



The Goodwin-Niering Center for Conservation Biology and Environmental Studies



Senior Integrative Project Abstracts for the Class of 2005

Marcie Berry

The Benefits of Offshore Wind Farms for Renewable Energy and the Possible Creation of Artificial Habitat for a Variety of Marine Life, Using the Cape Wind Project in Nantucket Sound as a Case Study

Global warming is a pressing environmental issue in the world today. There are currently several forms of renewable energy available, as well as great advances in technology that allow us to harness this energy efficiently. One form of this renewable energy is wind energy, which can be harnessed using large wind turbines. When many of these turbines are placed in a grid-like pattern they form a wind farm, which can be very successful at producing power. The Cape Wind Project is a proposed wind farm to be located offshore in Horseshoe Shoal off the coast of Cape Cod. Placing the wind turbines offshore allows for greater energy potential because the wind offshore moves at higher speeds and is not obstructed by buildings or landforms. Moving these wind farms offshore has created much controversy over whether or not the turbines will affect marine life. After analyzing the turbine foundations and how they will be placed, as well as examining the results of artificial reefs all around the world, I determined that these turbines may actually have a positive effect on the marine life. They would act as an artificial reef, attracting both benthic and pelagic species of marine life. Evidence from the Army Corps of Engineers' Draft Environmental Impact Statement shows that the turbines will have no negative impacts on marine life. This wind farm would serve to provide cleaner, and cheaper, energy to Cape Cod and the Islands while having no negative impacts on marine life.

Allen Bunting

Nature, Environment and Consumption

I began this Senior Integrative Project with high aspirations of analyzing the concept of environmentalism in the United States. I soon realized how great a task this actually is. As an Anthropology major, I understand that the answer to this question is only possible through observing the economic, political, gender and age influences on what environmentalism means to consumers in our culture. However you have to start somewhere and my research and analysis became situated in the basic conceptions of 'nature' and what 'natural' means in a consumer culture. The view that nature can be separated from man and increasingly produced through labor was initially brought about through capitalism and modernity. While brainstorming about the concept of nature, words that came to my head included *pristine*, *untouched*, and *wilderness*. Further, this language becomes solely figurative when one observes the reality of anthropogenic

impacts on our 'natural' world. My research progressed by my gathering of different print advertisements that utilized the concept of nature in placing meaningful and persuasive contexts to products. I then played Ad-Buster and researched just how natural these products actually were. My results show that not only are very few of the ingredients in these products were natural, but they were, in fact, harmful or toxic. The following digitally designed piece displays my research, analysis, and offered alternatives for my Senior Integrative Project. I begin with an analysis of the concept of nature, move into the truth behind common household products then into a breakdown of adds I selected for my research, and finally I offer both at-home and consumer alternatives to everyday products that may otherwise be harmful or toxic. This project is a visual culmination of my time, energy, thought and analysis of the difficult breakdown of nature and environmentalism in consumer culture. More importantly, this is just the beginning. Future research will take into consideration economics, eco-racism, gender, and/or age variations in the concept of nature and environmentalism.

Elizabeth Ginn

Community Gardening and Urban Development in New York City

The purpose of this study is to demonstrate the important and vital role that community gardens play in urban poor neighborhoods and their power in neighborhood transformation and renewal. They have become irreplaceable in the influence they have on cities and their residents. Community gardens give people a chance to connect with the environment when they otherwise might not have been able to. When this connection happens and people understand more about the environment, they are more likely to be environmentally aware and make environmentally smart choices, like recycling, producing less waste, driving less, and valuing the importance of wilderness and stable and natural ecosystems. People living with community gardens might vote for an environmentally friendly candidate, or lobby for environmental improvements locally, nationally, and globally. Therefore, community gardening is one of the most important means of non-traditional environmental education. Most people do not receive environmental education in a classroom setting, but in practice with the earth, and gardening is one of the best ways to achieve this. It brings peace of mind and strength to the earth. Using these experiences and my study as an environmental studies major, I feel that community gardening and urban environmental education is vital to a clean environment in the future. Hopefully, this study will further emphasize this and reiterate the immeasurable positive influences that gardens and connection with the environment in general have on people living in cities.

Genevieve Godfrey

The Use of Environmental Enrichment in Preparing a Harbor Porpoise for Human Care in Zoological Facility

Environmental enrichment plays an important role in ensuring proper mental and physical health in animals in zoos and aquariums. It provides sufficient mental stimuli to effectively reduce stereotyped behaviors and increase an animal's behavioral flexibility. I studied the application of environmental enrichment in preparing a female harbor porpoise (*Phocoena phocoena*) for a captive environment. Using a harbor porpoise for this study offers challenges because harbor porpoises are fairly nonsocial cetaceans and because there has been little previous research on

their behavior. This specific animal offered further challenges because of her history as a rehabilitated animal under legal restrictions that limited her exposure to people for two years. The goal of this study was to not only provide the benefits normally associated with environmental enrichment, but to do so in a way that increased her interaction with trainers and prepared her for the unfamiliar stimuli that will be presented to her in an aquarium environment, without the use of food as a positive reinforcement. For thirty days over the course of two months an assortment of 20 enrichment objects were presented by trainers using one of 7 specific actions, four times per day. During these sessions, six minutes were spent making baseline observations of her behavior, immediately followed by three minutes of one object and action and three minutes of another object and action. Using 10-second time sampling to quantify the frequency of her behaviors, different behaviors were quantified to gauge her level of interest or avoidance in enrichment. Her behavior during the study supports the hypothesis. Her interest remained constant over time and her avoidance behaviors decreased. Also, a significant increase was observed in her interest and avoidance behaviors during enrichment when compared to baseline behaviors. Even when exhibiting interest behaviors, she maintained a level of apprehension regarding enrichment throughout the study period, suggesting a further need for enrichment. Also, while one of her stereotyped behaviors decreased during enrichment, another increased, suggesting a need for a change in the type of enrichment used.

Cameron Hewitt
Citizen Action and Land Conservation

Despite several decades of research on self-efficacy, no direct research has been done on a potential correlation between reduced sense of individual self-efficacy and aggression. The goal of this study was to establish such a correlation in an experimental setting by artificially manipulating participant's self-efficacy on a cognitive task. Subsequently, participant aggression was measured using the Novaco Anger Inventory (1975). 18 college undergraduates participated in this study, and no significant correlation was found. However, due to procedural difficulties and the presence of significant confounding variables, further trials are suggested.

Rory Jose
The Environmental, Social, and Economic Impacts of Large Dams: A Case Study of the Three Gorges Dam in China

After examining various viewpoints from governments, environmentalists and economists on large dams, the focus of this study will be on the Three Gorges Dam in China. The Chinese government began construction of the large dam in 1997. According to Chinese officials, the dam will be completed in 2009. Not only is it important to understand the opinions of different groups, it is vital to understand the details and lessons of the Three Gorges Project, in order to make good decisions on future proposals to build large dams. Following the investigation of the Three Gorges Dam, the study will focus on a proposed dam project on the Tiger Leaping Gorge in China. Building on the lessons from the Three Gorges case, should the Chinese Government construct another similar large dam? The government has two options. Chinese officials can choose to ignore the negative effects of the Three Gorges Dam project or they can review the impacts caused by the construction of the dam and perhaps scale down the project. As the Three

Gorges Dam is completed in 2009 there will be numerous environmental, human, economic and political impacts. The Chinese government is committed to the Three Gorges Dam, but there is hope for future proposed sites in China. Recently, an article in the New York Times discussed the controversy over the construction of the large dam on the Tiger Leaping Gorge. As of today the Chinese central government has not granted final approval. According to the article, environmental groups have issued a public petition to halt the project. The Chinese government needs to examine the costs and benefits of building large dams. In the short term, large dams help develop a third world country but in the long run large dams cause irreversible environmental and social problems. Not all large dam projects should come to a halt but there needs to be a thorough examination of large dams and their impact on the environment and society. Recently, many organizations, such as the World Bank, have not supported numerous large dam projects because there are so many factors when building a large dam. This study will show the negative impacts of large dams on the environment and society is more significant than the positive affects of dams.

Sarah Lumnah

James Fenimore Cooper: Justifying History Through Manipulating the Environment

Throughout The Last of the Mohicans, James Fenimore Cooper justifies white expropriation and settlement of America. In order to explain the whites' genocide of the Native Americans and the colonization of the land, Cooper must demonstrate the need for these things to occur; he demonstrates this need through demonizing the forest and the majority of the Native Americans that inhabit it, thereby suggesting that genocide and colonization have to happen in order to save America. Yet, by no means is Cooper simply a racist. Throughout the novel, Cooper sympathizes with certain Native Americans, in particular, the Mohicans, suggesting that their mistreatment by whites is wrong. The Last of the Mohicans, then, may be viewed as Cooper's attempt to justify the immoral acts of the settlers, while also helping himself come to terms with his country's, as well as his own family's history.

Caitlin McIntosh

Plant Poisoning of Livestock: Issues of Economic Impact and Biological Sustainability Using *Cicuta douglasii* and *Kochia scoparia* Case Studies

This paper reviews the prevalence and distribution of plant poisoning within the United States and its impact on livestock management and production. The biochemical characterization of plant toxins is outlined, as well as an evaluation of the possible economic impact of such poisonings. The impact which grazing pressures may have on poisonous plant density is explained, specifically in areas of arid and semi-arid soils such as the rangelands of the American southwest. Two plants, water hemlock (*Cicuta douglasii*) and Kochia weed (*Kochia scoparia*), and their respective toxins are closely reviewed. An example case study of poisoning by water hemlock and Kochia weed is also included. In conclusion, current methods of plant control and veterinary treatment are reviewed. An appendix of poisonous plants commonly found in New England is included for distribution by the Connecticut College Arboretum.

Keiko Nishimoto

The US Forest Service and the Multiple-Use Sustained-Yield Act of 1960

The U.S. Forest Service was originally established in 1905 to oversee use of and to develop management plans for the nation's forest reserves. Changing demands of the American public and the increasing need for natural resources have caused a shift in management ideology over the past century. Today, the Forest System includes 175 forests and grasslands in all 50 states. These lands are managed under the multiple-use principles outlined in the Multiple-Use Sustained-Yield Act of 1960 and the National Forest Management Act of 1976. The fact that MUSYA and NFMA are inherently vague and fail to prioritize land uses has provoked conflict in management decisions. One such conflict is currently being addressed in the Carson National Forest in New Mexico, where preservationists are fighting a proposal to open land to coalbed methane drilling by the El Paso Corporation. This paper provides a history of the Forest Service and the legislation which governs land management decision-making and looks specifically at the Carson National Forest to address the problems of MUSYA and NFMA and public participation in the management decision-making process.

Amy Phelan

Restoration of a Pitch Pine / Scrub Oak Woodland at the Hopeville Pond Natural Area Preserve, Griswold, CT

Fire tolerant *Pinus rigida* (pitch pine) / *Quercus ilicifolia* (scrub oak) Woodlands are usually found on glacial origin, nutrient poor soil in the Northeast. Historic use of fire by the Native Americans and European colonists helped shape the *Pinus rigida* / *Quercus ilicifolia* Woodlands. The fires created a favorable environment for *P. rigida* by opening the canopy, increasing light availability, and removing leaf litter to expose mineral soil for germination. However, by the 20th century, fire suppression became common. Many *Pinus rigida* / *Quercus ilicifolia* Woodlands began to decline and fire sensitive species such as *Pinus strobus* started to dominate the forest canopy. The state of Connecticut set aside 10 ha of *Pinus rigida* / *Quercus ilicifolia* Woodlands for the Hopeville Pond Natural Area Preserve. The site was selected in order to protect and conserve the rare habitat and the special species associated with the unique *Pinus rigida* / *Quercus ilicifolia* Woodlands. The study site, located on the western side of the Hopeville Pond Natural Area Preserve, includes a burned and unburned site. The restoration efforts performed by the Connecticut Department of Environmental Protection (DEP) on the burned site included a prescribed burn in the spring 2002 and selective cutting in the fall 2003 and winter 2004. Species were identified and percent cover was recorded in the overstory, sapling and shrub layer, and herbaceous layer on both the burned and unburned sites. On the unburned site, *Pinus rigida* declined in density, while *P. strobus* had the highest density in the overstory by 2004. On the burned site, *P. rigida* had the highest relative importance value of 28.86% in the overstory yet, there was no evidence of *Pinus rigida* reproduction by 2004. The density of *P. strobus* stems, greater than breast height, dropped from 3,921 stems / ha to 325 stems / ha from pre-burn to 2003. The burn was also effective in eliminating *P. strobus* sapling from 4,483 stems / ha to 0 stems / ha from pre-burn to 2003. After selective cutting in 2003-2004, stump resprouting increased for such species as *Acer rubrum*, *Prunus serotina*, and *Quercus alba*. It is recommended that prescribed burns and selective cuttings continue for

restoration and conservation of the *Pinus rigida* / *Quercus ilicifolia* Woodlands in the Hopeville Pond Natural Area Preserve.

Lauren Richter

Equating Reason With Rational: How Rationality Limits Modern Approaches to Environmental Problems

This paper explores the relationship between modern society and the environment, isolating “rationality” as a central component of a modern condition under globalizing capitalism. I will provide a critique of modern dependence on rationality arguing that despite its effectiveness it also hinders our approaches to environmental concerns by: 1. establishing knowledge hierarchies and 2. promoting a flawed paradigm for controlling the environment. Central to this task is the underlying question: To what extent is environmental degradation a function of capitalism, rendering solutions produced in this paradigm superficial, if not inflammatory? I conclude by promoting innovative approaches to environmental problems as seen in the systems-based analyses of Berkes et al. (1998). Their research uses multiple sources of knowledge and embraces “irrational” concepts such as unpredictability, creative innovation, and surprise.

Emily Weidner

Struggles for Cultural Survival in a Changing Environment: Two Panamanian Hydroelectric Projects and their Impacts on Indigenous Communities

Small and slow change is natural and normal to both environmental and indigenous cultural systems. The simultaneous changing and evolving of indigenous cultures and their environments defines an unconventional interdependency between the two, called the environment-culture bond. The Bayano Hydroelectric Project constructed in the 1970s in central Panama brought with it comparatively quick and large environmental change which led to the environmental instability of the area. This instability is defined by the loss of complexity, and change or loss of the central character of the environment. The environmental changes in the area of the Bayano project and the cultural changes of the Kuna living in the area are broken down into their most basic causal form. A causality model describes a changing environment and culture. First a linear causal line is formed from environmental change to environmental instability, to cultural change, to cultural instability. Subsequent environmental changes and instability come from cultural changes. Additionally, cultural conflicts not originating from environmental change/instability, but from the decision-making process, also create cultural instability and subsequent environmental changes. The compounded environmental and cultural instability threaten the cultural survival of the indigenous groups in the area. It is expected that the proposed Hydroelectric Project of Bonyic, a Panamanian hydroelectric project in the traditional lands of the Naso, would perpetuate a similar model of environmental and cultural change leading to an eventual environmental and cultural instability, and a people struggling for cultural survival. To assure Naso cultural survival environmental and cultural instability must be avoided.

Katherine Williams

Musings: A Sense of Place in Moby Dick

Mary Hunter Austin, a scholar of American Literature, wrote: “American literature is not only *about* the country but *of* the country, ‘flower of its stalk in root, in the way that Huckleberry Finn is of the great river, taking its movement and rhythm, its structure and intention, or lack of it, from the scene.’”¹ In the same way, *Moby-Dick*, Herman Melville’s epic whaling novel, takes its movement, rhythm and structure from that voyage. This project seeks to evaluate Melville’s use of place in two chapters of the book: “The Mast-Head” and “Cetology.” Through ecocriticism, this essay evaluates the ways that setting and place can inform our readings in order to show that there are moments in the book where Ishmael advocates an anti-whaling perspective. Leo Marx, a literary theorist, summarizes Ishmael’s complex environmental beliefs:

*Melville in effect puts his blessing upon the Ishmaelian view of life: a complex pastoralism in which the ideal is inseparably yoked to its opposite. It is a doctrine that arises at the “vital centre” of experience. At the same time Melville acknowledges the political ineffectuality of this symbol-makers truth.*²

This paper will illustrate several examples of this complex pastoralism.

¹ Mazel, David. A Century of Early Ecocriticism. The University of Georgia Press, Athens and London. ©2001. p.262.

² Marx, The Machine and the Garden, 318.