

Center for the Environment, Ecological Design, and Sustainability

Smith College



Annual Report

7 July 2011

Submitted by Andrew J. Guswa, Director

Executive Summary

2010-2011 was an exciting year for the Center for the Environment, Ecological Design and Sustainability. In January, we moved into our new space in Wright Hall, and it has quickly become a hub of activity for everyone interested in the environment. Programmatically, we launched a successful curricular grant program, coordinated a faculty learning community around the Deepwater Horizon crisis, developed a new concentration on the topic of sustainable food, engaged students in a variety of projects, and continued to develop the Ada and Archibald MacLeish Field Station as a site for environmental research and outdoor education. We also grew our staff through the hiring of Ms. Sarah Loomis, our new administrative assistant, and we continued to share the vision for the Center with faculty, staff, students, alumnae, and potential partners and supporters.

1 Mission and Outcomes

Building on a strong tradition of women's leadership at Smith, the Center for the Environment, Ecological Design, and Sustainability (CEEDS) brings together faculty, staff, and students from the natural sciences, social sciences, humanities, and engineering to address environmental questions and challenges. Our mission is *to graduate women who excel at integrating knowledge to support environmental decisions and actions*. This mission, and CEEDS itself, is intended to complement and enhance the wide range of curricular pathways that students can choose to study the environment at Smith. CEEDS is about linking knowledge across the liberal arts and critically applying this knowledge to real-world solutions.

In pursuit of these goals, the activities of the Center are directed toward

- Enhancing the curriculum
- Sponsoring integrative environmental projects
- Using the campus as a model
- Integrating environmental resources and information

Sections 3 through 6 of this report are organized according to these categories with details on specific activities.

Ultimately, CEEDS is driven by educational outcomes rather than activities; that is, we choose to focus on the impact of the Center rather than the efforts. Through the programs, activities, and collaborations facilitated and supported by the Center, we intend that

Connections are made

Seemingly disparate knowledge is brought together within the unifying context of the environment.

Students take action

Smith students are empowered and enabled to take on environmental projects inside and outside of the curriculum and to bring their liberal arts learning to bear in pursuit of these projects.

People interact

Students, faculty, staff, alumnae, employers, and community members, who might not otherwise have crossed paths, interact and share knowledge and experiences related to the environment.

Faculty members feel supported

Members of the faculty recognize the Center as an organization that helps them achieve their goals with greater ease.

Students get outside

Students are mindful of the communities and urban and natural landscapes of the Pioneer Valley, our New England setting, and beyond.

Graduates get jobs

Graduates find meaningful employment in environmental fields over a range of sectors (graduate school, business, non-profit, government).

Alumnae Connect

Smith alumnae connect with the college, current students, and each other to share knowledge, experiences and expertise related to the environment and sustainability.

Smith is known

Smith grows its reputation as a model of environmental sustainability, as a place for students to live sustainably, and as one of the best places to study the environment.

Experiences stick

Student and alumnae thoughts, decisions, and actions throughout their lives reflect environmental experiences and learning at Smith.

One challenge identified this year is how to measure our success at achieving these outcomes, i.e., how to assess to what extent our actions are leading to the desired effects. This challenge for the Center for the Environment presents a strategic opportunity for Smith to enhance its Office of Institutional Research to provide expanded capability for programmatic assessment throughout the college.

2 Growth and Development

Many of our efforts this year were directed to growing and developing the Center, including hiring and assembling appropriate personnel, establishing our new home in Wright Hall, developing the Ada and Archibald MacLeish Field Station (see 5.1.1. below), and working with alumnae and potential donors. In January 2011, the Center moved into a renovated space on the Garden Level of Wright Hall. This space features staff offices, a foyer and informal gathering space, meeting space with a flat panel display, student workspaces, and an ever growing plant collection (see Figures 1 and 2). Regular hours for the Center are 8 am – 4 pm, Monday through Friday, and accommodations can be made for student and faculty groups during other times upon request.



Figure 1: Welcoming entry and informal gathering space in the Center for the Environment, Ecological Design and Sustainability.

Concomitant with our move into Wright Hall, we hired a new administrative assistant, Sarah Loomis. Originally hailing from Northfield, MA, Sarah graduated from Skidmore College in 2007 with a BA in Environmental Studies and a concentration in water issues. After graduating from Skidmore, Sarah served as an AmeriCorps VISTA at the Delaware Center for Horticulture where she helped encourage community engagement and implemented green initiatives through gardening education. Following this experience, she taught horticulture and gardening classes to incarcerated women at the state women's prison. Sarah brings her warm and engaging personality to the Center and has quickly come up to speed on Smith's systems and procedures.



Figure 2: People Interact – Smith’s Green Team meets in the Center for the Environment, Ecological Design and Sustainability.

2.1 Personnel

As of 1 July 2011, the staff of the Center comprise the Director, Program Coordinator, Field Station Manager, Senior Research Associate, and Administrative Assistant, all of whom are part-time employees of CEEDS (see Table 1). Environmental Fellows, appointed from the Smith College faculty, provide strategic guidance to the Director and staff. Separate advisory boards exist to set policy and make decisions related to the MacLeish Field Station (see 5.1 below) and the Environmental Concentration (see 3.1 below). The Center also relies on a close working relationship with Smith’s Environmental Sustainability Director, Deirdre Manning, whose office is located within CEEDS.

2.2 Fundraising and Alumnae Outreach

Throughout 2010-2011, the Center Director, CEEDS staff, and the Environmental Fellows worked closely with the Office of Development and the Alumnae Association to share the mission and potential of CEEDS with alumnae and potential donors.

Specific events in 2010-2011 at which Professor Guswa spoke include:

18 July 2010, “Smithies in Action: Environment, Engineering and Liberal Education,” presentation to the Smith Club of Colorado, Boulder, CO.

15 October 2010, “Smithies in Action: Engineering, Environment and Liberal Education,” presentation to Smith alumnae and students participating in Smith JYA in Geneva, Switzerland.

Table 1: Staff and faculty affiliated with the Center for the Environment, Ecological Design and Sustainability. Specific job responsibilities for 2011-12 are provided in Appendix A.

	As of 1 July 2010	As of 1 July 2011
Staff		
Director	Andrew Guswa	Andrew Guswa
Program Coordinator	Joanne Benkley (0.25-FTE)	Joanne Benkley (0.5-FTE)
Field Station Manager	Reid Bertone-Johnson (0.5-FTE)	Reid Bertone-Johnson (0.5-FTE)
Senior Res. Associate	Paul Wetzel (casual)	Paul Wetzel (0.5-FTE)
Administrative Asst.	-	Sarah Loomis (0.33-FTE)
Environmental Fellows	Leslie King, Sociology Ann Leone, French and Landscape Studies Amy Rhodes, Geosciences and Env. Science and Policy David Smith, Biological Sciences and Env. Science and Policy Greg White, Government	Jesse Bellemare, Biological Sciences Leslie King, Sociology Ann Leone, French and Landscape Studies David Smith, Biological Sciences and Env. Science and Policy
MacLeish Advisory Board	Amy Rhodes (Chair), Geosciences and Env. Science and Policy Jesse Bellemare, Biological Sciences Reid Bertone-Johnson, Field Station Manager and Landscape Studies Scott Johnson, Athletics	Andrew Guswa (Chair), Engineering Jesse Bellemare, Biological Sciences Reid Bertone-Johnson, Field Station Manager and Landscape Studies Scott Johnson, Athletics
Advisory Board for Environmental Concentration: Sustainable Food		Nina Antonetti, Landscape Studies Elisabeth Armstrong, Study of Women and Gender Ann Leone, French and Landscape Studies Michelle Joffroy, Spanish and Portugese Nola Reinhardt, Economics

26 October 2010, visit by alumna to Smith College, coordinated by Mr. Jack Missry, Development Officer. Included in this visit was a trip to the Ada and Archibald MacLeish Field Station.

27 October 2010, "Smithies in Action: Engineering, Environment and Liberal Education," presentation to the Smith Club of Cambridge, MA.

11 December 2010, lunch with alumna and Patricia Jackson, Vice President for Development for Smith, in Burbank, CA.

15 December 2010, meeting with alumna and Ms. Marea Wexler, Senior Development Officer, to discuss a CEEDS gift proposal, San Francisco, CA.

15 December 2010, lunch with Ms. Deborah Duncan '77 and Ms. Marea Wexler to inform Ms. Duncan of the activities of CEEDS, San Francisco, CA.

15 December 2010 "Smith by Design: Environment, Action, and Liberal Education," presentation to Smith alumnae in San Francisco, CA.

25 March 2011, Moderator for panel on Teaching Science and Sustainability, Alumnae Association Women in Education Conference, Smith College.

2 April 2011 "Smith By Design: Environment, Action and Liberal Education," presentation to the Smith Alumnae Club of the North Shore, Rockport, MA.

12 May 2011, brief presentation of the Center to the Regional Chairs of the Alumnae Association, Smith College.

28 June 2011, visit by alumna to Smith College, coordinated by Ms. Marea Wexler. Included in this visit was a trip to the Ada and Archibald MacLeish Field Station.

2.2.1 Grant Proposals

In 2010-2011, CEEDS staff in conjunction with Smith's Development office submitted a number of grant proposals for external funding. Each is summarized briefly here.

Title:	Development of the Ada and Archibald MacLeish Field Station for Environmental Education
Agency:	S. D. Bechtel, Jr. Foundation
Amount:	confidential
Summary:	Three-year request to develop the MacLeish Field Station as a living hub of environmental education and outreach for Smith College and for the Pioneer Valley region of Massachusetts. This proposal includes funding for the design and construction of the Bechtel Environmental Classroom, along with student engagement projects and trail development.
Status:	Funded; Sept 2010-Sept 2013

Title: Engaging Middle and High School Youth in Environmental Leadership and Teamwork Training at Smith College's MacLeish Field Station

Agency: AEC Trust

Amount: \$50,000

Summary: Two-year pilot to develop a docent program and ropes course to engage middle and high school youth and educators from regional public and private schools and service organizations at the Smith College MacLeish Field Station in Western MA.

Status: Not funded

Title: K-12 Nature Access

Agency: National Grid

Amount: \$22,500

Summary: K-12 environmental education project to engage urban youth through programming at the MacLeish Field Station. Funding is requested for a 1-year pilot program to lay the groundwork for a long-term collaborative environmental education initiative between Smith and K-12 educators in Western Massachusetts.

Status: Pending

Title: Exploration Grant, Letter of Inquiry

Agency: Luce Initiative on Asian Studies and the Environment (CEEDS is a collaborator with East Asian Studies – the lead for this proposal – along with Environmental Science and Policy and the Global Studies Center)

Amount: TBD (full proposal due on 14 October 2011)

Summary: Funding to support a number of exploratory and collaborative activities related to China and the environment.

Status: Pending

Title: Center for the Environment, Ecological Design and Sustainability

Agency: Stephen Bechtel Fund

Amount: \$100,000

Summary: One-year of support for operational expenses of the Center for the Environment, Ecological Design and Sustainability.

Status: Funded; 1 July 2011 – 30 June 2012

In addition to the grant proposals, the Center for the Environment, Ecological Design, and Sustainability also received the following gifts and commitment from alumnae and friends.

Amount	Duration	Intent
\$60,000	2011-2013	General operating support. This gift is being used to launch the Environmental Concentration (see 3.1 below), including staff compensation.
TBD	TBD	Design and construction of a leadership challenge course at the Ada and Archibald MacLeish Field Station.
\$50,000	2011-2012	General operating support. This gift is being used to support the curricular enhancement grant program, staff compensation, and administrative expenses.

3 Curricular Enhancement

3.1 Environmental Concentration: Sustainable Food

Over the past two years, Smith College has developed concentrations in an effort to give students a way to organize a combination of intellectual and practical experiences around an area of interest. By declaring a concentration, students receive focused advising to help them design a program in their area of interest. In 2010-2011, the Center for the Environment developed and proposed an Environmental Concentration, focused on the topic of Sustainable Food. This concentration will be run as a four-year, limited-term program, serving as a pilot project for future environmental concentrations on other topics. This concentration will begin in fall 2011.

The concentration on sustainable food builds on current student and faculty interest in this subject. For example, the student-run Community Garden continues to grow in popularity; Professor Nina Antonetti is offering a new First-Year Seminar titled “Food for Thought;” and Five College faculty and staff are proposing a Food and Agriculture Institute at the Hampshire College Farm Center. This particular topic also capitalizes on Smith’s location in the heart of the Pioneer Valley with many food and agriculture-related initiatives underway. A concentration on this topic at Smith College will enable our students and faculty to engage in an interdisciplinary exploration of food and the many issues involved in sustainability, such as global food distribution systems, the economics of agriculture, food cultures around the world, agricultural policy, food justice, and various questions pertaining to gender and food. The concentration will comprise both internships and academic classes and consists of four components: a gateway course, academic core courses, practicum experiences, and a capstone project.

3.2 Deepwater Horizon

During the 2010-11 academic year, the Center for the Environment, Ecological Design and Sustainability partnered with the Sherrerd Center for Teaching and Learning to coordinate a faculty learning community on the Deepwater Horizon oil spill. This venture brought together faculty who were interested in incorporating elements of this case into their

courses. This cross-disciplinary community shared knowledge and perspectives on the events, and all participants gained a deeper sense of the issues. Specific projects were developed for courses in Comparative Literature and Landscape Studies (the rhetoric of the spill), Mathematics (using the spill to teach quantitative literacy), the Study of Women and Gender (community-based projects on spill-based campaigns led by social movements), Economics (valuing environmental resources), Philosophy (governmental oversight), Biological Sciences (effect of crude oil and dispersants on embryonic development of zebrafish), and Engineering (two projects: modeling fate and transport of the oil; engineering culture and ethics). A Smith College press release highlighting these activities and an article from the *Daily Hampshire Gazette* on the experience are provided in Appendix B. Results of this faculty learning community were also presented at the 4th Annual Symposium on Engineering and Liberal Education at Union College (3-4 June 2011) and at the annual meeting of the Association of Environmental Sciences and Studies (23-26 June 2011).

3.3 China and the Environment

Inspired by the newly established course, Environment and Society in Contemporary China, taught by Professor Dan Gardner in the East Asian Studies Program, a group of students in the Chinese Interregional Student Cultural Organization (CISCO) organized a lecture and put together a poster exhibit aimed at raising awareness of the interconnectedness of Chinese and American environments. At the lecture, George Robinson, emeritus professor of psychology, and philosophy professor, Janice Moulton, spoke about environmental challenges and recent initiatives undertaken by the government and NGOs in China. The poster exhibit was on display in CEEDS and the McConnell Hall Foyer Gallery between 28 February and 13 March 2011.

In May, the Center for the Environment partnered with the East Asian Studies Program, the Environmental Science and Policy Program, and the Global Studies Center to submit a letter of inquiry to the Luce Foundation and the Luce Initiative on Asian Studies and the Environment (see 2.2.1 above). We have since been invited to submit a full proposal in October 2011.

3.4 Curricular Enhancement Grants

In 2010-2011, the Center for the Environment, Ecological Design, and Sustainability administered grants to ten faculty from across the college for the modification and enhancement of courses in support of our mission and our programmatic outcomes. In this inaugural pilot phase, we awarded grants for eight projects (two of which were collaborative) totaling \$12,250. Example projects include:

- Jesse Bellemare in Biological Sciences and Katherine Halvorsen in Mathematics and Statistics collaborated on a joint class project on statistical analyses of microclimates between hemlock and black birch stands at the MacLeish Field Station.
- Candice Salyers in the Dance department conducted portions of her intermediate dance composition course at the MacLeish Field Station.
- Dan Gardner traveled to China this summer to meet with the Natural Resources Defense Council to develop a History/East Asian Studies/ES&P course on China and the Environment.

Descriptions of all of the projects funded in 2010-2011 are provided in Appendix C. In addition to supporting these grants, Reid Bertone-Johnson and Paul Wetzel provided twenty-three hours in support of student projects for ENV 201 and ENV 300, two core courses for the new Environmental Science and Policy major.

3.5 Environmental Monitoring

To support research in the environmental sciences and to improve quantitative literacy among all students at Smith College, the Center supports an environmental monitoring program. Quantitative data on the environments around Smith are made available to faculty and students for use in courses and projects. Currently, most of these efforts are based at the MacLeish Field Station, and we see opportunities to grow this program to include Smith's campus and other areas.

Environmental monitoring at the Ada and Archibald MacLeish Field Station currently comprises measurement of meteorological variables and vegetation. Continuous measurements from atop an eighty-foot tower (Figure 3) include atmospheric pressure, temperature, relative humidity, solar radiation, and wind speed and direction. These data are complemented by precipitation recorded by a heated tipping-bucket rain gauge at ground level. Additionally, three 20 x 50 m (0.1 ha) permanent vegetation plots were established in hemlock-dominated forests in 2009, and micrometeorological stations were added to these plots during the summer of 2010. Shorter-term monitoring efforts have included snow sampling, geochemical surveys of streamwater, and assessing the differences in throughfall chemistry and volume between deciduous and hemlock forest stands.

A related challenge we identified over the past year is how to effectively acquire, catalog, manage, and disseminate digital resources such as environmental databases, spatial (GIS) data, aerial photography, and satellite imagery. Many environmental resources of great value to faculty and students do not exist as published texts, and we hope to work with the Smith College Libraries and Information Technology Services to develop the appropriate procedures and infrastructure to facilitate access to such resources. Additionally, faculty and students at Smith are themselves generating significant quantities of data that we hope to archive and manage in a way that makes them useful to future projects. We have begun conversations with Chris Loring and Rocco Piccinino from the libraries, Elisa Lanzi from the Imaging Center, and Jon Caris from the Spatial Analysis Lab to address these challenges



Figure 3: Paul Wetzel climbing the meteorological tower at the MacLeish Field Station.

and goals, and the digital repository proposed as part of the recent IT Strategic Plan can help in this regard.

4 Integrative Projects

One of the key activities for the Center is the sponsorship of integrative environmental projects in which students, faculty, and staff work together toward solutions to environmental challenges. Currently, students are working on projects such as the Mill River Greenway Initiative, the American Chestnut Restoration Project, and research related to the hemlock woolly adelgid (see below).

As the Center continues to grow, we would like to expand our offerings to include an internal grant program for integrative environmental projects. These projects would be solution focused, engaging faculty and students from across disciplines to address an environmental challenge. The grant program would facilitate this engagement by providing two-years of seed funding for collaborative multidisciplinary projects. Teams of two to three faculty members and six to eight students would take on an environmental challenge. An example could be a project to improve 5-College transportation, which might be proposed by faculty from engineering, sociology, and economics. Another project might focus on the supply of clean water in Kenya, which could engage an anthropologist, biologist, and geologist. While incremental increases in disciplinary knowledge are important and necessary, true innovation and disruptive change results from the creativity brought about by multidisciplinary engagement and collaboration. The skills of being able to communicate across disciplines are especially critical with respect to issues of sustainability, energy, and the environment. Therefore, a goal of the Center for the Environment is to find ways of modeling such interactions and bringing students into those opportunities. These projects provide one means of achieving this goal.

4.1 Mill River Greenway Initiative

As a result of its construction of a new synthetic turf field, Smith College is required by the Massachusetts Department of Environmental Protection to remove invasive species from approximately two acres of riparian land adjacent to the Mill River. At the same time, a working group of local citizens has started the Mill River Greenway Initiative to protect the Mill River watershed, preserve its cultural artifacts, enhance its biological health and encourage recreational activity with the concrete goal of establishing a greenway along the river. The confluence of these opportunities provides a great way for Smith students to engage with environmental issues in their community, and the Center has supported associated projects.

Caron Dewey '11 conducted research on the occurrence of Japanese Knotweed (*Polygonum cuspidatum*) along the Upper Mill River. She mapped knotweed using GPS and GIS and proposed mitigation strategies for the invasive.

Brittany Innis '13 is developing a mitigation strategy for all vegetative invasive species around Paradise Pond and the Smith portions of the Mill River. She is working with Gary Hartwell from Facilities Management, Reid Bertone-Johnson from CEEDS, and Gaby Immerman from the Botanic Garden. Brittany will help to coordinate the efforts of the New England Wildflower Society's work on invasive removal and will organize a workshop for community members along the Mill River to learn about invasive species removal.

Kassia Rudd '11 developed a method for researching and mapping industrial mill history along the Mill River, and she conducted a river walk field trip for nearly twenty interested members of the Mill River community (see Figure 4).



Figure 4: Making Connections – Kassia Rudd '11 relates the history of the Mill River to interested members of the community.

4.2 American Chestnut

Blight resistant chestnut hybrids will soon be available in large enough numbers to begin restoring the American chestnut into natural forests. With this prospect in mind, the Center for the Environment is sponsoring and supporting a series of experiments at the MacLeish Field Station with the goal of testing methods of restoring American chestnut hybrids into various natural forest communities of southern New England. These experiments include an investigation of chestnut seed germination ecology in a natural setting, the growth response of seedlings to forest gaps of varying size, the competitive interactions of chestnut with other native hardwoods, and an examination of the chestnut's response along a soil moisture gradient.

The chestnut project will be designed to provide several levels or access points for student involvement. For example, the very interested student could use the chestnut project to develop her own 1-2 semester-long research project under the umbrella of the broader experiment, enabling her to work at the MacLeish Field Station and potentially develop connections with the American Chestnut Foundation at the state and national levels. For students with less time to commit to an independent project, but with strong interests in conservation, this project has the potential to provide a larger number of students with the chance to work on American chestnut conservation for a day.

4.3 Hemlock Woolly Adelgid

Invasive pests, especially in conjunction with climate change, have the potential to transform the species composition of many forests. In the northeastern United States, the hemlock woolly adelgid poses a significant threat to eastern hemlock (*Tsuga canadensis*). This pest, which kills infested hemlocks within a few years, arrived in western Massachusetts over the last ten to fifteen years and is steadily making its way into southern Vermont and New Hampshire. Replacement of hemlock forests by other species, such as birch, maple, and oak, may alter geochemistry and hydrology, and Professors Amy Rhodes and Andrew Guswa are working to understand these potential impacts. During the summer of 2011, Professors Rhodes and Guswa are engaging five Smith students in these research investigations, two of whom are funded by the Center for the Environment.

4.4 Avery Brook Watershed

The Avery Brook watershed lies just to the west of the MacLeish Field Station and drains to Northampton's primary water supply reservoirs. Both Smith College and the City of Northampton have an interest in this watershed and the reliable measurement of flow in Avery Brook. For the City, measurement of streamflow can provide information related water treatment and supply. For Smith, the watershed provides potential sites for studies of nutrient cycling, biogeochemistry, and sediment transport. During 2008-2009, a Design Clinic team from Smith's Picker Engineering Program completed a preliminary design for a flow measurement system. This past year, four faculty from Biological Sciences and one from Geosciences initiated research projects with students to better understand biogeochemical processes and the role of beaver ponds, of which there are five in the watershed. These projects have formed the basis of a proposal to the Howard Hughes Medical Institute to be submitted in 2011-12. In support of these efforts, the Center for the Environment, in collaboration with Professor Robert Newton and Mr. Gary Hartwell, a project manager for Smith, contracted Stantec Consulting Services in 2010 to complete a preliminary design and cost estimate for a flow measurement system on Avery Brook, building on the work completed by Smith students in 2009. This resulted in preliminary design drawings for a pre-cast concrete Parshall flume with a removable V-notch weir. As of November 2010, the cost estimate for the project, including engineering, permitting, and construction, was \$242,000. This represents an opportunity for future grant proposals.

5 Campus as a Model

5.1 Ada and Archibald MacLeish Field Station

The Ada and Archibald MacLeish Field Station is a 240-acre patchwork of forest and farmland located in West Whately, MA that provides opportunities for faculty and students to pursue environmental research, outdoor education, and low-impact recreation. During the 2010-2011 academic year, Reid Bertone-Johnson served as the Field Station Manager, and Professor Amy Rhodes chaired the MacLeish Advisory Board. Supported in part by a grant from the S. D. Bechtel, Jr. Foundation, most of the efforts this past year were directed to continued development of the site, including the design of the new Bechtel Environmental Classroom.

5.1.1 Site Development

Bechtel Environmental Classroom

Supported by a grant from the S. D. Bechtel, Jr. Foundation, Smith College is pursuing the design and construction of a 2300-square-foot environmental classroom to be constructed at the MacLeish Field Station. A rendering of the interior and the proposed site plan are included as Figures 5-6.

Architect selection in the fall of 2010 resulted in awarding the design to a team led by Bruce Coldham of Coldham and Hartman, Inc. A key element of their proposal was the possibility of pursuing the Living Building Challenge for this facility, which would establish the building as one of the most sustainable in the country. Smith College has recently committed to pursuing this challenge (see press release in Appendix D).

Throughout the spring semester, a programming committee, chaired by Associate Provost John Davis, worked with the architects to ensure that the resulting structure will meet the needs of Smith students and faculty and support the mission of the Center for the Environment. Students were included in both the architect selection and programming committees, and the design team has embraced the Center's desire to include students in the design and evaluation of the building. For example, Smith students assisted in design development by working directly with the design team on day-lighting studies and sustainable water supply research.



Figure 5: Rendering of the multi-purpose space and seminar alcove for the Bechtel Environmental Classroom.



Figure 6: Campus as a Model – The site plan for the Bechtel Environmental Classroom includes sustainable features, such as a photovoltaic pavilion and rain garden, and highlights the natural beauty of the surrounding environment.

At present, the building design is complete, and the Whately Conservation Commission has granted permission to site the building in the preferred location. Mr. Charlie Conant from Facilities Management is the project manager for the construction, and throughout the summer he, Reid, and the design team will continue to work with the Whately Planning Board and town officials to ensure that the project moves forward on schedule. Ground-breaking is scheduled for early September, and the building should be completed by May 2012 in time for use throughout the summer.

Trails

Work that began during the summer of 2010 to develop a system of trails for the field station continues. Last summer Scott Johnson and Reid Bertone-Johnson oversaw the construction of 2.5 miles of new trails at MacLeish that are currently used by researchers, faculty, students, and neighbors. During the fall of 2010, a new trail kiosk and tool shed were erected at the entrance to the site. This summer, undergraduate research fellows supported by the Center are continuing with trail construction, and we anticipate completing an additional 1.5-2 miles of trails.



Figure 7: Getting Outside – Smith students creating trails at the MacLeish Field Station.

Conservation Restriction

At the request of Mr. Gabriel Cooney, one of the neighbors to the MacLeish Field Station, we met with Ron Hubbard from the Franklin Land Trust to discuss placing a portion of the Smith property in Whately under a conservation restriction. Student interns have been researching precedents for such an action by a college, and we plan to write a proposal in support of some variation of a conservation restriction and submit it to College Hall ahead of the May 2012 meeting of the Board of Trustees. This effort has strengthened in light of new information from the Living Building Challenge that we will be required to set aside some land in perpetual protection to offset the land developed in the construction of the new building.

5.1.2 Research and Teaching at the MacLeish Field Station during 2010-2011

A variety of courses took advantage of the Ada and Archibald MacLeish Field Station over the past year:

- Site and Space - Birdhouse design (see box below)
- Telescopes and Techniques
- Principles of Ecology
- Animal Behavior: Methods - Birdhouse design (see box below)
- Plant Ecology
- Intermediate Dance Composition – Site-specific choreography
- Introduction to Wilderness Skills
- Seminar in Environmental Science and Policy
- Special Studies in Environmental Science and Policy
- Photovoltaic and Fuel Cell System Design
- First Year Seminar: Reading the Earth
- Special Studies in Geology - Geologic interpretation
- Landscape Design Studio: Art & Ecology - Parking and entrance experience design

More than one hundred students have visited the site - many on more than one occasion. For example, the intermediate dance composition course of sixteen students visited the site six times in the fall semester. Students have engaged in research projects, used the site as inspiration, engaged in site-specific design, gone on guided tours, and used the recreational trails.

On-going research at the field station includes several projects from the engineering, biology, and geology departments. In addition to the meteorological data maintained by Dr. Paul Wetzel, there are on-going research efforts related to land-use history, monitoring and studying the implications of woolly adelgid infestation of the hemlock trees, salamander distribution, and forest ecology. This summer Professor Guswa is guiding students in the development and implementation of a sensor to measure transpiration rates in hemlock and deciduous trees; Professor Rhodes continues her work in soil geochemistry; and Professor Bellemare and Dr. Wetzel are conducting forest vegetation studies and beginning a study in which they, in collaboration with the American Chestnut Foundation, will re-introduce the American Chestnut to the field station lands (see section 4 above). All four primary researchers at the field station are employing Summer Undergraduate Research Fellows to assist in their labs and field studies.

5.1.3 Mapping, Information Management, and GIS Support

Student interns are currently working to map all of the interior stone walls to the benefit of our own maps and Professor Bellemare's research on land-use history and pasture abandonment at the field station. This work is supported by the Spatial Analysis Lab. Reid Bertone-Johnson has continued to develop maps for internal and external use, for research, and for recreation. Reid also maintains up-to-date GIS data on the GEO server made available by Mr. Jon Caris, Coordinator of the Spatial Analysis Lab.

Making Connections: Birdhouses for the MacLeish Field Station

In the fall of 2010, CEEDS supported a collaborative effort between Professor Jim Middlebrook's architecture studio and Professor Virginia Hayssen's biology class to design five birdhouses for the field station. Guided by input from neighbors and the Massachusetts Audubon Society, Professors Middlebrook and Hayssen selected the Bluebird, Eastern Screech Owl, Kestrel, Tree Swallow, and Chickadee as the clients. Biology students determined the birds' requirements and sited the installations, and architecture students designed and built the birdhouses. Students met mid-project to share information, and the biology students helped to review the architecture students' designs. Chickadees, Kestrels, and Screech Owls are now welcome, and Bluebirds and Tree Swallows can move in next spring.



Figure 6: Architecture students and their birdhouses.

5.2 Campus Sustainability

Ms. Deirdre Manning was hired as Smith's new Environmental Sustainability Director in August 2010, and she has provided input and feedback to CEEDS throughout the year. As we head into academic year 2011-2012, we look forward to developing student programs and projects that will link the Center with the Environmental Sustainability Office to effectively use Smith's campus operations as teaching opportunities for our students.

6 Communication and Collaboration

Joanne Benkley and CEEDS staff members continue to establish the Center as the nexus for environmental communications on campus. In January 2011, we moved into and set up our new space in Wright Hall, and throughout the spring, we have facilitated its use by student and faculty groups. To kick things off, alumna Melissa Krueger AC '03 offered a non-credit course, "Good to the Last Drop? A Closer Look at Coffee, Sustainability, and Fair Trade," from January 10-14. Since then, the Green Team, Community Garden (see box below), and other student groups have used the space regularly.

Campus Grown – Sustainable Food from the Smith Community Garden

The Smith Community Garden (CG), now under the full direction of Smith students, aims to provide organic seasonal vegetables and flowers for its members and to Smith's Dining Services for use in the Dining Halls and the Campus Center Café.

This spring CEEDS collaborated with the CG and the Smith College Botanic Garden to pilot a summer internship position. Most days, Allison Langley '13 helps to maintain the Smith campus under the supervision of Gaby Immerman from the Botanic Garden. One day per week, however, she turns her attention to developing the Community Garden as an educational resource for Smith, CEEDS, and the new Environmental Concentration on Sustainable Food (see 3.1 above). While contributing entries to our CEEDS blog about her experiences as a garden manager (see <http://smithceeds.wordpress.com/>), Allison is carrying out two projects, supervised by Joanne Benkley. The first is a survey of community gardens at a variety of schools and an analysis of the roles the gardens play at their respective institutions and in the surrounding communities. For a second effort, Allison is tracking the Community Garden outputs (e.g., produce production quantities and timing) and logs garden inputs such as labor, water, materials (seeds, straw, mulch, etc.). In addition to her garden work over the summer, Allison will also host workshops in the coming academic year in support of the Environmental Concentration.



Throughout the year, Joanne Benkley and Sarah Loomis continued to reach out to students, stakeholders, and potential partners by developing web and print materials; meeting with peers from the Five Colleges regarding shared resource and curricular interests (e.g., the Five-College Sustainability Certificate); and communicating the vision and mission of the Center to faculty, staff, and students at Smith. As Program Coordinator for CEEDS and the Environmental Science and Policy Program, Joanne Benkley manages the budgets for both programs and provides a critical link among curricular, co-curricular, and scholarly initiatives related to the environment.

This summer, Sarah and Joanne are revising and updating the CEEDS website, adding Facebook pages for the Center, the Office of Environmental Sustainability, and the MacLeish Field Station, and developing a blog site for environmental reflections. Additionally, they are working with Jessica Bacal, Director of the Center for Work and Life, to develop narratives and graphical tools to help students make informed choices regarding their academic and co-curricular pursuits at Smith. They are also developing ideas for events, colloquia, and gatherings that will bring students together around various environmental issues in the coming year.

Appendix A: CEEDS Job Responsibilities for 2011-12

Director

- Set and communicate the strategic vision for the Center
- Oversee the budget
- Make decisions regarding funding priorities and resource allocation
- Supervise Center staff
- Coordinate and communicate with Environmental Fellows
- Communicate with administration, stakeholders and constituents
- Communicate with local, regional, and national environmental orgs and individuals
- Develop new programs and help fundraise
- Direct the Environmental Concentration
- Direct the Curricular Enhancement Grant Program

Environmental Faculty Fellows

- Participate in bi-annual strategic planning meetings
- Provide strategic guidance to the Director
- Communicate with stakeholders and constituents (students, faculty, alumnae, donors, etc.)
- Generate ideas for new projects
- Offer environment-related guest lectures in Smith courses
- Offer co-curricular environment opportunities for students
- Serve as role models of sustainable practices on campus

Program Coordinator (0.5-FTE)

- Supervise the Administrative Assistant
- Supervise work-study interns
- Administer and track Center budget and gifts and grants
- Coordinate the Environmental Concentration (e.g, Sustainable food)
 - With the directors and advisory board, identify appropriate curricular and co-curricular offerings
 - Coordinate guest visits (schedules, reimbursements, etc.)
 - Provide and receive student applications
 - Provide first-line of advising to students (logistics, courses available, etc.)
 - Develop, review, and update materials for course catalog, web and other media
 - With the CDO, coordinate internships for students
- Coordinate the Curricular Enhancement Grant program
 - Solicit applications
 - Provide information to inquirers and coordinate communication with applicants
 - Track expenses
- Develop, direct and oversee student grants
- Develop, direct and oversee student engagement activities
- Communicate with students and student groups and orgs
- Coordinate and communicate student internships
- Oversee the development and updating of communications via web, print, and social media
- Oversee the development of tools to help students navigate academic choices
- Participate in bi-annual strategic planning meetings
- Back up other staff needs as necessary. Perform related duties as required.

Field Station Manager (0.5-FTE)

Oversee and coordinate all activities at the field station, including class visits, research, co-curricular activities, and outreach.

Regularly communicate with faculty, staff, students, neighbors, and others regarding the use and management of the field station.

Develop and maintain the site for its intended uses by working with the MacLeish Advisory Board, facilities management, students, governmental officials, and outside contractors.

Develop and provide GIS data layers for the field station property and surrounding area

Oversee MacLeish work-study interns

Develop and coordinate educational outreach programs at the field station

Develop opportunities for faculty and students to engage with integrative environmental design projects, including the Mill River Greenway Initiative

Support external communication and grant writing

Participate in bi-annual strategic planning meetings

Back up other staff needs as necessary. Perform related duties as required.

Senior Research Associate (0.5-FTE)

Assist in setting the environmental monitoring priorities for the Center and contribute to the development of new monitoring initiatives

Coordinate the use, maintenance, calibration, and repair of instruments at the Ada and Archibald MacLeish Field Station

Ensure environmental data quality and make data available to Smith faculty, staff, and students

Develop and oversee integrative environmental projects (American Chestnut)

Develop curriculum, projects, and community connections for the capstone course for the Environmental Concentration

Communicate with Five Colleges regarding food curricula and co-curricular opportunities

Assist with development of research proposals for external funding

Participate in bi-annual strategic planning meetings

Back up other staff needs as necessary. Perform related duties as required.

Lecturer for ENV 100 (0.03-FTE)

Teach one of the gateway courses for the Environmental Concentration (ENV 100)

Identify potential speakers (practitioners and alumnae) and coordinate visits

Administrative Assistant (0.33-FTE)

Provide reception services

Provide secretarial services (writing, reimbursement processing, etc.)

Manage use of the Center in Wright Hall

Plan, schedule, and coordinate Center use, events, and visitors

Develop and maintain website, social media, newsletter, and other communications

Develop tools to help students navigate academic choices and opportunities

Participate in bi-annual strategic planning meetings

Back up other staff needs as necessary. Perform related duties as required.

Appendix B: Press related to the Deepwater Horizon Learning Community

Appendix C: 2010-2011 Curricular Enhancement Projects

Appendix D: Press release regarding the Living Building Challenge and the Bechtel Environmental Classroom