Aquaculture: Intelligent Use of the Seas

Dr. Michael Rubino
Manager, NOAA Aquaculture Program
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Overview

- Definition of marine aquaculture
- International and national context
- NOAA's Aquaculture Program
- Next steps for NOAA-ATP

Aquaculture: *"The propagation and rearing of aquatic organisms in controlled or selected environments for any commercial, recreational or public purpose."*

- NOAA Aquaculture Policy, 1998

US Aquaculture: 70% Catfish

US Marine Aquaculture

- Shellfish farming: oysters, clams, mussels
- Finfish, shrimp, ornamentals
- Aquatic plants (algae, grasses)
- Marine stock enhancement: recreational and commercial fishing, replenishment, habitat restoration
- Feed, nutrition, equipment, investment servicing global production

Oyster Culture: bottom, suspended, containment

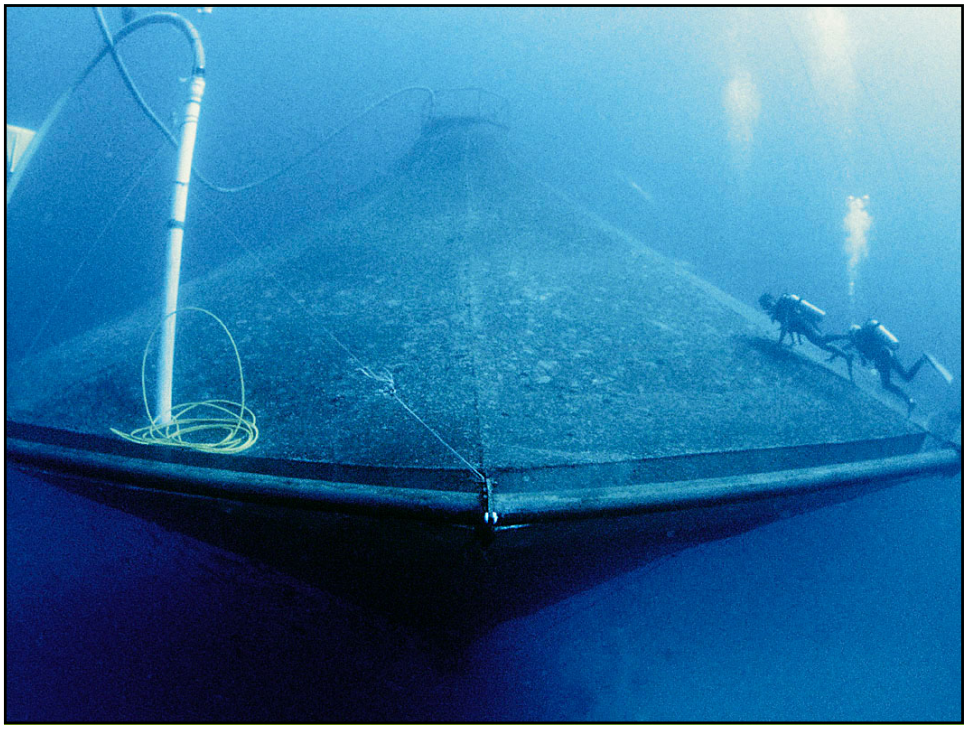
Mussel Culture - Northeast and Northwest

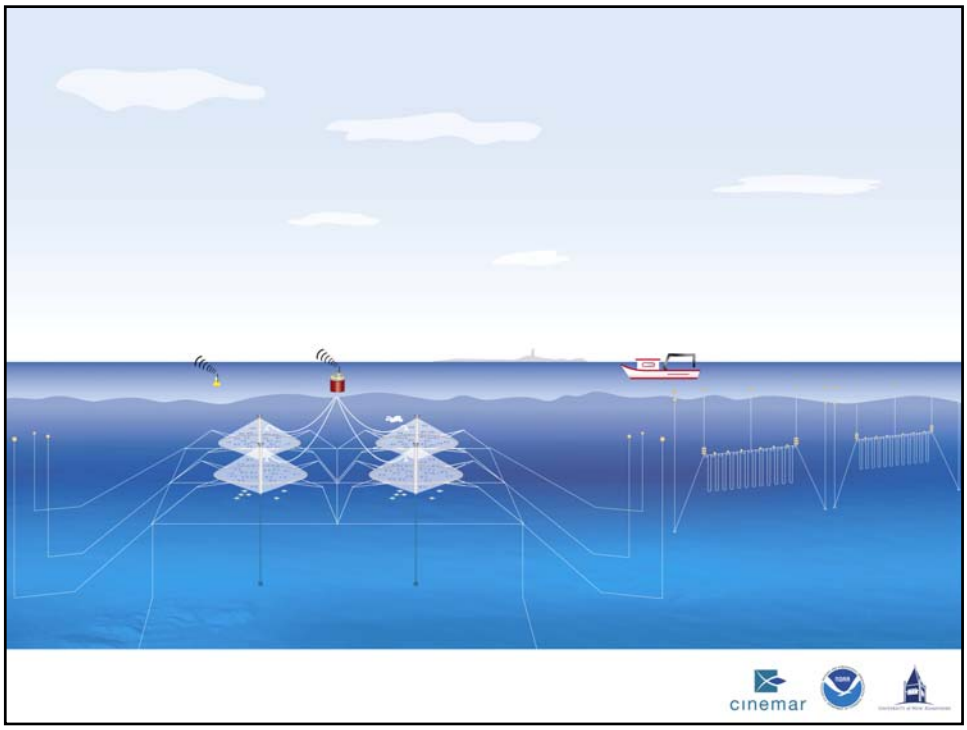
Coastal Cage Culture

Other US Marine Aquaculture

- Shrimp farming
- Algae, kelp
- Closed recirculating systems
- Marine stock enhancement
- Restoration aquaculture

New Frontier: Offshore

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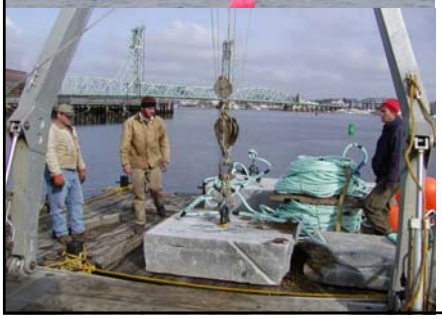
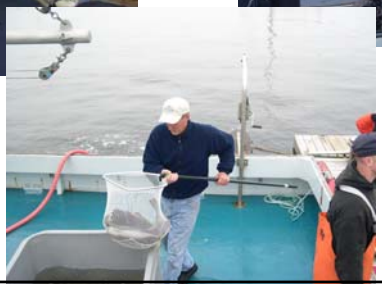
Offshore Technology

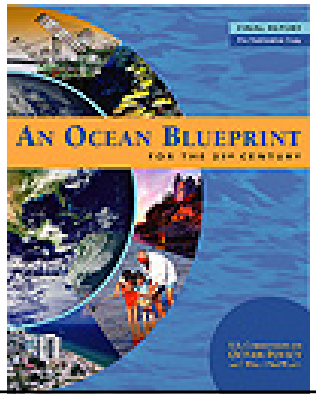


Environmental Assessment

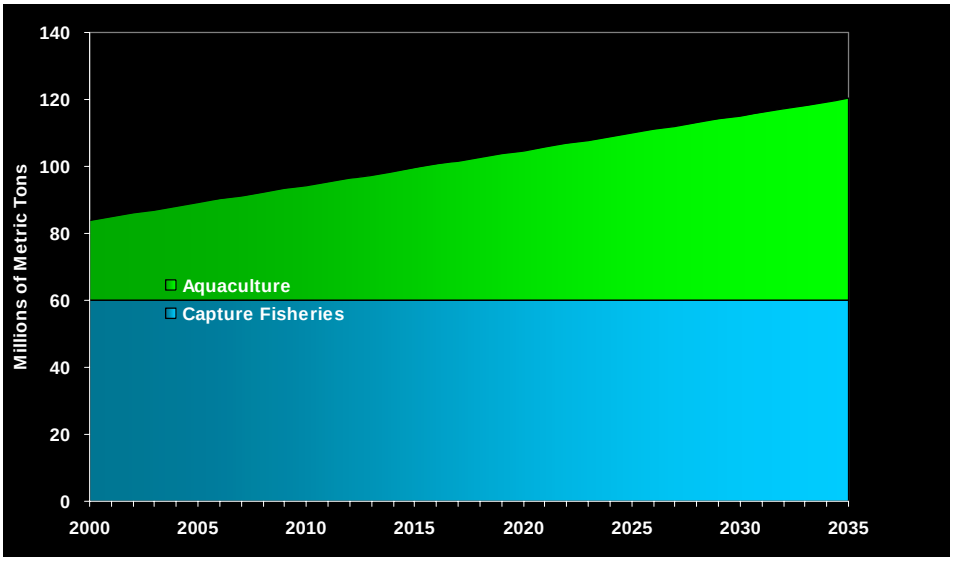


Why so much momentum now?

- Global demand
- US supply gap
- U.S. Ocean Commission Recommendations
- President's Ocean Action Plan
- New species
- New technology



Global Opportunity



National Opportunity

With increasing demand for seafood:

- US aquaculture production: 500,000 mt (whole weight)
- US wild catch 3m mt (half exported, ~ 22% US mkt)
- Current US consumption: 6 to 7 m mt (70% imported)
- 2025 gap: 2m mt minimum ($5b, 150,000 jobs)

- ***Choice: imports or domestic aquaculture***
- ***Aquaculture can satisfy rising demand, create jobs, enhance food security and health***

Hypothetical 1 MMT US Aquaculture Production Increase

(in metric tons) Source: C.E. Nash 2004

Group	Sub-group	Current US 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

Challenges to US Production

- Need enabling regulatory framework
- Address divergent views, build political will
- Lack of understanding about health/safety, environmental and economic effects
- Need marketing for ***all*** seafood
- Need R&D funding, incentives, investment

Aquaculture Support Growing

- Seafood buyers, processing, distribution restaurants, food service - need supply
- Nutritionists: “eat more seafood”
- Fishermen engaged in aquaculture, integrate wild catch and aquaculture
- Entrepreneurs
- Feed companies
- Tech, engineering, equipment suppliers

US Investment Opportunity

- US aquaculture production could triple or more from $1b to $3-5b in sales by 2025
- Supply worldwide aquaculture industry with technology, equipment, production systems, feeds
- Maine biotechnology, other spinoffs

NOAA's Aquaculture Program

- Regulation
- Science, R&D
- Outreach and education
- International

Offshore Legislation - Rationale

- Limited near shore areas in most states
- No easy way to allow operation in EEZ and set standards under current law
- Over ten years of preparatory work
- New technology, species
- Good production and environmental results
- Need for 50 year horizon

Offshore Bill - Status

- Introduced in Senate, no action yet in House
- Allowing national debate about aquaculture
- If passed, two year regulatory design process with stakeholders

R&D Priorities

- Production: offshore, shellfish, recirculating, polyculture
- New species
- Hatcheries
- Feed, nutrition
- Disease diagnostics and controls
- Eco-effective production, BMPs
- Biotech, industrial and cosmetic products

Learn By Doing: Pilot Projects

- FL Clams, NH offshore mussels
- NH, PR, HI offshore finfish
- Chesapeake Bay (oysters, crabs)
- Aquaculture as part of Gulf rebuilding
- Offshore projects in Gulf of Mexico, Caribbean, CA
- Urban aquaculture – closed systems
- Restoration, conservation aquaculture

Research Funding, Investment Incentives

- National Marine Aquaculture Initiative
- Sea Grant
- SBIR
- NOAA Fisheries Finance Program
- ATP/NIST; EDA
- USDA
- State, foundation, industry funding

Next Steps

- Build partnerships
- Refine priorities with partners
- Secure funds, issue RFPs, make awards
- Work with grant recipients and partners to build the industry
- Broadcast results

NOAA Aquaculture Program Contact Information

Michael Rubino, Program Manager
michael.rubino@noaa.gov

Jim McVey, National Sea Grant Aquaculture Program Manager
jim.mcvey@noaa.gov

Susan Bunsick, Policy Analyst
susan.bunsick@noaa.gov

Kate Naughten, Outreach Coordinator
kate.naughten@noaa.gov

AQUACULTURE PROGRAM OFFICE:

(301) 713-9079 – phone

(301) 713-9083 – fax