

Coastal Features



VOLUME 11, ISSUE 1

FALL, 2002

INSIDE THIS ISSUE :

RI Water Allocation Program Initiated	p. 3
Invasive Species in Narragansett Bay	p. 4
Former CRMC Employee Rescued at Sea	p. 6

GOVERNOR SIGNS PROVIDENCE RIVER DREDGE PROJECT AGREEMENT

by Kevin R. Cute



(Photo: Mark McInerney/ACOE)

Governor Lincoln Almond is congratulated by Col. Thomas Koning, Army Corps of Engineers (ACOE), after signing the Project Cooperation Agreement for the Providence River and Harbor Dredging Project. Joining in the congratulations are (l-r) CRMC Chairman Mike Tikoian, U.S. Senator Lincoln Chafee (R-RI), and U.S. Representatives Patrick Kennedy (D-RI) and James Langevin (D-RI).

PROVIDENCE - The State of Rhode Island moved closer to improving navigation in its main transportation corridor for waterborne commerce when Governor Lincoln Almond signed the Project Cooperation Agreement for the Providence River and Harbor Dredging Project (PCA) on December 18. The PCA binds the State and the Army Corps of Engineers (ACOE) to terms and conditions by which the dredging of a significantly shoaled 7-mile section of the Providence River shipping channel will proceed. The goal of the dredging project is to restore the shipping channel to its federally-authorized dimensions. However, while the PCA includes a cost-sharing agreement between the State and ACOE, it only addresses a portion of the total project cost. An additional \$30 million is needed to complete the work, but the members of Rhode Island's Congressional delegation who attended the PCA ceremony seemed cautiously optimistic that they could procure the money. Senator Lincoln Chafee (R-RI) said

(see PCA, page 2)

Aquaculture Grants Provide Boost to Industry and Research

The \$1.5 million for developing aquaculture in the Ocean State. The Rhode Island Aquaculture Initiative is directing \$600,000 of that money toward aquaculture research and development in the state through a series of multi-year research grants and one-year "mini-grants."

The initiative has awarded funding for projects that seek to improve the health and longevity of farmed shellfish, educate students and communities about aquaculture, address concerns about aquaculture's effects on the environment, help researchers and aquaculturists access aquaculture data, and reduce conflicts between aquaculturists and traditional capture fishermen. These research grants represent one of several efforts by the initiative to promote aquaculture development in Rhode Island.

(see Aquaculture, page 7)

(PCA, continued from page 1)

“we still have some heavy lifting to do in the upcoming weeks, but I think it can be done.” The PCA was signed amidst the news that a contract to dredge the shipping channel would be awarded to the Great Lakes Dredge and Dock Company of Oak Brook Illinois, whose low bid of \$43 million was substantially less than the ACOE \$69 million estimated project cost. While the CRMC’s Chairman Michael Tikoian (who chaired the signing ceremony) praised the ACOE for “developing a plan that has resulted in a significant savings to the State,” Colonel Thomas Koning, the ACOE New England District commander, said that the project would have to be put on hold in the event that the \$30 million needed from the U.S. Congress was not appropriated.

The first step toward the PCA took place in 1992 when the State of Rhode Island asked the ACOE to conduct a survey of the Providence River shipping channel to assess the need for dredging. The discovery that as much as 11 feet of shoaling had occurred in the middle of the channel prompted the U.S. Coast Guard to immediately enforce a one-way vessel traffic scheme for the shipping channel that remains in place today. While necessary to protect against possible ship groundings or collisions and their attendant environmental impacts, the Coast Guard decision to restrict navigation in the channel has affected the availability of crucial commodities such as home heating oil. According to Chairman Tikoian “the State has experienced significantly low levels of available home heating oil due to the inability of the shipping channel to accommodate two-way vessel traffic. This has effectively slowed all barge and tanker traffic associated with the delivery of this necessary staple to a crawl.” But in looking forward to the pending task at hand, Chairman Tikoian optimistically noted “we are at the beginning of the end for this project. The Providence River Shipping Channel will be returned to its Congressionally-authorized 40 foot depth below sea level. And we will see its 600-foot width reclaimed so that vessel traffic can return to normal.”

In order to accomplish this, over 6 million cubic yards of sediment will be removed from a 7-mile stretch of the upper channel which terminates near the Hurricane Barrier at the head of Providence Harbor. One of the primary reasons that it took over ten years to arrive at a consensus on dredging this portion of the channel was the question of how to dispose of the large volume of dredge spoils - some of them contaminated - that will be produced under the PCA. An early proposal to dispose of the dredge sediments near Prudence Island in Narragansett Bay mobilized a large, varied, and vociferous group of opponents that remained engaged in an often tumultuous public review process to find a solution that satisfied all interested parties. As a result of an enormous amount of input received over a 7-year period, the commitment of the ACOE to the review process, and with crucial assistance from the Rhode Island General Assembly, a two-pronged disposal plan was finally achieved. Under the PCA dredge material disposal plan, clean sediments will be shipped offshore and disposed of in the waters of Rhode Island Sound at a site northeast of Block Island, or be used in various Brownfield-projects.

One such project is the planned use of 215, 000 cubic yards of clean sediment to cap a contaminated site at Fields Point in Providence, which will then be developed by Johnson and Wales University. Governor Almond singled out state Representative Peter Ginaitt (D-House District 33) for leading a successful effort to pass legislation that declassified all sediments as solid waste, which allowed their use for beneficial purposes including beach replenishment and other projects. And after an extensive public education effort led by the CRMC and ACOE, a strong consensus was reached to bury contaminated sediments in Confined Aquatic Disposal (CAD) cells - large subsurface chambers excavated from the bottom of the shipping channel. The CADs will be located in the upper portion of the channel in Providence Harbor where the vast majority of the contaminated sediments are found. A layer of clean dredged sediment will be used to cover the contaminated sediment that is placed into the CADs.

THE RHODE ISLAND WATER RESOURCES BOARD

WATER ALLOCATION PROGRAM

CRMC Joins Partnership to Develop a Statewide

Water Allocation Program

The CRMC is one of many partners that have recently joined together under the auspices of the RI Water Resources Board to undertake the task of developing and implementing a water allocation program for the state. The RI Water Resource Board is charged by the legislature to manage the withdrawal and use of the water in Rhode Island, and apportioning it as necessary (RI Gen. Law 46-15.7) Rather than embark independently, the board has invited interested partners to serve on the Water Allocation Program Advisory Committee (WAPAC). The WAPAC acts as a "Committee of the Whole," organized around the business process of managing water. WAPAC will be advised by the following subcommittees:

- Research
- Water withdrawal
- Registration/reporting
- Steam flow standards
- Priority uses during emergencies
- Water rights, regulatory authority,
- Compliance
- Out of basin transfer*
- Fee, water rates, and alternatives
- Education, outreach, and technical assistance
- Integrated water and wastewater considerations
- Impact analysis
- Joint advocacy, funding, reporting and program evaluation

Because of the importance of the task of WAPAC , it is essential that all facets of communities in the State including major users, industrial representatives, law makers, municipal representatives, governmental agencies, attorneys, agricultural interests, and interstate organizations, become involved in participating on one of these subcommittees . Each subcommittee will identify program objectives, outcomes, milestones and timelines specifically related to implementing a water use system. The goals of WAPAC include the development of interim and long term stream flow standards, water allocation criteria, technical assistance programs, an educational web site, conservation-based programs, and shared decision support systems. WAPAC welcomes interested organizations to become involved in the decision making process of water allocation and the impact it will have on the State.

Information about the effects, including meetings proceedings and a list of participants to date is available on the Water Resources Board's website at www.wrb.state.ri.us. New members are welcome on all committees and for further information on how to join one, please contact Kathleen Crawley at kcrawly@wrb.state.ri.us or Connie Mcgreavy at cmcgreav@wrb.state.ri.us or by calling the Water Resources Board at (401) 222-2217.

** The CRMC Vice-chairs the Out-of-Basin Transfer Committee*

This article was adapted with permission from a press release by the Rhode Island Water Resources Board

Coastal Features is published by the RI Coastal Resources Management Council. It is financed in part by a grant from the National Oceanic and Atmospheric Administration pursuant to the Coastal Zone Management Act, as amended. This issue of *Coastal Features* was edited by Kevin R. Cute. To comment on any article or to make address changes please contact the CRMC.

STRANGERS TO OUR SHORES: THE BIOLOGICAL INVASION OF NARRAGANSETT BAY

by Kevin R. Cute

Maybe you noticed it while walking along one of Narragansett Bay's rocky shores. It was small, fast, and seemed masterfully adapted to the intertidal zone that it inhabits throughout much of the Bay. It probably looked right at home as it scurried over the cobble-strewn terrain and vanished into a cluster of rocks the instant it sensed your approach. The Asian shore crab you barely caught a glimpse of is indeed very much at home in Narragansett Bay. But while the Bay has been good to the crab, providing abundant food and habitat, the crab has not exactly returned the favor. For, despite its innocuous appearance, the Asian shore crab, known to scientists as *Hemigrapsus sanguineus*, is evidence of the biological invasion of Narragansett Bay.

The problem of "bioinvasions" - the introduction of non-native, often harmful, plants and animals - is on the rise worldwide, affecting terrestrial and aquatic ecosystems. A recent report, "Introduced Species in U.S. Coastal Waters: Environmental Impacts and Management Priorities," (available on-line at http://www.pewoceans.org/reports/introduced_species.pdf) details the problem. The report, by Dr. James T. Carlton of Williams College - Mystic Seaport, defines introduced species as "those that have been transported by human activities - intentionally or unintentionally - into a region in which they did not occur in historic time and are now reproducing in the wild."

The Asian shore crab was first reported on the U.S. East Coast in 1988. Native to coastal waters of the Western Pacific, the crabs were probably brought here by one or more ocean-going ships that picked them up in ballast-water carried in tanks to stabilize the vessel, and released them as the ballast was pumped overboard somewhere near Cape May, N.J. This routine method of compensating for changes in buoyancy as cargo is loaded and unloaded is a major pathway for the introduction of invasive marine species throughout the world.

The Asian shore crab has been on the move since its arrival in U.S. waters. It has made its way into the coastal waters of every New England state, and is expected to continue northward to Canada. It is now the most common intertidal crab throughout southern New England, including Narragansett Bay. Its rise to dominance is fraught with irony, as the Asian shore crab has largely displaced the green crab, *Cancer maenas*, which itself was introduced from European coastal waters. The green crab, first reported in New England in 1841, long ago filled a niche in Narragansett Bay's coastal ecosystem.

While Dr. Carlton's definition for introduced species clearly applies to the *presence* of the Asian shore crab in Narragansett Bay, another definition - aquatic nuisance species - from the federal Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), addresses its *effects*. NANPCA defines an aquatic nuisance species as "a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural or recreational activities dependent on such waters."



Photo: Robin Seeley/Cornell University

Asian Shore Crab

Hemigrapsus sanguineus

Adult crabs have a carapace (shell) width up to 1 ½ inches across. The carapace is roughly square shaped and has three spines behind each eye. The color varies widely, including dark purple, green, and orange-brown. The legs show a pattern of alternating light and dark colored bands. The claws are speckled. Asian Shore Crabs may be found in large numbers beneath rocks in the intertidal zone throughout much of Narragansett Bay.

A recent study by Dr. Nancy J. O'Connor of the University of Massachusetts demonstrated that the Asian shore crab in Narragansett Bay also fits the definition of an aquatic nuisance species. The study measured the abundance of native mud crabs and Asian shore crabs at a study site in Bristol, R.I., over a two-year period from 1997 to 1999. Dr. O'Connor found that the native mud crabs were the most abundant crab species at the beginning of the study period, when the Asian shore crab was found in very low densities. By the end of the study, however, the pattern had reversed: after only two years the Asian shore crab was present at densities of 30-50 crabs per square meter, while the mud crabs were found at a density of less than two. The Asian shore crab had out-competed the native crab and was present at a very high density, demonstrating its ecological vigor in Narragansett Bay.

The Asian shore crab has clearly established a robust, reproducing population in Narragansett Bay, and readily fits the federal definition of an aquatic nuisance species, as demonstrated by its ability to displace native crabs. And while its impacts on Narragansett Bay's fisheries are not yet clear, the Asian shore crab feasts voraciously on mussels, clams and other shellfish, and has the potential to hurt New England's seafood industry. According to Dr. Robin Hadlock Seely of Cornell University, "the shore crabs are more aggressive than European green crabs, and the green crabs are bad enough." Though smaller than the green crab, the Asian shore crab is apparently stronger, and can tear the claws off the larger species.

The Asian shore crab presents perhaps the most dramatic argument for preventing the introduction of nonindigenous aquatic nuisance species into Narragansett Bay. But it is not alone. A recent survey of Narragansett Bay led by Dr. Carlton identified 21 introduced species. Since the 1950's, an increasing number of invasives found in the Bay have come from the Pacific - a trend that is expected to accelerate with the expansion of world trade.

According to Dr. Carlton, "introduced species are like a ticking time bomb...you may not notice them until it is too late." While the impact of bioinvasives like the Asian shore crab may not yet be fully understood in Narragansett Bay, consider the zebra mussel, a seemingly-innocuous little freshwater mussel from the Black Sea region. The mussel, introduced into the Great Lakes region in the 1980's, now costs the U.S. more than a billion dollars each year to manage, and has driven native freshwater mussels to near-extinction.

Although some extermination efforts have proven successful, it is typically expensive and difficult to remove introduced species from coastal waters once they have been introduced. But ballast-water management strategies such as pre-discharge treatment or open-ocean exchange may greatly reduce the potential for introductions. Congress pointed the way toward ballast-water management via NANPCA. But twelve years later, federal law requires ballast-water management only on the upper Hudson River and in the Great Lakes. On the U.S. West Coast, where introduced species from ballast water have ravaged native coastal ecosystems - the states have taken action: California, Washington and Oregon all require ballast-water management. In Narragansett Bay, however, neither federal nor state law currently requires ballast-water management.

In March, 2002, a "white paper" on the issue was prepared for the R.I. General Assembly by the Narragansett Bay Estuary Program. The report, "Ballast Water and Introduced Species: Management Options for Narragansett Bay and Rhode Island" is available on-line at www.nbep.org. And under the auspices of the federal National Invasive Species Act of 1996 (P.L. 104-332), the recently-formed *Northeast Regional Panel is assessing the problem - and potential solutions - for the Northeast. It is past the time to begin taking the threat of biological invasions seriously. With the clock ticking on the introduction of nonindigenous species into Rhode Island's coastal waters, only time will tell what the future holds for the health of Narragansett Bay.

****Learn more about the Northeast Regional Panel at www.northeastans.org.***

This article was adapted with permission from a story in the Narragansett Bay Journal, Vol.1, No.3

CLOSE CALL AT SEA

Former CRMC Employee Rescued After His Sailboat is Lost at Sea

by Kevin R. Cute

WAKEFIELD - Not one of his friends and colleagues from the Coastal Resources Management Council who spent a November evening toasting *bon voyage* to Dave Alves and his adventure of a lifetime guessed that he would be lucky to escape it alive a few weeks later. But that is exactly what happened when Dave's 39' sailboat *Fluke* slipped beneath the surface of the North Atlantic ocean on December 5, leaving the captain and crew members, Roger Wallace and Thomas Stone, adrift in a life raft.



Captain David Alves watches from a life raft as his sailboat Fluke sinks into the sea about 140 miles west of Bermuda.

Dave Alves was the CRMC's Aquaculture Coordinator when he resigned his position in November 2002 to chase a dream of open-ocean sailing to the Caribbean for a winter of languid cruising and island hopping. He was well along in fulfilling his dream after a smooth departure from Rhode Island in mid-November when it came to a frightening halt about 140 miles west of Bermuda.

On December 1 the *Fluke* set a course from Gloucester Point, Virginia to the Island of Antigua. After several days of uneventful sailing, some mechanical problems prompted a change of course to Bermuda for repairs. But the real trouble hit shortly thereafter. While motorsailing in light airs at about 7:00 p.m. on December 5, the *Fluke's* power failed. A quick search below revealed that the battery compartment was flooded with seawater. The urgency of the situation was apparent with the discovery that the source of the leak was a failed through-hull fitting located below the *Fluke's* waterline. When it became obvious that neither bailing nor several attempted repairs could stop the flooding below deck, Captain David Alves gave the order to abandon ship.



Rescued: The crew of S/V Fluke (l-r), Thomas Stone, Roger Wallace, and Captain David Alves, with the Genmar Star's Captain, Oleg Federenko.

A happy ending to this terrifying tale was possible because of the calm reaction of the *Fluke's* captain and crew, and a well coordinated international rescue effort. After watching the *Fluke* disappear into the sea from the safety of their life raft, Dave and the crew kept in constant contact with Bermuda Harbour Radio via satellite telephone. The U.S. Coast Guard was hailed and a C-130 patrol aircraft was dispatched to oversee the rescue operation. The Russian tanker *Genmar Star* responded to the call for help, and diverted from its course to Northern Europe to pluck Dave and his crew from the sea. After arriving at Bermuda a short time later, Dave quickly jetted home to Rhode Island where he is acclimating to life on dry land. All of us here at the CRMC offer a most grateful "Welcome Home."

(Aquaculture, continued from page 1)

”Funding for new capacity-building projects and industry-relevant aquaculture research will help jump-start a new era of aquaculture development in Rhode Island—a place where everyone says our collective challenges are among the greatest anywhere—and help us become a world-class aquaculture research and development center,” says Barry Costa-Pierce, Rhode Island Sea Grant College Program director.

The Rhode Island Aquaculture Initiative is a unique collaboration that unites federal and state interests as well as academic, regulatory, and industry resources. Funding from the National Oceanic and Atmospheric Administration was awarded to the R.I. Coastal Resources Management Council (CRMC), the state’s lead regulatory agency for aquaculture. CRMC, in turn, is enlisting Rhode Island Sea Grant, the University of Rhode Island, and Roger Williams University to administer the project. The list of grant projects follows:

Rhode Island Aquaculture Initiative Multi-Year Research Grants

- Peter August, URI natural resources science professor, received \$149,983 over three years to enhance the Rhode Island Aquaculture and Fisheries Web page and Internet map server with up-to-date physical, chemical, and biological spatial data.
- Bradford Bourque, of Roger Williams University, Harold Pomeroy, Roger Williams University biology professor, and Something Fishy, Inc. received \$125,438 over three years to develop economically and environmentally sustainable land-based culture techniques for at least three species of marine ornamentals.
- Graham Forrester, URI biological sciences associate professor, and Robert Rheault, Spatco, Ltd. President, received \$100,028 over two years to evaluate the effects of aquaculture facilities on natural habitats and to describe the habitat values of shellfish aquaculture gear.
- Marta Gomez-Chiarri, URI fisheries, animal, and veterinary science assistant professor, Roxanna Smolowitz, Marine Biological Laboratory researcher, and Tim Scott Roger Williams University Center for Economic and Environmental Development director, received \$49,136 over three years to evaluate the presence of a parasite found in wild and farmed northern quahogs in Rhode Island and the potential effect of the disease on Rhode Island’s quahog industry.
- Perry Raso, shellfish aquaculturist, and Alicia Thayer, South Kingstown High School teacher, received \$82,405 over three years to educate over 1,700 students from Grade 6 through college about shellfish aquaculture and to promote community acceptance of aquaculture. In addition, students will be involved in a cutting-edge model aquaculture facility.
- Tim Scott, Roger Williams University center for Economic and Environmental Development director, received \$100,000 over three years to determine whether producing young seed clams in a hatchery and replanting them on public grounds will result in a greater harvest of adult clams in the future or will inadvertently attract predators to a productive bed.

Rhode Island Aquaculture Initiative Mini-Grants

- Aquaculture Products of Charlestown received \$275 to test methods for reducing starfish predation in oyster culture.
- Russell Blank and William Blank of North Kingstown received \$3,000 for the purchase of materials and seed to grow bay scallops and soft-shell clams.
- Louis Ricciarelli, Jr. of West Kingstown received \$3,000 to grow bay scallops to harvestable size in Narragansett Bay, using varying types of cages to determine the best method for grow-out.
- Salt Water Farms, LLC of Wakefield received \$3,000 to purchase processing machinery intended to reduce operating costs and accelerate the growth rates of cultured oysters and mussels.
- Spatco, Ltd., of Wakefield, received \$2,000 to purchase and test in-water aeration equipment that will substantially reduce ambient noise levels.
- Kenneth Thompson of North Providence received \$2,000 to grow surf clams, which have not previously been cultivated in Rhode Island.
- Christopher Warfel of New Shoreham received \$1,700 to develop a hybrid wind and solar powered upweller to enable shellfish aquaculturists to site culture operations in remote waters.



*"Our policy is to preserve, protect, develop,
and where possible, restore the coastal resources
of the state for this and succeeding generations"*

Council Members

Michael M. Tikoian, Chair
Paul E. Lemont, Vice Chair
Senator V. Susan Sosnowski
Pamela Pogue
Jerry Sahagian
Representative Eileen S. Naughton
K. Joseph Shekarchi
Representative Thomas A. Palangio
Turner C. Scott
Joseph R. Paolino
David Abedon
Neill Gray
Senator Daniel DaPonte
Raymond C. Coia
Thomas Ricci
Jan Reitsma, Director, DEM

Grover J. Fugate, Executive Director
Goldman and Biafore, Legal Counsel



Photo: Kevin R. Cute

A view of the Rhode Island coast near the Narragansett Town Beach includes the 21' tall bronze sculpture "Dance of Peace II" by local artist Anne Mimi Sammis. The "towers" straddles Ocean Road to the right. The towers is the last remnant of the Narragansett Casino which was destroyed by fire in 1900.

PRST STD
US Postage
PAID
Permit No. 1286
Providence, RI

Contact us!

Coastal Resources Management Council
Stedman Government Center
4808 Tower Hill Road
Wakefield, RI 02879
Phone: 401-783-3370
Fax: 401-783-3767



This publication is printed on recycled paper