

**KUDOS to Amanda Cutone and Tara Thompson**, student workers at the Cat Cove Marine Laboratory. Both young ladies graduated in May 2005 and have secured positions that utilize skills learned at the Laboratory. Given their energetic, proactive natures we are confident that they will achieve both personal and professional success in their first post-baccalaureate positions.



### NEMAC Summer Crew

*Amanda Cutone, Dr. Mark Fregeau, Adam Cormier, Scott Weston, Bonnie McAneney, Mae Taylor, Dr. Joe Buttner, Matt Latta, and Adam Leason (It to rt, missing from image are Sean Marcisin, who is spending several weeks at Benning, GA, and Tanya Bettencourt)*

**Professional contributions** take many forms including publications, professional and technical presentations. During the 2004-2005 academic year, fifteen presentations were made by Laboratory personnel before varied audiences. Recent publications include:

Buttner, J.K., M. Fregeau, S. Weston, B. McAneney, J. Grundstrom, A. Murawski, and E. Parker. 2004. Commercial Culture of Softshell Clams has arrived and is Growing on Massachusetts' North Shore. *Journal of Shellfish Research*, 23(2); 633.

Buttner, J.K. and J. T. Best. 2004. Fish Handling in the Classroom. *Aquaculture Magazine* 30(5): 8-15.

Buttner, J.K. 2005. Urban Aquaculture: A Necessary Reality, chapter 17 in *Urban Aquaculture*, B.A. Costa-Pierce, A. Desbonnet, P. Edwards, and D. Baker eds. CABI Publishing, Wallingord, UK. 304pp.

### Calendar 2005

**Early November** Call for small grants proposals  
(contact Mark Fregeau, 978-542-6705; mfregeau@salemstate.edu)

NEMAC News is published by the Northeastern Massachusetts Aquaculture Center, housed at the Cat Cove Marine Laboratory operated by Salem State College. The Cat Cove Marine Laboratory physically includes a 5,500 ft<sup>2</sup> laboratory and an 8 acre, tidal pool, Smith Pool. 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 978-542-6824 or Dr. Joe (jbuttner@salemstate.edu) or Dr. Fregeau (mfregeau@salemstate.edu) or visit our website, [www.salemstate.edu/biology/aquaculture](http://www.salemstate.edu/biology/aquaculture).

# NEMAC NEWS



Northeastern Massachusetts Aquaculture Center  
Salem State College/Department of Biology  
Salem, Massachusetts

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Since inception, the Northeastern Massachusetts Aquaculture Center (NEMAC) has prioritized development of a sustainable commercial aquaculture industry on Massachusetts' North Shore that targets softshell clams. Initial efforts focused on hatchery production of small clams for stocking and growout on managed tidal flats. Production has increased each year, with distribution of clams spawned and reared at the Cat Cove Marine Laboratory now extending beyond Cape Ann.

Year	Number
2000	30,000
2001	200,000
2002	1,040,000
2003	1,540,000
2004	1,603,000
2005	2,500,000

*Production of softshell clams >2 mm at the Cat Cove Marine Laboratory*

As competence with hatchery production of clams has grown, concurrent with demand for juvenile clams, NEMAC personnel have increasingly moved off site and into the field to assist culturists with growout challenges. On-going initiatives include monitoring green crab populations, and growth of stocked clams. Other recently initiated studies examine stock density, facilitate acquisition of permits and compilation of Best Management Practices.

Through the collective efforts of over a half dozen shellfishers and NEMAC personnel, the North Shore's ability to produce increasing numbers of softshell clams has been enhanced; several acres

of tidal waters are currently cultivated. The first significant harvest of cultured clams occurred this summer and should translate into several hundred bushels of locally produced clams. Production will continue to increase as several new participants have been inspired to pursue clam culture and await necessary permits.



*Fried clams are popular menu fare for many New England restaurants*

**Green crab studies** conducted cooperatively by NEMAC investigators, SEMAC personnel and commercial culturists initiated in summer 2004 and continued this summer. Preliminary findings, presented at the Milford Shellfish Seminar 2005 indicate crab abundance is greater on Cape Cod than the North Shore. Abundance in intertidal waters is greatest in summer and greatly diminished between November and April. It is hoped and anticipated that insight gained from trapping green crabs will culminate with better management strategies to reduce their predation upon juvenile softshell clams and increase profitability for culturists.



Green crabs are measured, sexed and counted

**Rowley shellfisher Jack Grundstrom and NEMAC's Dr. Joe** presented several invited talks on softshell clam culture at the Workshop on Soft-shell Clam Culture in Rimouski, Quebec on 20-22 April 2005. Nearly three dozen participants, all but three from Canada, explored aspects of clam culture through nearly 100 presentations. Abstracts of presented papers are being assembled and will be available shortly.



Bruno Mynard (lt) and Jack Grundstrom (rt) reflect upon techniques used to culture softshell clams on Massachusetts' North Shore

**Six workshops coordinated by NEMAC** were presented between winter 2004 and spring 2005. With funds provided by the Northeastern Regional Aquaculture Center (NRAC), workshops on Management of Shellfish Predators, NRAC Aquaculture Business Workshop, and Managing and Starting a Small Aquaculture Business in Appalachia were held in Massachusetts (2), Maine (2), Connecticut (1) and West Virginia (1). Several North Shore culturists participated in the series. Information

presented at the workshops is being compiled into a report and will be available to interested parties, contact Dr. Joe (jbuttner@salemstate.edu; 978-542-6703).



Carlton School (Salem, MA) youth appreciate tidal pool acquired through a NEMAC grant

**Mini-grants to local schools** have provided in excess of \$11,000 to integrate aquaculture into classroom experiences since 2002. Numerous local K-12 teachers and students have benefited from funding and expertise provided by NEMAC. Building upon initiatives in Gloucester and accessing expanded funding provided by the Commonwealth, last year a major collaborative construction project was started. Scheduled for completion early this fall is a 480ft<sup>2</sup> hatchery/wet lab setup on school property adjacent the Annisquam River. Once completed and equipped, the Lab will afford teachers, students and the local community a readily accessible asset to learn about aquaculture, while producing aquatic organisms for restoration and enhancement efforts on Cape Ann. NEMAC personnel look forward to collaborating with Gloucester High School personnel to develop curricula and other learning experiences.

Teachers and culturists interested in participating in this year's mini-grant program, RFR anticipated in late fall, may contact Dr. Mark Fregeau for specifics (mfregeau@salemstate.edu; 978-542-6705).

**Continuing what has become a semi-annual tradition**, Drs. Mark Fregeau and Joe Buttner team instructed a one week institute Topics in Aquaculture (BIO 705) between 27 June and 1 July 2005. Five local teachers participated in the

experience, gaining the competency and confidence to integrate aquaculture into their classrooms as a hands-on science teaching tool. Also participating in the summer experience were individuals interested in setting-up a commercial aquaculture operation. For more information, contact Dr. Joe at 978-542-6703 or by email at jbuttner@salemstate.edu.

**NEMAC's Advisory Board Meeting** was held at the Cat Cove Marine Laboratory on 19 July 2005. The well-attended annual event started at approximately 1915 and updated participants from industry, education, agency, and government on recent and on-going projects. A lively discussion ensued after the update that focused on open water aquaculture, mussel culture and oysters. New options for investigation were discussed and are currently being explored.

The potential listing of American oysters as an endangered species, which would have potentially catastrophic impacts on aquaculture in Massachusetts and elsewhere, was also examined. State Senator Bruce Tarr, Representative Anthony Verga and State Aquaculture Coordinator Scott Soares immediately responded, cooperatively with over two dozen other Massachusetts' legislators. A resolution against listing the American oyster as endangered was authored and submitted to the federal government. (For a copy of the resolution and more information on the proposed listing of American oysters as an endangered species, contact Dr. Joe at 978-542-6703; jbuttner@salemstate.edu).



State Aquaculture Coordinator Scott Soares, Representative Anthony Verga, and Senator Bruce Tarr confer at NEMAC BOD meeting (lt to rt)

## Biology my First Love

by Adam Cormier, Student

After being in the Biology program at Salem State College for the past two years I've come to realize that I want more out of college, so I talked with my advisor about a double major in education and biology. We started to brainstorm and explore the double major option.

I was offered a way to test my dual major aspiration by setting-up a tour for 100 second and third graders from the Saltonstall School. I've given tours before, but not to so many young people. The hardest part would be keeping them interested for two hours, as the tour itself would only take an hour. For the second hour students were divided into groups to do a project. The project started with a list of questions about things they learned on the tour. Students that answered a question correctly placed a piece of paper on a whale drawing, until the whale was entirely filled by individual pieces of paper.

Thanks to my summer position as a student worker at Cat Cove Marine laboratory I experienced my first teaching moment. Everything went well! The students and teachers left very pleased, already talking about bringing other groups to Cat Cove for future tours.

Some may think that working at Cat Cove is just a summer job, but I also see it as a learning opportunity. During the summer advisors have more time to work with us students, one-on-one which is very beneficial to understanding what you really want out of your college experience. Every student should become involved in a summer experience.



Adam Cormier (blue shirt) shares a whale of a tale with local youth