

# Dean's Scholar Summer 2007 Research Grant Proposal

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## Abstract

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There is a growing need for environmental management to take on a more holistic and integrated approach. It is becoming widely recognized that effective management of environmental systems, and especially agricultural systems, requires stakeholder involvement and both scientific and social investigation. The world's resource base is being stressed by pressures such as population growth and globalization, which is forcing a reevaluation of the sustainability of our land use practices. Developing countries are especially vulnerable to these forces, and often need programs that equally focus on managing natural resources and supporting local livelihoods. Significant evidence also demonstrates that different communities, both globally and nationally, receive unequal distribution of environmental protection and access to resources.

I am interested in pursuing the connections between natural resource management, international development, and the distribution of inequalities through projects on community based natural resource management at the Institute of Tropical Biology (ITB) in Ho Chi Minh City, Vietnam. The organization is working on two projects, both of which require high levels of community involvement in order to monitor fragile ecosystems. I will research possible methods for creating community management programs and bioindicators that the communities could use to monitor their landscapes in an easy, cheap, and reliable way. Both projects are in the highlands of Vietnam. In one region the Ede, an ethnic minority, and a rare freshwater crocodile are in the process of losing their land due to the filling of a reservoir behind the new Lower Ba River Hydropower dam. The other region, Da Lat, is facing severe changes in its surface water quality, the causes of which are under investigation. I will be researching methods and creating action plans for the ITB for its continued work with these communities at risk. The culmination of my research will be in the form of proposals to the government in an effort to incorporate participatory management into their poverty alleviation strategies.

## Biological Sketch

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I am a junior College Scholar Major and I am also minoring in Biology and Inequality Studies. I have tailored my College Scholar program to have both a solid background in the natural sciences, while also taking many courses in the social sciences. It is essential to have a solid background in both these aspects in order to create effective change in community based natural resources management.

My family currently lives in Exeter, NH, but before high school I lived in Goshen and Swampscott, Massachusetts. I attended Phillips Exeter Academy for high school, where I played in the orchestra, ran varsity track, danced, and spent time creating art with ceramics and photography. My summers in high school were spent working for the New England Aquarium's educational department, where I learned and taught about the local marine environment as a naturalist and environmental educator on the aquarium's boats. I deferred my acceptance from Cornell, and spent the year working and traveling. While abroad I lived in Wellington, NZ for

three months and participated in back country environmental conservation work. On my return to the States I lived and worked aboard the schooner *Adventuress* in Puget Sound, WA where I taught environmental conservation, marine biology, and nautical skills to students age seven to eighteen.

My interests in environmental education, sustainable development, and resource conservation have held strong while I have been at Cornell. I am currently the President of Roots and Shoots, which is an environmental education student group on campus working to raise awareness of environmental issues by teaching at the Sciencenter, lobbying our government, and running awareness and fundraising campaigns on campus. I am also the Vice President of the Society for Natural Resources Conservation (SNRC), which is working to help Cornell become more sustainable and conscious about purchasing and resource use. Last semester I created a tutoring program affiliated with the Caroline Elementary School through my position as the Vice President of Philanthropy for the Pi Beta Phi sorority on campus. I have also pursued my research interests by working in Nelson Hairston Jr.'s lab, conducting various experiments and gathering data on freshwater zooplankton. I have been looking forward to the opportunity to apply the knowledge I have gained at Cornell, and feel this summer research in Vietnam will allow me to pursue questions about how to create an effective community based natural resources management program in a country and culture far from my own.

## Statement of Purpose

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There has been a change in the methods used for managing the world's natural resources. Two main shifts have occurred. The first recognizes that management must integrate science and societal concerns.<sup>1</sup> The second change recognizes that we need to take a more holistic ecosystem and watershed approach to surveying and managing our resources.<sup>2</sup> Traditionally, environmental problems have been assessed and managed from a distance, with experts called in and often the government working with these scientists to create a set of goals to direct management. These projects have often failed to take into account the complexity of managing a landscape that is not only complex scientifically but integrated into the livelihoods of various groups in that society. Action Research, Ecoagriculture, Participatory Rural Appraisal are a few examples of frameworks that have developed to address the issue of integrating stakeholders at all levels, from grassroots to international, into the decision making process. These approaches

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<sup>1</sup> Louise Buck, Jeffrey Milder, Thomas Gavin, and Ishani Mukherjee, 2006, *Understanding Ecoagriculture: A Framework for Measuring Landscape Performance*, Discussion Paper No. 1, Washington, DC: Ecoagriculture Partners.

<sup>2</sup> N. LeRoy Poff, et al, Dec 1997, The Natural Flow Regime: A paradigm for river conservation and restoration, *Bioscience* 47(11): 769-781.

seek to gain a more equitable decision making process, which values and utilizes local knowledge in any decision that would effect a region.

In terms of community based natural resource management, the goal is to have local stakeholders active in the decision making process by setting mutually agreed upon goals and then creating participatory action plans to achieve them. This could take the role of monitoring a landscape, working together to protect a fragile ecosystem, reevaluating current land use methods, and many other management techniques. In contrast to the traditional hierarchical management plan, an adaptive management plan would be put in place that allows for continual feedback in order to pull in any new information or concerns that arise.<sup>3</sup> This type of management, which is labeled with different terms depending on the discipline, has gained wide respect internationally as an integral part of any project, both in the development, implementation, and evaluation phases.

In the wider context, natural resource management, and especially water quality and food production, is at the forefront of global concerns due to the pressure from population growth, globalization, and global climate change. Globalization has caused the countries of the world to become integrated in ways previously unimaginable, and traditional land use practices are changing rapidly around the world. The types of crops grown are affected by the international market, and many areas, primarily subsistence farming areas, are now part of a market economy. This has placed extreme pressure on agriculture and biodiversity in numerous regions, especially in the developing world. The issue of poverty often ties directly to the loss of traditional means of subsistence and loss of land. In many regions livelihood depends on land use and agriculture, which directly effects biodiversity. In order to make substantial change in any of these areas, all aspects of a region must be considered.

The UN Millennium Development Goals for 2015 strive to reduce the proportion of people without sustainable access to drinking water and the poverty rate by fifty percent.<sup>4</sup> The Government of Vietnam is working to achieve these goals, and is working on various programs to compensate landowners for developing their land, and in some areas for protecting environmental services. The Institute of Tropical Biology (ITB) in Ho Chi Minh City is working

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<sup>3</sup> James A. Perry and Elizabeth Perry, 1996, Water Quality Management: An Evolving Field for Changing Values, In *Water Quality*, pp. 3-14, Cambridge, MA: Blackwell Science.

<sup>4</sup> United Nations, 2005, UN Millennium Development Goals, viewed February 3, 2007, from <http://www.un.org/millenniumgoals/#>

to develop alternative techniques that would alleviate poverty and protect environmental services while also integrating local stakeholder participation. The ITB is one of the partners in the Mekong Program on Water, Environmental, and Resilience (M-POWER) alliance in South East Asia. The group is working towards democratizing water governance and maintaining the opportunities for sustainable livelihoods while protecting watersheds as a whole. My research would assist the ITB in creating holistic management techniques to protect ecosystems while also strongly integrating local participation and knowledge. I would create proposals that would be sent to the government advocating for community based management and participation poverty alleviation and natural resource management programs.

The ITB is currently working on projects in two regions facing rapid environmental changes that threaten agriculture, human health, and ecosystems as a whole. The first project is centered at Ha Lam Lake in the Song Hinh district of Phu Yen province. The Ha Lam Lake and wetlands are home to an endangered freshwater crocodile, *Crocodylus siamensis*, and many important waterfowl.<sup>5</sup> By the end of 2008 the area will be flooded to create a reservoir as part of the Lower Ba River Hydropower project. Not only is the unique biodiversity of the region at risk, but the Ede people will lose significant parts of their agricultural lands. The Ede are an ethnic minority in Vietnam, and there is concern that they will be pushed out of the region not only by the flooding, but also by subsequent development. These people also significantly rely on the 800 hectare area that is to be flooded for food and natural products that supports their livelihoods. This area is also spiritually and culturally significant to the Ede people.

My research will focus on how to help this community manage the natural resources at risk in their landscape. A volunteer Crocodile Conservation Taskforce has already been established to monitor the region and prevent poaching of remaining crocodiles. A long term action plan must be created to manage the biodiversity concerns along with the livelihood issues faced by the Ede people. The government's poverty alleviation techniques will also be critiqued to discern their effectiveness in the region. Local authorities are interested in using community based management in this region as an innovative model that would affect broader hydropower policies throughout Vietnam in the future.

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<sup>5</sup> Nguyen Xuan Vinh, et al., 2007, *The Freshwater Crocodile (Crocodylus siamensis) Conservation Initiative in Ea Lam Commune of Song Hinh District, Phu Yen Province, Vietnam from November 20, 2006 to November 30, 2007*, Ho Chi Minh City: Institute of Tropical Biology; IUCN Vietnam; Wild Tour.

The ITB is also working in the Da Lat area due to recent awareness that water quality degradation is occurring there. The goal of this ITB project is to develop techniques for the community to manage and monitor their own water. The rivers running through Da Lat to Ho Chi Minh City are visibly degraded, and local communities are losing access to healthy drinking water. The watershed is currently being assessed in order to gain a baseline of relevant information concerning the hydrology, vegetation, and biodiversity of the area. There has been a noticeable decrease in forest cover, which has been replaced by other land use types. The ITB and other organizations are working on a program that would compensate local land users for protecting ecosystem services, such as water quality and soil retention. Compensation would be both monetary and increased access to safe water. In relation to this project my research goal would be to create an integrative management plan that would involve local stakeholders not only in setting goals for water management, but also in water monitoring. I would be working to develop appropriate biological indicators for ecosystem services, such as water quality, that the community feels are important. These indicators should be easy to administer, inexpensive, and ideally could be used by school groups to monitor the surrounding ecosystem. ITB will analyze information collected using these monitoring techniques and share all results with the local communities in this watershed.

Both of these projects will allow me to research how to best implement community based natural resource management techniques in rural ecosystems facing negative human caused effects. I am interested in finding out how to create a strategy for management that will bridge the gap between local community members and a larger removed organization. The hope is that the ITB can give positive support and be the catalyst for locally run management. In order for the stakeholders to manage their land they will need to work with various specialists to create effective indicators that can be used to monitor environmental conditions. I will work with professionals at ITB and others in Ho Chi Minh City to build the initial criteria for these indicators. They will then be tested in the field. The key to all of these processes will be to build effective feedback methods into all decision making and monitoring programs. As more is learned and goals change this can be integrated into management. If communities can manage these issue effectively this will be an important demonstration to the government that stakeholder participation should be an integral part of all resource and social management. Ideally, this will

help to alter the resource management, poverty alleviation, and development techniques used by the Vietnamese government.

## **Bibliography**

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## **Estimated Budget**

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Roundtrip Airfare between Boston and Ho Chi Minh City:

Estimate for leaving June 10<sup>th</sup> and returning August 18<sup>th</sup>: \$1659.15

This was the lowest fare found in my search, and it was found through

[www.cheapair.com](http://www.cheapair.com)

Housing in Ho Chi Minh City:

I will be renting an apartment in Ho Chi Minh City. Nguyen Xuan Vinh, who is the project director I will be working with at the ITB, is helping me locate an apartment.

Estimated monthly rent: \$200 X 3 months = \$600

Food:

Nguyen Xuan Vinh has informed me that I will spend roughly US\$7 on food per day.  
\$7 X estimate of 69 days = \$483

Travel to Research site from Ho Chi Minh City:

Car rental, gas, lodging = roughly \$500

This estimate was also provided by Nguyen Xuan Vinh

Total estimated budget:

\$1659.15

\$600.00

\$483.00

\$500.00

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\$3242.15

I am aware that the Dean Scholar's grant is for \$2500 dollars. This money will significantly help to cut the costs of my trip. At this time I have not applied for other funding, but I am looking for other summer grant opportunities.

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Dean's Scholar Research Proposal  
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