

WHAT ARE THE BENEFITS OF THIS PROJECT?

This work will provide a landscape level view of movements among burrowing owl populations which will allow natural resource managers to direct their efforts appropriately.

This study also will provide insight into how the rapid land-use changes occurring in arid areas of the southwestern U.S. and northern Mexico are likely to influence the distribution of burrowing owls.

This information is vital to supporting the military mission because it will help identify the management role of DoD for conserving burrowing owls in the western U.S., potentially help prevent further listing efforts for a species that is common on DoD installations, and provide information on risk and frequency of bird strike hazards by documenting movement patterns of a breeding bird common on DoD installations in the region.

Additionally, this project will provide information to resource managers at DoD installations that want to manage burrowing owl populations. To this end, we are also providing training to DoD personnel on burrowing owl field techniques.

WHAT IS THE TIME FRAME FOR THE PROJECT?

The project began in the summer of 2005 and will continue until December 2008.

DO THESE ACTIVITIES HARM THE OWLS?

Burrowing owls are not harmed by moderate disturbance. Unless their actual nest cavities are damaged or destroyed, burrowing owls will often continue to nest successfully even with moderate human disturbance.

Trapping and collecting blood and feather samples do not harm the owls. The procedure is short and harmless. Methods developed as a result of past studies in which we have trapped and monitored >5,000 owls in 4 states over 6 years keep interference at a minimum.

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Carol A. Finley is the Natural Resource Manager at Kirtland Air Force Base in New Mexico. She has a B.S. and a M.S. degree in Wildlife Science from New Mexico State University. She has been conducting field studies on burrowing owls on DoD lands for many years. She has published her Burrowing Owl research and is the Coordinator for the New Mexico Burrowing Owl Working Group.



DoD Legacy Project: Migratory linkages of burrowing owls



Athene cunicularia

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WHAT IS THE OBJECTIVE?

The overall objective of this project is to determine whether burrowing owls are redistributing their populations and becoming less migratory. To this end, we will determine connectivity of burrowing owl populations on DoD installations and adjacent lands in the western U.S., and determine where burrowing owls nesting on and near DoD installations spend the winter.

WHO IS INVOLVED?

We are currently partnering with the following installations/agencies:

Barry M. Goldwater Air Force Range, Buckley AFB, Camp Pendleton, Cannon AFB, Casa Grande National Monument, China Lake Naval Weapons Station, City of Tucson, Davis-Monthan AFB, Edwards AFB, Fallbrook Naval Weapons Station, Fort Bliss Army Base, Fort Carson Army Base, Fort Irwin, Holloman AFB, Kirtland AFB, March JARB, NAS Lemoore, NAF El Centro, NAS North Island, Naval Outlying Field Imperial Beach, Nellis AFB, Nevada Test Site, Pinon Canyon Maneuver Site, Rocky Mountain Arsenal NWR, Salton Sea NWR, Schriever AFB, Seal Beach Naval Weapons Station, White Sands Missile Range, Yuma Marine Corps Air Station, Yuma Proving Ground.

WHAT QUESTIONS WILL THE PROJECT ANSWER?

We are asking three main questions:

- 1) Are burrowing owls hatched in northern latitudes migrating to southern latitudes and remaining there to breed?
- 2) How much connectivity exists among burrowing owl populations on DoD installations throughout the west?
- 3) Where do burrowing owls breeding on and near DoD installations spend the winter?

The first and second questions are answered by collecting blood samples from burrowing owls. We can use DNA in the blood to establish patterns of relatedness within and among populations. Relatedness usually follows a predictable gradient in which populations closer to each other are more closely related than populations farther from each other. If burrowing owls hatched in northern latitudes are re-locating to southern latitudes, we would expect northern owls to be more closely related to owls in southern latitudes than predicted by the expected gradient.

The third question is answered by

- a) collecting feather samples from burrowing owls. Each feather bears a stable isotope signature that is unique to the location where the owl was when the feather was grown. Burrowing owls molt some of their feathers during the winter, so we can potentially use these feathers to determine where each owl spent the winter.
- b) placing a radio-transmitter on a subset of owls and tracking them during their migration.

WHY IS THIS PROJECT IMPORTANT?

Burrowing owls were once a common breeder in grasslands and deserts throughout the western U.S. and Canada. However, some populations have declined and burrowing owls have been extirpated from areas on the periphery of their breeding range.

Despite the declines in some portions of their range, burrowing owls appear to be increasing in other areas. One possible explanation for this paradox is that burrowing owls are becoming less migratory; owls which once migrated to northern breeding locations during the summer are becoming year-round residents in the southwestern U.S. and northern Mexico. In other words, populations might be redistributing rather than declining.

If this hypothesis is correct, it has implications for the validity of current or future burrowing owl listing petitions and implications for the effectiveness of different conservation and management efforts. If burrowing owls are redistributing their numbers to the southwestern U.S. and northwestern Mexico, there exists the potential that this limited distribution will cause burrowing owl populations to be vulnerable to environmental stochasticity, disease, and other factors that threaten fragmented populations.

The status of the burrowing owl impacts the military mission because burrowing owls are common on many of the DoD installations in the western U.S.