Burrowing Owl Research:

Developing Recommendations for Artificial Burrow Systems Utilized in Translocation Efforts

Background

There has been a recent increase in the rate of burrowing owl displacement due to habitat loss resulting from urban and suburban development in central and southern Arizona. Displaced owls are currently being translocated to human-created artificial burrow systems under permits from the U.S. Fish and Wildlife Service and the Arizona Game and Fish Department (AGFD). Translocation sites are embedded in a variety of landscapes: agricultural, residential, urban parks, and industrial. It is important to document the efficacy of artificial burrows systems as a management tool, and to identify the variables impacting the nesting success of owls at artificial burrows after translocation.

The AGFD Research Branch is currently investigating artificial burrow site characteristics and their influence on successful occupancy, reproduction, and survival rates of translocated owls. The overall goal of this study is to establish specific guidelines for permitting and future management plans for this species. Long-term monitoring of translocated owls and relocation sites is necessary to determine the success of current release efforts and identify appropriate locations for future translocations. This project will help to prevent further declines of burrowing owls in

Arizona by identifying land use and habitat factors that influence survival and reproductive success of displaced owls.

Approach:

AGFD is using three methods to evaluate the success of artificial burrow systems utilized in translocations efforts:

- Site Occupancy – AGFD determines site occupancy using weekly visits and standardized observations of 20 artificial burrow sites during the breeding season (March – July). Site occupancy is then compared among land use categories.
- Reproductive Success – AGFD evaluates nest success and reproductive rates by monitoring nests and counting juveniles during weekly observations. Reproductive success has two components, nest success and nest productivity. Annual variation in nest success and productivity are compared among land use categories. In addition, habitat components of the nest site are evaluated to determine their influence on nest success.
- Survival – AGFD captures and bands all juveniles and unbanded adults at each occupied site using mist-nets, two-way box traps, and bow nets. Mark-resight techniques are used to evaluate survival of juvenile and adult and to compare these rates among land use categories.

Do Artificial Burrow Systems Work for Burrowing Owl Translocation?

- This project is on-going and long-term monitoring will continue. Survival estimates will be available as additional years of mark-resight efforts are concluded. However, we have determined that in the short-term, artificial burrow systems can be successful in the Sonoran Desert. Some of the preliminary results indicate that:
- Agricultural and industrial sites have experienced higher occupancy rates than residential and urban park sites.
- If burrowing owls at translocation sites are free from major disturbances (harassment by feral dogs, vandalism, vehicular traffic, changes in vegetation structure), both nest success and reproductive output remain relatively constant regardless of land use.