

STATE OF COLORADO

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AN EQUAL OPPORTUNITY EMPLOYER

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*For Wildlife-  
For People*

**RECOMMENDED SURVEY PROTOCOL AND ACTIONS TO PROTECT NESTING BURROWING OWLS**

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Western Burrowing Owls (*Athene cunicularia hypugaea*) are commonly found in prairie dog towns throughout Colorado. Burrowing Owls require prairie dog or other suitable burrows (e.g. badger) for nesting and roosting. Burrowing Owls are migratory, breeding throughout the western United States, southern Canada, and northern Mexico and wintering in the southern United States and throughout Mexico.

Federal and state laws prohibit the harming or killing of Burrowing Owls and the destruction of active nests. It is quite possible to inadvertently kill Burrowing Owls during prairie dog poisoning projects, removal of prairie dogs, or during earth moving for construction. Because Burrowing Owls often hide in burrows when alarmed, it is not practical to haze the birds away from prairie dog towns prior to prairie dog poisoning/removal or construction activity. Because of this, the Colorado Division of Wildlife recommends surveying prairie dog towns for Burrowing Owl presence before potentially harmful activities are initiated.

The following guidelines are intended as advice on how determine if Burrowing Owls are present in a prairie dog town, and what to do if Burrowing Owls are detected. These guidelines do not guarantee that Burrowing Owls will be detected if they are present. However, adherence to these guidelines will greatly increase the likelihood of detecting Burrowing Owls

**Seasonal Timing**

Burrowing Owls typically arrive on breeding grounds in Colorado in late March or early April, with nesting beginning a few weeks later. Active nesting and fledging has been recorded and may be expected from late March through early August. Adults and young may remain at prairie dog towns until migrating to wintering grounds in late summer or early autumn.

Surveys should be conducted during times when Burrowing Owls may be present on prairie dog towns. Surveys should be conducted for any activities occurring between 15 March and 31 October. No Burrowing Owls are expected to be present between 1 November and 14 March.

**Daily Timing**

Burrowing Owls are active throughout the day; however, peaks in activity in the morning and evening make these the best times for conducting surveys (Conway and Simon 2003). Surveys should be conducted in the early morning (0.5 hours before sunrise until 2 hours after sunrise) and early evening (2 hours before sunset until 0.5 hours after sunset)

## **Number and locations of survey points**

Burrowing Owls are most frequently located visually, thus obtaining a clear view of the entire prairie dog town is necessary. For small prairie dog towns that can be adequately viewed in their entirety from a single location, only one survey point is necessary. The survey point should be selected to provide unobstructed views (with binoculars if necessary) of the entire prairie dog town (burrow mounds and open areas between) and all nearby structures that may provide perches (e.g., fences, utility poles, etc.)

For prairie dog towns that can not be entirely viewed from a single location because of terrain or size, enough survey points should be established to provide unobstructed views of the entire prairie dog town and nearby structures that may provide perches. Survey locations should be separated by approximately 800 m (0.5 mi), or as necessary to provide adequate visual coverage of the entire prairie dog town.

## **Number of surveys to conduct**

Detection of Burrowing Owls can be highly variable and multiple visits to each site should be conducted to maximize the likelihood of detecting owls if they are present. At least three surveys should be conducted at each survey point. Surveys should be separated by approximately one week.

## **Conducting the survey**

### Weather Considerations

Because poor weather conditions may impact the ability to detect Burrowing Owls, surveys should only be conducted on days with little or no wind and no precipitation.

### Passive surveys

Most Burrowing Owls are detected visually. At each survey location, the observer should visually scan the area to detect any owls that are present. Some Burrowing Owls may be detected by their call, so observers should also listen for Burrowing Owl while conducting the survey.

Burrowing Owls are frequently detected soon after initiating a survey (Conway and Simon 2003). However, some Burrowing Owls may not be detected immediately because they are inconspicuous, are inside of burrows, or are not present on the site when the survey is initiated. We recommend that surveys be conducted for 10 minutes at each survey location.

### Call-broadcast surveys

To increase the likelihood of detecting Burrowing Owls, if present, we recommend incorporating call-broadcast methods into Burrowing Owl surveys. Conway and Simon (2003) detected 22% more Burrowing Owls at point-count locations by broadcasting the primary male (*coo-coo*) and alarm (*quick-quick-quick*) calls during surveys. Although call-broadcast may increase the probability of detecting Burrowing Owls, most owls will still be detected visually.

We recommend the following 10-minute timeline for incorporating call-broadcast methods (Conway and Simon 2003, C. Conway pers. commun.). The observer should scan the area for Burrowing Owls during the entire survey period.

- 3 minutes of silence
- 30 seconds call-broadcast of primary call (*coo-coo*)
- 30 seconds silence
- 30 seconds call-broadcast of primary call (*coo-coo*)
- 30 seconds silence
- 30 seconds call-broadcast of alarm call (*quick-quick-quick*)
- 30 seconds silence
- 4 minutes of silence

Calls can be broadcast from a “boom box” or a portable CD or cassette player attached to amplified speakers. Calls should be broadcast loudly but without distortion.

Compact discs recordings of this survey sequence are available free of charge by contacting:

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### Identification

Adult Burrowing Owls are small, approximately 9-11 inches. They are brown with white spotting and white barring on the chest. They have long legs in comparison to other owls and are frequently seen perching on prairie dog mounds or other suitable perches (e.g., fence posts, utility poles) near prairie dog towns. Juvenile Burrowing Owls are similar to adults but smaller, with a white/buff colored chest that lacks barring.

General information about Burrowing Owls is available from the Colorado Division of Wildlife website: <http://wildlife.state.co.us/WildlifeSpecies/Profiles/Birds/BurrowingOwl.htm>

Additional identification tips and information are available from the U.S. Geological Survey Patuxent Wildlife Research Center website:

<http://www.mbr-pwrc.usgs.gov/id/framlst/i3780id.html>

### **What to do if Burrowing Owls are present**

If Burrowing Owls are confirmed to be present in a prairie dog town, there are two options before proceeding with planned activities:

1. Wait to initiate activities until after November 1 or until it can be confirmed that the owls have left the prairie dog town.
2. Carefully monitor the activities of the owls, noting and marking which burrows they are using. The owls may use several burrows in a prairie dog town. This is not easy to accomplish and will require considerable time. When all active Burrowing Owl burrows have been located and marked, activity can proceed in areas greater than 150 feet from Burrowing Owl burrows with little danger to the owls. Activity closer than 150 feet may endanger the owls.

### **Reference**

Conway, C. J. and J. C. Simon. 2003. Comparison of detection probability associated with Burrowing Owl survey methods. *Journal of Wildlife Management* 67:501-511.