~ Interim Final ~

10-Year Plan *for the* NOAA Aquaculture Program

~ November 2006 ~

~ Interim Final ~

10-Year Plan *for the* NOAA Aquaculture Program

~~~~~~

You may download an electronic version of this report from:
http://www.aquaculture.noaa.gov

This document should be cited as follows:
Interim Final 10-Year Plan for the NOAA Aquaculture Program, November 2006

For more information:
NOAA Aquaculture Program Office
Phone ~ (301) 713-9079
E-mail ~ NOAA.Aquaculture@noaa.gov

To submit comments on this plan through November 30, 2006:
Electronic comments should be submitted to NOAA.Aquaculture@noaa.gov.
Written comments should be directed to the NOAA Aquaculture Program,
1315 East-West Highway, Rm. 13117, Silver Spring, MD 20910;
or by fax at (301) 713-9108.
~~~~~~

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

November 1, 2006

I am pleased to present for public comment the interim final version of our *10-Year Plan for the NOAA Aquaculture Program*. The Plan addresses NOAA's involvement in marine aquaculture in the United States over the next decade, including program goals and strategies, budget and staffing requirements, outcomes, benefits, and challenges.

By way of background, this Plan was prepared by NOAA at the request of the agency's Marine Fisheries Advisory Committee (MAFAC), which advises the Secretary of Commerce on all living marine resource matters that are the responsibility of the Department of Commerce. At its July 25–27, 2006, meeting, MAFAC reviewed the Plan and recommended that it be formally adopted by NOAA. Before taking that step, NOAA is providing the public an opportunity to comment on the Plan.

Comments must be sent to the NOAA Aquaculture Program by November 30, 2006, to ensure consideration. Comments submitted after that date will be considered to the extent possible. You may submit comments in one of three ways:

- **E-mail:** NOAA.Aquaculture@noaa.gov.
- **Mail:** NOAA Aquaculture Program, 1315 East-West Highway, Rm. 13117, Silver Spring, MD 20910.
- **Fax:** (301) 713-9108.

As reflected in this Plan and in the program's other ongoing activities, NOAA is fully committed to seeing the aquaculture industry develop in a predictable, environmentally compatible, and sustainable manner as a complement to the nation's wild harvest, while ensuring the protection of the marine environment, other uses of marine resources, and human health and safety.

Thank you in advance for your interest in the NOAA Aquaculture Program and our plans for the program through 2017. I look forward to working with you to develop a robust program for marine aquaculture that will lead to tangible benefits for the nation.

Regards,

Michael Rubino

Michael Rubino, Ph.D.
Manager, NOAA Aquaculture Program

Congress needs to move forward with
my administration's plan to build
a well-managed system of offshore aquaculture ...
And when we get this right,
these farmed fish can provide a healthy source of food
and reduce pressure on the ocean ecosystems.

~ President George W. Bush, June 15, 2006

Table of Contents

Overview

In response to a request from the Marine Fisheries Advisory Committee (MAFAC), the NOAA Aquaculture Program drafted this *10-Year Plan for the NOAA Aquaculture Program,* which frames our plans for future marine aquaculture development in the United States. The plan was reviewed and endorsed by MAFAC at its July 2006 meeting and is now being made available for public review and comment through November 30, 2006. The plan builds a case for a broad, national marine aquaculture development initiative based on four distinct goals. These 10-year goals were developed by the NOAA Aquaculture Program based on the agency's long involvement in marine aquaculture as well as recent legislative, policy, and planning guidance for aquaculture development.

The goals are as follows:

1. Establish a comprehensive regulatory program for marine aquaculture.

2. Develop appropriate technologies to support commercial marine aquaculture and enhancement of wild stocks.

3. Improve public understanding of marine aquaculture.

4. Influence the development and international adoption of sustainable practices and standards for marine aquaculture.

The plan also provides a realistic assessment of the challenges NOAA will face in its implementation of the plan, such as the need for congressional and Executive Branch actions to provide additional legislative and budget support.

I. Background

Momentum is building for the United States to become more self-sufficient in the production of seafood from aquaculture. Recognizing this, in June 2005 the Marine Fisheries Advisory Committee (MAFAC) requested that the National Oceanic and Atmospheric Administration (NOAA) prepare a plan to support the future development of marine aquaculture in the United States.

Based on its initial discussion of an "Aquaculture Development Initiative" in June 2005, MAFAC viewed a strong, forward looking plan from NOAA as the basis for a broad national marine aquaculture development initiative. However, in order to provide specific recommendations to the agency with regard to the development of marine aquaculture, the committee required more information from the NOAA Aquaculture Program. So, in its request for a plan, MAFAC asked the program to detail the approach it would take over the next decade to fully support the development of marine aquaculture

MAFAC's request for this plan was timely. The national profile of aquaculture was raised significantly by recent milestone events that have highlighted the need for greater attention to the development of marine aquaculture in the United States. These events include the delivery of the U.S. Commission on Ocean Policy's final report and recommendations to Congress in September 2004, the release of the President's U.S. Ocean Action Plan in December 2004 and the Senate introduction of the Administration's *National Offshore Aquaculture Act of 2005* (S. 1195) in June, 2005. This Act would establish a coordinated federal regulatory framework for offshore aquaculture in the United States. Since its introduction, the Senate Commerce Committee National Ocean Policy Study Subcommittee conducted two hearings on S.1195 in 2006. Although it is unlikely that Congress will take final action on S.1195 this year, it is anticipated that offshore aquaculture legislation will be addressed again during the next session of Congress.

Although much of the media coverage of aquaculture this past year has focused on offshore aquaculture, NOAA's broad aquaculture responsibilities also include regulatory review of permits for coastal aquaculture and research and development for all forms of marine aquaculture (e.g., shellfish farming, algae culture, feeds, hatchery techniques, closed recirculating systems, and biomedical products). NOAA's program also includes the use of stock enhancement for habitat and endangered species restoration and replenishment of commercial and recreational fisheries.

In light of the renewed national debate on the future of marine aquaculture, it is important to note that NOAA and its predecessor agencies have been involved with commercial culture and stock enhancement of finfish and shellfish since the late 1800s.

In the late 1960s, NOAA's research and development work on salmon provided the basis for the development of aquaculture industries in the United States, as well as in Chile, Norway, and the United Kingdom. For decades, other NOAA-led research (e.g., on finfish and shellfish biology and reproduction, habitat utilization and restoration, environmental impact assessment, and fish pathology) has supported private and government aquaculture, including marine stock enhancement activities. Much of the scientific information developed by NOAA has been used in the commercial aquaculture, commercial fishing, and recreational fishing sectors, where it has been instrumental in the development of shellfish and shrimp hatcheries and culture operations, in addition to cultured salmon and salmon stock enhancement operations, throughout the world.

Complementing NOAA's expertise in marine aquaculture and related science is a set of legislative and policy drivers empowering NOAA to move forward with marine aquaculture development, regulation, science, and education. Beginning in the 1970s, several laws were enacted that gave NOAA comprehensive environmental stewardship responsibilities for marine resources, including the Magnuson-Stevens Fishery Conservation and Management Act, Marine Mammal Protection Act, Endangered Species Act, Coastal Zone Management Act, and National Environmental Policy Act. Under these laws, NOAA is responsible for considering the potential environmental impacts of planned marine aquaculture facilities on its trust resources through formal permit reviews and consultations. In addition the National Aquaculture Act of 1980, National Sea Grant College Program Act, and the Saltonstall-Kennedy Act (as amended) gave NOAA authority to provide assistance for both public- and private-sector aquaculture.

In the 1990s , rising demand for seafood, declining market share of domestically wild-caught fish, and increasing imports led to renewed interest in the potential of marine and freshwater aquaculture. In response to increased demand for and a growing trade deficit in seafood, NOAA and the Department of Commerce (DOC) developed aquaculture policies, which were adopted in 1998 and 1999, respectively. Descriptions of these authorities and policies are provided in Appendix 1.

In 2004, the U.S. Commission on Ocean Policy's final report to Congress and the Administration's *U.S Ocean Action Plan* recommended that new authority be given to the Secretary of Commerce to develop offshore aquaculture. In June 2005, the Administration transmitted to Congress the National Offshore Aquaculture Act of 2005. To date this legislation has been the focus of two Senate hearings.

NOAA's renewed interest in aquaculture is also reflected in recent internal initiatives. In 2003, aquaculture was designated as a NOAA matrix program under the agency's Planning, Programming, Budgeting, and Execution System (PPBES). In 2004, a NOAA Aquaculture Program Office was established and a permanent, full-time NOAA Aquaculture Program Manager was hired. Current program staff includes policy, strategic planning, science, and outreach expertise.

II. Setting the Stage for Aquaculture Development

A compelling case can be made for developing the domestic marine aquaculture industry in the United States to meet the growing demand for seafood. The following facts are integral to any discussion of the future of aquaculture in the United States:

- Americans consumed 16.6 pounds of seafood per person in 2005, up from 16.3 pounds per person in 2004.
- Nutritionists are encouraging Americans to double our consumption of seafood, from one seafood meal per week to two.
- Of the 6 million metric tons of seafood consumed in the United States each year, 1.5 million is provided by domestic commercial fisheries and 0.5 million is provided by domestic aquaculture.
- The U.S. aquaculture industry currently produces about 500,000 metric tons of seafood per year, with a farm-gate value of $1 billion.
- To meet current demand, each year the United States imports almost 70 percent of its seafood, or 4 million metric tons—about half of which is from aquaculture.
- The current U.S. seafood trade deficit is almost $8 billion.

With these facts in mind, the NOAA Aquaculture Program has begun to consider future prospects for increasing marine aquaculture production in the United States for seafood (while also recognizing other potential non-food uses for marine aquaculture products). For example, a preliminary analysis by NOAA staff shows that it would be possible to increase domestic aquaculture production (freshwater and marine) by 1 million metric tons per year by 2025 (Table 1). The additional production could include 760,000 tons from finfish aquaculture, 47,000 tons from crustacean production, and 245,000 tons from mollusk production. Of the 760,000 tons of finfish aquaculture, 590,000 tons could come from marine finfish aquaculture.

The figures used in this analysis reflect projections based on best available data, current technology, market demand, access to sites, and the advice of agency experts. ***These figures are not specific agency targets for production of seafood from aquaculture.***

Group	Sub-group	Current U.S. Production	Increase	Target for 2025
Mollusks	All	100,000	**245,000**	**345,000**
Crustaceans	All	18,000	47,000	65,000
	Crayfish	14,000	35,000	49,000
	Shrimp and Prawns	5,000	11,000	16,000
Fish	All	340,000	760,000	1,100,000
	Freshwater	315,000	70,000	385,000
	Anadromous	25,000	100,000	125,000
	Saltwater	**< 1,000**	**590,000**	**590,000**
TOTALS		**458,000**	**1,052,000**	**1,510,000**

Table 1. Production plan to show how U.S. aquaculture could produce an additional 1 million metric tons of various products by 2025.
Source: C.E. Nash, published in Food Policy 29 (2004) 621-641.

However, many challenges for increasing marine aquaculture production in the United States must be addressed. These challenges include:

- A complicated, inefficient, and uncertain federal regulatory process to permit marine aquaculture facilities.
- Need for additional research on environmental implications and ecosystem carrying capacity of marine aquaculture.
- Lack of an adequate supporting research and development infrastructure and technical infrastructure.
- Inadequate public understanding about the environmental and social implications of marine aquaculture.
- Lack of access to coastal sites for marine aquaculture facilities because of competing high-value uses for housing and tourism.

"I am convinced that the United States must explore the potential of offshore aquaculture to help meet the growing demand for seafood in this country and to create jobs and economic opportunity for coastal communities. To support that, we are making the National Offshore Aquaculture Act of 2005 a priority for this department and this country. We need to create this opportunity now."

~ U.S. Secretary of Commerce Carlos Gutierrez, February 2006

III. Program Goals and Strategies

During the past year, NOAA's Aquaculture Program team reevaluated program goals and strategies, using legislative mandates and NOAA policies and history as a starting point. In addition, the team met with a wide variety of stakeholders and federal and state agencies to gather their input concerning the type of marine aquaculture program NOAA should pursue.

The following principal agency responsibilities and services emerged from the mandates and stakeholder consultations:

- Clear regulatory rules are needed for marine aquaculture production. Industry is seeking license to operate with regulatory certainty for 10 or more years so as to earn a return on investment. These rules need to enable aquaculture production, safeguard environmental resources, and balance multiple uses. The myriad overlapping government regulations for coastal aquaculture must be coordinated and simplified, and a framework for aquaculture in federal waters needs to be established, while maintaining all applicable environmental safeguards.

- Research and development partnerships and financial incentives are needed to support commercial aquaculture and stock enhancement production.

- As the nation's oceans and fisheries agency, NOAA needs to provide accurate and up-to-date scientific information related to marine aquaculture.

- NOAA must be engaged in international aquaculture developments. Most of the seafood consumed in the United States is imported, ocean resource management is transnational, U.S. commercial interests participate in a global seafood industry, and aquaculture research exchanges are important to U.S. aquaculture production. In addition, as one of the largest markets for aquaculture-produced seafood, the United States should set a global example for the use of sustainable aquaculture practices and encourage their adoption by other countries.

These issues, responsibilities, and services are restated below as Aquaculture Program goals, along with specific strategies or actions for accomplishing each goal.

~ Goal 1 ~
Establish a comprehensive regulatory program for the conduct of marine aquaculture operations.

- **Regulations under Existing Laws** ~ Develop policies, guidelines, and protocols for use in the review of proposed marine aquaculture facilities by NOAA regional and program offices under current NOAA mandates. The purpose of these reviews is to assess the impacts of aquaculture facilities and operations on fishery resources, marine habitat (including essential fish habitat), endangered and threatened species, marine mammals, coral reefs, coastal communities, and marine sanctuaries and, where appropriate, recommend mitigation measures or permit conditions. These review aids will be developed by a working group with representation from several NOAA programs and offices and will be based in part on information gathered from the scientific literature, industry management practices, public consultations, and other sources.

- **Regulations in Federal Waters** ~ Secure passage of the National Offshore Aquaculture Act of 2005 and promulgate implementing regulations for a streamlined permitting process. A programmatic environmental impact statement (EIS), regional mapping exercises to identify suitable and acceptable sites for offshore aquaculture, and public consultations will be required as part of the regulatory design process.

- **Federal Regulatory Coordination** ~ Work with the Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (Corps), and other federal, regional, and state agencies to coordinate these reviews to make them more timely, effective, and specific. Examples are national or regional general permits under consideration by the Corps for shellfish farming, and mapping/zoning work to steer permit applicants to partially pre-permitted areas.

- **Office of Aquaculture** ~ Formally establish a NMFS headquarters Office of Aquaculture and aquaculture coordinator positions within NMFS regional offices to administer regulatory functions, coordinate NOAA aquaculture-related activities, and provide liaison with stakeholders.

- **Science Capability** ~ Build and maintain a sufficient in-house science capability in NMFS and in the NOAA Ocean Service (NOS) and an external research capability through the Office of Atmospheric and Ocean Research (OAR) National Sea Grant Program to fulfill NOAA's regulatory and public policy missions for both commercial aquaculture and marine stock enhancement. This will require the expansion of NMFS, OAR, and NOS science capability to address key regulatory issues (e.g., determining acceptable management practices for species and site selection, aquatic animal health, and seafood safety; assessing and monitoring potential environmental impacts of marine aquaculture facilities on habitat, marine life interactions, and disease transfer; and conducting research on marine aquaculture feeds to reduce reliance on wild fish). Additional research needs to be conducted to improve the effectiveness of stock enhancement programs for wild fish stocks and threatened and endangered marine species.

- **Animal Health and Research Plans** ~ Complete and implement the *National Aquatic Animal Health Plan* and a national aquaculture research plan in cooperation with the Joint Subcommittee on Aquaculture.

- **Cross-Program Initiatives within NOAA** ~ Work with the other programs in the NOAA Ecosystem Goal Team and stakeholders to implement cross-program initiatives important to managing an expansion of marine aquaculture in the United States. These programs and activities could include mapping, GIS and other information systems, weather and ocean data applications, marine forecasting, coastal zone management, oceans and human health interrelationships, habitat restoration, and fisheries management.

~ Goal 2 ~
Develop appropriate technologies to support commercial marine aquaculture and enhancement of wild stocks.

- **Partnerships** ~ Increase extramural funding capability based on the OAR National Sea Grant Program and National Marine Aquaculture Initiative and other programs that support pilot projects, laboratory research, and technology transfer. These extramural initiatives may be based around regional centers of excellence for marine aquaculture ~ public/private partnerships between NOAA laboratories, the U.S. Department of Agriculture and other federal agencies, states, universities, non-profit research institutes, private companies, and coastal communities.

- **Investment Incentives** ~ Identify and develop opportunities for DOC and other federal agencies (e.g., Economic Development Administration, Farm Credit Administration, Small Business Administration, National Science Foundation, and Defense Advanced Research Projects Agency [DARPA]) to provide research and development and financial support for marine aquaculture.

- **Major New Initiative** ~ Identify possibilities for a major infusion of government investment in aquaculture. The initiative could include a combination of research and development funds, grants, soft loans, loans, and joint research projects financed with federal, state, and private funds.

~ Goal 3 ~
Improve public understanding of marine aquaculture.

- Conduct an active, productive dialogue with key stakeholder groups on marine aquaculture issues.

- Maintain an agency website that provides information on the NOAA Aquaculture Program, including access to scientific advances, research reports, and other pertinent information.

- Provide accurate, topical, and up-to-date scientific information on marine aquaculture to the public in coordination with the NOAA Office of Education and Sea Grant Extension/Marine Advisory Services.

- Engage the media on all levels.

~ Goal 4 ~
Influence the development and international adoption of sustainable practices and standards for marine aquaculture facilities.

- Actively participate in multilateral, regional, and bilateral research and policy fora to enhance development of responsible marine aquaculture through negotiation, data and information sharing, scientific exchanges, and cooperative studies.

- Implement the United Nations Food and Agriculture Organization (FAO) *Code of Conduct for Responsible Fisheries*, which calls for the United States to promote responsible development and management of aquaculture.

"The United States must take the initiative to become more self sufficient in the production of healthy seafood, provide jobs for coastal communities, and reduce the seafood trade deficit. We must develop aquaculture as a tool to complement commercial fishing because we will need both to produce seafood to meet the growing demand."

~ NOAA Fisheries Administrator Dr. Bill Hogarth, April 2006

IV. Outcomes

If the requisite legislative mandates and funding are provided to implement the strategies described above, between 2007 and 2017 the NOAA Aquaculture Program, working with federal and State partners and stakeholders, plans to achieve or substantially contribute to the achievement of the following outcomes:

- Establish a fully operational and coordinated interagency permitting system for marine aquaculture that enables aquaculture production while safeguarding environmental resources, including an agency capacity for assessing and monitoring short and long term impacts of marine aquaculture operations.

- Establish and maintain several regional ecosystem management initiatives that include commercial and stock enhancement aquaculture activities as key components.

- Demonstrate that offshore farming systems can be operated over several years in a range of sea conditions, and establish up to 20 new offshore farms in the U.S. Exclusive Economic Zone (EEZ) with a combined annual production of 10,000 to 15,000 metric tons of finfish, shellfish, and algae.

- Establish up to five onshore hatcheries to produce juvenile fish and shellfish to be stocked in marine farms ~ offshore, on land, and in coastal waters ~ for commercial aquaculture and stock enhancement/hatchery uses.

- Determine the feasibility of culturing up to 10 species of marine fish identified as suitable candidates for aquaculture (e.g., cobia, redfish, pompano, cod, halibut, sablefish, yellowtail, amberjack, Pacific threadfin, and tuna).

- Contribute to restoring and expanding coastal shellfish aquaculture and to the establishment and gradual expansion of offshore methods for the production of oysters, mussels, abalone, and (possibly) scallops.

- Complete research on techniques for farming and processing certain marine species and seaweeds for use in nutritional, health, and other industrial (non-food) products.

- Complete stock enhancement research on seven priority marine or estuarine species.

Achievement of many of these outcomes depends on actions by the Executive and Legislative branches of the Federal Government to enact new authorities for NOAA and to provide additional budget resources. Success will also depend on the actions of the private sector, states, and coastal communities to invest the time and capital necessary to expand the U.S. marine aquaculture industry.

V. Benefits

If the requisite legislative mandates and funding are provided for implementation, the NOAA Aquaculture Program could yield the following economic, social, and environmental benefits:

- Creation of 75,000 direct and indirect jobs for every 1 million metric tons of domestic aquaculture production (based on job creation figures from the salmon and catfish aquaculture industries).

- New opportunities for coastal communities and the seafood industry to increase the domestic supply of seafood through commercial marine aquaculture and stock enhancement to maintain and continue to employ existing boats, processing facilities, cold storage, marketing, and transportation infrastructure. These business opportunities will create more resilient coastal communities with a more diversified economic base.

- Integration of commercial marine aquaculture, fishing, and stock enhancement activities for seafood production, species and habitat restoration, and other products.

- New business opportunities for the U.S. grains and feed industry, health and nutrition products, equipment manufacturers, food processing, and other services.

- Greater regional food supply and security, because more of the seafood consumed in the United States would be grown here, under specific conditions and safeguards.

- New ecosystem benefits generated by regional ecosystem management programs that integrate aquaculture production with habitat and species restoration, sustainable fisheries, and multiple coastal uses (e.g. restoration of depleted species, marsh grass and oyster bed replanting for water quality improvements, and alternative source production of overfished aquarium species).

- Significant expansion of a research and development and extension infrastructure that supports aquaculture development with hatcheries, diagnostic services, advances in feed and nutrition, and other scientific research.

If the United States does not develop domestic aquaculture production, the nation will miss out on an important new economic and environmental opportunity, and fisheries-dependent coastal communities ~ damaged by hurricanes or reductions in wild catch ~ may lose their market niche as more seafood buyers turn to imported aquaculture products to meet market demand. In addition, seafood prices will likely increase as other countries consume more and export less, making the health and nutritional benefits of seafood less affordable to Americans.

VI. Budget and Staffing Requirements

A significantly larger annual budget and additional staff positions are needed for the NOAA Aquaculture Program to meet its 10-year goals and outcomes. These budget and staffing requirements are allocated among four program components:

- **Administration and Regulatory Program** ~ To establish and implement a legal, regulatory, and administrative framework for marine aquaculture, the current administrative budget and staff must be doubled. Additional funds will be required to:
    - Design and implement offshore legislation.
    - Conduct a programmatic EIS for offshore aquaculture.
    - Add aquaculture coordinators to each of the NMFS regional offices.
    - Increase the science capabilities at NOAA laboratories to address issues for commercial aquaculture and stock enhancement.

- **Research and Development** ~ Sound science and technology transfer must be provided to develop aquaculture, stock enhancement, and habitat restoration. A significant increase in funding and staff will be required to conduct research at NOAA science centers/labs and in partnership with industry, state, university, and scientific research institutions through competitive grants**.** The budget will have several components:

    - Increased funding for the National Marine Aquaculture Initiative competitive grants program.
    - Regional aquaculture centers of excellence (public/private partnerships) and pilot and demonstration projects. Funding could be arranged by designating institutions to receive funding through congressional earmarks or through new budget initiatives.

- **Outreach and Education** ~ Information must be communicated to federal agencies, states, industry, international partners, the public, and other interested aquaculture stakeholders. A modest increase in budget and staffing is needed for maintaining/upgrading the program website, producing documentaries, holding stakeholder meetings, gathering and publishing scientific research, and conducting media outreach.

- **International Activities** ~ The NOAA Aquaculture Program has compiled a list of international activities and commitments currently and historically undertaken by NOAA. The program is working on identifying international priorities. Modest funding in the past has been provided by OAR, the National Marine Aquaculture Initiative, NMFS and NOS for travel, conferences, and scientific exchanges.

VII. Challenges

The NOAA Aquaculture Program must overcome several internal and external hurdles to meet its goals, including:

Budget and Staffing ~ The program needs to reach a minimum critical size in terms of budget and staffing resources to fully achieve program goals and objectives. However, given the uncertain budget climate, staffing and budget resources for a fully operational program are not guaranteed.

Legislation and Regulatory Mandates ~ The program is currently operating under statutory authorities that were not provided specifically with aquaculture in mind.
The challenge is to address aquaculture growth in the marine environment within the context of NOAA environmental stewardship mandates. Offshore aquaculture legislation—a *U.S. Ocean Action Plan* priority of the Administration—was introduced in the Senate in 2005 (S. 1195) by Senators Stevens and Inouye, and Senate Commerce Committee hearings were held in April and June 2006. If Congress enacts offshore aquaculture legislation, NOAA will be charged with issuing permits for aquaculture in federal waters and coordinating actions by other permitting agencies.

Stakeholder Support ~ The program needs the support of a broad range of stakeholders—particularly those in coastal communities—to create opportunities for marine aquaculture to develop sustainably while protecting the marine environment and privileges of other users of marine resources.

Appendix 1 ~ Legislative and Policy Drivers

Legislative Drivers

Coastal Zone Management Act ~ Requires NOAA to provide assistance to coastal states to support comprehensive planning, conservation, and management for living marine resources, including planning for the siting of aquaculture facilities within the coastal zone.

Endangered Species Act ~ Requires NOAA to take various actions to protect and recover all threatened and endangered species under the jurisdiction of the Department of Commerce, including actions to address potential impacts from marine aquaculture facilities.

Magnuson-Stevens Fishery Conservation and Management Act ~ Requires NOAA to review activities in marine waters that may have impacts on a managed species or essential fish habitat; aquaculture activities are therefore subject to review under this Act.

Marine Mammal Protection Act ~ Requires NOAA to take various actions to protect all marine mammals under the jurisdiction of the Department of Commerce, including actions to address potential impacts from marine aquaculture facilities.

National Aquaculture Act ~ Established the overall national policy that, "… it is … in the national interest, and it is the national policy, to encourage the development of aquaculture in the United States" [Section 2(c)]." Under the Act, the Secretary of Commerce is authorized to "provide advisory, educational and technical assistance" and to "encourage the implementation of aquacultural technology in the rehabilitation and enhancement of publicly owned fish and shellfish stocks … and in the development of private commercial aquacultural enterprises."

National Environmental Policy Act ~ Requires NOAA to consider all reasonably foreseeable environmental effects of its proposed actions, including potential effects of marine aquaculture facilities

National Sea Grant College Program Act ~ Provides authority for NOAA to conduct research, extension, education, and communications to achieve a sustainable environment and to encourage the responsible use of America's coastal, ocean, and Great Lakes resources, including support for aquaculture.

Saltonstall-Kennedy Act ~ Provides authority for NOAA to award contracts, grants, or cooperative agreements for fisheries research and development projects addressing any aspect of U.S. fisheries, including but not limited to harvesting, processing, aquaculture, marketing, and associated infrastructures.

Policy Drivers

1998 NOAA Aquaculture Policy ~ Calls for a successful program to meet public needs for aquaculture development and environmental protection to focus on:

- Research, development, and technology transfer.
- Financial assistance to businesses.
- Environmental safeguards, including regulatory and permit procedures.
- Coordination with federal, state, and local agencies, as well as industry, academia, and foreign institutions

This policy defined aquaculture as, "The propagation and rearing of aquatic organisms in controlled or selected aquatic environments for any commercial, recreational, or public purpose. Potential purposes of aquaculture include bait production, wild stock enhancement, fish culture for zoos and aquaria, rebuilding of populations of threatened and endangered species, and food production for human consumption."




1999 Department of Commerce Aquaculture Policy ~ Includes the following goals:

- Increase the value of domestic aquaculture production (freshwater and marine) from the present $900 million annually to $5 billion.
- Increase the number of jobs in aquaculture from the present estimate of 180,000 to 600,000.
- Develop aquaculture technologies and methods both to improve production and safeguard the environment.
- Double the value of non-food products and services produced by aquaculture to increase industry diversification.
- Enhance depleted wild fish stocks through aquaculture, thereby increasing the value of both commercial and recreational landings and improving the health of our aquatic resources.

The U.S. Commission on Ocean Policy's Final Report to Congress, ***An Ocean Blueprint for the 21st Century*** (September 2004) ~ Called on the Secretary of Commerce to:

- Act as the lead federal agency for marine aquaculture.
- Design and implement national policies for environmentally and economically sustainable marine aquaculture.
- Develop a comprehensive, environmentally sound permitting, leasing, and regulatory program for marine aquaculture.
- Expand marine aquaculture research, development, training, extension, and technology transfer, including a socioeconomic component.
- Set priorities for research and technology, in close collaboration with the National Sea Grant College Program, states, tribes, academia, industry, and other stakeholders.
- Work with the United Nations Food and Agriculture Organization to encourage and facilitate worldwide adherence to the aquaculture provisions of the Code of Conduct for Responsible Fisheries.

U.S. Ocean Action Plan (December 2004) ~ Includes the following recommendation:

> *"In the 109th Congress, the Administration will propose a National Offshore Aquaculture Act that provides the Department of Commerce clear authority to regulate offshore aquaculture. This bill will empower the Department of Commerce to assist the private sector in obtaining necessary Federal agency approval for establishing an offshore aquaculture facility. The Department of Commerce has primary responsibility for the management and conservation of living marine resources in the EEZ and, as such, will ensure that offshore aquaculture enterprises operate in an environmentally sustainable manner that is compatible with existing uses."*

National Offshore Aquaculture Act of 2005 (S. 1195) ~ Includes authority for the Secretary of Commerce to:

- Issue permits and develop/implement a coordinated permit process in cooperation with other federal agencies.
- Develop environmental requirements.
- Establish a scientific research and development program to further offshore aquaculture technologies and industry development that are compatible with the protection of marine ecosystems.
- Conduct research and development in partnership with offshore aquaculture site permit holders.

NOAA's 2005 Annual Guidance Memorandum for Fiscal Years 2008–2012 ~ Includes the following advice for the Aquaculture Program:

> *"Create environmental standards and appropriate monitoring and evaluation protocols that will set a new commercial code of conduct for marine aquaculture …", and provide a "regulatory structure and robust scientific and technical support for marine aquaculture."*