

# NEMAC NEWS

Northeastern Massachusetts Aquaculture Center  
Department of Biology  
Salem, MA 01970



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**Approximately 30,000 juvenile soft shell clams** (*Mya arenaria*) were seeded on a tidal flat in Ipswich, MA. On Sunday, 8 October nearly two dozen shellfish enthusiasts braved brisk conditions to supplement diminished shellfish populations in tidal waters of Eagle Hill River. Participants included shellfishers from Ipswich, lead by Shellfish Constable Phil Kent, and conservation minded residents from nearby North Shore communities. Students enrolled in Salem State College's *Introduction to Aquaculture*, personnel from the Merrimack Valley Planning Commission, and staff from the Northeastern Massachusetts Aquaculture Center (NEMAC) also assisted with planting clams. Clams (averaging 10 mm in length) were seeded in an approved site (Eagle Hill Cove) adjacent to Ipswich Salt Marsh. Three raked areas (12 x 23 ft) were seeded at approximately 35 individuals per ft<sup>2</sup> and covered with UV resistant, black plastic mesh to exclude predators, predominantly the exotic green crab (*Carcinus maenas*). In approximately two-three years the clams will attain legal size and the area will be opened for clamming. Throughout the growout period, survival and growth of released clams will be monitored by NEMAC personnel and commercial shellfishers.

Clams released in this restoration/enhancement effort were obtained in September 1999 from the Beals Island

Regional Shellfish Hatchery in Maine, with approval from the Massachusetts Division of Marine Fisheries. For over a year, personnel at NEMAC cared for the clams as the first project initiated at the recently renovated Cat Cove Marine Laboratory (opened officially on 26 April 1999). Considerable practical knowledge was gained while caring for the clams such as methods to grow algae effectively, procedures to feed the clams, and techniques to release the clams after they attain suitable size.



*NEMAC Technician Scott Weston broadcasts juvenile clams on previously furrowed site*

Information and insight gained during this collaborative initiative has prepared the NEMAC team for continued and expanded efforts with softshell clams in 2000-2001. Over 500,000 juvenile clams now reside at NEMAC and will be overwintered in the Cat Cove Marine Laboratory. An estimated 300,000 clams were obtained in two batches from the

Beals Island Regional Shellfish Hatchery; the first group arrived in June and the second in early October. Maine clams were supplemented by an estimated 200,000 wild spawned clams collected from abundant natural sets in Rowley, MA by shellfishers and personally transported to the Cat Cove Marine Laboratory by Shellfish Warden, Jack Grundstorm. A modest number of clams were also spawned by NEMAC personnel from parentals collected in Essex, MA and conditioned for several months at the Cat Cove Marine Laboratory. Clams currently range between 3-15 mm in length. Our goal is to maintain the clams on a ration of *Tetraselmis chui* and *Isochrysis* until the spring thaw, at which time juveniles of an appropriate size will be released at sites identified with the cooperation of local communities and the Division of Marine Fisheries.



*Clams seeded adjacent Ipswich Salt Marsh are protected from predators by plastic webbing*

**Three courses in aquaculture** were offered by faculty from Salem State College during fall semester 2000. *Introduction to Aquaculture* (BIO 203.01) and *Aquaculture Methods* (BIO 205) were instructed at NEMAC's Cat Cove Marine Laboratory. *Introduction to Aquaculture* (203.G1) was team taught by Drs. Mark Fregeau and Joe Buttner on Wednesday evenings at

Gloucester H.S. Nearly 20 traditional and nontraditional students were exposed to the tools and skills necessary to practice finfish and/or shellfish aquaculture on Massachusetts' North Shore and throughout New England.



*Students estimate algal density with a microscope and hemacytometer*

*Introduction to Aquaculture* was primarily a lecture course peppered with occasional field efforts and hands-on experiences at the Cat Cove Marine Laboratory. Guest speakers enlivened classroom experiences, including an informative discussion of permitting requirements for aquaculture presented by Scott Soares, Massachusetts Aquaculture Coordinator. Participants were encouraged to personalize their aquaculture experience by developing a project/report describing analytically a culture system that they would like to operate. The project afforded participants the opportunity to synthesize information gained and to obtain critical feed back on their aquaculture dream while obtaining college credit. It is hoped and anticipated that some of the projects will move from paper narrative to commercial operation, with guidance and assistance provided by NEMAC.

Students that elected to complement *Introduction to Aquaculture* with the

strongly hands-on *Aquaculture Methods* sampled fish, stocked systems, fed fish, cultured algae, and monitored/managed water chemistry. Not only did they learn about aquaculture, they practiced aquaculture!

**Financial assistance** is currently available for aquaculture through two initiatives developed and managed by the Southeastern Massachusetts Aquaculture Center (SEMAC) and NEMAC with funds provided by the Massachusetts Department of Food and Agriculture.

***Aquaculture Industry Scholarships*** are available, statewide, to help offset the cost for growers and industry personnel to attend aquaculture related courses, training sessions, conferences, and events scheduled through 30 June 2001. Up to 66% of the total cost is reimbursable, upon submission of original receipts. All application forms must be submitted by 1 March 2001 and all travel must be completed by 30 June 2001. For application materials and more information contact William Burt, Administrator Coordinator, SEMAC, c/o Cape Cod Cooperative Extension, PO Box 367, Barnstable, MA 02630 or by telephone at 508-375-6702, or via e-mail at [wburt@umext.umass.edu](mailto:wburt@umext.umass.edu).

***NEMAC's Grant Program***, initiated last year, will continue in 2000-2001. Funds are available to support projects in two areas, (1) projects that promote development of commercial aquaculture in Massachusetts, especially along the North Shore; and (2) projects that facilitate educational experiences in the classroom. Aspiring and practicing aquaculturists as well as educators may consider submitting proposals. For more information on the program and specific

guidelines, contact Dr. Mark Fregeau, Facilities Coordinator, NEMAC, Department of Biology, Salem State College, Salem, MA 01970 or by e-mail at [mfregeau@salemstate.edu](mailto:mfregeau@salemstate.edu), or by phone at 978-542-6705. The deadline for submissions is 26 January 2000.



*Lobstermen Mike (rt) and Joe (lt) Birelli examine lobster pot modified to culture oysters.*

**Feasibility of integrating oyster culture in lobster pots** will be investigated through a two-year study funded by WHOI Sea Grant. The project involves lobsterfishers from Massachusetts' North and South Shores and is jointly coordinated by Drs. Dale Leavitt, Southeastern Massachusetts Aquaculture Center and Joe Buttner, NEMAC. A modified lobster pot has been developed by Friendship Trap (ME). Lobsterfishers have reviewed the prototype trap and their comments will be integrated into the finalized version. The goal is to determine the practicality of replacing cinder block and/or brick ballast with a revenue-generating substitute. Field-testing will initiate in spring at approved sites. Participating lobsterfishers will receive 10 modified traps and document their efficacy at capturing lobsters and ease of processing. If the modified pots fish effectively, if handling is consistent with lobsterfishers needs, if oysters survive and grow, and economics are attractive,

the next step will involve expanded field testing to include marketing elements. Throughout all phases of project design and implementation the Massachusetts Division of Marine Fisheries has provide assistance and guidance.

**Commercial shellfish culture in Massachusetts** is practiced as bottom culture save one bay scallop (*Agropecten irradians*) enterprise. According to MA Department of Food and Agriculture statistics, production targets the hard clam (*Mercenaria mercenaria*), Eastern oyster (*Crassostrea virginica*), and Atlantic surfclam (*Spisula solidissima*). Over 1,100 acres are cultivated by approximately 300 license holders,

clustered on Cape Cod and Massachusetts' South shore.

Shellfish culture on the North Shore is a fledgling activity, focusing on the popular "Ipswich clam" (*Mya arenaria*). Enterprising individuals such are Jud Lane (Essex) and John Henry (Gloucester), with assistance of local Towns, the Merrimack Valley Planning Commission, NEMAC and others, are pursuing innovative ways to generate a healthy, sustainable North Shore industry. With NEMAC now in operation, the means to support these activities exists and the stage is set for increased aquaculture on Massachusetts North Shore creating jobs, generating income and perpetuating an important fishing tradition.

## Recent NEMAC Contributions

Buttner, J.K. 2000. Photosynthesis and Respiration in a Jar. *Science Activities* 37(2): 10-15.

Miller, M.S. and J.K. Buttner. 2000. Symbiotic Relationship of the Sea Scallop and Red Hake as a Possible Management Tool. *Journal of Shellfish Biology*. 19(1): 576.

Buttner, J.K. 2000. Fathead Minnows as a Biological Filter (Feature Article). *Aquaculture Magazine*. 26(1): 26-40.

Buttner, J.K., F. Hanes, C. Lewis, D. Leavitt, S. Soares, and R. Audet. 1999. Teaching Science throught Aquaculture: the AQUA Experience pages 181-184 in *Proceedings of the 9<sup>th</sup> National Extension Wildlife, Fisheries, and Aquaculture Conference*, Portland, ME.

## Calendar

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|----------------|--|
| Spring 2000    | Fish Biology (BIO 323) instructed at Cat Cove Marine Laboratory, Northeastern Massachusetts Aquaculture Center, Salem State College. |
| 21-25 January  | World Aquaculture Conference, Orlando, FL  |
| 26-28 February | 21st Milford Aquaculture Seminar, Quality Inn Conference Center, 100 Pond Lily Avenue, New Haven, CT 06525                           |
| 27-29 March    | International Boston Seafood Show, Hynes Convention Center.  |

For more information regarding aquaculture initiatives by NEMAC and Salem State College or to be added to our Newsletter mailing list contact the Cat Cove Marine Laboratory at 978-542-6821 or Dr. Joe Buttner ([jbuttner@salemstate.edu](mailto:jbuttner@salemstate.edu)) or Dr. Fregeau ([mfregeau@salemstate.edu](mailto:mfregeau@salemstate.edu)) or visit our web page (<http://www.salemstate.edu/biology/aquaculture>).