



New Brunswick salt marsh

Photos: Andi Rierden

"Environmental groups have done a service to society and the global aquaculture industry by pointing out the ecological and social impacts caused by aquaculture," Costa-Pierce said. "Aquaculture does have an impact on the environment, just as agriculture does."

Those impacts include habitat degradation, nutrient discharges from feed and wastes, introduction of diseases and parasites and the genetic dilution of native wild species from breeding with escapees from aquaculture facilities. Costa-Pierce defines ecological aquaculture as "an alternative model of aquaculture research and development that brings the technical aspects of ecological principles and ecosystems thinking to aquaculture."

"To make this happen," he said, "we

need to get beyond the constant user conflicts between marine fisheries, aquaculturists, coastal zone management and coastal communities."

Costa-Pierce's recommendations include: use of advanced waste collection and recycling systems; escapement control and recovery procedures; reduction in the feeding of fish meal so aquaculture facilities do not consume more protein than they produce; submersible cages to eliminate the visual blight of surface facilities; and elimination of the use of chemicals that are harmful to human and ecosystem health. *Ecological Aquaculture* is published by Blackwell Science in Oxford, England and distributed by the Rhode Island Sea Grant Program.

Calendar

New Hampshire Coastal Clean-up, September 21, 11 to 2 p.m. Clean our coast and rivers in this international event. September 20th is reserved for schools. Sponsored by the NH Coastal Program in conjunction with Waste Management of NH. Other sponsors include: Seacoast Coca-Cola, Portsmouth Regional Hospital and Frisbee Memorial Hospital. Call 603-431-9366 to participate.

Year of Clean Water National Water Quality Monitoring Day. The New Hampshire Department of Environmental Services (DES) will sponsor a Governor's press event on October 18. This will include a trip to the Franklin Wastewater Treatment Plant and Training Center in Franklin, NH to observe the kick-off of the Healthy Water, Healthy People education program. Facilitated by Nicole Clegg, DES Project Wet Coordinator, teacher sessions will focus on the Clean Water Act and its history, nonpoint source pollution and water quality monitoring for schools and youth groups. A water quality restoration site that was funded by a Clean Water Act 319 grant will be chosen for the Governor to visit as well. For more information, contact Barbara McMillan, DES Watershed Outreach Coordinator, (603) 271-7889 or bmcmillan@des.state.nh.us.

The Fresh Water for Atlantic Canada Conference is scheduled for October 24 and 25 in Bathurst, New Brunswick. The Conference will explore critical issues pertaining to the stability of future surface and ground water resources in Atlantic Canada. The conference hopes to increase understanding and knowledge of the impacts that climate change is placing on fresh water resources. Sessions will focus on emerging issues in purification, conservation, restoration and available supplies of fresh water, and will make the link between water quality and human health. Managers of drinking water supplies, consulting engineers, government and business representatives, environmentalists, conservation groups, citizens, researchers, students and others concerned with drinking water and fresh water resources are welcome. For more information visit <http://atl.ec.gc.ca/community/cap.html>, or call Melanie Corkum at 1-800-663-5755.

Canada's Oceans: Research, Management and the Human Dimension, is a national conference scheduled for October 25 to 27 in Ottawa, Ontario. It is designed for ocean and coastal researchers, managers and policy-makers to share the current state of knowledge and to develop discussions on national social science research priorities for the future. The Ocean Management Research Network is organizing the conference. For information, access www.dal.ca/aczisc/call.pdf, or e-mail the network's national secretariat at omrn@stmarys.ca.

Fishing and Benthic Habitats 2002, a Symposium on the Effects of Fishing Activities on Benthic Habitats: Linking Geology, Biology, Socioeconomics and Management is scheduled for November 12 to 14 in Tampa, Florida. The major themes are earth sciences, biology and economics in managing natural resources. Other themes include characterization and understanding natural change; and understanding the ecological and economic effects of fishing. The sponsors of the symposium are the American Fisheries Society, the Ecological Society of America, the National Oceanic and Atmospheric Administration, and the US Geological Survey. Information is at <http://walrus.wr.usgs.gov/bh2002/>.

Resources Useful information for and about the Gulf of Maine

Proceedings of MPA symposium

Proceedings from the symposium, "Marine Protected Areas: Design and Implementation for Conservation and Fisheries Restoration," hosted by the Ocean Life Institute of the Woods Hole Oceanographic Institution on August 27 to 29, 2001 in Woods Hole, Massachusetts, are available to the general public at a cost of \$7.00 U.S. per copy (includes shipping). To obtain a copy, e-mail Ellen Bailey at ebailey@whoi.edu.

To swim or not to swim

The National Resources Defense Council has released its 12th annual beach report, which investigates all beach closings and possible causes. Nationally, almost 20 percent more beaches were closed last year than the year before. In Massachusetts, beach closings/advisories increased from 390 in 2000 to 653 in 2001, a rise of 67 percent. Representatives from the environmental advocacy organizations pointed to more local testing as a reason for the increase in beach closings, but said that many of the sources of bacterial contamination remain unknown. The report sites Massachusetts is as having one of the most comprehensive water monitoring programs in the country. To view the report go to: <http://www.nrdc.org/default.asp>.

Go GoMOOS

For up-to-date information on weather and oceanographic conditions log on to GoMOOS (Gulf of Maine Ocean Observing System), a pilot program designed to bring hourly oceanographic data from the Gulf of Maine to commercial mariners, coastal resource managers, scientists, educators, search and rescue teams, emergency response, public health officials and the curious. Go to: www.gomooos.org.

Stellwagen Bank Management Plan Review

Stellwagen Bank National Marine Sanctuary (SBNMR) in Massachusetts is undergoing a five-year review of its management plan, which sets priorities, contains regulations, presents existing programs and projects, and guides development of future sanctuary activities. SBNMS has opened a public comment period through October 18. Written comments should be mailed to: MPR, Stellwagen Bank National Marine Sanctuary, 175 Edward Foster Road, Scituate, MA 02066. Please send comments through sbnmsplan@noaa.gov. To find the dates, times and locations of the September meetings and to view a copy of the State of the Sanctuary report, which provides general background information on the Sanctuary and its

programs, log on to <http://stellwagen.nos.noaa.gov>. If you wish to be placed on the SBNMS mailing list or require further information, e-mail sbnmsplan@noaa.gov.

State of the oceans report

The Ocean Conservancy, a nonprofit organization that works to protect ocean ecosystems through science-based advocacy, research and public education, has issued a new report *Health of the Oceans*. The report calls for revolutionary changes in ocean management saying

poor management has reduced many species of fish and marine wildlife to a fraction of their historical abundance — in some cases to near extinction. And overfishing has become the greatest threat to the oceans, with a more profoundly negative impact on the oceans than all other human impacts, including pollution. The report contains a comprehensive resource list for concerned citizens. To view the report go to: www.oceanconservancy.org. The site also contains contact information and a web link to the conservancy's New England office in Portland, Maine.

TWELVE THOUSAND YEARS

American Indians in Maine



BRUCE J. BOURQUE

With contributions by Steven L. Cox and Ruth H. Whitehead

The Gulf of Maine has a rich history of archaeological research that goes back to the 1839 discovery of coastal shell middens. Bruce Bourque, chief archaeologist and curator of ethnography at the Maine State Museum, surveys the findings of this archaeological research, providing a thorough history of the Paleo-Indian period to the present. An enjoyable read for both a professional and lay audience. Published by the University of Nebraska Press, 2001, Lincoln, Nebraska.