



## **Aquaculture in Rhode Island**

2000 Yearly Status Report



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## **A snapshot of the Aquaculture Industry in Rhode Island For the year 2000**

**The farm gate value of Rhode Island raised aquaculture products rose 47%.**

This is the 4<sup>th</sup> double-digit increase in the past 5 years.

The number of farms in Rhode Island decreased by one to 13.

The total acreage under cultivation in Rhode Island rose to 30 acres.

Aquaculture related industries in Rhode Island had gross revenue of \$3.1 million dollars during the calendar year 2000.

The two universities conducting aquaculture related research in Rhode Island brought in \$1.9 million dollars from outside sources during the year 2000.

These two universities served 14 private companies in Rhode Island during the year.

Aquaculture directly supported 79 full time employees and 11 year -round part time employees during 2000.

The total contribution of aquaculture to the economic bottom line of the State of Rhode Island was \$5.4 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 2000.

Three new CRMC lease categories were created in 2000, commercial viability, research/education and upweller use in recreational docks.

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## **Introduction**

The final year of the millennium was a year of growth for the aquaculture industry. The farm gate value of the industry rose more than \$101,000 for a 47% gain. The total farm gate value of aquaculture in Rhode Island was \$314,977. For the year 2000, 100% of all aquaculture in Rhode Island resulted from shellfish culture. This year, for the first time, employment statistics for aquaculture farms was compiled. In the year 2000 Rhode Island aquaculture farms employed 12 people full time, 10 people part time year around, and 3 people part time seasonally.

It has become recognized that aquaculture is not only the production of food products. The ancillary industries are also important to the state's economy. For the first time we have compiled data to try to indicate the importance of these industries to the State of Rhode Island. There are two universities in the state which feature aquaculture in their program, University of Rhode Island and Roger Williams University. Between the two they brought in \$1,950,000 in outside monies to their program to pursue aquaculture research. The universities employed 27 professors, 14 professional staff for a total of 41 people employed related to education and aquaculture research. At the University of Rhode Island there are 30 graduate students also pursuing research related to aquaculture. The universities also play an important role in the transfer of technology from the academic realm to industry. The universities served a total of 14 companies, helping them become competitive, survive and prosper in an internationally competitive aquaculture arena.

Other industries that generate revenue and jobs in the state include the distribution of aquacultured product and the manufacturing and sales of aquaculture related products. This part of the aquaculture industry was worth \$3,100,000 to the state's economy. This sector employed 23 full time employees and 3 part time seasonal employees. These income figures are based on gross income to the companies that is attributed to aquaculture.

The total worth of aquaculture and the related industries to the economic well being of the State of Rhode Island was \$5,364,977 for the year 2000. There were a total of 76 people employed full time, 11 part time year around, and 3 part time seasonal in the aquaculture and related industries.

The aquaculture industry, including farm production and the related industries, is poised to continue growing. Indications are that aquaculture's contribution to the economic bottom line of Rhode Island will continue to grow in the years to come.

On the regulatory front a number of gains begun last year were built upon during 2000. There were three new categories of permits promulgated during 2000. The first was one for commercial viability. One of the problems in selecting a new site has been if the species being cultivated will grow in the location. One of the facts of shellfish culture is that it is very site specific. In order to allow prospective farmers to test a site before going through the full permitting process a new permit was created. The commercial viability permit allows a prospective farmer to test a site for a maximum of three years. This is a one-time permit for each location, limited to 1000 square feet, and a one-time sale of product is allowed. At the end of the three-year period the applicant must remove all of the farm equipment and either apply for a full lease, going through the whole process, or look for a new site.

The second new permit category is for research/education. This permit is renewable, limited to 1000 square feet, does not allow the sale of any cultured product and is for educational institutions. The third new permit is to allow the use of upwellers in recreational docks. The upweller must be permitted to a already permitted shellfish grower, the foot print and the use of the dock cannot be affected by the inclusion of an upweller, the dock must be permitted and is not allowed in type 1 waters.

The CRMC working group on aquaculture and fisheries has continued to meet monthly. Presently the group is comprised of representatives from commercial and recreational fishing groups, Aquaculturist, academia, and regulatory agencies. The group has initiated a project to chart the current uses of the state's waters. This mapping project has already proven valuable to site an aquaculture project. The University of Rhode Island Cooperative Extension Service has been supporting this project. The project will be a valuable tool for reducing conflict between traditional users and any future development of the state's waters, not just siting aquaculture projects. Currently the group's discussions have centered on reducing conflict between the traditional users and new aquaculture sites.

One new and controversial viewpoint being discussed is that all of the industries involved in this arena, traditional capture fisheries and aquaculture, should be united to represent a unified seafood industry. The genesis of this view is that these industries depend on a clean aquatic environment. Rapidly escalating pressure on the aquatic environment by increased development is putting pressure on the whole seafood industry, not just one sector of this important industry. Another outgrowth of the working group is the formation of an information e-mail list. Members get regular mailings that contain information relevant to the seafood industry.

The year 2000 also saw the continuation of the annual Rhode Island Aquaculture Conference. This year the format was enlarged to include the four southern New England states, Massachusetts, Connecticut, Rhode Island, and New York. In September the 1<sup>st</sup> Annual Southern New England Aquaculture Conference, and 5th Annual Rhode Island Aquaculture Conference was held at Salve Regina University, in Newport Rhode Island. A conference planning committee made up of representatives from Connecticut, Massachusetts, New York and Rhode Island invited speakers from the four state region, and as far away as North Carolina. This conference was seen as an important step in creating a regional approach in southern New England.

All in all it was a good year for aquaculture in Rhode Island. Production was up at the farm level, new and existing aquaculture related industries continued to conduct business in Rhode Island and to export to other states and nations. At the universities research and outreach continues to bring in significant amounts of money and to serve industry. The traditional fishing industries and the nascent aquaculture industry are coordinating efforts to reduce conflict. The regulatory agencies involved in this arena are streamlining permitting and becoming more aware of the needs of the seafood industry.

**Farm Production**

In the year 2000 farm gate value of aquaculture production rose 47% from last year’s levels. This increase is the fourth double-digit percentage increase in the last five years (for shellfish production only). The fifth year, 1995, showed an increase of 9.6% (Table 1).

Table 1

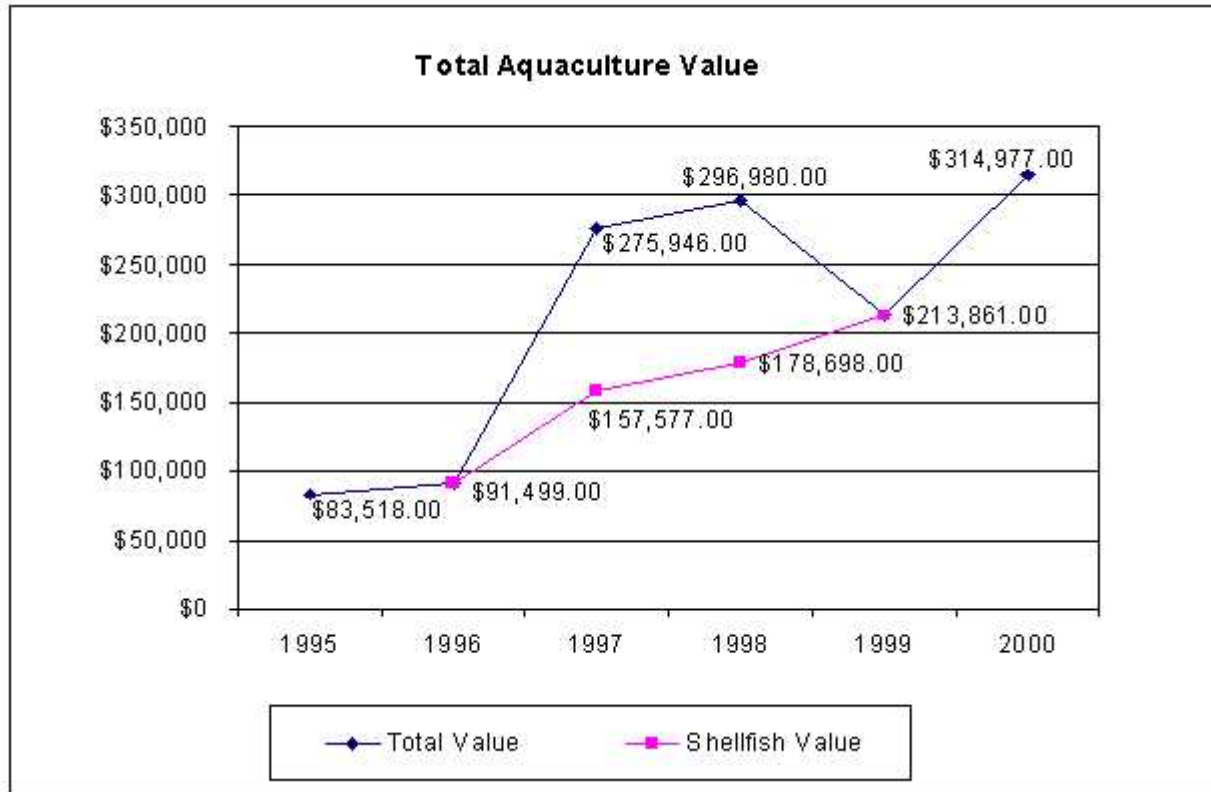
Year	Percent Increase from Previous Year
1995-1996	9.6%
1996-1997	72%
1997-1998	13%
1998-1999	20%
1999-2000	47%

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

This increase (Graph 1) equated to a \$101,116 increase. This increase was entirely due to shellfish culture. The two finfish facilities permitted in the state are either inactive (V&G Seafarm) or still searching for the financial backing needed to begin construction (GreatBay

Aquafarms). This year saw a number of new leases that were permitted in the last three years begin production, thus contributing to the overall production numbers. Last year production was attributed to just eight of the fifteen leases. In the year 2000, the number of leases fell to 14 (graph 4) but all but three of the leases have sold product.

Graph 1

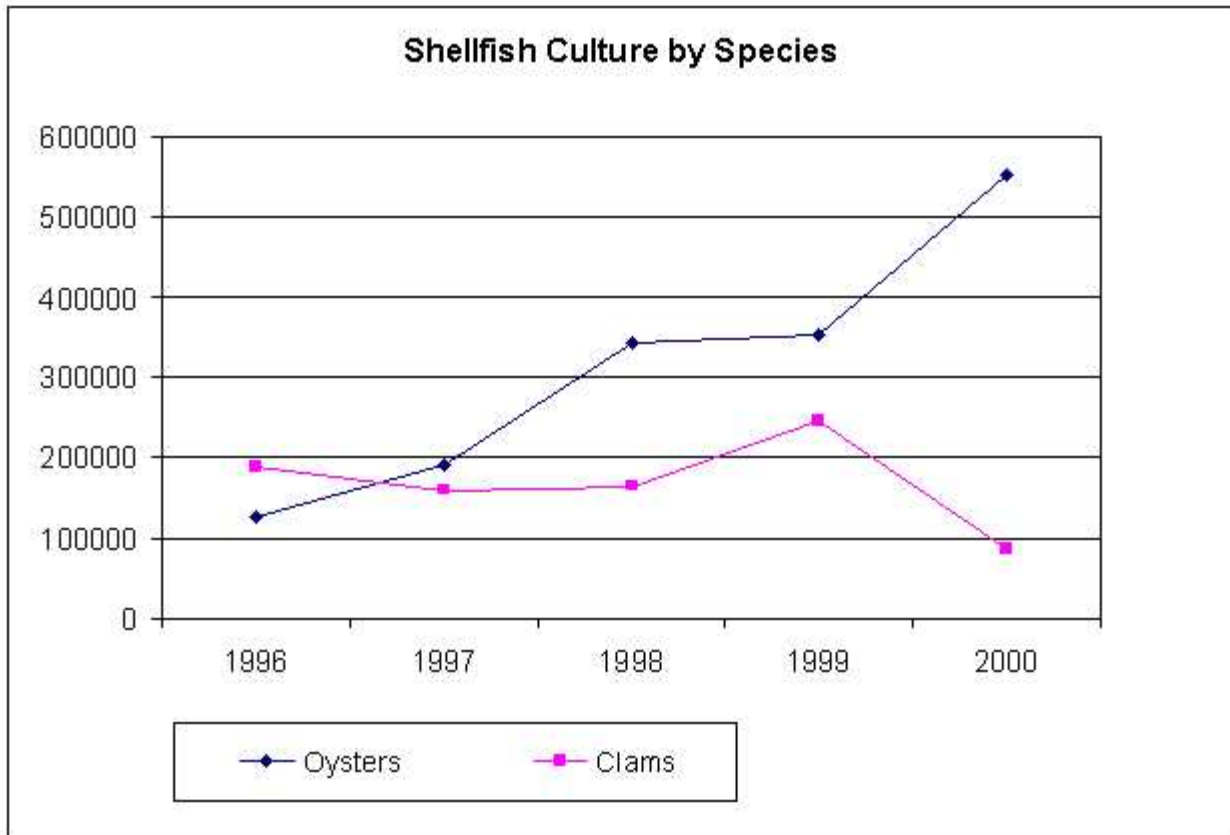


In the year 2000 production of shellfish continued to increase at a healthy pace. The increase of \$101,116 is a 47% from the previous year's production.

Rhode Island aquaculture production in 2000 can be attributed to just two species (Graph 2 & 3). The production of American oysters and the hard clam or quahog made up 100% of the production. Graph 2 shows the relative production numbers between the two species. Last year's figures indicated a trend towards quahog production surpassing that of oysters. This year the production of quahogs has declined by 64%, while the production of oysters has increased 57%. Graph 3 shows the relative values of the two species being cultured. The value of oysters, approximately \$294,000, made up the majority of the state's production. Quahog production was worth approximately \$18,000.

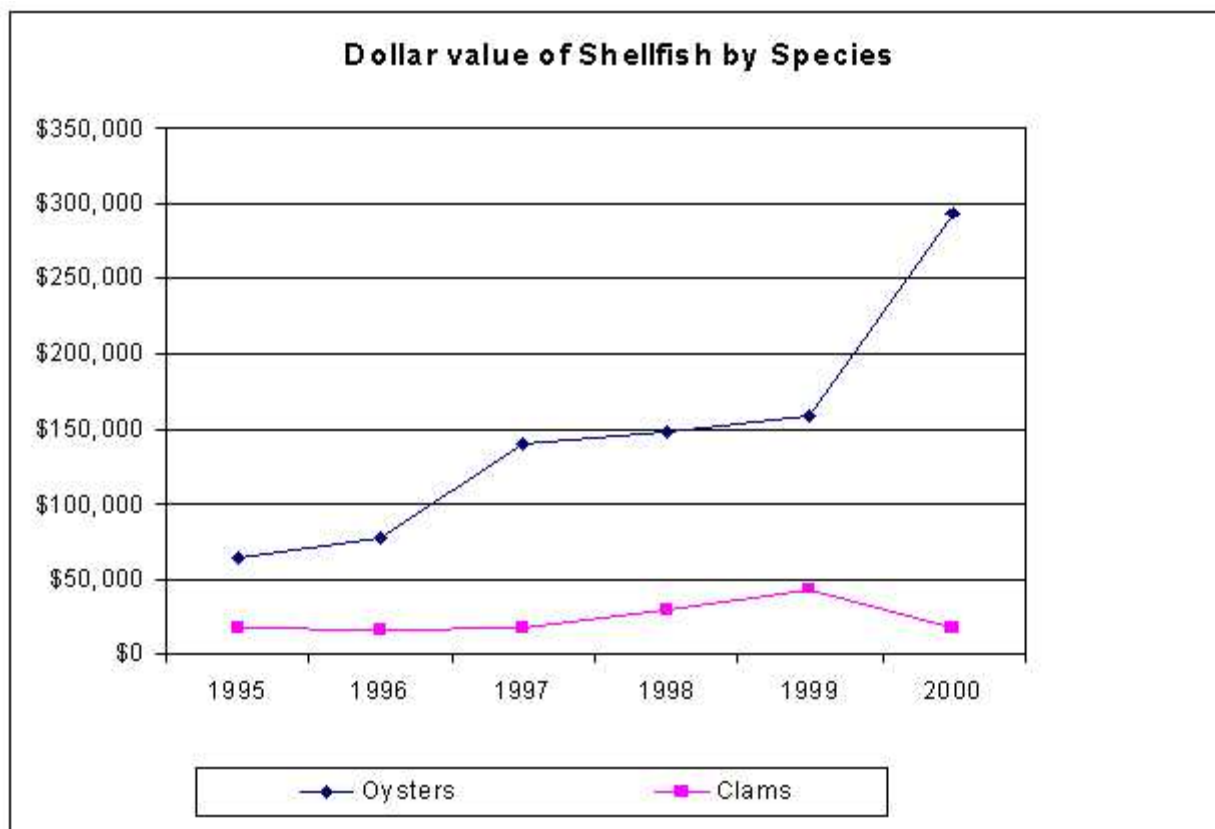


Graph 2



The American oyster is the dominant species cultured in Rhode Island waters. Slightly more than 550,000 sold in 2000, an increase of 57% from 1999. The culture of quahogs has declined with approximately 88,000 being produced in 2000, a decrease of 64% from 1999.

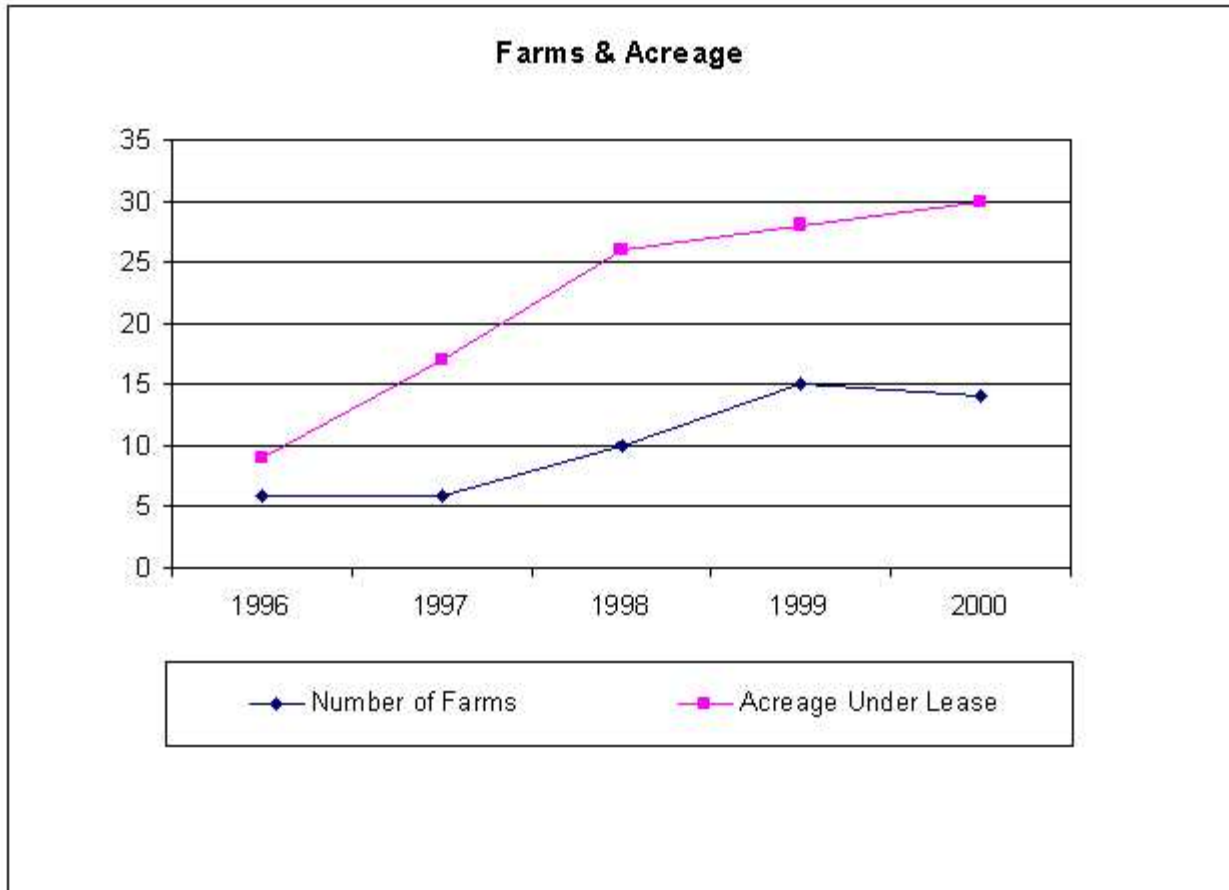
Graph 3



Graph 3 indicates the relative value of the shellfish production in Rhode Island for 2000. The increase for oysters is partially the cause of growers getting a better price for their product, and partially the result of the yearly questionnaire to the growers asking for more accurate information on how they sell their product. The increase in value from 1999 was 83%, versus an increase in production of 57%. The decline in the value of quahog production was softened by the increased value to the growers. The decline in production of quahogs was 64% and the decline in value of quahogs was 61%.

The year 2000 saw the decline of the number of aquaculture leases in Rhode Island waters. During the year one lease was revoked for not being actively farmed and one lease was voluntarily surrendered. Rhode Island Coastal Resources Management Council's regulations prohibit leases to remain in place if the permittee is not actively farming the lease. During the yearly site visit one lease fit the criteria and was revoked with no opposition of the permittee. The lease that was voluntarily surrendered was very small and had never produced in commercial quantities. The two leases removed from the roles were for a total of 1.25 acres. There was one new lease granted in 2000, for 3 acres. This resulted in a net increase of the state's submerged lands under cultivation. The total tidal area under lease is now 30 acres.

Graph 4



There was a net decline of one lease during 2000, and a net increase of acreage under lease of 2 acres. The totals for 2000 are 30 acres under cultivation and 14 permit holders.

The number of employees on Rhode Island aquaculture farms was collected for the first time in 2000. These figures show that there are 12 full time and 10 part time employees. There were also 3 part time seasonal people employed. The State's only private shellfish hatchery, which opened last year, has fallen on hard times due to internal problems. It did have some production during the year and hopes remain high that the internal problems can be overcome and Rhode Island will have a hatchery to produce seed.

### **Aquaculture Related Industries**

A new category of economic statistics was compiled for this year was the education industry. The State of Rhode Island has 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 equates into grant monies flowing into the state to conduct related research. The total of external funding brought into the state for aquaculture research and education is \$1,565,000. In addition to this figure the University of Rhode Island receives \$385,000 from graduate student tuition for a total, with external grants, of \$1,950,000.

The two universities employ 41 people who are professors or professional staff who conducts aquaculture related research or teaching, and there are 30 graduate students who are working in aquaculture related areas. The universities have a greater role than that of research and education though; they are also there to help business in the state acquire the knowledge and expertise required to remain competitive in the international arena of aquaculture. The two universities have served 14 business located in Rhode Island, helping these business gain the knowledge and expertise needed to compete internationally.

It is the other aquaculture related industries in Rhode Island that are the largest contributor 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. They do a gross total of \$3,100,000 in business in the state. These companies employ 23 full time and one part time employees. These companies not only serve local and regional farmers, but export to customers around the world.

## **Regulatory Agencies**

The Coastal Resources Management Council (CRMC), Department of Environmental Management (DEM) and the Department of Health (DOH) continued 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 towards streamlining the permit process. The staffs are also active in continuing to monitor the industry and are able to respond quickly to unforeseen contingencies that might arise.

Within CRMC the working group on aquaculture and fisheries continued to meet during the past year. The group saw a need to continue working on the various charting projects that have been started over the years. The University of Rhode Island Cooperative Extension Service has generously offered and supported the services of Mr. David Beutel, who is the fisheries and aquaculture extension agent. Mr. Beutel has met with representatives of a wide range of fishing

groups and solicited their input for the project. Most of the groups have responded by giving serious consideration to the project before adding their well thought out input. We all appreciate those groups that offered serious and thoughtful input and we look forward to being able to reduce conflict in siting of any type of projects in the areas that are important to their continued livelihood. The charts have already proven their worth in one instance, and prospective aquaculture applicants are encouraged to review them during the site selection process.

The charts have been combined and they show the extent of the usage of Rhode Island's waters by the fishing industry. This project has sparked interest around the state and we hope that their value will be recognized in the planning process. During the year various funding opportunities were pursued to finance the continued work on the project. For the next year continued input from municipalities will be solicited, and the process of digitizing the charts will begin.

The process of building a unified seafood industry is a new and controversial viewpoint. The genesis of this view is that these industries depend on a clean aquatic environment. In the face of rapidly escalating pressure on the aquatic environment by increased development puts pressure on the whole seafood industry, not just one sector of this important industry.

An e-mail information service was formed as an outgrowth of this working group. The people on this list receive regular, sometimes daily, articles gleaned from internet sources by the aquaculture coordinator's office. This service helps to ensure that all of the participants are up to date on issues related to the seafood industry.

The 5<sup>th</sup> Annual Rhode Island Aquaculture Conference was held this year in conjunction with the 1<sup>st</sup> Annual Southern New England Aquaculture Conference. The combined meeting was held in Newport at the Salve Regina University campus. There were sessions on education, marketing, management issues, marine culture, and freshwater culture. A panel made up of representatives of the four states invited the conference's speakers.

The conference started on a Sunday afternoon with keynote speaker Dr. Tom Losordo, North Carolina State University. Dr Losordo is the current president of the World Aquaculture Society, and has been instrumental in the development of an aquaculture industry in North Carolina. Following the keynote address there was a round table discussion between members of the audience and representatives from the four states, and Dr. Losordo. Later that evening a

reception was held where shellfish, summer flounder sushi, stuffies, and lobster bisque was served. Members of the Rhode Island Shellfishermen's Association and the Ocean State Fishermen's Association volunteered to shuck the fresh product. The next day the two concurrent sessions were held at the Pell Center.

A wide range of organizations in the four states sponsored the conference. From Rhode Island a partial list includes the RI Legislative Commission of Aquaculture; The Pell Center at Salve Regina University; The University of Rhode Island; RI Coastal Resources Management Council; Roger Williams University; RI Narragansett Bay Commission; RI Sea Grant; URI Cooperative Extension and the URI Agriculture Experiment Station. A partial list of sponsors from Massachusetts include The New England Board of Higher Education; Massachusetts Sea Grant, MIT; Massachusetts Sea Grant, WHOI; Barnstable County (Mass) Cooperative Extension; Massachusetts Department of Food & Agriculture; Western Massachusetts Center for Sustainable Aquaculture; Northeastern Massachusetts Aquaculture Center and the Southeastern Massachusetts Aquaculture Center. From Connecticut the CT Sea Grant and CT Cooperative Extension were sponsors. From New York the conference had support for the NY Sea Grant and Cornell Cooperative Extension. All of these organizations and growers in the four-state region and New Hampshire were very generous in their support of this first regional conference. All of the participants agree that this conference was a first step towards building a coalition between the four states.

## **Conclusion**

It has been an interesting year for aquaculture in Rhode Island. There was continued steady growth in the farm production of shellfish, even though there was a decline in the number of farms. This increase in production was due to the maturing of the newer farms in the state. Now that these farms have begun to reach maturity it will be interesting to see if this steady increase in production can be continued through increased efficiency. There remains hope that the shellfish hatchery, which opened last year, can sort out its internal problems and continue to contribute to the Rhode Island industry. This year the industry was totally dependent on two species of shellfish for its entire crop. It would be prudent if there could be movement towards introducing new species. Two oyster diseases, MSX and Dermo, continue to have an effect while another disease, JOD, looks like it might increase the disease related mortality. During the coming years we will be encouraging the use of alternative species for aquaculture production.

The beginning of a regional coalition of the four southern New England states is a positive

step. Its history and environment link the southern New England region. This common thread makes the joining of the region a natural progression which will further the industry in this unique area.

The aquaculture-associated industries within the State of 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.

The universities continue to be centers of excellence in the field of aquaculture. The University of Rhode Island has internationally known and respected researchers in the field. Roger Williams University continues to compliment the efforts of URI in the aquaculture arena. Both universities contribute greatly to the state's economic bottom line and to supporting a viable aquaculture industry.

The continued cooperation of the regulatory agencies to streamline the permitting process, while bringing the stakeholders into the process will help to reduce conflict and further the seafood industries goals of a continuing viable industry. The first tangible progress in this area has produced the charting project, which has already had an impact. Continued effort in this area will hopefully produce tangible products; however an intangible product of improved communication between the various sectors in this industry has already been realized.

## **Caveats**

All harvest figures for this report came from the "Annual Report of Aquaculture in Rhode Island 1999" compiled by Mr. A. Ganz at the Coastal Fisheries Laboratory of the RI DEM, Division of Fish and Wildlife. This report is produced yearly from reports supplied by the individual farmers who hold "Special Permits for Aquaculture" from RI DEM. All reports are taken at face value and no further queries are made of the farmers.

Monetary figures for this report were obtained by getting an estimated yearly average price from multiple sources and averaging them. This was then multiplied by the figures reported by growers in the yearly DEM 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.

## **Acknowledgments**

Thanks to Mr. A. Ganz, RI DEM; Mr. G. Fugate, RI-CRMC; Dr. R. Rheault, Spatco Inc.; Mr. R. Silkes, American Mussel Harvesters Inc.; Mr. B. Bowes, Coastal Aquacultural Supply; Mr. D. Bouchard, Atlantic Aquaculture Supply; Dr. T. Scott, Roger Williams University; Dr. M. Rice, University of Rhode Island, and all of the aquaculture lease holders for their help in putting this report together.



## Appendix A

R.I. DIVISION OF FISH AND WILDLIFE  
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WAKEFIELD, RI 02879  
January 2001

**ANNUAL REPORT OF**  
**AQUACULTURE**  
**IN**  
**RHODE ISLAND**  
**2000**

by  
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Summary:

Total number of permitted aquaculture facilities: 15  
Operations in production: 15  
Operations in terminated: 2  
Operations under C.R.M.C. permit review: 1

Number of permitted experimental/research/educational aquaculture facilities: 5

Number of acres leased for aquaculture: 30.25

Number of land based aquaculture facilities: 3  
Operations in production: 1  
Operations under development: 1  
Operations inactive: 1

Reported annual harvest from aquaculture:

Shellfish:

American Oysters: (Adult) 548,823 count  
American Oysters: (seed) 12,000,000 count  
Bay Quahogs: (adult) 87,897 count  
Bay Quahogs: (seed) 2,036,000 count

This amount was grown and sold by 13 aquaculturist.

Production from two culture operations have not reached market size and one reported no production

No finfish were cultured for sale in 2000.

Reported Employment:

Full-time employees 25  
Part-time seasonal 6  
Part-time year-around 4  
Volunteers 2 (does not include Students)