

II. Project Proposal Sharon Gusky: More than just Kangaroos: Experiencing Australia's Biodiversity

1. Project Title: More than Just Kangaroos: Experiencing Australia's Biodiversity

2. Project Goals:

I worked in research labs for seven years before becoming a teacher and my research focus as well as my graduate degree is in molecular biology and genetics. When I lecture on genetics, my students enjoy hearing about the research I did and I enjoy sharing that experience with them. When we go to lab we do small scale experiments using the same techniques I used in the research labs I worked in. When I lecture on biogeography and its relationship to biodiversity and conservation, I lack the personal experiences and do not teach it with the same level of enthusiasm. This project will allow me to gain a better understanding of biodiversity and biogeography through first hand experiences in Australia so that I can enrich my lectures and pass this experience and knowledge on to my students with the same enthusiasm I give to genetics. A study of Australia's marsupial mammals would provide me with a fascinating experience for discussing these topics.

To reach this goal I will:

- a. Read background information on Australia and the various marsupials that live there
- b. Be part of a research team during the Australia's Forrest Marsupials Expedition sponsored by Earthwatch Institute
- c. Document my experience with photographs and written works
- d. Develop curriculum supplements to use with my students in lecture and lab
- e. Share this first hand experience students and colleagues thorough formal and informal presentations

3. Project Design

A. I will develop a basic understanding of Australia's biodiversity and study biogeography by doing background reading and research on the topics . My reading list includes but is not limited to :

Dickman,C. and Ganf, R.W. 2008 *A Fragile Balance: The Extraordinary Story of Australian Marsupials*

Lindenmayer, D.B. 1996. *Wildlife and Woodchips: Leadbeater's Possum as a test case of sustainable forestry*. University of New South Wales Press, Sydney.

Lindenmayer, D.B. and Beaton, E. 2000. *Life in the tall eucalypt forests*. New Holland Press, Sydney.

Rich, P.V. and Rich, T.H. 1993 *Wildlife of Gondwana: The 500 Million-Year History of the Vertebrate Animals From the Ancient Southern Supercontinent*

Lindenmayer, D.B. 1997. Differences in the biology and ecology of arboreal marsupials in southeastern Australian forests. *Journal of Mammalogy*, 78, 1117-1127.

Lindenmayer, D.B., Welsh, A., Donnelly, C. and Meggs, R. 1996. The use of nest trees by the Mountain Brushtail Possum (*Trichosurus caninus*) (Phalangeridae: Marsupialia). I. Number of occupied trees and frequency of tree use. *Wildlife Research*, 23, 343-361

B. I will participate in the Australia's Forrest Marsupials Expedition sponsored by Earthwatch Institute. During this 10 day expedition I will participate in all field activities in the four studies of *Australia's Forest Marsupials* project.

The main objectives of this study are (as stated in the Earthwatch briefing):

"1. to assess the extent of the present decline among populations of Leadbeater's possum and other arboreal marsupials"

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2. to contrast the trends in actual long-term population dynamics with forecast trends based on the loss of trees with hollows and the known habitat requirements of arboreal marsupials

3. to examine aspects of the effectiveness of the reserve system for Leadbeater's possum and other species of arboreal marsupials"

While in Australia I will also be participating in field training and informal lectures on: the Field identification of animals (e.g. possums, gliders, birds, small mammals and owls), survey techniques (e.g. spotlighting, stagwatching, and trapping) as well as the biology and ecology of Australian animals and plants. The expedition also includes a number of excursions including a trip to the Healesville Fauna Sanctuary, waterfalls and lookouts in the Central Highlands region.

C. I will document my trip by keeping a photographic journal. I will bring notes from my background readings with me and detail them with personal experiences while on my trip. These will chronicle my experiences and provide me with material to use to enrich my teaching and presentations.

D. I will create a CD of images and a PowerPoint presentation on Australia's biodiversity and marsupials to use in my courses and to share with other biology teachers.

E. I will use my newly acquired experiences, photographs and PowerPoint presentation to enhance and enrich my lectures on biogeography and biodiversity.

F. I will give presentations on my project to my colleagues at Northwestern Connecticut Community College, to college and high school biology teachers involved in the state-wide Connecticut Association of Biology Teachers and at other meetings and conferences.

4. Personal Statement

Every year when I get to the section in my General Biology course on biogeography and biodiversity, I talk about Australia and marsupials. I know my coverage of Australia and marsupials is vague; I of course talk about kangaroos but I know there are more marsupials than just kangaroos. There are 220 species native to Australia alone, but I just don't have enough personal experience with them to discuss them with same enthusiasm I give genetics or microbiology. Having been trained as a cell biologist, I have not had the opportunity to work or do research in the fields of animal science or ecology. I have always wanted to travel to Australia to see first hand some of the unusual animals that live there. This project will give me the opportunity to grow professionally and to participate in fields of biology in which I have no personal experience. I feel that this project will strengthen my teaching and make the topics of biodiversity and biogeography more exciting for my students. I, like many of my students, learn best through first hand experiences. I look forward to sharing this experience with my students in lecture and to coming up with creative ways to incorporate this experience into my laboratory courses.

I plan on making a CD of images from my expedition; I will use these to enhance my biology lectures and will share these images with other biology faculty members and teachers. I plan on giving presentations of my project to my colleagues at the college during one of our All-College meetings and at one of the Connecticut Association of Biology Teacher (CTABT) events. I plan on developing a PowerPoint presentation on Biogeography and Biodiversity using information and examples from my expedition. I will make this presentation available to CTABT members and others who are interested. I will also make it available through the Earthwatch Institute's curriculum site, a website where teachers share curriculum materials based on expeditions. I also think it would also be fun to put together a panel of Mosal recipients and do a presentation for advisors at a Phi Theta Kappa Convention.

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5. Timeline

May 2008: Purchase books and begin reading and researching.

June 2008: Register for the and put down deposit

November 2008: Obtain visa and purchase airline tickets

December 2008: Put down final payment on Expedition and obtain expedition briefing.

Read briefing and begin to gather necessary materials for the trip.

January 2009: Purchase digital camera and learn how to use it.

March 10: Fly to Australia

March 11-21 Participate in Expedition. Below is a tentative itinerary for the expeditions.

“Day 1: The team will rendezvous in the morning and volunteers will be taken to the Nanda Binya Lodge in Marysville for lunch, followed by a late afternoon lecture, walk to the waterfalls, and an evening stagwatch or spotlight survey at a site close to Marysville.

Day 2: The day will be spent at Healesville Sanctuary to familiarize volunteers with the range of forest wildlife (you may want to bring money for souvenirs). In the afternoon the team will set up traps for mountain brushtail possum and there will be an evening stagwatch at a site close to Marysville.

Days 3-8: The team will be split into three groups to start work on different activities (small mammal trapping, mountain brushtail possum trapping and nest box checking). A nighttime stagwatch will take place after the afternoon break (2:00-5:00 pm) and evening meal.

Day 9: Daytime research activities will be completed and traps will be cleaned back at the lodge. The afternoon break will be followed by a final evening party and a farewell celebration.

Day 10: The team will pack up and volunteers will be taken to the Lilydale train station for departure.”

March 22: Return to the United States

April: Prepare the CT of photographs and a Powerpoint presentation

May :give a presentation for the NCCC college faculty and staff

June-September: work on curriculum integration plan

November: Implement the curriculum integration into my General Biology course. We usually start discussing biogeography in November.

January 2010 : Give a presentation for the Connecticut Association of Biology Teachers

February: Write the final report for Phi Theta Kappa

6. Budget

Roundtrip Airfare to Australia: \$2300

Earthwatch’s Australia’s Forrest Marsupials Expedition: \$2750 (this includes housing, meals and transportation in Australia)

Technology Expense: Nikon D40's high-resolution camera \$500 (Includes AF-S DX Zoom-NIKKOR 18-55mm f/3.5-5.6G ED II Lens.)

Total: \$5550 (\$550 will be requested from my college’s Professional Development fund)

(Plus \$150 in book purchases which I will cover)

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1. Provide your title at your institution and list your primary professional responsibilities (50 words or less).

As a Professor of Biology, I teach General Biology and Microbiology. I am the Teaching and Learning Consultant for the college. In this capacity, I organize professional development events on campus and participate in state-wide initiatives. I coordinate the High School partnership program and college advise students.

2. Describe a recent professional activity that has enhanced your ability to fulfill your professional responsibilities as cited above.

In 2004 I was selected by the Connecticut Business and Industry Association for participation in a two-year National Science Foundation (NSF) program teaching educators about emerging technologies in the workplace. According to the CBIA press release: "The teachers were selected for their commitment to learning about technological advances that will give students a more realistic understanding of how classroom learning can be applied on the job." This two-year program consisted of participation in two 80-hour externships, which were held during two consecutive summers, as well as seminars, workshops and conferences held throughout that two-year period.

The first externship was at the University of Connecticut Health Center's Department of Clinical Laboratory Medicine and Pathology. I learned how to perform a variety of diagnostic tests including the tests for Lyme Disease, blood disorders and the series of tests used to screen newborns for Cystic Fibrosis (CF). I used this experience to develop a laboratory exercise for my General Biology students which casts them in the role of laboratory technicians screening newborns for CF. They are able to run the full series of tests using simulated samples. This exercise helps students build direct connections between the coursework and issues of current relevance. The enhanced enthusiasm and engagement they show underscores the importance of this addition to our science program.

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During my second externship, held in 2005, I worked at Genomas, Inc in Hartford. This company uses the latest technology to screen patients for treatment with DNA-guided medicine. At their facilities I learned how genotyping is performed and I was privileged to explore first-hand the use of robotics in the laboratory. I was also granted access to scientific databases and journals, in order to research articles for use by the company and in my courses. The cutting-edge work being performed by this small company was truly inspiring. Participating in the day-to-day operations of Genomas during this externship has provided me with a wealth of experience concerning the career opportunities that are open to our students.

3. Explain the significance of a specific contribution to scholarship you made through publication, presentation, workshop, or other scholarly activity (include any available documentation).

I was awarded a Teaching Scholars Partnership Grant from the AACC and NSF for the period of July 2001-June 2003. With this grant I developed a program called Partnering in Learning Science. This program provides college students with the opportunity to develop and teach science enrichment lessons to elementary and high school students. This program gave students, who were interested in science, teaching or both, an opportunity to experience classroom teaching while they were in their freshman or sophomore level. This early classroom experience was not only beneficial to the college students but it also provided a resource to the elementary and high school teachers who hosted the students. The college students brought a new perspectives to the classroom, and provide a level of scientific experience and expertise that many of the elementary school teachers lacked.

The program won two awards: the College Board's Best Practices Award and the Bellewether Finalist Award. The program was presented at a number of meetings including: the Rural Advisory Consul meeting, the College Boards Showcase of Two-year Colleges, the Futures Assembly and the Community-Technical College's Board of Trustees meeting. In addition, an article on the program appeared in the Community College Journal of Research and Practice.

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As a result of my role in this project, I was asked to participate in the Teaching by Choice national conference, convened in Washington, DC, September 9, 10 & 11, 2004. The product of this conference was the publication *Teaching by Choice: Community College Science and Mathematics Preparation of K-12 Teachers*. A 35-page report of recommendations for community college K-12 teacher preparation programs which was published by the American Association of Community Colleges.

4. Explain the significance of no more than five awards or recognitions you have received for excellence in your field.

NISOD Excellence Award 2007: I received this award for my inspirational teaching. My Dean nominated me for this award and in my recent evaluation my direct supervisor stated that I teach as if I am having personal conversation with my students. It means a lot to me to be recognized as an excellent teacher by my supervisors.

The College Board's Best Practices Award 2005 and 2003: One of these awards was for a presentation I gave on The Teaching Scholars Project and the other was on the High School Partnership Program. Both of these projects have to do with providing high school students to with exposure to college while in high school. The College Board, the same institution that oversees the SAT and AP exams, presented me with these awards. Having these awards strengthens my credentials when approaching and working with High School faculty and staff who are all too familiar with the agency.

Bellwether Finalist Award: I received this award for a presentation I gave on the Teaching Scholars Program at the Future Assembly of Two Year Colleges. The presentation focused on the work I was doing with the college students who wanted to be teachers and the impact that the program had on them.

NCCC Merit Award 2006: This award is extremely meaningful because the nominations for this award come from fellow faculty and staff members. Only two awards are given out each year a

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since I had already received the award previously in 2004, I was deeply moved and honored to receive this award for a second time.

5. How has your experience in scholarship, service, and/or leadership contributed to the growth and achievements of your students?

Accord in the writer and scholar Parker Palmer, “we teach who we are”. I believe this is true and as I continue to grow and develop as a teacher, scientist and individual, my teaching grows and my students are impacted by this growth. I bring all my life experiences with me to the classroom and who I am shapes my teaching perspective. My work with the CBIA/NSF project provided me with additional resources and business connections that I share with my students. Being able to work in science related industries for two summers allowed me to integrate real world applications into my laboratory course. This helped my students to make connections between abstract scientific concepts and terms and the real world. It also impressed upon my students that learning is a life long process and doesn't stop once you are in your job or become a professor. My work in the Teaching Scholars program had a significant impact on the students that participated in the program. These were students who had some interested in either science, teaching or both. All of the participants in the program graduated from our college and most have transferred to 4-yr universities to pursue a degree in science. Two of my students are graduated with degrees in Biology this spring. Both of these students are single mothers and did not know what they wanted to do before they participated in the program. Both already have full time jobs in the state Community College system as laboratory technicians and will continue on to get their Master's Degree.

I feel the biggest impact my experiences in scholarship, service and leadership have had on the growth and achievements of my students is seen when they are ready to graduate from Northwestern. Many students come to me for advice on transfer and career choices. My students know that my experiences have provided me with insight into these areas. They see that I continue to grow and develop and they no longer see an associate's degree as the end of their education.