials developed by DACS in 1998 have recently been reprinted thanks to the Division of Aquaculture. The clam recipe brochure and handling poster are available by contacting the Bureau of Seafood and Aquaculture Marketing at (850) 488-0163.



Clam Growers Associations Update

When individuals identify areas of common concern, reaching solutions are more likely if people work together rather than singularly. For this reason, many clam growers have come together over the years to address certain industry problems. More recently, growers in south west Florida are working on developing a regional association. Here's an update on several shellfish growers associations in the state and nation.

Cedar Key Aquaculture Association, Inc.

P.O. Box 315, Cedar Key, FL 32625

Contact: Mike Hodges, Chairman (352) 543-5583
or) Sue Colson, Projects Chair (352) 543-6648

Incorporated in 2000, this association recently reorganized and focused on a membership drive. The results are over 170 industry members have joined. A meeting with their state legislative delegation in April assisted in the efforts of procuring marketing funds for the clam industry. There is strength in numbers! Other pursuits include local awareness of the importance of this industry, promotional efforts, and water quality issues.

Hidden Coast Shellfish Producers Association, Inc.

P.O. Box 1148, Cross City, FL 32628

Contact: David Capo, President (352) 498-5320
or) Jerry Fulford, Secretary (352) 498-5892

This association formed in 1999 to focus on reclassification of shellfish harvesting waters in Dixie County. Their efforts resulted in a seasonal management plan. The association also oversees the community nursery in Horseshoe Beach. With grant funding from the North Central Florida Regional Planning Council, the nursery has been renovated this year and a seed loan program is available for members. Contact the officers above if you are interested in participating.

East Coast Shellfish Growers Association

Contact: Gel Flimlin, Rutgers University

Cooperative Extension flimlin@aesop.rutgers.edu

or) Robert Rheault, Moonstone Oysters oysters@ids.net

A movement to establish an eastern U.S. association continues to gain momentum as organizers recently met at a national forum in April. About 70 people came together to discuss the future direction for a national association. The group established an Internet listserv and enlisted representatives from almost every state along the eastern seaboard to serve on a steering committee. Bill Thompson (561/589-8841) and Leslie Sturmer (352/543-5057) represent Florida. At this stage, the committee is focusing on incorporation, bylaws, dues structure and mission statement. To join the discussion, subscribe to the ECSGA electronic mailing list by contacting the organizers above.



Chinese Aquaculture: The Sleeping Dragon Awakens



China, the home of aquaculture, welcomed the World Aquaculture Society at its 2002 Conference and Exposition held in Beijing this past April. China's long history of aquaculture, species diversity, records levels of production and research interests attracted over 2,000 people representing 90 countries at this international event. During the opening addresses, attendees were introduced to Chinese aquaculture which dates back to as early as 1100 B.C. Fan Li's Fish Culture classic, the earliest documented book of fish culture in the world, was written over 2,400 years ago. During the half century since the founding of the People's Republic of China, its fisheries has entered a new stage. When China adopted reform and the open-up policy, the government initiated an aquaculture-based fisheries development policy. China's fisheries, particularly aquaculture, has since developed rapidly. The output of aquatic products in 2001 reached 27.3 million tons, an increase of 16 times over that of 1978. This staggering amount represents about two thirds of the world's total aquaculture production. Over the past 20 years, China's inland waters, shallow seas and beach land suitable for fish culture have been exploited and utilized. Striving for diversity and high value, culture species are evolving from the traditional such as carp and tilapia. Many species have been introduced to China from every continent. Chinese producers are rapidly upgrading their technology for species such as abalone, shrimp, sea bass, scallops, snapper, sea bream, red drum, crab, clams, catfish, flounder, mussels and more. With a population of 1.2 billion people, aquaculture is playing an important part in ensuring China's food security. Entry into the World Trade Organization last year provides a challenge for China to further develop aquaculture exports.

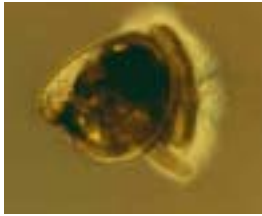
During the conference, an enlightening overview on world mollusc (bivalve) production and trade was given by the Food and Agriculture Organization (FAO) of the United Nations. Fifteen million tons were reported in 2000, of which 11 million tons were cultured. China produced 70% of the global total that year, 82% of which was cultured. China was also the main exporter of molluscs both in value and product form. Clams were the largest group of molluscs exported. Japan was the leading importing country, accounting for 30%, 61% of which was live clams. The U.S. followed as the next largest importer of molluscs. In terms of clams, the total world production was 3.4 million tons in 2000, of which 2.6 million were cultured. Again, China was the main producer with species including the Malaysian clam, razor clam, blood cockle, and carpet shell. The U.S. lead the capture fisheries of clams (800,000 tons) with species including the Atlantic surf clam and ocean quahog. The leading importer of clams in terms of volume and value was Japan with Asian countries, particularly Korea, the main suppliers. Additional statistics on other molluscan groups can be found at FAO's web site, www.fao.org.

Other papers given at this conference that were of interest follow. Introduction of the bay scallop to China was reviewed by researchers from the Chinese Academy of Sciences. Wild broodstock was brought from the Atlantic coast of U.S. in 1982. Only 26 survivors were spawned and produced seed under controlled conditions. Techniques for rearing seed on a commercial scale and growout methods were established by 1985. Five years later, total production was about 50 thousand tons. Once the demand of the domestic market was met, the frozen adductor muscle processed from scallops was exported to markets in the U.S. and Western Europe. The success of bay scallop introduction gave impetus to the development of the mariculture industry in China, such as rotating scallop raft culture with kelp, polyculture of shrimps and scallops, and advancement of hatchery for other molluscs. Today, over 640 thousand tons are produced. at the Dalian Fisheries University reported on their recent work with the This is the same species cultured here in Florida as well as along the eastern the U.S. The parent clams were introduced to China around 2000. Seed is being developed with the total yield around 1.1 million of 1 mm size. were cultured in both indoor ponds and shrimp ponds along the coast of the in 2001. These researchers are evaluating this species for the potential of along vast intertidal areas in the southern provinces.

technology
Researchers
hard clam.
seaboard of
production
Seed clams
Yellow Sea
culturing
In



summary, current development strategies in China are to continue to accelerate aquaculture and to take vigorous measures to promote fish processing and trade. However, the problems now facing China are serious fish diseases, deterioration of water quality, and few efforts have been made in the management of waste waters. In expanding its trade, China will need to consider the regulations of importing countries and, more importantly, the attitudes of the consuming public. China, a country built on the past, is now taking its place as a country of the future. Aquaculture is also their future.



Enhancing Clam Seed Availability Through Application of Remote Setting Techniques

Leslie Sturmer, UF Cooperative Extension Service
 Chuck Adams, UF Food and Resource Economics Department
 John Supan, Louisiana State University, Sea Grant Development



Adequate seed availability has been a major concern to the Florida hard clam aquaculture industry with critical shortages experienced by growers in the recent past. A 2-year study was funded by the Florida Sea Grant Program to determine the economic feasibility of transferring remote setting technology from the Pacific Northwest molluscan shellfish industry to the clam culture industry. Remote setting methods in Washington, Oregon, and British Columbia involve high volume production of shellfish larvae in the hatchery. Pacific oyster “eyed” larvae and manila clam pediveliger larvae are then refrigerated and shipped chilled to growers at “remote” locations for setting and nursing.



Technical procedures were developed and demonstrated during 2000-1 at participating land-based nursery operations in New Smyrna Beach (NSB) and Cedar Key (CK). These facilities were modified to include the following components: 1) 250-gallon weller tanks, 2) sand and bag filters for mechanical filtration of water supply, and 3) downwellers ranging in mesh size from 120 to 710 microns. Competent pediveliger larvae obtained from commercial hatcheries (2 in-state and 1 out-of-state) were placed on shipping material (moist coffee filters), refrigerated for 2-3 hours, packaged in shipping boxes with gel packs, shipped overnight, and delivered to remote set locations for evaluation of technique, site, and season. Management regimes evaluated over 4 rearing trials included: 1) supplemental feeding with a commercial algal paste or cultured algae versus none, and 2) duration of shipping times. Procedures used at the test sites

included: 1) stocking 3 million pediveligers per tank, 2) water flow of 2-5 gpm, 3) daily cleaning of seed and tanks, 4) cleaning filters 1-2 times daily, 5) changing wellers 2 times weekly, and 6) sieving seed on a weekly basis. Water temperature, salinity, and chlorophyll were measured routinely. Biological features documented included survival and time to reach a 1 mm seed, the minimum size typically reared at nurseries.

Results from rearing trials provide for operational guidelines for remote setting of hard clam seed. Production of 1 mm seed during spring 2001 (see Table 1) ranged from 15 to 54% over a 7 to 10-week period. No differences were detected in duration of shipping times (2 versus 20 hours) but production doubled when algal paste was used versus no supplemental feeding. The higher salinities (average of 38 ppt) encountered at New Smyrna Beach may have influenced the overall lower production at that site. Production of 1 mm seed during fall 2001 (see Table 2) ranged from 13 to 41%

Table 1. Spring 2001 Remote Set Rearing Trial Results

Site	Management		Days	1 mm Seed Production (%)
	Ship (hrs)	Feed		
NSB	2	Algal Paste	50	18
	20		49	15
CK1	20	Algal Paste	72	54
		None	72	25

over a 5 to 8-week period. Supplemental feeding with cultured “live” algae versus an algal paste increased production by 70% at the New Smyrna Beach site; whereas production in Cedar Key using the algal paste was 3 times that obtained at the east coast nursery. In summary, hard clam pediveliger larvae can be refrigerated and shipped up to 20 hours without detrimental effects. Setting success was not fully determined in this study, but production to a 1 mm seed size averaged 27% in the 2001 field trials. Variability of results was due to seed source, site location, and season. Addition of food is necessary to achieve adequate survival to a 1 mm seed

Site	Management		Days	1 mm Seed Production (%)
	Ship (hrs)	Feed		
NSB	20	Algal Paste	37	13
		Live Algae	37	22
CK2	20	Algal Paste	56	41

Table 2. Fall 2001 Remote Set Rearing Trial Results

size. In conclusion, remote setting of hard clams may not be beyond the capabilities of most land-based nursery operators.

The economic characteristics associated with remote setting were also described in this study. A cost budget and potential cost savings will be detailed in the next issue of the Shellfish Aquaculture Newsletter. A final report is being prepared by the investigators for Florida Sea Grant and will be made available upon request to interested hatchery and nursery operators.

Eastern U.S. Shellfish Seed Transport Workshop: SUMMARY

A workshop was held this past February in South Carolina to provide an exchange of information concerning the need to protect state resource interests, reduce risks associated with shellfish seed importation and facilitate interstate commerce of aquaculture products. Florida was represented by 2 Department of Agriculture and Consumer Service staff, the shellfish aquaculture extension agent, and 4 seed suppliers.

During breakout sessions, equal numbers of regulators, pathologists, researchers and industry members met to address the following workshop objectives: 1) Develop a standardized set of tests for the pathogens of interest to the states for each bivalve species. 2) Design the best, cost effective, scientifically relevant shellfish pathogen testing and test interpretation system. The three sessions reached similar conclusions.

Among the session groups, there was unanimous support for the following positions: 1) *Vibrio* testing is unnecessary for seed transport since the bacteria are ubiquitous in the marine environment. Consequently, it is a human health issue and testing should be confined to the organisms entering the human food chain. 2) Development of health management guidelines is a priority and should be supported by appropriate funding opportunities. 3) Base level monitoring forms the basis for any shellfish disease program.

A summary of the workshop is now available. This provides a report of the breakout sessions, identification of research needs, development of a spreadsheet containing all 14 east coast state regulations and points of contacts within each state, and recommendations for developing a uniform set of criteria for shipment of bivalves between jurisdictions. To obtain a copy of the workshop summary, contact the shellfish aquaculture extension agent at (352) 543-5057.

Upcoming Aquaculture Meetings

“Hands-On” Clam Farming Workshops

August, TBA
FSU Marine Lab at Turkey Point
Carrabelle

These workshops will provide “hand-on” experiences for new clam farmers in Alligator Harbor Aquaculture Use Area, Franklin County. Activities include sieving nursery seed, estimation of seed using subsampling techniques, determination of stocking rates, construction of clam belts, and planting nursery and growout bags. Each session will be limited to 8 people. For more information, contact Bill Mahan, County Extension Director, at (850) 653-9337.

CLAMMRS Workshops

Tuesday, July 23 6:30 PM
Park Community Center, Matlacha

Wednesday, July 24 6:30 PM
Tringali Center, Englewood

As part of the CLAMMRS, Clam Lease Assessment, Monitoring and Management Project, water quality monitoring stations have recently been installed at lease areas in Charlotte and Lee Counties. These stations are measuring key physical, chemical and biological parameters affecting clam health and production. At these workshops, clam growers in southwest Florida will be introduced to equipment, stations, and web site; informed of how to access and interpret the data; and, acquainted with the other CLAMMRS components. For more information, contact Rich Novak, Charlotte County Sea Grant agent, at (941) 764-4340 or Bob Wasno, Lee County Sea Grant agent, at (941) 461-7518.

Seafood HACCP / SCP Training

September 10-11 (HACCP)
September 12 (SCP)
UF Aquatic Food Products Lab
Gainesville

This training assists both the seafood and aquaculture industries in developing and maintaining Hazard Analysis & Critical Control Point programs for product safety and compliance with FDA regulation. In addition, a course in Sanitation Control Procedures will be offered to expand on the key sanitation areas. Participants that attend this standard training will receive an “AFDO Certificate for Course Completion.” To obtain information on fees and register, contact Zina Williams, Aquatic Food Products Lab, at (352) 392-4221.