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Marine  
Science  
for Maine  
People

## *Meeting the Challenges Together*

Based on farm gate sales, Maine was ranked as the number one marine aquaculture producer in the United States in 2000. Cultured Atlantic salmon is the largest sector, yielding more than 29 million pounds (whole) in 2001, valued at approximately \$64 million, but there is also a significant and growing shellfish aquaculture industry. Aquaculture directly supports about 1000 jobs, located primarily in the downeast region of Maine. Maine Sea Grant has supported aquaculture research and extension work for decades. The Marine Extension Team, a collaboration of Sea Grant and University of Maine Cooperative Extension, is based in coastal communities and members facilitate applied research projects and provide education programs that promote sustainable aquaculture management and development.

### **Informational Meetings**

In the past two years, Sea Grant and University of Maine Cooperative Extension have organized more than a dozen aquaculture informational sessions in communities where aquaculture facilities are proposed. Over 200 people have attended the meetings, which have helped improve relationships among lease applicants, the state's Department of Marine Resources, environmental nonprofit organizations, and citizens in general.

### **Shellfish Health/ Oyster Breeding Program**

Juvenile Oyster Mortality (JOM) is a disease that, in some years, has resulted in greater than 90% losses of a given year class in oysters on the East Coast. For the past two years, researchers, managers, and the oyster industry have been working together to study the causes of JOM disease, develop a breeding program for faster growing and disease-resistant oysters, and disseminate information to growers. A Sea Grant Marine Extension Team member played an

integral role in bringing all the interests together, which resulted in researchers applying for, and receiving, funding to study JOM. The University of Maine and the oyster industry recently provided funds to hire a new hatchery technician at the Darling Center, which will enhance greatly the University's capability in shellfish aquaculture research.



### **Growout Technology**

Tidal upwellers are important in the nursery culture of several species of shellfish, such as Eastern oysters and hard-shell clams, and are used in regions where tidal flow can be captured effectively. So far, tidal upwellers have been designed, based on trial and error, and built with materials the culturist has on hand. Sea Grant extension initiated a project to bring engineering science into the understanding of how upwellers perform with the goal of improving their performance and efficiency. This could ultimately translate into higher profitability for shellfish growers. So far, growers from throughout the U.S. and Canada have made inquiries about the project and have used this information to help them make decisions about their equipment.

## Fish Health Committee

Sea Grant Marine Extension staff participate on the eight –member Maine Fish Health Technical Committee that evaluates the scientific merit of fish health-related information that the commissioners of Maine departments of Marine Resources and Inland Fish and Wildlife use to make public policy. One important issue the committee tackled was Infectious Salmon Anemia (ISA), the presence of which has dramatically impacted salmon farms in Maine. The committee made recommendations to mitigate the impact of ISA on Maine’s domestic and wild salmon stocks.




## Farmed Fish Health Management Workshop


In April 2002, the 10th Annual New England Farmed Fish Health Management Workshop brought over 160 people together to explore innovative techniques and management strategies for salmon aquaculture operations in Maine. Sponsored by Maine Sea Grant, University of Maine Cooperative Extension, Maine Aquaculture Innovation Center, and Maine Aquaculture Association, the conference included a discussion of factors affecting the success of ISA control.


## Sea Lice Control

Maine salmon farmers have experienced serious economic hardships due to losses caused by sea lice infestations. Sea lice disfigure fish, making them unappetizing and difficult to market. Maine Sea Grant has collaborated with University of Maine Cooperative Extension and participating fish farmers in establishing an integrated pest management program (IPMP) for the control of sea lice in Maine’s salmon aquaculture industry. The program includes a coordinated monitoring effort for the parasite on cultured salmon and research into assessing, prevention, and treatment methods. Since salmon farmers implemented the integrated pest management program, losses due to sea lice have dropped significantly.

## Did You Know?...

 Through the first Sea-Grant project funded in Maine in the late 1970s, a University of Maine oceanographer is credited with **introducing aquaculture** to the state. With long-term Sea Grant support, he conducted research, trained students, and developed shellfish culturing techniques. Much of the now well-established shellfish aquaculture industry in midcoast Maine is based on his work, and he trained many of the current industry leaders who have successful shellfish aquaculture operations in Maine.

 In the 1980s, Sea Grant-funded microbiologists researched the most critical fish diseases, developed certification and diagnostic protocols, and set up the **Aquatic Animal Health Lab (AAHL)** at the University of Maine, where they provided these services to finfish growers in the Northeast. In 1990, the AAHL was spun off from the University to Northeast Labs in Waterville. A subsequent spin-off company, MicroTechnologies in Richmond, Maine, continues to provide these services commercially to growers throughout the region.

 With Sea Grant support, microbiologists at the University of Maine developed a **diagnostic kit** that uses monoclonal antibodies to diagnose and treat infectious fish diseases caused by aquatic birnaviruses. These kits are now available commercially for use by aquaculturists and fish pathologists throughout the world. Other Sea Grant-supported studies led to the development of the first PCR assay in which multiple fish pathogens can be identified simultaneously. This fast, effective test has allowed farmers to manage their fish populations in ways to minimize economic loss.