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AQUACULTURE SITUATION AND OUTLOOK REPORT 2010: NEW HAMPSHIRE

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Industry Trends and Outlook

New Hampshire has continued to increase aquaculture capacity through research, continued commercial activity and applied technology transfer activities. Most notably the Atlantic Marine Aquaculture Center, formally the University of New Hampshire (UNH) Open Ocean Aquaculture Program has continued to build interest regionally in offshore long-line mussel culture through collaborations with New Hampshire Sea Grant and continued extramural funding acquired to transfer the technology to prospective producers along the New England coast.

New Hampshire has a small number of fish farms that raise rainbow and brook trout as well as brown bullheads. Most fish are used to stock public and private ponds. There is great interest in baitfish culture as an economic opportunity and over the next few years the Sea Grant program plans to collaborate with UNH scientists to begin an outreach program in this area. In addition, finfish aquaculture researchers at UNH are developing husbandry protocols for black sea bass, flounder species, Atlantic cod, baitfish and several trout species.

Great Bay Aquaculture, the only commercial saltwater hatchery in New Hampshire, produces cod, summer flounder and black sea bass. In addition to commercial production, Great Bay Aquaculture is an important collaborator with UNH researchers, seeking to optimize current culture practices as well as investigate new species. There is one commercial offshore long-line mussel grower who has been in



Workshop participants hang “socked” out mussel seed for grow-out at the UNH offshore demonstration farm site. (Photo: Ken La Valley)

operation since 2006. This farm currently has ten operational lines and has been permitted for up to twenty. There is also one commercial shellfish farmer, Little Bay Oyster Company, that cultivates Eastern oysters.

Emerging Issues and Critical Needs

The most pressing need for marine aquaculture is a permitting process for conducting aquaculture in federal waters and a revamping of the process in state waters. These processes will facilitate and encourage additional entrepreneurs within the state to pursue marine aquaculture. The current displacement of the New Hampshire commercial fishing fleet makes marine aquaculture an attractive prospect.



Offshore mussel culture line at the UNH demonstration farm site.
(Photo: Ken La Valley)

Commercial Species List

- Atlantic cod (*Gadus morhua*)
- Cobia (*Rachycentron canadum*)
- Summer flounder (*Paralichthys dentatus*)
- Blue mussel (*Mytilus edulis*)
- Brook trout (*Salvelinus fontinalis*)
- Brown bullhead (*Ameiurus nebulosus*)
- Rainbow trout (*Oncorhynchus mykiss*)
- American Oyster (*Crassostrea virginica*)

Addressing Industry Needs

Researchers, extension staff, resource managers, industry associations and concerned stakeholders all play a role in addressing industry needs. The following sections outline the new initiatives and recent accomplishments in these areas.



New Hampshire salmonid farm. (Photo: J-J Newman-Rode)

Aquaculture Research

The University of New Hampshire has several researchers who focus on freshwater and marine aquaculture applications. UNH has operated an open ocean aquaculture project since 1997. The project is run by an interdisciplinary team of marine biologists, ocean engineers, benthic ecologists, extension educators and technical operations professionals based at the University. This team is recognized worldwide as a leader in open ocean aquaculture. The University's Open Ocean project is now called the Atlantic Marine Aquaculture Center. The center's offshore demonstration site, which can accommodate up to four cages, is secured by a submerged mooring grid 440 feet in perimeter and held fast to the sea floor by 12 anchors. The project has successfully produced summer flounder, cod, haddock, halibut, and mussels in the open ocean site. The breakthroughs over the past eight years have been numerous.

Dr. David Berlinsky, of the UNH Biological Sciences Department, has focused his research on improving the culture of commercially important finfish species by understanding and ultimately controlling physiological processes. Much of Dr. Berlinsky's research has centered on understanding reproductive processes of fishes as this is often a limiting factor in commercial production. Some of the species he has worked with include striped bass, white bass, summer flounder, southern flounder and haddock. In addition to his research on black sea bass, Berlinsky is investigating production of pathogen-free white sucker broodstock and baitfish production.

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Efforts are also being made to restore oyster habitat to promote recreational harvesting and potential commercial harvesting ventures. Dr. Raymond Grizzle, of the UNH Jackson Estuarine Laboratory, and his team are experimenting with optimal conditions for reef restoration in the Great Bay estuary.

UNH scientists, in cooperation with the Massachusetts Institute of Technology Sea Grant's Aquaculture in the Classroom Program, has laid the foundation for a sustainable stock enhancement program to bring back New England's failing winter flounder fishery. The program engages teachers in K-12 schools throughout New England and helps them bring fisheries, aquaculture, and animal husbandry information and training to their students in a creative way.

Aquaculture Extension

There is one extension specialist who has responsibilities in commercial fisheries, marine aquaculture and seafood safety. The aquaculture component of the extension program focuses on developing seed collection technology and commercial efficiency for offshore mussel farming, transferring offshore technology to regional entrepreneurs, and developing Hazard Analysis and Critical Control Points (HACCP) programs for fish and shellfish harvesting, processing and distribution. In addition, extension collaborates with campus researchers to coordinate the Oyster Shell Recycling Program, participate in red tide disaster relief programming, and investigates seafood pathogens, such as *Vibrios*, in the consumer product stream.

Aquaculture Education

The University of New Hampshire Marine Docents is a group of volunteers dedicated to the preservation and wise use of our marine resources. One of the areas they provide educational programs on is marine aquaculture. The volunteers conduct programs in public and private schools, parks, on campus, and on the water on passenger vessels.

Aquaculture Resources

The Northeastern Regional Aquaculture Center (NRAC). NRAC <http://www.nrac.umd.edu> is one of five Regional Aquaculture Centers established by the U. S. Congress which supports research and outreach efforts to promote the development of the aquaculture industry.

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