

Burrowing Owl Project Clearance Protocol

Arizona Burrowing Owl Working Group

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Adult banded burrowing owl.

Bruce Taubert

Background and Purpose

The Western burrowing owl (*Athene cunicularia*) can often be seen during daylight hours, is approximately 20 cm (8 in) tall, and uses underground burrows for nesting and escape cover. All owls are protected by Arizona state law (ARS Title 17) and by Federal law under the Migratory Bird Treaty Act (MBTA). Fines and other penalties may result if these laws are violated. To avoid violating these laws, all owls and active burrows should be identified prior to any ground-disturbing activity. This survey protocol was developed by State and Federal biologists and other burrowing owl experts to provide a standardized means for conducting burrowing owl surveys in areas where burrows are likely to be disturbed in order to minimize impacts to the owls and the projects that may displace them.



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Figure 1. Adult burrowing owl.

The survey protocol involves visual surveys for owls and burrows using walking transects to look for owls and/or owl sign. It is recommended that only persons with proper training and State certification conduct the survey. To facilitate burrowing owl management, it is recommended that all survey areas, routes, times, and detections be reported to Arizona Game and Fish Department (AGFD) when completed, and if owls or active burrows are detected, coordination with the appropriate agencies prior to initiating ground-disturbing activity will facilitate compliance with the applicable legal requirements (see Contacts below).

Surveyor Credentials

Burrowing owl surveyors should have the following background and experience:

- At least four years of full-time undergraduate-level education or a Bachelor's degree in biology, natural resources, wildlife science, environmental studies, or a related field; or
- One (or more) year(s) of experience working with burrowing owls in the field; and
- Burrowing owl survey protocol certification (training provided by AGFD; see Website in Contacts below for next date and location) with appropriate documentation.

Completed burrowing owl survey reports provided to AGFD should include each surveyor's resume and protocol certification.

Survey Timing

Burrowing owls are most likely to occupy breeding burrows between March and mid-July. While burrowing owl migration habits are not well documented, it is thought that northern Arizona owls generally migrate south for the winter, whereas some larger proportion (up to 12-61%; Conway and Ellis 2004) of burrowing owls in southern and western Arizona are thought to be non-migratory (Sheffield 1997). It is highly recommended that surveys be conducted at the



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Figure 2. Natural burrowing owl burrow on a wash bank.

time of property acquisition or project design to allow time to properly accommodate or mitigate for owls, if present. Absent preliminary surveys, or depending on the results of preliminary surveys and subsequent actions to reduce the likelihood of burrowing owl occupancy, surveys may also need to occur within 90 days before grading or construction activity starts, and again within 30 days of construction if original surveys were conducted during the winter season and construction activity starts during the breeding season (see below). We recommend that project initiation be avoided in March due to the possibility of new owls arriving during construction, unless all suitable burrows are

permanently closed by a properly licensed individual or group. If owls or occupied burrows are detected within the construction area at any time during project implementation, burrows must be avoided (see below for buffer requirements) until status of the burrows can be determined and owls removed by properly permitted individuals or groups, or other conservation measures are implemented.

Surveys should be conducted between first light (typically ½ hour before sunrise) until 9:00am and between 2 hours before sunset until dusk. Do not conduct surveys during excessive rain, temperatures above 32 degrees C (90 degrees F) or wind speed greater than 32 km/hr (20 mi/hr).

Recommended schedule for burrowing owl surveys to account for migration and the breeding season.

Scheduled Start of Grading Activity	Recommended Survey Timing
March 1– March 31	90 days and implement owl conservation measures* at least 30 days prior
April 1- June 30	90 & 30 days prior
July 1- Feb 28	90 days prior

*Potential owl conservation measures include collapsing all unoccupied burrows of suitable dimensions, identifying open space areas to be protected as a buffer around occupied and suitable owl burrows, passive exclusion of owls, or translocation of owls.

Survey Protocol

Surveys are conducted by walking straight-line transects 10 m (33 ft) apart (or arranged so that all ground surfaces can be seen) and looking for evidence of owls: owls themselves, burrows, and owl sign at burrow entrances, including pellets, feces or other “ornamentation,” feathers, prey remains, whitewash, etc. Transects should be located over the entire project area, and oriented such that the tops and sides of all topographic features are examined. For example, if the



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Figure 2. Artificial burrow with fresh owl sign.

project area includes a wash with a steep bank, one transect should be near the top of the bank, and another near the base of the bank in the wash.

At the start of the survey and again every 100 m (300 ft), scan the entire visible project area for owls using binoculars or a spotting scope. Record the locations of all burrows (natural and artificial) within 5 m (16 ft) of each transect. Each burrow (entrance height 8 + cm [3 + in]; width 8 + cm [3 + in]; burrow depth > 1 m [3 ft]) shall be assessed to determine potential use by burrowing owls, unless owls are present. Burrows may include holes dug by mammals, birds, or created by erosion, pipes, spaces below concrete or other solid structures, etc.

An Active burrow has a live owl or owls, or shows sign of recent use (e.g., fresh whitewash, fresh pellets, feathers, or nest ornamentation – Figure 2). A Potentially Active burrow is one with evidence of previous use, but use is not recent (e.g., old whitewash, old pellets, cobwebs over entrance, and/or debris at burrow entrances). An Inactive burrow exhibits no evidence of use by burrowing owls but is of suitable size for occupancy.

Record the number and location of all owls seen within or near the project area. Clean and remove all owl sign at Potentially Active burrows. Visit the site again after 2-8 days and check all Potentially Active and Inactive burrows of the appropriate size for fresh sign to verify burrows that are occupied.



Figure 4. Adult burrowing owl at artificial burrow entrance.

Reporting

Record the locations and dates of all surveys and the details of all burrow and owl detections (even if outside the construction zone), either on a hard copy map or as UTM's (Universal Transverse Mercator map coordinates compatible with GIS and GPS systems) using the standard forms provided. Attach resumes and credentials of all surveyors as described above. Send to AGFD, Urban Wildlife Program (northern Arizona and Phoenix area – send to the Mesa office; southern Arizona – send to the Tucson Office) either by email at urbanwildlife@azgfd.gov or by mail to the address below (see Contacts).



Figure 5. Burrowing owl chicks at a natural burrow entrance.

Owl Detections, Conservation and Mitigation

Should preliminary measures fail to prevent burrowing owl occupancy of a project site during implementation or if active burrows are located in the construction zone during construction activities, owls should not be disturbed in any way, as this may constitute a violation of the MBTA. A 35-m

(100-ft) radius buffer excluding all heavy machinery and foot traffic should be set up around all active burrow entrances during construction and until the appropriate conservation action is determined (B. Fox, pers. comm.). To permanently accommodate owls on site, we recommend that a buffer of 35-m (100-ft) should remain in perpetuity between the burrows and new construction and managed to maintain breeding habitat suitability (Millsap and Bear 2000). Delineating protected areas (fencing, cones, etc.) is encouraged as long as it does not enclose the owls or prevent the owls' ability to see nearby predators.

After surveys are completed and reports submitted to AGFD, and if burrowing owls or suitable burrows are located within the project boundaries, the landowner is advised to contact the nearest AGFD office (see Contacts) for direction related to accommodating or mitigating for owls prior to development based on the conditions and constraints of the site. Further mitigation or costs may be avoided if occupied owl areas can be set aside for at least 10 years and if suitable habitat for nesting and foraging will remain after development is finished. If it is determined that the best option is to disturb and then mitigate for the disturbance of the owls, the owner must obtain a permit from U.S. Fish and Wildlife Service, and mitigation may include excluding owls from disturbed burrows prior to construction, and/or providing artificial burrows on-site or in a different location, and monitoring to determine the success of the actions taken.

Literature Cited

- Arizona Burrowing Owl Working Group. 2007. Burrowing Owl Mitigation Standards and Guidelines. Arizona Game and Fish Department, Phoenix, AZ. [Azgfd.gov](http://azgfd.gov)
- Arizona Game and Fish Department. Arizona Revised Statutes, 17-235, Migratory birds, and 17-236, Taking birds; possession of raptors. Last accessed May 4, 2007. <http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp?Title=17>
- Conway, C.J. and L.A. Ellis. 2004. Demography of Burrowing Owls Nesting in Urban and Agricultural Lands in Southern Arizona. Arizona Game and Fish Department, Heritage Grant Technical Report U03006, Phoenix, AZ.
- Millsap, B.A. and C. Bear. 2000. Density and reproduction of burrowing owls along an urban development gradient. *Journal of Wildlife Management* 64:33-41.
- Sheffield, S.R. 1997. Current status, distribution and conservation of the Burrowing Owl (*Speotyto cunicularia*) in midwestern and western North America. Pages 399-407 in J.R. Duncan, D.H. Johnson, and T.H. Nicholls [Eds.], *Biology and Conservation of Owls of the Northern Hemisphere: Second International Symposium, February 5-9, 1997, Winnipeg, Manitoba, Canada*. USDA For. Serv. Gen. Tech. Rep. NC-190.
- U.S. Fish and Wildlife Service. Migratory Bird Treaty Act, Migratory Bird Permit Office. Last accessed May 4, 2007. <http://www.fws.gov/permits/mbpermits/birdbasics.html>

Appendix A.

Contacts

In Tucson and southern AZ:

Arizona Game and Fish Department
Urban Wildlife Program, Tucson Office
555 N. Greasewood Rd.
Tucson, AZ 85745
(520) 628-5376

US Fish & Wildlife Service
Ecological Services Office
201 N. Bonita Ave., Ste. 141
Tucson, AZ 85745
(520) 670-6144

In Phoenix, central and northern AZ:

Arizona Game and Fish Department
Urban Wildlife Program, Mesa Office
7200 E. University
Mesa, AZ 85207
(480) 981-9400
www.azgfd.gov

US Fish & Wildlife Service
Ecological Services Office
2321 W. Royal Palm Road, Ste. 103
Phoenix, AZ 85021
(602) 242-0210
<http://www.fws.gov/southwest/es/arizona/>

Burrowing Owl Working Group Members

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**Appendix B. Burrowing Owl Survey Report Form
Arizona Burrowing Owl Working Group**

Surveyor(s):
 Date of Survey: Weather (precipitation, wind, temperature, cloud cover):
 Survey Location (address or ¼ Section, Township, Range, or UTM):
 City: County: Datum (for UTM – NAD83 preferred):
 Area surveyed: acres or m² (circle one)
 Fossorial mammals present? Yes No If yes, what species?
 Total # burrowing owls seen:
 Total # Active burrows:
 Total # Potentially Active burrows:
 Habitat Description (open, treeless areas, washes, topography, etc.):
 Features present (circle all that apply):
 Agricultural fields (if so, with trees? Yes No Both with and without)
 Wash corridor (if so, water in wash? Yes No)
 Desert scrub, average % cover: <20 20-40 >40
 Creosote flats
 Other (describe)

Instructions:
 Attach map of surveyed area showing the location of all transects, burrows >3 in., and burrowing owls (BUOW) seen. Label each transect so that it corresponds to the data below, and note the activity level of each burrow.

Transect #	Transect start location	Transect end location

Transect	Date	Burrow or BUOW location (UTMs)	BUOW present?	BUOW sign observed (if burrow)	Status (Active/Potentially Active/Inactive)

Return completed forms (regardless of whether burrowing owls are detected) along with surveyor’s resume(s) listing qualifications and burrowing owl certification to:

Arizona Game and Fish Department
 ATTN: James Driscoll, Nongame Program
 2221 W. Greenway Road
 Phoenix, AZ 85023
 (602) 789-3581
urbanwildlife@azgfd.gov or jdriscoll@azgfd.gov