Primary research and hands-on restoration experience profoundly influenced my decision to pursue a graduate education in the Environmental Science, Policy and Management program at the University of California, Berkeley (UCB). My undergraduate thesis research gave me the opportunity to collaborate with colleagues, develop hypotheses and field methods, analyze data and share my results. As a restoration ecologist with non-profits in the San Francisco Bay Area, I participated in current restoration practices. These experiences prepared me for my proposed plan of study examining pollinator restoration and will guide the application of my findings in restoration projects in California's Central Valley.

Research Experience: As part the course, Natural History of Birds, I researched role of shade coffee in conserving avian biodiversity. Through this project I discovered Bird-friendly (BF) coffee certification, which utilizes scientific findings to create management standards (e.g. degree of shade overstory) that promote neotropical migrant bird conservation in coffee agroecosystems. While reading the primary literature I was struck by the fact that the majority of studies were carried out in just a few large plantations in one region in Mexico, whereas most BF-certified farms (approximately 85%) are small (< 5 ha) and distributed throughout Latin America. This discrepancy caused me to question the generalizability of the standards. Therefore I designed an undergraduate thesis project that tested avian occurrence in a markedly different setting: small-scale coffee farms in a dry forest in Nicaragua. Since no labs researched this topic at my university, I consulted graduate students who had experience working with shade coffee or birds for advice on study design. After hours of independent study spent flushing out my methods, I carried out my field research in Cooperativa Organica de Yucul, in Matagalpa, Nicaragua.

By conducting and analyzing my research, I was able to implement ecological sampling methods and statistical techniques I had learned in classes. In order to address social and economic factors associated with adoption of BF standards, I conducted informal interviews with producers which revealed that strict pruning restrictions were the main barrier preventing participation in BF certification because the restrictions coincided with coffee ripening, when fruits are most susceptible to disease due to the low light, high moisture conditions created by excess shade. I found migrant birds used lower shade environments than reported in previous studies, demonstrating that standards derived in one region may not be applicable to all coffee-growing regions. My thesis won departmental honors, and I presented my results in a poster session at the 2007 Central Coast Biodiversity Symposium. To ensure my findings would be applied, I shared my results with a representative of the Smithsonian Migratory Bird Center (the organization that runs BF). To benefit Cooperativa de Yucul's ecotour operation, I wrote and illustrated a guide to common birds of Matagalpa. The success of the guide spawned production of a local bird guide in another coffee cooperative in Costa Rica.

Teaching Experience: As the teaching assistant for Natural History of Birds, I led groups of students on field trips in different ecosystems to identify local birds. Since I enjoyed teaching, I created opportunities to teach as part of my professional work: I held workshops, led natural history hikes, wrote articles, and included educational components in every volunteer program I offered. I plan to continue teaching by working as teaching assistant while studying at UCB.

Work Experience: In order to ground my education in real-world experience, I decided to work in restoration before pursuing a graduate degree. I helped plan revegetation projects in a diverse array of coastal California ecosystems as a restoration ecologist with two non-profits, the Golden Gate National Parks Conservancy (GGNPC) and Audubon Canyon Ranch. I conducted seed germination experiments, initiated direct seeding trials, compared weed management techniques

through replicated study design, created a protocol for survivorship monitoring, and designed integrated pest management strategies to control nursery pests. I led volunteer activities that connected underrepresented urban populations to their environment through restoration. With the GGNPC, I researched the life history of a locally rare plant [western dog violet (*Viola adunca)*] that is the host species for an endangered butterfly [Myrtle's Silverspot (*Speyeria zerene*)]. I initiated a species recovery plan for the violet that included weed management near the remnant population and nursery propagation for outplanting; recovery activities are ongoing.

Through my work experience I developed as a naturalist. In order to share botanic knowledge with the public, I have led wildflower walks for the California Native Plant Society. I also rediscovered a population of the Satyr Comma (*Polygonia satyrus*), a butterfly that had been thought to be extirpated from San Francisco over 15 years ago.

To supplement my ecological knowledge with an understanding of environmental policy, I took a position with California State Parks. I wrote reports for Fish and Game that contained specific recommendations for protection of vulnerable populations. I drafted Mitigated Negative Declarations, as mandated by the California Environmental Quality Act, that included mitigation measures such as habitat restoration and invasive species eradication. I conducted botanic surveys, identifying rare plant populations and mapping them with a GPS. I continue to work as a consulting botanist, surveying vegetation in parks not yet open to the public.

Through my varied work experiences, I have developed numerous professional contacts in the restoration ecology field in California. These connections will help me to stay abreast of current management issues, as well as provide a sounding board for feasibility of implementing restoration methods I propose to study. Further, I have an established network through which the results of my research can reach its target audience: land managers and restoration ecologists.

Current Research with the Kremen Lab: I was awarded a Berkeley Edge grant this past summer, enabling me to increase my knowledge of bee sampling techniques by assisting with native bee monitoring. I became familiar with bee and plant species in Yolo County, my study region, and a variety of commonly-used monitoring techniques. I learned pollen identification and counting techniques using my lab's electron microscope. I participated in a citizen science training workshop put by my guiding professor, Dr. Claire Kremen, in collaboration with the Xerces Society, a non-profit organization focused on promoting invertebrate conservation. I will continue to be involved in this annual workshop, teaching interested community members, including farmers and conservation agency employees, about native bee conservation.

Publications

Sardiñas, H. "Growing Diversity: How seed collection influences genetic diversity in ecological restoration." Ardeid. 2009.

------ "This wily reproducer is no 'shrinking violet': Reproductive biology and propagation strategies in *Viola adunca*." GGNRA Native Plant Nurseries Newsletter, Issue 33. 2007.

------ Undergraduate thesis, "Avian conservation through your coffee cup: an analysis of the science behind bird-friendly certification." University of California, Santa Cruz. 2006.

------ Field Guide to Birds of Mountainous Nicaragua. Community Agroecology Network, Santa Cruz, CA. 2006.

Poster Presentations

------ Avian Conservation through a Coffee Cup: Assessing Differential Habitat Utilization of Resident and Migrant Birds in Nicaraguan Shade-grown Coffee. Central Coast Biodiversity Workshop. 2007.