 

Addressing challenging environmental problems of today requires improved collaboration among traditional academic disciplines to better integrate science into the socio-political decision-making process. This is particularly true in the context of threats to ecological communities resulting from rapid and expansive land use change. An improved understanding of ecosystem composition and function that integrates knowledge from biological and physical sciences will be vital in guiding future development practices and maintaining the long-term persistence of native species and habitats. My personal and professional experiences have prepared me to take a leading role in bridging the gap between diverse scientific fields and enhancing the communication of science to improve land use policies and create effective ecosystems management strategies.

Throughout my childhood the best days of summer were spent at swimming holes on the Eel, Mattole, and Trinity Rivers in northern California. When the weather cooled and the waters began to rise from the first rains, the salmon would return, migrating from the Pacific to spawning grounds in tributary streams of the rivers' headwaters. Fisherman lined the riverbanks, hip deep in water, hoping to snare a 20-pound steelhead. Fishing along side them, I learned that the periodic migrations of Pacific salmon to their natal streams occurred within nearly every watershed of coastal California. I also learned of the myriad threats the fish faced on their journey and the dramatic declines of salmon populations resulting from unrestrained logging practices, dam construction, and water diversion projects. Living as an adult in rural northern California, I witnessed the polarizing effect environmental issues had on the community and the tensions between human land use and the preservation of natural systems. I became attracted to the intellectual challenge of environmental science research and was particularly inspired by the contributions of science to guiding land use policy and management practices through improved understanding of ecosystem processes.

My interest in environmental sciences led me to study biology at Stanford University, where I cultivated a strong background in the biological sciences, acquired technical skills, and developed a conceptual framework for conducting quality scientific research. My ability to thrive at Stanford, excelling in both coursework and research, offers an important indication of my potential as a future research scientist. Although the Biology Department was primarily oriented towards molecular and human biology, I was successful in the demanding technical coursework for the major yet was able to cater my education to the environmental sciences. I worked with some of the nation’s top ecologists, and participated in such research projects as the Jasper Ridge Global Change Experiment near Stanford and a behavioral study of anole lizards in the Caribbean. While studying abroad in Germany during my third year at university, I designed and conducted independent research, which was later submitted as an honors thesis project. I graduated from Stanford with departmental honors and distinction and strong aspirations to pursue a career in the environmental sciences.

I decided to complement my academic background by gaining experience as a biologist in the field of private environmental consulting. My work activities included conducting rare species surveys, ecological assessments, and wetland delineations. I became acquainted with the regulatory framework of environment law in California and was involved in the preparation of permit applications and mitigation plans for multiple public and private development projects. I soon began to manage my own projects and was also responsible for tracking project budgets, coordinating schedules, and maintaining client relations. Work in consulting gave me key insights into the political components of negotiations among developers, regulatory agencies, and special-interest groups. For example, I played a critical role in the success of a major waterfront redevelopment project in the coastal California town of Eureka. I was responsible for preparing a salt marsh restoration plan to mitigate project impacts to coastal wetlands, and for securing multiple environmental permits required for the project. I was the primary liaison between city and regulatory agency staff and insured that all parties were educated on project design elements, mitigation measures, and permitting requirements.

Through my work in environmental consulting, I’ve honed strong leadership and communication skills, attributes which are vital in advancing project goals and facilitating compromise

among diverse entities. My dual strengths of technical understanding and human relations often placed me at the head of project teams, and as a project leader, I've gained valuable experiences bridging knowledge gaps across disciplines and producing collaborative environmental documents under restrictive deadlines.

While my experiences in environmental consulting allowed me to further develop management skills and technical expertise, I was generally unable to conduct rigorous scientific research in the context of work projects. I was frustrated by the fact that important land use decisions were being made without full consideration or understanding of the ecological implications of those policies. Given continued land use change at regional and global scales, it is imperative that ecological research knowledge be effectively communicated to decision makers. I believe that scientists must take a more active and responsible role in shaping policy debates, and I have the potential to become a central leader in this movement.

I began investigating graduate programs and was immediately drawn to Berkeley's Environmental Science, Policy, and Management (ESPM) Department for its unique emphasis placed on interdisciplinary collaboration, while maintaining the highest standards of scientific excellence. While I am fascinated by ecosystems science, I particularly interested in how scientific results are interpreted and applied in dynamic socio-political settings. Because ecological research requires intense specialization, there is the potential to lose sight of the relevant social implications of the work. I believe it is fundamental to consider how potential research findings will be communicated to the general public and applied in the context of environmental policy and management. I am taking advantage of Berkeley's strong academic resources in multiple fields to develop a scientifically rigorous yet highly integrated research program.

My current research interests are focused on the effects of human land and water use on the integrity of stream ecosystems. Specific research questions I am pursuing are: What are the dominant physical and ecological processes that control stream and riparian habitat characteristics? How do human land and water uses disrupt these processes? What restoration and management techniques are most appropriate to maintaining watershed processes and native species communities? And finally, how will the successful communication and application of research findings be achieved in the regional planning context? I have begun addressing these questions through my involvement with a University of California watershed research group investigating the resilience of stream ecosystems and the ecological effects of altered flow regimes resulting from water diversions and land use change.

Working with leading scientists in the fields of aquatic biology (V. Resh and P. Moyle), geomorphology (W.E. Dietrich), and conservation biology (A. Merenlender), I will develop a dissertation project that will make an original, relevant, and significant contribution to ecosystems science. At Berkeley, I am able to combine my interests in the natural world with field research and coursework in analytical methods and ecological theory. Through my work, I aim to satisfy my intellectual curiosity while contributing to environmental research and biological conservation. Based on my previous success as an academician and my work experiences outside of the university, I am confident I will be able respond and thrive in ESPM's demanding doctoral degree program. To have the support of an NSF fellowship would allow me to fully pursue my research interests and ultimately achieve a prominent leadership role in the advancement of my field.

I am confident that Berkeley's ESPM program will provide me with the resources necessary to enhance scientific understanding and improve the communication of science to better serve society and the environment. My professional goals are complemented by a strong personal connection to the natural landscapes of northern California, and my background demonstrates a potential to become a respected leader in the field ecosystems science. I am intimately bound to the waters of my youth and am dedicated to the preservation of the region's ecological integrity and to the future of the local rural communities.