

# Wildlife Survey Protocols

## Pinedale Field Office

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## BLACK-FOOTED FERRET SURVEY PROTOCOL

### Introduction

In response to requests from numerous entities and an internal review of the situation regarding ferret surveys, the U.S. Fish and Wildlife Service (Service) and others have been evaluating the potential for a previously unidentified black-footed ferret population to occur in Wyoming and the need for conducting black-footed ferret surveys across the entire state. Through this process, the Service has developed an initial list of habitat blocks that are not likely to be inhabited by black-footed ferrets (block-cleared areas). In these areas, take of individual ferrets and effects to a wild population are not an issue and surveys for ferrets are no longer recommended. Black-footed ferret surveys are no longer necessary in black-tailed prairie dog colonies statewide (Wyoming).

Please note that "block clearance" must not be interpreted to mean that the area is free of all value to black-footed ferrets. These areas, or blocks, are merely being cleared from the need for ferret surveys. Therefore, this clearance from the survey recommendations reflects only the negligible likelihood of a wild population of ferrets occurring in an area. It does not provide insight into an area's value for survival and recovery of the species through future reintroduction efforts. For example, while an action proposed in a cleared area needs no survey and is not likely to result in take of individuals, the action could have an adverse effect upon the value of a prairie dog town as a future reintroduction site and should be evaluated to determine the significance of that effect.

### GUIDELINES FOR BLACK-FOOTED FERRET SURVEYS

U.S. Fish and Wildlife Service  
Denver, Colorado and  
Albuquerque, New Mexico  
April 1989

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

### Introduction

The Endangered Species Act (Act), as amended, requires Federal agencies to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of a threatened or endangered species. Regulations implementing Section 7 of the Act require that Federal agencies determine if any action they propose "may affect" any threatened or endangered species. If it is determined that a proposed action "may affect" an endangered or threatened species, then the agency is required to request formal Section 7 consultation with the Fish and Wildlife Service (Service).

The black-footed ferret is a federally listed endangered species that depends upon the prairie dog (*Cynomys spp.*) as a source of food and uses its burrows for shelter. Ferrets are rare, nocturnal animals whose brief above-ground nighttime activities make them difficult to find and observe. Any actions that kill prairie dogs or alter their habitat could prove detrimental to ferrets occupying the affected prairie dog town(s). This requires that we determine whether ferrets are present in a proposed project area and whether the proposed project activity "may affect" the survival and recovery of this endangered species.

To help detect the presence of ferrets on a prairie dog town, the Service has prepared this set of guidelines. These guidelines should assist agencies or their authorized representatives in designing surveys to "clear" prairie dog towns prior to initiation of construction projects, prairie dog control projects, or other actions that affect prairie dogs. They are intended for use by Service personnel and other State, Federal, or private agencies or organizations interested in conducting surveys for the black-footed ferret. In addition these guidelines should assist individuals in designing surveys to be used in areas suspected of maintaining a ferret population, but without confirmed or recent sightings. If these guidelines are followed by persons conducting black-footed ferret surveys, agency personnel can be reasonably confident in results that show black-footed

ferrets are not occupying a proposed project area. A survey for ferrets will supplement the consultation process, but does not relieve any agency of their obligation to consult with the Service as required by Section 7 of the Act.

To determine whether the limits and exclusions apply to an area being proposed for a planned action, the lead agency should consult with the appropriate Service office (see Appendix I). In situations where the limits or exclusions do not apply, each State Supervisor or Associate Regional Director is authorized to determine what precautions must be taken to ensure that ferrets are not adversely affected before a prairie dog town is impacted or destroyed.

## **SURVEY CRITERIA**

### **Delineation of Survey Areas**

Until the time that the Service, States, and other Federal agencies are able to identify reintroduction areas and to classify other areas as being free of ferrets, surveys for black-footed ferrets will usually be recommended. During this interim period the following approach is recommended to determine where surveys are needed.

A black-tailed prairie dog (*Cynomys ludovicianus*) town or complex of less than 80 acres having no neighboring prairie dog towns may be developed or treated without a ferret survey. A neighboring prairie dog town is defined as one less than 7 kilometers (4.34 miles) distance from the nearest edge of the town being affected by a project.

Black-tailed prairie dog towns or complexes greater than 80 acres but less than 1,000 acres may be cleared after a survey for black-footed ferrets has been completed, provided that no ferrets or ferret sign have been found. (Not applicable to Wyoming, see introduction above).

A white-tailed prairie dog (*Cynomys leucurus*) town or complex of less than 200 acres having no neighboring prairie dog towns may be cleared without a ferret survey. White-tailed prairie dog towns or complexes greater than 200 acres but less than 1,000 acres, may be cleared after completion of a survey for black-footed ferrets provided that no ferrets or their sign were found during the survey.

A complex consists of two or more neighboring prairie dog towns each less than 7 kilometers (4.34) from the other. Instructions for determining a complex of black-tailed or white-tailed prairie dogs are found in Appendix II.

Before any federally funded or permitted activities are conducted on black-tailed or white-tailed prairie dog towns or complexes greater than 1,000 acres, the appropriate Service office should be contacted to determine the status of the area for future black-footed ferret reintroductions (see Appendix I). That office also will determine whether a survey for black-footed ferrets should be completed.

### Defining a Prairie Dog Town

For the purpose of this document a prairie dog town is defined as a group of prairie dog holes whose density meets or exceeds 20 burrows per hectare (8 burrows/acre). Prairie dog holes need not be active to be counted but they should be recognizable and intact; i.e., not caved in or filled with debris

### Timing of Surveys

The Service recommends that surveys for black-footed ferrets be conducted as close to the initiation of a project construction date as possible but not more than 1 year before the start of a proposed action. This is

recommended to minimize the chance that a ferret might move into an area during the period between completion of a survey and the start of a project. If the town being affected is part of a complex in which the combined acreage of prairie dog towns total less than 1,000 acres, a survey of all the prairie dog towns within the complex will serve to clear the entire area provided no black-footed ferrets or their sign are found. If this is done, no future surveys for ferrets will be required within the borders of the complex regardless of future project activities unless a ferret is observed and confirmed on the complex at a later date.

An alternative to clearing the entire complex would be to search only the prairie dog town(s) being affected. Assuming that no ferrets or ferret sign is found, this would allow an activity to take place on the prairie dog town. If an activity is proposed in the same area in the future, a survey for ferrets may again be required if the Service cannot justify an exemption based upon the ferret history in the area, survey records, or current status of prairie dog habitat.

In a prairie dog town or complex where the acres of prairie dog towns meet or exceed 1,000 acres, any prairie dog town being affected should be surveyed as close to the initiation of project activity as possible, but not more than 1 year prior to the proposed action. When other projects are planned that will affect different prairie dog towns within the complex, they too will need to be surveyed before the project starts. Towns or complexes of 1,000 or more acres should be given special consideration for their importance to the overall recovery and survival of the black-footed ferret as potential reintroduction areas. The Service would like to minimize disturbances of these areas until black-footed ferret reintroduction sites have been selected. Once reintroduction sites are selected, these large areas of prairie dogs can be cleared from the need for future surveys if the area is surveyed, no ferrets or ferret sign are found, and it is determined that the area is not needed or suitable for ferret recovery.

## **PROJECT TYPE**

*Construction projects* - both linear and spatial developments that permanently alter prairie dog towns (buildings, facilities, surface coal mines, transmission lines, major roadways, large pipelines, impoundments, etc.) should be surveyed. The area to be surveyed should include all black-tailed prairie dog towns or complexes greater than 80 acres and white-tailed prairie dog towns or complexes greater than 200 acres occurring on a project right-of-way and the portion of those towns found within one-half mile of the construction site or right-of-way border. Projects of a temporary nature and those that involve only minor disturbance (e.g., fences, some power lines, underground cables, etc.) may be exempted from surveys when project activities are proposed on small prairie dog towns or complexes of less than 1,000 acres, do not impact those areas where ferret sightings have been frequently reported, or occur on areas where no confirmed sightings have been made in the last 10 years. To determine whether a project qualifies for exemption, the lead agency must contact the appropriate Service Office (see Appendix I)

*Pesticide or toxicant use* - The Service recommends that before any action involving the use of a toxicant in or near a prairie dog town begins, a survey for ferrets should be conducted. This includes all black-tailed prairie dog towns or complexes greater than 80 acres or white-tailed prairie dog towns or complexes greater than 200 acres proposed for control. If phosphide-treated grain, gas cartridges, or tablets are the proposed toxicants and the town proposed for treatment is in a complex of less than 1,000 acres, the town should be surveyed 30 days or less before treatment using the nocturnal survey technique (see Selection of Survey Method, Method 2). In this situation it is recommended that the entire complex be surveyed and cleared before treatment begins. This would avoid the need for an additional survey if the town needs to be treated again at a later date. Otherwise the town to be treated should be surveyed as described above and surveyed again if a second treatment is needed.

Prairie dog towns or complexes greater than 1,000 acres should not be poisoned without first contacting the appropriate Service office (see Appendix I). Procedures to be followed on large towns or complexes will be the same as for those recommended for construction projects.

If the proposed control agent involves the use of any other compound under registration with the Environmental Protection Agency, then the area to be surveyed for ferrets should include the prairie dog town to be treated and any other town or portion of a town within 1 mile of the town being treated with the toxicant. The survey should be conducted within 30 days or less of the treatment using the nocturnal survey technique. This difference is justified on the basis of potential hazards to ferrets from secondary poisoning. As above, if the town(s) are part of a complex of less than 1,000 acres and the entire complex is surveyed for ferrets, then no future surveys will be required in the affected area if ferrets or their sign are not found.

## **SELECTION OF SURVEY METHOD**

Two methods to survey for black-footed ferrets or their sign are recommended. Either can be used. These methods are based upon the most recent survey research data, and both involve specific time periods. Research has shown a marked decrease in ferret activity and/or sign in November, April, May, and June. For this reason surveys for ferrets during these months are not recommended, since no acceptable confidence can be placed on the results of surveys conducted during this period.

### **METHOD 1**

Diurnal (daylight) surveys for ferrets are recommended if surveys are conducted between December 1 and March 31. This type of survey is used to locate signs left by ferrets. During winter months, ferret scats, prairie dog skulls, and diggings are more abundant because prairie dogs are less active and less likely to disturb or destroy ferret sign. When there is snow cover, both ferret tracks and fresh diggings are more obvious and detectable. Daylight searches for ferret sign, should meet the following criteria to fulfill the minimum standards of these guidelines.

1. Three searches must be made on each town. Each search should be done when fresh snow has been present for at least 24 hours and after 10 or more days have passed between each search period.
2. Vehicles driven at less than 5 miles per hour may be used to search for tracks or ferret diggings, but complete visual inspections of each part of the town being surveyed is required (i.e., visually overlapping transects).
3. If ferret sign is observed, photograph the sign and make drawings and measurements of diggings before contacting the appropriate Service office (see Appendix I) and State Wildlife Agency.

Aerial surveys for ferrets are considered experimental, but may be allowed in winter using skilled aerial observers when suitable snow conditions exist. Determination of when to use this technique should be made with the appropriate Service office (see Appendix I).

### **METHOD 2**

Nocturnal (nighttime) surveys involve the use of spotlighting techniques for locating ferrets. This survey method is designed to locate ferrets when the maximum population and the longest periods of ferret activity are expected to occur.

Minimum standards have been established by the Service for nocturnal surveys, these should be followed as recommended and include:

1. Surveys should be conducted between, July 1 and October 31.
2. The prairie dog town should be continuously surveyed using spotlights. Surveys should begin at dusk and continue until dawn on each of at least three consecutive nights. Large prairie dog colonies should be divided into tracts of 320 acres and each tract systematically searched throughout three consecutive nights. Rough uneven terrain and tall dense vegetation may require smaller tracts to result in effective coverage of a town.
3. Observations on each prairie dog town or tract searched should begin a different starting point on each successive night to maximize the chance of overlapping the black-footed ferrets' nighttime activity period(s).
4. A survey crew consists of one vehicle and two observers equipped with two 200,000 to 300,000 candle power spotlights. In terrain not suitable for vehicles, a crew will consist of two individuals working on foot with battery-powered 200,000 to 300,000 candle power spotlights. To estimate the number of crew nights for a survey, divide the total area (acres) of prairie dog town to be surveyed by 320/acres and multiply by 3. One or both of the observers in each survey crew should be a biologist trained in ferret search techniques.

## **SURVEY REPORT**

The following outline provides a general summary of the types of information useful to the Service in reviewing the results of ferret surveys for concurrence with an agency's decision of "may affect" or "no affect." This information will be used to assist in Section 7 compliance decisions. Headings listed can be used in field data forms to ensure that all pertinent data are collected and surveys are not unnecessarily repeated. It is recommended that a report summarizing survey data be prepared for each project and submitted to the lead agency and to the appropriate Service office (see Appendix I). Data requirements for daylight searches (December 1 to March 31) or night searches (July 1 to October 31) are as follows:

1. Location information (Township, Range, Section, Quarter/Quarter section)
2. Survey date and start and end times (military time)
3. Year
4. Datum, Zone, and a general description of the location, e.g. Fontenelle Dam or Pinedale Airport
5. Total number of acres searched
6. Number of colonies searched
7. Number of burrows inspected
8. Weather conditions and ground condition (temperature, sky condition, wind, mud, snow, or dry)

### Sky Condition

0 =	0 – 15% cloud cover	3 =	76 – 100% cloud cover
1 =	16 – 50% cloud cover	4 =	Fog
2 =	51 – 75% cloud cover	5 =	Drizzle

### Ground Condition

M =	mud	Sn =	snow	D =	dry ground
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9. Ferrets or ferret sign observed and locations.

Ferret Sign

IND	Individual sighted	SKE	Skeletal remains
DIG	Diggings	PPB	Plugged prairie dog burrow entrances
TRA	Tracks	TPD	Mustelid teeth indentations on prairie dog skulls
SCA	Scat		

10. Method used to search (backpack spotlight, vehicle, walking)

Method

BS = Backpack spotlight    V = Vehicle    W = Walking

11. Name of the consulting firm conducting the survey and names of observers

12. Descriptions of any photos taken

13. Comments

Survey Summary (for Report)

1. Starting and completion dates for the survey
2. Detailed information for the survey location
3. Total hours of spotlight search
4. Total acres searched by spotlight
5. Total colonies searched using spotlight
6. Total ferrets observed and locations by night search
7. Total hours searched in daylight
8. Total acres searched in daylight
9. Total colonies searched in daylight
10. Total ferret sign observed and location of sign observed
11. Narrative describing search technique used
12. Mapped location of central project (include acres and description)
13. Mapped survey route and location of prairie dog town
14. Copies of field data sheets

Surveyor Qualifications

The Service has established a process to provide specific training for conducting ferret surveys. This formal training (a 1-day workshop for biologists) is currently available through the Wyoming Cooperative Fishery and Wildlife Research Unit, Box 3166, University Station, Laramie, Wyoming 82071, telephone (307) 766-5415. A trained biologist should accompany each survey crew; i.e., one trained biologist in each two person crew, when surveys are being conducted.

A field guide "Handbook of Methods for Locating Black-footed Ferrets" provides detailed methods for locating black-footed ferrets and interpreting sign made by this animal under field conditions. This handbook should be useful when designing surveys for black-footed ferrets, whether for Section 7 compliance or for locating ferrets for conservation and recovery. A copy of this document may be obtained from:

Bureau of Land Management  
Wyoming State Office  
P.O. Box 1828  
Cheyenne, Wyoming 82001

Bureau of Land Management  
Montana State Office  
P.O. Box 36800  
Billings, Montana 59107

## **COORDINATION OF SURVEYS**

This section discusses coordination measures that the Service believes are vital to completing a proper survey.

### State Wildlife Agency

The appropriate State wildlife agency should be contacted prior to initiating ferret surveys. State agency personnel may provide historical information or literature pertinent to the survey or offer suggestions regarding access or landowner contacts needed for the survey. In addition, some States may require special permits for spotlighting wildlife or have minimum requirements for protecting ferrets under State laws which are different or more detailed than those described in these guidelines.

### Other Local Authorities

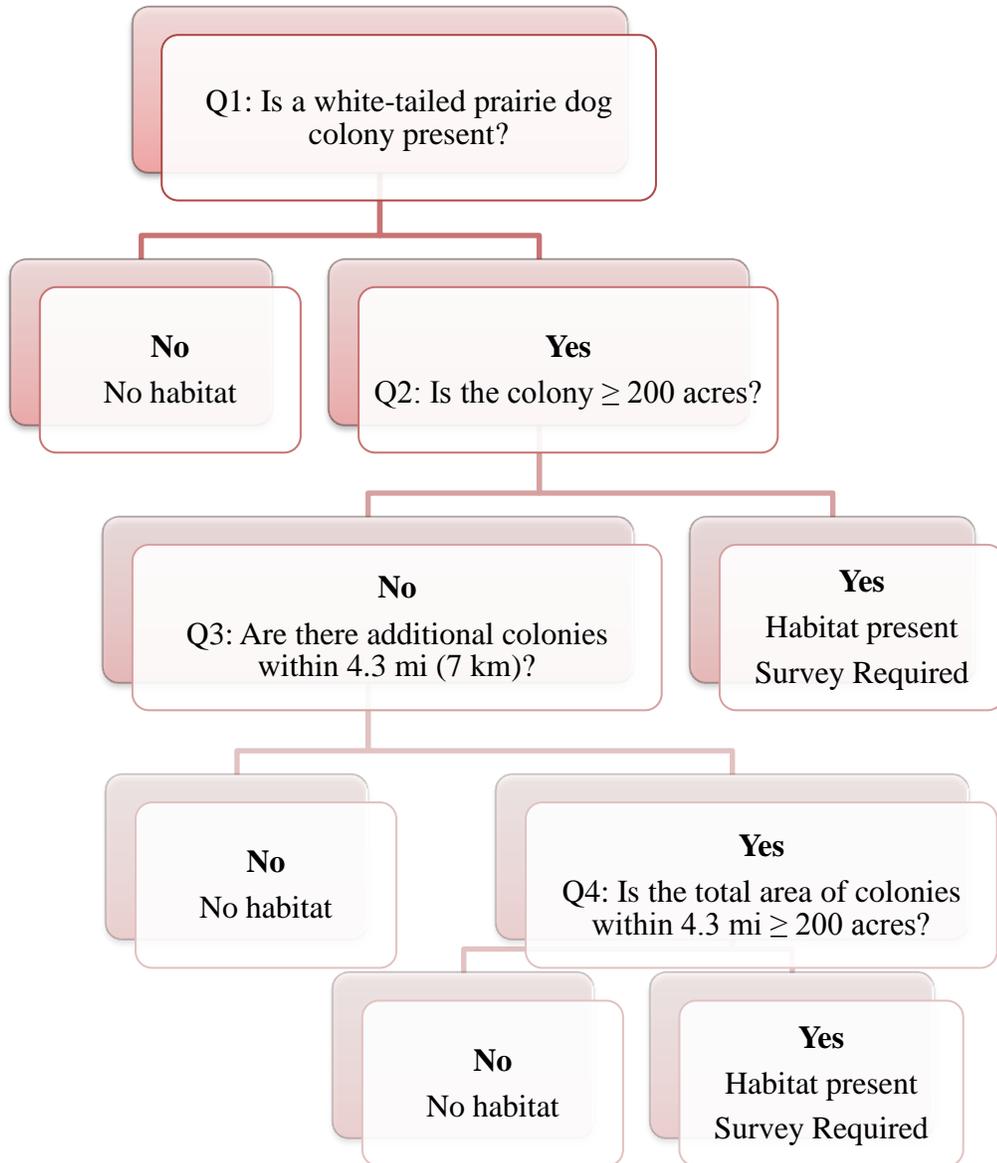
We recommend that persons planning surveys contact local authorities before initiating surveys. Many sheriff departments cooperate with State conservation officers in investigating possible game violations. Spotlighting crews are often reported to the game warden and sheriff by local citizens and ranchers. Proper coordination of survey activities should prevent unnecessary conflict with these groups and agencies.

## **PROCEDURES TO FOLLOW IF FERRET SIGN OR A FERRET IS LOCATED**

Wildlife agencies of some States located within the potential range of the black-footed ferret have developed a procedure to follow when ferrets are seen and reported. We recommend that agencies or their representatives request these procedures from the States in which they are working and review them before conducting surveys. If no procedures are available, contact the appropriate Service office (see Appendix I) for guidance. If you observe a ferret while conducting surveys, you should notify the closest Service or State wildlife agency office within 24 hours.

Experience has shown that premature release of a ferret sighting to the news media or others can have lasting negative effects upon recovery actions in the area. We request that contacts with the public be avoided until the presence of a ferret is confirmed by the Service or State wildlife agency and necessary landowner contacts and discussions are completed.

## Black-footed Ferret Habitat Flowchart





## Black Footed Ferret Survey Key and Codes

SURVEY DATE (SRV\_DATE): mm/dd/yyyy

LOCATION (LOC): General location information for the sign or sighting, such as Fontenelle Dam or Pinedale Airport, or a well name and number.

TIME START/TIME STOP: Military time.

SHAPEFILE ID OR UTM (Easting & Northing): Coordinates of ferret sign or new p-dog colony/complex

PRAIRIE DOG TOWN ID (PDT\_ID): The unique identifying code for the colony being searched.

LAND OWNERSHIP (OWNERSHP): Private, BLM, Forest Service, State, US Fish and Wildlife, Military, Tribal, National Park, Other

SECTION/TOWNSHIP/RANGE (SEC, TWNSHP, RANGE): S\_\_/T\_\_/R\_\_

DATA CORRECTION (DATA\_CORR): Record which type of correction was performed on the data.

REALTIME = real time correction only (e.g. Garmin)

POSTPROC = post processing correction (e.g. Trimble)

SURVEY: For survey type, indicate **N** for a nocturnal survey or **D** for a diurnal survey.

METHOD: For survey method, indicate one of the following: 1) spotlighting, 2) walking, 3) vehicle

OBSERVER (OBSVR): Record the names of all individuals who partook in sign/sighting identifications.

AFFILIATION (AFFILI): Record the name of the organization the observers are affiliated with.

WEATHER: Indicate the average temperature and wind conditions during the survey, as well as the sky condition.

Temp: Average Degrees Fahrenheit

Wind:

0 =	0 – 5mph	3 =	26 – 35mph
1 =	6 – 15mph	4 =	36 – 45mph
2 =	16 – 25mph	5 =	45+ mph

Sky:	0 =	0 – 15% cloud cover	3 =	76 – 100% cloud cover
	1 =	16 – 50% cloud cover	4 =	Fog
	2 =	51 – 75% cloud cover	5 =	Drizzle

GROUND: Indicate the condition of the ground in the vicinity of where the survey was conducted.

M = mud

Sn = snow

D = dry ground

ACTIVE BURROWS (#\_ACTIVE): Indicate the number of active burrows inspected. Use NA if nocturnal survey.

INACTIVE BURROWS (#\_INACT): Indicate the number of inactive burrows inspected. Use NA if nocturnal survey.

ACRES\_SEARCHED (#\_ACR\_SRV): Total number of acres searched during the survey.

PHOTOS TAKEN (PHOTOS): Yes or No

FERRET SIGN (FERRT\_SN):

Record one of the following codes for the indication of black footed ferret presence.

IND Individual sighted

SKE Ferret skeletal remains

DIG Diggings

PPB Plugged prairie dog burrow entrances

TRA Tracks

TPD Mustelid teeth indentations on prairie dog

SCA Scat

skulls

OTHER OBSERVATIONS: Any additional information

## MOUNTAIN PLOVER SURVEY PROTOCOL

*This protocol is adapted from:  
Mountain Plover Survey Guidelines  
U.S. Fish and Wildlife Service  
March 2002*

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

The mountain plover (*Charadrius montanus*) is a small bird (17.5 cm, 7 in.) about the size of a killdeer (*C. vociferus*). It is light brown above with a lighter colored breast, but lacks the contrasting dark breast-belt common to many other plovers. During the breeding season it has a white forehead and a dark line between the beak and eye, which contrasts with the dark crown.

Mountain plover breeding habitat includes short-grass prairie and shrub-steppe landscapes; dryland, cultivated farms; and prairie dog towns. Plovers usually nest on sites where vegetation is sparse or absent, conditions that can be created by herbivores, including domestic livestock and prairie dogs. Vegetation in shortgrass prairie sites is typically less than 4 inches tall. Nest sites within the shrub-steppe landscape are also confined to areas of little to no vegetation, although surrounded by areas visually dominated by shrubs. Commonly, nest sites within shrub-steppe areas are on active prairie dog towns. Nests are commonly located near a manure pile or rock. In addition to disturbance by prairie dogs or livestock, nests have also been found on bare ground created by oil and gas development activities, and on dryland, cultivated agriculture in the southern part of their breeding range. Mountain plovers are rarely found near water. Positive indicators for mountain plovers therefore include level terrain, prairie dogs, bare ground, *Opuntia* pads, cattle, widely spaced plants, and horned larks. It would be unusual to find mountain plovers on sites characterized by irregular or rolling terrain; dense, matted vegetation; grass taller than 4 inches, wet soils, or the presence of killdeer.

### GENERAL HABITAT INDICATORS

#### Positive habitat images

Stock tank (non-leaking, leaking tanks often attract killdeer)  
Flat (level or "tilted") terrain  
Burned field/prairie/pasture  
Bare ground (minimum of 30 percent)  
"Spaced" grass plants  
Prairie dog colonies  
Horned larks  
Cattle  
Heavily grazed pastures  
*Opuntia* pads visible

#### Negative habitat images

Killdeer present (indicating less than optimal habitat)  
Hillsides or steep slope  
Prominent, obvious low ridge  
Leaky stock tanks  
Vegetation greater than 4 inches in height in short-grass prairie habitat  
Increasing presence of tall shrubs  
Matted grass (i.e., minimal bare ground)  
Lark buntings

## GENERAL GUIDELINES FOR SURVEYS

The US Fish and Wildlife Service has developed the following survey guidelines, depending on whether the intent is to determine the presence or absence of plovers at a site during the nesting season for permanent and short term projects, or to determine the density of nesting plovers at known nesting sites.

Surveys for mountain plovers are conducted generally from **May 1 through June 15**. Since specific nesting dates across the breeding range of the plover vary according to latitude and local weather, the project proponent or the land management agency should contact the local U.S. Fish and Wildlife Service Office to determine what seasonal restrictions apply for specific projects.

Two types of surveys may be conducted:

- 1) Surveys to determine the presence/absence of breeding plovers (i.e., displaying males and foraging adults)
- 2) Surveys to determine nest density.

The survey type chosen for a project and the extent of the survey area (i.e., beyond the edge of the construction or operational ROW) will depend on the type of project activity being analyzed (e.g., construction, operation) and the users intent.

In every report submitted, the completed mountain plover survey summary form is required. If there is no sign or sighting, an excel file with the mountain plover sign/sighting attributes is not required. If there is sign or sighting, the mountain plover sign/sighting excel file is required with all of the attributes listed on this form, in the order they appear on the form. Regardless of the presence of mountain plovers, a hard copy map with the transect route should be submitted.

### Techniques Common to Each Survey Method

- Conduct surveys between local sunrise and 1000 and from 1730 to sunset (periods of horizontal light to facilitate spotting the white breast of the adult plovers).
- Drive transects within the project area to minimize early flushing. Flushing distances for mountain plovers may be within 3 meters for vehicles, but plovers often flush at 50 to 100 meters when approached by humans on foot.
- Use a 4-wheel drive vehicle where allowed. Use of ATVs has proven highly successful in observing and recording displaying males.
- Stay in or close to the vehicle when scanning. Use binoculars to scan and spotting scopes to confirm sightings.
- Do not conduct surveys in poor weather (i.e., high wind, precipitation, etc.).
- Surveys conducted during the courtship period should focus on identifying displaying or calling males, which would signify breeding territories.
  
- For all breeding birds observed, conduct additional surveys immediately prior to construction activities to search for active nest sites.

## SURVEY TO DETERMINE PRESENCE/ABSENCE

### *Large scale/long term projects*

1. Conduct the survey between **May 1 and June 15**, throughout the breeding range.
2. Survey by vehicle within 1/4 mile of the proposed action. All plovers located should be observed long enough to determine if a nest is present. These observations should be made from within a stationary vehicle, as plovers do not appear to be wary of vehicles. Because this survey is to determine presence/absence only, and not calculate statistical confidence, there is no recommended distance interval for stopping the vehicle to scan for birds. Obviously numerous stops will be required to conduct a thorough survey, but number of stops should be determined on a project and site-specific basis.
3. If no visual observations are made from vehicles, the area should be surveyed on ATV's. Surveys on ATVs must be in accordance with the 2008 Pinedale Resource Management Plan Final EIS; and the transportation plan (TBD). Extreme care should be exercised in locating plovers due to their highly secretive and quiet nature. Surveys by foot are not recommended because plovers tend to flush at greater distances when approached using this method. Finding nests during foot surveys is more difficult because of the greater flushing distance.
4. A site must be surveyed 3 times during the survey window, with each survey separated by at least 14 days, unless otherwise authorized by the BLM. The need for 3 surveys is to capture the entire nesting period, with the intent of reducing the risk of concluding the site is not nesting habitat by an absence of nesting birds during a single survey.
5. Initiation of the project should occur as near to completion of the survey as possible. For example, seismic exploration should begin within 2 days of survey completion. A 14 day period may be appropriate for other projects.
6. If an active nest is found in the survey area, the planned activity should be delayed 37 days, or seven days post-hatching. If a brood of flightless chicks is observed, activities should be delayed at least seven days.

### *Short-term, linear projects*

Short-term linear projects are defined as projects which move through an area within the course of a day and result in no permanent habitat alteration (e.g. vegetative/topographic changes), and no permanent project-related above ground features. Short-term, linear projects may include activities such as pipelines (4 inch diameter or less), fiber optic cables, and seismic exploration. For these projects, all ROW surveying/staking activities should be completed before April 1 to avoid discouraging plovers from nesting in suitable habitat. If ROW surveying cannot be completed before April 1, surveyors will need to coordinate with the lead Federal agency before entering these areas, and a plover survey may be required prior to ROW demarcation. For these projects, the presence/absence guidelines above should adhere to the dates below.

1. Conduct the survey between **April 10 and July 10** 1- 3 days prior to any construction activity, including initial brush clearing, to avoid direct take of mountain plovers.
2. The survey should include the route and a 1/4 mile buffer on either of the project corridor. If there is a break in construction activity in these areas of more than 3 days (e.g., between pipe stringing, trenching, or welding), an additional plover survey is necessary before construction activity can resume after that break

in activity. After July 10, most mountain plover chicks are sufficiently mobile to reduce the risk of direct take.

3. If an active nest is found in the survey area, the planned activity should be delayed 37 days, or seven days post-hatching. If a brood of flightless chicks is observed, activities should be delayed at least seven days.

## **SURVEY TO DETERMINE DENSITY OF NESTING MOUNTAIN PLOVERS**

We are assuming people will have received training on point counts in general before using this specialized point count technique adapted to mountain plovers.

### **Establishing Transects**

1. Identify appropriate habitat and habitat of interest within geographic areas of interest.
2. Upon arriving in appropriate habitat, drive to a previously determined random starting point.
3. For subsequent points, drive a previously determined random distance of 0.3, 0.4 or 0.5 miles.
4. Each transect of point counts should contain a minimum of 20 points.

### **Conducting the Point Counts** (When required, a survey sheet will be provided)

- Conduct counts between last week in June to July 4<sup>th</sup> at elevations equivalent to the eastern plains of Colorado (i.e., about 5,000 feet). Timing of counts at other elevations should be coordinated with the local FWS office.
- Only 1 counter is used. Do not use a counter and recorder or other combinations of field help. Drivers are okay as long as they don't help spot plovers.
- If an adult mountain plover is observed, plot occupied territories on a minimum of 1:24,000 scale map and on a ROW diagram or site grid. The ROW diagram will be at a greater level of detail, depicting the location of breeding birds (and possible nest sites) relative to ROW centerline, construction boundary, and applicable access roads.
- Estimate or measure distances (in meters) to all mountain plovers. Method used should be noted, e.g., estimates w/distance training, estimates w/o distance training, rangefinder or measured with tape measure, etc.
- Record "fly-overs" as "FO" in the distance column of the data sheet.
- If you disturb a mountain plover while approaching the point, estimate the distance from point-center to the spot from which the bird was flushed.
- Conduct counts for 5 minutes with a 3 minute subsample to standardize with BBS.
- Stay close to your vehicle.

## **BREEDING/NESTING SEASON EXCEPTION PROTOCOL**

If a surface disturbing activity is requested to take place in MP habitat during the MP breeding/nesting season (April 10 – July 10), presence/absence surveys would be required. These surveys would take place within a ¼ mi buffer around the activity and must not occur during poor weather conditions (i.e. high winds, precipitation, etc.). The initial survey would begin on or after April 20 followed by a second survey 14 days later (earliest date for second survey is May 4). If cold, wet weather pushes the nesting period later into the spring, the initial survey would also need to be pushed back accordingly. These two surveys will capture the vast majority of nesting MPs, with the intent of reducing the risk of concluding the site is not nesting habitat by an absence of nesting birds during a single survey. No surface disturbing activity is allowed to occur until both surveys have been completed and one of the following two findings has taken place:

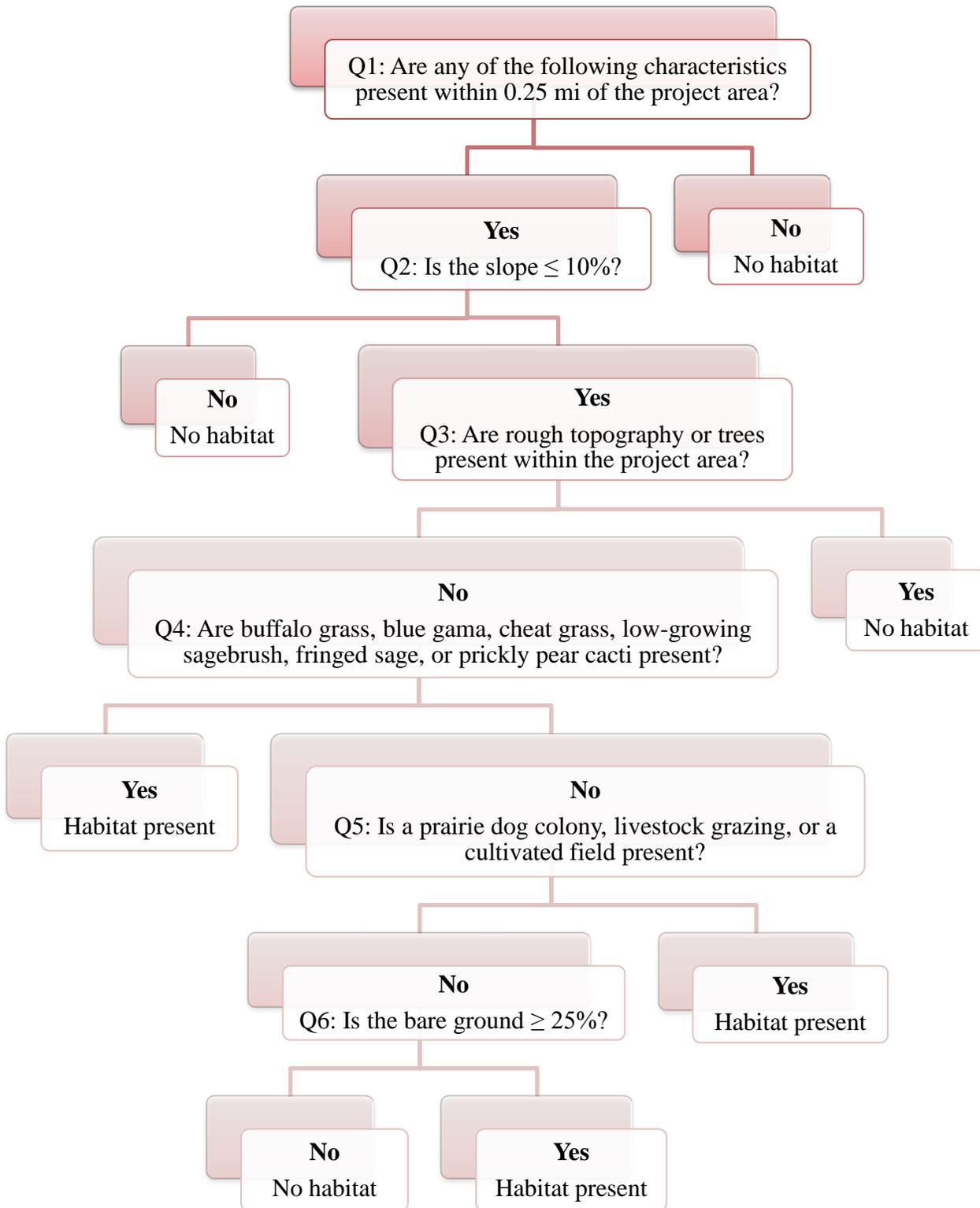
- If no MPs are found during either survey, then the disturbing activity must begin within 72 hours. If the disturbing activity doesn't commence within 72 hours, an additional survey will be required to check for late nesting MPs, which will start the clock again giving another 72 hour time period.
- If MPs are found during the first or second survey, then either:  
The activity can be postponed until July 10 with no additional surveys required;  
-or-  
Additional surveys could be done to locate active nests (density survey can be used if nest location was not found using presence/absence protocol). Because of the colonial nature of MPs, the entire ¼ mi buffer area would need to be thoroughly surveyed. When nests are located the activity could commence after 37 days to allow the young MPs to hatch and be mobile, or the nest could be monitored and activity could commence after seven days post-hatching. If a brood of flightless chicks is observed, activities could commence after at least seven days.

## **RECORDING DATA**

Record the following information AT EVERY POINT, EVERY DAY

- Survey Date
- Location UTM
- Start/End time (military time)
- Unique point code
- Land Ownership
- Your name and affiliation
- Survey Method
- Number of mountain plovers and distance to each
- Temperature, wind, and cloud cover
- Land use and/or habitat type (e.g., fallow wheat, plowed, shortgrass)

# Mountain Plover Habitat



**Q1:** One-quarter mile is a commonly applied protective buffer for nesting habitat (USFWS 2002). A minimum area size was considered, 40 acres (USFWS 2002) and 160 acres (Keinath et al. 2002) have been reported. Documented occupied nesting habitat patches within the BFO have frequently been much smaller in area.

**Q2:** Although mountain plovers prefer flat areas for nesting (< 8% slope), they have been documented nesting in steeper areas including 12% slope (USFWS 2002).

**Q3:** Rough topography includes ridges, escarpments, cliffs, and draws. Mountain plovers prefer flat areas with high visibility, topography and trees provide cover and perch sites for plover predators.

**Q4:** Mountain plovers prefer areas with short vegetation, the identified species are typically low-growing and have been identified within documented nesting habitat. Low growing sagebrush includes birdsfoot and black sagebrush.

**Q5:** Prairie dogs, livestock grazing, and cultivation are some of the disturbance sources creating the open habitat preferred by mountain plovers.

#### REFERENCES:

Beauvis, Gary P. and Rebekah S. Smith. Occurrence of Breeding Mountain Plovers (*Charadrius montanus*) in the Wyoming Basins Ecoregion. Wyoming Natural Diversity Database, University of Wyoming. Laramie, WY. 12pp

Good, Rhett E., David P. Young Jr., and James P. Eddy. 2002. Distribution of Mountain Plovers in the Powder River Basin, Wyoming. Western EcoSystems Technology, Inc. Cheyenne, WY. 11pp.

Keinath, Douglas A. and Donna Ehle. 2001. Survey for Mountain Plover (*Charadrius montanus*) on Federal Lands in the Powder River Basin. Wyoming Natural Diversity Database, University of Wyoming. Laramie, WY. 17pp.

Long, Michael. 2001. Revised Mountain Plover Guidelines and Section 7 Guidance Memorandum. U.S. Fish and Wildlife Service. Cheyenne, WY. 4pp.

U.S. Fish and Wildlife Service. 2002. Mountain Plover Survey Guidelines. 7pp.

# Mountain Plover Survey Summary Form



Survey Date: \_\_\_\_\_ Time: \_\_\_\_\_ Survey Number: \_\_\_\_\_

Survey Type: Presence Absence / Exception

Location: \_\_\_\_\_

Ownership: WY100 / WY040 / WY090 / BTNF / STATE / PRIVATE

Section: \_\_\_\_\_ Township: \_\_\_\_\_ Range: \_\_\_\_\_ Data Correction: \_\_\_\_\_

Observers Names: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Survey Method (circle one): Walking    ATV    Vehicle    Other \_\_\_\_\_

Habitat and Vegetation Type: SS / PDTN / GSL / GZA / OGD

Average Weather Conditions:

Temperature: \_\_\_\_\_ Wind: \_\_\_\_\_

Cloud Cover: \_\_\_\_\_

Mountain Plover Present? YES / NO

Number Adults: \_\_\_\_\_ Number Juveniles: \_\_\_\_\_

Nest Condition: OLD / NEW

Nest Status: OCCU: 1 2 3 4 / UNOC / UNDT

Eggs Seen: \_\_\_\_\_

Prairie Dog Town: YES / NO

Killdeer Present: YES / NO

Terrain: 1 = Flat / 2 = 1-3 / 3 = 3.1-5% / 4 = 5.1-7% / 5 = >7%

Photos Taken: \_\_\_\_\_

Other Observations: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Mountain Plover Survey Key and Codes

Survey Date and Time: (SUR\_DATE, SUR\_TIME): Date of the survey and the time (military)

Survey Number (SURV\_#): All sites must be surveyed 3 times. Indicate whether this is survey 1, 2, or 3.

Survey Type (SUR\_TYPE): Indicate whether this survey was a presence/absence or an exception survey.

LOCATION: General location information for the sighting or nest, such as Fontenelle Dam or Pinedale Airport, or well name.

OWNERSHIP: BLM Pinedale (WY100), BLM Kemmerer (WY090), BLM Rock Springs (WY040), Bridger-Teton National Forest (BTNF), State, or Private

SECTION/TOWNSHIP/RANGE (SEC, TOWNSHP, RANGE): S\_\_/T\_\_/R\_\_

DATA CORRECTION (DATA\_COR): Record which type of correction was performed on the data.

REALTIME = real time correction only (e.g. Garmin)

POST\_PROC = post processing correction (e.g. Trimble)

OBSERVER: Record the names of all individuals who partook in sign/sighting identifications

Affiliation (AFFILI): Record the name of the organization the observers are affiliated with.

METHOD: Indicate whether surveys were conducted on foot, ATV, or in a vehicle.

Habitat Type (HAB\_TYPE): Record one of the following codes for habitat type. Indicate the height of vegetation in the area where the bird was spotted/flushed or where a nest was located in inches.

SS = Shrub-steppe

GZA = Grazed area

GSL = Grassland

PDTN = Prairie dog town

OGD = Oil and gas development

TEMP, SKY, WIND:

Indicate the average temperature and wind speed present throughout the duration of the survey. Record one of the following codes for cloud cover.

0 = 0 - 15% cloud cover

3 = 76 - 100% cloud cover

1 = 16 - 50% cloud cover

4 = Fog

2 = 51 - 75% cloud cover

5 = Drizzle

Mountain Plover Present (MP\_PRES): Indicate Yes or No. If plovers are present, indicate the number of adults (NUM\_ADS, exact #) and the number of juveniles (NUM\_JUV, use the exact #, or the number seen with a + to indicate estimate, i.e. 2+)

Nest Condition (NEST\_CND): Indicate whether the nest is old (OLD, e.g. known location) or new (NEW, e.g. new location).

NST\_STAT: When recording nest occupancy, record one of the following codes.

OCCU = Occupied: (one or many may apply)

- A pair of adult birds are present in breeding area
- Adult presence at or near the nest
- Eggs Present (YES or NO)
- Flightless chicks present (these should be included in NUM\_JUV seen)

UNOC = Unoccupied = A habitat that exhibits no evidence of the presence of a breeding pair during the breeding season

UNDT = Undetermined = Surveyor was unable to determine whether birds were occupying an area and/or was unable to determine the activity at a nest site

Prairie Dog Town (PDTN): If the bird or nest was spotted on a town, or there is a town in the immediate vicinity, record yes.

Killdeer Present (KILLDEER): Yes or No as to whether killdeer were present in the vicinity of the mountain plover and/or nest.

TERRAIN: Record one of the following codes for terrain.

1 = Flat

3 = 3.1 - 5% slope

5 = Greater than 7% slope

2 = 1 - 3% slope

4 = 5.1 - 7% slope

COMMENTS: Any additional information

## PYGMY RABBIT SURVEY PROTOCOL

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

**This protocol is adapted from:**

SURVEYING FOR PYGMY RABBITS (*Brachylagus idahoensis*)

*Principal author: Helen Ulmschneider, Boise District, ID BLM*

Review and contributions from:

*Dave Hays (WA Dept. Fish and Wildlife)*

*Hadley Roberts (independent wildlife biologist, ID),*

*Janet Rachlow (Univ. Idaho)*

*Todd Forbes (BLM, OR)*

*John Himes (Nevada Dept. Wildlife, now at Texas Parks and Wildlife Dept.)*

*Eveline Sequin (Univ. Nevada-Reno, NV)*

*Marcy Haworth (FWS, Reno, NV)*

*Todd Katzner (Univ. Wyoming, now at Imperial College, London, England)*

*Adam Kozlowski (Utah Div. Wildlife Resources)*

*Ryan Rauscher (Montana Fish, Wildlife, and Parks)*

*Pat Lauridson (CA Dept. Fish and Game)*

### SURVEY PROCEDURES:

1. BLM must be notified by operators/consultants prior to conducting surveys for any reason within or along the Pinedale field office boundaries. This communication is essential for clarification of project specific survey areas, data submission timeframes, report standards and potential additional requirements and to gain authorization if certain data is not required to be gathered and submitted on a project by project basis.
2. All suitable habitats within the survey area will be targeted and surveyed. Survey routes will be determined by the location of habitat patches within the survey area. When walking a survey route, the tallest, densest patches of sage should guide the surveyor on his or her survey route. These habitat patches hold the highest potential for pygmy rabbits and should thus be the highest priority areas to survey. Surveys should be designed to not only cover these priority areas but to also sample the lower priority (less suitable habitat) between the suitable habitat patches evenly throughout the survey area.
3. The goal of a survey route is to check enough habitat in an efficient manner to determine whether pygmy rabbits are present or not, and secondarily to record the general spatial distribution of burrows within each patch. What this means is that every patch needs thoroughly surveyed and every burrow system that is found should be recorded; not every burrow system in a habitat patch will be found every time however. In areas with dense burrows, it may be difficult to decide when to record a new burrow system. One rule of thumb is to record burrow systems at least 30 ft apart. In some instances burrow systems may occur much closer than 30 feet apart and often times a burrow system may consist of only 1 burrow entrance.
4. Record your survey routes using the track function or a line feature on a GPS.
5. Record each pygmy rabbit burrow system (not individual openings), pygmy rabbit sighting, or pygmy rabbit pellet pile (do not record pellets piles unless burrows cannot be found) as a point feature, using a pygmy rabbit data dictionary that includes the essential information portrayed in the Pygmy Rabbits Survey Key and Codes form. If data dictionaries are not being used, record the data point with your gps and record all appropriate data on the Pygmy Rabbit Field Survey Template form. Complete the associated excel spreadsheet with field data and UTM's. Data must be provided to the BLM PFO in a digital format with all appropriate field names and entries as indicated in the BLM PFO data standards.

## Data Standards

- All pygmy rabbit survey data collected by BLM employees, contractors, or other state or federal agencies meant for incorporation into the BLM PFO corporate GIS database must follow these data standards.
- Data field headers for the official excel tables and data dictionaries are indicated by bracketed text [FIELDHEADER] in the Pygmy Rabbit Survey Key and Codes.
- Any codes/words discussed in the, Pygmy Rabbit Survey Key and Codes that are meant to be entered as data, are listed in bold text.
- All data will be entered in capital letters. For all qualitative data in which more than one word is used within a data field, each word should be followed by a single space and then the subsequent word should be entered. For example: A surveyor observes 3 juvenile pygmy rabbits at a burrow complex and he/she wants to portray that in the [COMMENTS] field; JUVENILE PYGMY RABBITS OBSERVED is an acceptable comment in the proper format.
- An Excel or database file (.dbf) with UTMs is required to be submitted with all of the listed attributes completed, and in the order that they are listed. Do not leave data fields blank, empty or unpopulated! If no field-sign, burrow or pygmy rabbit sightings were recorded during the survey, an excel /.dbf file with the pygmy rabbit sign/sighting attributes is not required to be submitted.
- Survey tracks/routes do not have to be submitted as electronic spatial data but should be portrayed in a map of the survey area in the survey report.
- All spatial data submitted to the BLM will be recorded in Universal Transverse Mercator (UTM) coordinates using North American Datum 1983 (NAD83) datum.

## Literature Cited

- Gabler, K.I., J.W. Laundre and L.T. Heady. 2000. Predicting the suitability of habitat in southeast Idaho for pygmy rabbits. *J. Wildl. Manage.* 64(3): 759-764.
- Green, J.S. and J.T. Flinders. 1980. *Brachylagus idahoensis*. *Mammalian Species* No. 125: 1-4.
- Forrest, L.R. 1988. *Field Guide to Tracking Animals in Snow*. Stackpole Books, Harrisburg, PA. 193 pp.
- Katzner, T.E. 1994. Winter ecology of the pygmy rabbit (*Brachylagus idahoensis*) in Wyoming. M.S. thesis, Univ. of Wyoming, Laramie.
- Rachlow, J. and L. Svancara. 2003. *Pygmy Rabbit Habitat in Idaho*. Project Completion Report, Challenge Cost Share, Univ. Idaho, Moscow, ID. 28 pp.
- Rauscher, R. 1997. Status and distribution of the pygmy rabbit in Montana. Final Report, Montana Fish Wildlife and Parks. 19 pp.

Roberts, H. B. 2001. Survey of pygmy rabbit distribution, numbers, and habitat use in Lemhi and Custer Counties, Idaho. Tech. Bull No. 01-11, ID Bur. Land Mgmt.

Simons, E. and J. Laundre. 2001. Predicting suitable habitat for the pygmy rabbit (*Brachylagus idahoensis*) using a Geographic Information System. Project Completion Report, Challenge Cost Share, Idaho State Univ., Pocatello, ID. 13 pp.



## Pygmy Rabbit Survey Key and Codes

- Observation Date [OBS\_MONTH] [OBS\_DAY] [OBS\_YEAR] – The month, day and year that the data point was collected should be recorded. For example: A survey is conducted on June 2, 2010. The data that should be entered into the appropriate data fields are: **6** for [MONTH], **2** for [DAY], **2010** for [YEAR].
- Observer [OBSERVER] – The first initial followed by a single space and then the last name of the individual that recorded the data point should be entered. For example: **R MCWILLIAMS** is the proper format for the name Ron McWilliams. Do not enter R. MCWILLIAMS, R McWilliams or any other permutation of the name.
- Data Source [SOURCE] – Enter the agency name, or an abbreviation or acronym of the agency name (BLM, WGFD, RONS SURVEYS INC, etc.) that conducted the survey. Please be consistent in how you represent your department/agency/university/establishment in all data submissions. Do not spell out your company name in some data submissions and then abbreviate your company name in others.
- Project Name [PROJ\_NAME] – The project name that data was collected as a part of should be entered. For example: a gas well clearance survey performed on the Yellowpoint 7-21 well should be entered as **YELLOWPOINT 7-21**.
- Survey Method [SURV\_METH] – The method in which a survey is performed should be reflected by entering one of 4 codes:

**FOOT** (on foot), **HORSE** (horseback), **INCIDENTAL** (an incidental observation), **OTHER** (any other method that BLM deems to be a suitable survey method)

- Data Correction [DATA\_COR] – The type of correction that was performed on the data should be entered.
  - REALTIME** – real time correction only. For example: Garmin and Trimble are both capable of using this type of correction.
  - POST\_PROC** – post processing correction. For example: Trimble is capable of this but Garmin is not.
- Northing and Easting [NORTHING] [EASTING] – Pygmy Rabbit data points will be collected using UTM coordinates in NAD 83. Record the Northing UTM Coordinates (7 characters) and Easting UTM Coordinates (6 characters).
- Number of Pygmy Rabbits [NUM\_PYRA] – This field should be entered in numeric form (no pygmy rabbits seen = **0** (zero)).
- Complex Details – For all details that apply to the data point collected, use the code **0** = Not present and **1** = Present.

[T] – Clean Trail, [O] – Open, [COL] – Collapsed, [DEB] – Debris Filled, [DIG] – Fresh Digging, [B] – Base of Bush, [R] – Base of Rock, [E] – Enlarged by Predator, [TS] – Tracks in Snow  
[US] – Untracked Snow

- Number of Entrances [NUM\_ENTR] – This is also a numeric field; enter the number of Pygmy rabbit burrow entrances at the location. *NOTE: There may be instances where pygmy rabbit pellets are encountered but burrow entrances cannot be found. If no entrance can be found, 0 may be entered.*
- Quantity of Fresh/Old Pellets [PELLET\_QF] [PELLET\_QO] – Enter one of four codes that reflect pellet quantities of fresh pellets [PELLET\_QF] and old pellets [PELLET\_QO] at the location.

**H** – high, lots, a carpet   **M** – moderate pellets   **L** – low or few pellets   **NA** – no pellets seen

- Soil Type [SOIL] – Enter one of seven codes that reflect the type of soil present at the location. These codes are not official USDA NRCS soil textural codes but are codes used to represent the general soil type. *If soils are encountered that are a mix of these soil types make a call on the type that is most prevalent and use that code.*

**L** – Loam   **S** - Sand   **C** - Clay   **G** - Gravelly   **R** - Rocky   **W** – Snow   **T** -Silt

- Canopy Cover – The canopy cover for each of the four canopy cover types should be estimated and recorded as a percent (without the percentage sign (%)). The estimation should include the total amount (percent) of each canopy cover type within a 20 ft radius plot. For example, include all grasses in plot, even if there is a stratified canopy in which grasses may be underneath sagebrush and forbs may be underneath grasses. This vegetation measurement method is used to reduce underestimation of vegetation present at the site. The total of all of the canopy cover values does not necessary equal 100%.

Shrub Canopy Cover [CC\_SHRUB]   Forb Canopy Cover [CC\_FORB]  
Grass Canopy Cover [CC\_GRASS]   Bare Ground [CC\_BARE]

- Comments [COMMENTS] – Any additional, pertinent information should be entered into this field

## RAPTOR SURVEY PROTOCOL

Bureau of Land Management, Pinedale Field Office  
Raptor Nest Survey Procedures and Data Standards

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

### **SURVEY PROCEDURES:**

Recommended protocol based on peer reviewed publications.

1. BLM must be notified by operators/consultants prior to conducting surveys for any reason within Pinedale field office boundaries and should be notified for areas adjacent to or along the Pinedale field office boundary. This communication is essential for clarification of project specific survey areas, data submission timeframes, report standards and potential additional requirements and to gain authorization if certain data is not required to be gathered and submitted on a project by project basis.
2. Surveys will be conducted in all suitable habitats (rock outcrops, cliffs, ridges, knolls, stream banks, conifer, cottonwood trees, prairie dog towns etc.) from April 15 to June 15 in an attempt to document nest activity. It is recommended for early nesting species, such as eagles and great-horned owls that surveys be conducted as early as possible in the survey window, while late nesting species should be conducted later in the survey window. Authorization must be obtained from, and coordination pursued with BLM biologists if surveys need to be performed outside this time frame.
3. No less than 2 surveys per nesting season (April 15 – June 15) are required to document nesting raptors. One month of elapsed time is required between survey dates. The BLM Authorized officers may require additional surveys on a project by project basis to document if nesting raptors successfully hatched and fledged young. *NOTE: Burrowing owls will be surveyed outside these dates as per the separate burrowing owl protocol. The data collected for burrowing owls remains the same as for other raptors (see data standards below).*
4. Extreme caution should be given to make sure that breeding/nesting/fledging raptors are not disturbed during any and all surveys. All monitoring will be conducted from the farthest distance possible that allows the surveyor to determine the nest activity using a spotting scope. Nests will not be approached on foot during breeding/nesting/fledging seasons (more accurate Universal Transverse Mercator (UTM) locations of nests may be obtained when it has been determined that birds are no longer using the area for the season). If a more precise location is taken on a nest it will be reported as soon as possible. Visits will be as brief as possible.
5. Nests on private property may be digitized but collaboration with the landowners should be pursued to allow access to new locations
6. Nests will not be visited during adverse weather conditions (for example: extreme cold, precipitation events, windy periods or during the hottest part of the day). Optimum weather conditions for surveys are clear calm days.

## Data Standards

- All raptor survey data collected by BLM employees, contractors, or other state or federal agencies meant for incorporation into the BLM PFO corporate Geographic Information System (GIS) data and/or for use when determining exceptions must follow these data standards.
- Raptor data will be broken into 3 separate categories:
  - 1) Spatial data – new and updated nests locations and associated attributes. Spatial data will be collected in UTM coordinates using NAD83 datum and will be submitted in either an Excel or database (.dbf) file.
  - 2) Non-spatial data – nest activity data for all nests that are surveyed. Non-spatial data will be submitted in its own Excel/.dbf file.
  - 3) Summarized activity data – This data will be submitted in a separate Excel/.dbf file after all surveys have been performed for all nests that are surveyed. Depending on the need of the survey, this data will either be submitted at the end of the monitoring season or no later than 2 weeks after a survey is completed.
- All electronic spreadsheets/databases containing raptor data submitted to BLM PFO will use the exact data field headers in the order they appear in the Raptor Survey Key and Codes and will use the data and codes supplied therein. Do not leave data fields blank, empty or unpopulated! Data field headers are indicated by bracketed text [FIELDHEADER] for each piece of data.
- Any codes/words discussed in the Raptor Survey Key and Codes section which are meant to be entered as data, are listed in bold text.
- All data will be entered in capital letters. For all qualitative data in which more than one word is used within a data field, each word should be followed by a single space and then the subsequent word should be entered. For example: A surveyor discovers that a nest is falling from the tree that it is in due to a supporting branch being broken since his/her last visit and wants to portray that in the [COMMENTS] field. An acceptable comment in the proper format would be: NEST IS FALLING FROM TREE. SUPPORT BRANCH IS BROKE.



# Raptor Survey Summary Form

## NEST ACTIVITY (ALL SURVEYED NESTS)

New Raptor Nest: Yes / No      Nest ID: \_\_\_\_\_

Survey #: \_\_\_\_\_ Survey Date : \_\_\_\_\_ Time (military): \_\_\_\_\_

Source (*Entity gathering data*): \_\_\_\_\_ Observer: \_\_\_\_\_

Species and Species Code: \_\_\_\_\_

Occupancy: OCCU (Occupied) / UNOC (Unoccupied) / DNLO (Did not locate) / UNDT (Undetermined) / NA

Activity Status: ACTI (Active) / INAC (Inactive) / INDI (Inactive dilapidated) UNK (Unknown) / HIST (Historical) /

NA

Hatch Status (*Successful to a hatchling*): FAILED / SUCCESSFUL / UNKNOWN / NA / PENDING

NOT REQUIRED

Fledge Status (*Successful to a fledgling*): FAILED / SUCCESSFUL / UNKNOWN / NA / PENDING

NOT REQUIRED

# Adults (*verified*): \_\_\_\_\_ or NOT REQUIRED # Juveniles (*verified*): \_\_\_\_\_ or NOT REQUIRED

Nest Condition: GONE / REMNANTS / POOR / FAIR / GOOD / EXCELLENT / UNKNOWN / PENDING /

NA

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Raptor Survey Summary Form

### NEST LOCATION (NEW AND UPDATED NESTS)

Nest: NEW / UPDATED

Nest ID: \_\_\_\_\_ Survey Date: \_\_\_\_\_

Source: \_\_\_\_\_ Observer: \_\_\_\_\_

Northing: \_\_\_\_\_ Easting: \_\_\_\_\_

Data Correction: REALTIME / POST PROCESSED / PRIVATE\_DIG

General Substrate: EVG (Evergreen) / DEVG (Dead evergreen) / DEC (Deciduous) / DDEC (Dead deciduous)

SHB (shrub) / DSHB (Dead shrub) / ANS (Artificial nesting structure) / MMS (Manmade)

NGS (Natural Gas Structure) / UNG (Underground) / CLF (Cliff) / ROK (Rock)

ERR (Errosional) / GHS (Ground hillside) / CKB (Creek bank)

Specific Substrate: \_\_\_\_\_

Height of Substrate (ft): \_\_\_\_\_ Nest Height (ft): \_\_\_\_\_ (For burrowing owls use **0** ft.)

Aspect: N / NE / E / SE / S / SW / W / NW / OPEN / PENDING

Exposure of Nest: N / NE / E / SE / S / SW / W / NW / OPEN / PENDING

Nest Type: Burrow / Cavity / Ledge / Open Stick / Domed Stick / Other:

Spatial Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Raptor Survey Key and Codes

*Note: Data for all data fields in this protocol will be required to be procured and submitted by the surveyor unless otherwise not required by the authorized officer on a project by project basis. The **NOT REQUIRED** code may be used for data fields that may not be required by the authorized officer and is included within this protocol for BLM data management purposes. Do not use this code unless given prior authorization.*

**NEST ACTIVITY:** Nest Activity data does not need to be recorded spatially. Only the data recorded for the nest location needs to be spatial. Record this nest data in associated spreadsheet/datasheet only.

- New Nest? [NEW] – Enter **YES** for nests that are newly discovered within the nesting season in which the survey is being conducted, and **NO** if the nest that is being surveyed had been previously documented (prior to the current nesting season).
- Nest ID [NEST\_ID] – All official nests Id's will follow the Township (2 digits), Range (3 digits), Section (2 digits), Nest# (2 digit – assigned sequentially to reflect the order in which the nest was found within the section) naming scheme. Nest ID's for new nests will be assigned by the contractor and will follow the same naming scheme. For example: Nest 271131309 is located in Township 27N, Range 113W, Section 13, and was the 9<sup>th</sup> nest found in that section. *NOTE: The most up-to-date official spatial data set should be consulted prior to determining new nests names/IDs. Coordination with the BLM is imperative when naming nests in order to ensure that existing nests are not mistakenly being re-named as new nests and that new nests are not given the names of existing nests. Do not rename existing nests.*
- Survey Number [SURV\_#] – The numerical value associated with the survey being performed should be entered. For example: **1** should be entered for the first survey performed on the subject nest in the current season, **2** should be entered for the second survey performed in the current season etc.
- Survey Date and Time [MONTH] [DAY] [YEAR] [TIME] – The month, day, year and time (military time) that the field survey was conducted should be recorded. For example: A survey is conducted on June 2, 2010 at 7:30 a.m. The data that should be entered into the appropriate data fields are: **6** for [MONTH], **2** for [DAY], **2010** for [YEAR] and **730** for [TIME].
- Data Source [SOURCE] – Enter the agency name or an abbreviation or acronym of the agency name (BLM, WGFD, RONS SURVEYS INC, etc.) that conducted the survey. Be consistent in how you represent your department/agency/establishment in all data submissions. Do not spell out your company name in some data submissions and then abbreviate your company name in others.
- 1. Observer [OBSERVER] – The first initial followed by a single space and then the last name of the individual that conducted the survey should be entered. If numerous observers participated in the survey the surveyors' names should be separated by a comma and a single space.

For example: Ron McWilliams and Fred Thompson perform a survey together.

R MCWILLIAMS, F THOMPSON or F THOMPSON, R MCWILLIAMS are two ways to enter data in the proper format. Note: Do not enter Ron McWilliams' name as

R. MCWILLIAMS, R McWilliams or any other variant of the name.

- Species Code [SPP\_CODE] – Record the species code based on the American Ornithologist's Union (AOU) designation (a code based on the common name). Some non-raptor species are included because they have been known to take over a raptor nest. The following is a list of raptor species, and their

associated codes, that are common within the BLM PFO. If a species is discovered that is not in the list below use the **OTHER** = OTHER SPECIES option and identify the species in the [COMMENTS] field. The **NA** = NOT APPLICABLE code should only be used when reporting faulty and/or duplicate data points or inaccurate nest locations. For example: A surveyor is given a nest location, but finds the coordinates lead to the middle of a lake where a nest could not exist; surveyor should report **NA** in [SPP\_CODE] data field.

<b>AMCR</b> = AMERICAN CROW	<b>NOGO</b> = NORTHERN GOSHAWK
<b>AMKE</b> = AMERICAN KESTREL	<b>NOHA</b> = NORTHERN HARRIER
<b>BAEA</b> = BALD EAGLE	<b>OSPR</b> = OSPREY
<b>BUOW</b> = BURROWING OWL	<b>PRFA</b> = PRAIRIE FALCON
<b>CAGO</b> = CANADA GOOSE	<b>RTHA</b> = RED TAILED HAWK
<b>CORA</b> = COMMON RAVEN	<b>SEOW</b> = SHORT EARED OWL
<b>COHA</b> = COOPERS HAWK	<b>SWHA</b> = SWAINSONS HAWK
<b>FEHA</b> = FERRUGINOUS HAWK	<b>UA</b> = UNKNOWN ACCIPITER
<b>GOEA</b> = GOLDEN EAGLE	<b>UB</b> = UNKNOWN BUTEO
<b>GHOW</b> = GREAT HORNED OWL	<b>UO</b> = UNKNOWN OWL
<b>MERL</b> = MERLIN	<b>UR</b> = UNKNOWN RAPTOR
<b>NA</b> = NOT APPLICABLE	<b>OTHER</b> = OTHER SPECIES

- **Occupancy** [OCCUPANCY] – Record one of four occupancy codes to portray the occupancy status of the nest. *Note: When using this protocol there may be certain situations in the field that may result in a nest being considered occupied but not active. Once a nest is occupied in a given year the occupancy status for subsequent surveys in that year should remain occupied.*

**OCCU** (Occupied) – At least one of the following applies:

1. A pair of adult birds are present in a breeding area/territory/nest during a breeding season
2. Fresh nest lining material
3. Adult presence at or near the nest
4. Recent and well-used perch site near the nest
5. Fresh mutes or whitewash at or near the nest

**UNOC** (Unoccupied) – A habitat that exhibits no evidence of the presence of a breeding pair during the breeding season. If any birds are seen during the survey, please note this in comments. *The UNOC code should be used when the surveyor is very confident that the habitat is not occupied. At a minimum the nest area should have been surveyed twice before the habitat is considered unoccupied.*

**DNLO** (Did Not Locate) – Surveyor searched but was unable to locate the nest. This does not necessarily mean that the nest is gone or destroyed, but merely that the surveyor was unable to find the nest. The area needs to be resurveyed in order to try and locate the nest.

**UNDT** (Undetermined) – Surveyor/Observer was unable to determine whether birds were occupying an area. *The UNDT code should also be used on the initial survey(s) of a nest when no evidence of occupancy is encountered but future surveys could result in a more definitive assessment of nest occupancy. A nest should not remain undetermined at the end of the season unless sufficient justification is provided in the [COMMENTS] field.*

**NA** (Not Applicable) – Code should only be used when reporting faulty data. See example in [SPP\_CODE] discussion.

- **Activity Status** [ACTIVITY] – Enter an activity status code. This activity information should be collected in a manner causing as little disturbance to the raptors as is possible. *Note: Once a nest is deemed active in a given year the activity status for subsequent surveys in that year should remain active.*

**ACTI** (Active) – Defined by the presence of an incubating adult, eggs or young in the current year. A nest in which a breeding attempt was made as indicated by:

For all raptors

1. Eggs observed
2. Young observed
3. Fledged young observed near nest
4. Incubating/brooding adult observed
5. Adults courting in a territory, though they may not necessarily have been seen on a nest

Additional measures for cavity or burrow nesters

1. One or more adults were observed at a nest at least twice throughout the breeding season and at least one month apart
2. An adult was observed at or near the nest and the cavity showed sign of use such as evidence of prey items, mutes, or nesting material

**INAC** (Inactive) – Courting/incubating/brooding adult, eggs or young not present in the current year. *The INAC code should be used when the surveyor is very confident that the nest is not active. At a minimum the nest area should have been surveyed twice before the nest is considered inactive.*

**INDI** (Inactive Dilapidated) – An inactive nest in a state of ruin due to weather, natural aging and/or neglect.

**UNK** (Unknown) – It is unknown whether there are nesting or incubating adults in the area. *The UNK code should also be used on the initial survey(s) of a nest when no evidence of activity is encountered but future surveys could result in a more definitive assessment of whether the nest is active or inactive. A nest should not remain in unknown status at the end of the season unless sufficient justification is provided in the [COMMENTS] field.*

**HIST** (Historic) – Nest historically existed at a particular location but is now gone.

**NA** (Not Applicable) – Code should only be used when reporting faulty data. See example in [SPP\_CODE] discussion.

- **Hatch Status, Fledge Status** [HATCHSTAT][FLDGSTAT] – An active nest will have one of the following 5 codes entered to portray whether or not nesting raptors successfully produced young to a hatchling [HATCHSTAT] or a fledgling [FLDGSTAT].

**FAILED** – The site or pair had no young produced to a hatchling [HATCHSTAT]. The site or pair had no young produced to a fledgling [FLDGSTAT].

**SUCCESSFUL** – The site or pair has produced at least one young to a hatchling [HATCHSTAT]. The site or pair has produced at least one young to a fledgling [FLDGSTAT].

**UNKNOWN** – Certain instances may result in the surveyor not knowing the Hatch Status or the Fledge Status.

**PENDING** – Hatch Status has not yet been determined [HATCHSTAT]. Fledge Status has not yet been determined [FLDGSTAT].

**NA** – The nest was never occupied or active. This code can also be used to report faulty data.

**NOT REQUIRED** – Data was not required for this survey. *Do not use this code unless given prior authorization.*

- Number Adults, Number Juveniles [NUM\_ADS] [NUM\_JUVS] – Enter the numerical value for the number of adults and juveniles seen. Do not enter ranges. If there is uncertainty over the number of raptors present only record the numerical value for the number of verified raptors. If it is suspected that more raptors are present than can be verified, then reflect the uncertainty in the comments [COMMENTS] field. **NOT REQUIRED** may be entered for both of these fields but only with prior authorization.
- Nest Condition [CONDITN] – If unsure of nest condition refer to attached nest photographs to aid in making a determination. Record the observed nest condition using the categories below:
  - GONE** – Nest no longer occurs at the nest location but prior knowledge, suitable habitat or physical evidence indicates that a nest did exist. Do not use this code in reporting faulty data.
  - REMNANTS** – Scant material remaining and not usable unless fully rebuilt. *Burrow nesters – the burrow is completely collapsed but burrow location is recognizable.*
  - POOR** – Nest is dilapidated, in need of major repair to be used. *Burrow nesters- burrow entrance is partially filled in or collapsed but the burrow entrance is still discernable.*
  - FAIR** – Nest is not dilapidated, but needs significant repair in order to be used. Material is slumping or sliding. *Burrow nesters- burrow entrance is not collapsed but may be filled with debris or cobwebs. No mutes or sign of activity.*
  - GOOD** – Nest is in need of only minor attention in order for it to be used. Nest has apparently been maintained within the past year. *Burrow and cavity nesters- burrow/cavity is free of cobwebs and debris but shows no sign of nesting activity such as fresh mutes, whitewash or parts of prey items.*
  - EXCELLENT** – Nest is able to be used with little or no attention or maintenance needed. Bowl intact and nest is in usable condition. Recently maintained or repaired. *Burrow and cavity nesters- burrow/cavity is free of cobwebs and debris and shows sign of nesting such as mutes, or parts of prey items.*
  - UNKNOWN** – The nest is obviously present (i.e. a tree cavity, rock cavity), but because of its location, a condition determination cannot or could not be made.
  - PENDING** – If nest condition is difficult to assess due to the distance from which an observation is being made, this code may be entered and the appropriate data may be gathered later in the season when it has been determined that birds are no longer using the area.
  - NA**– Data point is faulty and there is no potential that a nest existed.

- Comments [COMMENTS] – Any comments related to the nest activity may be entered.

**NEST LOCATION:** Only recorded for new and updated nest locations.

- New vs. Updated Nest [NEW] – NEW - should be entered if the spatial data that is being reported is for a new nest that is not currently in the official database. **UPDATE** – should be entered if the data being submitted is a more accurate location than exists in the current official database.
- Nest ID [NEST\_ID] – See discussion in Nest Activity section of Raptor Survey Key and Codes.
- Survey Date [MONTH] [DAY] [YEAR] – See discussion in Nest Activity section of Raptor Survey Key and Codes.
- Data Source [SOURCE] – See discussion in Nest Activity section of Raptor Survey Key and Codes.
- Observer [OBSERVER] – See discussion in Nest Activity section of Raptor Survey Key and Codes.
- Northing and Easting [NORTHING] [EASTING] – Nest locations will be collected using UTM coordinates in NAD 83. Record the Northing UTM Coordinates (7 characters) and Easting UTM Coordinates (6 characters). If a nest observation point (location where you observe the nest at a distance) is being recorded for the nest location during a survey, portray an estimate of the offset (in feet) and general direction the nest is from the point in the [SP\_COMMENTS]. Obtain a more accurate location later in the year when the birds are no longer using the area.
- Data Correction [DATA\_COR] – The type of correction that was performed on the data should be entered.

**REALTIME** – real time correction only. For example: Garmin and Trimble are both capable of using this type of correction.

**POST\_PROC** – post processing correction For example: Trimble is capable of this but Garmin is not.

**PRIVATE\_DIG** – code only to be used for nests on private land where access was not granted or where nests can't be accessed due to safety concerns of navigating treacherous terrain; nest location therefore had to be estimated.

- Nest Substrate – There will be two substrate fields, general and specific. General substrate must be designated by one of fifteen categories while specific substrate should be a descriptive entry, possibly with tree species information if applicable.
  - General Substrate [SUBS\_GEN] – Record one of 15 general category codes.
    1. **EVG** = Evergreen
    2. **DEVG** = dead evergreen
    3. **DEC** = Deciduous
    4. **DDEC** = dead deciduous
    5. **SHB** = Shrub
    6. **DSHB** = dead shrub
    7. **ANS** = Artificial Nesting Structure (for example: nest box or pole structure)
    8. **MMS** = Manmade Structure (for example: telephone or power pole, old barns, bridges)

9. **NGS** = Natural Gas Structure (for example: condensate tank – distinct from a manmade structure due to maintenance on a regular basis)
10. **UNG** = Underground
11. **CLF** = Cliff (rock)
12. **ROK** = Rock Feature (for example: rock outcropping, rock pillar)
13. **ERR** = Errosional feature (for example: Badland type feature – prone to filling with sediment or washing away)
14. **GHS** = Ground Hillside
15. **CKB** = Creek Bank

- Specific Substrate [SUBS\_SP] – Enter a more specific description of the substrate. For example: a more specific description of a ROK substrate could be GRANITE or SANDSTONE while an EVG substrate could be PINE or SPRUCE. **PENDING** may be entered if specific substrate data cannot be determined from a distance and will be gathered later in the year. 100 characters max.
- Height of Substrate [SUBS\_HT] – Record in feet, an approximation of the total height of substrate upon/in which the nest is located. For example: a golden eagle nest is located on top of a cliff which is approximately 100 feet high. The height of the substrate is 100 feet and the data that should be entered is **100** (without the ft. label of measurement). **PENDING** may be entered if the height of the substrate cannot be determined from a distance and will be gathered later in the year
- Nest Height [NEST\_HT] – Record in feet, an approximation of the height of the nest on/in the substrate. For example: a red-tail hawk nest is located approximately 20 feet off the ground in a cottonwood tree that is 30 feet high. The nest height is 20 feet and the data that should be entered is **20** (without the ft.). **PENDING** may be entered if nest height data cannot be determined from a distance and will be gathered later in the year. *NOTE: For burrowing owl nests heights use 0.*
- Aspect of Substrate, Exposure of Nest [ASPECT][EXPOSURE] – Enter the general direction in which the substrate is facing [ASPECT] or the general direction from which the nest is exposed [EXPOSURE] using the following codes: **N, NE, E, SE, S, SW, W, NW** or **OPEN** if there is no distinguishable aspect/exposure of the substrate/nest. Any more detailed aspect/exposure data should be entered in spatial comments [SP\_COMMENTS] field. **PENDING** may be entered for either of these data fields if data cannot be determined from a distance and will be gathered later in the year.
- Nest Type/Structure [TYPE] – One of six codes should be entered to portray the nest type:
  1. **B** = Burrow
  2. **C** = Cavity
  3. **L** = Ledge
  4. **OS** = Open Stick
  5. **DS** = Domed Stick
  6. **OT** = Other (explain in the [SP\_COMMENTS] field)
- Spatial Comments [SP\_COMMENTS] – Any unique features, physical relationships to other nests, proximity to human disturbances, other pertinent observations or any other comments about the visit or observation that the observer feels are appropriate should be entered into comments. These comments should be specific to spatial (nest location) data and should not include any comments related to nest activity.

**SUMMARIZED ACTIVITY DATA:** An excel/.dbf file will be provided subsequent to and independent of the raptor activity data submissions discussed above. This file should summarize the entire season's worth of activity data for each nest (one row of data per nest).

- Nest ID [NEST\_ID] – See discussion in Nest Activity section of Raptor Survey Key and Codes.
- Species Code [SPP\_CODE] – Use the proper species code discussed in Nest Activity section of Raptor Survey Key and Codes.
- Occupancy [OCCUPANCY] – See discussion in Nest Activity section of Raptor Survey Key and Codes.
- Activity Status [ACTIVITY] – See discussion in Nest Activity section of Raptor Survey Key and Codes.
- Nest Condition [CONDITN] – See discussion in Nest Activity section of Raptor Survey Key and Codes.

## RAPTOR NEST CONDITION PHOTOGRAPHS

NOTE: Condition doesn't determine occupancy

**EXCELLENT: Bowl intact and nest is in usable condition.**



Ferruginous Hawk



Red Tailed Hawk



Ferruginous Hawk



Bald Eagle

**GOOD: Nest is in need of only minor attention in order for it to be used.**



Ferruginous Hawk



Golden Eagle



Ferruginous Hawk



Red-tailed Hawk

**FAIR: Nest is not dilapidated, but needs significant repair in order to be used, material is slumping or sliding**



Ferruginous Hawk



Red-Tailed Hawk



Red-Tailed Hawk

**POOR:** Nest is dilapidated, in need of major repair to be used.



Ferruginous Hawk



Ferruginous Hawk

**REMNANTS:** Scant material remaining and not usable unless fully rebuilt



Ferruginous Hawk

## BURROWING OWL SURVEY PROTOCOL

Adapted from:  
Recommended survey protocol and actions to protect nesting Burrowing Owls,  
State of Colorado Department of Natural Resources,  
Division of Wildlife. March 2007.

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

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

### Seasonal Timing

Burrowing owls typically start building nests in Wyoming mid April to late May. However, active nesting and fledging has been recorded and may be expected from April 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 in the Pinedale Field Office for any activities occurring between **1 May and 31 October**. No Burrowing Owls are expected to be present between early November and late 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).

### Data Collection

All burrowing owl survey data will follow the data standards for the collection of raptor data (see raptor survey field summary form).

### 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 cannot 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), though this value may be adjusted as necessary to account for project size and topography.

## 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. When conducting standard monitoring surveys, surveys should commence no earlier than 1 May. There should be three consecutive surveys conducted no less than one month apart to determine if Burrowing owls inhabit a particular area. When surveying an area for an exception, the three surveys may be conducted one week apart; however, they must still occur after 1 May.

## 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 primary call (*quick-quick-quick*)
- 30 seconds silence
- 4 minutes of silence

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

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

David Klute

All-bird Conservation Coordinator

Colorado Division of Wildlife

6060 Broadway

Denver, CO 80216

Phone: 303-291-7320

Email: [David.Klute@state.co.us](mailto:David.Klute@state.co.us)

### *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>

### **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.

# BALD EAGLE WINTER ROOST SURVEY PROTOCOL

Adapted from:  
WILDLIFE SURVEY PROTOCOL  
FOR COAL BED NATURAL GAS DEVELOPMENT  
POWDER RIVER BASIN WILDLIFE TASKFORCE  
February 2005

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

## **Recommended protocol based on peer reviewed publications.**

1. Survey stands of coniferous and cottonwood trees during the period of Dec.1 to March 1 from 1 hour before sunrise or sunset to 1 hour after sunrise or sunset. Surveys after this period are not reliable. Late afternoon surveys may be preferable as eagles often leave roost sites at or before dawn and may return to roost throughout the afternoon.
2. Helicopters or fixed-wing airplanes can be used for surveys. If not following a drainage, suspected roost habitat should be flown on north - south transects with lines about one km (.6 mi) apart. Under conditions of marginal light, transect width should be narrowed.
3. Transects should be flown at about 100-150 meters (300-450 ft) above ground level.
4. Whenever possible, two observers should be used in addition to the pilot so that one observer is always looking away from the sun regardless of the direction the aircraft is flying.
5. Surveys should begin at the east edge of the survey area and work west to minimize the possibility of the plane flying over roost sites prior to them being observed.
6. Document all bald eagle observations using GPS equipment (UTMs - NAD83).  
Record:
  - date,
  - location,
  - number seen by age class (adult, juvenile, unknown eagle)
  - tree type and habitat
  - any additional comments

Survey will consist of at least 3 visits, with at least 1 week between visits. Visits should extend throughout the winter roosting season (recommended minimum of 1 visit per month), as eagle use is largely dependent on regional weather patterns, and eagle use often increases as the roosting season progresses. APD analysis shall proceed with the completion of 3 visits so as not to delay APD analysis for the entire three month survey period.

## Bald Eagle Winter Roost Survey Summary Form

Survey Date: \_\_\_\_\_ Survey Number: \_\_\_\_\_ Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Location: \_\_\_\_\_

Observers Names: \_\_\_\_\_

Affiliation: \_\_\_\_\_ Data Correction: \_\_\_\_\_

Average Weather Conditions:

Temperature: \_\_\_\_\_ Wind: \_\_\_\_\_

Cloud Cover: \_\_\_\_\_

UTM	# Juveniles	# Adults	# Unknown	Habitat/Roost Tree Type	Comments
E N				_____ _____ _____	_____ _____ _____
E N				_____ _____ _____	_____ _____ _____
E N				_____ _____ _____	_____ _____ _____
E N				_____ _____ _____	_____ _____ _____
E N				_____ _____ _____	_____ _____ _____
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## Bald Eagle Winter Roost Survey Key and Codes

**SURV\_DATE** (Survey Date): Date of the survey.

**SURV\_#** (Survey Number): Indicate the number of the survey. If area was surveyed once before in the same season, enter the number two.

**START; STOP** (Start time and start time): Record the military time that you started the flight and the time that you land.

**LOCATION**: General location information for the flight, such as Green River or New Fork River.

**OBSERVER**: Record the names of all individuals who partook in sign/sighting identifications

**AFFILIATION**: Record the name of the organization the observers are affiliated with.

**Data Correction (DATA\_COR)**: Record which type of correction was performed on the data.

REALTIME = real time correction only (e.g. Garmin)

POST\_PROC = post processing correction (e.g. Trimble)

**TEMP, WIND, CLOUDCVR**:

Indicate the average temperature and wind speed present throughout the duration of the survey. Record one of the following codes for cloud cover

0 = 0 - 15% cloud cover

3 = 76 – 100% cloud cover

1 = 16 – 50% cloud cover

4 = Fog

2 = 51 – 75% cloud cover

5 = Drizzle

**UTMS: NORTHING and EASTING**: Record the location of the roost/bald eagle sighting

**Number of Juveniles, Number of Adults**: Indicate the number of adults (**#\_ADS**), the number of juveniles (**#\_JUV**) and the number of unknown age eagles (**#\_UNK**) seen.

**HAB\_TREE** (Habitat Type/ Roost Tree Type): Describe the type of tree the birds are seen roosting in as well as associated habitat. A general description is adequate. Example: Cottonwood tree, approximately 50 feet from the north edge of the Green River floodplain.

**COMMENTS**: Any additional information

# YELLOW-BILLED CUCKOO SURVEY PROTOCOL

Adapted from:  
Yellow-billed Cuckoo (*Coccyzus americanus*):  
A Technical Conservation Assessment  
Prepared for the USDA Forest Service,  
Rocky Mountain Region,  
Species Conservation Project  
March 25, 2005  
David A. Wiggins, Ph.D.

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

The current and historical statuses of yellow-billed cuckoos in Wyoming are difficult to assess. Knight (1902) did not include the species in his discussion of Wyoming birds, suggesting that they were rare in the state in the late 1800s. Scott (1993) noted that they were regularly seen in the eastern half of the state during the summer months. Dorn and Dorn (1999) considered it a rare summer resident and showed scattered summer records throughout the eastern and southern portions of the state. It appears that cuckoos likely spread westward into eastern Wyoming following the construction of dams and impoundments on the Great Plains and the subsequent establishment of dense, riparian woodlands along affected rivers and streams.

## ***Nesting habitat***

Yellow-billed cuckoos prefer to nest in open woodlands with an understory of dense vegetation, especially near water. In western portions of the range, nests are often situated close to water, likely because of the lack of dense vegetation away from water. Western cuckoos (including those in the western Great Plains) prefer to nest in willow (*Salix* spp.), cottonwood (*Populus* spp.), and mesquite (*Prosopis* spp.), but they will also utilize orchards (Laymon 1980, Walters 1983). In western portions of the Rockies, most recent summer cuckoo sightings have been made along river valleys, including the Gunnison, Colorado, and Yampa rivers in Colorado (Andrews and Righter 1992) and the Green River in Wyoming (Wyoming GAP analysis web site: [www.wygisc.uwyo.edu/wbn/](http://www.wygisc.uwyo.edu/wbn/)).

## ***Foraging habitat***

Cuckoo foraging habitat is similar to that used for nesting. Foraging areas during the breeding season averaged 19.6 ha in California (Laymon 1980), but foraging habitat has not been quantified in eastern portions of the range. It is likely that a healthy forest understory is a critical component of cuckoo foraging areas, as most nests are placed in or near such areas. The only detailed observations of cuckoo foraging behavior (from California) found that most attempts at prey capture occurred at heights greater than 3 m (Laymon 1980). Overall, 55 percent of all prey items in California were taken in riparian vegetation, 33 percent from white alder (*Alnus rhombifolia*) tracts, and 12 percent from orchards (Laymon 1980). Hughes (1999) noted that cuckoos often foraged in upland areas away from riparian woodlands, especially prior to nesting.

## ***Surveying for Yellow-billed Cuckoos***

A generally accepted survey protocol for yellow-billed cuckoos has not been published, but draft protocols used in several western states are shown below. The generally accepted monitoring protocol is to census riparian woodlands by using tape playbacks of the “kowlp” call. A minimum of three and a maximum of five censuses

should be carried out during the breeding season, generally from 15 June to 10 August, with at least 12 days between successive census attempts. **Table 6** outlines specific monitoring techniques.

### **REQUIRED SURVEY SUMMARY REPORT**

A report summarizing survey data should be prepared for each project and submitted to the lead agency. In every report submitted, the completed Yellow-billed Cuckoo survey summary form is required. If there is sign or sighting, an excel file is required (to be incorporated by the PFO into GIS) with all of the attributes listed completed, and in the order that they are listed. If collected with a Trimble unit, only the complete shapefile with all the attributes is required. If there is no sign or sighting, an excel file is not required.

**Table 6.** Survey methods currently in use for yellow-billed cuckoos in the western United States. Techniques were provided by participants in the yellow-billed cuckoo symposium, Cooper Ornithological Society annual meeting, May 2003, Flagstaff, Arizona.

<b>Method</b>	<b>Explanation</b>
Survey frequency: 3 to 5 times, between 15 June and 10 August	At least three surveys, spaced at intervals of at least 12 days, with a later survey in August if possible.
Survey stops every 100 to 200 m in appropriate habitat.	Call broadcasts are generally effective up to 100 m.
Recorded should be played back 5 to 10 times at each stop, with 30 to 60 s intervals.	10 playbacks when using 200 m intervals, 5 when using 100m intervals.
Time of day: mid-morning (best) or early evening	Avoid surveys during mid-day heat. 0630 to 1200 is the best period.
Weather conditions: No rain, little wind	Avoid surveys during rain, and when wind is greater than 7 mph.
Call playback: Only the “kowlp” call should be used for surveying	Cuckoos habituate to calls, so other call types should be used only for specific (e.g., nest surveys) purposes.
Avoid checking nest contents: parents will abandon during incubation period	Surveys should be aimed at locating adults - females will often abandon the clutch if disturbed at the nest during incubation.

# Yellow-billed Cuckoo Survey and Detection Form

Site code   Visit # \_\_\_\_\_ Date (mm/dd/yy): \_\_\_\_\_

| State |

Drainage code | Site code | Surveyor: \_\_\_\_\_

Site Name: \_\_\_\_\_ USGS Quad Name: \_\_\_\_\_ Scale(circle):1:24000 1:62500

County: \_\_\_\_\_ Management Unit or Owner: \_\_\_\_\_

Ownership (circle all that apply): 1-BLM 3-USFS 5-NWR 7-State 2-BOR 4-NPS 6-Tribal 8-Private 9-Other \_\_\_\_\_

UTM Site Coordinates: Start       E       N

Stop       E       N

Collect GPS data in Zone 12 using NAD 83

UTM Source (circle): 1 - PLGR 2 - post processed 3 - generic 4 - Map Data Correction: \_\_\_\_\_

Site elevation: \_\_\_\_\_ m Length of area surveyed (sum segments): \_\_\_\_\_ km

Est. area of patches (total area surveyed): \_\_\_\_\_ ha

Start time: \_\_\_\_\_ Stop time: \_\_\_\_\_ Total hrs.: \_\_\_\_\_

### UTM coordinates for individual patches within this site

#Stops	Patch #	Start coordinates	Stop coordinates	YBCU?	Photo#
_____	1	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____
_____	2	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____
_____	3	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____
_____	4	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____
_____	5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____
_____	6	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____
_____	7	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____
_____	8	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E N	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> N	<input type="checkbox"/>	_____

### Distance Between patches (m)

1→2 \_\_\_\_\_ 2→3 \_\_\_\_\_ 3→4 \_\_\_\_\_ 4→5 \_\_\_\_\_ 5→6 \_\_\_\_\_ 6→7 \_\_\_\_\_ 7→8 \_\_\_\_\_

### Estimated area of patches (ha)

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_ 7 \_\_\_\_\_ 8 \_\_\_\_\_

Remember to take photographs of habitat in each patch and attach a copy of the USGS quad section.

Site code

Visit # \_\_\_\_\_ Date (mm/dd/yy): \_\_\_\_\_

YBCU Detect # (# tape plays)	Patch #	# times tape played before response	Surveyor	Time 24 hr	Detect.type: 1 - Casual: A = aural V = visual B = both 2 - Playback: A, V, or B	Vocaliz. Type 1 kowlp 2- knocker 3 - coo 4 - one note 5 - oher 6 - none	BreedingStatus: M -mated S -single U -unk. N- Nest: (say why in notes)	Age: A -adult J -juven. U -unk.	Note #	Detection UTM's (Where first detected)
1										E N
2										E N
3										E N
4										E N
5										E N
6										E N
7										E N
8										E N

Survey summary: # Adults \_\_\_\_\_ # juveniles \_\_\_\_\_ # territories \_\_\_\_\_ # pairs \_\_\_\_\_ # singles \_\_\_\_\_

Additional Bird Species Detected (use A.O.U. codes)

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## *Instructions for Completing the Yellow-billed Cuckoo Survey and Detection Form*

These forms were provided by Murrelet Halterman (cuckoobuster@yahoo.com) and were developed in cooperation with the Arizona Game and Fish Department, the USGS Colorado Plateau Field Station in Flagstaff, Arizona, and with information provided by S.A. Laymon (personal communication).

### **Explanation of survey form codes:**

**Page 1: Site code** is the location of the area you will survey on a given day. Use the standard 2-letter for State, the four-letter code for the **Drainage Code** (ex - Feather River is FEAT, Cosumnes River is COSU) and the **Site code** is the segment of the drainage being surveyed (leave this blank). Visit and Date are both self-explanatory. This information is repeated at the top of each page in case the data sheets become separated.

**Site Name** is the actual name of the area to be surveyed (ex. Mineral Wash west, or Woodson Bridge). **USGS Quad Name** is the name of the topo sheet from which information was taken. Scale refers to the topo map. **County** and **Management Unit or Owner** can be determined from the topo map. **Ownership** again can be determined from either the topo map or other information provided to the surveyor. **UTM Site Coordinates** are the east and north location of the site. **UTM Source** is the means by which the UTM coordinates were determined. **Data Correction** (DATA\_CORR) describes which type of correction was performed on GPS data: REALTIME = real time correction only (e.g. Garmin) or POST\_PROC = post processing correction (e.g. Trimble). **Site elevation** should be determined from a topo map since the GPS units are very unreliable. **Length of area surveyed** is the total length of habitat (in km) surveyed on a given day. This can be determined using the UTM start and stop points minus the **Distance between Patches**. **Est. area of patches** is the total area surveyed on a given day. This can be determined from the summation of the **Estimated Area of Patches**. **Start time, Stop time, and Total hrs** are for the site surveyed, not for the individual patches surveyed.

**UTM coordinates for individual patches within this site** delineates the beginning and end of individual patches within the survey site for a given day. **#Stops** is the number of survey stops made within the patch. **Patch #** is the number of the patch surveyed within the site being surveyed. A patch is defined as an area of habitat 5 ha or greater in extent that is 300 meters or more from the next closest patch. **Start coordinates** and **Stop coordinates** are again determined either with a hand-held GPS unit or from a topo map. **YBCU?** is a check-off to indicated if cuckoos were detected at that patch. **Photo#** is the numbers on the roll of film of the photos taken of that particular patch.

**Distance Between patches** is the m between each patch surveyed. **Estimated area of patches** is the area in hectares of each patch. This can be determined from a topo map or estimated (remember - one ha is 100 m X 100 m).

Take at least 2 photographs of habitat in each patch and attach to the data sheets a copy of the USGS quad section with the patch identified. Take at least one photo from outside the patch, and indicate which where the photo was taken (i.e. - #23 on north side of patch looking south). When starting each new roll of film take a picture of a card stating the survey area and the roll number - (i.e. - NCAL roll#2; or LCR roll#1). This way it will be easy to identify each roll of film and match it with the site notes.

**Page 2:** This sheet is the information to be filled out each time a cuckoo is detected. **Patch number** is the patch the YBCU was located in (there can be multiple detections for a patch). For **Surveyor** is the use the first letter of your first, middle, and last name. **Time** is the time the cuckoo was first detected. **Detection type** is categorized by **casual** (the tape was not played), **playback** (bird was responding to the tape), and **nest** (a nest was located). Within each of these categories is the type of response - was the bird heard only (aural), seen only

(visual), or both. **Vocalization Type** – if the cuckoo was vocalizing, which vocalization was it doing? It is possible to have more than one type of vocalization listed. **Breeding Status** is determined from a combination of vocalization and behavior. If a bird is cooing and very interested in the tape, it is unmated. If it gives either a kowlp or a knocker call and shows little interest in the tape, it is probably mated. If it shows some interest in the tape, but never calls, it would probably be unknown. **Age** is determined by bill color, tail color and length, and vocalizations. Adults have yellow on the lower mandible, the tail is approx. as long as the body, and is black with bold white spots. Juveniles have little or no yellow on the lower 36 the tail is shorter and dark gray with smudgier tail spots. **Note #** refers to any notes made on the reverse of these sheets. Notes should include behavioral observations as well as descriptions of calls and tail markings that can be used to determine sex and breeding status. **Detection UTM** – the UTM coordinates of any cuckoos detected.

Please summarize the day's findings at the bottom of the page. Include the initials of all members of the survey team as well as the date. In the space provided list additional riparian species seen at the site. We are particularly interested in other riparian obligates such as yellow warblers, summer tanagers, Bell's vireos, and yellow-breasted chats.

**Page 3: Vegetation characteristics** is an estimate of the percentage of native (willow, cottonwood, etc.) vs. exotic (Tamarisk, Arundo, etc.) vegetation in the area. The next two categories are a ranking of the major plants present at the site. In an area that dominated by cottonwoods, with lesser quantities of willow and alder, these would be ranked as follows: **1** cottonwoods, **2** willow, **3** alder. If the understory was dominated by wild grape, but also had blackberry and poison oak, it would be ranked as follows: **1** wild grape, **2** blackberry, **3** Other - poison oak. **Average Canopy Height** is for all of the areas surveyed on a given day, as are **Estimated Canopy Cover** and **Average Understory Height** and **Understory Cover**. The final section on the page is for describing differences among the patches surveyed, as well as logging photo numbers.

The final lines of the page are to record names of surveyors as well as who entered the data in the computer and the date this was done.

**Page 4:** This space is provided for additional comments, notes, etc.

### **Instructions for completing the Yellow-billed Cuckoo Survey and Detection Form - Repeat Visits**

This is the same as the form used for the first visit, bit without the habitat information. If more space is required, then additional sheets should be attached.

## WHITE-TAILED PRAIRIE DOG SURVEY PROTOCOL

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.*

### Delineation of Survey Areas

Until the time that the Service, States, and other Federal agencies are able to identify reintroduction areas and to classify other areas as being free of ferrets, surveys for black-footed ferrets will usually be recommended. During this interim period the following approach is recommended to determine where surveys are needed. A white-tailed prairie dog (*Cynomys leucurus*) town or complex of less than 200 acres having no neighboring prairie dog towns may be cleared without a ferret survey. White-tailed prairie dog towns or complexes greater than 200 acres but less than 1,000 acres, may be cleared after completion of a survey for black-footed ferrets provided that no ferrets or their sign were found during the survey. Before any federally funded or permitted activities are conducted on black-tailed or white-tailed prairie dog towns or complexes greater than 1,000 acres, the appropriate Service office should be contacted to determine the status of the area for future black-footed ferret reintroductions. That office also will determine whether a survey for black-footed ferrets should be completed.

### Defining a Prairie Dog Town

For the purpose of this document a prairie dog town is defined as a group of prairie dog holes whose density meets or exceeds 20 burrows per hectare (8 burrows/acre), unless otherwise specified by the BLM. Prairie dog holes need not be active to be counted but they should be recognizable and intact; i.e., not caved in or filled with debris

### **SURVEY METHODS:**

1. The entire survey area is searched from ATV, or on foot where necessary, to locate prairie dog colonies using visually overlapping transects.
2. Transect spacing will range from 50-100 m to enable a thorough search of the survey area.
3. Map each colony by GPS-ing the location of a burrow on the edge of a colony, and then searching the area within 30 meters of this burrow for the next burrow occurring along the colony edge.
4. If another burrow is located within 30 meters, the location is collected as a polygon vertex. This technique is repeated until the colony edge is defined by the points (i.e., vertices) located along the perimeter and the biologist returns to the starting burrow, closing the polygon and providing accurate delineation of the colony.
5. Collapsed burrows are not considered the edge of a prairie dog colony. Open but unoccupied burrows are considered the edge of a colony.
6. Based on the assumptions underlying this methodology, prairie dog colonies delineated in this fashion should yield at least 8 burrows per acre, which compiles with the definition of a prairie dog town (Biggins et al. 1988).

### Prairie Dog Town/Complex Acreage Determination (Biggins et al. 1988)

To determine the acreage that a prairie dog town or complex of towns occupy, several steps are required. A diagrammatic (spatial) example of a simulated complex is presented here. Before starting this exercise, those prairie dog towns that will be affected by the action and those in the surrounding area should be identified on a map having a scale of 1:24,000. Once this has been done, the following procedures should be followed:

- 1) Determine the northernmost prairie dog town on the map. Start at the northernmost point of the northernmost town of the complex being considered.
- 2) Pivot a 7-km (4.34 mile) line segment clockwise from due north until it touches a point on a town (see example). The line between the initial point and the second point forms the first segment of the polygon.
- 3) From the second point, pivot the 7-km line clockwise from alignment with the first segment until it touches a third point on a town. This forms the second segment of the polygon.
- 4) If a convex town perimeter prevents "pivoting" the 7-km line to another point, move clockwise around that perimeter until Step 3 can be accomplished. The convex perimeter of a town can thus become a segment of the boundary of the complex.
- 5) Continue pivoting the line from town to town until the polygon becomes closed.
- 6) In rare circumstances, a complex may contain one or more large prairie dog free spaces (diameter = 7 km). Delete this space from the area of the complex, circumscribing it as follows.
- 7) Start at the southernmost point of the northernmost town in the prairie dog free space.
- 8) Pivot a 7-km long line counter-clockwise from due south until it touches a point on a town.
- 9) If a concave town perimeter prevents the "pivoting" 7-km line from contacting another point, move counter-clockwise around that perimeter until (b) can be accomplished.
- 10) Repeat step (b) until the polygon becomes closed.

## REFERENCES

Biggins, D., B. Houston, B. Miller, B. Oakleaf, T. Clark and A. Dood. 1988. A system for evaluating black-footed ferret habitat. U.S. Fish and Wildlife Service Draft Report, 40 p. plus appendix.

# White-tailed Prairie Dog Survey Summary Form

Observers: \_\_\_\_\_

Affiliation: \_\_\_\_\_ Data Correction: \_\_\_\_\_



Location or Identifier	Township, Range, Section, 1/4, and Shapefile ID	Date (mo/day/yr)	Activity (Y, N, U)	Size (acres) <u>all</u> mounds	Density (L, M, H)
1.					
<b>Comments:</b>					
2.					
<b>Comments:</b>					
3.					
<b>Comments:</b>					
4.					
<b>Comments:</b>					
5.					
<b>Comments:</b>					
6.					
<b>Comments:</b>					

## White Tailed Prairie Dog Survey Key and Codes

**SURVEY DATE (SRV\_DATE):** mm/dd/yyyy

**OBSERVER:**

Record the names of all individuals who partook in sign/sighting identifications.

**AFFILIATION (AFFILI):** Record the name of the organization the observers are affiliated with.

**DATA CORRECTION (DATA\_COR):** Record which type of correction was performed on the data.

REALTIME = real time correction only (e.g. Garmin)

POST\_PROC = post processing correction (e.g. Trimble)

**PDT\_ID:** A unique value for each colony.

**TWNSHP, RANGE, SECTION:** The township, range and section that the majority of the prairie dog colony is located.

**UTM:** Northing and Easting for prairie dog complex.

**ACTIVITY:**

Define whether or not the colony is occupied using one of the following codes:

YES Animals or fresh sign seen

NO Mounds present but neither fresh sign nor animals seen and mounds show various stages of abandonment

UNK Mounds present but neither fresh sign or animals seen, mounds may or may not show various stages of abandonment OR the survey was not at the time of day and/or season when animals or fresh sign would be expected to be seen

**SIZE\_ALL**

Record the acreage of the entire colony as mapped per the protocol.

**DENSITY:**

Estimate the number of burrows per acre throughout the colony.

Low <5 burrows/acre

Medium 5 – 10 burrows/acre

High >10 burrows/acre

**COMMENTS:** Any additional comments.

## UTE LADIES'-TRESSES ORCHID SURVEY PROTOCOL

Adapted From:  
RECOMMENDATIONS AND GUIDELINES FOR  
UTE LADIES'-TRESSES ORCHID (*Spiranthes diluvialis*)  
RECOVERY AND FULFILLING SECTION 7 CONSULTATION RESPONSIBILITIES  
FWS June 1995

*These survey procedures and data standards may be changed at any time at the discretion of the BLM.  
Survey sheet will be provided upon survey request*

As a follow-up to a recent Ute ladies'-tresses orchid recovery team meeting the U.S. Fish and Wildlife Service (Service) has prepared these recommendations and guidelines for Service staff and partners to further orchid recovery and aid in conducting Section 7 consultations.

Ute ladies'-tresses orchid (*Spiranthes diluvialis*) is endemic to moist soils near springs, lakes, or perennial streams. The elevational range of known orchid occurrences is 4,200 to 7,000 feet. Most of the occurrences are in alluvial substrates along riparian edges, gravel bars, old oxbows, and moist to wet meadows in the floodplains of perennial streams, but some locations in the eastern Great Basin are in similar situations near freshwater lakes or springs. The orchid appears to require moisture in the rooting zone, typically provided by a high ground water table, through the growing season and into late summer or early autumn. The orchid is well adapted to disturbances caused by stream movement through floodplains over time, and is tolerant of other disturbances, such as grazing, that may mimic natural disturbances in their effects on riparian habitat. Suitable potential habitat is typically found along streams that experience heavy spring runoff of sufficient magnitude to create movement and reshaping of the stream channel. Plants usually occur as small scattered groups and occupy relatively small areas within the riparian system. It is not known how, under what conditions, and in what time frame, the orchid is dispersed and new viable colonies established. The orchid is generally intolerant of deep shade and strongly alkaline or clay soils and cannot compete with aggressive rhizomatous species such as reed canarygrass (*Phalaris arundinacea*) and cattails (*Typha spp.*) or exotic species such as Canada thistle (*Cirsium arvense*).

"Typical" orchid habitat, as described above, can be found throughout the Intermountain and Rocky Mountain west and the western plains. However, the orchid only occurs in significant numbers in two locations, in and near Boulder, Colorado along the east slope of the Front Range, and in the Uinta Basin along the south slope of the Uinta Mountains. Otherwise, it is found infrequently in widely scattered locations. Recent discoveries of colonies in Wyoming and Montana indicate that surveys for and inventories of orchid occurrences continue to be an important part of orchid recovery planning and implementation. The recovery team has identified and prioritized areas where survey and inventory of the orchid are important.

### SECTION 7 CONSULTATION AND UTE LADIES'-TRESSES ORCHID SURVEYS

Potential habitat is fairly common, yet orchid occurrences are infrequent and unpredictable. Because the probability of actually finding an orchid colony at any one location is small, the Service wishes to avoid the regulatory burden of requiring surveys under Section 7 of the Endangered Species Act for all projects throughout the potential range of the species. However, in order to recover the orchid, it is important that surveys be conducted in appropriate locations and in response to impending impacts to colonies or potential habitat. The Service has therefore developed the following recommendations and guidelines to help ensure that surveys are conducted where and when appropriate

## General Guidelines for Surveys

Field Offices are encouraged to take the following actions regarding surveys for Ute ladies'-tresses orchid:

1. Solicit funds and organize partnership and volunteer efforts to conduct surveys in identified high priority areas, especially those in which future impacts are likely to occur. Survey efforts should be coordinated with state Natural Heritage Programs and with the orchid recovery team.
2. Acquaint all Service staff with the orchid, high priority areas for surveys, habitat preferences, and species identification. Staff should have the orchid in mind when visiting wetlands or streams for any purpose, and also when reviewing projects of any type, for example, fishery, wetland, or stream enhancement or alteration projects, FERC and 404 licenses, and surveys for other species of interest that may be in or near potential orchid habitat.
3. Develop relationships with state and other Federal partnership agencies to acquaint them with orchid habitat, appearance, and priority areas for survey. Encourage them to look for the orchid when in suitable areas and notify Service staff about projects that are planned for potential orchid habitat. Especially important partners include state wildlife agencies, state stream management or water quality agencies, Corps of Engineers, Natural Resources Conservation Service, Bureau of Reclamation, Forest Service and Bureau of Land Management.
4. Require surveys as part of Section 7 consultation under appropriate conditions in areas identified as high priority for surveys. Appropriate conditions include:
  - a. Large areas of potential habitat will be impacted. Examples of projects that can result in impacts to large areas of potential habitat include stream channelization and stabilization, stream habitat improvement, projects that impact downstream hydrology and hydrograph such as dams, diversions, and hydropower, gravel mining operations And streamside recreation trails.
  - b. Planning time frame allows a survey to be conducted, i.e., project will not be initiated until after the next orchid flowering period. If possible, surveys should be conducted for several years. Developers in priority survey areas should be educated about the orchid and the need for surveys. They should be encouraged to plan projects sufficiently ahead that surveys will be possible so that they will not be put in a bind should the Service determine that a proposed project will have an impact on potential orchid habitat of sufficient magnitude that a survey will be required before permits can be issued.

## Recommendations and Guidelines for Section 7 Consultation

The Service has placed potential habitat within the known distribution of Ute ladies'-tresses orchid into 3 categories for purposes of Section 7 consultation as follows:

### Category 1: Surveys Required

Ute ladies'-tresses orchid is currently documented as occurring within the watershed or is documented as having occurred within the watershed within the past 50 years. Surveys for the orchid should be required as part of Section 7 consultation for projects that will have an impact on potential habitat.

Agencies, developers, and others who may propose projects in areas with potential habitat should be alerted that such surveys will be required and urged to schedule project planning so as to allow time for orchid surveys during the flowering period in late summer.

## **Category 2: Surveys Recommended**

Ute ladies'-tresses orchid may have occurred within the watershed or in nearby similar watersheds, however historical records are incomplete and the orchid is not now known to occur in the area. The watersheds are adjacent to or essentially similar in character to those where the orchid is currently known to occur. Surveys are recommended, particularly in circumstances when large areas of potential habitat will be impacted and/or when planning schedules permit surveys prior to project commencement. Project proponents should be alerted and encouraged to schedule project planning to allow time for orchid surveys.

## **Category 3: Surveys Encouraged**

Ute ladies'-tresses orchid is not known to occur in or near these watersheds. However, given the known distribution of the orchid and character of the watersheds, it is possible that the orchid could be discovered. Surveys are not required or recommended as part of Section 7 consultation. However, Service field offices and partners are strongly encouraged to organize and support survey efforts in these watersheds.

Attachment 2 is a list of Category 1, 2, and 3 areas in Idaho, Colorado, Montana, Nevada, Utah and Wyoming. The areas are referenced as watershed units or subunits from USGS Hydrologic Unit maps of each state. Within these watershed units, wetlands, springs and seeps, and riparian areas within the 100 year floodplain of perennial streams below 6,500 feet elevation should be considered potential habitat. Recommended survey areas in each category will be revised as new information becomes available.

## **Survey Procedures**

Ute ladies'-tresses orchid can only be reliably found and identified when it is flowering, which typically occurs sometime during the period from mid-July through mid-September. Surveys are conducted by walking or otherwise closely scrutinizing areas of potential habitat looking for flowering stalks. Surveys conducted at other times of the year are not reliable and are therefore not acceptable to the Service for purposes of clearance under Section 7.

Surveys should be conducted by knowledgeable botanists trained in conducting rare plant surveys. The Service does not maintain a list of "qualified" surveyors. However, the Service can refer those wishing to become familiar with the orchid to experts within their area who can help provide training.

## **Potential Habitat**

Within the recommended search areas, surveys should focus only on good potential habitat as described in the Background section and at <https://mountain-prairie.fws.gov/species/plants/uteladiestress/>.

## **Disqualified Habitat**

Considerable experience in conducting surveys in Colorado and Utah has led to identification of a number of habitat and landscape features that indicate that a site does not qualify as suitable potential habitat for Ute ladies'-tresses orchid. Most of these features can be identified at any time of year, often by as simple an activity

as driving by in a vehicle. Surveyors are urged to visit sites where projects are proposed and surveys may be recommended to determine whether, and how much, of the site actually qualifies as good potential habitat. Typically, the amount of good potential habitat in a project area is limited. Therefore, if it is a hardship for a project to be postponed until the following summer in order for a survey to be completed, it is often possible to make minor design changes to avoid potential habitat. Caution must be taken to avoid alterations in hydrology, however.

The following features serve to disqualify potential orchid habitat:

1. Appropriate hydrology not present, typically indicated by:
  - area is composed of mostly upland vegetation
  - area dries up by mid-July, with water table lower than 12 inches below the soil surface
2. Heavy clay soils present
3. Soils strongly alkaline
4. Site heavily disturbed, such as, for example:
  - stream banks channelized and stabilized by heavy rip-rap
  - highway rights-of-way built on filled or compacted soil or rock material
  - construction sites where construction has either stripped the topsoil or where construction has been completed within the last 5 years but the area has not been revegetated

(note that Ute ladies'-tresses orchid has been found in some heavily disturbed sites where hydrology is appropriate, such as revegetated gravel pits, heavily grazed riparian edges and pastures, and along well-traveled trails developed on old berms)

5. Stream banks steep, transition from stream margin to upland areas abrupt
6. Site characterized by standing water with cattails, bullrushes, and other aquatic vegetation (note that margins of such areas may be suitable habitat)
7. Riparian areas or stream banks vegetated with dense rhizomatous species such as reed canarygrass (*Phalaris arundinacea*), tamarisk or salt cedar (*Tamarix ramosissima*), teasel (*Dipsacus sylvestris*), common reed (*Phragmites australis*), or saltgrass; (*Distichlis spicata spicata*)
8. Riparian areas overgrazed or otherwise managed such that the vegetation community is composed of upland native or weedy species or is unvegetated. Note that the orchid can tolerate rather extreme overgrazing as long as it has not resulted in a drop in the water table as indicated by conversion of the riparian vegetation community to mostly upland species.
9. Potential habitat is no longer in a natural condition, for example, has been converted to agricultural uses and is now plowed and cropped, or has been converted to lawns or golf courses
10. Wetland is a brackish playa or pothole not fed by springs or not in the floodplain of or connected hydrologically with a riparian system or other source of fresh water

## PERMITS AND VOUCHER SPECIMENS

Ute ladies'-tresses orchid (*Spiranthes diluvialis*) can be mistaken with a closely related species, *Spiranthes romanzoffiana*, which generally grows at higher elevations. It is important that potential new discoveries be appropriately identified and verified. However, since Ute ladies'-tresses orchid often occurs in very small numbers, destructive sampling may be undesirable. Proper verification of new locations of Ute ladies'-tresses orchid should include (1) identification of the species by experts, (2) depositing a voucher specimen in an authorized institution, and (3) completion of a data form, such as an Element Occurrence Record form provided by the state Natural Heritage Program, and submission of the form to the state Natural Heritage Program and the Service.

Field Offices should have at least one staff person with a permit for collecting *Spiranthes diluvialis* and should be sure that other authorized surveyors, such as the state Natural Heritage Programs, have the necessary permit also. It is not necessary for everyone conducting surveys to have a permit, however. Service staff should make sure that all potential surveyors understand the permit requirements and persons without a permit do not take specimens. Service staff should also encourage all surveyors and partners to notify the Service immediately if it is suspected that a new location of Ute ladies'-tresses orchid has been discovered. There have been problems in the recent past with surveyors waiting several months before notifying the Service or the state Natural Heritage Program. Immediate notification will allow the Service an opportunity to arrange for a person with the proper permit to take a voucher specimen and contact experts to help with identification when the orchid is still fresh and flowering. The Service may need to provide assurances to surveyors that information will be treated as confidential until surveyors have had an opportunity to notify their clients of a discovery.

*Wildlife Survey Protocols, Pinedale Field Office*  
**Template for Survey Reports**

**SAMPLE**

Survey Type  
Project Name  
Legal Location  
Operator

Consultant Name  
Contact  
Address  
City, State Zip

Date

1. Introduction
2. Methods
3. Results
4. Discussion
5. Maps
6. Data sheets
7. Photos (if taken)