

COASTAL STUDIES CENTER

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<i>Research and Teaching</i>	1-3	<p>On behalf of the Coastal Studies Center Faculty Advisory Committee, I am pleased to offer our annual report of events and activities associated with the Coastal Studies Center for the 2007-2008 academic year.</p> <p>Just as our liberal-arts curriculum seeks to expose students to different perspectives and to forge new connections between them Coastal Studies explicitly recognizes that a better understanding of our college's location in coastal Maine requires different approaches to, and the formation of, new connections between the complex forces affecting our coastal environment.</p> <p>To further our mission, the CSC hosted a selection of visiting scholars and artists at the property this past year. Ethnomusicologist Dr. Christopher Scales was in residence for the entire year as our Rusack Coastal Studies Visiting Scholar. Geographer and marine conservationist, Dr. Peter Mackleworth and two MacArthur Fellows, painter and installation artist Anna Schuleit and sound artist Trimpin stayed out at the farmhouse at different points during the year as our Coastal Studies Scholars in Residence. Each of these visitors taught classes to our students, gave public talks, and pursued their research and artistic work while in residence.</p>
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The CSC sponsored a vibrant array of student and faculty research at the property and locations nearby, ranging widely from the study of neuropeptides in the American Lobster to the creation of a documentary film on the challenge of coordinating the clean up of the Androscoggin River, a river that moves through Brunswick and meets the Kennebec River at nearby Merrymeeting Bay.

A highlight of the academic year was the dedication of our dock facility, made possible through a gift by Geoffrey C. Rusack '78 and Alison Wrigley Rusack. On May 9, 2008, a gathering of the Board of Trustees and invited guests at the Coastal Studies Center recognized the efforts of the many people involved in the establishment of the dock, a vital resource to the property and the research being conducted there. After a short ceremony under a tent next to the farmhouse, the group boarded schooners and sailed a short distance to Cook's Lobster House for dinner to celebrate the accomplishments of the Coastal Studies Center.

The CSC has much to look forward to in the coming years. We are focusing on how to expand the use of the property while continuing to support and protect research taking place there. The Coastal Studies Faculty Advisory Committee is working to establish firmer curricular ties to a range of other programs and departments at the college. We hope that as Coastal Studies thrives at Bowdoin College, we can involve a greater number of students and faculty in research and artistic works that engage broadly with our college's location on the coast of Maine.

RESEARCH AND TEACHING

In late August twenty-four first year students spent an afternoon exploring the Coastal Studies Center. The group were participants in Bowdoin Science Experience, a faculty initiated program to give incoming students an academic orientation designed to encourage and support their study of science and math. The afternoon included a tour of the Coastal Study Center's new dock and pier and marine lab to learn about available resources and current student and faculty research. The students had time to explore the trails and relax before gathering for an evening cook out.



BSE mentor and alumni, Tenzing Lama ('10), Jenessa Jules ('12) and Daniel Yuan ('12)

The College welcomed **Peter Mackelworth** to Bowdoin as the CSC Scholar in Residence for the fall semester. Dr. Mackelworth is conservation director for 'Blue World', an organization protecting dolphin habitat in Croatia. Dr. Mackelworth taught a course on marine protected areas for the Environmental Studies Program, and gave a public lecture that explored the social aspects of marine conservation in Croatia. Peter received his Ph.D. in Geography at University College, London.

Christopher Scales, an ethnomusicologist at the College of William and Mary came to Bowdoin for the year as Rusack Coastal Studies Visiting Scholar. An expert in Native American music, Dr. Scales has published on powwow music and spent the fall semester at Bowdoin researching Maine Native American musical styles (Passamaquoddy and Penobscot), traditions that are neglected in the academic literature. In the spring, Dr. Scales taught 'Native North American Music and Dance' which examined musical traditions in Native North America, with a focus on contemporary coastal communities of the Northeast US. One of the culminating projects of the course involved organizing a Wabanaki Festival of the Arts in April in collaboration with the Native American Student's Association; Music, Anthropology and Sociology departments; and the Coastal Studies Center. Wabanaki artists and craftspeople from all over Maine convened at Bowdoin for a day of drumming, singing, dancing, carving demonstrations, and Native story telling.

Working with Doherty Postdoctoral Scholar **Jonathan Allen**, **Ian Haight '08** completed a year long independent study project at the Coastal Studies Center marine lab. Ian examined the effects of temperature changes on the larval growth and development of two local seastar species (*Asterias rubens* and *Asterias forbesi*) as well as the hybrids that frequently form between them. In Spring 2008, **Michael Wolovick '09** worked under the direction of **Ed Laine** (Geology) on an independent study project, "Circulation and productivity in Harpswell Sound."

The program awarded eleven student fellowships for the 2008 summer research season. The students shared their research findings and products of their work with their faculty mentors and peers at two seminars at the Coastal Studies Center farmhouse. The fellows, their mentors and their projects were as follows: **James Anderson '10** (Doherty Fellow) worked with Professor **John Lichter** (ES/Biology) conducting a survey of aquatic invertebrates in Merrymeeting Bay and their relationship to submerged aquatic vegetation. James sampled invertebrates to determine the spatial structure of the Merrymeeting Bay food web and to assess its potential for recovery after centuries of human impact. **Alexandra Bassett '09** (Rusack Fellow) titled her project "The Coastal Resource: A Scientifically Oriented Visual Study". With guidance from Professor **James Mullen** (Art) Alex used mixed media to create ten large format pieces that focused on the incidental details of Orr's Island and the Coastal Studies Center. Alex and Kent Island Fellow **Mary Helen Miller** have plans for an exhibit of their work at the Visual Arts Center this Fall. **Elizabeth Barton '09** (Doherty Fellow) worked under the guidance of Professors **Elizabeth Stemmler** and **Patsy Dickinson** (Chemistry) on her project "The Characterization of Truncated and Modified *Orcokinin Neuropeptides* in the tissues from the American Lobster, *Homarus americanus*". Libby's study looked at specific neuropeptides in the tissues of the American Lobster using mass spectrometry to compare concentrations that might suggest the role neuropeptides play in nervous system regulation. **Nicholas Crawford '09** (Doherty Fellow) with direction from Professor **Peter Lea** (Geology) explored the Androscoggin Lake's outlet delta system. Nick's goal for his research project was to map the three dimensional extent of the delta below water using a boat-operated CHIRP sonar. He also collected lake-bottom samples to investigate patterns of recent floods. **Rachel Dicker '09** (Doherty Fellow) studied egg capsule distribution in *Nucella lapillus* as a strategic maternal investment with direction from Professor **Jonathan Allen** (Biology). The purpose of Rachel's research was to determine if adult snails are able to respond to physical/biological cues (e.g. dessication or predation stress) and lay their eggs in optimal locations according to these cues. **Ashton Bunce** of Juniata College in Huntington, PA joined Rachel and Doherty Marine Scholar **Jonathan Allen** for the summer research season contributing to research in maternal investment in egg capsule distribution in *Nucella lapillus*. **Isaac Irby '09** (Doherty Fellow) under the guidance of Professor **Ed Laine** (Geology) examined Precambrian shield impact cratering. Isaac's summer research will form the foundation of his senior honors project.



Ashton Bunce (Juniata College), Professor Jon Allen and Rachel Dicker '09 at the CSC



Ross Cowman '10, James Anderson '10 and Professor John Lichter in Merrymeeting Bay

Wallace Scot McFarlane '09 (Rusack Fellow) examined the history of the changing water quality in the Androscoggin River and Merrymeeting Bay under the direction of Professor **Matthew Klinge** (ES/History). Scot's goals for this project were three-fold, 1) that his research expand the understanding of human impacts and ecological recovery, 2) to complete a research paper for honors in history, and 3) to obtain publication in a peer-reviewed environmental history journal.



Annie Hancock '10, Don Hudson (Chewonki Foundation) and Lee Johnson (Friends of Squirrel Point)

Annie Hancock '10 (Rusack Fellow) completed preliminary architecture and design work for the restoration of Squirrel Point Lighthouse, in Arrowsic, Maine. Annie completed a precedent analysis to evaluate the projected uses of the property and a site analysis to develop the foundation for later design and restoration work. Annie worked with Professor **Wiebke Theodore** (ES/Art) on this project, and designed a pamphlet, and book for the local non-profit organizations undertaking fundraising for the project. As a follow-up to Environmental Policy and Politics (ES 202), with Professor **DeWitt John** (ES/Gov), **Alexa Kaubris '09** (Rusack Fellow) designed her fellowship proposal to create a documentary of the cultural and scientific history of the Androscoggin River, a river deemed one of the ten dirtiest in the country in the 1960's and still one of the top 50. Alexa, from Rumford, Maine, grew up on the banks of the river yet learned nothing about it in school or from her community. Her documentary will explore the tensions between the upriver and downriver communities. She hopes the film will both inspire and educate other Maine youth about the river. Professor

Michael Kolster (Art) was a second advisor for this project. With guidance from Professor **Nancy Riley** (Sociology/Anthropology), **Jessica McGreehan '08** designed a research project as a way to test a finding that gender plays an integral role in male-dominated spaces, and that women may accept oppressive practices as a way to negotiate acceptance (a coping mechanism). Jess interviewed ten women in the male dominated maritime industry attempting to determine how they find their "place" in this line of work and how women mariners live their lives. **Drew Trafton '10** worked with Professor **John Lichter** (Biology) and fish biologists **Michael Brown** (Dept. of Marine Resources) and **Dr. Karen Wilson** (University of Southern Maine) to sample juvenile anadromous and resident fish extensively in Merrymeeting Bay and its tributaries. Drew's project sought to identify characteristics that make good nursery habitat in support of habitat restoration efforts in Merrymeeting Bay.

Two faculty members from the Sociology and Anthropology departments received **Phocas Family Awards: Krista Van Vleet**, for her research 'Beautiful but Deadly?: Representing the Island of Vieques in the Aftermath of U.S. Military Presence', and **Pamela Ballinger**, for research on '(Re)Developing the Coast: Ownership, Access, and Sovereignty in Postsocialist. Croatia' **Jon Allen**, Doherty Marine Biology Postdoctoral Scholar, received a **Rusack Award** in support of the second State of Marine Ecology in Maine Symposium which took place in May 2008.

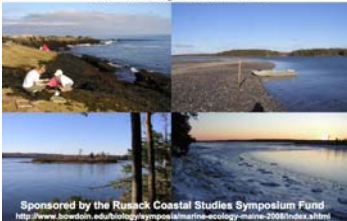
The new dock and pier were well utilized this first year for research, course work and independent study and honors projects. Biology of Marine Organisms used the dock and boat for plankton tows and the marine lab for organism identification. Marine Environmental Geology and Coastal Oceanography used the dock and boat extensively for classwork and to carry out research on harmful algal blooms. The Bowdoin Oceanographic Sensing Buoy installed in Harpswell Sound has contributed to the understanding of circulation, oceanography and harmful algal blooms in Casco Bay. The dock and pier have made access to the buoy much easier and more efficient. Work with the Bowdoin Buoy is conducted by **Ed Laine** and **Collin Roesler** of Bowdoin and **Neil Pettigrew** of the University of Maine and **Gregory Teegarden** of Saint Joseph's College., in concert with student researchers from all the three institutions.



Geo 103 students, Samantha (Sam) Collins ('11) and Lillian (lily) Prentice ('10)

SYMPOSIA

The State of Marine Ecology in Maine
May 2nd and 3rd
Bowdoin College, Brunswick, ME



Sponsored by the Rusack Coastal Studies Symposium Fund
<http://www.bowdoin.edu/anthology/symposia/marine-ecology-in-maine-2008/index.html>

The success of the 2006 State of Marine Ecology in Maine Symposium highlighted Bowdoin's growing role in coastal studies in the Gulf of Maine and the resources available at the Coastal Studies Center. This success has led to unanimous support for a repeat event, and the long-term goal of making the symposium a biannual meeting. With funding from the Coastal Studies Center Symposium Fund, **Jonathan Allen**, Doherty Marine Biology Postdoctoral Scholar organized and coordinated a second symposium at the Coastal Studies Center and the Bowdoin campus in May. The 2008 symposium, which was open to the public, brought 35 researchers from 18 institutions together to present and discuss current research within their area of specialty. Based on feedback from 2006, this year's symposium also included awareness

of student involvement in research in the Gulf of Maine and culminated with an afternoon poster session for undergraduate and graduate students to present their research. This element afforded students the valuable opportunity to present their work to a group of experts in their field. The symposium provided researchers time for fruitful discussions that resulted in identification of the most critical gaps in the understanding of marine ecology in Maine and highlighted areas for future work.

VISITING ARTISTS

The Visual Art Department and Coastal Studies Center welcomed two recent MacArthur fellows as Artists in-Residence this spring; **Anna Schuleit**, an accomplished painter and installation artist; and **Trimpin** a sound sculptor, composer and inventor. Both artists used the Coastal Studies Center Terrestrial Lab as an art studio during their residence.

Trimpin is a specialist in interfacing computers with traditional acoustic instruments. He has developed myriad methods for playing trombones, cymbals, pianos, and other instruments with Macintosh computers. Trimpin describes his work as "extending the traditional boundaries of instruments and the sounds they're capable of producing by mechanically operating them. Although they're computer-driven, they're still real instruments making real sounds, but with another dimension added, that of spatial distribution." Trimpin's goal is to "go beyond human physical limitations, to play instruments in such a way that no matter how complex the composition of the timing, it can be pushed over the limits. Both artists participated in a three-course cluster "Artworks and Social Change", reviewed students final projects, met with classes, conducted open studios at the CSC and gave public lectures.

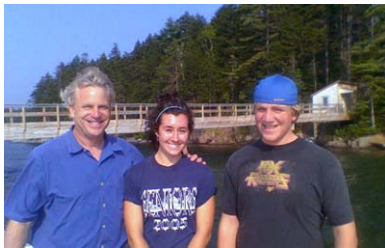
Anna Schuleit's work is informed by the social and architectural history of public sites and institutions. She studied painting at the Rhode Island School of Design, creative writing at Dartmouth College, and recently served as a public art consultant at "Arts for Transit" of the MTA in New York.

Anna gave a public lecture, titled "Local Histories, Public Art, and the Creative Process" which was followed by a discussion about the practice of public art.



Anna Schuleit at the Coastal Studies Center Terrestrial Lab

MARINE LAB



Geoffrey Rusack, Rachel Dicker and Hunter Rusack on the CSC dock

Professor **Kurt Bretsch** (biology) spent the year at Bowdoin as Professor **Amy Johnson's** sabbatical replacement. Kurt taught two courses, supervised independent study projects and Kathryn Anderson's honors project. Kurt has accepted a position as Lecturer at Stony Brook University, NY.

Dr. Amy Johnson spent two months working on echinoderm catch connective tissue in the lab of Dr. Tatsuo Motokawa at Tokyo Institute of Technology.

After three years as Doherty Postdoctoral Scholar, **Jonathan Allen** accepted a teaching position at Randolph Macon College in Ashland, Virginia. At Bowdoin Jon taught Marine Larval Ecology and Evolution in America and supervised two student honors projects this year. Jon also initiated the highly successful State of Marine Ecology in Maine Symposium at Bowdoin in 2006 and a second symposium in 2008. Jon was acting director of the CSC Marine Lab for the 2007-2008 year.

In August the CSC welcomed **Daniel Thornhill** as Doherty Marine Biology Postdoctoral Scholar for a two year appointment. Dan received his B. Sc. From Michigan State University and a Ph.D. from the University of Georgia.

Three visiting researchers used the marine lab during the summer research season. **Will Ambrose**, Professor of Biology at Bates College, studied the growth of bloodworms (*Glycera dibranchiate*) with Bates students **Eben Sypitkowski**, **Lexi Zhang** and **Bill Locke**. **Jan Pechenik**, Professor of Biology at Tufts University conducted research in the influence of salinity on fertilization success in sand dollars, and **Scott Santagata**, Post Doctoral Fellow at the Smithsonian Ecological Research Center used the CSC marine lab to preserve the larvae of several species of bryozoans to investigate the expression of conserved developmental genes involved in the specification of neuronal cell types.



Jon Allen in the intertidal zone

MARINE LAB ALUMNI UPDATE

Rebecca Selden (2006), former Beckman Scholar and Watson Fellow, is in her first year at the University of California at Santa Barbara working with marine ecologist Steve Gaines studying kelp forest ecosystems.

Molly Wright (2005) is in her second year at the University of California at Berkeley working with Roy Caldwell. Her fieldwork is at U.C. Berkeley's field station on Moorea, French Polynesia: "Predicting sexual conflict by examining the genetic mating system of a socially monogamous mantis shrimp, *Pullosquilla litoralis*".

Laura Windecker (2003) is in her second year at the Graduate School of Oceanography, University of Rhode Island.

Michael Butler (2002) received an MS in raptor biology from Boise State University, Boise Idaho and is currently pursuing a PhD in biology at Arizona State University.

COMMUNITY SERVICE AND OUTREACH

Six students joined **Mark Murray** and **Rosie Armstrong** for a beautiful September Common Good Day morning beach and trail cleanup for the Maine Coastal Program's Coastal Clean Up at the CSC. **Gemma Leghorn '10**, **Katie Gunderson '10**, **Sarah Glaser '11**, **Maggie Crosland '10**, **Maggie Schmidt '11**, and **Camila Lopez-Anido '09** teamed up and gathered trash and other debris from Dipper Cove, Brewer Cove, and Dog's Head. Prospective students, neighbors and the wider community met Bowdoin students, faculty and staff at the CCS Marine Lab for an Open House in November, many spent the afternoon walking the trails and having a look at the Terrestrial Lab and farmhouse as well.

DOCK DEDICATION



Schooner at the CSC dock

The Coastal Studies Center dock was dedicated Friday, May 9, 2008. The new dock greatly increases opportunities for students to engage in marine science and coastal research by expanding the areas of inquiry through providing broad access to Harpswell Sound and Casco Bay. The dock allows students and faculty to engage in a range of projects including sea urchin growth experiments, invasive species research, blue mussel toxicology, marine glaciology, water quality studies, coastal archaeology, and marine responses to climate change. The construction of the dock also benefits visiting scientists and courses that use the Coastal Studies Center, and serves as a catalyst for creating collaborations with other institutions, such as

Bigelow Laboratory for Ocean Sciences and St. Joseph's College.

Access to the ocean enriches the hands-on research, education and training that are crucial to preparing students for advanced degrees in the sciences. This project was made possible through generous financial support from Trustee **Geoffrey C. Rusack '78** and his wife, **Alison Wrigley Rusack**, and the **National Science Foundation**.



Ian Haight '08 at the CSC dock dedication visit to the marine lab

A TRIBUTE

On August 14, 2008 the Coastal Studies Center lost a great friend with the passing of **Donald Brown**. Don ran the plumbing shop on campus and as a result was deeply involved with the operation of the marine lab. From the designs of several sea water pumping systems, to their construction and all through the years of their constant operation, Don provided both a steady hand that made solving any problem seem possible, and a sense of good humor that made it fun to tackle each challenge that came along. It will be many, many years before the evidence of his work here is no longer visible, and even then, his presence will still be sorely missed by those of us who had the pleasure of working with him.



Rosie Armstrong (coordinator)

Mark Murray (primary caretaker)

Steve Hauptman (summer caretaker)

Jane Hauptman (marine lab technician)

Mike Chipman, Don Brown and Richard Johnston (Facilities Plumbing Shop) 2007-2008

CSC Advisory Committee

Jim Mullen (Visual Arts)

Sarah McMahon (History)

John Lichter (Biology)

Susan Kaplan (Arctic Studies)

Ed Laine (Geology)

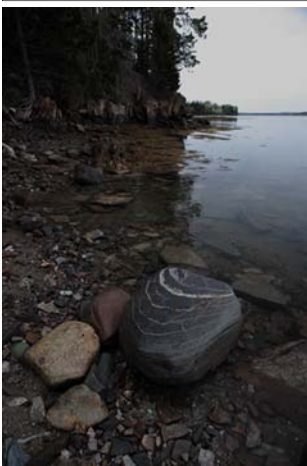
Ta Herrera (Economics)

Mike Kolster (Visual Arts)

Peter Lea (Geology)

DeWitt John (ES/Gov)

Connie Chiang (History/ES)



Photograph credits:

Stephen Hauptman, Ed Laine, Anna Schuleit, and Wiebke Theodore.

PUBLICATIONS, HONORS AND PRESENTATIONS

(Student co-authors are denoted by *)

Alcorn, N.A.* and J.D. **Allen** (submitted). How do changes in parental investment influence development in echinoid echinoderms? *Evolution and Development*.

Allen, J.D. 2008. Size-specific predation on marine invertebrate larvae. *Biological Bulletin*. 214 (1): 42-49.

Bretsch, K., and D. M. Allen, 2006, [Effects of Biotic Factors on the Depth Selection of Nekton](#), *Journal of Experimental Marine Biology and Ecology* 334 (1): 130-138.

Bretsch, K., and D. M. Allen, 2006, [Tidal Migrations of Nekton in Salt Marsh Intertidal Creeks](#), *Estuaries and Coasts* 29 (3): 479-491.

Ellers, O. & Johnson, A. (in press) Polyfluorochrome marking slows growth only during the marking month in the green sea urchin *Strongylocentrotus droebachiensis*. *Invertebrate Biology*.

Selden, R.*, **Johnson, A.**, **Ellers, O.** (submitted). Crab scent induces thicker skeletons, smaller gonads and size-specific growth responses in sea urchins. *Marine Biology*.

The following conference papers resulted from Phocas Family funded faculty research:

Ballinger, Pamela. The Inelasticity of Water? Privatizing Seaspaces in Postsocialist Croatia. Paper presented at American Anthropological Association meetings, San Francisco (November 2008).

Ballinger, Pamela. Reconstructed Hope: Tourism and the Limits of Hope in Post-Yugoslav Croatia. Conference on "Critical Spaces of Hope: Locating Postsocialism and the Future in Post-Yugoslav Anthropology," University of Chicago (October 2008).

Ballinger, Pamela. 'The Mediterranean as it once was': Valorizing the Adriatic Seascape. Paper given at European Association of Social Anthropologists conference, University of Ljubljana, Slovenia (August 2008).

Student Honors projects:

Nicolas James Alcorn ('08) "How do changes in parental investment influence larval development in Gulf of Maine echinoids?" Biology Department.

Nick Alcorn attended the annual meeting of the Society of Integrative and Comparative Biology in San Antonio, TX in January where he presented his CSC supported research on the effects of parental investment on development in sea urchins. Nick's poster presentation won an award as a Best Student Paper at the meeting. This is an especially impressive honor since Nick's paper was competing with presentations by Masters and Ph.D. level students. Incredibly, this is the second year in a row that a Bowdoin student who worked at the CSC has won a Best Student Presentation award at this meeting.

Kathryn Michelle Anderson ('08) "Comparing chemical and structural induced defenses of *Ascophyllum nodosum* and *Fucus vesiculosus* in response to damage by herbivory and wave action." Biology Department.

Benjamin Morgan Stormo ('08) "Effects of eastern dwarf mistletoe infection on the expression of senescence-related genes in host white pine." Biochemistry Department.