



THE STATE  
of **ALASKA**  
GOVERNOR SEAN PARNELL

**Department of Commerce, Community,  
and Economic Development**

DIVISION OF ECONOMIC DEVELOPMENT

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Dear Alaska Mariculture Participants:

The Alaska shellfish mariculture industry remains an exciting economic prospect for Alaska as it continues to draw attention from leaders across the state. The Division of Economic Development shares in this interest and in the belief that greater success awaits this industry.

In 2012, the division received legislative approval to create the shellfish mariculture loan program. Immediately thereafter, strong interest was shown to open the loan program to seed production. Other stakeholders continue to work on incremental improvements to the industry. It is clear much more needs to be done.

From the division's perspective, establishing a formal initiative focused on the shellfish mariculture industry is a method of directing efforts and funds to expedite the development of this industry. The division has prepared a Draft Alaska Mariculture Development Prospectus as a means to generate discussion and ideas among mariculture stakeholders with the goal of creating a unified approach to move the industry forward. The prospectus recognizes the potential of the industry while highlighting areas of needed development. The document is intended to provoke response and does not reflect a formal state position.

Please take the time to review the prospectus and provide your feedback. If it appears there is a strong desire on behalf of individuals to carry this concept through to a formal working proposal, the division will arrange a series of meetings in the fall to facilitate plan development.

With summer upon us, we intend to send this prospectus out in the early fall for another round of input. Shortly thereafter we will determine if there is support for greater plan development and lay out a schedule of outreach meetings.

Glenn Haight, Development Manager, is collecting responses. Please call or email him at 907-465-6144 or [glenn.haight@alaska.gov](mailto:glenn.haight@alaska.gov) with your input. We also appreciate you forwarding this communication on to others who may be interested.

Sincerely,

A handwritten signature in blue ink that reads "Lorene Palmer".

Lorene Palmer  
Director

# Draft **Alaska Mariculture Development Prospectus**

## **OPPORTUNITY**

According to the [OceansAlaska report](#), *Tipping the Balance. Bringing Alaska's Shellfish Industry to the Takeoff Point*, Alaska's shellfish mariculture industry holds great economic potential. While the current annual gross revenues (also referred to as farm gate) of Alaska's shellfish farms is less than \$1 million, *Tipping the Balance* projects growth may exceed \$20 million or more.

Comparative success stories are abundant including shellfish farm industries in Puget Sound at \$117 million (2009) and New Zealand at \$147 million (US dollars - 2009). The New Zealand Greenlip mussel industry grew five times after industry constraints were removed. The Japanese scallop industry persevered for four decades before experiencing significant growth, going from 10,000 tons in the early 1960's to 400,000 tons and \$400 million today.

## **Untapped Potential**

Alaska's potential in shellfish farming may be even greater in the long-term due to its extensive natural coastline and abundant marine resources. The upside of a vibrant sustainable mariculture industry is one that could generate \$20 million in revenues and serve as an economic engine for coastal communities.

## **Ideal Location**

Alaska's remote coastal areas and pristine waters make it an ideal place to farm marine shellfish. Farms are located mainly along the vast coastline of the Southeast and Southcentral regions.

Most of Alaska's long coastline is undeveloped and sparsely populated. State law and regulation provides for aquatic farming in most areas. With fewer competing regional interests, less pollutants, and an improving regulatory environment, shellfish farming in Alaska is more practical than other regions of North America.

With finfish farming prohibited, Pacific oysters, littleneck clams, and mussels make up the majority of Alaska's aquatic farm products. Geoducks are anticipated to become a major future contributor to coastal economies as farms solve husbandry hurdles and come into production.

## **Product Demand**

Global demand for seafood is increasing. World harvest of wild seafood has remained stable between 85 and 95 million tons since the mid-80s. Over that same time, aquaculture production increased from 12 million tons to today's production of 79 million tons. In the last decade, aquaculture production increased between 5 to 8 percent annually. (FAO)

Even the global recession in 2008 and 2009 could not slow aquaculture production. With a rapidly growing global population, economic growth, especially in large countries like China and India, is driving demand. China is a major growth opportunity for live Alaska geoducks in the future.

The United States market for shellfish remains an attractive target. Shellfish products, in particular oysters, represent a high-end niche opportunity if carefully marketed. The Alaska oyster is known for its premium meat due to the colder growing environment.

## **Greater Revenues and Jobs**

A recent shellfish farm optimization study by the University of Alaska determined an Alaska oyster farm could generate a positive economic return by expanding the farm footprint to ten acres and making operational improvements. Table 1 projects current and potential farm scenarios at current levels versus optimal levels. In shifting a farm size to 10 acres (as opposed to a current estimate of 4.6 acres) and achieving other levels of optimization, the projected gross revenues would approach \$250,000 per farm. This compares to the current average gross revenues of \$18,000 per farm. If the current 28 producing farms could achieve this optimization, the gross revenues would exceed \$7 million. The study projected a total of three jobs for each farm. This would increase the number of jobs to 84.

It should be noted the analysis was just for oyster farms (using older growing techniques) and did not consider the potential of geoduck farms. Geoducks in the Alaska dive fishery fetch harvesters \$10.43/lb (2011), compared to the \$5.70 per dozen earned by Southeast farms earned for oysters.



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## Currently Declining Industry

Although there is significant potential for the industry, the most recent data indicates the total farm gross revenues fell from a high in 2005 of \$619,000 to \$510,978 in 2012. This decline in value occurred while global aquaculture sustained positive growth, and despite significant state investment into the industry. By comparison, even the struggling

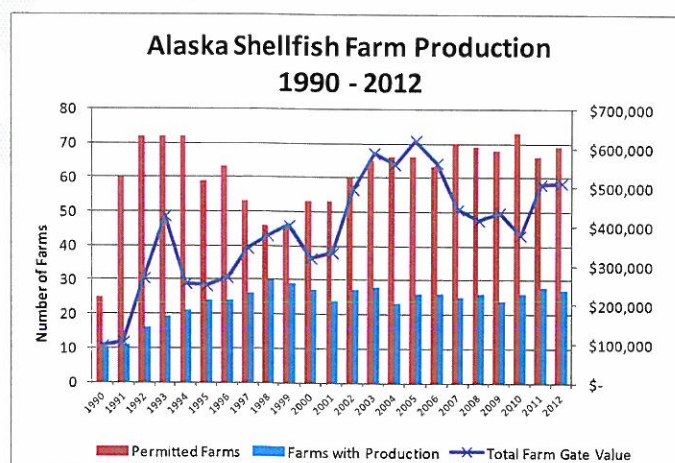
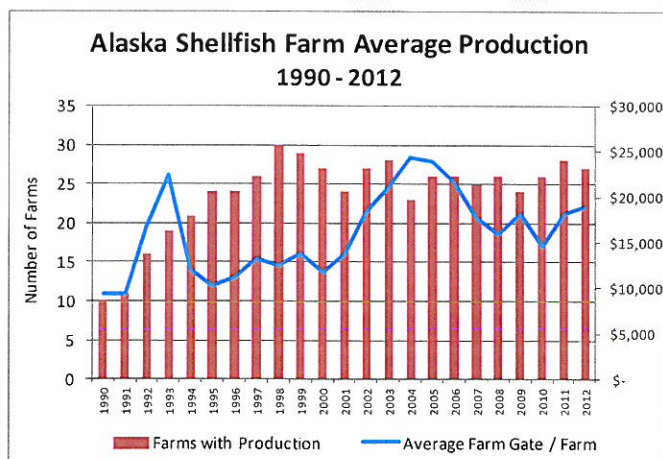
Southeast shrimp fisheries makes 6 to 10 times the value sustained by the mariculture industry and receives only modest management service.

The number of farms in production remains flat. Farm production values are in decline. At \$19,000 in gross revenues per farm, it is very hard to achieve profitability while operating in Alaska's remote, high-cost environment.

**Table 1. Farm Scenario Values and Employment Based on Optimal Farm Conditions**

Farm Scenario	Producing Farms	Acres	Gross Sales	Jobs
<b>With Current Farm Size (4.6 acres)</b>				
Current production	28	129	\$507,515	28
Current production w/ 100 farms	100	461	\$1,812,555	100
<b>With Farm Size (10 acres)</b>				
Current farms at optimal farm conditions	28	280	\$7,000,000	84
100 farms at optimal farm conditions	100	1,000	\$25,000,000	300

Data source: Current farm data is from the Department of Fish and Game. Optimization numbers are sourced from a study by Dr. Quentin Fong, et al, University of Alaska Fairbanks, Sea Grant Marine Advisory Program, 2009.



## **STEPS TO INDUSTRY ADVANCEMENT**

The Division of Economic Development identified six long term structural improvements needed to advance the industry. In support of executing these broad areas, the Division envisions the development of a Mariculture Advisory Board comprised of farmers and industry advocates that will make recommendations for industry improvements.

1. Regulatory Review and Revision
2. Financing Improvements
3. Training Programs
4. Research Programs
5. Infrastructure Plan
6. Marketing Program

### **Regulatory Review and Revision**

#### **Goal**

Support a regulatory framework to increase aquatic farm production through a permitting process for larger and higher density aquatic farms.

#### **Background**

The regulatory system is headed by sections within three state agencies - ADF&G, DEC, and DNR. Several other agencies impact shellfish farms. The following are some of the more commonly cited areas in the regulatory system that impact shellfish farm development.

- Site selection – Farmers submit farm site applications to ADF&G and DNR. Determining where to locate a shellfish farm is among the biggest regulatory burdens. Pre-determined areas for mariculture development would take significant guess work out of establishing a farm operation.
- Water quality testing - Farmers are required to test and report water quality to DEC to assure the grow out environment is free of harmful bacteria and pathogens. The cost is high and effort detailed.
- Water classifications - Water classification is FDA required (national shellfish sanitation program) and often paid for by other states. DEC administers this program which requires costs from the farmers.
- Paralytic shellfish poison (PSP) testing - PSP testing laws through the US Food and Drug Administration (FDA), as implemented through DEC, remains a time consuming component of farm production.
- Seed importation rules - ADF&G employs a strict seed importation ban on all shellfish except oysters. This restricts production growth.

- Upland support - Opening suitable farm locations with available and favorable terms on upland leases for support facilities would help. This involves coordination with DNR and other federal landowners such as US Forest Service.

#### **Task**

- Agencies will work with the Mariculture Advisory Board to conduct periodic independent reviews of regulations and make recommendations to the Executive and Legislative branches.
- Agencies are funded and authorized to conduct pre-screening for development zones.
- Agencies are funded to perform peer reviewed research that improves the science used to develop regulations.
- Consider establishing approved testing labs closer to farm sites.
- Support greater agency outreach to communities to provide workshops on the permit and regulatory system.

### **Financing Improvement**

#### **Goal**

Assist shellfish growers in obtaining long term low interest loan financing for start-up and expansion of aquatic farm operations, and develop loan support for shellfish hatchery production in regional areas.

#### **Background**

The business climate for Alaska mariculture must improve to attract private resources and investment capital in a significant manner. Financing that meets the grow out needs of shellfish farmers is a critical component of supporting the industry.

The 2012 Legislature authorized the Division of Economic Development to create a shellfish mariculture loan program. It is designed to assist the farmers with equipment and working capital costs. To take advantage of this new financing opportunity, new farmers would benefit from basic training in financial and debt management.

The availability of local seed stock continues to be a problem, particularly in light of seed shortage throughout the Pacific Northwest. More hatchery production will improve this situation. A shellfish hatchery loan program made available to propagate shell

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stock and seeds sources would assist in the development of this vital asset.

## **Task**

- Incorporate financial management training into the training effort discussed in this prospectus.
- Consider a loan program to assist in establishing and operating shellfish mariculture hatcheries.

## **Training Program**

### **Goal**

Through collaborative efforts of stakeholders, government, and non-profit entities, provide education, technical training, and outreach to mariculture owners, entrepreneurs, and employees.

### **Background**

Mariculture skills are gained through years of working an aquatic farm, combining marine technology with animal husbandry and business management.

As an emerging industry there are very few “apprenticeship” opportunities. Government sponsored training programs addressing fundamental business management skills and technical education required to perform the harvesting, marketing, and regulatory functions are essential to help achieve economic goals.

Currently, efforts aimed at training and workforce development must converge to achieve education goals.

### **Task**

- Upon advice of the Mariculture Advisory Board, appropriate service providers will create a mariculture workforce development program. The program will run steady funding through a rigorous granting agency to assure streamline training efforts.

## **Research Programs**

### **Goal**

Establish a sustainable research program to address technical problems in resource management, new species development, state of the art aquatic farm production methods, and market research.

### **Background**

The Alaska shellfish industry currently has more research questions than answers. Research falls into two categories – science/management, and production technology. Research activity must include a

combination of technology transfer from other regions and original research to solve Alaska-based problems. A sample of research topics includes: site selection research, impacts on wild stocks, protocols for species grow out, new species research, seed supply, farming practices, processing technology, and market research.

### **Task**

- The Mariculture Advisory Board will advise on apportioning research dollars to scientists, industry, and developers.

## **Infrastructure Plan**

### **Goal**

Develop an infrastructure plan for Alaska’s mariculture industry to increase aquatic farm density and regional shellfish production.

### **Background**

Growth of the mariculture industry is constrained by poor infrastructure in key locations. Infrastructure in this plan refers to a mix of public assets (roads, docks, airports), and private non-profit or quasi-public assets (hatcheries, FLUPSYs).

### **Task**

- Agencies and growers will prepare a periodic infrastructure priority plan for farm development.
- Work would be coordinated through the Mariculture Advisory Board, DED and Alaska Regional Development Organizations with participation from state and federal agencies, industry and communities.

## **Marketing Program**

### **Goal**

As new and more efficient aquatic farms are established, strategic marketing efforts undertaken by the growers will boost production and prices paid to the growers.

### **Background**

Currently demand exceeds supply for Alaska shellfish farmers. However, as growing production leads to an increase in supply, higher value markets needing exploration will require focused marketing efforts including research data to support these efforts.

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## **Task**

- Engage in market research to determine potential new markets and/or species (through the Research Program).
- Consider branding program.
- Provide marketing training for farmers and processors.
- Promote the discussion of marketing cooperatives as a means to increase value.

## **What Next?**

There are a number of development steps that could improve the business environment for shellfish mariculture.

### **Next steps**

- Promote this draft mariculture prospectus with a wide working group of farmers, industry advocates, regulatory bodies, and researchers.
- Refine the document based on input.
- Determine suitability for eventual legislative action.