Aquaculture in Rhode Island

2004 Yearly Status Report

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Prepared by:

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A snapshot of the Aquaculture Industry in Rhode Island

For the year 2004

- The 2004 farm gate value of Rhode Island raised aquaculture products rose 1.6%.
- This is the 8th increase in the past 9 years.
- The number of farms in Rhode Island increased by two to 22.
- The total acreage under cultivation in Rhode Island rose to 70 acres.
- Aquaculture related industries in Rhode Island had gross revenue of $5.5 million dollars during the calendar year 2004.
- The total contribution of aquaculture to the economic bottom line of the State of Rhode Island was $6 million dollars.
- Regulatory agencies charged with responsibility for aquaculture continued to make progress in streamlining the permitting process.
- Regulatory agencies continued to involve stakeholders in the planning and regulation of aquaculture during the year 2004.
- The Rhode Island Aquaculture Initiative continued to make investments for the future of RI aquaculture.

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Introduction

The year 2004 saw modest growth of the Rhode Island Aquaculture industry. The farmgate value (this is the value for the product paid to the farmer) of the industry grew by a modest 1.6%. 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% of the total harvest. The hard clam being the only other species cultivated in any numbers making up 3% of the total harvest. The oysters harvested decreased 2% from the previous year, clams saw an increase of 2% harvested as compared to 2003. For the fifth year 100% of all Rhode Island grown aquaculture products were shellfish. The number of farms under lease increased to 22, a 10% increase. The acreage under lease increased to 70, a 16% increase.

The Rhode Island Aquaculture Initiative, funded during 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 future growth.

Research at the universities continued to be an important part of aquaculture in Rhode Island. Not including the money from the Rhode Island Aquaculture Initiative, the universities brought in almost $2 million dollars in outside grants, and tuition for students studying aquaculture related subjects.

A quick explanation on how the numbers cited in this report were derived.

Harvest figures came from the yearly CRMC aquaculture questionnaire distributed to all lease holders. All reports are taken at face value and no further queries are made of the farmer. 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 statistics cited for the universities were supplied by the universities.

Farm Production

The farm gate value of Rhode Island grown shellfish increased 1.6% from the previous year. This increase came after a 16% increase in product sold in 2003. This increase is less than the average of the past ten years of 29% (Please see Table 1 and Graph 5). The 2004 farm gate value is estimated to be $572994, up from $556,326 in 2002 and $478,160 in 2001 (Please see Graph 1).

Again in 2004 100% of all Rhode Island aquaculture production was shellfish. The dominate species was again the American oyster with 1,138,718 pieces being sold (see Graph 2). This is a 2% decrease from the previous year which resulted in an increase of 1.6% (see Graph 3) in value of the oyster production. The small increase in value as compared to the decrease in product sold can be explained by growers selling more of their product directly to the retail market, which results in a higher price for their product. Clam production was up slightly with a 2.5% increase in harvest (see Graph 2) which resulted in a 1.8% decrease in value due to lower prices (see Graph 3).

The number of farms active in Rhode Island Aquaculture increased in 2004 to 22 active farms. This number was a result of two new farms joining the ranks. This resulted in an increase in acreage under cultivation to 70 acres (see Graph 4). The production per acre of aquaculture in Rhode Island was $8,185 which was a decrease from $9,120 for the 2003 year.

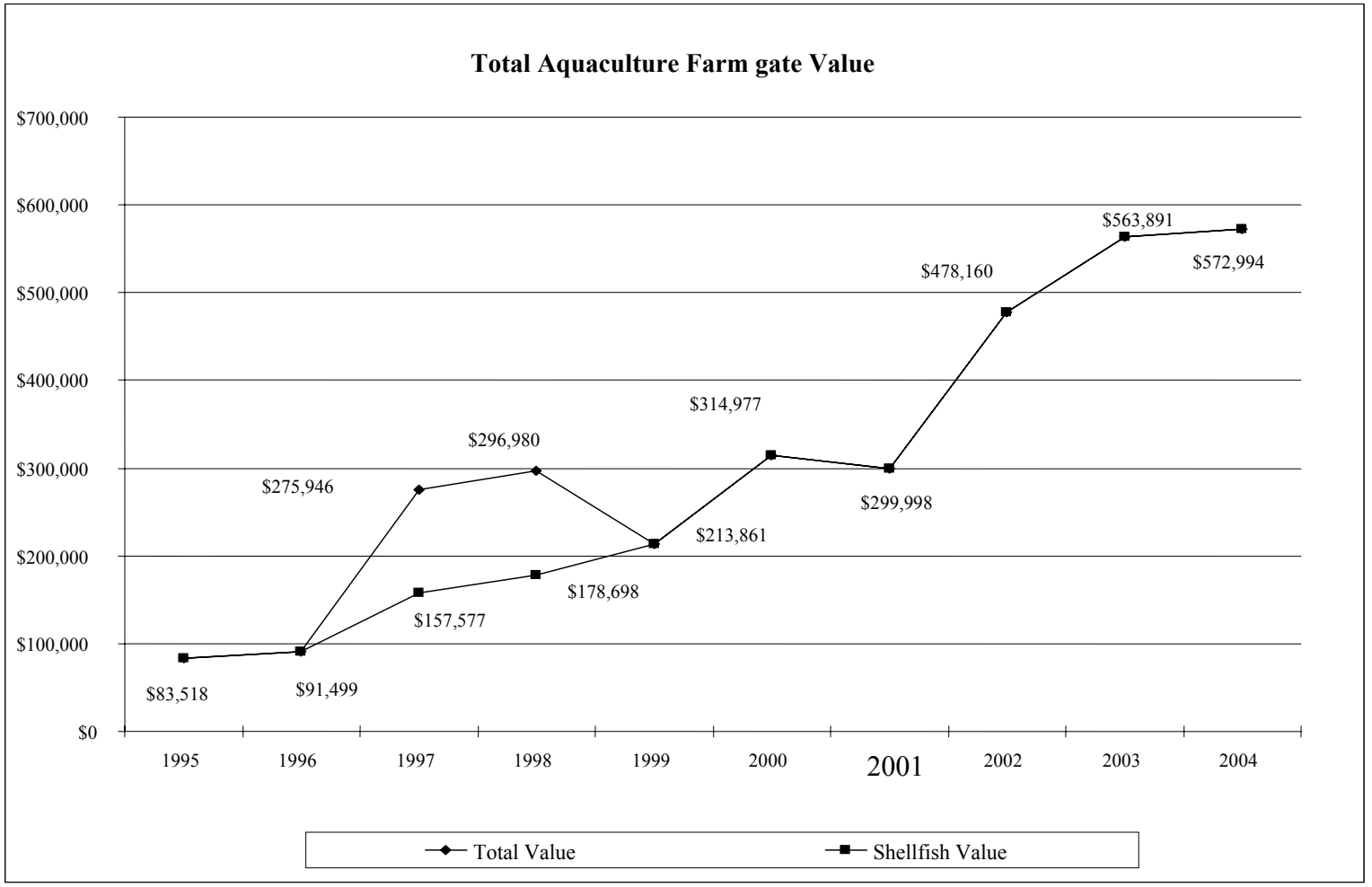
The farm related employment increased slightly. In 2004 there were 12 full-time year-around and 14 part-time year-around seasonal people employed in Rhode Island aquaculture. Employment increases a bit during the summer with Rhode Island aquaculture farms hiring 6 full-time seasonal and 11 part-time seasonal workers.

Last year was the first time the question was asked of growers of how much they invested in their farms. The reports indicate that in 2004 growers invested $377,472 into their aquaculture farms in Rhode Island compared to $271,000 in 2003.

Table 1

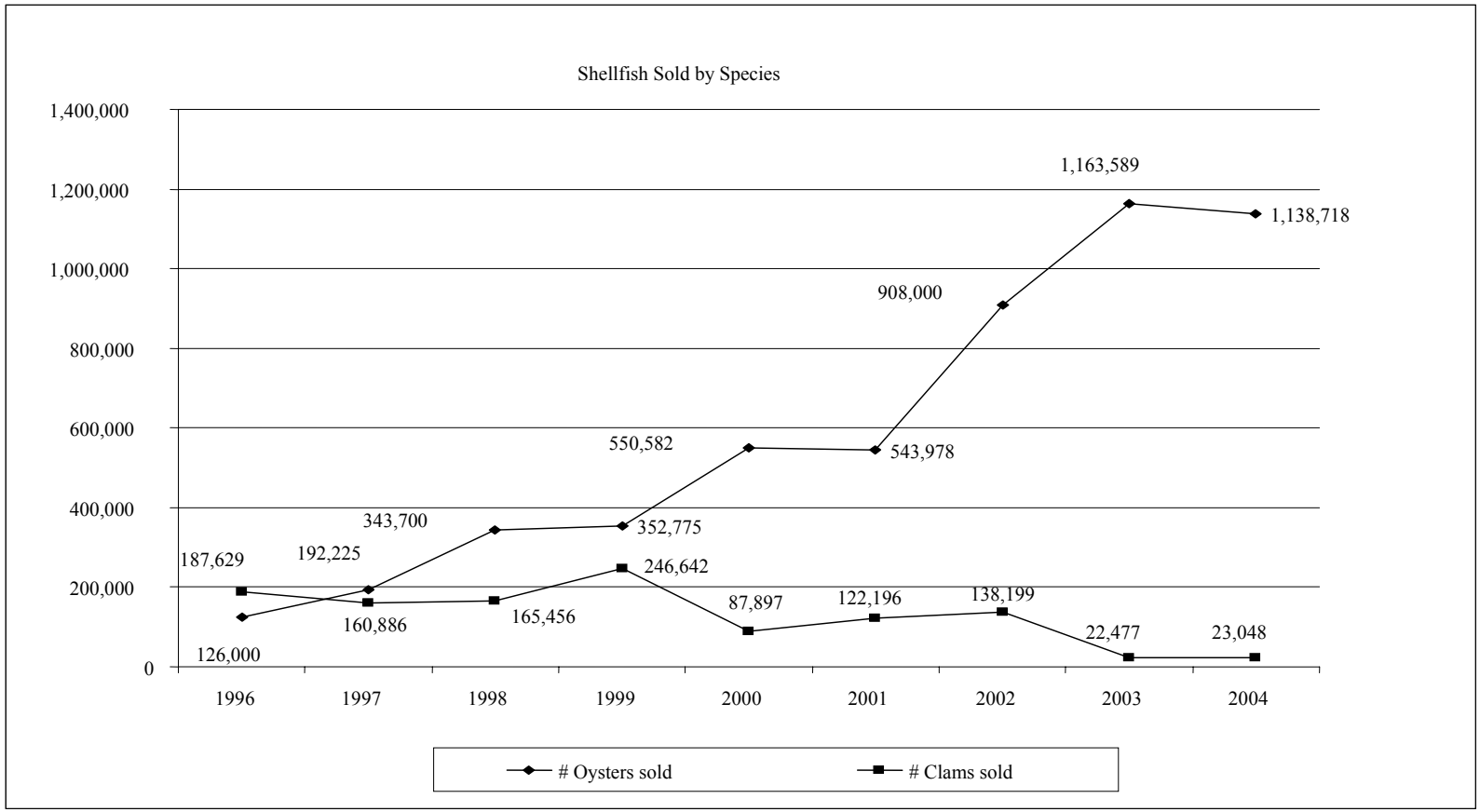
Year	Percent Change in Farm Gate Value from Previous Year
1995-1996	9.6%
1996-1997	72%
1997-1998	13%
1998-1999	20%
1999-2000	47%
2000-2001	-4.7%
2001-2002	59%
2002-2003	16.5%
2003-2004	1.6%

Table 1 shows the percentage change of the farm gate value of aquaculture shellfish production in Rhode Island. See Graph 1 for overall production figures.



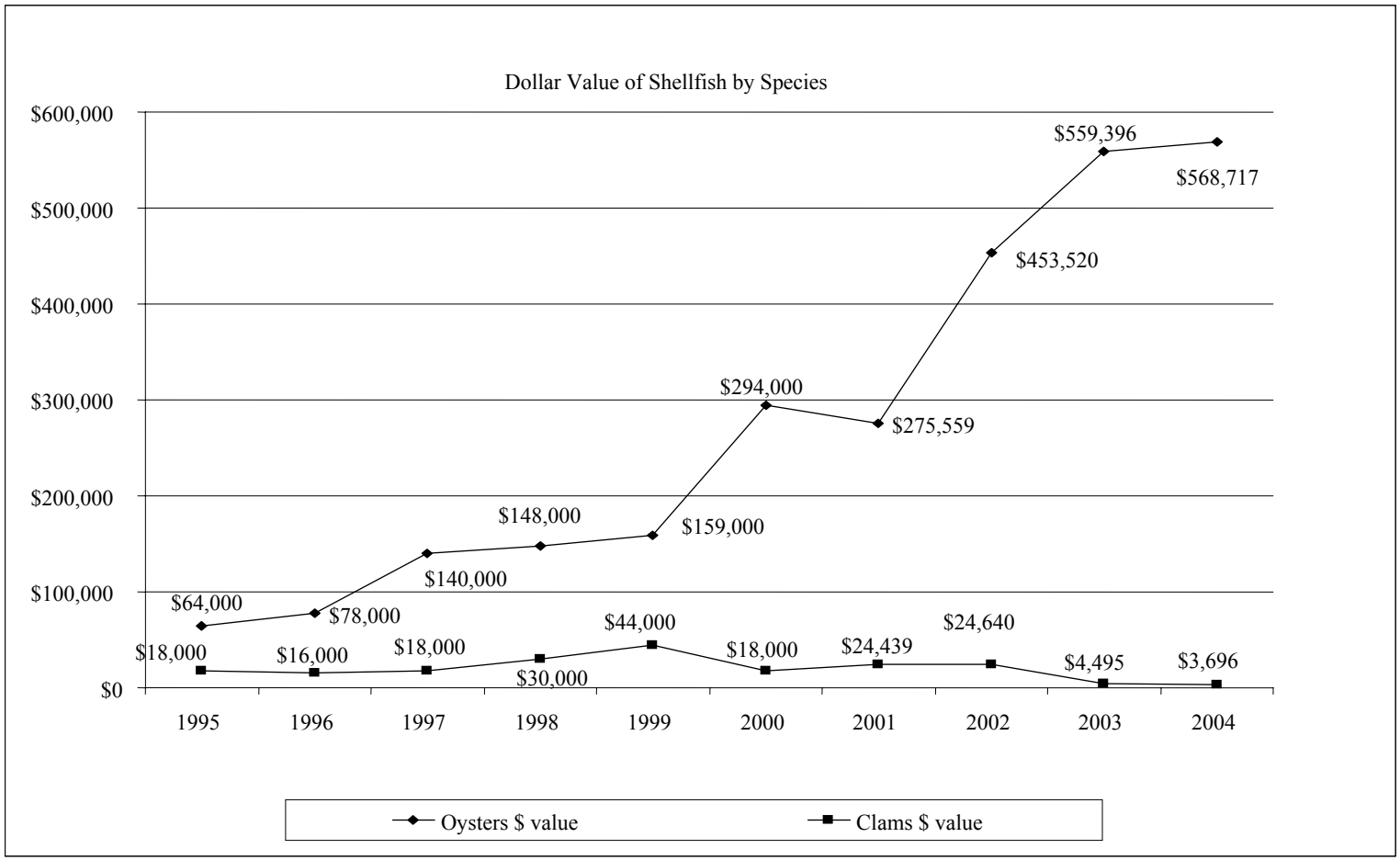
Graph 1

In 2004, total Rhode Island aquaculture production increased 1.6%. 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.



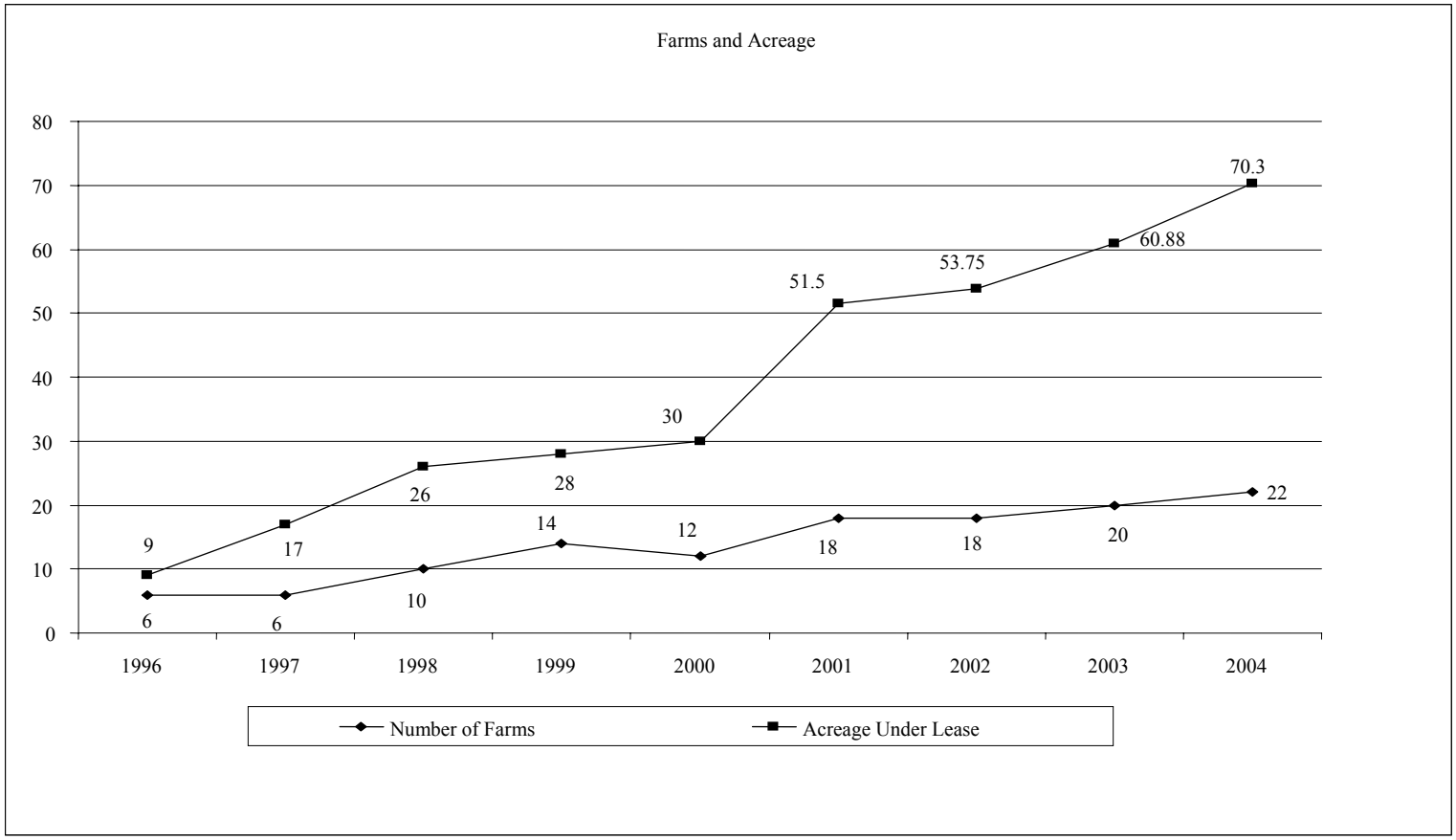
Graph 2

The American oyster is the dominant species cultured in Rhode Island waters. Oyster production accounted for 97% of the total Rhode Island aquaculture production. Grower's reported 1,138,718 oysters were sold in 2004, a decrease of 2% from 2003. The culture of quahogs has increased slightly with approximately 23,048 being produced in 2004, a increase of 2.5% from 2003.



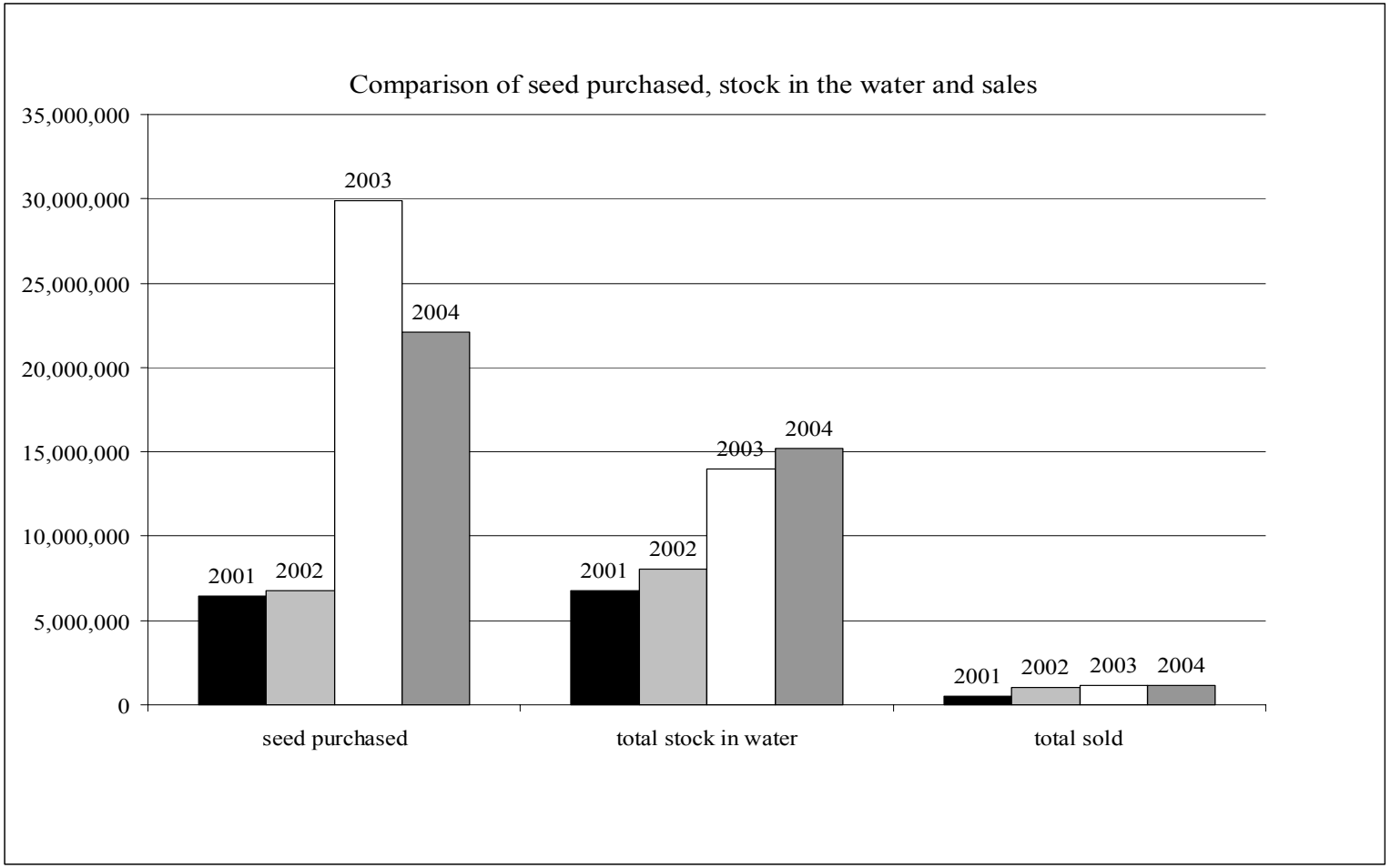
Graph 3

Graph 3 indicates the relative value of the shellfish production in Rhode Island for 2004. The increase in value of oysters from 2003 was 1.6%. The decrease in value of quahogs was 1.8%.



Graph 4

There were two new leases established during 2004. The totals for 2004 are 70 acres under cultivation and 22 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. It also shows the growth an decreased investment in seed stock and an increase of animals in the water from 2003.

Aquaculture Related Industries

It is the other aquaculture related industries in Rhode Island that are the largest contributors to the state's 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 did a gross total of $5,500,000 in business in the state, for no net increase from the 2003 numbers. These companies employ 25 full time employees, a decrease of 15% from 2003

Not only do these companies serve local and regional farmers, but they also export internationally. This increase is especially impressive when the fact that one of the companies doing business in the state who contributed to this report two years ago continues to decline to contribute to this report this year. 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 both quality education and research. This recognition translates into 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 to supporting 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. Michael Rice, Chair of the Department of Fisheries, Animal and Veterinary Sciences, contribute the following description of the aquaculture research and projects that URI conducted in 2004.

Aquaculture Activities at the University of Rhode Island – 2004

Michael A. Rice
Dept of Fisheries, Animal and Veterinary Science

During the calendar year of 2004, there was considerable activity in the areas of aquaculture instruction, research and extension at the University of Rhode Island. As is traditional at URI, a number of projects have been cooperatively undertaken by a number of members of several different URI Departments. Key URI units undertaking aquaculture research during 2004 include: the Graduate School of Oceanography, the College of Business Administration, and the Departments of Cell and Molecular Biology, Environmental and Natural Resources Economics, Fisheries, Animal and Veterinary Science, Natural Resource Sciences, and Nutrition and Food Science.

During 2004, work in the laboratory of Dr. Jennifer Specker of the Graduate School of Oceanography focused on fish endocrinology. Projects included: 1) Cortisol stress response of juvenile winter flounder (*Pseudopleuronectes americanus*) to predators, effect of exogenous cortisol and RU486 on cortisol concentrations and on Na+/K+-ATPase and glucocorticoid-like receptor immunoreactivity in juvenile summer flounder, 2) cortisol concentrations, the glucocorticoid-like receptor, and Na+/K+-ATPase in the juvenile summer flounder (*Paralichthys dentatus*) subjected to osmotic stress, and 3) stress in summer flounder: anesthesia mitigates transportation-induced stress response and increases post-transport performance. Dr.

Robert Comerford of the College of Business Administration and Dr. Michael Rice of the Department of Fisheries, Animal & Veterinary Science concluded a study of financial structures within the aquaculture industry of the northeastern United States. Also from FAVS, work in the laboratory of Dr. David Bengtson included work on water velocity on the conditioning of summer flounder in netpens, and a study in the energetics of juvenile cod fish. Dr, Joseph DeAlteris of FAVS worked with Dr. Robert B. Rheault, an industry cooperator to assess the relative habitat value of shellfish aquaculture gear and submerged aquatic vegetation, and Dr. Terry Bradley also of FAVS continued on work with Atlantic Salmon physiology and the development of black sea bass as an alternative aquaculture species. Work in the laboratory of Dr. Marta-Gomez Chiarri of FAVS focused on the characterization of diseases in fish and shellfish. Dr. James Anderson of the Department of Environmental and Natural Resource worked on the economic impacts of the introduction of the Asian oyster *Crassostrea araiakesis* into Chesapeake Bay. During 2004, about $1.75 million in external grand funds was expended by research scientists at URI scientists on aquaculture research projects (Source: URI Research Office Annual Report).

Key aquaculture extension/outreach activities by URI faculty and staff included continued work by Extension Agent Randall Mickley on a Freshwater Aquaculture Demonstration Center at East Farm that included water gardening, aquaponic fish/vegetable culture, tilapia culture and ornamental fish breeding. A practical shellfish aquaculture course by Extension Agent David Beutel and Dr. Dale Leavitt of Roger Williams University was continued to be offered in 2004. The Fourth Northeastern Aquaculture Conference and Exposition was held in Manchester New Hampshire in 2004 with major sponsorship by Rhode Island Sea Grant and Rhode Island Cooperative Extension.

Academic programming in aquaculture at the University of Rhode Island remained strong during 2004 with 52 enrolled undergraduates and 11 bachelor's degrees in Aquaculture and Fisheries Technology Awarded (Source: URI Registrar). Additionally in 2004, there were 10 students studying for master's degrees in aquaculture and 4 students in the Ph.D. Program.

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 2002.

Roger Williams University

Center for Economic and Environmental Development (CEED) 2004

Dr. Timothy M. Scott, CEED Director

Staff: Dr. Timothy M. Scott, CEED Director
Dr. Dale Leavitt, Aquaculture Faculty
Brad Bourque, Marine Laboratory
Karin Tammi, Shellfish Hatchery

Additional Roger Williams University Faculty in specific aquaculture-related projects:

Dr. Skip Pomeroy	Marine Biology	Tropical Fish Breeding
Dr. Andrew Tate	Marine Biology	Winter Flounder Enhancement
Dr. Stephen O'Shea	Environmental Chemistry	Environmental Monitoring
Dr. Scott Rutherford	Environmental Science	Environmental Monitoring

Aquaculture activity underway at Roger Williams University (RWU) supports 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 about $1 million in active aquaculture research grants. Using these funds, a small staff of CEED Scientists lead over 75 undergraduate students in research intended to promote aquaculture development in the state. In 2004, these projects included:

■ **Operating the Only Shellfish Hatchery in Rhode Island:** Most 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 2004, we produced over 10 million shellfish seed including quahogs, oysters, steamers and scallops. Working with the RI Shellfishermen's Association, we planted almost one million seed clams into the waters outside of Greenwich Bay as part of a public benefit aquaculture effort. We continued our shellfish restoration efforts by planting almost a half a million young oysters around Prudence Island and the local production of scallops and steamers were used in research projects and ultimately released into the bay. We anticipate expanding this production in 2005 and adding additional species as we try to diversify the aquaculture products being cultured in Rhode Island. Projects that rely on our hatchery include:

■ Developing disease resistant oysters for Narragansett Bay
■ Culturing alternative species including surf clams and razor clams
■ Shellfish restoration efforts
■ Aquaculture extension and education opportunities
■ Environmental benefit of shellfish cultivation

■ **Tropical Fish Breeding:** 2004 was our second year of study in which we are investigating the development of a local tropical fish production facility. Preliminary studies suggest that the added cost of local production will be offset by the increased survival we realize by being close to the major markets along the Northeast corridor. In addition, 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, and working to restore endangered species, our effort will promote the conservation of these species.

■ **Shellfish Extension:** Dr. Dale Leavitt joined Roger Williams University as a Visiting Professor of Aquaculture in February, 2003. His role is to teach aquaculture, and to share his shellfish aquaculture expertise to a wider community of researchers, aquaculturists and the general public. During 2004 Dr. Leavitt gave numerous public presentations and workshops to an impressive range of public and private groups, and has research support for projects ranging from studies on QPX and the design of a fish fingerling counter.

■ **Additional Projects Include:**

■ Administration of Grant Programs funded by the RI Aquaculture Initiative
■ Hydroponics Demonstration Facility
■ Koi Production
■ Conversion of Cranberry Bogs to Fish Production
■ Winter Flounder Restoration in Mt. Hope Bay

About 30 undergraduate students are involved in these projects.

Rhode Island Shellfishermen'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

The R.I.S.A. began a cooperative venture of growing Shellfish in upwellers for public enhancement. This effort, using funding from Rhode Island Aquaculture Initiative, involved the Shellfishermen working with Roger Williams University, C.R.M.C., D.E.M., 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. 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. The product of this project was planted in a public ceremony in the fall 0f 2004 with Governor Carcieri and other dignitaries helping to plant the seed.

R.I.S.A. is now working on another project involving shellfish upwellers combined with an educational component working with Save the Bay.

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, 2004

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 has been:

- Continuing oversight of research awards granted during 2004, totaling approximately $600,000. 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 3 meetings during 2004, producing minutes of those meetings and coordinating action items and decisions made by the committee.

- Convening of a RI Aquaculture Initiative visioning process to lay out the future direction for aquaculture in Rhode Island and the role of RIAI in that future. A series of visioning meetings were conducted, which led to the development of a vision document titled "Rhode Island Aquaculture Initiative." The vision document underwent design and layout in the RI Sea Grant Program Communications Office, and was printed on color stock for distribution in November 2004.

- Development and upkeep of the RI Aquaculture Initiative web site http://seagrant.gso.uri.edu/research/rhodyaquaculture/rhodyaquaculture.html via the RI Sea Grant Communications Office. A web site was put on line for the RI Aquaculture Initiative in 2002, and is updated regularly as appropriate. The web site was also used as a vehicle for dissemination of the research and mini-grants RFP announcements, as well as providing electronic versions of all application materials for downloading to interested parties.

- RI Sea Grant was a sponsor of the NE Aquaculture Conference held in Manchester, NH during December of 2004. RI Sea Grant disseminated the newly printed "Rhode Island Aquaculture Initiative: A Shared Vision For The Future" document at the conference.

- Other RISG efforts in aquaculture in RI during 2004 have been:
  - RISG is the home for the Husbandry & Management Section of the international journal Aquaculture (Elsevier Press, Amsterdam, The Netherlands). RISG processed ~300 international manuscripts for Aquaculture in 2004.

- Completed development of a book, based on the talks given at the special National Urban Aquaculture Symposium held at the 2002 NACE symposium. The book is being published in by CABI Publishing of the UK, and is titled Urban Aquaculture. Printing date is the 29th of April with book distribution expected during mid-May 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 entitled 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 will be solicited during the fall of 2004.

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, had 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.
- Development of a fish counter by Dale Leavitt at Roger Williams was funded.

Ocean State Aquaculture Association

Rhode Island is fortunate to be one of the few states in the region with an active aquaculture association. We are fortunate to have the following state of the farm report from the Ocean State Aquaculture Association's president, Mr. Todd Corayer.

Ocean State Aquaculture Association

2004 was another successful year for the state aquaculture association, with members working their leases, attending and participating in conferences and being part of a growing local industry. We hosted our second annual Chef's Tour on a beautiful day, giving several chef's and reporters from around the region an up close look at some sights, meeting farmers and enjoying the fruits of our labors. Our farms benefited from the exposure but more importantly, our visitors learned more about how important and responsible our farms are. Perry Raso was busy bringing aquaculture to school children around the state, making full use of the Aquaculture Initiative support. Perry has done a great job of educating many people not only about what we grow and how we do it, but also how we interact with the marine environment, other water users and how we serve in many ways as a net gain to the economy and the ecosystem. We also continued our involvement with the ever growing East Coast Shellfish Aquaculture Association in their efforts to keep shellfish farming in the right spotlights and to protect our collective future's. In the midst of the many challenges facing marine farmers, we are optimistic about this new year with many new business opportunities, some expanding markets and hopefully easy weather. Our meetings are always open to the public, information can be found at our website, www.oceanstateaqua.org and I encourage you to join us soon!

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.

The Coastal Resources Management Council now has all of its management plan, regulations and applications on the internet. The agency is making a major push to continue its effort to continue to provide access to all of the necessary documents in as easy format as possible. During 2004 the CRMC Aquaculture Application was continually updated to provide more information for the applicant and to clarify and simplify the process as much as possible. The CRMC web page address is: **http://www.crmc.state.ri.us**. From the CRMC home page clicking the "project" button will bring you to a page where if you click on "Aquaculture" will bring you to a page with information and links to Rhode Island aquaculture related sites. Clicking on the "application" button on the CRMC home page will bring you to a page that has a downloadable complete CRMC aquaculture application package. Back to the home page if you click on the "publications" button will bring you to a page that has the past 4 years CRMC Aquaculture Report available in a downloadable format. 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 a great deal better, but the are showing their belief in the future of the industry by investing time and capitol 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, and contributing to the economic health of the state. The industry is showing its belief in the future by making investments to ensure its continued competitiveness.

Acknowledgments

Thanks to: Mr. M. Tikoian, Chair RI-CRMC; Mr. G. Fugate, RI-CRMC; Mr. R. Silkes, American Mussel Harvesters Inc.; Mr. T. Corayer, OSAA; Mr. P. Sebring, Atlantic Aquaculture Supply; Mr. M. McGiveney, Rhode Island Shellfishermen's Association; Dr. T. Scott, Roger Williams University; Dr. M. Rice, University of Rhode Island; Dr. B. Costa-Pierce, Director RI Sea Grant; and all of the aquaculture lease holders for their help in putting this report together.