



JON M. HUNTSMAN, JR.
Governor

GARY R. HERBERT
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

General
Outgoing
@

May 7, 2009

To: All Coal Mine Operators

Subject: Raptor Survey Protocol

Dear Operator:

As you are aware, the Division of Wildlife Resources is no longer conducting Raptor surveys. However, the majority of permittees are still required or may have future needs to conduct these surveys. With that in mind, the attached Raptor Survey Protocol has been developed to assist you in conducting these surveys.

The survey protocol was prepared by the Division of Oil, Gas and Mining (DOG M) in coordination with the Division of Wildlife Resources (DWR) and the US Fish and Wildlife Service (FWS). The Protocol is a "living document" subject to change as needed to assist coal operators in meeting applicable regulations.

The purpose of this document is to:

- A) Provide the coal industries with a set protocol for conducting raptor surveys, and
- B) Ensure accurate and consistent data acquisition and reporting.

In order to meet these stated objectives, qualified biologists should follow the protocol when conducting raptor surveys.

We hope this protocol will be of assistance to you in conducting your raptor surveys. In the near future the protocol will also be available on the Division's website. If you have questions or suggestions to improve this document, please call Ingrid Wieser at (801)538-5318 or Joe Helfrich at (801) 538-5290.

Sincerely,

Daron R. Haddock
Coal Program Manager

Enclosure

O:\Ingrid\RaptorData\Protocol Cover letter.doc



DRAFT RAPTOR SURVEY PROCEDURES

Utah Coal Regulatory Program

Purpose

The purpose of this document is to:

- A) Provide the coal industries with a set protocol for conducting raptor surveys, and
- B) Ensure accurate and consistent data acquisition and reporting.

This is a cooperative document between the Division of Oil, Gas and Mining, the Division of Wildlife Resources and the U.S. Fish and Wildlife Service. These procedures will be refined and updated as needed and will be re-issued as a final copy in the future.

Background

The Bald and Golden Eagle Protection Act prohibits the "take" of bald and golden eagles. The Act defines "take" to mean kill, molest or disturb. "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3). A violation of the Act can result in a fine of \$100,000 (\$200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony.

The Migratory Bird Treaty Act implements four bilateral agreements between the United States and Canada, Mexico, Japan and Russia to protect migratory birds. This Act also prohibits the unlawful taking of migratory birds, which includes any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof. Most birds in Utah are protected by the Act as well as their parts, nests, or eggs. All of Utah's raptors are protected by this Act.

Utah law also protects wildlife existing within the state, except those held by private ownership and legally acquired (Utah Code Section 23-13-3). Sections 23-30-3, 23-20-4 and 23-20-4.5 make illegal the taking, transporting, selling, purchasing or wanton destruction of protected wildlife.

The Utah Administrative Code Annotated (R645-301-358.300) states that coal mining and reclamation operations are prohibited from the taking of an endangered or threatened species or a bald or golden eagle, its nest, or any of its eggs in violation of the Endangered Species Act of 1973 or the Bald Eagle Protection Act, as amended, 16 U.S.C. 668 et seq. The coal mine operator must avoid and minimize disturbance and adverse impacts to wildlife species protected by state or federal law and describe in the mining and reclamation plan how this will be accomplished (R645-301-333).

Coal Mines have the potential to "take" eagles or other migratory bird species in several ways including direct or indirect disturbances to their nest, roosts, or food sources resulting from mining related disturbances due to:

- Subsidence;
- Surface facilities;
- Exploration drilling; or
- Gas or ventilation holes or openings.

In order to prevent the "take" of eagles and other raptor species in past years the mines in conjunction with DWR have typically conducted annual helicopter surveys. The Division of Oil, Gas and Mining (DOGGM) has accepted those surveys, as adequately addressing raptor survey needs. Even though The Division of Wildlife Resources (DWR) is no longer conducting surveys the mines are still required to provide the necessary information to demonstrate a "take" is being prevented. This document is meant only as a guideline; prior to conducting surveys DOGM biologist should be contacted to discuss specific project details. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Romin and Muck 2002) guidelines are incorporated into these suggested procedures.

General Survey Guidelines

Survey methodology should be designed to inventory the species expected within the habitat to be disturbed. Aerial or ground survey methodologies target different raptor species and are used to collect different types of data. Appendix C lists recommended survey methodologies and typical nesting substrates for specific raptor species. Most coal operators are interested in nest locations and presence/absence data during the nesting season. Survey methodology should be designed by a qualified raptor biologist and reviewed on a case-by-case basis with DOGM in coordination with DWR, the US Fish and Wildlife Service (FWS), and the surface land management agency. Survey methods will be incorporated into the mining and reclamation plan. To be consistent with State AGRC standards, coordinates should be provided in UTM zone 12, NAD83.

Subsidence

Raptor surveys should be conducted to identify nest locations in areas where subsidence is possible. Aerial surveys are typically conducted.

1. Conduct survey for two years prior to permit issuance to determine resource.
2. Repeat surveys in subsidence zones prior to mining and then again 2 years post mining or until subsidence has ceased to verify no impact.
3. Surveys are best performed in May to determine nest status.
4. Survey information required,
 - i.) Species
 - ii.) Nest location
 - iii.) Nest status (active, inactive, tended, dilapidated...)
 - iv.) Additional information as shown in Appendix A.

5. Raptor data are confidential and should not be shared with the public. The data must be submitted to DOGM and DWR. In the future, the data may be directly entered into an online database.
 - i) In an electronic format suitable for uploading into ArcGIS (shapefiles).
 - ii) In a map format showing mine panels, subsidence boundary, dates of anticipated or completed mining activity, and nest locations indicating species, activity etc.

Surface facilities

Raptor surveys for long-term surface facilities placement should be conducted to identify species, locate nests, winter roosts, and other important habitat so they can be avoided.

1. Conduct spring nesting and winter roosting surveys for three years prior to permit issuance to determine resource.
2. Survey within a one-mile radius of proposed facility.
3. Nesting surveys are best performed in May to determine nest status.
4. Roost surveys should be conducted in January within winter roosting habitat.
5. A prey-based survey may also be required.
6. Survey information required
 - i) Species
 - ii) Nest location
 - iii) Roost location
 - iv) Nest status (active, inactive dilapidated...)
 - v) Additional information as shown in Appendix A.
7. The initial survey should be an aerial and ground survey; however this will depend on terrain of proposed facilities and raptor species targeted. Follow-up surveys may be ground if the status of the nest can be accurately determined.
8. It is suggested that a qualified wildlife biologist be retained to annually inventory and document raptor nesting and winter roosting status within the one-mile disturbance radius of the facility
9. If a surface facility is inactive before the site is reclaimed another survey will be required prior to the start of reclamation activities. These surveys should include the surface structures such as conveyors and buildings as well as surrounding terrain.

Exploration drilling

Exploration drilling is generally a one-time short duration occurrence. The surface management agency needs to be contacted for specific survey requirements and to determine if existing data are available. If nest locations are known aerial or ground surveys can verify nest status so that appropriate spatial and season buffers can be determined. Generally, plan exploration drilling between August and November to avoid seasonal buffers.

Gas or Ventilation Holes or Openings

1. Conduct spring and winter surveys for one year prior to permit issuance to determine resource.
2. Survey within a one-mile radius of proposed facility.
3. Nest surveys are best performed in May to determine nest status.
4. Roost surveys should be conducted in January within winter roosting habitat.
5. A prey-based survey may also be required.
6. Survey information required
 - i) Species
 - ii) Nest location
 - iii) Roost location
 - iv) Nest status (active, inactive dilapidated...)
 - v) Additional information as shown in Appendix A.
7. The initial survey should be an aerial and ground; however this will depend on terrain of proposed facilities and raptor species potentially present. Follow-up surveys may be ground if the status of the nest can be accurately determined.
8. A qualified wildlife biologist should be retained to annually inventory and document raptor nesting and winter roosting status within the one-mile disturbance radius.

Protocol

The following protocol has been developed in consultation with DOGM, DWR and FWS.

Qualifications: Individuals responsible for designing and conducting the survey must have a Bachelor or higher degree in Wildlife Biology or a related discipline and experience in raptor behavior and identification. The act of surveying has the potential to disturb or molest the species surveyed and the qualified biologist will be responsible to prevent "take" during the survey. Qualified individuals should have a good working knowledge of GIS and GPS tools. Qualification statements or resumes must be submitted to DOGM prior to the survey.

Aerial Surveys

Golden Eagle and cliff nesting raptor surveys need to be initiated as close to May 10th as possible. This date will prevent "take" since eagle chicks have generally hatched and parent birds are less likely to abandon the nest. Surveys need to be completed by the first of June to ensure that the chicks are young enough that they will not be prematurely flushed from the nest by the disturbance.

Survey participants for aerial surveys historically included 4 members: the pilot, a company representative (scribe), a navigator, and a spotter/identifier (biologist). At least three people should be present. The navigator and spotter need to be qualified individuals

as noted in the previous section of this document who can properly identify raptor species.

It is recommended that the navigator use moving-map type GPS technology to navigate during the survey to ensure adequate coverage of the survey area, navigate and identify known nests, and accurately record the location of newly discovered nests. Software that has been proven effective for these types of surveys include: ArcPad, Fugawi, Xmap, and National Geographic Map. These programs should show a topological map of the area, the surveyor's real-time location on the map, the locations of the known raptor nests and the track that the survey has covered.

The spotter/identifier finds new nests and birds; and assists in finding the known nest as the navigator explains its location on the computer. Once the nest is located, the spotter/identifier confirms the species, determines nest status and other information using the terms and data fields listed on the attached tables.

The company representative or scribe ensures that the area within 1 mile of the affected or potentially impacted area is thoroughly surveyed. The scribe records the information listed on the attached table, i.e. nest number, date, time, species, status of the nest, nest type (i.e. cliff, tree...), number of eggs, number of young, age of young, and any additional comments that are deemed necessary, preferably in an electronic format on the GPS.

GPS track logs should be recorded and submitted to DOGM as well as photographs of the nest. When a new nest not in the database is found, a point of that nest should be taken with a GPS handheld, or the Trimble Laser Pointer. At a minimum, latitude and longitude coordinates must be submitted to DOGM. Each new nest will be assigned an original nest ID # given by DWR.

Ground Surveys

Ground surveys generally target tree and ground nesting species and are used when there is adequate road access. Some species, including Northern Goshawk, Mexican Spotted Owl and Burrowing Owl, require a ground or calling survey. When used to inventory remote or cliff habitat they generally require more time than aerial surveys. Surveyors must obtain a permit from FWS before surveying for Mexican Spotted Owls

Survey methodology should be designed by a qualified raptor biologist and reviewed on a case-by-case basis with DOGM in coordination with DWR, the US Fish and Wildlife Service (FWS), and the surface land management agency. Ground surveys require all data collection as described in the aerial survey.

Species Specific Surveys

See Appendix B for a list of protocols.

Data Collection and Formatting

Surveyors must obtain existing survey data prior to conducting aerial or ground surveys. This information can be obtained by contacting DWR at 801 538 5700 and filling out the requisite release forms. In addition, the applicant needs to contact the Division to verify the necessary location and extent of the survey. This will assist in locating known nests and so that unique identifying numbers can be assigned to new nests.

After field data has been collected all GPS tracks need to be downloaded into separate company or mine files, and all collected nest data needs to be added to the master database.

After all newly collected data and new nest information has been entered into the master database, the data should be imported into ArcGIS and saved as a shapefile or other compatible geospatial file.

Survey data are confidential and should not be shared with the public. The data must be submitted to DOGM in the following formats.

1. In an electronic format suitable for uploading into ArcGIS.
2. A report with photographs and a map format showing all surface facilities and pertinent raptor use area, an appropriate size buffer (.25-1 mile depending on species), nests indicating species and status.

BIBLIOGRAPHY

Romin, L.A. and J.A. Muck. 2002. Utah Field Office guidelines for raptor protection from human and land use disturbances. U.S. Fish and Wildlife Service unpublished report.

APPENDIX A
RAPTOR SURVEY FORM

BACK OF PAGE

NEST STATUS *

Active

Active nest; a nest in which a breeding attempt was made as indicated by:

- 1) Eggs in nest, or
- 2) Young in nest, or
- 3) Fledged young near nest, or
- 4) Incubating/brooding adult

An active nest that did not fledge young, indicated by:

- 1) Egg shells in or around nest with no young when, young should be in the nest, or
- 2) Young present but known not to have fledged, or
- 3) Eggs in nest but obviously abandoned (past the time when eggs should have normally hatched).

Not Found:

Did not locate; surveyor searched but was unable to locate the nest

Tended or Occupied: a nest with one or more of the following:

- 1) Fresh lining material;
- 2) Adult presence at or near the nest; and
- 3) Recent and well-used perch site near the nest.

TendedAL:

Occupied Alternate; a tended nest within the boundaries of a territory housing an active nest.

Inactive:

Inactive: a nest with no apparent recent use or adult presence at the time of observation, but in good condition.

Dilapidated:

In an inactive nest in a state of ruin due to weather, natural aging and/or neglect.

Destroyed:

Inactive Destroyed; a nest showing no sign of raptor activity that is destroyed to the point that it is no longer usable without major reconstruction. These nests have disappeared, but there is often still lingering evidence of an historic presence.

Predated:

Predated; the nest was active, but there is evidence that it was predated (remains of adults or young, feathers or egg shells scattered)

NEST CONDITION*

Gone:

There may or may not be evidence of where the nest was, but it is no longer there.

Remnants:

Scant material remaining and not usable unless fully rebuilt.

Poor:

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

Fair:

Nest is not dilapidated, but needs significant repair in order to be used.

Good:

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

Excellent:

Nest is able to be used with little or no attention or maintenance.

Unknown:

The nest is obviously present (i.e., a tree cavity, rock cavity), but because of its location, a determination can not be made.

SUBSTRATE*

CAV:

Cavity

BLT:

Broadleaf tree

CLF:

Cliff/ Rock outcrop

CON:

Conifer

GHS:

Ground/Hillside

MMS:

Manmade Structure

UTL:

Utility

SNG:

Snag or dead tree

UNK:

Unknown

EXPOSURE OF NEST*

N:

North

S:

South

W:

West

E:

East

NW:

Northwest

NE:

Northeast

SW:

Southwest

SE:

Southeast

APPENDIX B
SPECIES SPECIFIC PROTOCOLS

Appendix B

BALD EAGLE WINTER ROOST SITES (BLM 2009)

Recommended protocol

1. Survey suitable roosting 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. Evening 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. Transects should be flown at about 100-150 meters (300-450 ft) above ground level. 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. 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.
3. Document all bald eagle observations using GPS equipment (UTMs - NAD83). Record: date, location, number seen, age class (adult, juvenile, unknown eagle) and habitat
4. Ground surveys 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.

MEXICAN SPOTTED OWL PROTOCOL

U.S. Fish and Wildlife Service. (2003). Mexican Spotted Owl Survey Protocol.
<http://www.fws.gov/mountain-prairie/endspp/protocols/MSOSurveyProtocol.pdf>

BURROWING OWL PROTOCOL

Colorado Division of Wildlife. (2007). Recommended Survey Protocol and Actions to Protect Nesting Burrowing Owls When Conducting Prairie Dog Control.
<http://wildlife.state.co.us/NR/ronlyres/C5D61571-F1DC-4679-ADD7-F3ABB339FB1C/0/BUOWSurveyProtocol2007.pdf>

NORTHERN GOSHAWK PROTOCOL

Woodbridge, B.; Hargis, C.D. (2006). Northern Goshawk Inventory and Monitoring Technical Guide. Gen. Tech. Report WO-71. Washington, DC: U.S. Department of

Agriculture, Forest Service. 80p.

<http://www.fs.fed.us/biology/wildecology/GoshawkTechGuideJuly06.pdf>

APPENDIX C
RECOMMENDED SURVEY METHODOLOGIES AND
TYPICAL NESTING SUBSTRATES FOR
SPECIFIC RAPTOR SPECIES

Recommended Survey Methodologies for Specific Raptor Species

Species	Ground searches			
	Sign/nest searches	Begging young	Snag tapping	Call playback
Bald Eagle	X			
Golden Eagle	X			
N. Harrier	X			
Osprey	X			
N. Goshawk	X	X		X
Cooper's hawk	X	X		X
Sharp-shinned hawk	X	X		
Peregrine falcon	X	X		
Prairie falcon	X	X		
American kestrel	X			
Merlin	X			
Ferruginous hawk	X			
Red-tailed hawk	X			
Swainson's hawk	X			
Boreal owl	X			X
Burrowing owl	X			X
Flammulated owl			X	X
Great-horned owl	X	X		
Long-eared owl	X			X
Northern saw-whet owl			X	X
Short-eared owl	X			
N. pygmy owl	X			X
W. screech owl	X		X	X
Common barn owl	X	X		
Mexican spotted owl	X	X		X
Turkey vulture	X			

Species	Aerial Searches		Comments
	Helicopter	Fixed-wing	
Bald Eagle		X	Large, conspicuous nest
Golden Eagle	X		
N. Harrier			
Osprey	X	X	Large, conspicuous nest
N. Goshawk	X		Helicopter only in aspen, difficult
Cooper's hawk			butcher blocks, squirts
Sharp-shinned hawk			butcher blocks, squirts
Peregrine falcon	X		Helicopter can miss
Prairie falcon	X		Helicopter can miss
American kestrel			
Merlin			Nesting very uncommon Utah
Ferruginous hawk	X		Pinyon nests in tops, easy to see
Red-tailed hawk	X		
Swainson's hawk	X		
Boreal owl			Difficult, can use radio telemetry
Burrowing owl			
Flammulated owl			
Great-horned owl			
Long-eared owl			roosts - pellets, whitewash near nests
Northern saw-whet owl			
Short-eared owl			
N. pygmy owl			Very difficult, will not look out
W. screech owl			
Common barn owl			
Mexican spotted owl			
Turkey vulture			

Typical Nesting Substrate

Species	Coniferous	Broadleaf	Pinyon/ Juniper	Cavity	Cliff	Utility	Cave	Building	Ground	Comments
Bald Eagle	X	X								Super-dominant trees
Golden Eagle		X			X					Cliffs, large agricultural area trees
N. Harrier									X	Grassy fields
Osprey	X	X				X				Artificial platforms too
N. Goshawk	X	X								Often aspen
Cooper's hawk	X	X	X							Both riparian and forest trees
Sharp-shinned hawk	X		X							Dense conifers
Peregrine falcon					X			X		Scrapes on ledges
Prairie falcon					X					Scrapes on ledges
American kestrel				X						Both tree and cliff cavities
Merlin	X									Nesting very uncommon in Utah
Ferruginous hawk			X		X					Isolated or edge trees, bluffs and pinacles
Red-tailed hawk	X	X	X		X					Often cliffs, large pinyons
Swainson's Hawk		X	X			X				Hedgerows, powerlines, isolated trees
Boreal owl				X						Boreal climate zone
Burrowing owl				X						In ground or gully wall
Flammulated owl				X						Flicker holes
Great-horned owl	X	X			X		X			Low on cliffs, old raptor nests, broken snags
Long-eared owl	X	X	X		X		X			Dense cover
Northern saw-whet owl				X						tree cavities, often snags
Short-eared owl										Grassy fields, wetlands
N. pygmy owl										tree cavities, often in snags
W. screech owl										tree cavities
Common barn owl				X			X	X		Behind ivy, holes in gully walls, farm buildings
Mexican spotted owl					X		X			Small caves on cliff walls
Turkey vulture					X					Also talus, brush piles