



## **Aquaculture in Rhode Island**

2005 Yearly Status Report

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## **A snapshot of the Aquaculture Industry in Rhode Island**

### **2005**

- The 2005 farmgate value of Rhode Island raised aquaculture products rose 29.9% the ninth increase in the past 10 years.
- The number of farms in Rhode Island increased by three to 25.
- The total acreage under cultivation in Rhode Island grew to 85 acres.
- For the first time in six years there is a fin fish proposal under consideration.
- Aquaculture-related industries in Rhode Island had a gross revenue of \$3.5 million dollars during the 2005 calendar year.
- Rhode Island's regulatory agencies charged with responsibility for aquaculture continued to make progress in streamlining the permitting process.
- The state's regulatory agencies continued to involve stakeholders in the planning and regulation of aquaculture in 2005.
- The Rhode Island Aquaculture Initiative continued to make investments for the future of RI aquaculture.

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## **Introduction**

The year 2005 saw significant growth of the Rhode Island Aquaculture industry. The farmgate value (the value for the product paid to the farmer) of the industry grew by almost 30 percent. Aquaculture in Rhode Island continues to be a very dynamic, albeit small, industry. The American oyster was the predominate species of shellfish grown accounting for 97 percent of the total harvest, the hard clam being the only other species cultivated in any numbers making up 3 percent of the total harvest. The oysters harvested increased 34 percent from the previous year. Clams saw an increase of 42 percent harvested, compared to 2004. For the sixth year 100 percent of all Rhode Island-grown aquaculture products were shellfish. There was one application for a freshwater finfish farm which proposes raising Koi for the ornamental market. This application is under review. The number of farms under lease increased from 22 to 25, an 8 percent increase. The acreage under lease increased to from 70 acres to 85, a 20 percent increase.

The Rhode Island Aquaculture Initiative, established in 2002, continues to provide an investment in the future growth of the industry in Rhode Island. Competitions for research grants and mini-grants for growers were held with the best grants receiving funding. Two aquaculture extension positions that were funded in partnership with Roger Williams University and the University of Rhode Island provide very real benefits to the industry and to prospective participants. This initiative has been successful in helping the industry build infrastructure for continued growth.

Research at the universities continued to be an important part of aquaculture in Rhode Island. Excluding the money from the Rhode Island Aquaculture Initiative, the universities bring in outside grants and tuition for students studying aquaculture related subjects.

### **How the figures were derived**

Harvest figures came from the yearly Rhode Island Coastal Resources Management Council (CRMC) aquaculture questionnaire distributed to all lease holders. All reports are taken at face value. Monetary figures for this report were calculated by averaging an estimated yearly average price from multiple sources. This figure was then multiplied by the numbers reported by growers in the yearly CRMC report to arrive at the figures used in this report. Figures from the aquaculture-associated industries came from the principals involved in these privately held companies. The figures cited are for gross sales of aquaculture-related products. The universities supplied their own statistics.

## Farm Production

The farmgate value of Rhode Island-grown shellfish, in 2005, increased 30 percent from the previous year's growth rate of 1.6 percent. This increase is right in accord with the averages of the last 10 years of 29 percent (see Table 1 and Graph 5). The 2005 farmgate value is estimated to be \$744,319 in 2005, up from \$572,994 in 2004, \$563,891 in 2004 and \$478,160 in 2003 (see Graph 1).

One hundred percent of all Rhode Island aquaculture production was shellfish in 2005. The dominant species was the American oyster, with 1,530,815 pieces being sold (see Graph 2). This is a 34 percent increase from the previous year, which resulted in a 30-percent increase (see Graph 3) in value in oyster production. Clam production was up significantly with a 42 percent increase in harvest (see Graph 2) which resulted in a 68 percent increase in value to \$6,222 (see Graph 3).

The number of farms active in Rhode Island aquaculture increased in 2005 to 25 active farms, a result of three new farms joining the ranks and one farm closing. This led to an increase in acreage under cultivation to 85 acres (see Graph 4). The production per acre of aquaculture in Rhode Island was \$8,757, an increase from the \$8,185 per acre value for 2004.

Farm-related employment increased slightly. In 2005 there were 13 full-time, year-round and 13 part-time, year-round seasonal employees in the industry. Employment increased slightly during the summer with Rhode Island aquaculture farms hiring two full-time seasonal and 12 part-time seasonal workers.

In 2003, the CRMC began polling farmers as to how much they invested in their farms. The reports indicate that growers are investing significant capital - in 2005 growers invested \$852,500 in their aquaculture farms in Rhode Island. This is in comparison to \$377,472 in 2004 and \$271,000 in 2003. In 2004, investments averaged \$85,294 per farm, or \$10,047 per leased acre.

**Table 1**

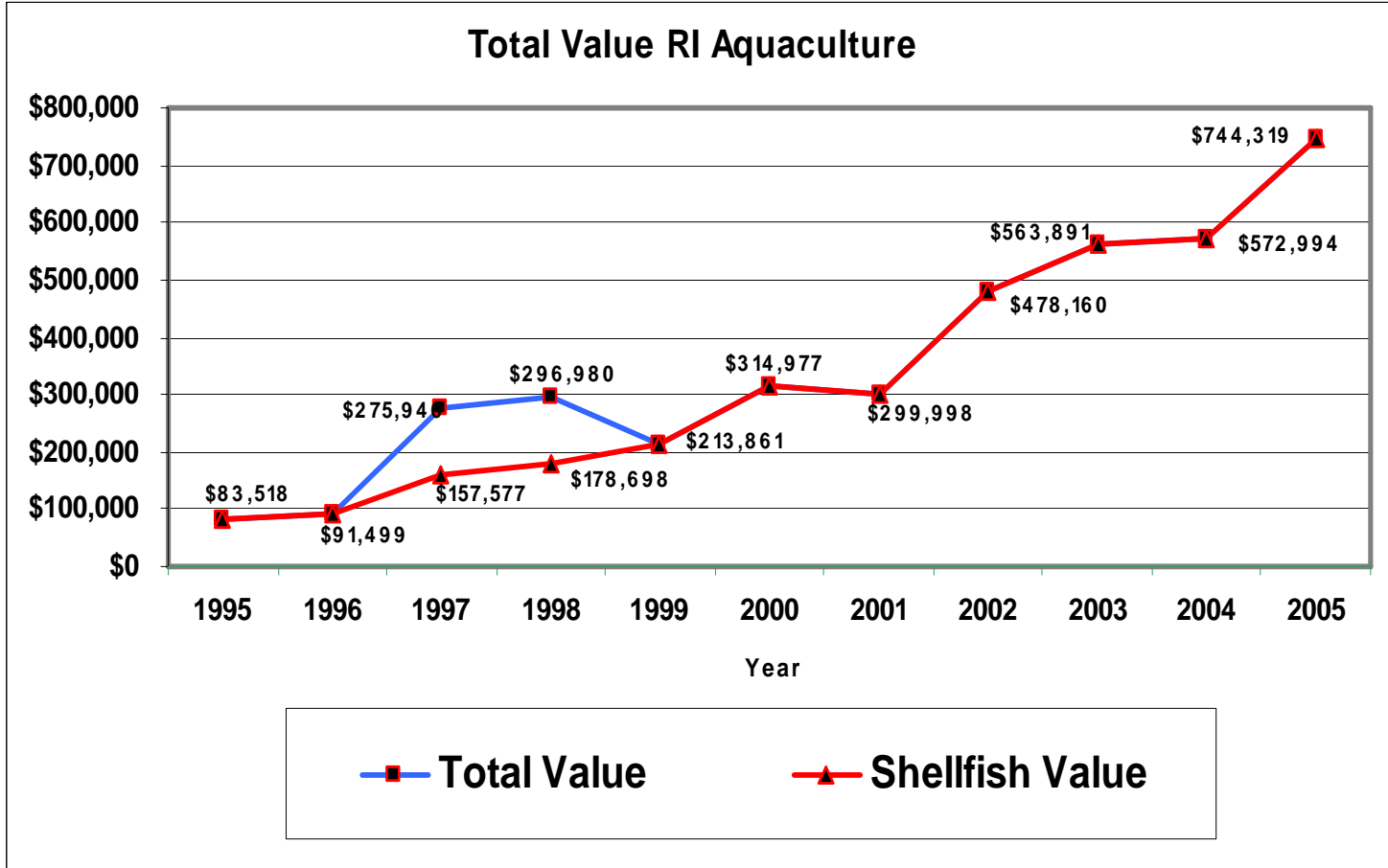
Year	Percent Change in Farmgate Value from Previous Year
1995-1996	9.6%
1996-1997	72%
1997-1998	13%
1998-1999	20%
1999-2000	47%
2000-2001	-4.7%
2001-2002	59%
2002-2003	16.5%
2003-2004	1.6%
2004-2005	29.9%

Table 1 shows the percent change of the farmgate value of aquaculture shellfish production in Rhode Island. See Graph 1 for overall production value figures.

**Table 2**

Year	Percent Change in Farmgate Production from Previous Year
1996-1997	52.6%
1997-1998	78.8%
1998-1999	2.6%
1999-2000	56.1%
2000-2001	-1.2%
2001-2002	66.9%
2002-2003	28.1%
2003-2004	-2.1%
2004-2005	34.4%

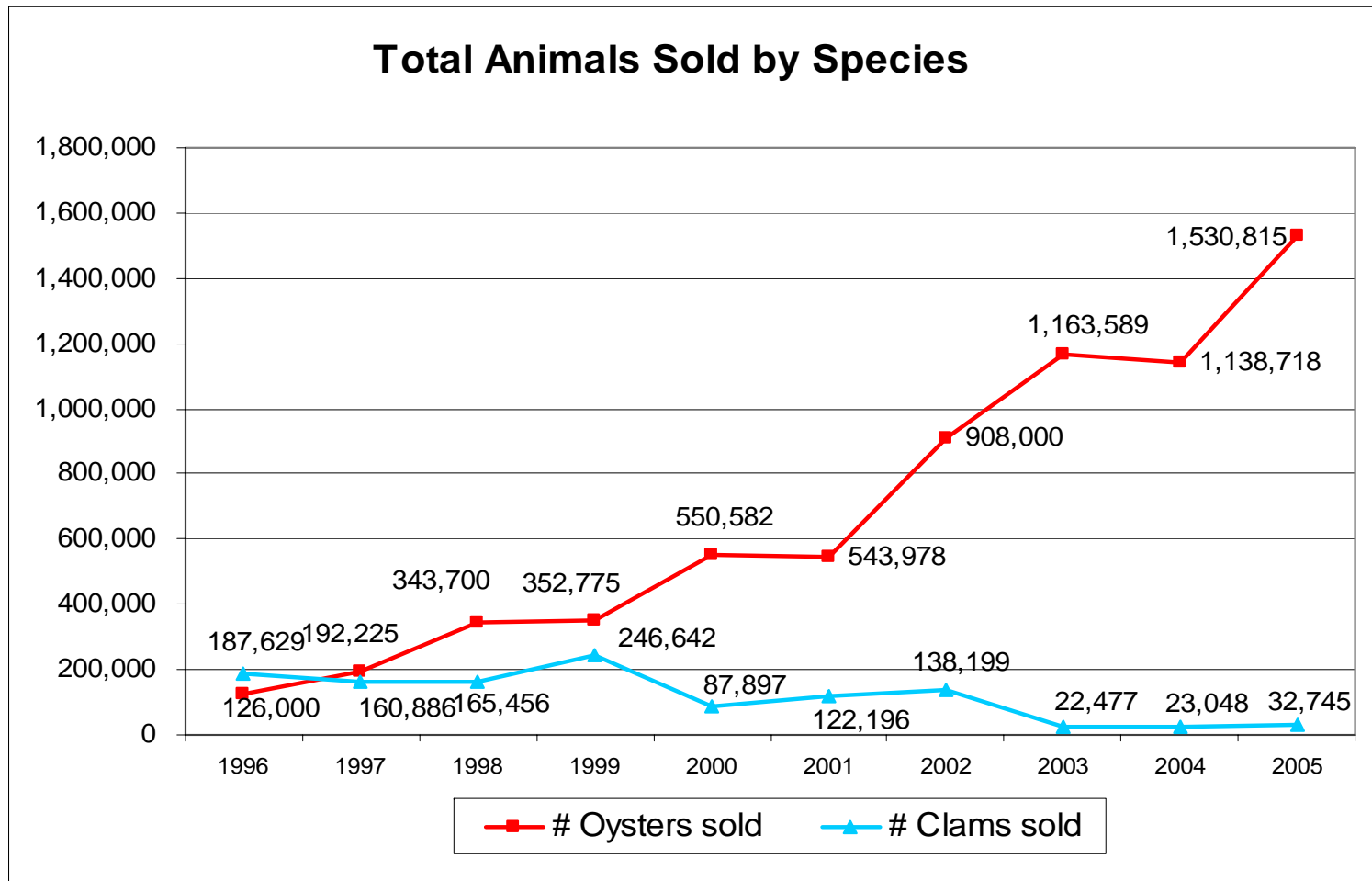
Table 2 shows the percentage change of the farmgate production numbers of aquaculture shellfish production in Rhode Island. See Graph 2 for overall production figures.



**Graph 1**

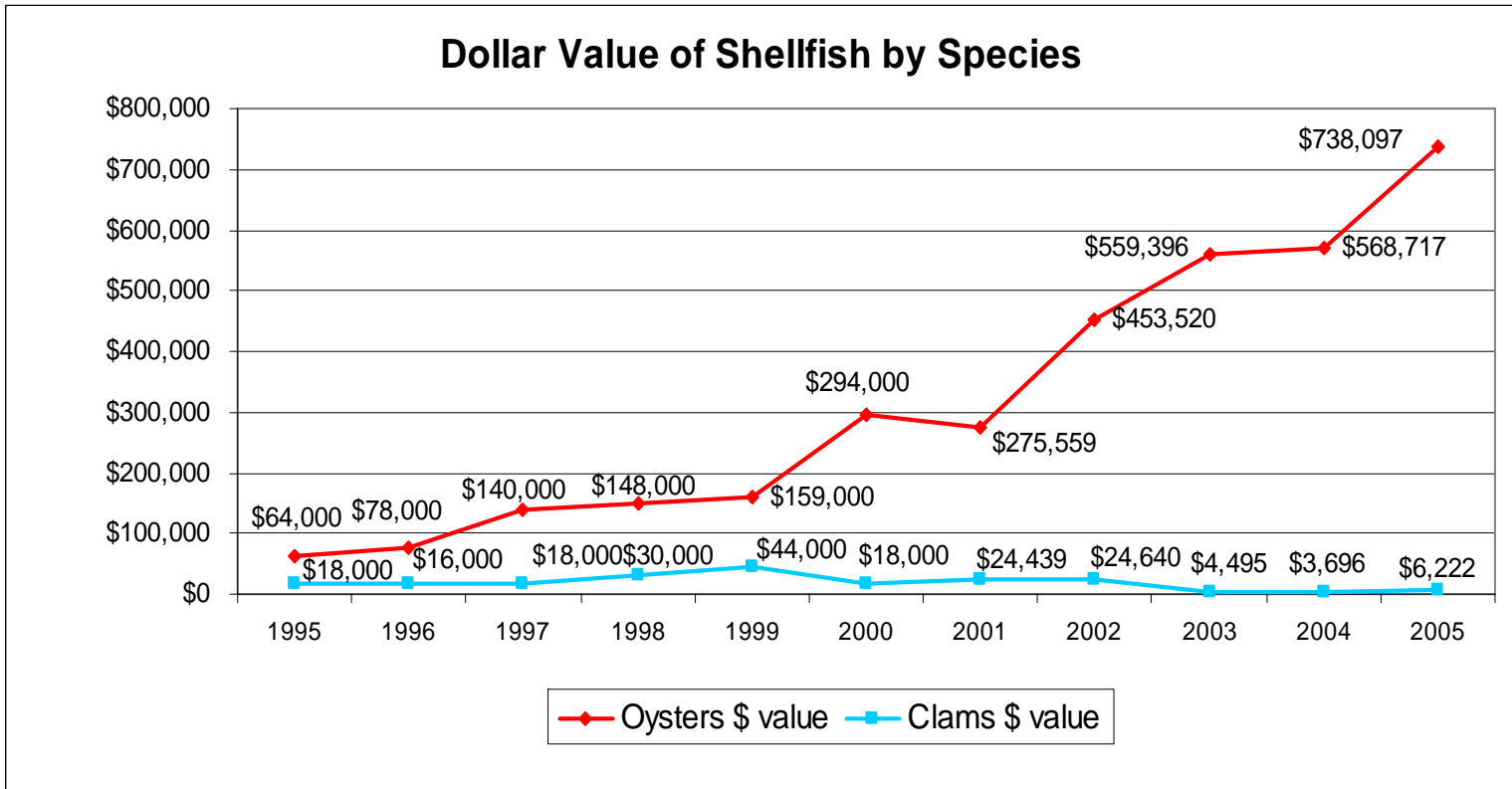
In 2005, total Rhode Island aquaculture production increased 30%. The total value indicated for the years 1997 and 1998 includes a retail ornamental finfish operation that was in business for those two years only. In all other years 100% of Rhode Island aquaculture production is in shellfish.





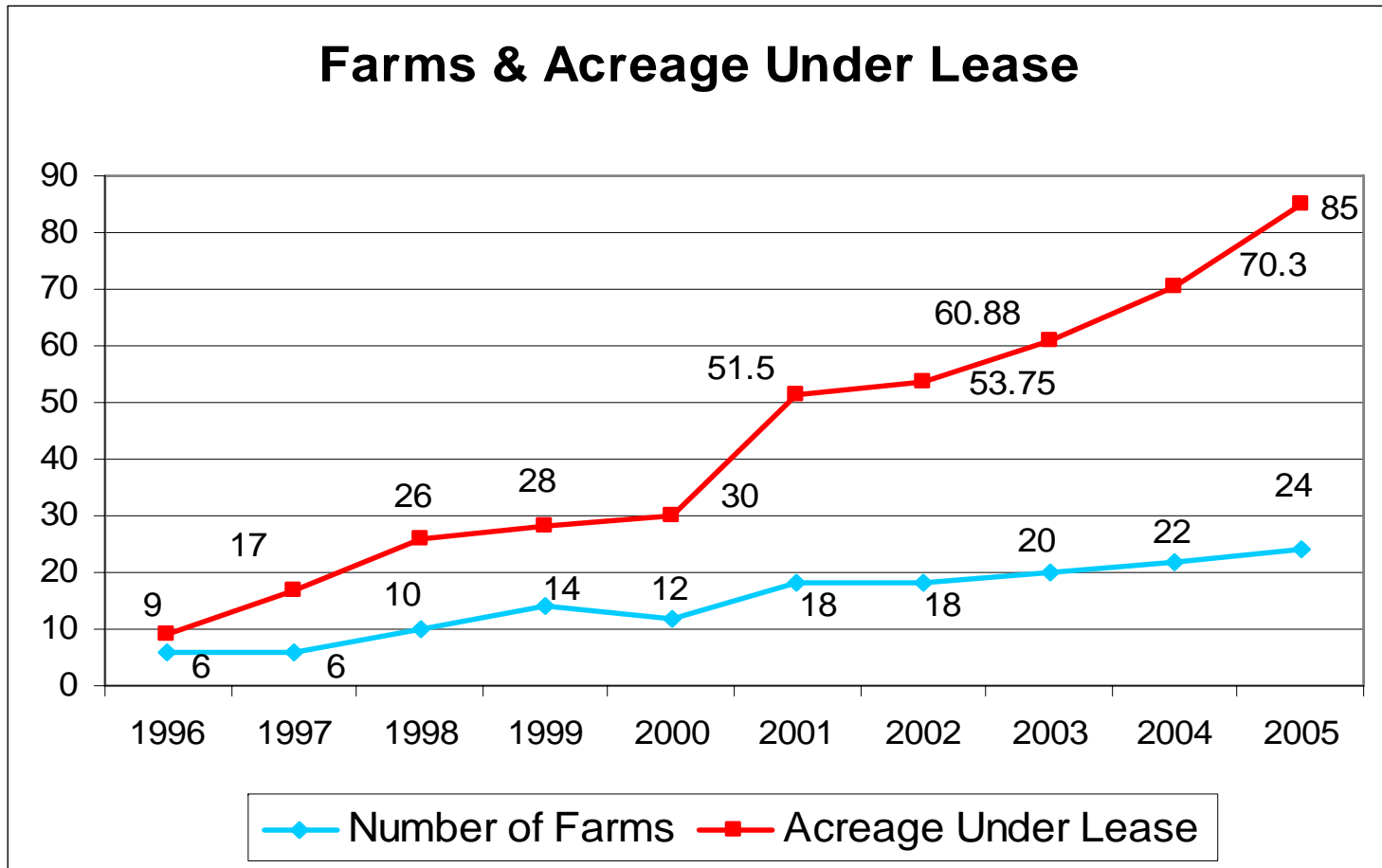
**Graph 2**

The American oyster is the dominant species cultured in Rhode Island waters. Oyster production accounted for 97% of the total Rhode Island aquaculture production. Growers reported 1,530,815 oysters sold in 2005, an increase of 34% from 2004. The culture of quahogs has increased with approximately 32,745 being produced in 2005, a increase of 42% from 2004.



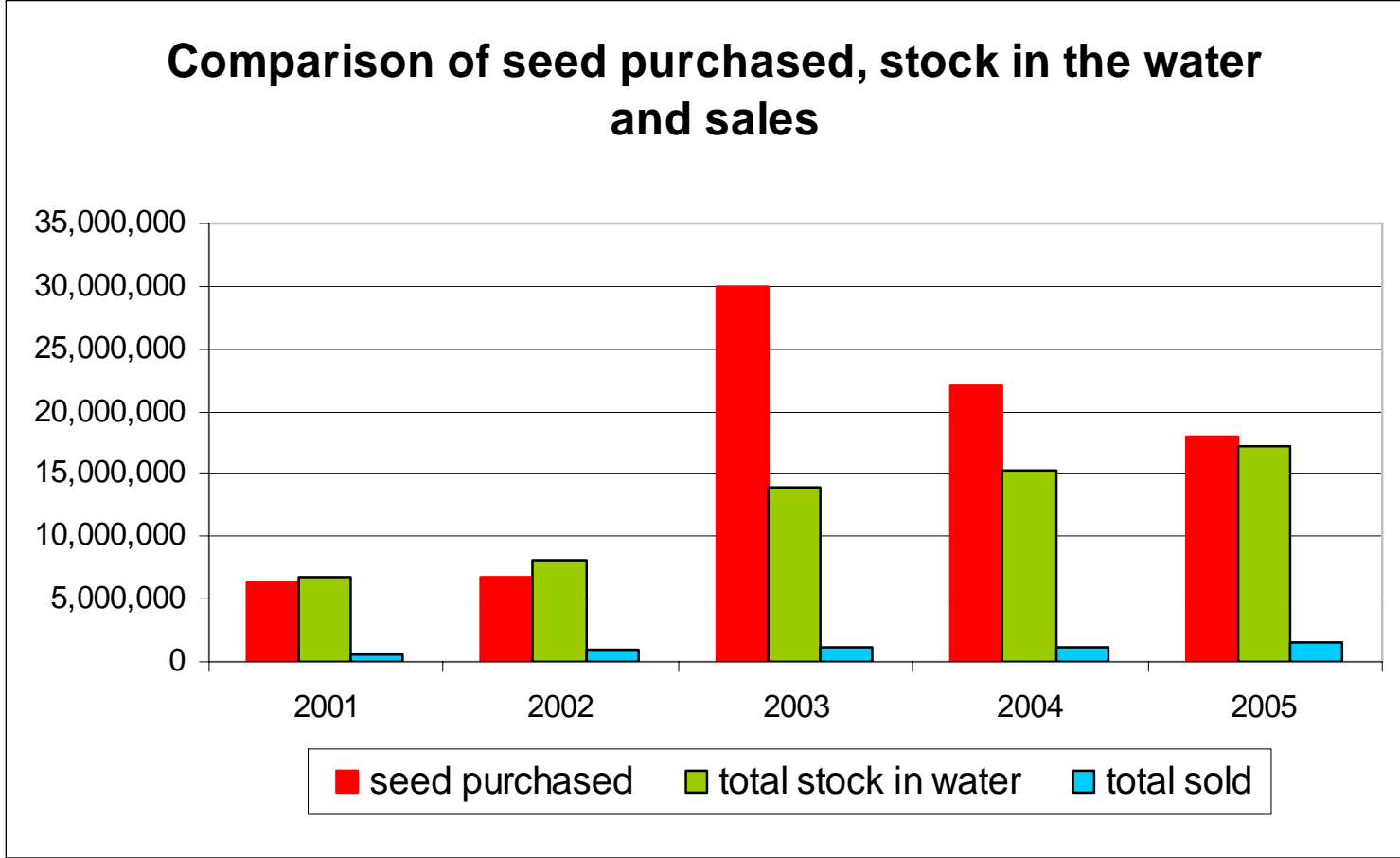
**Graph 3**

Graph 3 indicates the relative value of the shellfish production in Rhode Island for 2005.



**Graph 4**

There were three new leases established during 2005. The totals for 2005 are 85 acres under cultivation and 25 permit holders (not including commercial viability, educational and research permits).



**Graph 5**

This graph shows the relationship between seed bought in a single year, the number of animals in the water on aquaculture farms and the numbers of shellfish sold. This graph indicates possible future animals available for harvest in coming years. Mortality of 40-50% per year is not uncommon in the shellfish industry.

## **Aquaculture-Related Industries**

The other aquaculture related industries in Rhode Island are the largest contributors to aquaculture's state and economic bottom line. These industries include distribution of aquaculture product (fish and shellfish), and the manufacturing of aquaculture products to be used on farms. There are a number of small privately held companies in the state that fit into this category. These companies produced a gross total of \$3.5 million in business in the state. These companies employ 25 full-time employees for no net increase from 2004.

Not only do these companies serve local and regional farmers, but they also export internationally. The aquaculture-associated industries within Rhode Island have contributed to the economic well-being of the state. As the industry grows in Rhode Island, the nation and the world, this sector of the industry will continue to contribute economically.

## **The Universities**

The State of Rhode Island is home to two universities that conduct aquaculture education and research-the University of Rhode Island and Roger Williams University. Each is recognized for quality education and research. This recognition results in grant monies flowing into the state in order to conduct aquaculture related research.

The universities continue to be centers of excellence in the field of aquaculture. The University of Rhode Island employs internationally-known and respected researchers in the field. Roger Williams University continues to compliment the efforts of URI in the aquaculture arena and is growing into a center of excellence on its own. Both universities contribute greatly to the state's economic bottom line and support a viable aquaculture industry.

The University of Rhode Island has professors that are recognized as world class in many fields of aquaculture research. The university is a great resource to the state and brings in research dollars, undergraduate and graduate students from around the world. We are fortunate to have Dr. David A. Bengtson, Chair of the Department of Fisheries, Animal and Veterinary Sciences, contribute the following description of the aquaculture research and projects that URI conducted in 2005.

## Aquaculture Activities at the University of Rhode Island – 2005

David A. Bengtson  
Department of Fisheries, Animal and Veterinary Science

Aquaculture research, education and extension continued apace at the University of Rhode Island during 2005. Once again, several departments of the University were involved, including Fisheries, Animal and Veterinary Science (FAVS); Environmental and Natural Resource Economics (ENRE); Cell and Molecular Biology (CMB); Natural Resources Science (NRS); Nutrition and Food Science (NFS); and the Graduate School of Oceanography (GSO).

### Research

Perhaps a listing of faculty and their research projects will demonstrate the range of research that was conducted in 2005:

Dr. Terry Bradley (FAVS) – Use of sound conditioning to indicate feeding time for Atlantic salmon, so that escapees from net pens can be lured back to a central location in the event of net pen damage; investigations into genetic regulation of muscle growth in fish, focusing on the regulatory protein myostatin, with the intention of increasing fish growth rates in aquaculture.

Dr. Marta Gomez-Chiarri (FAVS) – Conduct of annual disease survey of shellfish in RI waters; investigation of disease-resistant strains of oysters for RI (with Dr. Dale Leavitt of RWU); continued investigations of flounder infectious necrotizing enteritis, with the finding that

the causative agent, *Vibrio harveyi*, is an opportunistic pathogen that strikes animals under stress (e.g., during transport).

Dr. Barry Costa-Pierce (FAVS) – Investigations of pea crab infestations of mussels, in relation to potential mussel aquaculture in RI. Dr. Costa-Pierce has also been involved in several international activities related to aquaculture (e.g., preparation of a soon-to-be-released report from the World Bank).

Dr. David Bengtson (FAVS) – Use of plant proteins as a substitute for fish meal in diets for summer flounder, in order to reduce production costs (with Dr. Chong Lee of NFS).

Dr. Cathy Roheim (ENRE) – Marketing and consumer acceptance of wild vs. farmed seafood, especially regarding the value of “green-labeled” products.

Dr. James Anderson (ENRE) - The impact of farmed shrimp on the global shrimp market; Economics of marine aquaculture in the US EEZ; Analysis of the economics of introducing triploid *C. ariakensis* in the Chesapeake Bay; The impact of farmed salmon on the US wild salmon industry

Dr. David Nelson (CMB) – Fundamental research on the microbe *Vibrio anguillarum*, a cause of aquaculture fish diseases, specifically regarding the regulation of secretion of a specific virulence factor by this organism.

Dr. Graham Forrester (NRS) – Assessment of the value of aquaculture gear as fish

habitat, with the finding that oyster grow-out cages provide habitat for reef-associated fishes that is at least as good in quality as natural habitat.

Dr. Chong Lee (NFS) – Use of squid hydrolysate made from squid processing wastes as a protein source or feeding attractant in diets for larval and juvenile fish.

Dr. Jennifer Specker (GSO) – Investigations of the roles of cortisol and ghrelin in the regulation of food consumption by early life stages of summer flounder.

### **Education**

URI continues to offer a major in Aquaculture and Fishery Technology, from which about a dozen students graduate each year. In 2005, the University awarded one M.S. and 2 Ph.D. degrees for work in aquaculture.

### **Extension**

The aquaculture extension program at URI in 2005 consisted of Marta Gomez-Chiarri's work on diseases with shellfish aquaculturists in the state and Randy Mickley's work (with Dale Leavitt of RWU) to try to establish demonstration projects for largemouth bass culture. Unfortunately, Randy resigned his position in August to move to Maine, but URI student Patrick Samson continued to assist Dale with the largemouth bass work. We also began a cooperative agreement with the USDA Natural Resources Conservation Service in Warwick to provide technical assistance on the development of technical documents and training as NRCS enters the world of aquaculture.

Roger Williams University has been investing in the future of Rhode Island aquaculture. This university is fast becoming a recognized center of excellence in the field, giving the state two universities active in aquaculture. We are fortunate to have the Director of the Roger Williams University Center for Economic and Environmental Development, Dr. Timothy M. Scott, provide this report with the following project summary for the activities conducted during 2005.

### **Roger Williams University Center for Economic and Environmental Development (CEED)**

#### **Submitted by Dr. Timothy M. Scott, CEED Director**

Aquaculture activity underway at Roger Williams University (RWU) continues to support our undergraduate marine biology program and is conducted by the RWU Center for Economic and Environmental

Development (CEED). CEED exists to promote economic development in an environmentally sustainable manner and for the past several years has had an active and innovative aquaculture program. Most of

these projects are funded externally from a variety of sources, and we presently have multiple aquaculture research grants. Using these grant funds, a small staff of CEED Scientists lead over 75 undergraduate students in research intended to promote aquaculture development in the state. In 2005, these projects included:

■ **Operating the Rhode Island Shellfish Hatchery:** Many coastal states support one to several commercial or municipal shellfish hatcheries for local production of shellfish seed. Since the Ocean State lacked this resource, RWU opened a small research and educational hatchery in 2003. In 2005, we produced over 10 million shellfish seed including quahogs, oysters, and scallops. We continued to work with the RI Shellfishermen's Association, to stock juvenile quahogs into the waters in the vicinity of Greenwich Bay, as part of our public benefit aquaculture effort. We also continued our shellfish restoration efforts by planting approximately a half a million young oysters around Prudence Island, by providing shellfish seed to the North Cape Project and by producing bay scallop seed for use in research projects and ultimately released into local waters. We intend to continue this production through 2006 and add additional species as we try to diversify the aquaculture products being cultured in Rhode Island. Projects that utilized our hatchery included:

- Developing disease resistant oysters for Narragansett Bay;
- Culturing alternative species, including surf clams and razor clams;

- Restoring shellfish at locations in Rhode Island;

- Presenting aquaculture extension and education opportunities; and

- Describing the environmental services provided by shellfish cultivation.

■ **Tropical Fish Breeding:** 2005 was our final year of study in which we were investigating the development of a local tropical fish production facility. The finished study indicates that a market exists for locally reared marine ornamental fish and they can be reared in Rhode Island at a production level that would be profitable. A final report is being prepared for submission to the Rhode Island Aquaculture Initiative summarizing the results of this study. In addition to being a business opportunity, many tropical fish destined for the aquarium trade are harvested from live coral reefs using techniques that devastate the reef community. By developing hatchery protocols for many of these fish, our efforts will contribute to and will promote the conservation of these species and the protection of wild marine ecosystems throughout the world.

■ **Shellfish Extension:** During 2005, members of RWU-CEED gave numerous public presentations and workshops about aquaculture to an impressive range of public and private groups. RWU hosts an annual course, focused for adult interests, that teaches individuals about Practical Shellfish Farming and provides information for persons interested in starting a shellfish farming business. In addition, RWU is collaborating with URI in assisting the



USDA Natural Resource Conservation Service with developing Technical Standards for shellfish growers that contribute to increasing environmental quality.

■ **Freshwater Aquaculture:** This year, RWU contributed to a state-wide effort to expand freshwater aquaculture in Rhode Island by designing and constructing recirculating fish culture systems on two commercial farms in the state. These systems are the first step in a coordinated effort to develop a network of private freshwater fish culture facilities within the

state, culminating in the proposed start-up of a fee fishing operation to serve as an outlet for fish cultured locally. The new recirculating systems will be stocked with fish during the summer of 2006 to evaluate the feasibility of this first step in our proposed fish farming network. This work is a collaborative effort among state organizations, including RI-CRMC, RI-DEM Division of Agriculture, and University of Rhode Island with Roger Williams University and cooperating private farms and is funded by the Rhode Island Aquaculture Initiative.

### **Rhode Island Shellfisherman's Association**

One of the newest developments in Rhode Island aquaculture is the participation of traditional fishing groups. The Rhode Island Shellfisherman's Association has been particularly active in using aquaculture to enhance populations of shellfish in Narragansett Bay. Mr. Michael McGiveney, president of the association, was gracious enough to provide the following description of their activities.

### **Rhode Island Shellfisherman's Association (RISA)**

The Association began a cooperative venture of growing shellfish in upwellers for public enhancement. This effort, using funding from the Rhode Island Aquaculture Initiative, involved RISA working with Roger Williams University, CRMC, DEM, RI Sea Grant and Save The Bay to begin using aquaculture technology to grow clam seed to a predator proof-size, were they can safely be transplanted into public waters.

Unfortunately we had a setback on our public enhancement project. Due to a malfunctioning pump on our upweller during a heat wave we lost the seed provided by Roger Williams University. This year we look forward to moving ahead with the project and learning from our mistakes. Currently we plan on operating two upwellers in Warwick Cove and possible another at Save The Bay's

headquarters using seed from Roger Williams University.

We received a \$5,000 grant from the Narragansett Bay Commission toward this project and hope to secure more funding from DEM. We also plan on working with Roger Williams University on shelling and oyster repopulation of Narragansett Bay.

The involvement of the commercial fishermen using aquaculture technology to enhance a public resource is an important

step in incorporating traditional harvesters into the aquaculture community.

RISA is now working on another project involving shellfish upwellers combined with an educational component and is working with Save The Bay.

We remain committed to working with CRMC on properly locating future leases in the Bay and ponds to reduce conflict among user groups.

### **United States Department of Agriculture**

We are fortunate to have a report this year from the USDA Rhode Island Natural Resources Conservation Service office in Warwick. The local USDA office has been working with the aquaculture industry in Rhode Island and produced the following progress report.

#### **Rhode Island Natural Resources Conservation Service**

The Rhode Island office of the USDA Natural Resource Conservation Service (NRCS) opened its FY 2006 Environmental Quality Incentives Program (EQIP) for the first time to aquaculturists in the state. Nationally, EQIP will provide 1.7 billion dollars in 2006 to implement conservation practices and conservation incentive payments on eligible agricultural land. Assistance to aquaculture growers, including shellfish farms, was authorized through the 2002 Farm Bill in the EQIP Final Rule,

stating “Livestock means animals produced for food or fiber such as dairy cattle, beef cattle, poultry, turkeys, swine, sheep, horses, **fish and other animals raised by aquaculture...**” Through the EQIP program, agricultural producers may voluntarily apply to the program to help them improve environmental quality in concert with agricultural production on their farms. This is the first year that our RI office will extend our conservation cost share programs to aquaculture industry.

In order to assist NRCS to effectively address the unique resource issues associated with freshwater and marine

aquaculture in Rhode Island, NRCS and the University of Rhode Island (URI) entered into a cooperative agreement for the development of technical information for use by NRCS staff and Rhode Island freshwater and marine aquaculture producers. Under this agreement, technical assistance from URI and Roger Williams University will result in the development, application, and evaluation of “Best Management Practices” (BMPs) for use in small scale aquaculture operations in RI. Along with technical guidance documents, these BMPs will be incorporated into new and modified NRCS conservation practice standards. Long term contracts and the conservation plan that incorporates these conservation practices are the mechanisms NRCS uses to cost share with producers to solve environmental problems.

So what does these mean for aquaculture producers this year? The Rhode Island EQIP program is administered and managed by NRCS with advice from the RI State Technical Team, who is comprised of representatives from state and federal agencies, universities, agribusiness, and environmental and agricultural non-profit organizations. The RI State Technical Team recommended to NRCS that a portion of RI EQIP funds be set aside for the aquaculture industry in Rhode Island this year.

In order to meet this request, a team of eager partners from RIDEM, the Rhode Island Coastal Resource Management Council (CRMC), RWU and URI, worked over the past 4 weeks to initiate a pilot EQIP program relevant to shellfish producers in

RI. NRCS held several planning meetings and worked to develop a suite of conservation practice best management practices that could be cost shared with RI shellfish growers.

This year’s EQIP program was based upon the highly successful Massachusetts EQIP pilot project in Cape Cod where shellfish growers were eligible for cost-share assistance on conservation practices for the first time in 2005. The MA program allocated \$247,000 in cost-share funding through 21 contracts with aquaculturists who raise scallops, oysters and clams throughout Cape Cod. Our RI team raced against the clock to modify the MA approach in order to meet the February 10, 2006 application deadline in RI. As a result, our team was able to develop a shellfish management conservation practice standard that would address the uniqueness of the RI shellfish farming industry and the particular resource concerns in RI waters.

Rhode Island NRCS was able to develop a practice standard to fit the conditions found within Rhode Island for the protection of water quality by controlling oil and gasoline emissions from outboard motors, endangered species through gear management, and the health of wild and farmed shellfish populations through record keeping and disease monitoring. The practice was intended to address as many resource concerns as possible within the variety of farming practices derived from commercial seeding, growing and harvesting of marine mollusks or other invertebrates in a natural or manufactured environment.

Ten Rhode Island shellfish growers (about 50% of those commercial operations in the state) attended an informational meeting on EQIP program this winter and twelve shellfish growers applied for funding for “best management practices” under the 2006

EQIP program, requesting over \$280,000 in assistance.

For more information on the program contact Vicky Drew, EQIP Program Manager at (401) 822-8820 or [Vicky.Drew@ri.usda.gov](mailto:Vicky.Drew@ri.usda.gov)

### **Rhode Island Sea Grant**

Rhode Island Sea Grant has been very active in promoting aquaculture in Rhode Island. We are fortunate to have the following contributed by the executive director, Dr. Barry Costa-Pierce.

### **Rhode Island Sea Grant (RISG) Aquaculture Engagements, 2005**

In cooperation with the Rhode Island Coastal Resources Management Council, the Rhode Island Sea Grant College Program has administered the approximately \$1.4 million Rhode Island Aquaculture Initiative. Major elements of that administration during 2004 have been:

- Continuing oversight of research awards as they wind down towards completion. RISG conducts a totally transparent, external, expert peer reviewed grant selection process. Pre- and full- proposals are reviewed by relevant external experts via mail review and via a convened expert panel on behalf of the RI Aquaculture Initiative.
- Coordination of the Executive Committee of the Aquaculture Initiative, having convened several meetings during 2005, producing minutes of those meetings and coordinating action items and decisions made by the committee.
- Transferal of the RIAI web site from the Sea Grant server to one maintained and hosted by CRMC.
- RI Sea Grant is a sponsor of the 2006 NACE event to be held in Mystic, CT.

Other RISG efforts in aquaculture during 2005 have been:

- RISG is the home for the Husbandry & Management Section of the international journal Aquaculture (Elsevier Press, Amsterdam, The Netherlands). RISG processed ~400 international manuscripts for Aquaculture in 2005.
- A book, published in by CABI Publishing of the UK, and titled Urban Aquaculture, was released to public in May 2005. This book is one outcome of the Urban Aquaculture Symposium convened at the 2002 NACE Meeting.
- RISG is sponsoring a Master's Student researching the effects of pea crabs on blue mussels and how that affects aquaculture production possibilities in RI waters. RISG, with this research, has a presence in the new Blount Building on the GSO campus.
- RISG has developed, and is hosting, an informational web site for POI (Partnership in Ocean Instrumentation—[http://seagrantadm.gso.uri.edu/POI\\_Web/poi\\_home.htm](http://seagrantadm.gso.uri.edu/POI_Web/poi_home.htm)), who has a focus area in Fisheries & Aquaculture.
- Host of the Working Group Environmental Interactions of Mariculture (ICES) 11-14 April 2005, leading developments of manuscripts on “Risk Management in Aquaculture,” and the other in “Sustainability Indicators for Aquaculture.”
- Appointed as liaison to The World Fish Center and attended a meeting in Washington DC during June 2005.
- Attended the World Food Prize Celebration in October 2005, where the first World Food Prize was given for accomplishments in aquaculture.
- Gave a presentation on “Ecological Aquaculture” at the Sustainable Seafood Conference in October 2005.

### **The Rhode Island Aquaculture Initiative**

In November 2001, at the 2nd Southern New England Aquaculture Conference it was announced that \$1.5 million, secured through the efforts of Senator Jack Reed, had been appropriated for planning and advancement of aquaculture in Rhode Island. The project has

been named the “Rhode Island Aquaculture Initiative.” During 2002 a memorandum of understanding was reached with Rhode Island Sea Grant, Roger Williams University and the University of Rhode Island to oversee the day-to-day management of the grant. A multi-institutional executive committee comprised of Rhode Island state, university, industry, and other aquaculture leaders was formulated to determine priorities for projects to be funded with the \$1.5 million that Senator Jack Reed obtained for aquaculture development in Rhode Island. Funds are routed from the National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research to the Rhode Island Sea Grant College Program at the University of Rhode Island (URI) and managed by David Alves, Coastal Resources Management Council (CRMC) state aquaculture initiative coordinator, assisted by Barry Costa-Pierce, Rhode Island Sea Grant director, and Ames Colt, Rhode Island Sea Grant associate director. Rhode Island Sea Grant reports to the NOAA-Sea Grant Project Manager, Jim McVey, in Washington, DC. CRMC has signed a memorandum of understanding with Rhode Island Sea Grant, the University of Rhode Island, and Roger Williams University to manage this project.

RI Sea Grant has built and hosted a web page to encourage all who might be interested to keep abreast of the developments with the initiative. The address is:

**<http://seagrant.gso.uri.edu/research/rhodyaquaculture/rhodyaquaculture.html>**

## **Grants awarded**

The Rhode Island Aquaculture Initiative has awarded \$600,000 toward aquaculture research and development in the state through a series of multi-year research grants and one-year "mini-grants." The next round of grant proposals was solicited during the fall of 2005.

### **Rhode Island Aquaculture Initiative Multi-Year Research Grants**

- Peter August, URI natural resources science professor, received \$149,983 over three years to enhance the Rhode Island Aquaculture and Fisheries Web page and Internet map server with up-to-date physical, chemical, and biological spatial data.
- Bradford Bourque, of Roger Williams University, Harold Pomeroy, Roger Williams University biology professor, and Something Fishy, Inc. received \$125,438 over three years to develop economically and environmentally sustainable land-based culture techniques for at least three species of marine ornamentals.
- Graham Forrester, URI biological sciences associate professor, and Robert Rheault, Spatco, Ltd. President, received \$100,028 over two years to evaluate the effects of aquaculture facilities on natural habitats and to describe the habitat values of shellfish aquaculture gear.
- Marta Gomez-Chiarri, URI fisheries, animal, and veterinary science assistant professor, Roxanna Smolowitz, Marine Biological Laboratory researcher, and Tim Scott Roger

Williams University Center for Economic and Environmental Development director, received \$49,136 over three years to evaluate the presence of a parasite found in wild and farmed northern quahogs in Rhode Island and the potential effect of the disease on Rhode Island's quahog industry.

- Perry Raso, shellfish aquaculturist, and Alicia Thayer, South Kingstown High School teacher, received \$82,405 over three years to educate over 1,700 students from Grade 6 through college about shellfish aquaculture and to promote community acceptance of aquaculture. In addition, students will be involved in a cutting-edge model aquaculture facility.
- Tim Scott, Roger Williams University center for Economic and Environmental Development director, received \$100,000 over three years to determine whether producing young seed clams in a hatchery and replanting them on public grounds will result in a greater harvest of adult clams in the future or will inadvertently attract predators to a productive bed.

### **2003 Grants**

- Dr. Dale Leavitt, Roger Williams University, and Dr. Marta Gomez-Chiarri, URI, received funding for their proposal to test disease resistant oysters funded.
- Dr. Marta Gomez-Chiarri's proposal to continue the disease survey was funded. This survey was funded by RI DEM in the past, but because of financial and management problems the funding was not renewed. This is a project that rightly should be funded by the state but because of the importance of the survey for resource management decisions RIAI has provided funding.

### **Rhode Island Aquaculture Initiative Mini-Grants**

- Aquaculture Products of Charlestown received \$275 to test methods for reducing starfish predation in oyster culture.
- Russell Blank and William Blank of North Kingstown received \$3,000 for the purchase of materials and seed to grow bay scallops and soft-shell clams.
- Louis Ricciarelli, Jr. of West Kingston received \$3,000 to grow bay scallops to harvestable size in Narragansett Bay, using varying types of cages to determine the best method for grow-out.
- Salt Water Farms, LLC of Wakefield received \$3,000 to purchase processing machinery intended to reduce operating costs and accelerate the growth rates of cultured oysters and mussels.

- Spatco, Ltd., of Wakefield, received \$2,000 to purchase and test in-water aeration equipment that will substantially reduce ambient noise levels.
- Kenneth Thompson of North Providence received \$2,000 to grow surf clams, which have not previously been cultivated in Rhode Island.
- Christopher Warfel of New Shoreham received \$1,700 to develop a hybrid wind and solar powered upweller to enable shellfish aquaculturists to site culture operations in remote waters.

### **2003 Grants**

- A cooperative project between the RI Shellfisherman's Assoc. and Save The Bay was funded.
- Purchase/use of a video camera was funded for research use by Moonstone Oysters was funded.
- Dale Leavitt of Roger Williams University received funding for development of a fish counter.

## **Ocean State Aquaculture Association**

Rhode Island is fortunate to be one of the few states in the region with an active aquaculture association. The Ocean State Aquaculture Association provided the CRMC with the following State of the Farm report.

### **OSAA**

Rhode Island continues to increase its production of cultured oysters as new growers begin to harvest their first crops while established growers continue to expand their lease area and learn new ways to squeeze more production out of existing grounds. Innovation is evident in every grower's operation. The quality and flavor of our product is unmatched and Rhode Island oysters are found in finer restaurants up and down the east coast and across the country. While increases in production have fluctuated widely from year to year, on average we have enjoyed double digit

growth in production for seven years. We are poised to break the one million dollar mark very soon.

Perry Raso single handedly set up our booth at the State House for the annual Rhode Island Farm Day event. The booth was well received by enthusiastic representatives and senators from around the state.

OSAA President Perry Raso applied for a grant from the Rhode Island Aquaculture Initiative to help the OSAA make our first



appearance at the '06 Boston Seafood Show. Nine growers presented product at the show and many growers were able to establish lucrative new accounts with buyers from across the country. It is a good sign that growers are now producing enough product that they are seeing the benefits of doing proactive marketing. Growers Perry Raso, Dave Roebuck, Rob Krause, Jeff Gardner, Peter Melanson, Bob Rheault and Graham Brawley manned the booth for the three-day event.

Another grant from the Rhode Island Aquaculture Initiative and a matching grant from RI DEM Agriculture Marketing funded the printing of an updated brochure describing the various shellfish produced by Rhode Island Growers.

OSAA is also a proud Associate member of the East Coast Shellfish Growers Association. Several growers participated in ECSGA sponsored events such as the Block Island Oyster Festival and other events round the nation including the Nantucket Wine Festival, the Milford Oyster Festival.

The ECSGA has been active in several national issues in our nation's capitol including:

- Blocking of the EPA's proposed "Sewage Blending" policy which would have loosened regulations guiding the release of untreated

sewage from treatment plants during storm events

- Fighting the move to list the American Oyster as an endangered species. Rep. Naughton led the RI House to pass a resolution in opposition of the listing, while ECSGA President Rheault testified in DC in front of Rep. Pombo's Congressional Resources Committee and NOAA's Eastern Oyster Status Review Committee. These efforts combined with the work on many others resulted in the petitioner withdrawing his petition in the fall of 2005.
- Establishing the Congressional Shellfish Caucus; a bi-partisan group of over 40 Congressmen and women from all the coastal states who are united in their support for our industry.
- Pushing for restoration of funds to key research and development projects that affect our industry in the USDA and DOC.
- The ECSGA also helped push for the phase out of the Byrd Amendment, an import tariff policy that was deemed illegal by the World Court and led to retaliatory tariffs on oysters being shipped into Canada.

## **Regulatory Agencies**

The Coastal Resources Management Council (CRMC), Department of Environmental Management (DEM) and the Department of Health (DOH) continue to work closely together during the year. The staff members who deal with the day-to-day regulations concerning aquaculture in Rhode Island continue to work toward streamlining the permitting process. The staffs are also active in continuing to monitor the industry and are able to respond quickly to unforeseen contingencies that may arise. For the past few years the DEM Division of Agriculture has been working closely with the aquaculture industry in Rhode Island. We are fortunate to have the following from Mr. Ken Ayars, chief of the DEM Division of Agriculture.

### **DIVISION OF AGRICULTURE, RI DEM**

The Division of Agriculture, RI DEM formed the RI Farm Viability Committee in 2002 to coordinate and enhance efforts within Rhode Island relating to the long term viability of agriculture in Rhode Island. These efforts pertain include aquaculture, and a particular objective is the recognition and inclusion of aquaculture into agricultural programs and promotions in Rhode Island. The Division sponsors each year Rhode Island Agricultural Day at the State House which since its inception in 2001 has included aquaculture among the many exhibitors and highlights. The Division is providing funding assistance to

the Ocean State Aquaculture Association regarding development and publication of a new RI Shellfish brochure and is involved in other RI shellfish marketing efforts, serves on the USDA/NRCS State Technical Team which helps direct USDA funds toward implementation of farm best management practices – including aquaculture, and assists aquaculture farmers with environmental and regulatory issues. These efforts are collaborative with USDA, CRMC, the RI Aquaculture Initiative, RI Rural Development Council etc, and our objective remains the enhancement and promotion of aquaculture as a vital Rhode Island agricultural industry.

The Coastal Resources Management Council now has all of its management plans, regulations and applications on the internet. The agency is making a major effort to further provide access to all of the necessary documents in as easy a format as possible. In 2004 the CRMC Aquaculture Application was updated to provide more information for the applicant and to clarify and simplify the process. The CRMC web page address is: <http://www.crmc.state.ri.us>. From the CRMC home page click the “Projects” button and then “Aquaculture” which will bring visitors to a page with information and links to Rhode Island aquaculture-related sites. Clicking on the “Applications” button on the CRMC home page will go to a page that has the downloadable, complete CRMC aquaculture application package. Clicking from the home page on the “Publications” button will lead to a page that has the past

four years' CRMC Aquaculture Reports available to download. CRMC is committed to providing information and forms via the internet to make applying for all CRMC permits easier for the public.

## **Conclusion**

Aquaculture in Rhode Island is a small, diverse and very dynamic industry which is making a real contribution to the economic health of the state. The companies, farmers and universities involved will readily admit that the situation could be much improved, but they are showing their trust in the future of the industry by investing time and capital towards increasing their competitiveness now and into the future. Aquaculture in Rhode Island is an industry that is taking advantage of the state's assets, its clean waters, its many universities and a well trained populace.

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