



# The Goodwin-Niering Center for Conservation Biology and Environmental Studies



## Reflection Papers for the Class of 2009

**Sarah Ayres**

**The Gulf of Maine Research Institute, Portland, Maine**

This past summer I interned at a non-profit science center in Portland, Maine called The Gulf of Maine Research Institute (GMRI). Due to the unpredictable nature of the fishing industries in Maine, GMRI works to sustain a future for many communities who rely on fishing for their livelihood. By fostering community dialogue, interdisciplinary research and science literacy, GMRI works to realize the human and natural potential of the Gulf of Maine bioregion. Their goal is “to position the Gulf of Maine community to emerge at the forefront of a new era of maritime innovation, embracing creative strategies to harness the ocean’s productive capacity while sustaining the bioregion's vitality and character for future generations.” They work with all different stakeholders in an attempt to build knowledge about commercial fish species, critical habitat, fishing gear, technologies and human behavior in order to create more effective management in the Gulf of Maine. GMRI has created education programs that help to foster an interest in the sciences and Maine’s ecosystems among students. They also have community programs that help identify emerging problems and create an environment where everyone can be part of the solution.

My responsibilities varied throughout the summer. When I first arrived, I was responsible for gathering information that would enable us to create a comprehensive survey on groundfishermen. Groundfish refer to the fish that dwell at the bottom of the ocean; some of the more common species are cod, flounder, and sole. We were trying to discover the role that harvest cooperatives may have on fishing communities. Harvest sectors are self-selected fishing cooperatives. The fishermen are allocated a total allowable catch quota for the group, and they then create a plan to stay under this quota. They are an alternative to the general management plan, which implements effort controls such as limiting days at sea. Hopefully, they will allow the fishermen the freedom they need to keep their fishing businesses economically profitable. We wanted to see how these new groups of fishermen could change the way fishermen define their communities, and how they interact with one another. This involved reading articles and searching online databases for examples of past surveys used with fishing communities. Most of my time was spent at my desk conducting and summarizing my research. For this project, my boss at GMRI was working with two people from the Northeast Fisheries Science Center in New Bedford, Massachusetts, so we had weekly conference calls with them. During these calls we discussed the progress of the survey and our research. We were preparing for my second month at GMRI, which was to be spent conducting the survey by phone and collecting the baseline data for our project.

However, days before the survey was to begin, we decided to take a step back and evaluate the roll of social capital in such a survey. Social capital is a term created to describe the interactions that people have with other people, whether they be similar types of people or different. There are established ways of measuring social capital and we decided it was important to use these tools if we wanted our survey to be useful and accurate. As a result, I returned to my computer to begin researching this new subject. I spent the majority of the second month conducting a literary analysis and an annotated bibliography of social capital. Finally during the last week and a half of my internship I was able to conduct a handful of preliminary interviews with groundfishermen. This was the most interesting and rewarding part of my internship because it gave me a chance to get out and talk to real people about current issues.

In addition to my research responsibilities, I was able to experience first hand how the New England Fisheries Management Council works. I attended several committee and council meetings as an observer, and from these I learned a great deal about fisheries management. GMRI also sponsored a meeting for all stakeholders to come together to discuss the options for monitoring harvest cooperatives. This was an opportunity for me to see the ways in which GMRI works to facilitate discussion among groups that would otherwise not communicate with one another.

I learned a great deal during my internship, and I developed useful skills that will help me with future research and my senior integrative project (SIP). During my internship I spent a great deal of time researching. As a result, I have greatly improved my researching skills, enabling me to explore a greater range of data in order to find the information I need. I also have increased my ability to effectively skim and summarize articles, giving me greater ability to find useful information. While interviewing fishermen, I discovered a very effective method for leading discussions so that they provide useful data, while not being too pushy and allowing the interviewee to feel in control. I also had the unique opportunity to experience the fisheries management process by attending several meetings. It is a very bureaucratic system, which I found very slow and ineffective. Observing this process made it clear to me that I do not want to pursue a career in fisheries management policy, which I had previously thought I wanted. Although I am still very interested in fisheries management, I now know that I would be much happier working hands-on with the people and the communities, and leaving the policy up to someone else.

I think these skills will help me with my SIP because now I know where to go for articles on the fishing industry, and how to process the information I find effectively. In addition, I now understand how fisheries management works, which will certainly help me understand its history, and how it affects communities. For my SIP I still want to explore the historic, economic and environmental contexts of the Maine lobster fishery in order to learn how they have interacted over time to make the industry what it is today. I hope to trace the history of policies that have shaped Maine's fishing communities. After this, I will delve into the environmental/ political/ economic and social consequences of the industry's changing policies.

**Rebecca Beachell**

## **Berkshire Pioneer Resource Conservation and Development Group, Amherst, Mass**

Some people say that everything happens for a reason. I learned this summer that that is a true adage. I started my summer expecting to work in China with an environmental NGO but, due to illness and the unexpected tragedy of the earthquakes in Sichuan province, I returned to the United States to work with an environmental non-profit in Amherst, Massachusetts. Despite my disappointment that my original internship did not work out, Berkshire-Pioneer Resource Conservation and Development Area, Inc. was a great experience and I absolutely loved my time there.

Berkshire-Pioneer Resource Conservation and Development Area, Inc. (BPRC&D) is a non-profit group based out of Amherst, Massachusetts that works to conserve natural resources while stimulating the economy and providing citizens a voice in the future of their environment and industry. The Resource Conservation and Development (RC&D) program was established in 1962 as a federal program administered by the United States Department of Agriculture Natural Resource Conservation Service (USDA-NRCS). The RC&D area is run by a Council comprised of members of other non-profits, representatives of natural resource based industries, and citizens. USDA-NRCS also provides funding for a coordinator to work for the RC&D group in order to help the Council organize and implement projects, and to help with the reporting of projects to USDA-NRCS. Originally given the mission of alleviating poverty, 375 RC&D programs exist in all 50 states with programs that range from urban forestry to farm energy programs. BPRC&D is responsible for Hampden, Hampshire, Franklin, and Berkshire Counties in Massachusetts. Their mission is to “help citizens stimulate economic opportunities, conserve natural resources and improve the general quality of life in rural areas.”

My job as program assistant meant that I worked in BPRC&D’s office in Amherst, but I was not just an office assistant. I worked with the group to write their five-year Area Plan, to explore the possibility of joining the RC&D Circle of Diamonds, and to create a tabletop display to explain the Massachusetts Farm Energy Program. The Circle of Diamonds is an elite group of RC&D programs that have demonstrated a close, working relationship with their communities and have impacted their areas in a meaningful way. Joining the Circle of Diamonds requires an extensive application and references from the community. The five-year plan was challenging for all of us who worked on it since new regulations required the RC&D group to conform to the federal SMART criteria in order to continue receiving federal funds. SMART stands for Specific, Measurable, Attainable, Results oriented, and Time bound. These criteria are very difficult for an environmental group whose impacts are not always measurable or time bound like educational programs. Because the Berkshire-Pioneer group was established by, is funded by, and reports to the US government, they must fit their programs into the new criteria even though the group is technically a non-profit rather than a government agency.

As students of environmental policy we learn that there are difficulties in putting policy into practice on the ground, but it is impossible to really understand the difficulties until you are the one trying to make programs fit under policies and criteria that are unclear or impossible to apply. I witnessed the difficulties and obstacles that environmental groups must overcome to simply do their work. The determination and talents that the BPRC&D council and office workers brought to their work re-inspired me to try to further their beneficial efforts.

My time in China gave me a glimpse of how Chinese environmental NGOs work, and my time with BPRC&D was invaluable in giving me a comparative example from the United States. BPRC&D has a unique relationship with the US government in that they have a government employee who works as a consultant for the group, despite the group's status as an independent non-profit. Having a government employee was very beneficial to BPRC&D because it gave the Council a resource who was familiar with the government requirements and the rigors of grant writing. My supervisor spoke with me on my final day as an intern about her experience as a government employee in a non-profit and about her wish that more groups had that benefit. My supervisor was able to give me a few examples that I did not know of groups that had a very close working relationship with the United States government, however she stressed that it was very rare.

For my senior integrative project I hope to further research the response of the Chinese public to pollution in the Yellow River. My time in China increased my curiosity on the workings of Chinese environmental groups. I hope to discover what the groups are able to accomplish in a communist state in terms of lobbying, what tactics the groups employ to achieve their goals, who their targets are, and what they have been able to accomplish. I would also like to investigate the linkages between the Chinese government and the workings of civil environmental groups. I plan to use the Yellow River watershed area as a case study to investigate these questions. My internship this summer provided me with experience in the interrelationship between a non-profit environmental group and a government. I now plan to apply that experience to my investigation of the environmental groups around the Yellow River.

**Tyler Dunham**  
**Collins Design Research, New York City, New York**

My summer with Collins: started December 5<sup>th</sup>, 2007, when Brian Collins sent me this message:

Hi Tyler:

I'd be thrilled to consider you for an internship with us this summer. Will you be in NYC anytime soon so we can meet?

Let me know.

Warmest greetings from ice cold Manhattan,

Brian

I was so ecstatic I took a screen shot of it. It is only now looking back on my internship with Brian and his incredible team that I can appreciate how appropriate my reaction was.

Collins: is a brand design firm based in New York City. It is a new firm, formed while working on the "we" campaign for Al Gore, and has developed to specialize in transformation design

(focused towards increasing a brand's interactions with customers). A group of less than ten, the team is comprised of both strategy and design specialists. Most recently, the team designed the set, façade, menus, and more for CNN's broadcast location for the national political conventions: the CNN Grill.

My role at Collins: was the "Environmental Strategy Assistant." I spent my summer performing tasks that embodied this title in the various permutations these three words can form. I spent the first month working almost exclusively preparing for a pitch to Conservation International (CI). I completed extensive research on the organization to present to the Collins: team. I compiled ten 8' X 10' foam boards explaining who CI is, how CI currently uses its brand, what other environmental NGOs are doing differently, and how other environmental logos compare. I also drafted a brief for the team and presented my findings to them the day before CI came in.

As a "Strategy Assistant," I worked on several varied projects in my second month at Collins. On one memorable day, Amanda (Brian Collins' assistant) and I went out and purchased a wide variety of travel magazines. Collins: was preparing for a pitch to Hyatt, and it was my role to find examples of the competition: cruises, hotels, destinations that had ads in these magazines. After leafing through thousands of pages, I sent several ads to the team while they were preparing in Richmond, and Brian later told me that they had been indispensable in preparing for the pitch. During this second month I also satisfied the environmental role I had been acquired for while working on the Circle of Blue design challenge (a challenge to design students to develop ways to generate awareness about the water crisis).

Going into the summer, I hoped to learn what it is like to work in an advertising agency, and see if I could prepare for my senior integrative project (SIP) by seeing how effective successful marketing can be for NGOs. After getting over the culture shock of being in New York City, my experience as an intern was one of the most eye-opening experiences in my life. Although the firm was not exclusively involved with environmental projects, the opportunity to be able to observe and contribute to a top-rate design team working on projects designing buildings to bottles opened my mind creatively. Interacting with these talented individuals was the most rewarding aspect of my internship, and the network I have created at Collins: will be indispensable going into my SIP.

When Brian sent me the response that made my day, and summer, I was in the process of re-branding the Renewable Energy Club on campus. I hoped to make environmentalism on campus cool: something that everyone would do without thinking and without being considered a tree-hugging hippy. What I did not know at the time was that I was re-branding the club. After a summer at Collins: I fully understand the power effective branding can have on an individual. I left inspired by this power having gained valuable skills learning through observation and contribution. My internship with Collins: has therefore shown me the creative potential of green marketing. It will now be my mission going into my SIP in the spring to quantify the costs and benefits of green advertising: green washing vs. environmental transformation design.

As my SIP now stands, I still plan to analyze how important effective marketing can be on bringing positive environmental change. The success of the "we" campaign has yet to be determined: to some it looks too much like simple advertising with no specified end game. To

others, it looks as though its message is one that evokes very positive change. I intend to look at the success of several visible campaigns and at others that have faltered or flourished without a visible campaign. I wish to contrast this with the success of the Renewable Energy Club's Concert from Conservation campaign. By this winter, Conservation International's new campaign will hopefully come on line as well, and I hope to measure the success of this effort by contrasting outcomes to discussed goals. Through contrast, I hope to determine whether effective marketing is a vital component for a successful campaign, or if it is really the ideas that drive the campaign that determine success.

### **Hans Eysenbach** **Silverbrook Farm, Dartmouth, Massachusetts**

Silverbrook Farm is a small, 30-acre organic farm in Dartmouth, Massachusetts, located a little over an hour outside of Boston where they sell the majority of their produce. The farm owners, Jeffrey Schmalz and Andrew Pollock, have a vision for this 50 year old, Pollock family farm. The vision is of a successful, environmentally and community friendly farm that provides people with healthy and fresh produce. In order to achieve this goal they have teamed up with six other local farms, all with their own specialty crops, to form Silverbrook Farms. Included under this banner are Hillside Farm (a conventional corn grower), Shy Brother Cheese, Sylvan Nursery, Matte's Orchards, King Farm and Allen's Neck Farm in order to provide a wide range of foods to their supporters. These supporters provide the financial basis for the Silverbrook Farms in what is known as community supported agriculture. Aside from nearly 200 full and half shareholders the farm participates in twelve farmers markets, of which five are in Boston, the others on Cape Cod. The farm grew at an incredible rate over the past year, as indicated by the four new greenhouses and the purchase of 600 hens that doubled the chicken population. With two other Willing Workers on Organic Farms (WOOFERS), and twelve full-time staff during the main season, the farm was an exciting place to be. This past summer I spent eight weeks living and interning on this farm and was involved in all aspects of daily farm life.

Daily farm life starts early and we were all expected to be working at 7 am. Daily morning chores were divided in a pretty consistent way and I usually started by picking for the day's markets or I fed the pigs. Feeding the pigs may not sound like the most intellectually stimulating chore and it is not, but the two pigs were involved in the important act of clearing land of saplings and bushes and effectively fertilizing large swaths of potential farmland for future use. These pigs were a definite labor saving investment in the long run and were, besides, fun to have around. Cost effective farming was a major part of my education thanks to Andy Pollock, a businessman by graduate training at the University of Maine, who became a farmer midway through life. Andy's business approach to organic growing manifested itself in many ways: a constant search for free weed control in the form of old coffee bags; free fertilizer from elephants at the zoo; composting of farm food; a new human waste composting project and seaweed from the beaches nearby. I was also involved in starting up the pre-consumer food waste pick up from the UMASS Dartmouth campus and educating the kitchen staff about the project. Andy hopes the project will cut down on the costs for grain feed and give the animals a good source of essential vitamins absent from grain. These were the kind of ideas that circulated around the farm in abundance.

Aside from the daily care of animals (pigs and chickens) there was always a focus for the day that generally fell into four categories: field preparation, planting, weeding, or picking. Each category, with the possible exception of the last two, held within it a number of time consuming and physically strenuous tasks. Field preparation could mean picking rocks out of a relatively young field or tilling and cultivating with the tractor. Sometimes the preparation was for a future season and involved a trip to the zoo where the elephants served as a free and abundant source of manure for fertilizing the fields. The preparation also took the form of planning what to plant where and what if any plants could be planted to reduce the negative impact of pests. One particularly effective piece of planning was to plant buckwheat among the rows of our potato field; the buckwheat grew to hip level and effectively hid the plants from the potato beetles. Planting could mean a ride on the back of the planter towed behind the tractor or back breaking hand seeding or plug planting. There is a fair amount of repetition in farming based upon a cycle of preparation, planting, and picking. I was involved in each aspect of this cycle on a daily basis and was also offered opportunities outside the farm as well.

Silverbrook Farms works with several state and national agricultural organizations and I had the opportunity to do farm visits with two of them: the Southeastern Massachusetts Agricultural Partnership (SEMAP) and the Dartmouth Natural Resources Trust (DNRT). I went with SEMAP to a cranberry bog whose owners were interested in joining the partnership. With the DNRT I listened in on the planning of a new feed facility for a goat and cow farm that would reduce contaminated run off. These were the kinds of unique experiences that made my summer so interesting and broadened my appreciation for small-scale farming and the importance of local food systems.

It is in this area, food systems and more specifically the Connecticut College food system, that I would like to focus my senior integrative project. For my project I would like to conduct an independent study of where the college gets its food, determine to the best of my ability what kind of farming is behind the food, understand the programs that are underway to dispose of food waste and also to see to what extent the college is fostering a local food system. One promising operation underway is the exchange of composted food waste for fresh local produce that was started by Tyler Dunham and a group of other students last year. I would also like to look into other possible sources of fresh produce, and whether there are any other farms that could supply a small college with fresh local foods for 2000 students and faculty. I am excited about the opportunity to investigate these topics further.

**Richard Hederstrom**  
**Kew Royal Botanic Gardens, London, England**

This summer I interned with the Ethnomedica project at Kew Royal Botanic Gardens in London, England. This project's mission is: "To collect and preserve a fast disappearing aspect of our British heritage – its medicinal plant traditions." This project was started in 1999 and has become a well-organized research program at Kew. Kew functions first and foremost as a research and education institution. Its knowledgeable staff, extensive botanical library, large herbarium, and numerous plant collections make it an incredible environment for botanical study. Of particular

interest to me, as an Ethnobotany major, are the Ethnomedica project and the Kew Centre for Economic Botany, which concentrates on the study of the uses of plants in the United Kingdom and the world's arid and semi-arid zones.

My job description included a variety of tasks, most of which related directly to the Ethnomedica project. I spent a good deal of time entering collected herbal remedies into the Ethnomedica Access database, interviewing elderly British citizens regarding their knowledge of herbal remedies, creating reports from the remedies already collected and entered into the database, and educating the public about the Ethnomedica project. I also spent time in the Kew laboratory learning about the techniques used for analysis of plant material to isolate medicinal compounds, attended conferences held at Kew, visited other botanic institutions throughout London, and trained others to do future work with the Ethnomedica project.

During my internship at Kew, I was able to meet nearly all of my original objectives for this summer. I learned a great deal about the British flora and the traditional medicinal uses/properties of these plants. I also learned about and used a number of techniques to gather ethnobotanical information, and was able to evaluate the efficacy of each. I became extremely proficient at using databases to organize and present the collected ethnobotanical information in the form of talks and formal print reports. I was fortunate to have the plants I was studying close at hand at Kew Gardens and Chelsea Physic Garden, as well as a world-class group of colleagues to work with.

The internship was a very valuable learning experience. I was able to learn about how a large-scale ethnobotanical research project is run in a developed country, as well as the issues involved in managing such a project. I learned much about British ethnobotany, folklore, and interviewing techniques. I also developed advanced skills in working with collected information in database form. Through this internship, I have acquired a greater appreciation for just how much work it takes to organize and implement a nationwide oral history project. Although my primary interest going into this internship was to collect information through interviews that could hopefully lead to the discovery and development of new cures and treatments, I have come to see that the stories that come with the remedies are just as important as the remedies themselves because it is within these stories that the human element, which makes each culture unique, is to be found.

For my senior integrative project I will be writing a thesis directly related to my internship at Kew. I plan to begin by summarizing the history of medicinal plant use and associated folklore in Britain through literature research. For the body of my thesis, I will be analyzing three months of raw data that I collected as well as other relevant information in the Ethnomedica database. Some of the specific questions that I hope to answer through this analysis are: Are there any unrecorded herbal remedies to be found in recent interviews; are there any similar to previously recorded remedies? What types of medical conditions are supposedly treated by the remedies in the database? How consistent is the information regarding similar treatments mentioned by different informants (i.e. are certain conditions always treated in the same ways with the same plants)? Can any of the claims of efficacy of plants used in herbal remedies be supported or refuted by published studies in literature or ethnobotanical databases? What is the best way to go about collecting, documenting, and making available ethnobotanical information, especially in



developed countries like Britain? My goals are to produce an informative analysis of traditional British plant medicine based on the data collected by the Ethnomedica project.

I also plan to do a comparative study between traditional British ethnobotany and Native American ethnobotany. I would like to see if any of the plants (or their close relatives) recorded in the Ethnomedica database have also been used by Native Americans in similar ways and for similar conditions. I am also interested in determining if any similar remedies can be attributed to information exchange brought about by globalization or if these similar remedies were more likely developed independently.

### **Maya Jacobs**

#### **Ceres, Boston, Massachusetts**

Ceres is a non-profit organization comprised of investors, environmental organizations and public interest groups from all over the country who work with companies and investors to ensure sustainability and address climate change. This is accomplished through the integration of sustainable practices into the capital market to ensure a clean environment. Ceres emphasizes a sustainable future by combining environmentalism, investment and business, demonstrating how connected these fields are and how businesses and investors can prosper and profit by addressing global climate change. Ceres was founded in 1989 when a few members of the Social Investment Forum, a socially responsible investment firm, teamed up with top environmentalists with the underlying goal of changing business environmental practices. The Exxon Valdez disaster also occurred in 1989, when the oil tanker collided with a reef in Alaska in the Prince William Sound, leaking 11,000,000 gallons of crude oil. This disaster affected the public greatly in the way they view business responsibility for the environment. Ceres created the Valdez Principles (today called the Ceres Principles), a ten-point code of corporate environmental conduct. Ceres has been extremely successful especially considering the small size of the organization. The Global Reporting Initiative (GRI) was launched with the goal of creating an international standard for corporate environmental, social and economic reporting. GRI is now used by over 1200 companies nation-wide to report the environmental and social impacts of their work.

Ceres has worked with a number of large companies to accomplish breakthrough achievements. Nike began disclosing the names and locations of its contract factories, making it the first global apparel company to disclose this type of information. Bank of America started a \$20 billion initiative to support the development and growth of sustainable businesses addressing climate change. Dell initiated “takeback” programs, otherwise known as product recycling with the goal of recovering over 250 pounds of computer products by the year 2010. Additionally, Timberland started a new kind of packaging with “nutritional labels” that contain the details of how and where the Timberland product was made and its environmental and social impact. Other Ceres Companies accomplishments include: Green Mountain Coffee Roasters, which use all natural paper coffee cup liners made from corn; Aspen Ski Co., which offsets 100% of its energy use by purchasing wind credits and Wachovia Bank, which will reduce Green House Gas emissions by 10% by 2010 in addition to creating “green” branches by LEED rating system standards.

Ceres both founded and now directs The Investor Network on Climate Risk (INCR), a network of investors and institutions that promotes understanding of the financial risks of climate change and the investment opportunities associated with addressing this issue. INCR promotes policies, disclosure and corporate governance to over 70 investors with total assets of almost \$7 trillion. Ceres started The Investor Summit on Climate Risk in 2003, bringing together almost 500 investors, and financial and corporate leaders who manage over \$1.75 trillion.

During my time at Ceres, I worked in the Real Estate Department as well as with Communications. For Real Estate I compiled briefs on different companies related to real estate including REITS, office supply stores, construction, contractors, hotels and discount variety stores. I wrote briefs for the top 3-5 publicly traded companies based on the market cap for each category. Each one contained company background, latest sales, senior management, board of directors, policies, disclosure, governance, environment, employees and philanthropy. The information I found was then used by my supervisor, Betsy Boyle, in order to figure out which companies are viable for filing resolutions with. As a shareholder, Ceres works with Investors to file resolutions of concerns and goals of different companies on social and environmental issues. There is no set standard for which companies to file with and they can range from companies with no environmental policies to leaders in the field.

In Communications I worked with Brian Sant on a number of different projects. My first project was search engine optimization. This consisted of typing key words into Google, such as climate risk, corporate governance and investor network to see if and where Ceres falls in the rankings. I researched which companies were ranked before and after us and why. Are other companies making better use of key search terms? Are their websites more accessible than ours? I wrote short reports on some of our top competitors to figure out what they are doing differently and why they are ranked before us. My second project was to figure out which companies linked to Ceres. I did not find many pages with Ceres links which is how we came up with my next project: going through Ceres Company and Coalition members and seeing if they link to us on their websites and if not, whether or not there is an easy place on their website to add a link. I spent a lot of time on search engines and Wikipedia pages always had high rankings on key terms I searched. This led to my final communications project: creating Wikipedia pages for both Ceres and INCR. This proved to be more difficult than I originally thought because Wikipedia has many rules and guidelines that need to be meticulously followed in order to make sure your page is not taken down. Both of these pages are now up and running. Communications is a vital part of any organization, especially a small one. Ceres wants to grow and become more recognized, which is why making our webpage more accessible is so important. Overall, I had a very meaningful experience at Ceres and I learned a lot considering I did not know much about sustainable businesses at the start of the summer. My work was not busy work and was actually used by the Real Estate and Communications teams for their projects, which really made me feel part of a team. It was also great to learn about their accomplishments and how such a small company can really make a difference.

I am planning to continue my studies in climate change for my senior integrative project in the spring. Last semester, I did an independent project in Argentina about climate change in Buenos Aires, comparing both the political and social agendas. I would like to use this as a jumping off point and then look at what cities in the U.S. are doing to address climate change. I will then narrow my study to focus on one specific city in the U.S., such as Portland, Oregon which is

working to mitigate climate risk. I will also look at the pressures and reasons behind addressing this issue, whether economic, public or political.

**Frank Jeffrey Nemeč**  
**Adirondack Museum, Blue Mountain Lake, New York**

My internship was with the Adirondack Museum in Blue Mountain Lake, New York. The museum is located in the heart of the Adirondack Park, a unique six-million acre mixture of public and private land. Created in 1892, the purpose of the Park is to protect public wilderness while allowing smart environmentally conscious growth and development on private property. With the public/private dynamic, the Park is still one of the only great wildernesses remaining in the eastern United States. The mission of the museum is to expand understanding of this area's important history and the relationship between people and the Adirondack wilderness in order to foster informed environmental choices for the future.

As an intern, I was to help the museum's curatorial staff get the ball rolling on the reestablishment of a mining exhibit for the summer of 2010. Mining was an important industry in the area from the time of the Revolutionary War to post-World War II. The exhibit is to recognize the lives of miners who settled in the region and thus had a part in shaping the Adirondacks. To tell the story, my main task was cataloging old mining photographs from the museum's archives of over 70, 000 images. I scanned each image associated with mining, interpreted the image (i.e. location, description, photo type), and entered it into a computer database. I also wrote a report on the current state of mining on private lands in the Park and researched the use of charcoal kilns for mining operations in the 18<sup>th</sup> century. Along with assisting the curatorial staff, I helped oversee a Monday night lecture series whose topics ranged from the Adirondack great camps of the rich and famous to the Nature Conservancy's 2007 historic purchase of 161, 000 private acres of land from a lumber company.

The objective of the internship was to gain a greater understanding of the Adirondack Park. Since the Park consists of lands both private and public, the dynamic is oftentimes a source of conflict. The changing perceptions on the value of nature along with over-exploitation and economic hardships tempered the area's mining industry, but mining still occurs on private land (for the most, it is not large scale). Mining seems to embody the motivation of the Adirondack Park: to integrate the protection of the environment on large tracts of public land while allowing proper development and growth on the private land. This integration is what makes the Park special (and controversial).

The internship was a terrific learning experience both academically and personally. The internship pulled together my interests in environmental history, philosophy, and identity. Through the internship experience, I have gained a deeper appreciation for the significance of the Adirondack Park. Most importantly, I was in the perfect setting to embrace the Adirondacks.

My proposed senior integrative project is on the sustainability of the communities in the Adirondack Park. After reading Deep Economy by Bill Mckibbin, the more appropriate buzzword may be a community's "durability." From food, fuel, and energy, how would these

communities stack up if they were forced to be self-sufficient? Increased prices on essentials have really taken their toll on the communities, which are some of the poorest and most rural in the state. Many would argue that the strict environmental regulations on both private and public land keep the region impoverished. But it should be viewed as an opportunity for the communities to adjust towards a more sustaining lifestyle. Community gardens, local wood chip stoves, and car-pooling are part of the changing trends. The growth of these trends brings to light the larger concerns of how such an interrelationship of public natural preserves and regulated private land affects the individuals, communities, and the environment of the Adirondacks. Is this a solid representation of how humanity should exist with nature? The Adirondack Park provides a model.

**Katherine Sacca**  
**World Camp, Inc., Lilongwe, Malawi**

Even before I left Malawi for the first time in June of 2007, I knew I had to come back. My volunteer program with the non-profit NGO World Camp, Inc. was over after five weeks, but my involvement with World Camp was definitely not yet over. After looking into several different volunteer programs operating in sub-Saharan Africa, my area of interest, I kept coming back to World Camp, founded in 2001 by several college students from the University of North Carolina. In the summer of 2007, I recognized the potential for change within World Camp when I initiated a tree-planting project that was accepted into the curriculum and is now a huge part of the program. The potential for change and development within the program was what eventually drew me back when I began considering internships; because I was established with World Camp already, I applied to be a program coordinator for the summer of 2008. My experience abroad in Botswana during the fall of 2007 helped me to acquire the position, as it gave me valuable and unique familiarity with environmental issues in southern Africa and life in sub-Saharan Africa.

My internship was certainly not a traditional internship in that I was integrated into the organization immediately, and shared responsibilities with two senior coordinators and one other new coordinator. Some of my first responsibilities were setting up volunteer orientation and going through the curriculum with volunteers, as well as an overview of environmental issues in Malawi that they teach in the classroom. I also helped with a language and cultural orientation to Southern Africa and Malawi in particular. For the rest of the five-week session, my primary job was maintaining volunteer safety and supervising their teaching to certify the integrity of the lessons and the program. I went with them to camps every day to oversee the school day and be available for questions or assistance. After the first session, I helped with the second session for two weeks until the start of the pilot high school program. I coordinated the high school program along with my supervisor, Rob Lamb. The high school program lasted for four weeks, after which I helped set up for the January session and close down the house and office for the fall.

This internship impacted me personally in several ways. I had a lot of responsibility, so I had to learn how to juggle my responsibilities with daily life and things that I wanted to do. The job was literally 24 hours a day for nearly three months, with one day in between sessions, so I had to focus on being enthusiastic and committed the entire time. I gained confidence through my

leadership role, and definitely came to appreciate others who do similar jobs who may have to juggle volunteer safety, satisfaction, and effectiveness. Academically, I was pushed to think creatively in my curriculum development. I did extensive research on deforestation using scholarly articles and news articles that are understandable to volunteers lacking a background in science. When working on the environmental curriculum, I had to learn to think realistically and practically, not just come up with the easiest solution.

My main learning objectives were to learn more about environmental issues facing Malawi, implement new projects for World Camp, and learn more about offering solutions and education for Malawi's children and teachers. I implemented several new environmental curriculum changes, built on other parts of the environmental curriculum, and helped implement a massive tree-planting project at an orphan care center. Although I do not have any solutions to deforestation currently, I hope to continue working towards a way of education that might offer a solution for Malawi. Overall, this internship was definitely a positive experience for me and solidified my interest in working in Malawi or other sub-Saharan regions in the future. This experience gave me confidence in my ability to be able to pursue something similar in the future in Africa or with a similar small nonprofit organization.

This internship was invaluable to my senior project and my interests in school. Although I did not learn many new technical skills during this internship (I definitely gained proficiency in Excel), I learned about the setup and operation of small nonprofit organizations and the steps they are taking to try to resolve Malawi's deforestation crisis. Doing hands on work in Malawi helped me keep a healthy perspective on what I was doing for World Camp and for my internship, and kept me focused on my senior project on patterns of deforestation. Being out in the field was absolutely essential to my internship, my senior project, and my studies as a whole; studying deforestation in Malawi from books and journal articles, and even spending a semester mapping it in GIS class, cannot compare to being there and seeing the multifaceted faces of poverty and deforestation manifesting themselves in every aspect of life in Malawi.

My goal for my senior integrative project is to incorporate a thorough literature review and analysis of previous research and studies on deforestation in Malawi with a GIS study of ecological and anthropological data that reflect patterns of deforestation. I will analyze the problem from an ecological perspective by looking at patterns of deforestation throughout Malawi and similar regions using current published literature and GIS images and analysis. I will use anthropological data as well as Landsat images of Malawi's land cover and other social factors to create and analyze GIS maps of deforestation and factors leading to deforestation, such as population size and concentration. I will then have a suitable background to make recommendations or propose remedial activities to NGOs active in Malawi's deforestation problem. I will be contributing to current research and literature by integrating a thorough literature review with my own anthropological and GIS-based research and analysis to determine causes and solutions for deforestation in Malawi.

**Michael Seager**  
**FUNDAPAZ, Salta, Argentina**

I spent two months this past summer working for a non-governmental organization called FUNDAPAZ in Salta, Argentina. Salta, located in the north of Argentina, borders Bolivia and contains a diverse array of people (Indigenous, Creole, those of European descent) as well as a diversity of natural resources and climates. FUNDAPAZ, founded in 1976, has established itself as a working partner and advocate for the rights and political endeavors of the Wichí indigenous people and Creole farmers of Northern Argentina. In recent years, the group has worked tirelessly with these groups of people to encourage sustainable planning for land use so that the small amount of land that these groups officially own can provide economic, social and cultural benefits for years to come. In the last five to ten years, FUNDAPAZ has worked with international organizations such as Greenpeace and the Heifer Organization on several projects and has established a presence within Salta's political sphere.

My research on deforestation in Argentina began when I studied with SIT in Buenos Aires in the fall of 2007. During that semester, I carried out an independent research project that focused on "La Ley de Bosques" (The Law of the Forests), which is attempting to bring a more sustainable approach to each province's land use and development policy. During the month that I spent researching this law and the background about land use in Argentina (Dec. 2007), my project advisor put me in touch with Gabriel Seghezzeo of FUNDAPAZ in Salta. Although I did not have the opportunity to meet him in person during that trip, we stayed in contact once I returned to the United States and we agreed that I could intern for FUNDAPAZ in Salta if, during my time as an intern, I compiled a comprehensive report about La Ley de Bosques for the organization's internal use.

During my time in Salta, for a few days of the week, I shadowed several of the Argentines who work for FUNDAPAZ and talked with the indigenous people or Creoles about their lives, the forest, and their families. I learned about the issues, complaints and problems that these people have and their attitudes towards the new Law of the Forests. I also had the unique opportunity to learn about the indigenous knowledge of the forestland in Salta and exactly how they are able to reap the benefits of the flora and fauna.

I also conducted several formal interviews each week with people who would be directly affected by the law: large and small-scale farmers, indigenous leaders, ecologists, agro-chemical business owners, and Greenpeace representatives. In addition, I attended two state-sponsored workshops about the law designed to both explain the law to the people of the province while also opening up the meetings for public discussion about how the law should be implemented and exactly what the future plan for land use should look like for Salta. I also attended a few meetings for various social/political organizations that represent the interests of indigenous and small farming communities.

Upon entering my internship, I was not certain exactly what I would be working on day to day. However, I quickly adapted to the relaxed atmosphere of working with an NGO and made the best of my time with the organization. I scheduled as many interviews as I could and took advantage of the time I had with people during my field visits with the FUNDAPAZ staff. At the end of my time working with FUNDAPAZ, I turned in a 15-page report written in Spanish to my supervisor, which both summarized the points of view of each interviewee and social group with whom I talked and put forth my own opinions about the future of the law and sustainable land

use in Salta. Through this experience, I feel that I have gained important life skills and lessons. Although my Spanish was fairly advanced upon entering Argentina this summer, I left speaking and writing fluently and confidently.

Furthermore, I learned about how difficult NGO work can be, and how workers must find ways not to become discouraged with their work, as it is often extremely difficult to realize the change that one might desire. Simple problems arose in our offices, such as when the electricity of the whole town was cut off for hours on end, which halted any chance of significant progress on the day's to do list. However, we always found other ways to further our daily progress by focusing on another impending issue, or we drove out to a community to do some fieldwork for the day. Working under such an unpredictable schedule was at first challenging, but I am proud to say that I was able to manage my time efficiently and collect valuable information for my senior integrative project.

This semester I plan to investigate the theory and criticism of participatory democracy in order to discern whether this form of governance could be more successful at creating ecologically minded national policy. I will be drawing my conclusions based upon my own observations and experiences from studying The Law of the Forests this summer in Argentina. During this semester, I will maintain my contacts with several people in Argentina in order to monitor the progress of the law in its early stages of implementation. Through my interviews, work with FUNDAPAZ, and the community and zonal consulting meetings I attended, I was able to put my finger on the pulse of several parts of Argentine society to gauge the reaction to The Law of the Forests. I feel that I have acquired enough information and diversity of opinion to present a balanced analysis of the strengths and weaknesses of Argentina's experiment with participatory democracy. Furthermore, by thoroughly observing the process of participatory consultation and public discourse about the law, I feel as if I will be able to come to a conclusion about the potential of participatory democracy to succeed or fail as a mode to foster the creation of environmental policy that reflects the views of those who feel underrepresented under the system of liberal democracy.

**Jamey Smith**  
**Hawaii Agriculture Research Center, Oahu, Hawaii**

Hawaii Agricultural Research Center (HARC) was founded with a focus on the development of the sugar cane industry on the Hawaiian Islands. During the later part of the 20th century, the sugar cane industry in the state decreased dramatically largely due to poor management and cheaper labor available overseas. Accordingly, HARC has transitioned into a research center encompassing many tropical crops important to both state and national economies such as papaya, coffee, asparagus, corn, and most recently, biofuels. Because the demand for biofuels is increasing at such a drastic rate, HARC has placed the majority of its manpower and funding into biofuel crop development. These crops provide a unique opportunity for the dwindling agricultural identity of Hawaii because the majority of research currently being done on biofuel crops involves tropical locations.

My responsibilities with HARC included assisting in several aspects of crop development of several potential biofuel crops. All of the crops being researched were perennial, oil-seed bearing tree species including *Jatropha curcus*, moringa, and kakui. Of these species, jatropha occupied the majority of my time spent with HARC. The total land occupied by biofuel crops on the Kunia farm site on which I was stationed was just over two acres, comprised of approximately 2000 trees.

The term “crop development” was further broken into three major components: mechanization of harvesting, breeding, and co-product development. In order to simulate potential commercial harvesting techniques, I trimmed, using a standard hedge trimmer, several sets of trees to a standard height and width. The trimmed material was then collected and separated into fruit and other biomass to determine ratios of potential oil-yield to non-oil producing biomass. This process also induces aggressive branching where the trees are cut. Because so much additional biomass would be collected if a similar harvesting technique were employed on a large scale, it is necessary to identify potentially valuable co-products in various plant parts. I spent several days working in the chemistry lab performing latex extractions from various jatropha plant materials. Other projects related to co-product development are currently being undertaken including removal of curcin, a mild poison, from the pressed seed cake to be used as animal feed. Breeding work was in very early stages during my time in Hawaii, but my supervisor and I spent a considerable amount of time identifying superior jatropha trees for clonal propagation and future breeding work. I also collected material and data for a whole-tree carbon sequestration analysis of jatropha.

Additional tasks included basic field monitoring including fruit collection, tree measurements and flower counts, which were complete within the first several weeks of my internship. I was also given various tasks that were not directly related to biofuel crop development. This included general cleaning and organizing activities in the chemistry lab, as well as on the farm. I was also occasionally placed with other scientists to assist with various projects such as a PCB bioremediation using a local fungus.

It is difficult to determine if the original goals of my internship were or were not met because I was very unsure of the exact tasks that I would be assigned to once I arrived. I had very little understanding of the field of agronomy and therefore had very few pre-conceived notions as to the learning experience I would have. I learned a great deal about the biology of the plants, mainly due to working with and observing them on a daily basis, and I consider being able to work so closely with these crops a great privilege. The actual science involved was very basic due to the early stages of research that these plants are currently in. I also learned a great deal about various aspects, in addition to scientific research, that are associated with a non-profit agency such as HARC.

I plan to use very little of the data I collected over the summer for my senior integrative project. The majority of it was related to agronomy, a field about which I still have very little knowledge. I plan to focus my project on the various ecological impacts associated with large-scale biofuel plantations of today, and will then parallel these issues with potential commercial jatropha operations. This will include inputs and related consequences of “first generation” biofuel crops as well as jatropha, invasion potential of jatropha in areas in which commercial operations may



be established, as well as potential conservation co-projects associated with large-scale plantations. It will focus on jatropha as a representation of a viable “second generation” biofuel crop and will briefly discuss what has led to the gradual downfall of “first generation” biofuel crops.

**Andrew Watts**

**Environmental Protection Agency, New England Division, Boston, Mass**

This past summer I was employed as an intern working for the Environmental Protection Agency (hereinafter EPA) New England Division located in Boston, Massachusetts. The EPA is a federal agency charged with the creation, implementation, and enforcement of a broad range of environmental measures. The country has been divided into ten regions, and at the regional level the offices carry out a more specialized and individualized work plan while also carrying out the broad national EPA mandates. The EPA New England is currently working on a wide variety of projects including regional conservation, energy, and pollution initiatives as well as carrying out the broader national mandate of the National Environmental Protection Agency. As an intern in EPA New England, I worked under Ms. Mary Putnam-Dever in the Assistance and Pollution Prevention Division in the Office of Environmental Stewardship. My main focus for the summer was working to assist community conservation efforts as I worked to provide support for the EPA’s CARE (Community Action for a Renewed Environment) Grant Project. The CARE Grant Program works to provide support, both financial and technical, to community based initiatives aimed at local or community level environmental amelioration. These projects in the New England Area varied from the cleaning up of beaches and shorelines in Newport, Rhode Island to hazard and pollution reduction related to the auto-body industry in major metropolitan areas.

As an intern, I was charged with a variety of projects that varied depending on the specific community organization’s needs. I researched everything from chemical compounds found in automobile paint to beach ecology in an effort to garner as much information and support as possible for whatever the community group needed. However, the main overarching summer-long project I completed was the creation of a resource guide for community groups in undertaking the CARE process. This guide started with aid for communities during the application process and walked the group all the way through to the final stage which was designed to make the project self-sufficient. In action, this guide will be given to community groups who desire EPA support in carrying out an environmental initiative and should support them throughout the 2-6 year process.

My original objectives upon entering into this specific internship included gaining a broader understanding of the operations of a federal agency, learning more about community based environmental initiatives, as well as learning how to make broad, national mandates effective and efficient on the local level. Working for the EPA New England certainly fulfilled these original objectives. My understanding of this federal agency, as well as other local, state, and federal agencies, has grown enormously from this experience and I expect to build on my familiarity when it comes time to find a job at the end of this year. Secondly, in attending meetings and working side by side with local environmental groups I was able to see first-hand the problems facing these organizations as well as the potential routes to success. Lastly, I was able to see how the EPA struggles to make national mandates a reality on the ground in the

different localities across the nation. In gaining all of this understanding and experience I feel I am able to form more informed decisions and opinions regarding the role and responsibilities of the government in responding to and supporting environmental issues.

I would also like to note that my original proposal was for an African based internship and senior integrative project, which would have included a summer spent in Uganda working as a wildlife ranger. Unfortunately, due to circumstances out of my control, I was unable to travel to Africa this summer, but I still feel my internship at the EPA has supplemented and enriched my understanding. The EPA experience has prepared me to begin my senior integrative project in that it gave me first-hand knowledge and understanding of community-based action. I am working to finalize the details of my project but I know that I would like to look at community initiatives in the East African Region. Having studied abroad in Kenya I learned about the wide array of environmental issues facing the region, and having worked for an organization in my own country striving to empower local communities, I hope to be able to assess East African Community Conservation from an enlightened and informed position. I now know much more about the variety of issues facing local community groups and hope to be able to provide analysis and suggestions for more effective and efficient community involvement.

**Samantha Wright**

**Ocean and Coastal Consultants Inc., Trumbull, Connecticut**

Ocean and Coastal Consultants, Inc. is a privately held consulting firm that provides unique expertise in all aspects of waterfront engineering and design. Their services range from design aspects and marina planning, to dredging projects, and beach nourishment design and management. Ocean and Coastal Consultants, Inc. is involved in a wide diversity of construction projects throughout the world and is also involved in the environmental impact mitigation of their projects.

My role at Ocean and Coastal Consultants, Inc. (OCC) for the summer has been a broad one. My responsibilities were numerous and were different on any given day. They ranged from mastering the ever important skill of photocopying, scanning, and binding to researching design solutions, ordering nautical charts, and working in the field with current and potential clients. More specifically, I was involved in a beach nourishment project on Laurel Beach in Milford, Connecticut. For this project, I took measurements in the field and helped with calculations and designs in order to achieve the goals of our clients, the Laurel Beach Association. Environmental impacts also had to be assessed, including disturbance of shore bird nesting sites, in order to complete a permit application that would hopefully be accepted at the local, state, and federal level. Another project I was part of included a day trip to Fishers Island off the coast of New London. The potential client was a resident of the island whose beautiful, historic home was perched precariously on top of an eroding fifty-foot bluff whose backyard had been disappearing for the last century. However, it was only recently, after several severe nor'easters removed enough of the bluff to undermine a corner of their garage, that the homeowners decided their house was in danger of collapsing into the ocean and that they should contact OCC. By the time I completed my internship, the company was only in the preliminary consultation stages with the client. However the options were few. The construction of an enormous revetment to protect the

entire bluff property (300 feet of waterfront and 50 feet high) is still being contemplated. However with most engineered coastal protection methods, the protection offered is only temporary, can be compromised in large storm events, and can have detrimental down-shore effects. The optimal solution that we continued to stress to the client is to relocate the house farther back from the edge of the bluff.

Whenever there was a lull in the work needing to be accomplished, I had the opportunity to research a topic of my own choosing under the guidance of my supervisor. My topic involved uncovering the flaws of conventional beach stabilization, coastal protection techniques and, ultimately, proposing the use of artificial reefs designed to mimic nature's way of protecting the shoreline. At the end of my nine weeks at OCC, I completed a research paper that will be used as the beginnings of my thesis. My senior integrative project will be a thesis written under the guidance of Doug Thompson, which tentatively will cover the same topic I researched during my internship, but in more depth. I will be using GIS technology and aerial photographs to map where artificial and natural reefs are located in the world. I will analyze whether a change has occurred in the beach width since the installation of an artificial reef, and draw some conclusions about where reefs are the optimal solution for shoreline stabilization.

My original objectives of this internship were to learn as much as I possibly could about the environmental consulting and engineering field of work, to ultimately discover if it was something I could see myself doing in the future as a career. I believe my learning objective was met. I got a real taste for the business and was involved in many aspects and different areas of the field including researching, fieldwork, client and site consultation, environmental mitigation, and permit application writing. I also worked closely with the Department of Environmental Protection in Connecticut to devise the optimal solution to satisfy both the environment and the client. This summer has been a truly valuable experience for me and it has shown me a potential career path for my future after graduation from Connecticut College.