

**Business Plan Overview 1/1/13**

**Narragansett Bay Shellfish**

**Hatchery and Restocking Project**

**The Restoration of an Industry**

***501 (C3) Corporation***

***Prepared by Mark M Johnson***

77 Rivervue Ave.

Warwick RI 02889

(401) 391-3311

Shellfish123@outlook.com

info@narragansettbayshellfishhatchery.com

## ***Business concept and goals***

- Build and operate a state of the art, commercial size, hatchery facility for public propagation.
- Adapt existing hatchery technology and techniques to support large scale, high volume, production of shellfish seed.
- Restock commercially important shellfish species in Narragansett Bay and Rhode Island state waters to historically high levels.
- Reestablish and support up to 2,000 fulltime commercial fishing jobs that have been lost over the past 30 years.
- Work with commercial fishermen and RI DEM to help grow, support, and maintain a healthy and productive commercial fishery.
- Create employment opportunities for locally educated marine biologists
- Create education opportunities for students at local schools, colleges, and universities
- At the industry peak the 10,000 most productive acres of the bay produced \$13,200/acre. Last year the same 10,000 acres produced only \$300/acre.

## ***Timeline***

- 3 months to complete 501-C3 process
- 9 to 12 months to raise needed capital funding
- 9 to 12 months to build and equip the facility.
- Approximately 3 years to grow from hatch to harvestable size for most shellfish in the northeast, harvest will start in the fourth year.
- After 10 years of production and 7 years of harvesting the target numbers for jobs, biomass density, and harvest production should be realized.

Replanting of harvest areas will be a continuous process in order to replace the product being harvested and rebuild stocks of shellfish to increase natural reproduction.

## ***Impacts***

### ***Economic***

- This project will have the capacity to add between 500 million and 1 billion dollars of related economic impact to the state's economy.
- The economic multiplier is approximately 4.25 X the ex-vessel value (Appendix Rhode Island Commercial Fishing and Seafood Industries The development of an industry profile Chapter 3 Table 3.1)
- 2009 seafood imports made up 84% of the total US consumption of seafood, up from 68% in 2000. (section 3.6)
- In 2010, Rhode Island produced less than 1% of the national total harvest of quahogs, oysters, bay scallops and sea scallops (Appendix ACCSP report)

### ***Environmental***

- Shellfish are filter feeders and at high density, efficiently clean waters of nitrogen and other pollutants from sewage treatment plants. The dollar value of nitrogen removal by shellfish can be as high as \$650,000/year. (Appendix Pacific Shellfish Institute)
- Oyster beds provide habitat for other commercially important species

### ***Employment***

- At the peak of the shellfish industry in RI, there were over 2,000 fulltime shell fishermen.
- There are now less than 100 left but there are over 300 active licenses.
- 250 workers ready to work if enough product is available. Example: Greenwich Bay
- The basic industry infrastructure already exists but as production increases more dealers will be needed.
- RI shellfish dealers have an established market both local and nationwide.
- Project will demonstrate how aquaculture can benefit fishermen and the environment without infringing on fishermen's rights or public access.
- Taking advantage of the best of both worlds, aquaculture will provide the means to repopulate depleted resources and fishermen will do what they do best. It will bridge the gap between research/restoration projects and the commercial fisheries.
- Traditional restoration/research projects are too small and too short in duration to have an effect on the commercial fishing industry.

- Restoration projects fail to address a proper baseline when planning and executing their efforts
- Private aquaculture leases are not an efficient means of job creation (Example: CT)
- RI has a reputation for producing the highest quality shellfish

## **Description of the Facility and Process**

The facility will be comprised of a greenhouse covering one acre. In this building will be large fiberglass tanks for growing six different types of phytoplankton to be used as food for the shellfish. The tanks will be arranged into six groups, each group for a different type of phytoplankton. Each group of tanks will be connected in a continuous flow through growing system designed to produce a non-stop flow of food.

The second building will be a steel building, covering one acre that will house twelve swimming pool style tanks, a large room for holding, conditioning, and spawning the shellfish, also a lab and office space.

Breeder size shellfish will be held in tanks with refrigerated water until they are ready to spawn. They will be moved to spawning tanks where the water will be warmed to induce spawning and then returned to the holding tanks. The spawn will be held in these tanks until they set, forming a shell. This seed will be transferred to the tanks, placed on trays filled with sand and fed a mix of phytoplankton until they reach the proper size to be transplanted to shellfish beds in the bay.

The entire facility will be heated by a series of solar panels on the roof of the steel building. This will provide a controlled environment for year round maximum production.

Quahogs can produce between 2 and 30 million spat each time they spawn. This facility will have the capacity to produce enough phytoplankton to feed 50 billion seed of various sizes in a continuous process.

Quahogs will be the first product generated as they are the most disease resistant and reproduce well in a natural environment. Oysters will be next. Development of disease resistant oysters will be a top priority. Next will be sea scallops for their high market value. Bay scallops and soft shell clams may also be considered.

## ***Location Options***

- Property at Rocky Point in Warwick has recently been purchased by The State of Rhode Island and offers a superior venue due to both the quality of the water and the accessibility to shellfish beds.

## ***Funding***

We will be seeking donations to fund the building of the facility and the first 5-6 years of operations. Donations from corporations and organizations initially and matching funds from government agencies and foundations to follow. Grants are available for the green energy sector of the facility.

Other funding will need to be established to ensure the long term viability of this project. Alternative funding options would include license fees collected from commercial fishermen and/or a percentage of the dollar value of the catch.

When production levels reach at least 1 billion pieces per year (in the 5<sup>th</sup> year) a harvest fee of 1/10<sup>th</sup> of a cent per piece or its equivalent will be phased in and private funds will be phased out. As production levels rise the harvest fee can be adjusted accordingly. Ultimately this facility will be funded fully by the fishermen that benefit from it.

## ***Grant Opportunities***

National science foundation  
NOAA Sea Grant  
Army Corps of Engineers  
US Environmental Protection Agency  
US Fish and Wildlife Service  
US Energy Department Solar  
Nature Conservancy  
National Fish and Wildlife Foundation  
Woods Hole Sea Grant

## ***Research Appendices***

### ***National Ocean Council***

Regional ecosystem protection and restoration plan  
Sustainable practices

### ***Need to establish historically correct baseline***

Shifting baselines Daniel Pauly

## ***Permit Application Documents***

Quonset Application  
CRMC Lease application  
DEM RIPDES Discharge permit application Hope hatchery doc

## ***Letters of Endorsement***

RI Shell Fisherman's Association  
RI DEM

## ***Research Technical Data***

Technical Data  
PVC Flow Charts  
Shellfish feed

## ***Greenhouse Plans***

## ***RI's Restoration efforts and costs***

North Cape  
CRMC 2010 restoration  
CRMC 2011 Restoration  
URI Whitehouse

## ***RI's Production and Trends***

RI profile doc  
RI's 2007 Stock report  
RI's 2011 Management plan  
RI's 2012 Management plan  
Landings by state and species  
ACCSP

## ***RI's Private Aquaculture Efforts and Costs***

CRMC RI Aquaculture 2009 Status Report

## ***Other States Aquaculture Efforts, Costs, and Results***

Chesapeake Bay  
Connecticut  
Delaware  
Florida Bio Economics Indian River  
Martha's Vineyard  
New York  
Washington State  
Scallop Restocking  
Louisiana Grande Isle  
Maryland 750mil spat  
Maryland oyster restoration  
Mass (\$4,640,250 Quahogs 2010 ACCSP)  
Maine (\$1,698,928 Quahog 2010 ACCSP)  
Virginia (\$23,138,852 Quahog 2010 ACCSP)  
Virginia 2010 oysters

Virginia aqua clams  
 Hard clam hatchery southern region US  
 NMFS Bay Scallop Objectives

General Contractor	\$ 100,000.00
Surveyor	\$ 20,000.00
Engineer	\$ 100,000.00
Excavation	\$ 150,000.00
Foundation	\$ 350,000.00
Greenhouse	\$ 700,000.00
Building	\$ 300,000.00
Waterproofing	\$ 150,000.00
Plumbing & Heating	\$ 50,000.00
Electrical	\$ 50,000.00
Parking Lot	\$ 100,000.00
Wells	\$ 20,000.00
Solar	\$ 300,000.00
Fence	\$ 30,000.00
Sign	\$ 4,000.00
<b>Sub-Total</b>	<b>\$2,424,000.00</b>
Refrigeration	\$ 50,000.00
Backup Generator	\$ 10,000.00
Boat	\$ 100,000.00
Tractor & Trailer	\$ 15,000.00
Tanks	\$1,100,000.00
Cistern	\$ 1,000.00
Microscopes	\$ 2,000.00
Computer	\$ 5,000.00
Air Compressors	\$ 10,000.00
Racks	\$ 75,000.00
Trays	\$ 60,000.00
<b>Sub-Total</b>	<b>\$ 1,428,000.00</b>
<b>Total Setup Cost</b>	<b>\$3,880,000.00</b>
Land Lease	\$ 4,000.00
Permits	
Accounting	\$ 1,000.00
Lawyer	\$ 1,000.00
Electricity	\$ 5,000.00
Salaries	\$ 60,000.00
Health Insurance	\$ 10,000.00
Building Insurance	\$ 5,000.00
Fuel	\$ 500.00
Maintenance	\$ 1,000.00
Internet	\$ 100.00
<b>Monthly Costs</b>	<b>\$ 87,600.00</b>

<b>Yearly Costs</b>	<b>\$1,051,200.00</b>
---------------------	-----------------------

### **Owner Mark M Johnson**

A commercial fisherman for 40 years with a working knowledge of construction, electrical, plumbing and refrigeration. A small business owner with hands on experience running day to day operations.

A unique and well informed view and perspective of fisheries, aquaculture, and fisheries management.

### **CEO Anthony P Della Selva**

Manager Konica Minolta For 19 years. Responsible for day to day operations, human resources. Superior business and personnel skills. Will be responsible for recruiting, interviewing, and hiring all employees. Scheduling workers, developing maintenance programs, payroll, accounts payable , public relations.

### **Accountant**

Sullivan & Co. CPA's

Michael Hanna Principal

Pelletier & Mirza,-Attorneys at Law

R Andrew Pelletier-Attorney

### **Personnel to be hired at a later date**

Marine biologists; shellfish specialists and phytoplankton specialists to be in charge of production.

lab assistants full-time

part-time employees

### **Board of Advisors**

RI Shell Fishermen's Association Board Member

Mike McGivney

Head of RISA upweller and seed program

Owen Kelly

RI DEM

Shellfish Dealer

Bob Goodman

### **Environmental Advocate**

### **Academic Advocate**

### **Grant Writers**

Gail Lambert PHD

Jessica Lambert



