

Richard Mrozinski, M.S. Thesis Candidate



My name is Rich Mrozinski. I grew up in Michigan's Upper Peninsula, where I learned to love and to have a healthy respect for the outdoors and its wildlife. I also excelled in math and science, and decided on a career in engineering. I earned a bachelor's degree from the University of Michigan in 1995, and a master's degree from the University of Texas at Austin in 1998, both in aerospace engineering. As an undergraduate, I was offered and accepted a fantastic opportunity to "coop" at NASA's Johnson Space Center (JSC) in Houston, Texas, which ultimately turned into my first career in August 1998. I worked at JSC for 9 years as a trajectory engineer and flight controller in Mission Control, before accepting an engineering supervisory position, in which I served nearly 7 years. I married in May 2014, which meant a move to west Texas to be with my wife. My move stirred up my original love for nature, and luckily Sul Ross was nearby, calling for my return to my roots. I am fortunate to now be

starting my second career, working toward my master's degree in Natural Resources Management under the guidance of Dr. Moody Harveson.

Thesis Project: Estimating Mammalian Predator and Prey Population Densities in the Davis Mountains, Texas, Using Spatial Capture-Recapture Techniques

The impacts of apex predators on all trophic levels of ecosystems are beginning to be understood as widespread and critically important. Yet, understanding these trophic cascades is difficult as our nation's apex predators are few in number, have very large ranges, are elusive, and tend to attract less research funding as these reasons lead to long study durations, and, understandably, plenty of scrutiny. Yet, as the wolves of Yellowstone National Park seem to indicate, the presence of these wolves means life for numerous species of animals and plants, and even means healthy river systems. Another key apex predator in the southwest is the mountain lion (*Puma concolor*). Researchers at Sul Ross State University have been monitoring mountain lions in the Davis Mountain region of Texas for several years. The goal of this research is to apply unmarked population spatial capture-recapture (SCR) analysis techniques to the remote camera data collected thus far to infer the population density of this elusive apex predator, as well as its prey and other carnivores caught on camera. This research will use SCR methods that do not assume spatial homogeneity and do not require the ability to mark or identify specific individuals within the population. The results will be useful to Wildlife Conservation and Management specialists in understanding and managing the populations of carnivores in the Davis Mountains.

