

COASTAL STUDIES CENTER

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FROM THE DIRECTOR

ANNE HENSHAW

It is with great pleasure that I submit the annual report of the Coastal Studies Center of Bowdoin College for the 2001-2002 academic year. This year has been a time marked by continued program development, self evaluation and visionary planning. The expanded academic role of the CSC has attracted larger numbers of students, faculty and visiting scholars from a broad spectrum of disciplines. The result thus far is encouraging in that the CSC provides entrée into the dynamic and multiple facets of coastal studies by offering an open platform of intellectual and experimental inquiry.

A host of classes used the Center during the academic year from Anthropology, Visual Arts, Environmental Studies, Theatre and Dance, Geology and Biology among others. Summer continues to be our peak period of activity for student and faculty research at the CSC and surrounding coastal locations. Last summer also marked the building of the CSC interpretive trail which offers a unique educational opportunity for students, staff, faculty and the public to explore the natural and cultural history of the CSC while enjoying the beauty of the Maine coast. Through support of two visiting artists and co-sponsorship of a major symposium on climate change, Coastal Studies also began emerging as an integral part of the intellectual life on campus. During the year, several important strategic planning sessions took place which will help broaden the vision of Coastal Studies for years to come. These strides have been made with the generous support of the College, donations from Geoffrey Rusack ('78) and Alison Wrigley Rusack, and the hard work of many individuals. Thanks to all who contributed their time and intellectual energy!

Our work for the coming year is cut out for us for our intellectual livelihood lay in attracting more participants and funding. Our future endeavors will revisit ways to engage more scholars especially those from the social sciences and the humanities with the goal of playing a part in the funding process. We also must attain critical mass by creating more interdisciplinary opportunities for teaching and research which can help support the kind of hands-on, experiential learning that continues to be our critical academic cornerstone. A number of promising starts have been made in these areas.

In 2003 and beyond, the CSC will continue to build on its achievements and to focus on positioning Coastal Studies, both on the site itself and beyond, as an innovative and vital part of the Bowdoin College experience.

RESEARCH AND TEACHING

In September 2001, Bowdoin contracted Goodwin's Well and Water to install 5 bedrock wells in the field near the top of the CSC Research Watershed using air-rotary drilling. This work, being directed by **Peter Lea** (Geology) is supported by a National Science Foundation CCLI grant. The wells extend 100 to 200 feet below the ground surface (extending below sea level), and yield between 1 and 60 gallons per minute. The well field has been used to examine groundwater flow in fractured-bedrock systems during such courses as *Environmental Geology and Hydrology* and represent a valuable resource for future teaching and research. In June, the CSC also completed a detailed ground survey by Harty & Harty of Bowdoinham as part of a virtual coastal studies project led by **Carey Phillips** (Biology). Fifteen monuments and two

RESEARCH AND TEACHING



CSC summer fellows and research assistants

axis of the property were laid. This survey will help complete high resolution GIS mapping and will be used by a variety of courses and projects in Geology, Environmental Studies and Biology.

With the help of the Coastal Studies Rusack Project Initiative Fund and several student research fellowships, a variety of coastal projects were underway during the 2002 summer. At the marine lab, three concurrent projects filled the wet lab with activity. Professor **Amy Johnson** (Biology) worked with **Laura Windecker** (Dougherty Fellow) on tracking growth mechanisms on sea urchins. The results of this research will hold important implications for the aquaculture industry in Maine and growing urchins in land-based urchin farms and for reseeding urchins in the wild. **Greg Teegarden** supervised two students, **Dave Donnelly** (Hughes Fellow) and **Steve Carpenter** (Rusack Fellow), on his continuing research related to zooplankton grazing, harmful algal blooms and toxic accumulation kinetics in planktonic food webs. Dave and Steve also took part in a two-week study aboard the RV Endeavor in the Bay of Fundy evaluating the threat posed to

whales from the accumulation of toxins in their food source (zooplankton). Greg will be starting a new position this fall with St. Joseph's College as head of their Environmental Science Program. We wish Greg the best of luck and look forward to having him conduct research at the CSC in the future. Lab instructor **Dave Guay** (Biology) and **Michelle Weaver** (Gibbons Fellow) continued their work on the *CSC Marine Biodiversity Project*, a web-based tool for Bowdoin students that will offer one-stop resource for taxonomy, natural history, and life history information for various marine organisms.

The waters surrounding the CSC were also the subject of summer long research by Professor **Ed Laine** (Geology) and his students. When not busy swimming to shore from our recently installed moorings or hauling heavy equipment down the bank of the marine lab, **Megan Lim** (Rusack Fellow), **Jamie Holte** (Dougherty Fellow) and **Ed Sweeney** (Rusack Fellow) were busy trying to understand and explain salinity anomalies in Harpswell Sound, low dissolved oxygen and flushing rates in Quahog Bay and glaciomarine sedimentation in Maquoit Bay and surrounding waters. Ed Sweeney will be following up his research through an honor's proposal this fall.

On the terrestrial side, Professor **John Lichter** (Biology) supervised a number of on-going projects at the CSC and adjacent coastal waters. At the CSC, **Jon Harris** and **John Carpenter** spent the summer mapping five study plots which will be part of John's long term forest ecology monitoring project. John also worked with **Josh Atwood** (Rusack Fellow) continuing a land use history project looking for evidence of historical erosion on the property. The project ties into archaeological work being conducted at one of the pre-colonial shell middens located on the property. Professor **Anne Henshaw** (Anthropology) supervised two students **Adrienne Heflich** and **Joy Giguere** in mapping and test excavation of the Hanson Point site. Adrienne's project helped reconstruct the season in which the site would have been occupied while Joy conducted a quantitative study of shell-soil ratios. In nearby Merrymeeting Bay, John Lichter supervised **Juliana Grinvalsky** (Rusack Fellow) on a project monitoring plant community dynamics in the saltwater marsh beds. **Barry Logan** (Biology) together with **Jared Reblin** (Biology) studied the physiological effects and distribution of eastern dwarf Mistletoe on the coastal red and white spruce. Most of their work focused on Monhegan Island where the effects of mistletoe were most pronounced. Barry Logan also advised biology major **Nissa Lohrmann** (Dougherty Fellow) on the seasonal acclimation of antioxidants in two red algae (*Mastocarpus stellatus* and *Chondrus crispus*) with differing levels of stress tolerance. Nissa along with Laura Windecker and Ed Sweeney will be developing the results of their research into honor's theses in the fall.

On the artistic front, Jim Mullen and Mike Kolster (Visual Arts) continued their work exploring the representations of landscape along the Maine coast and how we ascribe meaning to our surroundings through different forms of visual media. **Rachel Tannebring** (Rusack Fellow) worked with Jim Mullen and spent the summer painting along the Maine coast, mostly in Middle Bay and Harpswell Sound. **Lucy Barber** (Visual Arts), working through the Rusack project initiative fund explored the rhythms and complexities of the Maine Coastline. Her interests focus on human interactions with their surrounding environments.

We had several visiting researchers conducting work at the CSC during the course of the summer. **Dean McCurdy** (Albion College), former CSC scholar-in-residence, continued his ongoing work on the impacts of trematode parasites on the edible clam *Mya arenaria*. He was joined by two students, Nicole Casey and Sean Logan, for a week of intensive collecting and analysis in the marine lab. **Jim Slavicek** (US Forest Service) together with entomologist **Joe Elkinton** (University of Massachusetts), **Brian LeDuc** (Umass graduate student), **John Podgwaite** (US Forest Service) and **Richard Bradbury** (Maine Dept of Agriculture) began experiments testing the development of a baculovirus as a potential biological control agent for the Browntail moth. This is a two-year long project primarily focused on the apple trees located on the CSC property.



CSC ARTISTS-IN-RESIDENCE

During the 2001-2002 the CSC hosted two artists-in-residence. In the fall, landscape painter **Lucy Barber** resided at the CSC and taught an advanced landscape painting course. As part of her residency, she also gave a public lecture entitled "Brushstrokes as touches of light: painting at the Coastal Studies Center." The artwork produced by Barber during her residency was exhibited at the Denise Bibro Fine Arts Gallery in New York and in a faculty show at the Icon Gallery in Brunswick.

In the spring the Coastal Studies Center welcomed artist **Nigel Poor**. Nigel taught a course entitled "From Observation to Obsession." The final student projects in this class were exhibited in the Terrestrial Lab/Studio in April. The student exhibit was quite a site to behold with three dimensional artistic rendering filling the entire space. Nigel gave a public lecture in April entitled "Eight words" where she highlighted the creative works made during her residency. Photograms of insect collection that mimicked the nighttime sky at the CSC as well as signatures of all the incoming classes to Bowdoin were among the pieces that captured her imagination. We will miss Lucy and Nigel but thank them both for the unique artistic perspectives they brought to the Center. Next year we welcome environmental historian Connie Chiang as the scholar-in-residence for the 2002-2003 academic year.



Nigel Poor, Artist in residence Spring 2002

PUBLICATIONS, PRESENTATIONS AND EXHIBITS

A sample of the faculty publications, posters and art exhibits stemming from CSC research since it opened in 1998.

Articles: "Photosynthetic Characteristics of Eastern Dwarf Mistletoe (*Arceuthobium pusillum*) and its Effects on the Needles of Host White Spruce (*Picea glauca*)," Emily Huhn, **Barry A. Logan** and David Tissue, under review for the journal *Plant Biology*.

"Phycotoxin accumulations in zooplankton feeding on *Alexandrium fundyense* - vector or sink?" **Gregory J. Teegarden**, Allan D. Cembella, **Carrissa L. Capuano***, **Stacy H. Barron***, Edward G. Durbin (*Bowdoin student authors), Paper submitted to the *Journal of Plankton Research*.

Conference papers and posters: "Seasonal Acclimation of Antioxidants in Two Co-occurring Red Algae with Differing Stress Tolerances," Nissa L Lohrmann and **Barry A. Logan**, Annual Meeting of the American Society of Plant Biologists, Denver, Colorado, August 2002

"Photosynthetic Characteristics of Eastern Dwarf Mistletoe (*Arceuthobium pusillum*) and its Effects on the Needles of Host White Spruce (*Picea glauca*)," Emily Huhn and **Barry A. Logan**. Ecological Society of America, Snowbird, Utah. August, 2000

"Patterns of short-term and long-term accumulation and loss of PSP toxins in marine copepods feeding on *Alexandrium fundyense*," **Gregory J. Teegarden**, Allan D. Cembella, Robert G. Campbell, and Edward G. Durbin. Tenth International Conference on Harmful Algae, October, 21-25 2002.

"Power Law Scaling of Growth in Sea Urchins," ***Johnson, A., Ellers, O., Windecker, L.** Society of Integrative and Comparative Biology (SICB) meetings, January 2003.

Size-specific effects of diet during rapid growth in urchins. ***Windecker, L., Johnson, A., Ellers, O.** Poster presentation, Society of Integrative and Comparative Biology (SICB) meetings, January 2003.

Exhibits

"Depicting the Maine Coast," **James Mullen** and **Mike Kolster**. Saco Museum, Saco Maine, August through November, 2002.

"Recent Paintings," **Lucy Barber**, Denise Bibro Gallery, New York, NY. April 2002.

COMMUNITY SERVICE AND PUBLIC OUTREACH



Coastal clean up volunteers Sept., 2001

The CSC was involved with several projects over the year to increase our level of community service and public education about important coastal issues. In the fall, Bowdoin faculty, staff and students participated in **coastal clean-up** efforts at the CSC as part of the largest volunteer effort in the state of Maine. Faculty, staff and students participated in this effort which also coincided with Bowdoin's **Common Good Day** on Saturday, September 29, 2002. The CSC clean-up teams recorded the type and amount of the debris collected. The data are quantified by the state and help pinpoint the sources of marine debris and develop solutions for preventing debris like nets and six-pack rings from entangling marine mammals.

As part of the National Science Foundation CCLI award **Integrating Undergraduate Hydrology in a Community Context**, portions of two workshops for middle-school teachers throughout Maine led by **Peter Lea** (Geology) were held at the Coastal Studies Center in

July and August 2002. Twenty-four teachers from fifteen schools investigated groundwater and watershed processes using the CSC Bedrock well field and the research watershed. With support from Bowdoin, the teachers are bringing these lessons back to their own classes and students. For example, 8 schools have now installed their own shallow-groundwater monitoring wells similar to those in the CSC watershed. The CSC also participated in the *Ancient Ice, Cool Science* climate change exhibit mounted by the Peary-MacMillan Arctic Museum. The CSC weather station data gathered over the last several years was graphed and accessed through a computer interface documenting the local variability of temperature and precipitation along the Maine Coast. The exhibit also featured on-going research by a number of Bowdoin faculty including Anne Henshaw and her work amongst Inuit living in the Arctic coastal community of Cape Dorset and their observations and perceptions of climate change in that region.

During the summer we made great strides in building the **new CSC interpretive trail**. This project represents years of planning beginning back in the spring in 1998 when landscape architect Todd Richardson (Richardson Associates) taught a course at Bowdoin on trails design. The maps and related designs that students produced during that course built important momentum towards creating an interpretive trail system that could reflect the beauty and unique character of the CSC property. In the summer of 2001, with money provided by Alison Wrigley Rusack and Geoffrey Rusack ('78) a trail design was formalized and the basis for an interpretive guide created through the efforts of biology major Kate



Trail project crew: (left to right) Todd Richardson, Richardson Associates, Carolyn Johnson ('05), Ashley Berendt ('03), Connor Carpenter ('05), and CSC Caretaker Mark Murray.

Mendenhall ('01) with guidance from Todd Richardson and Anne Henshaw. The layout was designed in such a way to accentuate both the natural and cultural history of the property as well as the types of research currently being undertaken by Bowdoin faculty and students. In August 2001, a trail workshop involved faculty and staff in the final planning of the trail and a preliminary layout was approved allowing time to flag the trail for additional feedback and input. By the spring of 2002, a generous gift from the Rusacks allowed us to push to the final phase of trail construction. During the summer **Conor Carpenter** ('05), **Carolyn Johnson** ('05) and **Ashley Berendt** ('02) cleared the final trail with guidance from CSC caretaker **Mark Murray** and **Todd Richardson**. Over 4 miles of trails were cleared and the trail was officially open in the fall. A kiosk now houses interpretive trail guides and a large scale map of the trail and property (produced by Woodworth Associates). The trails represent an exciting addition to the property which will provide students with a greater understanding and appreciation for the Maine coast as well as the type of educational opportunities that exist at the CSC.



George Chatterton with Lewis Hanson's French coronet, August 2002

In December the CSC hosted its **first annual holiday gathering** for Bayview Road homeowners and other neighbors. It was a great way to meet our fellow island residents and to tell them about various programs taking place on the property. In August we were visited by **George Chatterton**, the step grandson of Lewis Hanson, former owner of the farm. Anne Henshaw conducted an interview with Mr. Chatterton

about his life history and memories of Mr. Hanson and life on the farm back in the 1920s and 1930s. The interview was audio and video taped and will be archived as part of the CSC oral history and photographic database. During his visit, Mr. Chatterton generously donated the French coronet Mr. Hanson used to play which will be housed in Bowdoin's Music Department.

Bowdoin College

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Planning for the future

Much of the 2001-2002 academic year was geared towards creating a vision for the future of Coastal Studies. The Coastal Studies Center advisory committee played an important role in this process as did the input and feedback from other faculty who participated in a planning session held in February. A series of summer working groups were also helpful in thinking through various components of our program that build on the important research and teaching currently taking place at the CSC as well as other coastal areas in Maine and beyond. The need for establishing connections with other coastal institutions through student and faculty exchange as well as through collaborative research projects provide an important basis for continued growth and expansion. On this front, collaborative endeavors with the Woodshole Oceanographic Institution and with the Wrigley Institute for Environmental Studies at the University of Southern California are being discussed. The culmination of these planning efforts resulted in the formulation of a case statement that advocates the creation of a "Coastal Studies Research Institute" which expands our current vision beyond the CSC property. The "Institute" idea will be under review during the 2002-2003 academic year by faculty and senior staff as we worked towards a development strategy.

Contributions to campus intellectual life

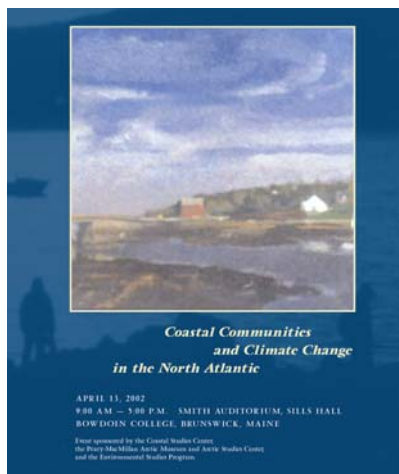
Special thanks to the 2001-2002 CSC Advisory Committee for all their help and input during the year:

DeWitt John (Environmental Studies)
Susan Kaplan (Arctic Studies)
Mike Kolster (Visual Arts)
John Lichter (Biology)
Ed Laine (Geology)
Peter Lea (Geology)
Del Wilson (Events and Summer Programs)

...and to a very dedicated and hard working support staff:

Marjorie Parker (coordinator)
Mark Murray (caretaker)
Rick Leary, Mike Chipman, and Ken Durgen (marine lab technicians)

As part of an on-going effort to engage the Bowdoin community and the public with timely and pertinent issues that relate to coastal issues and concerns, the CSC together with the Peary-MacMillan Arctic Museum and the Environmental Studies Program hosted a daylong symposium in April which brought together climatologists, anthropologists, and policy makers to discuss the challenges and opportunities posed by climate change. The symposium entitled "**Coastal Communities and Climate Change in the North Atlantic**," addressed the recent International Panel on Climate Change's report urging nations to develop strategies to reduce their vulnerabilities to climate change. One of the key themes addressed in the symposium explored the vulnerabilities of people living in coastal communities in the North Atlantic region and the adaptive measures they have developed over time to cope with climate change. The policy specialists discussed the challenges of implementing climate change policy that reflect upon our need to adapt and take preventative measures that will help mitigate future changes currently being forecasted.



The symposium highlighted the research and policy work of a host of renown academics and governmental consultants. Greg Zielinski, Research Associate Professor of Climate Studies, Institute for Quaternary and Climate Studies, University of Maine, led off the symposium. Zielinski is best known for his work on the Greenland Ice Sheet Project and is currently involved in the reconstruction and evaluation of weather and climatic conditions across New England for the last 300 to 400 years. Mark Nuttall, Professor of Social Anthropology, University of Aberdeen, and George Wenzel, Professor of Geography, McGill University, discussed their applied anthropological research amongst Inuit peoples in Greenland and Baffin Island, Canada. The afternoon discussion, focused on policy implications, led by Robert Corell, Senior Research Fellow, Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University and W. Michael McCabe, President of McCabe & Associates and former Deputy Administrator of the U.S. Environmental Protection Agency. Both Correl and McCabe discussed the policy implications of climate change and its relationship to sustainability. The symposium was made possible through the generous support of Geoffrey Rusack '78 and Alison Wrigley Rusack, and a grant from the Andrew W. Mellon Foundation.