Personal Statement for Kevin McGarigal

The rapid growth of the human population and the phenomenal industrial and technological developments of human society over the past two centuries have placed unprecedented demands on Earth's natural resources. As a result of these pressures, we have witnessed an accelerated loss of biodiversity and a dramatic alteration of ecological patterns (e.g., habitat loss and fragmentation) and processes (e.g., global climate change). I believe that these changes have potentially devastating consequences to mankind in the long term if left unchecked. Consequently, I am personally and professionally committed to finding solutions to this dilemma.

More specifically, the combination of increasing demands for natural resources (e.g., wood products), increasing concerns over non-commodity resources (e.g., endangered species protection), increasing public involvement in the planning and management process, increasing scrutiny of management decisions involving both private and public natural resources, and aggressive court challenges on the interpretation of existing legislative regulations has stimulated a great deal of concern and skepticism over the approaches used to manage natural resources. I am committed to seeking new and innovative ways to manage natural resources in a manner that is ecologically sustainable and yet economically viable and socially acceptable.

The emergence of landscape ecology as a scientific discipline holds great promise for the quest to solve complex ecosystem management problems. Landscape ecology involves the study of landscape patterns (i.e., spatial and temporal distribution of resources), their causes and their consequences to populations, communities and ecosystems, and how these patterns and processes change over time. In addition, landscape ecology involves the application of these principles in the formulation and solving of real-world problems. In other words, landscape ecology considers the development and dynamics of spatial and temporal heterogeneity (i.e., how landscape patterns are created and change over time and space) and its affects on ecological processes, and the management of heterogeneity (i.e., how humans manipulate landscape patterns to achieve certain goals). I believe that landscape ecology provides an exciting perspective on natural resource management issues and can revolutionize that way we manage complex ecological systems.

Hence, my overall professional goal is to improve our understanding of how landscapes are structured physically and biologically and the agents responsible for those patterns, how these patterns affect the distribution and dynamics of animal populations, how these patterns and processes change over time, and how to apply this information to better manage natural resources over multiple spatial and temporal scales.

The path of progress towards this goal requires that I learn new things about the structure and function of landscapes, develop new technologies to collect, analyze and communicate these complex pattern-process relationships, share this knowledge with others, and help resource managers and other decision-makers apply this knowledge and these techniques to become better stewards of healthy and sustainable ecosystems that provide diverse human and community benefits. I believe that academia provides the best means of achieving this mission. I am both personally and professionally committed to the mission of the University of Massachusetts and the three roles of teaching, research, and service as a faculty member. I believe that all three roles are critical not only to my mission but also to the well being of society.

In *research*, my overriding goal is that my research contributes to solving real world resource management problems and, in doing so, increases the sustainability of healthy ecosystems. Although basic research is important, I am most committed to applied research and to problem-solving in the real world. I am particularly interested in quantitative and interdisciplinary approaches to solving problems. Additionally, involvement of graduate students in research is a critical aspect of my research program. Through the research process, I strive to train students in basic ecological concepts, research methodology, management strategies, and philosophies of science. I gain tremendous gratification from training and working with bright, energetic, young minds. I also take much enjoyment from expanding my research horizons in new areas of the world and with new research questions and technologies. In recognition of my research (and service) accomplishments, I was awarded the **Distinguished Landscape Ecologists Practitioner Award** in 2009 from the US Regional Association of the International Association of Landscape Ecology – one of the two highest awards bestowed by the Association.

In *teaching*, either on-campus or off, there are two things that I most want to occur. First, it is my goal that students come out of my courses with an invigorated love of learning that will inspire a life-long hunger for knowledge. Learning facts is secondary to learning to how to conceptualize problems and find approaches for solving those problems. Conceptualization, critical-thinking, and problem-solving therefore are the keystones of my courses. Second, it is my goal that my students apply their new knowledge and critical thinking skills in making a difference in their communities. I encourage them to make personal and professional commitments to become stewards of healthy and sustainable ecosystems. In recognition of my on-campus teaching accomplishments, I have been **nominated** by my students for the **University of Massachusetts Distinguished Teaching Award** six times, making it to the finalists round on the last two occasions.

In *service*, my primary goal is to build and maintain a well-traveled bridge between science and management. Reflecting my focus on applied research, I have a strong personal and professional commitment in developing close working relationships with practicing resource professionals so that my research addresses real problems and provides practical solutions. To this end, I have established strong working relationships with land and natural resource managers at the state level (e.g., Massachusetts Executive Office of Environmental Affairs and subsidiary agencies such as the Division of Fisheries and Wildlife) and federal level (e.g., USDA Forest Service). However, the cornerstone of my off-campus service activities revolves around the development and support of decision-support tools, such as **FRAGSTATS** and **CAPS** (described elsewhere), designed to aid land and natural resource managers become better ecosystem stewards. FRAGSTATS is internationally recognized as the leading software for landscape pattern analysis and CAPS is increasingly gaining attention regionally and nationally as an effective strategic conservation planning tool. My on-campus service activity centers around my position as Director of the Graduate Program in Wildlife and Fisheries Conservation, where my efforts revolve around building a robust and modern program of studies.

Overall, in the end, my activities as a faculty member at the University of Massachusetts fulfill my intellectual needs and provide me the optimal vehicle for achieving my professional goals. Thanks to good health and happy family, I can't imagine a better condition.