Project Completion Report
Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU)

Project Title: Stable Isotope Analysis of San Miguel and Santa Rosa Island Foxes and Their Prey: Characterizing Dietary Preferences Across Islands and Habitats

Project Code: UWY-174, P12AC10755

Type of Project: Research

Funding Agency: National Park Service

Partner University: University of Wyoming

NPS Technical Representative:

Tim Coonan, Biologist
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Start Date of Project: July 1, 2012

End Date of Project: June 30, 2013

Funding Amount: $9,988

Project Summary

Island foxes (*Urocyon littoralis*) are considered to be dietary generalists and consume a wide variety of food items, including rodents, birds, insects, carrion, and fruits. Using scat analysis, previous work has documented seasonal food habits at the island-level, but individual- and habitat-level preferences for resources have not been determined. The low island fox population densities on several of the islands provide an opportunity to evaluate baseline diet preferences since resource abundance is likely high relative to fox population size, resulting in low intra-specific competition. Furthermore, many islands are experiencing significant changes in vegetation composition and structure due to recent removal of non-native ungulates. If specific resource preferences for foxes are identified, it may be possible to conduct habitat restoration or manage habitats in a manner that enhances the availability of preferred prey items for foxes.

We coupled scat analysis with carbon and nitrogen stable isotope analysis to examine dietary preferences of island foxes in different habitats on Santa Rosa and San Miguel Islands. By analyzing the isotopic composition of fox vibrissae (whiskers), a metabolically inert but continuously growing tissue, and of samples from primary foods, we characterized temporal dietary variation at the individual level and also related diet to habitats used by foxes. Results show that fox diets differ significantly among habitats, and that some habitats are associated with greater dietary variation among individuals. Dietary variation at the individual-level, however, appears to be low during the spring and summer months. Comparison of data for individuals caught in consecutive years suggests that individual dietary preferences are maintained among years. Future work will focus on field- and GIS-based characterization of habitat type/quality, as well as resource availability, in relation to dietary variation.

A spreadsheet of all isotopic data for foxes and potential prey will be emailed to Tim Coonan (Biologist) at the Channel Islands National Park.

Number of Students Participating in this Project:

A total of four undergraduate students participated in this project. Three were undergraduate technicians at the University of Wyoming: Ryan Jones, Kelli Blomberg, and Deborah Boro. A fourth student, Nick Smith, is an undergraduate student at the University of New Mexico (UNM) and will be including data from this project in his senior honors thesis. Lastly, I'm in negotiation with a prospective Ph.D. student Craig Reddell that would start at UNM in the Fall of 2014.

Other RM-CESU Agencies or Research Partners: N/A