

## **Biological Study Plan**

### **East Ridge Wind Energy Project**

*Prepared by:*

Rick Gerhardt, John Luginbuhl,  
Robert Gritski, and Karen Kronner

**Northwest Wildlife Consultants, Inc.**

815 NW 4<sup>th</sup> St.  
Pendleton, Oregon 97801



September 24, 2008

## TABLE OF CONTENTS

<b>1.0</b>	<b>Introduction</b> .....	<b>1</b>
<b>2.0</b>	<b>Study Area and Habitat</b> .....	<b>1</b>
<b>3.0</b>	<b>Study Methods</b> .....	<b>2</b>
3.1	Review of Existing Information and Database Search .....	2
3.2	Habitat Mapping .....	2
3.3	Avian Use Surveys .....	2
3.4	Small-plot Avian Surveys .....	3
3.5	Special Status Wildlife Species Surveys .....	4
3.6	Raptor Nest Survey .....	5
3.7	Rare Plant Survey .....	5
<b>4.0</b>	<b>Report and Data Analysis</b> .....	<b>6</b>
4.1	Data Compilation and Storage .....	6
4.2	Data Analysis and Products .....	6
<b>5.0</b>	<b>References</b> .....	<b>8</b>
<b>6.0</b>	<b>Appendices</b> .....	<b>9</b>

### Appendices

Appendix 1. Special status wildlife species of known or potential occurrence in the East Ridge Wind Energy Project area. ....	9
Appendix 2. Special Status Plant Species with Potential for Occurrence within the East Ridge Wind Energy Project Area .....	12

### Figure

Figure 1. Avian Study Plots.....	15
----------------------------------	----

## **1.0 Introduction**

This draft plan identifies and describes wildlife, habitat, rare plant, and other field investigations associated with the East Ridge Wind Energy Project (Project) located in southeast Oregon. These studies were requested by Columbia Energy Partners and are used to assess the presence in and use of the Project area by birds (during specific seasons), special status wildlife (during the nesting/denning season) and special status plant species.

Descriptions of each of the following studies are described within this plan:

- Review of existing information and database search
- Habitat mapping
- Avian use surveys
- Special status wildlife surveys
- Aerial raptor nest survey
- Rare plant surveys

## **2.0 Study Area and Habitat**

The proposed wind Project area lies entirely within Harney County, Oregon, south of the small town of Diamond and on the lower northern slopes of Steens Mountain. The main Project area is a north-south ridge bounded on both sides by rather steep canyons. The slope to Kiger Creek on the east is particularly steep, whereas the land falls off more gently to Cucamonga and McCoy Creeks to the west. Habitat on the ridge is primarily shrub-steppe, with sagebrush throughout, but there is a large—and increasing—juniper component. Historically, the juniper was likely confined to the canyons and draws, with periodic wildfires preventing it from establishing on the uplands. Slopes and hillsides contain stands of aspen and, to a lesser extent, mountain mahogany trees.

Streams are only ephemeral in these uplands, and so little or no riparian systems are present. Small depressions are infrequent on this landscape, but these may hold water from snowmelt through the spring and into summer. What little other water is present is associated with cattle troughs to which water is pumped during the summer months. The Project area itself contains small rock outcrops but no large cliffs or talus slopes. Such features are, however, present within two miles of the Project. The foregoing is a very general habitat description. An in-depth habitat mapping effort will be conducted by wildlife biologists and botanists during spring and summer of 2009.

## **3.0 Study Methods**

### **3.1 Review of Existing Information and Database Search**

An initial database search was conducted to ascertain the endangered, threatened, and other special status species of wildlife and plants likely to be present in and near the Project area. The U.S. Fish and Wildlife Service maintains lists (by county) of endangered, threatened, proposed, and candidate species and species of concern, and these electronic file lists have been accessed for Harney County (USFWS 2008). Also searched was the Oregon Explorer Wildlife Viewer (maintained by OSU and ODFW; OSU and ODFW, 2008). The resulting list of special status wildlife species of known or potential occurrence in the Project area is attached as Appendix 1. In addition, a list of documented occurrences of rare, threatened, and endangered plant and wildlife species within 5 miles of the Project is being requested from the Oregon Natural Heritage Information Center (ORNHIC).

Using this information and the experienced botanist's knowledge of the general area, a list of rare plant taxa with the potential for occurrence at the East Ridge Project area was compiled. This list includes all rare taxa known to occur in the general vicinity from existing data (Oregon Natural Heritage Information Center [ORNHIC] 2007). Additional taxa were added after reviewing distribution maps and habitat/ecology descriptions for other rare plants in the region (Oregon Flora Project 2008; Mansfield 2000). Through this process, 34 species were identified and rated with low, moderate, or high likelihood of presence at the Project site (Appendix 2). This list will be used to help guide and prioritize survey efforts through specific knowledge of the vegetative associations and habitats for rare taxa most likely to be encountered.

### **3.2 Habitat Mapping**

A general habitat map for the Project area will initially be developed from 2005 aerial orthophotos (with a resolution of 1 meter). Habitat boundaries will be digitized using ArcView. These broad habitats will be further defined into subtypes based on field surveys conducted in the spring/summer of 2009. For each habitat type, field notes will include dominant and co-dominant vegetation and overall habitat quality/value for supporting wildlife (vegetation structure, age, size of trees, presence or absence of invasive vegetation, history of disturbance). Experienced biologists will sample each of the habitat types during various field studies and draft habitat maps will be adjusted and refined as necessary to reflect actual conditions in the field.

### **3.3 Avian Use Surveys**

Five 800-meter-radius, non-overlapping study plots have been delineated on the Project area (Figure 1). Plot placement is designed to maximize viewing and provide excellent coverage of the proposed turbine strings to allow for the establishment of turbine siting corridors. Surveys were initiated in July

2008 and will be conducted weekly through late fall 2008. These surveys follow a variable circular-plot method (Reynolds et al. 1980) to determine species composition and relative abundance of birds using the Project and flight altitudes associated with avian use of this area. Survey protocol is similar to that used in the Columbia Basin of Oregon and Washington including the Leaning Juniper Phase I and Phase II Wind Projects (Kronner et al. 2005), Klondike I Wind Power Project (Johnson et al. 2002), and Klondike III Wind Power Project (Mabee et al. 2005). These studies were conducted for more than one season.

An experienced avian ecologist will be positioned at the center of the plot and collect data on all wildlife seen or heard during a 20-minute observation period. During fall, two of the five plots will be surveyed on a rotating basis for an additional 40 minutes each week in an effort to detect any migratory movement of raptors. This includes observations both within and outside the 800-meter radius plot (though several analyses may use only the within-plot data). A full set of surveys (5 plots) is generally completed on the same survey day, and plots will be surveyed equally during different times of day (morning, mid-day, and afternoon), to the extent feasible, to reduce temporal bias.

General data recorded includes date, time, weather, and wildlife observed. Data collected on birds detected includes species, number of individuals, habitat association, and behavior, including flight height and direction. In addition, flight paths of raptors and other species of interest will be hand-plotted in the field at the time of observation. These will be plotted on individual plot maps (topographic maps with study plot boundary delineation). Whenever special status species and species of interest (including raptors and sage-grouse) are observed while in-transit near the study plots, within the general Project area, these observations will also be recorded. Data will be entered into a Microsoft Access database.

### **3.4 Small-plot Avian Surveys**

Small-plot avian surveys complement the large-plot avian use surveys described above (Section 3.3). In particular, the small-plot surveys focus on smaller birds (passerines) utilizing the habitats of proposed developments during the breeding season. These data can aid in describing overall habitat quality and value for native wildlife, to be used later during the avian impact assessment and detailed facility micrositing process.

These surveys will involve the establishment of eight fixed-radius points (Ralph et al. 1993) in spring 2009, each will be surveyed three times during the spring breeding season (all 8 plots will be surveyed 3 times for a total of 24 surveys). Points where the surveyor conducts the survey will be located in each habitat type on the Project where applicable, and will be spatially distributed in the Project area. Study plots will be 100-meter in radius. Plots will be surveyed by an experienced avian ecologist using a ten-minute observation period, and all surveys will be completed between sunrise and

five hours after sunrise, consistent with standard protocols used nationwide. Surveys will not be conducted when wind and weather conditions will likely hamper the researcher's ability to detect whatever birds were present.

General data recorded will include date, time, and weather variables. Data associated with bird detections will include species and number, age and sex, behavior and habitat. Special status wildlife species encountered while in-transit between survey points will also be recorded. Products resulting from this study include a list of avian species using the Project area during the breeding season and associated analyses (including, but not limited to, diversity indices and a list of confirmed breeders).

### **3.5 Special Status Wildlife Species Surveys**

These surveys, which will aid in the micro-siting process, will be conducted with the walking transect method, through habitats in the established turbine siting corridors. Special status wildlife species that may occur in the Project area include state endangered, threatened, candidate, sensitive status species, and/or federal "species of concern" (Appendix 1). Also included in the list are species that the Oregon Department of Fish and Wildlife (ODFW) lists as having special status ("threatened," "endangered," "critical," "sensitive," "peripheral," or "undetermined") and the U.S. Fish and Wildlife Service (USFWS) lists as "birds of conservation concern" (USFWS 2002). A few species with no current federal or ODFW status but that are tracked by ORNHIC are also included. Based upon ODFW, USFWS, and ORNHIC lists and a habitat review of the area utilizing aerial photos, 20 species of birds, 17 species of mammals, one species of reptile, and two species of amphibians were determined as possibly occurring during all or part of the year within the proposed boundaries of the East Ridge Wind Energy Project area during the proposed survey period. The proposed survey period to be implemented in 2009 corresponds to the breeding or rearing season for most of these species.

Special status wildlife surveys will be conducted using standard, agency-acceptable protocols, conducting walking surveys with corridors representing a 400-foot buffer of all project facilities. General data recorded will include date, time, and weather variables. Locations of species detections will be recorded using hand-held Global Positioning System (GPS) units; data to be recorded in association with these locations include species and number, age and sex, behavior and habitat. GIS-generated maps will be prepared showing locations of individuals or groups of individuals for all special status wildlife species along with discussion of each species' relationships to habitats within the project areas. Species encountered in-transit while on site between survey corridors will also be recorded. Other products resulting from this study will include a list of avian, mammalian, reptile, and amphibian species using the Project area and associated analyses (including, but not limited to, diversity indices and a list of confirmed breeders).

Greater sage-grouse (*Centrocercus urophasianus*) are known to occur within the Project area. In addition to recording actual detections of this species, surveyors will record evidence of their presence, especially fecal material. This information will be used to identify areas of high use by this species, which is considered “vulnerable” by ODFW and is a federal “species of concern.”

### **3.6 Raptor Nest Survey**

The objective of the raptor nest survey is to obtain information that will help predict potential impacts of the Project to nesting raptors from the turbines and structures in order to properly design the final turbine layout. Potential impacts include those that might occur during construction or operation of the Project and might involve disturbance during nesting, direct loss of nest structure, or death of nesting birds or fledglings through collision with turbines. Information gained from this study is expected to be useful for avoiding, minimizing and/or mitigating impacts.

A single aerial survey will be conducted in mid- to late May 2009. It will be conducted from a helicopter, using a qualified avian ecologist and a helicopter pilot experienced at this type of survey. The goal is to identify all raptor nests, both active and inactive, on the Project area and within a two-mile buffer of the turbine strings and access road. All potential nesting areas—trees, transmission lines, and rock formations—will be flown to provide complete coverage of this area.

All raptor nests and nests that have raptor nesting characteristics but have no sign of activity will be documented and their locations recorded with a hand-held GPS unit. This will include all confirmed and potential nests regardless of their activity status. To determine whether a nest is active or inactive, the biologist will rely on clues including behavior of adults and presence of eggs, young, or whitewash. Attempts will be made to identify the species of raptor associated with each active nest. Ground-based confirmation of nests, status, and outcome if possible within the project area will be accomplished during the course of other studies. Stick nests built by common ravens or black-billed magpies will also be recorded, since these could be used by raptors in subsequent breeding seasons.

### **3.7 Rare Plant Survey**

In order to aid in the micro-siting process, special status plant field surveys will be conducted in early summer of 2009. Survey time windows will be specifically designed to maximize the potential for accurate identification of as many of the targeted taxa as possible in the field and hence to ensure adequate coverage with respect to potential occurrences of special status taxa. Surveys will cover an area extending 400 feet outwards from all proposed facilities. Searches will be conducted using an intuitively controlled survey method (USDA BLM 1998, Elzinga et al. 1998) where all survey corridors will be sufficiently traversed to locate all habitats of high suitability

for target plant species. Once located, survey efforts will intensify within these high suitability habitats, with surveyors conducting transects to allow 100% visual scan for potential special status plant taxa. All plant surveys will be conducted by qualified botanists familiar with the Steens Mountain flora in general and/or with specific pre-field training to definitively identify all focal rare plant taxa.

During surveys, field crews will be equipped with reference literature, pre-field review data, orthophotos, and handheld GPS units, to ensure adequate survey coverage and to record the locations of any special status species encountered. All vascular plant species encountered during surveys will be identified to species where necessary to ensure that no potential rare taxa are misidentified. All plant taxa will be definitively identified on site or, if necessary, collected and pressed for later identification through comparison with documented herbarium specimens or other reference materials.

## **4.0 Report and Data Analysis**

### **4.1 Data Compilation and Storage**

A database will be established to store, organize, and retrieve all field observations. All field data forms and notebooks will be retained, and the information from them will be entered into electronic database files for reference and analysis. Measures will be taken to ensure quality control at every stage of these studies, including data collection, data entry, data analysis, and report preparation. Electronic databases will be checked against field forms to verify the accuracy of data entry.

### **4.2 Data Analysis and Products**

A variety of analyses will be performed, and all results and analyses will be incorporated in a draft and a final report. Products expected to result from these studies include the following.

- Habitat map, including an expanded legend of broad-level plant community/wildlife habitat types.
- Map of raptor nests and special status species.
- Table of timing and occupation of raptor nesting.
- Map of locations of threatened, endangered, and sensitive species of wildlife, historic as well as documented during the 2008-2009 study.
- Map of locations of rare plant species.
- Table showing mean use, mean number of species/survey, total number of species, and total number of fixed-point surveys conducted overall, based on plots surveyed.



- Table delineating avian species observed within survey area and observed and estimated mean use and percent frequency based on plots surveyed during fall season 2008.
- Table listing special status wildlife species incidentally observed while in-transit at Project.

The following supporting documents will be included as appendices.

- Wildlife Study Plan (final version of this document).
- ORNHIC Database Search Response (sensitive data provided separately to ODFW).
- USFWS special status species list for Project area (Harney County list).
- Special status wildlife species of known or potential occurrence in the Project area (the post-studies version of the current document's Appendix 1).
- Comprehensive list of avian species observed during avian use surveys at the Project.
- Map of avian use study plot locations (Figure 1 of the current document).
- Table summarizing Pacific Northwest regional annual bird fatality estimates on a per-turbine and per-MW nameplate basis for all birds combined and separately for raptors (based on public information from studies available at the time).
- Table showing number and species of bird and bat fatalities documented at several Pacific Northwest regional wind projects.

## 5.0 References

- Elzinga, C. L., D. W. Salzer, and J. W. Willoughby. 1998. Measuring and monitoring plant populations. TR 1730-1. USDI Bureau of Land Management, Denver, Colorado. 477pp.
- Interagency Special Status/Sensitive Species Program (ISSSSP). 2008. Federally Threatened, Endangered, & Proposed Species and Sensitive Species List for Oregon and Washington. Available online at:  
<http://www.fs.fed.us/r6/sfpnw/issssp/documents/ag-policy/6840-im-or-2008-038-att1-tes-list.xls>
- Johnson, G.D., W.P. Erickson, K. Bay, and K. Kronner. 2002. Baseline ecological studies for the Klondike Wind Project, Sherman County, Oregon. Prepared for Northwestern Wind Power by WEST, Inc., Cheyenne, Wyoming and Northwest Wildlife Consultants, Inc., Pendleton, Oregon.
- Kronner, K., B. Gritski, J. Baker, V. Marr, G. Johnson and K. Bay. 2005. Wildlife baseline study for the Leaning Juniper Wind Power Project. Prepared for PPM Energy, Portland, Oregon and CH2M Hill, Portland, Oregon. Prepared by Northwest Wildlife Consultants, Inc., Pendleton, Oregon and WEST, Inc., Cheyenne, Wyoming.
- Mabee, T.J., B.A. Cooper, C. Grinnell, and J. Bana. 2005. Baseline Avian Use at the Proposed Klondike III Wind Power Project, Oregon, Winter 2004 – Spring 2005. Final report prepared for David Evans & Associates, Inc., Portland, Oregon.
- Mansfield, Donald H. 2000. Flora of Steens Mountain. Oregon State University Press; Corvallis, Oregon. 410pp.
- Oregon Flora Project. 2008. Rare Plant Guide. Available online at:  
<http://www.oregonflora.org/rareplants/index.php>
- Oregon Natural Heritage Information Program. 2007. Vascular Plant Rankings, 2007. Available online at: <http://oregonstate.edu/ornhic/data/vascular2007.html>
- Oregon State University (OSU) and Oregon Department of Fish and Wildlife (ODFW). 2008. Oregon Wildlife Explorer. Natural Resources Digital Library. Viewed at:  
<http://www.oregonexplorer.info/wildlife/>
- Reynolds, R. T., J. M. Scott, and R. A. Nussbaum. 1980. A variable circular-plot method for estimating bird numbers. *Condor* 82: 309–313.
- USDA Bureau of Land Management. 1998. Survey Protocols for Survey and Manage Strategy 2: Vascular Plants, V 2.0. Available online at:  
<http://www.blm.gov/or/plans/surveyandmanage/SP/VascularPlants>
- U.S. Fish and Wife Service (USFWS). 2008. Federally listed, proposed, candidate species, and species of concern under the jurisdiction of the fish and wildlife service which may occur within Harney County, Oregon. Available online at:  
<http://www.fws.gov/oregonfwo/Species/Lists/Documents/County/HARNEY%20COUNTY.pdf>
- U.S. Fish and Wildlife Service (USFWS). 2002. Species of Conservation Concern List (BRC 9, Table 9). <http://migratorybirds.fws.gov/reports/reports.html>
- Verts, B. J. and L. N. Carraway. 1998. Land Mammals of Oregon. University of California Press.

## 6.0 Appendices

### Appendix 1. Special status wildlife species of known or potential occurrence in the East Ridge Wind Energy Project area.

Common Name and Scientific Name	Federal Status	ODFW Status	Potential for Occurrence Within or Near the East Ridge Project (surveys not yet conducted)
<b>Mammals</b>			
<b>pygmy rabbit</b> <i>Brachylagus idahoensis</i>	SoC	SV	Unlikely due to lack of suitable big sage habitat, which is generally associated with deep, loose soils.
<b>Preble's shrew</b> <i>Sorex preblei</i>	SoC	-	Rare species, likely present on or near Project area where sagebrush is present.
<b>white-tailed antelope squirrel</b> <i>Ammospermophilus leucurus</i>	-	SU	Unlikely; associated with more xeric habitats at lower elevations.
<b>white-tailed jackrabbit</b> <i>Lepus townsendii</i>	-	SU	Unknown.
<b>California wolverine</b> <i>Gulo gulo luteus</i>	SoC	LT	Possible; habitat is open forests at high elevation and in alpine areas. May travel through lower elevations due to wide home ranges. Avoids young, regenerating forests and dense brushy areas.
<b>kit fox</b> <i>Vulpes macrotis</i>	-	LT	Unlikely; no recent documentation in Oregon.
<b>California myotis*</b> <i>Myotis californicus</i>	-	-	Likely; occupies various habitats, including shrub-steppe and juniper woodlands.
<b>fringed myotis</b> <i>Myotis thysanodes</i>	SoC	SV	Unlikely; dwells in caves, buildings, and mine adits.
<b>hoary bat *</b> <i>Lasiurus cinereus</i>	-	-	Possible; primary habitat is boreal montane forests, but also uses shrub-steppe; may also occur on Project during migration.
<b>long-eared myotis</b> <i>Myotis evotis</i>	SoC	SU	Possible, but not expected to be common; needs buildings, caves, or mine adits for maternity colonies and for night roosting.
<b>long-legged myotis</b> <i>Myotis volans</i>	SoC	SU	Possible; associated with montane coniferous forests but also occur in some desert and riparian habitats.
<b>pallid bat</b> <i>Antrozous pallidus</i>	SoC	SV	Possible, but needs rock crevices, tree hollows, mines, caves, buildings.
<b>silver-haired bat</b> <i>Lasionycteris noctivagans</i>	SoC	SU	Possible; found in forest and grassland habitats.
<b>spotted bat</b> <i>Euderma maculatum</i>	SoC	-	Possible as migrant or during long-distance foraging flights..
<b>Townsend's big-eared bat</b> <i>Corynorhinus townsendii</i>	SoC	SC	Likelihood unknown; uses caves, old mines, and buildings as summer day and night roosts. Does not roost in crevices (Verts and Carraway 1998) but hangs from structures. Uncommon anywhere.
<b>western small-footed myotis</b> <i>Myotis ciliolabrum</i>	SoC	SU	Possible; uses xeric habitats near cliffs and rock outcrops.

Common Name and Scientific Name	Federal Status	ODFW Status	Potential for Occurrence Within or Near the East Ridge Project (surveys not yet conducted)
<b>Yuma myotis</b> <i>Myotis yumanensis</i>	SoC	-	Unlikely, but habitats include arid grasslands.
<b>Birds</b>			
<b>horned grebe</b> <i>Podiceps auritus</i>	-	SP	Unlikely, except as transient.
<b>red-necked grebe</b> <i>Podiceps grisegena</i>	-	SC	Unlikely, except as transient.
<b>American white pelican</b> <i>Pelecanus erythrorhynchos</i>	-	SV	Unlikely, except as transient.
<b>snowy egret</b> <i>Egretta thula</i>	-	SV	Unlikely, except as transient.
<b>western least bittern</b> <i>Ixobrychus exilis hesperis</i>	SoC	SP	Unlikely, except as transient.
<b>white-faced ibis</b> <i>Plegadis chihi</i>	SoC	-	Likely visitor; breeds in wetlands to north.
<b>sandhill crane</b> <i>Grus canadensis</i>	-	SV	Likely as transient across Project area.
<b>snowy plover</b> <i>Charadrius alexandrinus</i>	PS:LT BoCC	LT	Unlikely, except as transient.
<b>Franklin's gull</b> <i>Larus pipixcan</i>	-	SP	Unlikely, except as transient.
<b>black tern</b> <i>Chlidonias niger</i>	SoC	-	Unlikely, except as transient.
<b>bald eagle</b> <i>Haliaeetus leucocephalus</i>	NW EPA	LT	Possible transient or during migration.
<b>Swainson's hawk</b> <i>Buteo swainsoni</i>	BoCC	SV	Possible during late summer and fall migration.
<b>ferruginous hawk</b> <i>Buteo regalis</i>	SoC BoCC	SC	Likely as visitor or migrant.
<b>northern goshawk</b> <i>Accipiter gentilis</i>	SoC	SC	Likely migrant or transient.
<b>peregrine falcon</b> <i>Falco peregrinus</i>	NW BoCC	Delisted	Likely (at least as passing migrant).
<b>greater sage-grouse</b> <i>Centrocercus urophasianus</i>	SoC BoCC	SV	Very likely; habitat present, and known from surrounding areas.
<b>Lewis's woodpecker</b> <i>Melanerpes lewis</i>	SoC BoCC	SC	Likely in aspen stands near Project area.
<b>willow flycatcher</b> <i>Empidonax traillii</i>	SoC	SU	Unknown. Willow/shrub habitats not present near proposed turbines.
<b>black swift</b> <i>Cypseloides niger</i>	BoCC	SP	Unlikely, except as transient. Breeds and roosts behind waterfalls.

Common Name and Scientific Name	Federal Status	ODFW Status	Potential for Occurrence Within or Near the East Ridge Project (surveys not yet conducted)
<b>black-throated sparrow</b> <i>Amphispiza bilineata</i>	-	SP	Possible disperser.
<b>black rosy-finch</b> <i>Leucosticte atrata</i>	-	SP	Known from higher elevations to south of Project, within approximately 5 miles.
<b>Reptiles and Amphibians</b>			
<b>ground snake</b> <i>Sonora semiannulata</i>	-	SP	Unlikely, secretive, nocturnal; known from Owyhee Mountains to northeast.
<b>Columbia spotted frog</b> <i>Rana luteiventris</i>	C	SU	Unknown.
<b>western toad</b> <i>Bufo boreas</i>	-	SV	Unknown.

#### Status Key

\* Indicates a species that does not have Federal or State Status, but is tracked by Oregon Natural Heritage Program (ORNHC). For ORNHIC ranking, see ORNHIC, 2007.

#### Federal:

T	Threatened	SoC	Species of Concern
E	Endangered	NW	Not Warranted; delisted
C	Candidate	EPA	Bald and Golden Eagle Protection Act
PS	Partial Status. Taxa for which some but not all infraspecific taxa have status		
BoCC	USFWS Birds of Conservation Concern (BCR 9, Great Basin)		
-	No special status		

*Note:* All native migratory birds are protected by the federal Migratory Bird Treat Act (MBTA).

#### Oregon:

T	Threatened
E	Endangered
SC	"Critical" sensitive species are those for which listing as threatened or endangered would be appropriate if immediate conservation actions were not taken. Some peripheral species which are at risk throughout their range and some disjunct populations (those that are geographically isolated from other populations) area also considered "Critical."
SV	"Vulnerable" sensitive species are not in imminent danger of being listed as threatened or endangered, but could become sensitive-critical, threatened, or endangered with changes in populations, habitats or threats.
SP	"Peripheral" species are on the edge of their range. "Naturally Rare" species are those with historically low population numbers in Oregon due to naturally limiting factors. The management objective is to maintain existing populations within their current range.
SU	"Undetermined" species are those for which status is unclear. They may be susceptible to population declines that may result in listing as endangered, threatened, critical or vulnerable in the future, but additional research is needed before a decision can be made regarding their status.

**Appendix 2. Special Status Plant Species with Potential for Occurrence within the East Ridge Wind Energy Project Area**

<b>Name</b>	<b>Status</b>	<b>Typical Habitat</b>	<b>Likelihood of Occurrence</b>	<b>Identification Period</b>
<b>alpine fescue</b> <i>Festuca brachyphylla</i>	ONHP Status L3 BLM Status T	Moist rocky slopes, meadows and crevices above 7900 ft	Low	June - August
<b>alpine lily</b> <i>Lloydia serotina</i>	ONHP Status L3 BLM Status T	Gravelly ridges and in rock crevices high in the mountains	Low	June - July
<b>Bellardi bog sedge</b> <i>Kobresia bellardii</i>	ONHP Status L2 BLM Status A	In Steens, known only from high elevation cirque meadow	Low	July - August
<b>capitate sedge</b> <i>Carex capitata</i>	ONHP Status L2 BLM Status T	In Steens, uncommon on shaded rock ledges and moist, gravelly slopes above 7900 ft	Medium	July - August
<b>cloud sedge</b> <i>Carex haydeniana</i>	ONHP Status L4 BLM Status T	In moist to moderately dry places at high elevations, usually above timberline	Low	June - August
<b>common moonwort</b> <i>Botrychium lunaria</i>	ONHP Status L2 BLM Status A	Along perennial streams, in open, moist rocky meadows. Not known from Steens. Elevation: 2300 to 7400 ft.	Low	July - September
<b>Cusick's draba</b> <i>Draba cusickii</i>	ONHP Status L4 BLM Status T	Common in rock outcrops above 6900 ft	High	Late June - July
<b>Cusick's giant hyssop</b> <i>Agastache cusickii</i>	ONHP Status L2 BLM Status A	On alpine rock outcrops or gravelly soils	Low	July - August
<b>dark alpine sedge</b> <i>Carex subnigricans</i>	ONHP Status L2 BLM Status T	On moist, rocky slopes and in meadows at high elevations in the mountains	Medium	June - August
<b>Davidsons penstemon</b> <i>Penstemon davidsonii</i> var. <i>praeteritus</i>	ONHP Status L4 BLM Status T	Alpine rock outcrops or gravelly soils	Moderate	June - August
<b>Drummond's willow</b> <i>Salix drummondiana</i>	ONHP Status L4 BLM Status T	In Steens, occasional near streams, seeps and ponds between 5575 and 8200 ft	Medium	May - June
<b>duskyseed sedge</b> <i>Carex pelocarpa</i>	ONHP Status L2 BLM Status A	Common in meadows and on moist, open slopes and stream banks at high elevations in the mountains, often above timberline. Not known from Steens	Low	June - August

Name	Status	Typical Habitat	Likelihood of Occurrence	Identification Period
<b>early sedge</b> <i>Carex praeceptorum</i>	ONHP Status L4 BLM Status T	In Steens, uncommon in inundated seeps and boggy stream and lake margins above 7500 ft	Medium	July - August
<b>foetid sedge</b> <i>Carex vernacula</i>	ONHP Status L2 BLM Status A	In moist or wet places at high elevations especially at the edges of melting snowfields and in meltwater streams.	Low	June - August
<b>grimy mousetail</b> <i>Ivesia rhypara</i> var. <i>rhypara</i>	OR RANK: Endangered OR STATUS: S1, List 1 FED STATUS: SOC	Mostly on dry, relatively barren, yellowish or light-colored outcrops or badlands. Elevation ~5000 to 6500 ft	Low	May - August (?)
<b>Herman's dwarf rush</b> <i>Juncus hemiendytus</i> var. <i>abjectus</i>	ONHP Status L3 BLM Status T	Seasonally wet depressions and gravels in sagebrush. In Steens, between 5250 and 7540 ft	Moderate	July - August
<b>Kruckeberg's hollyfern</b> <i>Polystichum kruckebergii</i>	ONHP Status L4 BLM Status T	In Steens, extremely rare in moist, shady rock crevices above 8850 ft	Low	June – September?
<b>lanceleaf moonwort</b> <i>Botrychium lanceolatum</i>	ONHP Status L4 BLM Status A	In Steens, known only from high elevation site at S. Fork Willow cirque.	Low	July - August
<b>Mingan moonwort</b> <i>Botrychium minganense</i>	ONHP Status L4 BLM Status A	Rare in Little Blitzen and S. Fork Willow cirques above 8500 ft	Low	July - September
<b>moss rush</b> <i>Juncus bryoides</i>	ONHP Status L3 BLM Status T	Moist shallow depressions in sagebrush. In Steens, known only east of Fish Lake	Moderate	July - August
<b>narrowleaf cottonwood</b> <i>Populus angustifolia</i>	OR RANK: S4 OR STATUS: Watch	Stream banks; foothills and high plains.	Medium - High	May - September
<b>northern moonwort</b> <i>Botrychium pinnatum</i>	ONHP Status L4 BLM Status A	Extremely rare in S. Fork Willow and possibly other cirques above 8200 ft	Low	July - August
<b>orpine stonecrop</b> <i>Sedum debile</i>	ONHP Status L4 BLM Status T	In Steens, uncommon in rocky outcrops above 7200 ft	Medium	Late June – Early August
<b>pygmy gentian</b> <i>Gentiana prostrata</i>	ONHP Status L2 BLM Status A	Cirque meadows above 8200 ft	Low	July - August
<b>rock milicgrass</b> <i>Melica stricta</i>	ONHP Status L2 BLM Status T	Moist rocky crevices above 8200 ft	Low	July - August

Name	Status	Typical Habitat	Likelihood of Occurrence	Identification Period
<b>shortfruit willow</b> <i>Salix brachycarpa</i> var. <i>brachycarpa</i>	ONHP Status L4 BLM Status T	Known to occur at high elevations in the Steens (~8500 ft), often in wet meadows	Low	April - May
<b>shortlobe penstemon</b> <i>Penstemon seorsus</i>	ONHP Status L4 BLM Status T	Dry rocky places in the plains and foothills, often with sagebrush, from 4920 to 5575 ft in elevation	Low	May – July
<b>Sierra springbeauty</b> <i>Claytonia nevadensis</i>	ONHP Status L4 BLM Status T	Occasional in alpine streams	Low	April - Late July
<b>slender gentian</b> <i>Gentianella tenella</i>	ONHP Status L2 BLM Status A	In WA, appears to favor disturbed sites in subalpine to alpine meadows from 6800 to 7600 ft	Medium	July - August
<b>small saxifrage</b> <i>Saxifraga adscendens</i> var. <i>oregonensis</i>	ONHP Status L2 BLM Status A	In Steens, very rare in wet, north-facing cliffs at the heads of Little Blitzen, Kiger and Big Indian gorges	Low	July - August
<b>snowline springparsley</b> <i>Cymopterus nivalis</i>	ONHP Status L2 BLM Status A	In Steens, restricted to rock crevices on ridges near highest summits	Low	July - August
<b>sticky polemonium</b> <i>Polemonium viscosum</i>	ONHP Status L4 BLM Status T	In Steens, extremely rare on east rim of Kiger gorge	Low - Medium	July - August
<b>western white-flower penstemon</b> <i>Penstemon pratensis</i>	ONHP Status L3 BLM Status T	Meadows and stream bank in high sagebrush valleys and aspen woods	Moderate	July - August
<b>whitestem goldenbush</b> <i>Ericameria discoidea</i> var. <i>discoidea</i>	ONHP Status L4 BLM Status T	Dry, rocky outcrops above 8200 ft	Low	August - Early September

#### Status Key

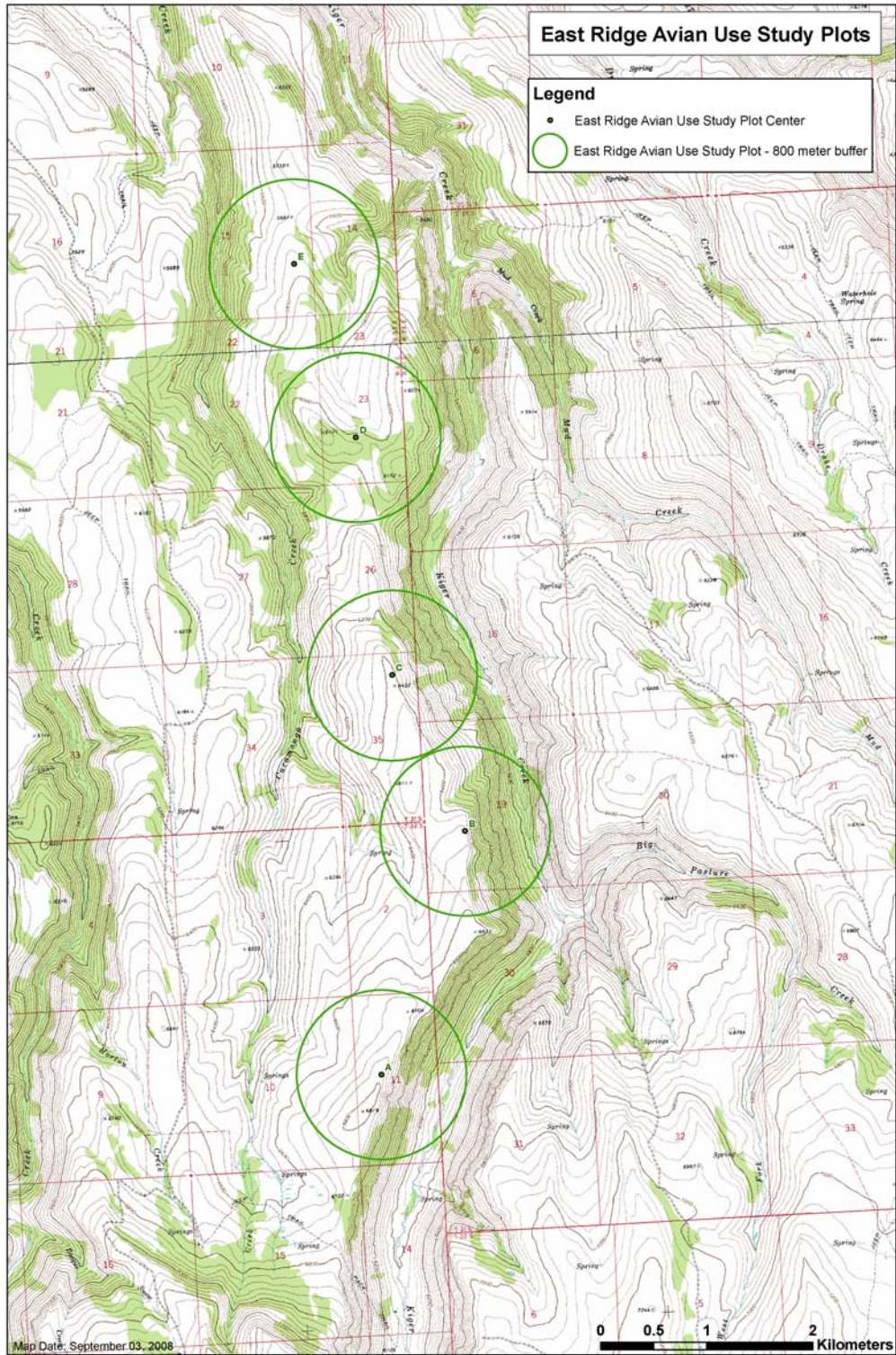
ORNHP (Oregon Natural Heritage Program) Status (ONHIC, 2007):

- List 1 – Taxa which are threatened with extinction throughout their entire range
- List 2 – Taxa which are threatened with extirpation in Oregon State
- List 3 – Taxa for which more information is needed but that may be threatened
- List 4 – Taxa off conservation concern but not currently threatened or endangered

BLM/USFS (Bureau of Land Management/U. S. Forest Service) Status:

- S – Sensitive taxa under the Interagency Special Status/Sensitive Species Program (ISSSSP, 2008)





**Figure 1. Avian Study Plots**