

An evaluation of the potential impacts of off-highway vehicle use to Kit Fox habitat selection

Over the past several decades, off-highway vehicle (OHV) riding has become an increasingly popular form of outdoor recreation. Recently OHV popularity has grown tremendously in our Arizona deserts, and the full range of its short-and long-term impacts to land and wildlife has yet to be fully realized. Information about the impacts of OHV recreation in the Southwest is critical because desert systems are ecologically sensitive and may require extended periods to recover from disturbance. Moreover, the open



vegetation structure of the Sonoran desert allows for the ready expansion of illegal road networks, and recent rapid human population growth in the Southwest has come with increased recreational pressures on public lands. As the lead agency responsible for OHV management, law enforcement, and education under a multiple-use paradigm, the Arizona Game and Fish Department must balance the desires of OHV recreationists while protecting and conserving native wildlife and habitats. To that end, we conducted a study on two sites in central Arizona from 2010-2014 to investigate the effects of OHV recreation to kit fox populations and to generate management recommendations for OHV and land managers to minimize the potential impacts of OHV use on kit foxes.

Objectives

1. Determine if kit fox home range use is influenced by OHV use.
2. Determine if kit foxes exhibit a shift in home range use in response to changes in intensity of OHV use.
3. Use these findings to make management recommendations to OHV and land managers to mitigate potential impacts of OHV use to kit fox populations.

Approach

Objective 1—We assessed if OHV use was a significant factor influencing kit fox home range use. To do so, we trapped and attached GPS-enabled radio collars to adult male kit foxes. We then measured available resources which might help to predict kit fox home range use, including prey availability, predator presence, soil type, topographical features, cattle presence, free water availability, vegetative cover, and a relative index of OHV use. We then related these predictor variables to location data from kit fox GPS collars to determine the relative influence of each predictor variable to kit fox intensity of use across their home ranges.

Objective 2—We used an experimental approach to meet our second objective of determining whether kit foxes would alter habitat use in their home ranges in response to increased OHV

traffic. To accomplish this, we first assessed OHV traffic levels at both study sites. Based on these use levels, we then temporarily increased OHV traffic. We collected kit fox locations via GPS collars and estimated individual fox home ranges in periods of normal and increased OHV use to assess whether or not kit foxes shifted their home ranges in response to increased OHV use levels.

Update and Preliminary Results

Fieldwork for both objectives was completed in April 2013. Statistical analysis was completed in January 2014, and reporting and manuscript preparation are currently underway.

Objective 1—Our preliminary results indicate that during the winter period, when OHV use was highest, kit foxes avoided areas of OHV use. However, during the summer period when OHV traffic was lower, kit foxes did not appear to use areas of OHV use less intensely than other parts of their home ranges. Kit foxes typically select natal dens during the winter time and a possible explanation for this observation is that kit foxes may be selecting natal dens away from areas of OHV use during the winter period.

Objective 2—Our preliminary results indicate that kit foxes did not generally shift their home ranges in response to increased levels of OHV activity. While this appears contrary to Objective 1 results, the apparent lack of response may come as a result of the short duration of our increased OHV use trials. Perhaps a longer period of increased OHV traffic would have resulted in dramatic shifting of home ranges. Or perhaps kit fox home ranges were sufficiently large enough to allow foxes to temporarily shift activities away from high OHV use areas while maintaining consistent home range boundaries.

Project Contacts

Andrew Jones, Wildlife Specialist I, 623-236-7992 ajones@azgfd.gov

Larisa Harding, Terrestrial Research Program Manager, 623-236-7301, lharding@azgfd.gov

Page last updated on July 8, 2014