

# Chapter 18 Wildlife

Words in **bold** and acronyms are defined in Chapter 32, Glossary and Acronyms.

This chapter describes existing wildlife resources in the project area, and how the project alternatives could affect these resources. Related wetland and vegetation information are in Chapter 16, Wetlands, and Chapter 17, Vegetation.

## 18.1 Affected Environment

Wildlife species that would be affected by the project include those that occur in forest, production forest, shrubland, open, and urban/suburban habitats. These categories correspond with the general vegetation types discussed in Chapter 17, Vegetation, and shown on Maps 17-1A through 17-1D, with some minor differences (see Table 18-1).

**Table 18-1 Wildlife Habitats<sup>1</sup> and Corresponding Vegetation Types<sup>2</sup>**

<b>Wildlife Habitat</b>	<b>Vegetation Types</b>
Forest	Forest; Mature Forest
Production Forest	Production Forest
Shrubland	Shrubland
Open	Herbaceous; Rural Landscaped
Urban/Suburban	Urban/Suburban Landscaped
Notes:	
1. WDFW priority habitats are treated as a subset of general wildlife habitats. See Section 18.1.1, Wildlife Habitats and Species.	
2. See Chapter 17, Vegetation, and Maps 17-1A through 17-1D.	

In addition, wildlife in the WDFW priority habitats (see Section 18.1.2, WDFW Priority Habitats) of Oregon white oak woodlands, herbaceous balds, westside prairie, old-growth/mature forest, freshwater wetlands and fresh deepwater, riparian areas, caves, cliffs, talus, and snags and logs, would also be affected. These priority habitats are discussed in the general wildlife habitats (see Section 18.1.1, Wildlife Habitats and Species) where they are typically found. For example, westside prairie is a type of open habitat.

General wildlife habitats were identified within a 3,000-foot corridor (1,500 feet either side of the transmission line centerline). This area includes the transmission line right-of-way, new and improved access roads, substation areas, and removed, rebuilt, and new towers on existing right-of-way. For WDFW Priority Habitats, the study area covers a 2-mile corridor for the transmission line (1 mile either side of the transmission line centerline) and a 1-mile corridor for access roads (0.5 mile either side of the road centerline). This area includes the transmission line right-of-way, new and improved access roads, substation areas, and removed, rebuilt, and new towers on existing right-of-way. This study area is larger than the study area for general habitats because a broader area allows a more accurate assessment of their likelihood to occur in the affected environment, and a better description of the extent of impacts on these high-value wildlife habitats.

## 18.1.1 Wildlife Habitats and Species

### 18.1.1.1 Wildlife in Forest and Production Forest Habitats

#### Forest Wildlife

In the study area, forest habitat is generally about 60 years old and contains a mix of conifers and hardwoods, with conifers generally dominating. Old-growth/mature forest, Oregon white oak woodlands, forested freshwater wetlands, riparian areas, herbaceous balds, and caves are considered WDFW priority habitats and may occur within this general wildlife habitat (see Section 18.1.2, WDFW Priority Habitats).

Forest habitat occurs throughout the study area but is concentrated on either side of the Cowlitz River in the northern portion of the study area, and southwest of Lake Merwin in the central portion (see Maps 17-1A and 1C). It covers about 33 percent of the study area along the West Alternative, 25 percent along the Central Alternative, 17 percent along the East Alternative, and 30 percent along the Crossover Alternative. The Monahan Creek substation site contains some forest.

The habitat features used by forest-dependent wildlife include surface rock, logs, duff/litter, **snags**, live trees, moss, cavities, and shrubs (Johnson and O'Neil 2001). Common wildlife species include mammals such as coyotes (*Canis latrans*), black bear (*Ursus americanus*), rabbits, squirrels, chipmunks, and Columbian black-tailed deer (*Odocoileus hemionus ssp. columbianus*). Many game birds such as ruffed grouse (*Bonasa umbellus*) and pheasants (*Phasianus spp.*) are found in young conifer stands, along with other common year-round resident bird species such as Steller's jay (*Cyanocitta stelleri*), Pacific wren (*Troglodytes hyemalis*), and golden-crowned kinglet (*Regulus satrapa*). Some of the most broadly distributed migratory species include Swainson's thrush (*Catharus ustulatus*), Pacific-slope flycatcher (*Empidonax difficilis*), and Townsend's warbler (*Dendroica townsendii*) (Johnson and O'Neil 2001).

Twenty-three special-status species could be found in forest habitat in the study area (see Section 18.1.4, Special-Status Wildlife). However, only 13 of these 23 special-status species have documented occurrences in the study area: bald eagle (*Haliaeetus leucocephalus*), great gray owl (*Strix nebulosa*), mountain quail (*Oreortyx pictus*), osprey (*Pandion haliaetus*), wild turkey (*Meleagris gallopavo*), Columbian black-tailed deer, elk (*Cervus elephus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western toad (*Anaxyrus boreas*), ringneck snake (*Diadophis punctatus*), southern alligator lizard (*Elgaria multicarinata*), western painted turtle (*Chrysemys picta bellii*), and western pond turtle (*Actinemys marmorata*). Additional special-status species could be found in old-growth/mature forests or riparian forested habitats (see Sections 18.1.2.5, Old-Growth/Mature Forest and 18.1.2.8, Riparian).

#### Production Forest Wildlife

Production forest habitat is similar to forest habitat, but can have lower species diversity due to the recurring cycle of selective tree growth and harvest, which strongly influences the structural characteristics, age, and composition of this habitat, and frequent disturbance, which creates openings for weedy species. Production forest is routinely harvested for wood products, but may also be managed for habitat. In the study area, it is dominated by Douglas-fir and western hemlock (WDNR 2009b). The age and quality of production forest in the study area can vary

widely, ranging from newly replanted production forest to old-growth/mature forest (a WDFW priority habitat).

Production forest also occurs frequently throughout the study area (see Maps 17-1A through 1D), being somewhat less concentrated to the south and southwest of Lake Merwin (see Map 17-1C). It is the most common general wildlife habitat in the study area along three of the action alternatives: 63 percent along the Central Alternative, 73 percent along the East Alternative, and 50 percent along the Crossover Alternative. It only makes up 10 percent of the habitat along the West Alternative. The Casey Road and Baxter Road substation sites are in production forest.

The same special-status species and habitats that can occur in forest can occur in production forest; particularly in areas that have not been logged recently or frequently (see Section 18.1.4, Special-Status Wildlife). Indeed, a similar number of old-growth/mature forests in the study area occur in both forest and production forest where logging has not yet occurred (or last occurred over 80 years ago). Sixteen special-status species have been documented in production forest in the study area: elk, bald eagle, golden eagle (*Aquila chrysaetos*), mountain quail, northern goshawk (*Accipiter gentilis*), peregrine falcon (*Falco peregrinus*), wild turkey, cascade torrent salamander (*Rhyacotriton cascadae*), coastal tailed frog (*Ascaphus truei*), Cope's giant salamander (*Dicamptodon copei*), Larch Mountain salamander (*Pethodon larselli*), western toad, ringneck snake, western painted turtle, western pond turtle, and Columbian black-tailed deer. Most of these species are associated with WDFW priority habitats in production forest, including forested riparian areas, cliffs, and talus slopes or caves.

### **18.1.1.2 Wildlife in Shrubland Habitats**

Shrubland includes areas dominated by shrubs or tree saplings, and typically occur in existing rights-of-way, on recently harvested production forest, and in fallow fields (see Chapter 17, Vegetation). It may include or encompass WDFW priority habitats, including scrub-shrub freshwater wetlands, riparian areas, herbaceous balds, and caves (see Section 18.1.2, WDFW Priority Habitats).

Shrubland is mixed with production forest and forest habitats in the study area and is often connected to open habitat (see Maps 17-1A through 1D). It is somewhat less concentrated in the Vancouver area (see Map 17-1D). It makes up about 7 percent of the West Alternative, 4 percent of the Crossover Alternative, and 2 percent of the Central and East alternatives. One acre of the Monahan Creek substation site is in shrubland.

Native shrubland can attract large numbers of wildlife. However, in the study area, shrubland is often highly disturbed and consequently dominated by weedy plant species, which can reduce wildlife habitat diversity. Common wildlife include birds such as willow flycatcher (*Empidonax traillii*) and bushtit (*Psaltriparus minimus*); and mammals such as coyotes, squirrels, chipmunks, and white- and black-tailed deer. Several species of neotropical migratory birds (those that breed in North America and winter in Central and South America), such as Swainson's thrush, typically nest in thickets of deciduous shrubs (Johnson and O'Neil 2001).

Nine special-status species may be found in shrubland (see Section 18.1.4, Special-Status Wildlife). All nine species are habitat generalists, in that they can be found in a variety of habitats, including both forested habitats and shrubland. Of these, only mountain quail, elk, Columbian black-tailed deer, and ringneck snake are documented in the study area.

### 18.1.1.3 Wildlife in Open Habitats

Open habitat includes non-forested areas dominated by herbaceous plants. It may include WDFW priority habitats including westside prairie, riparian areas, and freshwater wetlands (see Section 18.1.2, WDFW Priority Habitats). Open habitat has diverse land uses and features that distinguish it from other habitat types, including frequent disturbance from cultivation, mowing, and harvesting; monotypic landscapes from farming and grazing practices; and low-density residential and farm-related development. As such, it is generally highly disturbed and consequently dominated by weedy plant species, which can reduce wildlife habitat diversity. Similar to production forest, the quality of open habitats can vary widely across the study area.

Open habitat, like shrubland habitat, is scattered throughout forest and production forest, and in and around urban/suburban habitat (see Maps 17-1A through 1D). It is somewhat more concentrated along the Cowlitz River, in the area southwest of Lake Merwin, and in Castle Rock, Longview-Kelso, and Vancouver. Open habitat is more common along the West Alternative than the more forested Central, East, and Crossover alternatives. About 33 percent of the West Alternative crosses open habitat, compared to 12 percent of the Crossover Alternative, 8 percent of the Central Alternative, and 6 percent of the East Alternative. Open habitat makes up a majority of the habitat at the Monahan Creek substation site.

Much of the wildlife that use open habitat are habitat generalists, and have adapted to using several habitat types for feeding and breeding, including birds such as American robin (*Turdus migratorius*), wrens, jays, crows, and vultures; and mammals such as coyotes, squirrels, chipmunks, and Columbian white-tailed deer (*Odocoileus virginianus* ssp. *leucurus*). Important habitat elements include wetlands, wells and water developments, deserted dwellings, shelterbelts (rows of trees and shrubs along the edges of agricultural fields), hedgerows, roadsides, and field borders (a band or strip of perennial vegetation established on the edge of cropland to reduce erosion). Shelterbelts and field borders are important as stopover and breeding habitats for neotropical migratory birds (Johnson and O'Neil 2001). Farm buildings and trees in farmsteads and pastures and along field edges provide potential nesting and roosting sites for common species such as owls, hawks, and bats, and many small prey mammals such as Townsend's vole (*Microtus townsendii*) and vagrant shrew (*Sorex vagrans*).

Sixteen special-status species could be found in open habitat in the project area (see Section 18.1.4, Special-Status Wildlife). Ten have been documented within the study area, including golden eagle, sandhill crane (*Grus canadensis*), tundra swan (*Cygnus columbianus*), wild turkey, black-tailed deer, elk, Townsend's big-eared bat, western toad, western painted turtle, and western pond turtle. Many of these species are associated with WDFW priority habitats contained within open habitat, including riparian areas and wetlands.

### 18.1.1.4 Wildlife in Urban/Suburban Habitat

Urban/suburban habitat is a mix of natural and developed environments that support a relatively low diversity and density of wildlife species. However, it may include small areas of WDFW priority habitats including westside prairie, riparian areas, freshwater wetlands, and Oregon white oak woodlands (see Section 18.1.2, WDFW Priority Habitats).

Urban/suburban habitat occurs primarily in the northern and southern portions of the study area (see Maps 17-1A and 1D). It includes Castle Rock and the Longview-Kelso metro area in the north and Vancouver in the south. More urban/suburban habitat occurs along the West

Alternative than the other action alternatives (18 percent compared to 3 to 4 percent for the other three alternatives) because they cross the Longview-Kelso and Vancouver metro areas. The Sundial substation site is in an urban/suburban habitat (which includes a disturbed wetland).

Many wildlife species thrive in high density inner city areas such as Vancouver and Longview-Kelso and have a high tolerance for human activity. Habitat features in the built environment—such as rooftops, antennae, vent holes, and decorative boxes—provide holes, crevices, and ledges used by birds and mammals. Wildlife species are habitat generalists, and frequently are non-natives, such as opossum (*Didelphis virginiana*) and European starling (*Sturnus vulgaris*). Other common species could include American robin, wrens, jays, and crows. Available woody vegetation is the most important factor to support native birds (Johnson and O’Neil 2001). The proportion of native songbird species tends to decline as urban development intensifies. Some native perching birds and wildlife species that use remnant patches of forest, parks, and green belts could occur in this habitat, including four federal species of concern or state-listed species (see Section 18.1.4, Special-Status Wildlife).

In suburban areas with more vegetation, wildlife diversity increases, although most species are still typically generalists adapted to a wide range of food sources. Remnant patches of habitat left undeveloped such as riparian areas, canyons or ravines, rock outcrops, and lakes provide habitat for generalist species such as coyotes, osprey (*Pandion haliaetus*), belted kingfisher (*Megaceryle alcyon*), and occasionally cougars (*Puma concolor*) (Johnson and O’Neil 2001), and species more specialized to those habitats. Undeveloped areas in suburban areas next to rural areas may serve as wildlife corridors. Where remnant patches of habitat occur, special-status species appropriate to the type of habitat present also have the potential to occur. For example, one special-status species—purple martin (*Progne subis*)—has been documented along the West Alternative in urban/suburban habitat, likely in or near a riparian area, which is its preferred habitat.

## **18.1.2 WDFW Priority Habitats**

WDFW priority habitats are those habitats “with unique or significant value to a diverse assemblage of species” (WDFW 2008) considered a conservation and management priority by the state. The WDFW priority habitats include those documented in the WDFW database (WDFW 2013 and those that might qualify as WDFW priority habitats based on a GIS database analysis or field surveys (see Maps 18-1A through 18-1D). They include Oregon white oak woodlands, herbaceous balds, westside prairie, biodiversity areas and corridors, old-growth/mature forest, freshwater wetlands and fresh deepwater, riparian areas, caves, cliffs, talus, and snags and logs (snag-rich areas).

### **18.1.2.1 Oregon White Oak Woodlands**

Oregon white oak woodlands are stands of Oregon white oak or oak/conifer associations where oak accounts for at least 25 percent of the canopy (WDFW 2008). Only Oregon white oak woodlands equal to or greater than 1 acre are considered priority habitat in non-urbanized areas, but even a single Oregon white oak tree can be considered priority habitat in an urbanized area if particularly valuable to wildlife (WDFW 2008).

There are two documented areas of Oregon white oak woodlands within 1 mile of the action alternatives. Both are in the southern part of the study area (see Map 18-1D). One occurrence

is the Sifton/Lacamas Oregon White Oak Woodland in the Lacamas Prairie NAP/NRCA, which is crossed by the West and Crossover alternatives (segments 25, 36, 41, 43, 40, and 46) (WNHP 2010). NAPs and NRCAs are managed by WDNR to protect and conserve natural resources. While some properties have already been purchased by the state for the Lacamas Prairie NAP/NRCA, WDNR has proposed that the entire prairie be purchased for inclusion in the NAP/NRCA.

The other documented area of Oregon white oak woodlands within 1 mile of the action alternatives is in the Washougal Oaks woodland, which is along Segment 52 (crossed by all action alternatives) next to the Washougal River and Shepard Hill (WDFW 2012). (The Washougal Oaks Woodland is different from the Washougal Oaks NAP, which is about 5 miles to the east and not crossed by the action alternatives.) There are additional scattered Oregon white oak populations throughout Clark County within 1 mile of the action alternatives.

Oregon white oak woodlands provide an abundance of food and important habitat for wildlife. Species such as deer and squirrels feed on the acorns, cavity nesters and some bats nest in oak cavities, and mammals such as red fox (*Vulpes vulpes*) use cavities created by decaying root systems for denning (WFF 1997). Ten special-status species could be found in this habitat (see Section 18.1.4, Special-Status Wildlife). Of these, seven have been documented in the study area: pileated woodpecker (*Dryocopus pileatus*), wood duck (*Aix sponsa*), wild turkey, slender-billed white-breasted nuthatch (*Sitta carolinensis aculeata*), Townsend's big-eared bat, ringneck snake, and southern alligator lizard. A WDFW wood duck priority area encompasses much of an Oregon white oak woodland in the Lacamas Prairie NAP/NRCA. Slender-billed white-breasted nuthatch has been documented in this natural area, and in the nearby Washougal Oaks NAP.

### **18.1.2.2 Herbaceous Balds**

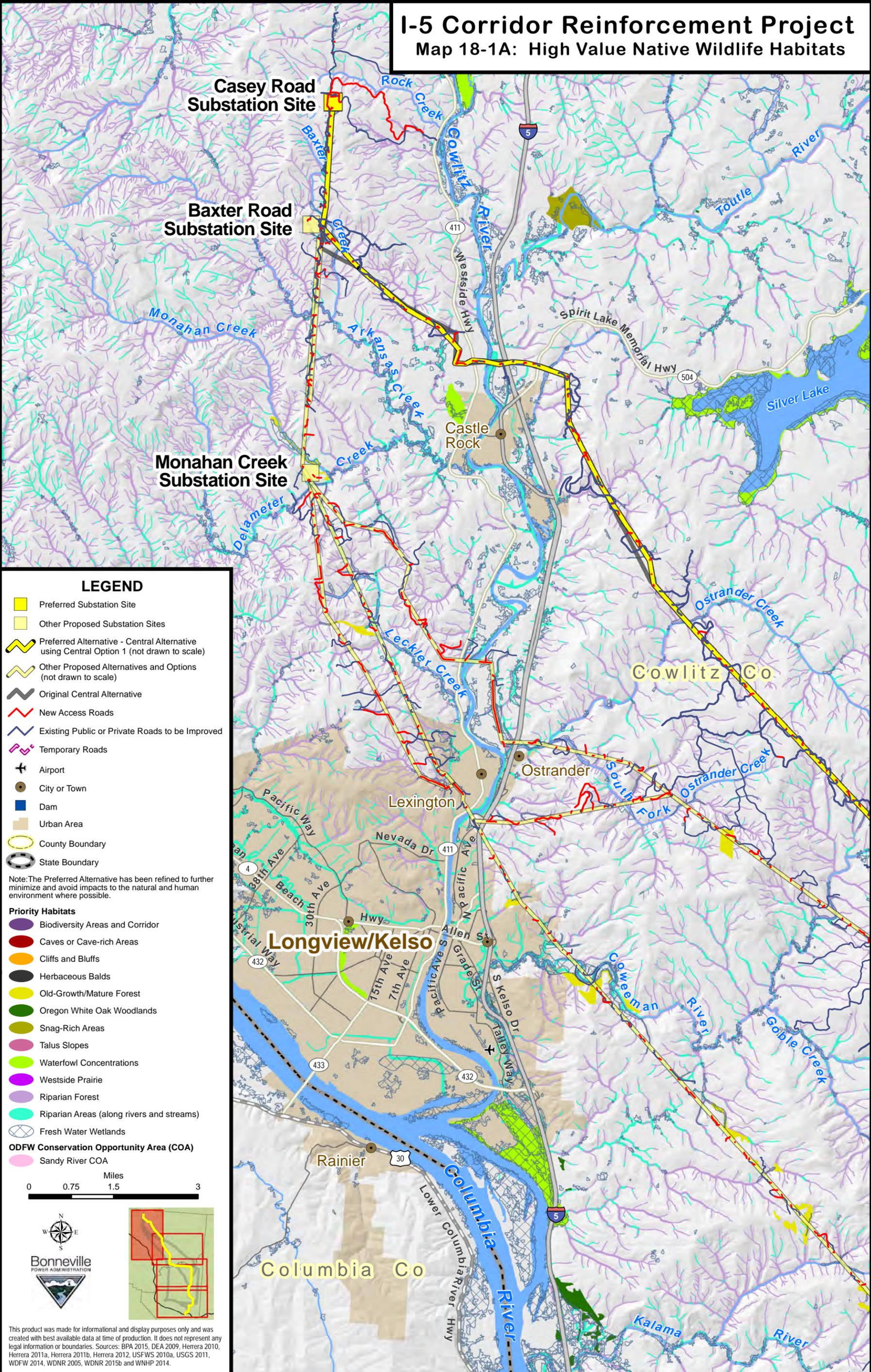
Herbaceous balds are areas of herbaceous vegetation growing in shallow soils over bedrock, often occurring within forested habitats or woodlands. Both WDFW and WNHP have special designations for herbaceous balds: WNHP herbaceous bald priority ecosystems consist of specific plant species associations (see Chapter 17, Vegetation); WDFW priority habitats are more general. There is no size limit for an herbaceous bald to be considered a WDFW priority habitat.

Four herbaceous balds are documented by WDFW within 1 mile of the action alternatives. They include the herbaceous bald south of Rock Creek on Larch Mountain (Segment O of the East and Crossover alternatives, see Map 18-1D); on Baldy (or Bald) Mountain south of Goble Creek (Segment 10 of the Central Alternative, see Map 18-1B); on Little Baldy Mountain southeast of Lacamas Creek (Segment 39 of West Option 3, see Map 18-1D); and near Lacamas Lake (Segment 50 of Central, Crossover, East, and West alternatives). Only the herbaceous bald on Larch Mountain is crossed by the project, although a new access road crosses within a few feet of the herbaceous bald on Baldy (or Bald) Mountain. The WNHP has also documented an additional herbaceous bald within the study area that is not documented by WDFW. This additional herbaceous bald has been documented as a North Pacific herbaceous bald and bluff priority ecosystem (West Alternative, West Option 1, and Crossover Alternative) (see Chapter 17, Vegetation).

Herbaceous balds provide habitat to many rare butterfly species, such as Fender's blue butterfly (*Icaricia icarioides ssp. fenderi*) and several others. However, none of these species has been documented in the study area.

# I-5 Corridor Reinforcement Project

## Map 18-1A: High Value Native Wildlife Habitats



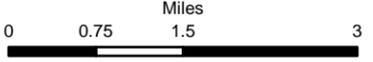
### LEGEND

- Preferred Substation Site
- Other Proposed Substation Sites
- Preferred Alternative - Central Alternative using Central Option 1 (not drawn to scale)
- Other Proposed Alternatives and Options (not drawn to scale)
- Original Central Alternative
- New Access Roads
- Existing Public or Private Roads to be Improved
- Temporary Roads
- Airport
- City or Town
- Dam
- Urban Area
- County Boundary
- State Boundary

Note: The Preferred Alternative has been refined to further minimize and avoid impacts to the natural and human environment where possible.

- #### Priority Habitats
- Biodiversity Areas and Corridor
  - Caves or Cave-rich Areas
  - Cliffs and Bluffs
  - Herbaceous Balds
  - Old-Growth/Mature Forest
  - Oregon White Oak Woodlands
  - Snag-Rich Areas
  - Talus Slopes
  - Waterfowl Concentrations
  - Westside Prairie
  - Riparian Forest
  - Riparian Areas (along rivers and streams)
  - Fresh Water Wetlands

- #### ODFW Conservation Opportunity Area (COA)
- Sandy River COA

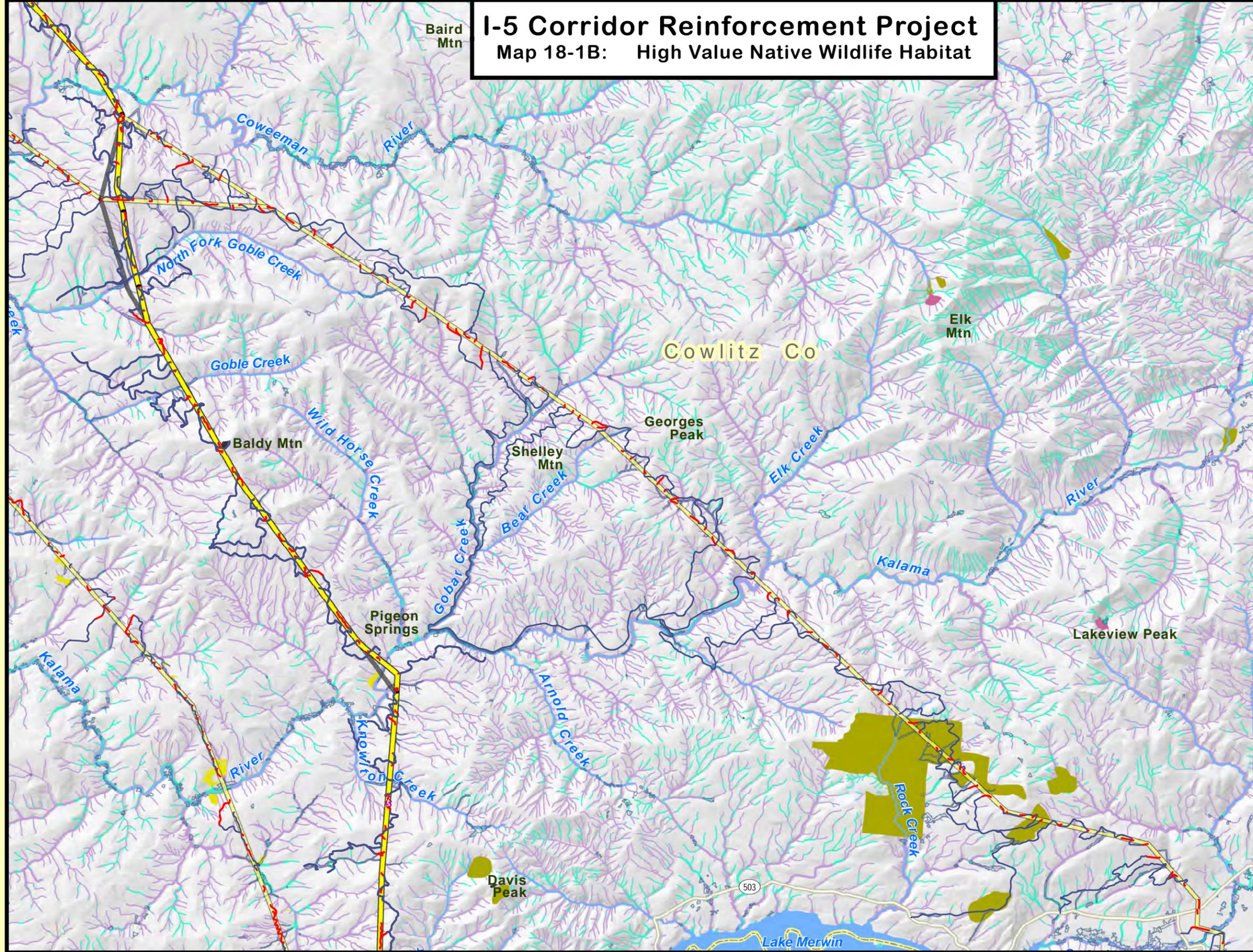


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Map 18-1A: High Value Native Wildlife Habitats

# I-5 Corridor Reinforcement Project

## Map 18-1B: High Value Native Wildlife Habitat



### LEGEND

- Preferred Substation Site
- Other Proposed Substation Sites
- Preferred Alternative - Central Alternative using Central Option 1 (not drawn to scale)
- Other Proposed Alternatives and Options (not drawn to scale)
- Original Central Alternative
- New Access Roads
- Existing Public or Private Roads to be Improved
- Temporary Roads
- Airport
- City or Town
- Dam
- Urban Area
- County Boundary
- State Boundary

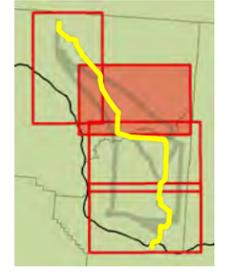
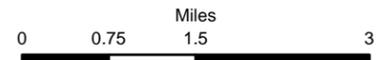
Note: The Preferred Alternative has been refined to further minimize and avoid impacts to the natural and human environment where possible.

#### Priority Habitats

- Biodiversity Areas and Corridor
- Caves or Cave-rich Areas
- Cliffs and Bluffs
- Herbaceous Balds
- Old-Growth/Mature Forest
- Oregon White Oak Woodlands
- Snag-Rich Areas
- Talus Slopes
- Waterfowl Concentrations
- Westside Prairie
- Riparian Forest
- Riparian Areas (along rivers and streams)
- Fresh Water Wetlands

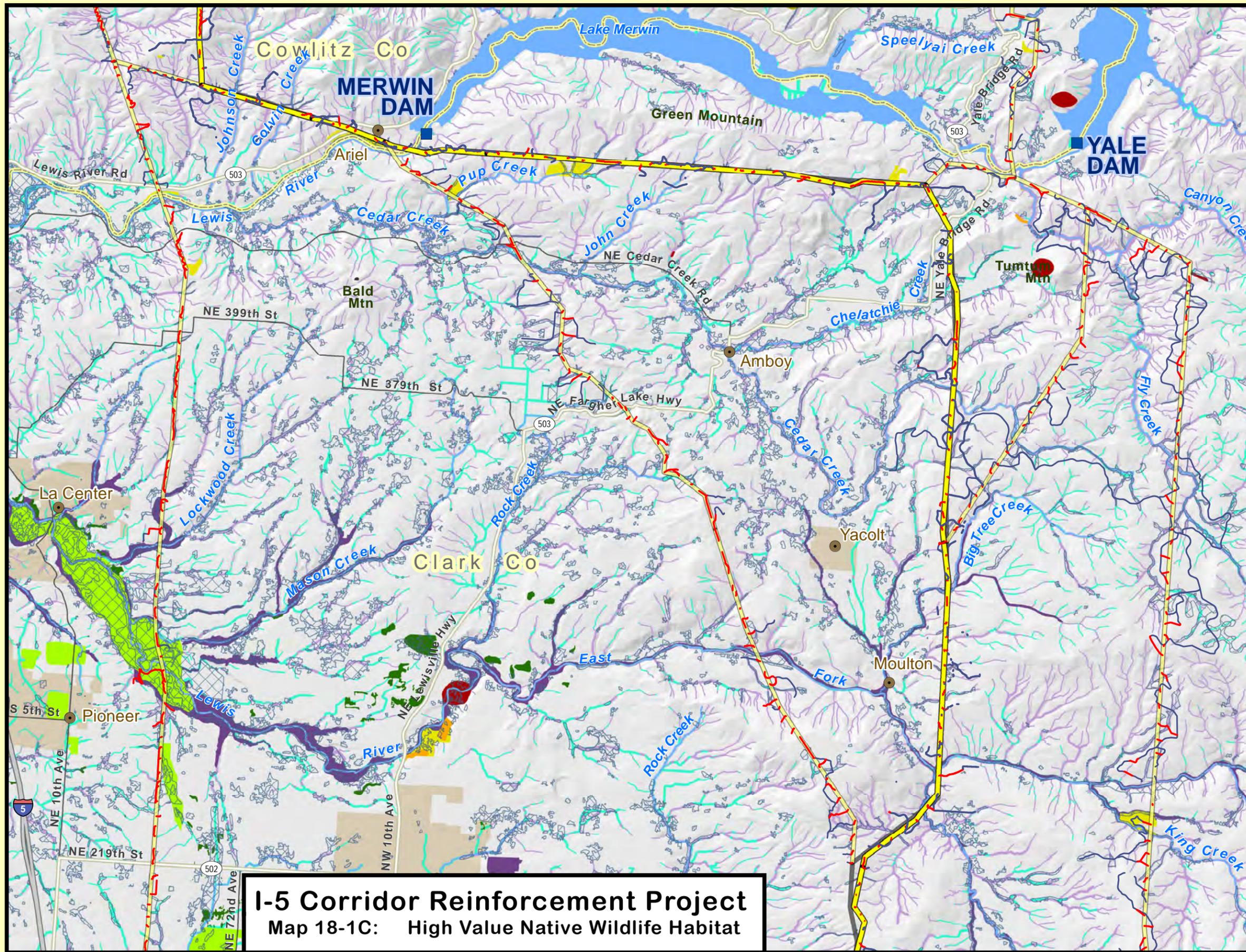
#### ODFW Conservation Opportunity Area (COA)

- Sandy River COA



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Map 18-1B: High Value Native Wildlife Habitat



### LEGEND

- Preferred Substation Site
- Other Proposed Substation Sites
- Preferred Alternative - Central Alternative using Central Option 1 (not drawn to scale)
- Other Proposed Alternatives and Options (not drawn to scale)
- Original Central Alternative
- New Access Roads
- Existing Public or Private Roads to be Improved
- Temporary Roads
- Airport
- City or Town
- Dam
- Urban Area
- County Boundary
- State Boundary

Note: The Preferred Alternative has been refined to further minimize and avoid impacts to the natural and human environment where possible.

#### Priority Habitats

- Biodiversity Areas and Corridor
- Caves or Cave-rich Areas
- Cliffs and Bluffs
- Herbaceous Balds
- Old-Growth/Mature Forest
- Oregon White Oak Woodlands
- Snag-Rich Areas
- Talus Slopes
- Waterfowl Concentrations
- Westside Prairie
- Riparian Areas (along rivers and streams)
- Riparian Forest
- Fresh Water Wetlands

#### ODFW Conservation Opportunity Area (COA)

- Sandy River COA

Miles

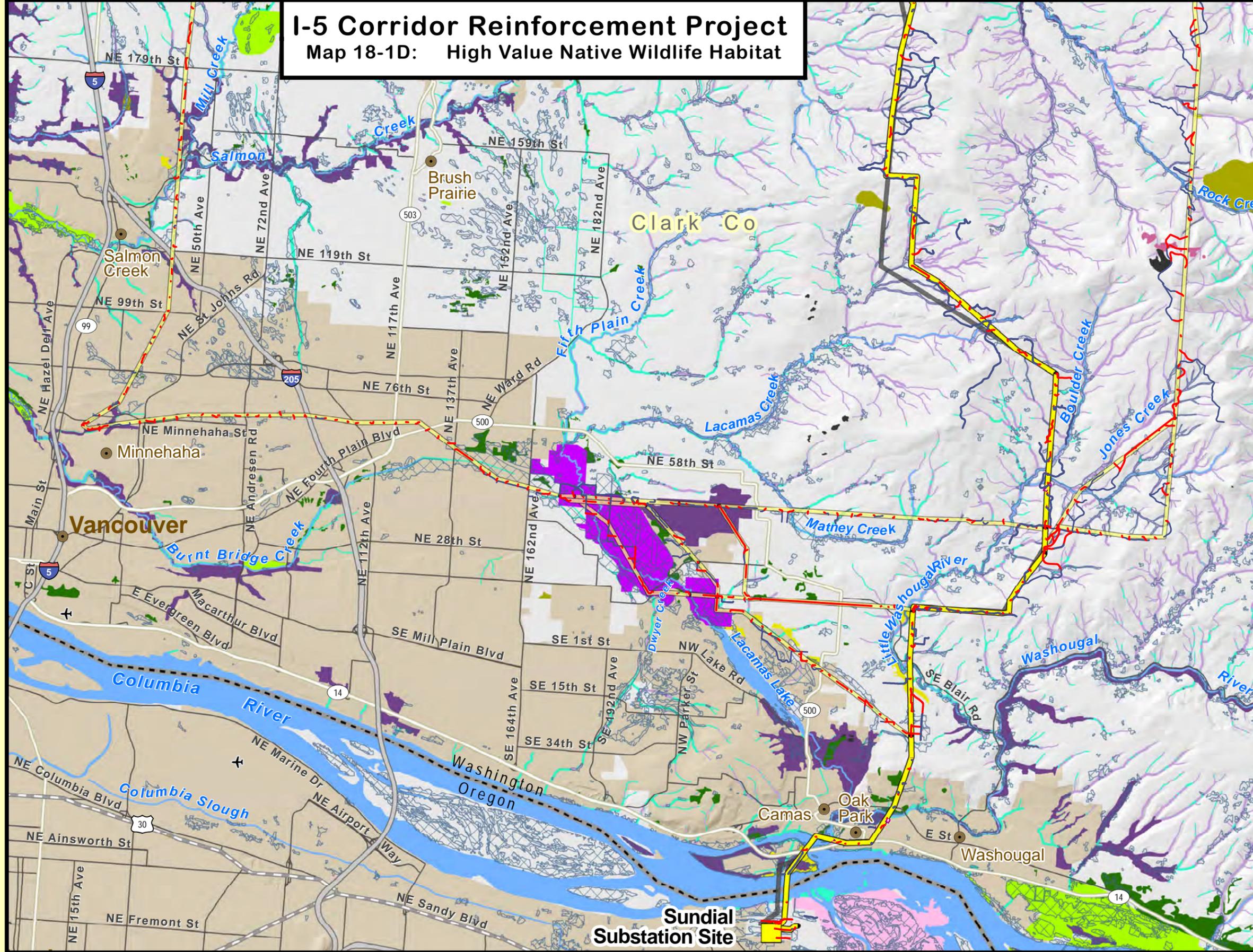
0 0.75 1.5 3

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**I-5 Corridor Reinforcement Project**  
**Map 18-1C: High Value Native Wildlife Habitat**

# I-5 Corridor Reinforcement Project

## Map 18-1D: High Value Native Wildlife Habitat



### LEGEND

- Preferred Substation Site
- Other Proposed Substation Sites
- Preferred Alternative - Central Alternative using Central Option 1 (not drawn to scale)
- Other Proposed Alternatives and Options (not drawn to scale)
- Original Central Alternative
- New Access Roads
- Existing Public or Private Roads to be Improved
- Temporary Roads
- Airport
- City or Town
- Dam
- Urban Area
- County Boundary
- State Boundary

Note: The Preferred Alternative has been refined to further minimize and avoid impacts to the natural and human environment where possible.

### Priority Habitats

- Biodiversity Areas and Corridor
- Caves or Cave-rich Areas
- Cliffs and Bluffs
- Herbaceous Balds
- Old-Growth/Mature Forest
- Oregon White Oak Woodlands
- Snag-Rich Areas
- Talus Slopes
- Waterfowl Concentrations
- Westside Prairie
- Riparian Forest
- Riparian Areas (along rivers and streams)
- Fresh Water Wetlands
- Sandy River COA

Miles  
0 0.75 1.5 3

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Map 18-1D: High Value Native Wildlife Habitat

### 18.1.2.3 Westside Prairie

Westside prairie is an increasingly rare type of habitat. This vegetation community is dominated by native herbaceous species and is classified as wet prairie or dry prairie based on hydrologic conditions and plant species present. Although the project area (including portions of the study area) historically contained many westside prairies, most have been converted to agriculture or developed for other uses. Consequently, westside prairie is primarily found in small remnant patches along fencerows and field margins (Caplow and Miller 2004; WDNR 2008, 2009b). An exception is the Lacamas Prairie NAP/NRCA in Clark County, which is the only remaining example of an intact remnant wet prairie in Washington (see Section 17.1.2.1, WDNR Protected Areas).

Only the West Alternative, West Options, and Crossover Option 1 cross westside prairie habitat (see Map 18-1D). The affected areas include two portions of the Lacamas Prairie NAP/NRCA, including part of the NAP (crossed by West Option 1—segments 40 and 46), and part of the NRCA (crossed by the West Alternative, West Options, and Crossover Option 1—segments 36, 36A, 36B, 40, 41, 45, 46, and 50). Although small remnant patches of prairie vegetation were found in the study area near Camas within 1 mile of other alternatives and options, no intact prairie habitat exists in the other alternatives and options (Herrera 2015).

Thirteen special-status species could be found in westside prairie, including one federally listed species—streaked horned lark (*Eremophila alpestris strigata*). Eight special-status species have been documented in the study area: golden eagle, tundra swan, sandhill crane, wild turkey, Columbian black-tailed deer, elk, Townsend's big-eared bat, and southern alligator lizard (see Section 18.1.4, Special-Status Wildlife).

### 18.1.2.4 Biodiversity Areas and Corridors

Biodiversity areas include habitats identified by WDFW as being important for their biological diversity. Corridors include the relatively undisturbed, unbroken tracts of vegetation that connect these areas (WDFW 2008). There are nine documented WDFW biodiversity areas and corridors in the southern half of the study area: the Upper Salmon Creek Riparian Corridor, the Burnt Bridge Creek Biodiversity Area, the Cougar Creek Riparian Corridor, the Whipple Packard Creek Biodiversity Area, the Green Mountain Biodiversity Area, the East Fork Lewis River Riparian Corridor, the Camas Biodiversity Area, the Washougal River Riparian Area, and the Lady and Akerman Islands Biodiversity Area and Corridor. All are within 1 mile of the West Alternative while the latter four are within 1 mile of all action alternatives (see Maps 18-1C and 18-1D). The Green Mountain Biodiversity Area is also within 1 mile of the Crossover Alternative. All but one are in riparian areas in either open or forested habitat (including two in old-growth/mature forest); the other—the Green Mountain Biodiversity Area—is in forest next to the Lacamas Prairie NAP/NRCA.

Wildlife found in biodiversity areas and corridor priority areas includes those species listed for forest (see Section 18.1.1.1, Wildlife in Forest and Production Forest Habitats), open habitats (see Section 18.1.1.3, Wildlife in Open Habitats), old-growth/mature forest (see Section 18.1.2.5, Old-Growth/Mature Forest), and/or riparian areas (see Section 18.1.2.8, Riparian).

### 18.1.2.5 Old-Growth/Mature Forest

Old-growth/mature forests in Washington have declined over the past century from timber harvest activities, but patches of these forests remain throughout the state. About 22.8 million acres of old-growth forests remain in Washington, which is about 6 percent of Washington's forests (USFS 1993). To be considered WDFW priority habitat, old-growth/mature forest stands need to be at least 7.5 acres, although stands less than 7.5 acres could still be considered a biodiversity area and corridor priority area (WDFW 2008).

There are about 27 stands of old-growth/mature forests crossed by or immediately adjacent to the action alternatives, although they occur most frequently along the West Alternative, particularly Segment 9 (see Maps 18-1A and 18-11B) (Herrera 2010; WDFW 2010b). About half of the stands identified are along rivers and streams. Some larger stands occur along Monahan Creek north of the Monahan Creek substation site (Segment E), the Coweeman River (Segment 9), the Kalama River (Segment 9), the Lewis River near Lake Merwin (Segment 23), Pup Creek (just south of Segment 18), King Creek (Segment O), Lacamas Lake (Segment 40), the Little Washougal River (Segment 51), and the Columbia River on Lady Island (Segment 52) (see Maps 18-1A through 18-1D).

Wildlife species found in old-growth/mature forests can vary from those found in forests, and generally have more specific habitat requirements. Common species in old-growth/mature forest include varied thrush (*Ixoreus naevius*) and bark-foraging birds such as brown creeper (*Certhia americana*), chestnut-backed chickadee (*Poecile rufescens*), red-breasted nuthatch (*Sitta canadensis*), and hairy woodpecker (*Picoides villosus*) (Johnson and O'Neil 2001). At least 13 special-status species may be found in old-growth/mature forest, including two federally listed species—marbled murrelet (*Brachyramphus marmoratus*), and northern spotted owl (*Strix occidentalis*) (see Section 18.1.4, Special-Status Wildlife). Of the 13 species, 9 have been documented in the study area: bald eagle, great gray owl (*Strix nebulosa*), northern goshawk, northern spotted owl, osprey, pileated woodpecker, slender-billed white-breasted nuthatch, Vaux's swift (*Chaetura vauxi*), and wild turkey.

### 18.1.2.6 Snags and Logs (Snag-Rich Areas)

Snags and logs can occur within any forest or woodland habitat, although they tend to be less frequent in managed forests. They support similar wildlife as the other forest and woodland habitats, but increase habitat structural diversity. Snag-rich areas occur infrequently in the project area, partly due to the large amount of managed (production) forest. They are found in the study areas of all action alternatives. WDFW-documented snag-rich areas occurring within the study area include the Rock Creek Snag-Rich Area, crossed by Segment K (East Alternative, see Map 18-1B); the North Fork Lacamas Snags crossed by Segment P (Central Alternative and East Option 2, see Map 18-1D); an unnamed snag-rich area in the Rock Creek Watershed near Segment O (East and Crossover alternatives, see Map 18-1D); and a snag-rich area at Whipple Creek (West Alternative).

### 18.1.2.7 Freshwater Wetlands and Fresh Deepwater

Freshwater wetlands include the transitional areas between aquatic and terrestrial habitats where the water table is at or near the soil surface, or where the land is covered by shallow water (WDFW 2008). They include emergent, scrub-shrub, and forested wetlands.

Wetland habitat occurs frequently along all action alternatives, although most frequently along the West Alternative (see Maps 18-1A, 1C, and 1D). Many wetlands found along the action alternatives are associated with the floodplains of large river systems, including the Cowlitz, Coweeman, Lewis, Kalama, and Columbia rivers. Wetland habitats are also found within smaller stream corridors, such as Salmon Creek. Although they can vary in their value to wildlife based on various attributes—such as size, structural complexity, connectivity, etc.—WDFW considers all wetlands to be a priority habitat (WDFW 2010a). To date, only four wetlands are identified as a priority habitat by WDFW in the study area. These include the Coweeman Wetland along the Coweeman River (Segment 9 of the West and Crossover alternatives), the Fraser Creek Wetland north of Yale Lake (Segment K of the East Alternative), the Curtin Creek Headwaters (Segment 25 of the West Alternative), and the Mill Creek Wetland south of the East Fork Lewis River (Segment 9 of the West Alternative). These wetlands are valuable to wildlife for various reasons, as noted by WDFW (WDFW 2012).

Birds, including species such as Bullock's oriole (*Icterus bullockii*), green heron (*Butorides virescens*), red-tailed hawk (*Buteo jamaicensis*), Virginia rail (*Rallus limicola*), belted kingfisher, red-winged blackbird (*Agelaius phoeniceus*), cavity nesting ducks, and breeding and wintering concentrations of waterfowl, typically use low-elevation herbaceous wetlands for foraging and refuge more than any other wetland type (WDFW 2010b). Mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), river otter (*Lontra canadensis*), and beaver (*Castor canadensis*) are common in wetlands. Emergent and scrub-shrub wetlands are used for breeding by most semi-aquatic amphibian species; even very small wetlands can be important habitat for amphibians (Richter and Azous 1995; Johnson and O'Neil 2001).

Fresh deepwater includes the deep water habitat beyond the emergent wetland boundary in permanently flooded lands such as rivers and lakes (WDFW 2008). They support non-emergent **hydrophytic** plant species and fish and serve as foraging habitat for waterfowl, waterbirds, raptors, and bats. A similar number of fresh deepwater habitats are crossed by the action alternatives and include the Coweeman and Cowlitz rivers in the northern portion of the study area (see Maps 18-1A and 1B), the Kalama, Lewis, and East Fork Lewis rivers in the central portion (see Maps 18-1B and 1C), and the Columbia and Washougal rivers in the southern portion (see Map 18-1D).

Twenty-six special-status species are supported by freshwater wetlands (see Section 18.1.4, Special-Status Wildlife). Nineteen special-status species could be found in fresh deepwater (see Section 18.1.4, Special-Status Wildlife). Of these wetland and fresh deepwater species, 16 species are documented in the study area, including California floater mussel (*Anodonta californiensis*), Oregon floater mussel (*Anodonta oregonensis*), western painted turtle, and western pond turtle.

### 18.1.2.8 Riparian

Riparian habitats occur in the lower-lying areas extending from the streamside vegetation along rivers and streams out to the edge of the floodplain (see also Chapter 15, Water and Chapter 19, Fish). Wetlands are commonly found within riparian zones. Riparian woodlands dominated by deciduous tree species are common, as are riparian areas in early- to late-successional coniferous forest.

Streams and rivers occur frequently throughout the study area (see Maps 18-1A through 18-1D). Riparian habitat would be cleared for the transmission line corridor at 47 to 69 fish-bearing

stream crossings, depending on the action alternative (see Tables 15-2 and 19-2). This would likely include habitat along seven to nine larger rivers and streams. All action alternatives would cross the Cowlitz, Coweeman, Kalama, Lewis, East Fork Lewis, Washougal, and Columbia rivers; while the West Alternative would also cross Salmon Creek (also part of the Clark County Regional Conservation and Greenway System) and Lacamas Creek.

Riparian zones generally contain more mammal, bird, and amphibian species than surrounding uplands. Mammals may include such habitat generalists as coyotes, squirrels, chipmunks, and white-tailed deer. Riparian habitats also provide abundant high-quality food for neotropical migratory birds, which use riparian areas for breeding and as stopovers during migration. Other bird species that use these areas include osprey, red-winged blackbird, red-tailed hawk, American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), great horned owl (*Bubo virginianus*), and song sparrow (*Melospiza melodia*). Amphibians such as Pacific giant salamanders (*Dicamptodon* spp.) and western redback salamander (*Plethodon vehiculum*) use riparian zones for foraging, and most amphibian species require an aquatic habitat for part of their life cycle.

In the study area, riparian areas are important habitats to special-status species. Thirty-one special-status species with potential to occur in the study area use riparian habitats (see Section 18.1.4, Special-Status Wildlife). Twenty of these have been documented as occurring in the study area, including bald eagle, osprey, wild turkey, purple martin, wood duck, elk, Cascade torrent salamander, Cope's giant salamander, coastal tailed frog, and western toad.

### **18.1.2.9 Caves**

Caves are naturally occurring cavities, recesses, voids, or systems of interconnected passages that are large enough for a person and that occur under or into the earth in soils, rock, ice, or other geological formations. Mine shafts may mimic caves and provide similar wildlife habitat (WDFW 2008).

Several WDFW cave-rich priority areas occur within the study area (see Map 18-1C). They include a WDFW cave-rich priority area, the Lost Lake Caves, crossed by the East and Crossover alternatives in the portion of Segment O. Two other unnamed caves occur within 1 mile of an action alternative: one near Tum Tum Mountain (Segment O of the East Alternative and East Option 2) and one near Speelyai Hill (Segment K of the East Alternative). A cave with a documented bat hibernaculum occurs between segments 41 and 43 near the West Alternative and West Options 2 and 3 (see Map 18-1D).

Caves could provide habitat for seven special-status species (see Section 18.1.4, Special-Status Wildlife). Three have been documented in the study area: Townsend's big-eared bat, peregrine falcon, and Larch Mountain salamander.

### **18.1.2.10 Talus**

Talus is a homogenous area of rock rubble, including riprap slides and mine tailings. Talus may be associated with cliff habitat, a WDFW priority habitat that has not been documented or quantified by WDFW (WDFW 2008).

Talus occurs where the East and Crossover alternatives cross Larch Mountain on Segment O (see Map 18-1D), which may also cross cliff habitat (also not yet documented by WDFW).

Common species such as red-legged frog (*Rana aurora*), Pacific tree frog (*Pseudacris regilla*), northwestern salamander (*Ambystoma gracile*), and long-toed salamander (*Ambystoma macrodactylum*) sometimes use talus slopes for winter hibernation. Cliffs provide vantage points and unique nesting and roosting habitat for birds, and roosting habitat for bats. Mammals such as fishers (*Martes pennanti*) use cliffs for denning.

Talus slopes may provide habitat for three special-status species: Larch Mountain salamander, ringneck snake, and Van Dyke's salamander (*Plethodon vandykei*) (see Section 18.1.4, Special-Status Wildlife). Cliffs may support four special-status species: peregrine falcons, fisher, long-eared myotis, and long-legged myotis. Of the seven species listed above, only Larch Mountain salamander, ringneck snake, and peregrine falcon have been documented to occur in the study area.

### **18.1.3 ODFW Strategy Habitats**

In Oregon, strategy habitats are native habitats considered to be conservation priorities due to high losses over the last century and the risk of future losses (ODFW 2006). ODFW guides habitat mitigation by rating and categorizing strategy habitats based on quality and importance to wildlife. These habitat categories are designated as categories 1 through 6, with 1 being the highest quality (OAR 635-415-0025). Oregon strategy habitats in the study area (defined the same as WDFW priority habitats) include wetland and riparian habitats. These habitats have been highly disturbed and would likely be considered ODFW habitat categories 5 and 6, including the primarily herbaceous emergent wetlands surrounding the Sundial substation site. The ODFW Sandy River Conservation Opportunity Area (COA) may contain higher quality habitat, but is 0.25 mile east of the proposed right-of-way for all action alternatives and 0.5 mile east of the Sundial substation site (see Map 18-1D), and would not be affected.

### **18.1.4 Special-Status Wildlife**

Special-status wildlife include those species protected under the federal Endangered Species Act as threatened, endangered, or proposed species; those listed by the USFWS as candidate species or species of concern; and those listed for protection by the states of Oregon and Washington. Special-status species also include WDFW priority (non-listed) species and specific wildlife groups, such as waterfowl. These are species identified as conservation priorities due to their dependency on specific habitats for important aggregations (e.g., heron rookeries), or based on their recreational, commercial, and/or tribal importance coupled with various vulnerabilities to decline (WDFW 2008). Special-status wildlife species with documented occurrences and/or potential suitable habitat within the study area (defined the same as WDFW priority habitats and ODFW strategy habitats) are identified in Table 18-2. The following discussion describes federally listed wildlife species with the potential to occur in the study area, and other special-status wildlife species.

#### **18.1.4.1 Federally Listed Wildlife Species**

The potential for a certain federally-listed wildlife species to occur in the study area is determined by documented occurrences and suitable habitat. Suitable habitat occurs for one federally endangered species (Columbian white-tailed deer) and three federally threatened species (northern spotted owl, marbled murrelet and yellow-billed cuckoo) along all action alternatives. Two additional federally threatened species (Oregon spotted frog and streaked

horned lark) could potentially occur in the study area, but there are no documented occurrences or suitable habitat.

### Columbian White-Tailed Deer

Suitable habitat for Columbian white-tailed deer includes a mosaic of open habitat (meadow) and forest or woodland habitat, especially in association with riparian areas (see Section 18.1.2, WDFW Priority Habitats). Although suitable habitat exists along all action alternatives for Columbian white-tailed deer, the habitat is low quality and is separated from current known deer populations by highly developed areas, which are barriers to dispersal. There are only two known populations of this species: one in Washington along the Columbia River west of the project area, and one in Roseburg, Oregon (USFWS 1983). The eastern extent of the Columbia River population is about 5 miles west of the study area; however, based on radio-tracking data and the dispersal barriers, it is unlikely that the deer would migrate into the study area (USFWS 2013a; Thomas 2014). There is no federally designated critical habitat for Columbian white-tailed deer in the study area (USFWS 2010b, 2010c).

**Table 18-2 Special-Status Wildlife Species with the Potential to Occur in the Study Area<sup>1</sup>**

Species (Scientific Name)	Status	Potential Habitat in Study Area	Documented Occurrences by Action Alternative
<b>Birds</b>			
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Federal (SOC) WA (S)	Fresh deepwater; Riparian; Forest; Production forest; Old-growth/mature forest	All Action Alternatives
Band-tailed pigeon ( <i>Columba fasciata</i> )	WA (Priority)	Forest; Production forest	–
Barrow's goldeneye ( <i>Bucephala islandica</i> ) <sup>2</sup>	WA (Priority)	Wetlands; Riparian	West Alternative and Options Crossover Alternative and Options
Bufflehead ( <i>Bucephala albeola</i> ) <sup>2</sup>	WA (Priority)	Wetlands; Riparian; Oregon white oak woodlands; Fresh deepwater	–
Cavity-nesting ducks	WA (Priority Areas)	Riparian	All Action Alternatives
Common Goldeneye ( <i>Bucephala clangula</i> ) <sup>2</sup>	WA (Priority)	Wetlands; Riparian; Oregon white oak woodlands; Fresh deepwater	–
Golden eagle ( <i>Aquila chrysaetos</i> )	WA (C)	Open habitat; Prairie	Crossover and Options East Alternative, East Options 1 and 3
Great blue heron ( <i>Ardea herodias</i> )	WA (Priority)	Wetlands; Riparian	West Alternative and Options Crossover Alternative and Options
Great gray owl ( <i>Strix nebulosa</i> )	WA (Priority)	Forest; Old-growth/mature forest	Central Alternative
Harlequin duck ( <i>Histrionicus histrionicus</i> )	WA (Priority)	Wetlands	–

<b>Species (Scientific Name)</b>	<b>Status</b>	<b>Potential Habitat in Study Area</b>	<b>Documented Occurrences by Action Alternative</b>
Hooded Merganser ( <i>Lophodytes cucullatus</i> ) <sup>2</sup>	WA (Priority)	Wetlands; Riparian; Oregon white oak woodlands; Fresh deepwater	–
Marbled murrelet ( <i>Brachyramphus marmoratus</i> )	Federal (T) OR (T) WA (T)	Old-growth/ mature forest	–
Mountain quail ( <i>Oreortyx pictus</i> )	OR (S-V) WA (Priority)	Shrubland; Forest; Production Forest; Riparian	All Action Alternatives except East Options 1 and 3
Northern goshawk ( <i>Accipiter gentilis</i> )	Federal (SOC) OR (S-V) WA (C)	Old-growth/mature forest	Central Alternative Crossover Alternative and Options West Alternative and Options
Northern spotted owl ( <i>Strix occidentalis</i> )	Federal (T) OR (T) WA (E)	Old-growth/mature forest	All Action Alternatives
Olive-sided flycatcher <sup>3</sup> ( <i>Contopus cooperi</i> )	Federal (SOC) OR (S-V)	Shrubland; Forest; Production Forest; Fresh deepwater	–
Osprey ( <i>Pandion haliaetus</i> )	WA (Monitor)	Riparian; Forest; Old-growth/mature forest; Freshwater wetlands; Fresh deepwater	All Action Alternatives
Peregrine falcon ( <i>Falco peregrinus</i> )	Federal (SOC) OR (S-V) WA (S)	Urban/suburban; Caves; Cliffs	Crossover Alternative and Options East Alternative and Options
Pileated woodpecker <sup>4</sup> ( <i>Dryocopus pileatus</i> )	OR (S-V) WA (C)	Old-growth/mature forest; Riparian; Oregon white oak woodlands	All Action Alternatives
Purple martin ( <i>Progne subis</i> )	Federal (SOC) OR (S-CR) WA (C)	Riparian	All Action Alternatives
Sandhill crane ( <i>Grus canadensis</i> )	OR (S-V) WA (E)	Open habitat; Fresh deepwater; Prairie; Wetlands	West Alternative and Options
Slender-billed white- breasted nuthatch ( <i>Sitta carolinensis aculeata</i> )	Federal (SOC) OR (S-V) WA (C)	Old-growth/mature forest; Oregon white oak woodlands	All Action Alternatives
Sooty grouse (formerly blue grouse) ( <i>Dendragapus fuliginosus</i> )	WA (Priority)	Forest; Production forest	–
Streaked horned lark ( <i>Eremophila alpestris strigata</i> )	Federal (T) OR (S-CR) WA (C)	Riparian; Open Habitat; Prairie	–
Trumpeter swan ( <i>Cygnus bucinator</i> )	WA (Priority)	Fresh deepwater; Wetlands	–

<b>Species (Scientific Name)</b>	<b>Status</b>	<b>Potential Habitat in Study Area</b>	<b>Documented Occurrences by Action Alternative</b>
Tundra swan ( <i>Cygnus columbianus</i> )	WA (Priority)	Open habitats; Fresh deepwater; Prairie; Riparian	West Alternative and Options
Vaux's swift ( <i>Chaetura vauxi</i> )	WA (C)	Old-growth/mature forest	All Action Alternatives
Waterfowl Concentrations (Ducks, Geese, and Swans)	WA (Priority Areas)	Wetlands; Riparian; Oregon white oak woodlands; Fresh deepwater	All Action Alternatives except East Option 1
Western grebe ( <i>Aechmophorus occidentalis</i> )	WA (C)	Fresh deepwater; Wetlands	–
Wild turkey ( <i>Meleagris gallopavo</i> )	WA (Priority)	Open habitat; Forest; Production Forest; Riparian; Old-growth/mature forest; Oregon white oak woodlands; Prairie	All Action Alternatives except East Option 1
Wood duck ( <i>Aix sponsa</i> ) <sup>2</sup>	WA (Priority)	Wetlands; Riparian; Oregon white oak woodlands	Crossover Option 1 West Alternative and Options
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	Federal (T) OR (S-CR) WA (C)	Forest; Production forest; Riparian	–
<b>Mammals</b>			
Big brown bat ( <i>Eptesicus fuscus</i> )	WA (Priority)	Urban/suburban; Forest; Production forest	–
Brush prairie pocket gopher ( <i>Thomomys mazama</i> spp. <i>Oregonus</i> )	Federal (C) WA (T)	Open habitat; Prairie	–
Columbian black-tailed deer ( <i>Odocoileus hemionus</i> ssp. <i>columbianus</i> )	WA (Priority)	Open habitat; Shrubland; Forest; Production forest; Prairie	Crossover Alternative and Options East Alternative and Options West Alternative and Options
Columbian white-tailed deer ( <i>Odocoileus virginianus</i> ssp. <i>leucurus</i> )	Federal (E) OR (S-V) WA (E)	Open habitat; Shrubland; Forest; Production forest; Wetlands; Riparian; Prairie	–
Elk: Rocky Mountain Elk ( <i>Cervus elephus nelsoni</i> ) and Roosevelt Elk ( <i>Cervus elephus roosevelti</i> )	WA (Priority)	Open habitat; Shrubland; Forest; Production forest; Prairie; Wetlands	All Action Alternatives
Fisher ( <i>Martes pennanti</i> )	Federal (C) OR (S-CR) WA (E)	Forest; Production forest; Cliffs	–

<b>Species (Scientific Name)</b>	<b>Status</b>	<b>Potential Habitat in Study Area</b>	<b>Documented Occurrences by Action Alternative</b>
Fringed myotis ( <i>Myotis thysanodes</i> )	Federal (SOC) OR (S-V) WA (Monitor)	Forest; Production forest; Caves	–
Gray-tailed vole ( <i>Microtus canicaudus</i> )	WA (C)	Open habitat; Prairie	–
Keen's myotis ( <i>Myotis keenii</i> )	WA (C)	Urban/suburban; Old-growth/mature forest	–
Long-eared myotis ( <i>Myotis evotis</i> )	Federal (SOC) WA (Monitor)	Shrubland; Forest; Production forest; Fresh deepwater; Riparian; Caves; Cliffs	–
Long-legged myotis ( <i>Myotis volans</i> )	Federal (SOC) OR (S-V) WA (Monitor)	Urban/suburban; Forest; Production forest; Caves; Cliffs	–
Marten ( <i>Martes americana</i> )	OR (S-V) WA (Priority)	Old-growth/mature forest; Wetlands	–
Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	Federal (SOC) OR (S-CR) WA (C)	Caves; Forest; Production forest; Oregon white-oak woodland; Open habitat; Prairie; Riparian	West Alternative and Options
<b>Amphibians</b>			
Cascades frog ( <i>Rana cascadae</i> )	WA (Monitor)	Riparian; Wetlands; Fresh deep water	Crossover Alternative and Options East Alternative and Options
Cascade torrent salamander ( <i>Rhyacotriton cascadae</i> )	Federal (SOC) OR (S-V) WA (C)	Wetlands; Riparian	All Action Alternatives
Coastal tailed frog ( <i>Ascaphus truei</i> )	OR (S-V) WA (Monitor)	Riparian	East Alternative and Options Crossover Alternative and Options
Cope's giant salamander ( <i>Dicamptodon copei</i> )	OR (S-V) WA (Monitor)	Wetlands; Riparian	Central Alternative Crossover Alternative and Options West Alternative and Options
Dunn's salamander ( <i>Plethodon dunni</i> )	WA (C)	Wetlands; Riparian	–
Larch Mountain salamander ( <i>Plethodon larselli</i> )	Federal (SOC) OR (S-V) WA (S)	Caves; Talus	Crossover Alternative and Options East Alternative and Options
Northern red-legged frog <sup>3</sup> ( <i>Rana aurora</i> )	OR (S-V)	Fresh deepwater; Wetlands; Riparian	–
Oregon spotted frog ( <i>Rana pretiosa</i> )	Federal (T) OR (S-CR) WA (E)	Fresh deepwater; Wetlands; Riparian	–
Van Dyke's salamander ( <i>Plethodon vandykei</i> )	Federal (SOC) WA (S)	Wetlands; Riparian; Caves; Talus	–

<b>Species (Scientific Name)</b>	<b>Status</b>	<b>Potential Habitat in Study Area</b>	<b>Documented Occurrences by Action Alternative</b>
Western toad ( <i>Anaxyrus boreas</i> )	Federal (SOC) OR (S-V) WA (C)	Fresh deepwater; Wetlands; Riparian; Open Habitat; Forest; Production Forest	Central Alternative Crossover Alternative and Options East Alternative and Options
<b>Reptiles</b>			
Ringneck snake ( <i>Diadophis punctatus</i> )	WA (Monitor)	Forest; Production forest; Shrubland; Oregon white-oak woodland; Riparian; Talus	All Action Alternatives
Southern alligator lizard ( <i>Elgaria multicarinata</i> )	WA (Monitor)	Forest; Production forest; Oregon white-oak woodland; Riparian; Prairie	Crossover Alternative and Options East Alternative, East Options 1 and 3
Western painted turtle ( <i>Chrysemys picta bellii</i> )	Federal (SOC) OR (S-CR)	Fresh deepwater; Wetlands; Riparian; Open habitat; Forest; Production Forest	All Action Alternatives
Western pond turtle ( <i>Actinemys marmorata</i> )	Federal (SOC) OR (S-CR) WA (E)	Fresh deepwater; Wetlands; Riparian; Open habitat; Forest; Production Forest	All Action Alternatives
<b>Invertebrates</b>			
Blue-gray taildropper (snail) ( <i>Prophysaon coeruleum</i> )	WA (C)	Old-growth/mature forest	–
California floater (mussel) ( <i>Anodonta californiensis</i> )	Federal (SOC) WA (C)	Fresh deepwater; Wetlands	All Action Alternatives
Oregon floater (mussel) ( <i>Anodonta oregonensis</i> )	WA (Monitor)	Fresh deepwater; Wetlands	All Action Alternatives
Valley silverspot (butterfly) ( <i>Speyeria zerene bremnerii</i> )	Federal (SOC) WA (C)	Open habitats; Prairie	–
<p>Notes:</p> <p>C = Candidate; E = Endangered; T = Threatened; S = Sensitive; S-CR = Sensitive, Critical; S-V = Sensitive, Vulnerable; SOC = Species of Concern.</p> <p>1. Documented occurrences are within a 2-mile-wide corridor (1 mile on each side of the action alternatives).</p> <p>2. These five species make up the WDFW priority species group “Cavity-Nesting Ducks.”</p> <p>3. These species are listed in Oregon but not in Washington, and are not shown as documented in the study area because they were not documented in the study area within Oregon.</p> <p>4. This species is not documented within the study area of any action alternative by WDFW but was identified during the 2014 and 2015 plant survey within 1 mile of the action alternatives.</p> <p>Sources: BPA 2015; Herrera 2015; ORBIC 2014; USFWS 2011a, 2014b; WDFW 2008, 2014</p>			

## Marbled Murrelet

Suitable habitat for marbled murrelet is old-growth/mature forest within about 50 miles of the coast that contains trees with large branches capable of providing nesting platforms (USFWS 1997). Since the western-most portions of the action alternatives are more than 50 miles from the coast, they are at the farthest edge of the region expected to support marbled murrelet. Because of the distance from the coast and the small amount of mature forest within

this portion of the project area (see Map 17-1A), it is unlikely that marbled murrelet would nest here. However, there is a documented occurrence about 3 miles northeast of the Casey Road substation site, so it is possible that marbled murrelet could be found in the small patches of mature forest that occur in this area. The eastern extent of the Western Washington Coast Range Conservation Zone, or Conservation Zone 2, for marbled murrelet (marbled murrelet conservation zone) is crossed by all action alternatives and the three Castle Rock substation sites. As stated in the Marbled Murrelet Recovery Plan, maintaining suitable habitat within each of the six marbled murrelet conservation zones is important for the recovery of the species (USFWS 1997). There is no federally designated critical habitat for marbled murrelet in the study area (USFWS 2011d, 2014a).

### **Northern Spotted Owl**

Suitable habitat for northern spotted owl is multi-layered, conifer-dominated old-growth forest with large overstory trees. Old-growth/mature forest stands of varying condition occur in the study area along all action alternatives and could be used as nesting, roosting, and foraging habitat (see Map 18-1A through 18-1D). Younger stands of lower quality could be used as foraging or dispersal habitat. Northern spotted owl nesting territories (referred to as northern spotted owl circles) have been documented throughout the study area, with northern spotted owl circles crossed by or occurring within 1 mile of all action alternatives. Historically, spotted owls were likely distributed throughout much of the western Washington lowlands, but are now considered rare in that portion of their range (USFWS 1992, 2007), and the documented northern spotted owl circles may no longer be occupied. There is no federally designated critical habitat for northern spotted owl in the study area (USFWS 2014a).

### **Oregon Spotted Frog**

Suitable habitat for Oregon spotted frog includes emergent wetlands in forested landscapes, and the species is most commonly associated with large wetland complexes greater than 10 acres with extensive emergent marsh areas (Pearl and Hayes 2004). Existing databases of wetlands and wetland survey results in a large portion of the study area indicate that there is no suitable habitat in any of the action alternatives for this species. There are no documented occurrences of Oregon spotted frog in the study area, and the nearest known population is more than 30 miles away. There is no federally designated critical habitat for Oregon spotted frog in the study area (USFWS 2014a). Because of the great distances from known populations and the lack of suitable habitat in the study area, the likelihood of this species being present is low (Hayes 2014, Leonard 2014).

### **Streaked Horned Lark**

Suitable habitat for streaked horned lark includes native prairies, coastal dunes, agricultural fields, and other sparsely vegetated areas. The species is shown to use large, open sites that are more than 300 acres, or smaller sites that are next to an open landscape, such as water.

The habitat occupied by streaked horned larks in Clark, Cowlitz, and Multnomah counties is on Columbia River islands used by the Corps for dredge material deposition (USFWS 2014a). All action alternatives cross the Columbia River at Lady Island, where there are no dredge deposition sites and no suitable habitat for streaked horned lark. There are no documented occurrences of streaked horned lark in the study area and no federally designated critical habitat for streaked horned lark (USFWS 2014a). There is a known breeding area 14 miles

downstream of the study area at the Rivergate Industrial Complex, and streaked horned larks could fly into the study area; however, the species is unlikely to be present given the lack of suitable habitat.

### **Yellow-billed Cuckoo**

Suitable habitat for yellow-billed cuckoo is large (50 to 200 acres), open cottonwood and willow woodlands, especially in lowlands near rivers and streams. Very little of this habitat is left in the northern part of its range (USFWS 2013b). Small stands of riparian forest of varying condition that could provide foraging habitat for the yellow-billed cuckoo occur in all action alternatives; the largest of these stands occurs on Lady Island where the alternatives cross the Columbia River. However, none of the stands in the study area are large enough for nesting habitat. Historically, yellow-billed cuckoos were fairly common along the Willamette and lower Columbia rivers in Oregon and Washington, and in the Puget Sound lowlands of Washington. Currently, the species is presumed to be non-breeding in Oregon and Washington, and only incidental occurrences of the species have been documented during the last 60 years (USFWS 2013b). There are no documented occurrences of yellow-billed cuckoo in the study area, although three detections of the species in the nearby Sandy River Delta were documented in 2009, 2010, and 2012 (USFWS 2013b). There is no federally designated critical habitat for yellow-billed cuckoo in either Washington or Oregon (USFWS 2014a).

### **18.1.4.2 Other Special-Status Wildlife Species**

In addition to the 3 federally listed species, 61 other special-status species have the potential to occur in the study area (see Table 18-2). Twenty-seven have documented occurrences in the study area and are discussed below. Two WDFW priority species groups are also discussed below.

#### **Birds**

**Bald Eagle.** All action alternatives have areas of suitable bald eagle habitat. They include large trees in riparian areas (or within 0.5 mile of water) for nesting and foraging habitat, and mature conifer stands for shelter at night (Stinson, et. al 2007; USFWS 2012). Throughout the study area, there are 16 documented occurrences of bald eagle nests and 7 WDFW bald eagle priority areas in riparian habitats: the Cowlitz Bald Eagle Feeding Habitat (see Map 18-1A); the Gobar Creek Winter Eagle Site (see Map 18-1B); the Lewis River Winter Eagle Habitat and adjacent Merwin South Shore Communal Night Roost with two nests on the south shore near the dam; and the Yale Tailrace Foraging Area, Yale-Siouxon Notch Communal Night Roost, and the Canyon Creek Communal Night Roost, all near the east end of Lake Merwin (see Map 18-1C). Each action alternative crosses within 1 mile of at least two WDFW bald eagle priority areas (the East Alternative crosses five and the Crossover Alternative crosses six), and all cross within 1 mile of at least six nests. The West and Crossover alternatives cross by the most nests.

Surveys for bald eagle were completed at the Merwin Dam and Yale Dam monitoring sites in 2011 and 2012 (MB&G 2011, 2012a). Biologists concluded that the Merwin site was used by bald eagles as a travel corridor, for occasional foraging, and as a night communal roosting site. They concluded that the Yale site was used as a communal winter roost and eagles were observed perching, roosting, entering and leaving. Elevations of flying bald eagles were either well above or well below existing transmission lines in the area. Biologists did not observe any

bald eagle or other avian interactions (e.g., strikes, avoidance maneuvers) with existing transmission lines.

**Cavity-Nesting Ducks.** Cavity-nesting ducks is a WDFW priority species group that includes wood duck, Barrow's goldeneye (*Bucephala islandica*), common goldeneye (*Bucephala clangula*), bufflehead (*Bucephala albeola*), and hooded merganser (*Lophodytes cucullatus*). Cavity-nesting duck priority areas are those that provide high-quality breeding habitat (WDFW 2008). There are four WDFW cavity-nesting duck priority areas in the study area: the Longview Vicinity Wetlands within 1 mile of the Central and East alternatives near Segment F; the Fraser Creek Wetlands within 1 mile of the East Alternative near Segment K; and the East Fork Lewis Wintering Waterfowl Area and the Pioneer Wetlands, both crossed by the West Alternative in Segment 25 (see Map 18-1C). In addition, there are priority areas specific to two of these species in the study area:

- **Barrow's Goldeneye.** There is one documented occurrence of Barrow's goldeneye within 1 mile of both the West and Crossover alternatives in high-value wetland habitat, which is also a WDFW waterfowl concentration priority area (see Waterfowl Concentrations, this section).
- **Wood Duck.** There are two WDFW wood duck priority areas in the study area in riparian areas crossed by the West Alternative, one of which also comes within 1 mile of Crossover Option 1. (Discussed further under Waterfowl Concentrations below.)

**Golden Eagle.** Potential habitat for this species includes open habitat, such as prairies, and transition zones between shrublands, grasslands, and forested habitat. Nests are usually built on rock ledges of cliffs, but are sometimes built in large trees (NatureServe 2014). There is one documented golden eagle nest in production forest within 1 mile of the East and Crossover alternatives.

**Great Blue Heron.** Potential habitat for great blue heron includes emergent and forested wetlands, open habitats, riparian areas, and shallow water along ponds and lakes (NatureServe 2012). Great blue herons are colonial breeders that nest in a variety of tall deciduous and evergreen trees in forested wetlands, establishing rookeries that usually exist in the same location for many years. Foraging habitat includes fields, meadows, and shallow water (NatureServe 2012). There are three documented occurrences of great blue heron in the study area. They are located within 1 mile of the West Alternative in three distinct areas, one of which is also within 1 mile of the Crossover Alternative.

**Great Gray Owl.** Potential habitat for this species includes a range of mature forested habitats that include dense coniferous and hardwood forest, especially pine, spruce, paper birch, poplar; also second growth, especially near water (NatureServe 2014). Nesting habitat usually includes copses or islands of aspens within pure stands of conifers. Most foraging is done in open areas such as swamps, bogs, and forest clearings where there are scattered trees and shrubs that can be used as perches. Great gray owl is documented within 1 mile of the Central Alternative.

**Mountain Quail.** Potential habitat for mountain quail includes brushy areas in forest, shrubland, and meadow edges, especially in riparian corridors. The species nests on the ground in a shallow scrape, usually under protective cover of roots, brush, grass clumps, or trees (NatureServe 2014; Larsen, et al. 2004). There are documented occurrences of mountain quail in the study area located within 1 mile of the Central, Crossover, and West alternatives and options, and the East Alternative and East Option 2.

**Northern Goshawk.** This species requires mature/old-growth forest habitat. Individuals typically nest in the largest trees in dense forests with sparse groundcover (NatureServe 2012). There is one documented occurrence of an immature northern goshawk in the study area, located in production forest within 1 mile of where the West, Central, and Crossover alternatives cross production forest. Goshawk surveys were conducted at two sites on PacifiCorp land in 2011 and 2012 at the Merwin Dam and Yale Dam monitoring sites. Two surveys were completed each year and were scheduled to coincide with the nestling and fledgling stages ranging from June to mid-August. No goshawks were observed during any of the surveys (MB&G 2012b).

**Osprey.** Ospreys occur primarily along rivers, lakes, reservoirs, and seacoasts. They often cross land between bodies of water. They typically build large stick nests on living or dead trees and also use many man-made structures such as utility poles, wharf pilings, windmills, microwave towers, chimneys, and channel markers (NatureServe 2014). Nests are usually near or above water. Osprey is documented within 1 mile of all action alternatives.

**Peregrine Falcon.** Potential habitat for peregrine falcon includes urban and suburban areas, caves, and cliffs. Peregrine falcons often nest on ledges or holes in rocky cliffs, riverbanks, large stick nests of other species, tree hollows, and man-made structures. Ideal locations include undisturbed areas with a wide view, near water, and close to an abundant food source (NatureServe 2012). There is one documented occurrence of peregrine falcon in the study area, located in WDFW cliffs/bluffs priority habitat within 1 mile of both the East and Crossover alternatives.

**Pileated Woodpecker.** Potential habitat for pileated woodpecker primarily includes old-growth/mature forest (including forested freshwater wetlands and forested riparian areas), although it may also include younger forests and Oregon white oak woodlands for foraging habitat if snags are present. There is one documented occurrence of pileated woodpecker in the study area within 1 mile of the West and Crossover alternatives where they cross forested freshwater wetlands. In addition, pileated woodpecker was documented within 1 mile of the Central, Crossover, and East alternatives near Segment 51 during rare plant surveys for this project. About 25 occurrences of pileated woodpecker sign (characteristic large, rectangular excavations) were documented during rare plant surveys in multiple locations in the Central, Crossover, and East alternatives, and in West Options 2 and 3.

**Purple Martin.** Purple martin nest in tree cavities in riparian areas and require open habitats (fields, marshes, or open water) to forage for insects (NatureServe 2012). There is one documented occurrence in the study area, located in riparian habitat within 1 mile of where all action alternatives cross the Columbia River.

**Sandhill Crane.** Potential habitat for sandhill crane includes open habitats such as agricultural areas, prairie habitat, emergent wetlands, and shallow ponds. Nesting habitat includes wet meadows and the edges of wetlands, while during the non-breeding season, sandhill cranes roost at night in shallow water (NatureServe 2012). Open habitats provide forage. There is one documented occurrence of sandhill crane in open habitat within 1 mile of the West Alternative.

**Slender-billed White-breasted Nuthatch.** Potential habitat for the slender-billed white-breasted nuthatch includes mature deciduous woodland, Oregon white oak woodlands, parks, riparian areas, and occasionally mature coniferous forest (NatureServe 2014). There are two documented occurrences of this species in the study area; one is in mature cottonwood forest

on Lady Island, where all action alternatives cross the Columbia River. The second occurrence is in oak woodland in the Lacamas Prairie NAP/NRCA within 1 mile of the West Alternative and Crossover Option 1.

**Vaux's Swift.** Potential habitat for Vaux's swift includes old-growth/mature forests, where they nest in hollow and broken-top trees and snags, although they sometimes use chimneys for nesting (NatureServe 2012). They generally use the same nest site each year. Vaux's swifts also need open habitats nearby, where they feed on insects (NatureServe 2012). There is one documented occurrence of Vaux's swift in the study area: a nesting Vaux's swift found in a chimney in urban-suburban habitat about 0.5 mile away from the Central Alternative. Vaux's swift has also been reported in a WDFW biodiversity area and corridor priority habitat (WDFW 2012) within 1 mile of all action alternatives.

**Waterfowl Concentrations (Ducks, Geese, and Swans).** WDFW waterfowl concentration priority areas are those known to support large numbers of ducks, geese, and swans, including those that are significant breeding areas or support regular concentrations of these birds in winter. There are nine WDFW waterfowl concentration priority areas in the study area. Two are crossed by the West Alternative in Segment 25 along and just south of the East Fork Lewis River; five are within 1 mile of the West Alternative, also along Segment 25 (see Map 18-1C); one is crossed by the West alternative in Segment 9; and one is within 1 mile of the Central and East alternatives near the Cowlitz River on Segment F (see Map 18-1A). At least two WDFW priority (waterfowl) species are documented to occur in these areas:

- **Barrow's Goldeneye** (see Cavity-Nesting Ducks).
- **Tundra Swan.** This species only occurs in the study area during the winter (non-breeding) season (NatureServe 2012). Open habitats, including shallow lakes and ponds, slow-moving rivers, flooded fields, prairies, and agricultural fields provide foraging and roosting habitat for tundra swan (NatureServe 2012; Seattle Audubon Society 2012). There are two documented occurrences of tundra swan in the study area. They are at two separate locations in riparian/wetland habitats within 1 mile of the West Alternative. One occurrence is in a WDFW Waterfowl Concentration Priority Area.

**Wild Turkey.** This introduced species is a habitat generalist that has established itself in a variety of habitats including forested areas with natural openings, open woodland, and open habitat such as agricultural areas and grasslands. Wild turkey requires trees for roost sites, escape cover, and foraging; and grasslands for foraging and rearing habitat (NatureServe 2014). There are 13 documented occurrences of wild turkey within 1 mile of all action alternatives in forest, production forest, forested wetlands, and rural residential areas.

**Wood Duck.** Wood Ducks prefer bottomland forests, swamps, freshwater marshes, and beaver ponds. They are also common along streams of all sizes. Wood ducks seem to fare best when open water alternates with vegetative cover that the ducks can hide and forage in. This cover can consist of downed trees, shrubs such as alder, willow, and buttonbush, and emergent herbaceous plants such as arrowhead and smartweeds. There are two WDFW wood duck priority areas in the study area in riparian areas crossed by the West Alternative; one also comes within 1 mile of Crossover Option 1.

## Mammals

**Columbian Black-Tailed Deer.** Columbian black-tailed deer is a subspecies of mule deer, and is classified as a state game species. Their preferred habitat includes a mix of shrubland and coniferous forest; as such, they are an “edge” species, finding food in forest openings and shelter in the forest. There are three known concentrations of this species in the study area. The Crossover and East alternatives cross the Upper Rock Creek Columbian Black-tailed Deer Winter Range and the Siouxon Creek Elk Winter Range where black-tailed deer are also documented. There is also a small concentration of this species in a WDFW biodiversity area and corridor —known as the Green Mountain Urban Natural Open Space (WDFW 2012), that that is crossed by the West Alternative (including West Options 2 and 3).

**Elk.** There are two subspecies of elk in the project area: Roosevelt elk, indigenous to Washington, and Rocky Mountain elk, introduced from the Rocky Mountain region (WDFW 2006). Both are game species in Washington. Elk are also considered an edge species because ideal habitat for elk consists of open habitat interspersed with closed-canopy forest (WDFW 2005). There are 11 recognized elk herds in Washington (WDFW 2006, 2012). Three have known ranges crossed by all action alternatives: the Willapa Herd (WDFW Roosevelt Elk Winter Range priority area) and the Mt. St. Helens and Mt. Rainier herds (WDFW Rocky Mountain and Roosevelt Elk Winter Range priority area). The range of the Willapa Herd extends to the northwest portion of the study area. The Mt. St. Helens/Mt. Rainier herds’ range extends to the east and southern portions of the study area. WDFW priority areas for all three herds occur only in the northern portion of the study area, including locations at Siouxon Creek, Coweeman River, Kalama River, and Yale Valley priority areas within the larger WDFW Mount St. Helens/Mt. Rainier herds’ winter range priority area.

**Townsend’s Big-Eared Bat.** Townsend’s big-eared bats may be found in forest habitats or in areas with a mosaic of forest, open, and/or shrubland habitats (NatureServe 2010). They establish maternity and hibernation colonies in caves and mine tunnels, roost in trees, and feed on insects near the foliage of trees and shrubs. There is one documented occurrence of Townsend’s big-eared bat in the study area in a cave within about 0.15 mile of the West Alternative (including the West Options) (WDFW 2010b).

## Amphibians

**Cascades Frog.** Cascades frogs inhabit wet mountain meadows, sphagnum bogs, ponds, lakes, and streams in open or patchy coniferous forests. Generally, they are found in and near water, but they sometimes move, from one drainage to another, by crossing over high mountain ridges. These frogs hibernate in mud at the bottom of ponds and in spring-water saturated ground (NatureServe 2014). Breeding sites are quiet ponds, where eggs are laid in open shallow water or among submerged vegetation (NatureServe 2014). Cascades frog is documented to occur within 1 mile of the Crossover and East alternatives and options.

**Cascade Torrent Salamander.** Suitable habitat for Cascade Torrent Salamander includes riparian areas in moist coniferous forests, primarily in and around streams (NatureServe 2012). There are 16 documented occurrences of Cascade torrent salamander in the study area, primarily along the Central, East, and Crossover alternatives, but also one along the West Alternative (WDFW 2010b).

**Coastal Tailed Frog.** Coastal tailed frogs require clear, cold, swift-moving mountain streams with a coarse substrate—most commonly found in forested riparian areas (NatureServe 2012). Coastal tailed frogs have moderate mobility and may be found in forest or open habitat away from streams in wet weather. There are five documented occurrences of this species in the study area. Two are located exclusively along the East Alternative; three others are along both the East and Crossover alternatives.

**Cope's Giant Salamander.** Suitable habitat for Cope's giant salamander includes riparian areas, moist coniferous forests, and in and around streams, rivers, and ponds (NatureServe 2012). There are two documented occurrences of Cope's giant salamander in the study area. One occurs in the study areas within both the Crossover and West alternatives, while the other occurs within the Central and Crossover alternatives.

**Larch Mountain Salamander.** The range of Larch Mountain salamanders extends from the Columbia River Gorge northward in the Cascades to central Washington. Potential habitat for Larch Mountain salamander includes steep slopes (usually north-facing, mossy slopes) associated with talus, gravelly soils, or other types of rocky substrate. There is one documented occurrence in the study areas of the East and Crossover alternatives.

**Western Toad.** The western toad migrates seasonally between aquatic breeding and terrestrial non-breeding habitat. Potential breeding habitat for the western toad includes emergent wetlands, ponds and lakes, or pools of slow-moving streams (NatureServe 2012). Non-breeding habitat occurs in a variety of disturbed and undisturbed open and forest habitats. There is one documented occurrence of this species in the study area along the Central and Crossover alternatives, and another three documented occurrences near an access road for the East Alternative.

## Reptiles

**Ringneck Snake.** This snake occurs in forests, woodlands, grassland, chaparral, and riparian corridors in arid regions (NatureServe 2014). Habitats are moist, at least seasonally. One or multiple individuals often are found near abandoned buildings and in junk piles in wooded areas. During daylight hours, this snake generally hides underground, in or under logs, or under rocks, stumps or other surface cover. Ringneck snakes are documented within 1 mile of the all action alternatives.

**Southern Alligator Lizard.** Habitats are diverse and include grassland, chaparral, oak woodland, and open pine forest; in drier regions, the species often occurs along streams or in other moist, vegetated areas (NatureServe 2014). Microhabitats include logs, thickets, rocks, and old woodpiles and trash heaps around houses. Egg-laying sites include burrows or stable talus (NatureServe 2014). Southern alligator lizard has documented occurrences within 1 mile of the Crossover Alternative and options and the East Alternative and Options 1 and 3.

**Western Painted Turtle.** Potential habitat for western painted turtle includes marshy ponds, small lakes, wetlands, slow-moving streams, and quiet off-channel portions of rivers. This species also requires upland habitat in open areas for nesting (NatureServe 2014). There is a documented occurrence of the species within the portion of the study area in Oregon. This record from 1992 documents 25 individual western painted turtles in the Sandy River Delta, within 1 mile of all action alternatives and options.

**Western Pond Turtle.** Potential habitat for the western pond turtle includes riparian areas, emergent wetlands, ponds and small lakes, and adjacent upland habitat for nesting and hibernation (NatureServe 2012). There are three documented occurrences of this species in the study area. One is in Washington along the Central Alternative. Two are along all action alternatives in Oregon, including one occurrence near the Sundial substation site. The population in Washington is a captive population (WDFW 2010b); its potential range is therefore limited to that specific site, which is about 0.25 mile away from the proposed right-of-way and access road.

## **Invertebrates**

**California Floater.** Potential habitat along the action alternatives for this freshwater mussel includes shallow water in primarily silty or sandy substrates of various aquatic habitats, although they have also been found in gravelly substrates (Xerces 2015). There is one documented occurrence of California floater in the Columbia River within 1 mile of all action alternatives.

**Oregon Floater.** The Oregon floater prefers low gradient and low elevation rivers, lakes and reservoirs, and often shares habitat with the California floater (Xerces 2015). The Oregon Floater is documented within 1 mile of all action alternatives.

## **18.2 Environmental Consequences**

General impacts that would occur for the action alternatives are discussed below, followed by impacts unique to each alternative.

### **18.2.1 Impact Levels**

Impacts would be **high** where project activities would cause the following:

- Mortality, a temporary decline in reproduction, or habitat loss of known occurrences of a federally listed species under the ESA that adversely affects population recovery
- Mortality, a temporary decline in reproduction, or habitat loss of known occurrences of a non-federally listed species with an at-risk population that contributes to the need for federal listing
- Permanent removal or alteration of WDFW priority habitats of high value to wildlife such that most or all relevant attributes of the original habitat are lost

Impacts would be **moderate** where project activities would cause the following:

- Mortality, a temporary decline in reproduction, or habitat loss of known occurrences of a federally listed species under the ESA that does not adversely affect population recovery
- Mortality, a temporary decline in reproduction, or habitat loss of known occurrences of a non-federally listed special-status species with an at-risk population that does not contribute to the need for federal listing
- Mortality of common wildlife species

- Disturbance of federally designated critical habitat under the ESA or high value WDFW priority habitats such that all or most of the relevant attributes of the original habitat are altered but will be restored
- Permanent removal or alteration of WDFW priority habitats of moderate value to wildlife such that most or all relevant attributes of the original habitat are lost
- Long-term or continued intermittent reduction of local food sources including prey species

Impacts would be **low** where project activities would cause the following:

- Minimal disturbance of federally designated critical habitat under the ESA or high value WDFW priority habitat such that all or most of the relevant attributes of the original habitat are maintained
- Permanent removal or alteration of WDFW priority habitats or ODFW strategy habitats of low value to wildlife such that most or all relevant attributes of the original habitat are lost
- Permanent removal or alteration of common wildlife habitats
- Loss of potential habitat of a federally listed species under the ESA where there is a greater likelihood that individuals could be present, but where none have been documented to occur.
- Habitat loss or temporary decline in reproduction of known occurrences of WDFW priority species with stable populations and of common species
- Temporary and minor disturbance of special-status species with at-risk populations that does not affect reproduction or cause injury or mortality
- Temporary disturbance of common wildlife species that does not cause mortality
- Short-term reduction to local food sources including prey species

No impact would occur when there is no degradation of habitat, or any mortality, injury, or reduced reproductive capacity of any wildlife species.

## **18.2.2 Impacts Common to Action Alternatives**

### **18.2.2.1 Construction**

#### **Habitat Removal and Alteration**

Project construction would remove or alter forest, forest production, shrubland, open, and urban/suburban habitats, and certain WDFW priority habitats.

Wildlife forested habitats—including Oregon white oak woodlands, old-growth/mature forests, and some urban/suburban habitats with trees—would be lost by clearing the right-of-way of vegetation for the new line. Most trees and shrubs taller than 4 feet would be removed. Green tree retention clumps and legacy trees in production forests would be permanently removed in several clear cut areas throughout the proposed right-of-way. These impacts would be permanent since the right-of-way would need to remain clear of incompatible vegetation for the

life of the line to maintain operational safety. The loss of wildlife breeding, roosting, nesting, and foraging sites characteristic of forested habitats would change the composition of the wildlife community within and at the edge of the right-of-way, substation, and access roads. Typically, the forested habitats would be converted to shrubland, and Oregon white oak woodlands to prairie. This change in habitat within the right-of-way would also create habitat fragmentation that could reduce and isolate wildlife populations, such as Cope's giant salamander and Dunn's salamander. Fragmentation can negatively affect a species' ability to access seasonal habitats and interbreed. Danger tree removal, pulling and tensioning sites, and helicopter fly yards would also require removing incompatible vegetation, but vegetation would be allowed to grow back.

Habitat loss of forest and production forest from right-of-way clearing would generally have **low** impacts on wildlife because impacts would be spread out along a relatively narrow corridor, and affected habitats are fairly common in the project area, with the exception of WDFW priority habitats (see further discussion, this section). Where special-status species, such as northern spotted owl, are known to be present and would lose habitat, impacts would be **moderate**. Impacts would not be higher since habitat loss would be distributed along the corridor and not greatly affect any single wildlife population. Also, right-of-way clearing would not affect the listing status of any special-status species based on the documented occurrences in the study area and their conservation status (see Special-Status Species, this chapter). For wildlife species that are habitat generalists (including one federally listed species—Columbian white-tailed deer and two WDFW priority species—elk and Columbian black-tailed deer), there would be **no** permanent adverse impacts from right-of-way clearing since they could still use shrubland or prairie habitat as foraging habitat.

Forested riparian areas and forested freshwater wetlands would be extensively altered although they would persist as scrub-shrub riparian areas or scrub-shrub freshwater wetlands (see WDFW Priority Habitats, this section). Trees in Riparian Management Zones would be permanently removed in several areas within the right-of-way. This alteration would have a **low-to-high** impact to these WDFW priority habitats depending on the condition of the affected areas and the proportion of shrubs and trees removed.

Shrublands (including scrub-shrub wetlands) would be altered by right-of-way clearing since they would lose taller vegetation, which could reduce nesting habitat for some bird species. However, these areas would persist as shrubland habitats. New shrubland would be created through right-of-way clearing of forest and production forest. Therefore, right-of-way clearing would either have beneficial impacts on shrubland wildlife or **low** adverse impacts on wildlife in existing shrubland.

Other habitats less affected by right-of-way clearing include caves, open habitat, talus fields, and cliff habitat (see WDFW Priority Habitats, this section). Caves in forested areas would lose adjacent forest habitat, but many wildlife species that rely on caves—such as bats—are habitat generalists that could use the resulting shrublands as foraging habitat. Adverse impacts would include the loss of small amounts of roosting habitat. Right-of-way clearing would therefore be beneficial or have **low** adverse impacts on both wildlife and habitat. Wildlife in open habitat, talus fields, and cliff habitat would experience **no** impacts from right-of-way clearing.

All types of wildlife habitat would be reduced by towers, access roads, and substations, although the minor amount of temporary access roads would have less habitat effect as these roads are located in agricultural fields which would return to pre-construction condition soon after

construction. Tree, shrub, groundcover, woody debris, and soil or rock removal would create habitat losses for mammals, reptiles, birds, and invertebrates in all wildlife habitat types. The loss of these resources could also decrease prey populations and other food such as acorns and seeds. Conversely, habitat could be enhanced for raptors since towers could provide new or additional perches, roosts, and nest sites. This could benefit raptor populations, but may adversely affect their prey, which would experience **moderate** impacts from mortality (e.g., small mammals, lizards, and snakes).

Habitat loss would generally have a **low** impact on wildlife given that impacts would be spread out along a relatively narrow corridor, and affected habitats are fairly common in the project area, with the exception of WDFW priority habitats (see WDFW Priority Habitats, this section). Where special-status species, such as western pond turtle, could be present and lose habitat, impacts would range from **low-to-high** depending on the value of the affected area, the extent of the disturbance, and the potential to affect a species' listing status based on documented occurrences and conservation status.

Not all impacts from right-of-way clearing would be negative, however. Species such as Columbian white-tailed deer, elk, black bear, beaver, rabbits, hares, mice, a variety of songbirds, migratory birds, and raptors frequent transmission line corridors and would be positively affected by right-of-way clearing of forested habitats (Harriman and Baker 2003). Shrubs can provide nesting habitat for some bird species (Bramble, et al. 1994), and the shrubs and herbaceous plants that grow in the cleared right-of-way are desirable for deer, elk, and other species (Loft and Menke 1984).

### **Construction Activities**

In addition to habitat modification and loss that would take place during construction, construction activities themselves could temporarily affect wildlife habitat and species. These activities involve clearing for the right-of-way, danger trees, pulling and tensioning sites, and helicopter fly yards; installing towers, constructing or improving temporary or permanent access roads, and building substations. There would be constant activity at staging areas where materials would be stored and assembled, but these areas would likely be previously disturbed and paved or graveled and not likely to be rich in wildlife habitat or species diversity. Resulting disturbances would include noise and physical hazards from heavy equipment, helicopters, blasting, vehicles, chainsaws, falling trees, and general human activity.

Construction disturbances could harm individual animals and temporarily displace or elevate stress levels for many wildlife species in or near construction areas. Increased stress from noise and construction activities could temporarily disrupt foraging, breeding, and other normal activities, generally a **low** impact. Most invertebrates, reptiles, and amphibians living in wetlands, riparian areas, woodlands, and open habitats are not highly mobile and would be less able to flee construction disturbance. Because of this, these species would experience increased stress during construction and disproportionate impacts from decreased reproduction, injury, and mortality—**low-to-high** impacts depending on a species' status, although mortality of most wildlife, including special-status species would result in **moderate** impacts. For more mobile species such as birds and mammals, displacement within and near construction sites would occur; however, their mobility would decrease the likelihood that they would be harmed, and impacts would be **low**. For example, potential habitat for Columbian white-tailed deer occurs along all action alternatives (see Table 18-2), but because these deer are highly mobile and are

habitat generalists, they would mostly be displaced by construction with no mortality or injury (a **low** impact).

Impacts would increase for special-status species if project-related stress or displacement should occur during the breeding season and cause decreased reproduction or the abandonment and loss of a nest or young. This would have **moderate** impacts on the affected wildlife. Where needed, construction would be limited during the breeding or nesting season to avoid mortality or nest abandonment for federally listed species and migratory birds (see Section 18.2.8, Recommended Mitigation Measures).

Construction activities along access roads and around substations and towers could also have temporary or permanent impacts on wildlife habitat by crushing, removing, or trampling vegetation, spreading weeds, and compacting soils (see Chapter 17, Vegetation and Chapter 14, Geology and Soils). BPA would attempt to restore the vegetation, soils, and hydrology in these areas as needed to mitigate impacts. In some cases, complete restoration may not be possible, and impacts on wildlife from habitat loss would range from **low-to-moderate** depending on the extent of the impacts, the listing and conservation status of the affected species, and the condition of the preconstruction habitat.

### **WDFW Priority Habitats**

Impacts on WDFW priority habitats are assessed because of their importance to a rich diversity of wildlife species. All action alternatives would impact at least three types of WDFW priority habitats: riparian areas, wetlands, and old-growth/mature forest. These habitats would also have the most acreage impacted of all WDFW Priority Habitats affected by the project. The project, regardless of the action alternative, would cause impacts on at least seven major riparian areas including the Columbia, Cowlitz, Coweeman, Kalama, Lewis, East Fork Lewis, and Washougal rivers (the West Alternative would cross an additional two: Salmon Creek and Lacamas Creek riparian areas) (see Section 18.1.2.8, Riparian). The project would also have impacts on biodiversity areas and corridors regardless of the action alternative. Impacts on special-status habitats would range from **low-to-high** depending on their value as wildlife habitat and the extent of the disturbance.

### **ODFW Strategy Habitats and COA**

The project is outside of the ODFW Sandy River Conservation Opportunity Area and would create **no** impacts on the COA. The only Oregon strategy habitats affected by the project would be the disturbed wetland at the Sundial substation site (see Section 18.2.2.3, Sundial Substation Site). No other habitats in Oregon designated as conservation priorities would be impacted by the project.

### **Special-Status Species**

Altered habitats have the potential to affect three federally listed species: northern spotted owl, marbled murrelet, and yellow-billed cuckoo. Impacts on northern spotted owl would range between **low** and **moderate** depending on the action alternative. Impacts on marbled murrelet and yellow-billed cuckoo would be **low** for all action alternatives (see Sections 18.2.4.3, 18.2.5.3, 18.2.6.3, and 18.2.7.3 – Special-Status Species, Federally Listed Species discussions for each alternative).

Each of the action alternatives is within 1 mile of documented occurrences of between 20 and 28 other special-status species depending on the alternative (see Table 18-2). Six of these species are found along all action alternatives and would experience similar types and levels of impacts, though documented occurrences may vary and are discussed in the impacts section for each alternative: bald eagle, mountain quail, northern spotted owl, osprey, pileated woodpecker, slender-billed white-breasted nuthatch, Vaux's swift, wild turkey, Cascade torrent salamander, western pond turtle, and elk. Five other species—California floater, Oregon floater, purple martin, ringneck snake, and western painted turtle—have the same documented occurrences and would experience the same impacts along all action alternatives.

**California floater (Federal SOC, WA Candidate).** Since there is a documented occurrence of California floater in the Columbia River within 1 mile of all action alternatives, and towers would be installed on a reef in the Columbia River, there is some potential for impacts on this species from temporary increased turbidity during construction. Direct impacts on individual mussels would not be as likely since this species most frequently occurs in shallow water in silty or sandy substrates, whereas the towers would be installed in the hard surface of the basalt reef adjacent to the deep channel of the river (see Section 3.2.4, Tower Construction, Columbia River Crossing). Spuds would be used to anchor construction barges, and if these spuds are located in the finer substrates of the river, direct mortality could occur. Although its conservation status is imperiled in Oregon and Washington and vulnerable at the federal level (NatureServe 2012), impacts would range from **low-to-moderate** given the factors listed above.

**Oregon floater (WA Monitor).** Since there is a documented occurrence of Oregon floater in the Columbia River within 1 mile of all action alternatives, and towers would be installed on a reef in the Columbia River, there is some potential for impacts on this species from temporary increased turbidity during construction. Direct impacts on individual mussels would not be as likely since this species most frequently occurs in shallow water in silty or sandy substrates, whereas the towers would be installed in the hard surface of the basalt reef adjacent to the deep channel of the river (see Section 3.2.4, Tower Construction, Columbia River Crossing). Spuds would be used to anchor construction barges, and if these spuds are located in the finer substrates of the river, direct mortality could occur. Since its conservation status is only listed as monitor at the state level and is considered secure at the federal level, loss of individuals or habitat in this area would not likely affect its overall conservation status (NatureServe 2012); impacts would be **low-to-moderate**.

**Purple Martin (Federal SOC, WA Candidate).** Since there is a documented occurrence of purple martin within 1 mile of all action alternatives, there is a greater chance that individuals could be present and affected by the project. Impacts could include loss of riparian habitat from tree removal for right-of-way clearing, towers, access roads, and temporary construction disturbance. BPA would use mitigation measures to avoid harm to a nest or young during the breeding season, if necessary. Since purple martin rely on trees in riparian areas, tree removal from right-of-way clearing in an urban/suburban area would remove valuable habitat in an area where such habitats are scarce. Because of this scarcity, any impacts would likely be isolated, potentially affecting only a small number of purple martin. Loss of individuals or habitat in this area would not likely affect its overall conservation status, which is listed as vulnerable in Washington but secure nationally (NatureServe 2012); impacts would be **moderate**.

**Ringneck Snake (WA Monitor).** Since all action alternatives are within 1 mile of a documented occurrence of ringneck snake, there is a greater chance that individuals could be present and affected by the project. Impacts could include mortality, stress from physical injury, reduced

reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, temporary construction disturbance, and access roads. Since its conservation status is only listed as monitor at the state level and it is considered secure at the federal level, habitat loss coupled with increased mortality would not likely adversely affect many individuals or lead to a need for increased protection (NatureServe 2012); impacts would be **low-to-moderate**.

**Western Painted Turtle (Federal SOC, OR Sensitive-Critical).** All action alternatives cross wetland habitat within 1 mile of a documented occurrence of 25 western painted turtles near the Sundial substation site (see Section 18.2.2.3, Sundial Substation Site). Impacts could include temporary construction disturbance, construction mortality, and loss of a nest or young if construction takes place during the breeding/nesting season, and degradation or loss of wetland habitat from the placement of towers or an access road. In Washington, this species is considered common and not assigned a special status. The western painted turtle is rated as Sensitive – Critical in Oregon, and although it is considered secure throughout its range, its population is potentially in decline in Oregon (NatureServe 2014; Gervais et al. 2009). Mortality, a decline in reproduction, or loss of breeding habitat for this known occurrence would be a **moderate** impact.

## 18.2.2.2 Operation and Maintenance

### Operation

Transmission lines can be obstacles to bird flight. Bird fatalities along the right-of-way could occur from collisions with the 500-kV transmission line conductors or ground wires. The frequency of collisions typically depends on line placement and configuration, and the numbers and species of birds present (Hunting 2002). The proximity of lines to areas of high bird use or migration is the biggest factor in avian collisions. Waterfowl, shorebirds, and other water birds such as egrets and cranes appear to be more susceptible to collision where lines span fresh deepwater, wetlands, and riparian areas, or where lines are between waterfowl feeding and roosting areas (McNeil et al. 1985). The risk of collisions with power lines also increases when birds are migrating in groups at night or in low-visibility conditions such as fog. Other important factors in determining the risk of collisions for a bird species include body size, maneuverability, age of the birds, and the height at which the birds fly (Crowder and Rhodes 1999). Mountain quail, pheasant, and other low-flying birds do not typically fly high enough to collide with conductors. Raptors and passerines appear to be most susceptible in upland habitats (Hunting 2002). Because the project would be within the Pacific Flyway, migrating birds could also collide with the lines. Bats do not tend to collide with transmission lines because they can easily echolocate the conductors.

Transmission lines with a flat configuration (where the conductors are on the same horizontal plane) are easier for birds to avoid. Lines that have the conductors stacked (the same vertical plane), or that parallel other transmission lines strung at a different height, can create a fence effect and are harder for birds to avoid (these conditions exist for this project along existing right-of-way). Typically, the conductors of 500-kV transmission lines are relatively large and more visible to birds and they fly higher to avoid them. Birds flying into transmission lines often collide with the smaller ground wire that is sometimes strung at the top of the towers.

The areas of primary concern for potential bird collisions with the proposed transmission line are riparian areas where the action alternatives would cross over the Cowlitz, Coweeman,

Kalama, Lewis, East Fork Lewis, and the Columbia rivers, and in larger wetland areas, though collisions could occur in all habitats. Migratory, raptor, and special-status bird species could experience mortality from collision with the transmission line. Historically, raptors—including eagles, hawks, owls, etc.—were known to have a high incidence of mortality from power lines, primarily from electrocution; however, current design standards have greatly reduced the probability of this occurring (APLIC 2006). Most transmission line collisions involve waterfowl, pelicans, and cranes, while raptor collisions are relatively rare (APLIC 2012; Kochert and Oldendorff 1999; Oldendorff and Lehman 1986). To avert possible collisions, bird diverters (devices placed on transmission lines to make the lines more visible to birds) would be installed on overhead ground wires spanning the open water in these areas, or in other areas of high bird use. In most habitats under most conditions, and with the use of bird diverters, collisions would be infrequent and impacts on birds **low**. Impacts would be more frequent and **low-to-moderate** where transmission lines are near water bodies or other areas of high bird use, or where the new line would parallel existing lines of a different height. Where the latter two situations occur together, impacts would be **moderate** due to the increased number of collisions that could occur.

Electrocution of birds is not an issue with high-voltage transmission lines, even for birds with large wingspans, because electrocution is considered in the line design and the conductors are spaced far enough apart that birds cannot touch two conductors at the same time to complete an electric circuit.

Previous studies have found that EMF from transmission lines generally does not affect the health, behavior, or productivity of large animals, including wildlife and livestock (Exponent 2011, 2015b). Research has suggested that static magnetic fields (not generated by AC transmission lines) are sensed by honeybees, birds, and bats and used in navigation. However, there is little evidence that EMF from AC transmission lines affects these species. A 2005 Fernie and Reynolds report concluded the following: “Generally, the reproductive success of some wild bird species does not appear to be compromised by EMF conditions, at least not in the short term. Numerous raptors, particularly ospreys (*Pandion haliaetus* L.), are breeding on pylons and towers under EMF conditions. Over 75 percent of the ospreys in Germany are now breeding on power line structures and demonstrate significantly higher breeding success (1.65 fledged young per pair) than birds breeding on natural substrate (1.32 fledglings per pair).” Other research has reported less clear findings and been interpreted according to a variety of hypotheses.

The sensory mechanism that is most commonly believed to support the detection of static magnetic fields by honeybees, birds, and bats appears to be highly frequency dependent. For example, the threshold for detection of static magnetic fields by honeybees is reported to be as low as 26 nanoTeslas (0.01 mG), but at 60 Hz the threshold under the same testing conditions was 430 microTesla (4,300 mG) (Kirschvink et al. 1997, Hsu et al. 2007). The available literature does not indicate that 60 Hz magnetic fields from high voltage transmission lines are likely to have adverse effects on the behavior of bees and other species that make use of static magnetic fields.

## **Maintenance**

Typical operation and maintenance activities would have **low** temporary impacts on most wildlife for all action alternatives, except where there is mortality, in which case the impact would be **moderate** (if mortality would contribute to a need for federal listing, the impact would

be **high**). Tower, line, and substation maintenance activities would impact wildlife from noise (see Chapter 9, Noise), the presence of workers and vehicles, and habitat damage. Vehicle noise would create a low, infrequent, and brief disturbance along the right-of-way during annual ground inspections with one or two maintenance vehicles and during bi-annual aerial inspections with a helicopter. Maintenance vehicles would typically use established access roads; if off-road work should be required, habitat in these areas could be damaged, particularly with the use of large equipment. BPA would revegetate these areas as needed to mitigate impacts.

Vegetation management, which can require mechanical and chemical controls, could take place in the right-of-way as often as every 3 years in areas with fast-growing vegetation. Mowing along roadsides could take place more regularly. Impacts on wildlife would be temporary and primarily include disturbance from the noise from spraying, mowing, or cutting.

### 18.2.2.3 Sundial Substation Site

The two options for the Sundial Substation site are Lots 11 and 12. Both options are within an industrial park, and the wildlife habitat in the general area has been degraded by construction and operation of the Reynolds Aluminum plant, levee construction, drainage improvements, and agricultural activities (DEA 2009). Because of these disturbances, this site has low-value habitats for wildlife. Impacts on wildlife would include displacement, habitat loss, and temporary construction disturbance to wildlife in the surrounding open and wetland habitats. Because of the condition of the affected habitat, the project would likely not affect a large diversity or number of wildlife species, so impacts would be **low**.

Some wildlife species may use the 11 acres of primarily emergent wetland habitat located on Lot 12 (there are no wetlands on Lot 11). Construction activities on Lot 12 would fill the 11 acres of wetlands and thus potentially affect wildlife species dependent on these wetlands. Although wetlands are ODFW strategy habitats, the wetlands on Lot 12 have a medium function rating given their condition. In the wetland areas, impacts could include injury or mortality of less mobile species, which would have **low** or **moderate** impacts.

There are documented occurrences of western pond turtle and western painted turtle within 1 mile of the site, indicating an increased likelihood that either species could be present and affected by substation construction (these are the same occurrences as those listed for all action alternatives) (see Sections 18.2.4.3, 18.2.5.3, 18.2.6.3, and 18.2.7.3, Special-Status Species discussions for each alternative). However, the high degree of disturbance already at the site makes this area poor nesting habitat for western pond turtle and western painted turtle (ODFW 2011; Gervais, et al. 2009), and their presence is unlikely. If present, loss of suitable habitat, harm to individuals in the populations at the Sundial site, and potential additional impacts from new towers and new access roads along the right-of-way approaching the substation on either Lot 11 or 12 could impact these species. The impact would be **moderate-to-high** to the western pond turtle given its declining population and its conservation status of imperiled in Oregon and vulnerable-to-apparently secure status in the United States, and a **moderate** impact on the western painted turtle given its status of Sensitive – Critical in Oregon and its potentially declining population in Oregon (ODFW 2011; Gervais et al. 2009).

## 18.2.3 Castle Rock Substation Sites

All three Castle Rock substation sites are in the northern portion of the project area (see Maps 17-1A and 18-1A), which is within the marbled murrelet conservation zone (USFWS 1997). However, only one site would remove potential marbled murrelet habitat (see Section 18.2.3.3, Monahan Creek). All three sites are located near potential northern spotted owl habitat. Two sites would remove potential northern spotted owl habitat, but all sites could generate noise and visual disturbance during construction that could affect owls. The three sites are also within the WDFW winter range priority area of the Willapa Roosevelt elk herd. Impacts on elk from habitat loss in this WDFW priority area would be **low** for all substation sites based on their secure conservation status (NatureServe 2012) and the relatively small portion of the total WDFW priority area that would be affected (the relative acreages affected are given below). No special-status species have been documented within 1 mile of the Castle Rock substation sites.

Impacts common to action alternatives are in Section 18.2.2. The remaining sections discuss impacts unique to each alternative, and recommended mitigation measures.

### 18.2.3.1 Casey Road

The substation would permanently displace forest and shrubland wildlife by removing and permanently occupying about 28 acres of production forest, 7 acres of shrubland, and 1 acre of open habitat. The substation access road uses an existing road. Displacement, habitat loss, and temporary construction disturbance to wildlife in surrounding production forest and shrubland would generally have **low** impacts on wildlife because the amount of habitat affected is small relative to the total amount present in the project area. Also, small stands of forest identified through GIS and field assessments could provide suitable nesting habitat for marbled murrelet or northern spotted owl, although there are no documented occurrences in the study area (Golder 2015; WDFW 2013). Only marginal quality marbled murrelet habitat was identified near the Casey Road substation. Patches of higher quality spotted owl habitat were identified; however, the large amount of open habitat and immature production forest surrounding the site reduce the likelihood of the habitat being used by spotted owls (Golder 2015). Potential impacts on marbled murrelet and northern spotted owl would include a small amount of potential habitat loss, and noise and visual disturbance during construction activities if the species were present. This would be a **low** impact due to the small amount of habitat removed, the poor quality of the surrounding habitat, the lack of documented occurrences, and, for marbled murrelet, the low likelihood for nesting at the site due to the distance from the coast.

### 18.2.3.2 Baxter Road

The substation and substation access road would permanently displace production forest wildlife by removing and permanently occupying 47 acres of production forest with a small amount of shrubland. This would include less than 1 acre of mostly forested wetland. Impacts on wildlife in production forest would essentially be the same as those described for the Casey Road site, although different types and numbers of wildlife would be affected (see Section 18.2.3.1, Casey Road). Impacts on less than 1 acre of scrub-shrub wetland identified as a WDFW priority habitat could be **low-to-high** depending on the value of the wetland as wildlife habitat. There would be **no** impact on marbled murrelets because there is no suitable habitat present within the affected area (Golder 2015), and a **low** impact on northern spotted owls because no suitable habitat would be removed and there are no documented occurrences of

the species, but a small amount of moderate quality spotted owl habitat is within disturbance distance (0.5 mile) of the affected area (Golder 2015).

### 18.2.3.3 Monahan Creek

The substation and substation access road would permanently displace wildlife typically found in open habitat, production forest, old-growth/mature forest, and shrubland. The Monahan site would remove and permanently occupy 46 acres of open habitat, 18 acres of production forest, 2 acres of old-growth/mature forest, and 1 acre of shrubland. Impacts on wildlife in open habitat, production forest, and shrubland would essentially be the same as those described for the Casey Road site, although different types and numbers of wildlife would be affected (see Section 18.2.3.1, Casey Road). The loss of old-growth/mature forest would be a **high** impact due to its importance as a WDFW priority habitat. Also, it could provide suitable nesting habitat for marbled murrelet or northern spotted owl, although there are no documented occurrences nearby, and the large amount of open habitat and immature production forest surrounding the site reduce the quality of the habitat, particularly for northern spotted owl (BPA 2011). Potential impacts on marbled murrelet and northern spotted owl would include a small amount of potential habitat loss and disturbance during construction activities. This would be a **low** impact due to the small amount of habitat removed, the poor quality of the surrounding habitat, the lack of documented occurrences, and, for marbled murrelet, the low likelihood for nesting at the site due to the distance from the coast.

## 18.2.4 West Alternative

Because 65 miles of the West Alternative parallels an existing transmission line(s) on existing right-of-way, the new line would not create new fragmentation although it could expand existing fragmentation where the right-of-way would need to be widened, primarily in forested habitats (see Chapter 4, Proposed Action and Alternatives). In addition, since the new line would be taller than the parallel existing line(s), the higher conductors would increase the fence effect to bird flight paths and increase the risk of collision in many areas.

### 18.2.4.1 Wildlife Habitats and Species— West Alternative

The following discussion describes the impact levels for wildlife in habitats that are not considered to be WDFW priority habitats; impact levels generally are higher where WDFW priority habitats or special-status species would be affected (see Section 18.2.4.2, WDFW Priority Habitats—West Alternative, and Section 18.2.4.3, Special-Status Species—West Alternative).



## Wildlife in Open Habitat

The proposed transmission line would cross 5 miles of open habitat (see Table 18-3). Towers, access roads, and substations would cause a permanent loss of 171 acres (see Table 18-4). The wildlife most affected by the project in open habitat would likely be ground-dwelling animals. They would experience both a decrease in available habitat and an increase in mortality from the increased number of perches available to predatory raptors (raptors, conversely, would experience mostly positive effects, with some potential for mortality from transmission line collisions). Impacts on wider-ranging wildlife would include a small reduction in breeding or grazing habitat. Wildlife mortality from construction and transmission-line bird collisions would also occur. Because the project would be long and narrow, any single population of animals would lose very little habitat and experience a small increase in mortality. These would cause **low** impacts from habitat loss and construction disturbance, and **moderate** impacts from mortality, since mortality of individual animals would not affect the conservation status of most species.

### Discussing Impacts in Sections 18.2.4–18.2.7

Sections 18.2.4, 18.2.5, 18.2.6, and 18.2.7 provide the amount of wildlife habitat (in acres) that would be altered or removed by each action alternative. They also give the length (in miles) of the transmission line in each habitat. The amount of habitat altered or removed by right-of-way clearing is in Table 18-3 exclusive of the footprints of access roads, towers, and substations, which are in Table 18-4.

Where right-of-way clearing and access road, tower, and substation footprints have similar effects on the resource (e.g., for woodland and forest habitats), acreages from the two tables are added together in the discussion.

## Wildlife in Forest and Production Forest Habitats

Construction would clear 372 acres of forest for right-of-way, towers, substations, and access roads, and 13 acres of production forest for towers and access roads (see Tables 18-3 and 18-4). Forest-dependent wildlife would be most affected by habitat loss. Habitat generalists would be less affected since they would be able to use the altered “edge” habitat within the cleared right-of-way for foraging or hunting (shrubland and open habitat species could experience positive impacts by an increase in habitat) (see Section 18.2.2, Impacts Common to Action Alternatives). Because forest and production forest are common in the project area, and since impacts would be spread out along the corridor, most forest wildlife species would experience **low** impacts from habitat loss and construction disturbance. Wildlife mortality from construction and transmission-line bird collisions would occur but would be **moderate**, since mortality of individual animals would not affect the conservation status of most species (see Section 18.2.4.2, WDFW Priority Habitats—West Alternative, and Section 18.2.4.3, Special-Status Species—West Alternative, for potentially higher impacts).

**Table 18-3 General Wildlife Habitats Impacted by Right-of-Way Clearing (Acres) and Transmission Line Crossing (Miles)**<sup>1,2,3,4</sup>

Alternatives and Options	Forest		Production Forest		Shrubland <sup>5</sup>		Urban/ Suburban <sup>5</sup>		Open	
	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles
<b>West Alternative</b>	<b>308</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>307</b>	<b>18</b>	<b>87</b>	<b>5</b>	<b>79</b>	<b>5</b>
West Option 1	-14	-1	N/C	N/C	+3	+<1	N/C	-<1	-2	+<1
West Option 2	-5	-1	+9	+1	+2	+<1	N/C	+<1	+7	+<1
West Option 3	+30	+2	+21	+1	+22	+1	N/C	-<1	+31	+2
<b>Central Alternative<sup>6</sup></b>	<b>206 (240)</b>	<b>12 (13)</b>	<b>925 (910)</b>	<b>55 (54)</b>	<b>68 (42)</b>	<b>4 (3)</b>	<b>24 (20)</b>	<b>1 (1)</b>	<b>25 (26)</b>	<b>2 (2))</b>
Central Option 1 <sup>6</sup>	N/C (+1)	N/C (+<1)	+40 (+39)	+2 (+3)	+1 (+2)	N/C (+<1)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)
Central Option 2	+40	+2	-76	-5	+4	+<1	-6	-<1	-1	+<1
Central Option 3	+56	+3	-175	-10	-3	-<1	-1	-<1	+10	+<1
<b>East Alternative</b>	<b>173</b>	<b>10</b>	<b>961</b>	<b>56</b>	<b>34</b>	<b>2</b>	<b>19</b>	<b>1</b>	<b>28</b>	<b>2</b>
East Option 1	+18	+1	-56	-3	+3	+<1	-8	-1	+8	+<1
East Option 2	+15	+1	N/C	+<1	+1	+<1	N/C	N/C	N/C	N/C
East Option 3	-6	-1	+22	+2	+3	+<1	N/C	N/C	N/C	N/C
<b>Crossover Alternative</b>	<b>276</b>	<b>14</b>	<b>588</b>	<b>35</b>	<b>208</b>	<b>12</b>	<b>21</b>	<b>1</b>	<b>59</b>	<b>3</b>
Crossover Option 1	+15	+1	N/C	N/C	+16	+1	+1	+<1	-6	-<1
Crossover Option 2	+3	+<1	N/C	N/C	+54	+3	N/C	N/C	+14	+1
Crossover Option 3	+29	+1	+16	+2	+6	+<1	N/C	N/C	+14	+1

Notes:

N/C – No net change from the action alternative.

1. To avoid double counting impacts, the acreages for substations, access roads, and towers, that occur within the right of way were subtracted from right-of-way acreages. These acreages are in Table 18-4.
2. 150-foot wide right-of-way except Central Alternative and Central Option 1 which is generally 150-foot wide right-of-way but may vary in some locations when adjacent to existing right-of-way.
3. The value for each option represents the net change from the action alternative. It was calculated as the acres added by the option minus the acres in the segments the option replaces.
4. Clearing for danger trees outside the right-of-way is unknown at this time and not included in these calculations.
5. Right of way clearing would only affect portions of the acreages given for these general vegetation types; i.e., where trees and tall shrubs are present. Herbaceous vegetation is below clearing requirements and not included in this table.
6. Impact numbers not shown in parentheses reflect updated data, assumptions, and design refinements; impact numbers shown in parentheses are from the Draft EIS.

Sources: BPA 2015, Corelogic 2015, Herrera 2010, USGS 2011, WDNR 2014a

Table 18-4 General Wildlife Habitat Converted to Towers, Access Roads, and Substations (Acres)<sup>1</sup>

Alternatives and Options	Forest					Production Forest					Shrubland					Urban/Suburban					Open					
	Towers	New Access Roads	Improved Access Roads <sup>2</sup>	Substations	Total	Towers	New Access Roads	Improved Access Roads <sup>2</sup>	Substations	Total	Towers	New Access Roads	Improved Access Roads <sup>2</sup>	Substations	Total	Towers	New Access Roads	Improved Access Roads <sup>2</sup>	Substations	Total	Towers	New Access Roads	Improved Access Roads <sup>2</sup>	Substations	Total	
<b>West Alternative</b>	<b>7</b>	<b>20</b>	<b>17</b>	<b>20</b>	<b>64</b>	<b>0</b>	<b>5</b>	<b>8</b>	<b>0</b>	<b>13</b>	<b>7</b>	<b>29</b>	<b>22</b>	<b>1</b>	<b>59</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>10</b>	<b>13</b>	<b>42</b>	<b>30</b>	<b>86</b>	<b>171</b>	
West Option 1	N/C	N/C	-1	N/C	-1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	+2	<-1	N/C	+1	
West Option 2	N/C	N/C	+1	N/C	+1	N/C	+1	+<1	N/C	+2	N/C	+2	<-1	N/C	+1	N/C	N/C	N/C	N/C	N/C	N/C	+<1	+3	-6	N/C	-1
West Option 3	+<1	+1	+2	N/C	+4	+<1	+7	+4	N/C	+12	N/C	+4	+2	N/C	+6	N/C	N/C	N/C	N/C	N/C	N/C	+<1	-2	-4	N/C	-5
<b>Central Alternative<sup>3</sup></b>	<b>3</b> <b>(5)</b>	<b>18</b> <b>(26)</b>	<b>28</b> <b>(45)</b>	<b>0</b> <b>(0)</b>	<b>49</b> <b>(76)</b>	<b>14</b> <b>(19)</b>	<b>76</b> <b>(100)</b>	<b>211</b> <b>(185)</b>	<b>47</b> <b>(47)</b>	<b>348</b> <b>(351)</b>	<b>2</b> <b>(2)</b>	<b>6</b> <b>(7)</b>	<b>29</b> <b>(23)</b>	<b>&lt;1</b> <b>(0)</b>	<b>37</b> <b>(32)</b>	<b>&lt;1</b> <b>(0)</b>	<b>1</b> <b>(&lt;1)</b>	<b>1</b> <b>(2)</b>	<b>0</b> <b>(0)</b>	<b>3</b> <b>(3)</b>	<b>4</b> <b>(4)</b>	<b>13</b> <b>(12)</b>	<b>23</b> <b>(26)</b>	<b>21</b> <b>(40)</b>	<b>61</b> <b>(82)</b>	
Central Option 1 <sup>3</sup>	N/C	+<1 (N/C)	+<1 (-<1)	N/C	+<1 (-<1)	+<1 (+<1)	+17 (+2)	+<1 (+9)	-19 (-9)	+1 (+3)	+<1 (-<1)	+4 (+<1)	+7 (+2)	+7 (+24)	+19 (+26)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	+<1 (N/C)	11 (N/C)	+3 (+8)	+1 (+1)	+15 (+9)
Central Option 2	+<1	+12	-5	+20	+28	-2	+1	-12	-47	-60	<-1	N/C	-3	+1	-3	N/C	N/C	N/C	N/C	N/C	N/C	N/C	<-1	<-1	+46	+44
Central Option 3	+2	+6	-4	N/C	+4	-4	-11	-18	N/C	-33	N/C	-1	-2	N/C	-3	N/C	N/C	N/C	N/C	N/C	N/C	+3	+4	N/C	+7	
<b>East Alternative</b>	<b>3</b>	<b>17</b>	<b>34</b>	<b>0</b>	<b>54</b>	<b>19</b>	<b>84</b>	<b>275</b>	<b>47</b>	<b>425</b>	<b>2</b>	<b>5</b>	<b>48</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>&lt;1</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>13</b>	<b>57</b>	<b>40</b>	<b>114</b>	
East Option 1	+<1	+6	-3	+20	+24	-1	+<1	-11	-47	-58	N/C	+<1	-7	+1	-5	N/C	N/C	<-1	N/C	-1	N/C	+1	-3	+46	+44	
East Option 2	+<1	N/C	-3	N/C	-2	N/C	-5	-45	N/C	-50	N/C	N/C	-15	N/C	-15	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-2	N/C	-2
East Option 3	N/C	-3	N/C	N/C	-3	+<1	N/C	N/C	N/C	+<1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	
<b>Crossover Alternative</b>	<b>6</b>	<b>23</b>	<b>35</b>	<b>20</b>	<b>84</b>	<b>12</b>	<b>65</b>	<b>122</b>	<b>0</b>	<b>199</b>	<b>5</b>	<b>16</b>	<b>44</b>	<b>1</b>	<b>66</b>	<b>&lt;1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>14</b>	<b>21</b>	<b>86</b>	<b>126</b>	
Crossover Option 1	N/C	+2	<-1	N/C	+1	N/C	N/C	N/C	N/C	N/C	+<1	+2	N/C	N/C	+3	N/C	N/C	N/C	N/C	N/C	N/C	+1	+7	+3	N/C	+12
Crossover Option 2	N/C	N/C	+3	-20	-17	N/C	N/C	+5	+47	+52	+3	+2	+9	-1	+13	N/C	N/C	N/C	N/C	N/C	N/C	N/C	+1	+4	-46	-41
Crossover Option 3	N/C	+<1	+3	-20	-16	+<1	+<1	+4	+47	+53	+<1	+2	+10	-1	+12	N/C	N/C	N/C	N/C	N/C	N/C	N/C	+1	+4	-46	-41

## Notes:

N/C – No net change from the action alternative.

1. The value for each option represents the net change from the action alternative. It was calculated as the acres added by the option minus the acres in the segments the option replaces.

2. Many improved access roads could be overgrown or would need to be widened; vegetation would need to be removed.

3. Impact numbers not shown in parentheses reflect updated data, assumptions, and design refinements; impact numbers shown in parentheses are from the Draft EIS.

Sources: BPA 2015, Corelogic 2015, Herrera 2010, USGS 2011, WDNR 2014a

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## Wildlife in Shrubland Habitat

Although total affected acreage is similar to the affected acreage in forest habitat, shrubland wildlife would experience fewer adverse effects, partly since more shrubland would be created than lost. Only 59 acres of existing shrubland would be removed for towers, access roads, and substations, with 307 acres of existing tall shrubland habitat altered by right-of-way clearing (see Tables 18-3 and 18-4). Conversely, they could benefit from the creation of 308 acres of shrubland habitat from right-of-way clearing in forest habitat (see Table 18-3). Also, raptors would experience a positive effect from the increase in available perches. Nonetheless, adverse impacts would occur, particularly to those animals in existing shrubland, including temporary construction disturbance; the loss of existing habitat; the loss of some tall shrub nesting habitat for birds; potential construction mortality for less mobile species; and a possible increase in mortality caused by an increase in predation by raptors using the transmission lines and towers as perches, and by bird/transmission line collisions. Since impacts would be spread out along the corridor and affect a relatively small amount of habitat, the levels of adverse impacts would be similar to those for open habitat, including **low** impacts from loss of existing habitat and construction disturbance, and **moderate** impacts from mortality.

## Wildlife in Urban/Suburban Habitat

Wildlife found in urban/suburban habitat would experience some of the least amount of disturbance in both miles of transmission line and lost or altered habitat. The West Alternative would alter 87 acres of habitat by right-of-way clearing (see Table 18-3) and remove 10 acres of habitat for towers and access roads (see Table 18-4). Impacts on wildlife would range among those impacts listed for open, shrubland, forest, and production forest habitats, depending on which habitats might be present in any given urban/suburban area. Given the small amounts of habitat lost and the general tolerance of urban/suburban wildlife to human disturbance, impacts related to construction and habitat loss or alteration would be **low**, while those related to an increase in mortality (such as for prey species of raptors and bird/transmission line collisions) would be **moderate**.

### 18.2.4.2 WDFW Priority Habitats—West Alternative

This section provides the amount of WDFW priority habitats altered or removed by the West Alternative, and the length in miles of the transmission line crossing in each habitat.

**Riparian Areas.** Along the West Alternative, more habitat loss or alteration would occur in riparian areas than any other WDFW priority habitat: 184 acres would be altered by right-of-way clearing (see Table 18-5) and 30 acres would be lost to towers, access roads, and substations (see Table 18-6). Habitat loss would be a **low-to-high** impact to these WDFW priority habitats, depending on their condition. In addition, transmission line bird collisions could increase across 11 miles of riparian habitat, particularly with the increased fence effect caused by parallel lines. This would also be a **low-to-high** impact depending on bird use and the effectiveness of mitigation measures, since it could reduce the ability of these habitats to safely support waterfowl, waterbirds, and raptors: an essential attribute for these habitats.

Riparian areas also encompass other priority habitats affected by the project, including biodiversity areas and corridors, wetlands, and old-growth/mature forest.

**Biodiversity Areas and Corridors.** Six documented WDFW biodiversity area and corridor priority habitats are crossed by the West Alternative. They include the East Fork Lewis River Riparian Corridor, the Upper Salmon Creek Riparian Corridor, the Burnt Bridge Creek Biodiversity Area, the Cougar Creek Riparian Corridor, the Green Mountain Biodiversity Area, and the Lady and Akerman Islands Biodiversity Area and Corridor (WDFW 2012). Three additional biodiversity area and corridor priority habitats fall within 1 mile of the West Alternative. They include the Whipple Packard Creek Biodiversity Area, the Camas Biodiversity Area, and the Washougal River Riparian Corridor (WDFW 2012). Fragmentation of these habitats from right-of-way clearing could adversely affect the movement of many wildlife species across a biologically diverse and relatively undisturbed area. A total of 3 miles of these habitats would be crossed at approximately 10 locations by new transmission line, with 53 acres altered from right-of-way clearing, and 8 acres lost to transmission towers and access roads (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since fragmentation would diminish one of their main attributes, which is to be a “relatively undisturbed and unbroken tract of vegetation” that connects high-value habitats (WDFW 2008).

**Caves or Cave-Rich Areas.** The West Alternative is within 1 mile of an unnamed cave between segments 41 and 43. This cave contains a documented bat hibernaculum. Impacts could include permanent removal of production forest habitat surrounding the cave (which could remove some roosting habitat); the presence of a tower, transmission line, or access road; and temporary construction disturbance. These disturbances would have **low** impacts on this habitat given the small area of disturbance and the likelihood that actual cave habitat would not be permanently altered. The effects on wildlife (such as Townsend’s big-eared bat) that rely on caves would not likely prevent them from using this cave habitat, while the addition of shrubland from right-of-way clearing could be beneficial for foraging purposes. Also, the location of the disturbance along the edge of the cave-rich area would mean that the area would not be fragmented.

**Freshwater Wetlands and Fresh Deepwater.** About 303 acres of forested, scrub-shrub, and emergent freshwater wetlands would be lost to right-of-way clearing (forested wetland) and/or towers, access roads, and substations (see Tables 18-5 and 18-6). Impacts on wildlife from the alteration and loss of wetland habitat would range from **low-to-high**, depending on the condition of each wetland. Habitat alteration and removal could occur at the Coweeman Wetlands, and would likely be **moderate-to-high** impacts given the description of their value to wildlife by WDFW (WDFW 2012). In addition, transmission line bird collisions may become more frequent over 16 total miles of all three types of freshwater wetlands (see Table 18-6); similar to riparian areas, an increase in transmission line collisions could reduce the value of these areas for wildlife habitat, a **low-to-high** impact. The Curtin Creek Headwaters and the Mill Creek Wetlands are within 1 mile of the West Alternative.

The only impacts on fresh deepwater would be from transmission line bird collisions, which may increase across 1 mile of this habitat (see Table 18-5). As for freshwater wetlands and riparian areas, impacts on this WDFW priority habitat would be **low-to-high**.

**Old-Growth/Mature Forest.** Twenty acres of old-growth/mature forest would be removed by right-of-way clearing, towers, substations, and existing access roads (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since tree clearing would remove the main values of this habitat: long-lived trees and the associated understory vegetation, which have become uncommon in the Pacific Northwest and could not be easily or quickly replaced. Removal of adjacent forested areas would also cause an indirect, **low-to-moderate** effect on the

old-growth/mature forested areas that remain. These edge effects include changes in sub-canopy climate conditions, increasing temperature and humidity variation, increasing light levels, and alteration of the understory composition and/or tree species reproduction. Tree clearing can also increase the risk of windthrow in adjacent forests, extending the canopy-removal effects.

**Westside Prairie.** Eight acres of westside prairie in the Lacamas Prairie NAP/NRCA would be removed by towers and access roads, a **high** impact due to the rarity of this habitat in Washington (see Table 18-6). In addition, the transmission line would cross 2 miles (33 acres) of westside prairie parallel to the existing line, which together may increase transmission line bird collisions (see Table 18-5). Impacts on this habitat would be **low-to-moderate** depending on bird use and mitigation. This is higher than in other types of open areas, since Lacamas Prairie NAP/NRCA is a wet prairie and could have a higher level of waterbirds and waterfowl than dry prairies (see Section 18.2.4.3, Special-Status Species—West Alternative, for a discussion of WDFW wood duck priority area in the Lacamas Prairie NAP/NRCA).

**Oregon White Oak Woodlands.** Less than 6 acres from the Sifton/Lacamas Oregon White Oak and Washougal Oak woodlands would be removed by clearing for right-of-way or towers and roads (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since tree clearing would remove the main attributes of this habitat: Oregon white oak trees and the associated understory vegetation, which are becoming less common in the Pacific Northwest.

**Snag-Rich Areas.** Whipple Creek Snags priority habitat is within 1 mile of the West Alternative. Because of the scarcity of this habitat in the project area, impacts on this snag-rich area would be **high**.

**Herbaceous Balds.** The Lacamas Lake WDFW herbaceous balds priority habitat falls within 1 mile of the West Alternative. Impacts could include temporary construction disturbance. These disturbances could have **low-to-moderate** impacts on this WDFW priority habitat, given its scarcity in the project area.

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**Table 18-5 WDFW Priority Habitats Impacted by Right-of-Way Clearing (Acres) and Transmission Line Crossing (Miles)<sup>1,2,3</sup>**

Alternatives and Options	Old- Growth/ Mature Forest		Snag-Rich Area		Riparian		Forested Freshwater Wetlands		Scrub- Shrub Freshwater Wetlands		Emergent Freshwater Wetlands		Fresh Deepwater		Westside Prairie		Biodiversity Areas and Corridors		Talus		Herbaceous Balds		Oregon White Oak Woodlands		Caves or Cave-Rich Habitat	
	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles	Acres	Miles
West Alternative	16	1	0	0	184	11	54	3	62	3	140	9	<1	<1	33	2	53	3	0	0	0	0	5	<1	0	0
West Option 1	+<1	N/C	N/C	N/C	+6	<-1	+5	+<1	+2	+<1	+21	+1	N/C	N/C	+28	+2	-11	-1	N/C	N/C	N/C	N/C	-1	<-1	N/C	N/C
West Option 2	+5	+<1	N/C	N/C	-2	<-1	-8	-1	-3	<-1	-5	<-1	N/C	N/C	-14	-1	+12	+1	N/C	N/C	N/C	N/C	-2	<-1	N/C	N/C
West Option 3	+3	+<1	N/C	N/C	+1	+<1	-5	<-1	-2	<-1	-3	<-1	N/C	N/C	-14	-1	+12	+1	N/C	N/C	N/C	N/C	-2	<-1	N/C	N/C
Central Alternative <sup>4</sup>	9 (11)	<1 (1)	0 (2)	0 (<1)	164 (173)	9 (10)	17 (69)	1 (4)	17 (16)	1 (1)	10 (18)	1 (1)	0 (<1)	0(0)	0(0)	0(0)	4 (10)	<1 (<1)	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	<1 (<1)	0 (0)	0 (0)
Central Option 1 <sup>4</sup>	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	+7 (+7)	+<1 (+<1)	+<1 (+1)	+<1 (+<1)	+1 (+<1)	+<1 (+<1)	+<1 (+<1)	N/C (+<1)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)
Central Option 2	+5	+<1	N/C	N/C	+5	+1	+5	+<1	-1	<-1	+2	+<1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Central Option 3	+3	+<1	N/C	N/C	-11	-1	-2	<-1	-1	<-1	+<1	+<1	N/C	N/C	N/C	N/C	-2	<-1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
East Alternative	11	1	31	2	166	9	61	3	23	1	15	1	0	0	0	0	9	1	<1	<1	<1	0	1	<1	<1	0
East Option 1	+5	+<1	N/C	N/C	-4	<-1	+2	+<1	+8	+<1	+10	+1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
East Option 2	-7	<-1	+2	+<1	+14	+1	+4	+<1	-7	<-1	N/C	N/C	+<1	N/C	N/C	N/C	+1	+<1	<-1	<-1	N/C	N/C	N/C	N/C	<-1	N/C
East Option 3	N/C	N/C	N/C	N/C	+7	+<1	+1	+<1	-1	<-1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Crossover Alternative	31	2	0	0	187	11	53	3	35	2	37	2	0	0	0	0	9	1	<1	<1	0	0	1	<1	<1	0
Crossover Option 1	-1	<-1	N/C	N/C	+13	+1	+8	+<1	+1	+<1	+4	+<1	N/C	N/C	+7	+1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Crossover Option 2	+<1	+<1	N/C	N/C	+8	+<1	+2	+<1	+3	+<1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Crossover Option 3	+<1	+<1	N/C	N/C	+10	+1	+3	+<1	+2	+<1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C

Notes:  
 N/C - No net change from the action alternative.  
 1. To avoid double counting impacts, the acreages for substations, access roads, and towers that occur within the right-of-way were subtracted from right-of-way acreages. These acreages are in Table 18-6.  
 2. 150-foot wide right-of-way, except Central Alternative and Central Option 1 which is generally 150-foot wide right-of-way but may vary in some locations when adjacent to existing right-of-way.  
 3. The value of each option represents the net change from the action alternative. It was calculated as the acres added by the option minus the acres in the segments the option replaces.  
 4. Impact numbers not shown in parentheses reflect updated data, assumptions, and design refinements; impact numbers shown in parentheses reflect updated data and assumptions using the Draft EIS design.

Sources: BPA 2015; DEA 2009; ESA 2015; Herrera 2010, 2011a, 2011b, 2012; WDFW 2014; WDNR 2014a, 2015b; WNHP 2014

**Table 18-6 WDFW Priority Habitat Converted to Towers, Access Roads, and Substations (Acres)<sup>1,5</sup>**

Alternatives and Options	Old-Growth/Mature Forest					Snag-Rich Areas					Riparian					Forested, Scrub-Shrub, and Emergent Freshwater Wetlands <sup>2</sup>					Westside Prairie					Biodiversity Areas and Corridors					Talus					Herbaceous Balds					Oregon White Oak Woodlands									
	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total	Tower	New Access Roads	Improved Access Roads <sup>3</sup>	Substations	Total										
<b>West Alternative</b>	<1	<1	1	2	4	0	0	0	0	0	3	9	10	8	30	6	20	8	13	47	1	3	4	0	8	1	6	1	0	8	0	0	0	0	0	0	0	0	0	0	<1	<1	<1	0	<1					
West Option 1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	+<1	+1	-1	N/C	+<1	+<1	+3	+1	N/C	+5	+<1	+4	+2	N/C	+6	-<1	-<1	-1	N/C	-2	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-<1	+<1	-<1	N/C	+<1					
West Option 2	+<1	+<1	N/C	N/C	+<1	N/C	N/C	N/C	N/C	N/C	-<1	+1	-1	N/C	-<1	-<1	-2	-2	N/C	-4	-<1	-2	-2	N/C	-4	+<1	+2	+1	N/C	+4	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-<1	-<1	-<1	N/C	-<1					
West Option 3	+<1	+<1	N/C	N/C	+<1	N/C	N/C	N/C	N/C	N/C	-<1	+1	-<1	N/C	+<1	-<1	-1	-2	N/C	-4	-1	-2	-2	N/C	-5	+<1	+1	+1	N/C	+3	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-<1	-<1	-<1	N/C	-<1					
<b>Central Alternative<sup>4</sup></b>	<1 (<1)	<1 (1)	<1 (<1)	0 (0)	1 (1)	0 (<1)	0 (<1)	0 (<1)	0	0 (1)	1 (2)	3 (10)	23 (24)	6 (6)	33 (41)	<1 (2)	1 (6)	1 (2)	1 (12)	3 (22)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	<1 (<1)	<1	0 (0)	0 (0)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Central Option 1 <sup>4</sup>	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (+<1)	+4 (+<1)	+2 (+3)	-6 (-5)	N/C (-1)	N/C (-<1)	+<1 (+<1)	+<1 (+<1)	-1(-1)	-<1 (-<1)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)	N/C (N/C)		
Central Option 2	+<1	+<1	+<1	+2	+3	N/C	N/C	N/C	N/C	N/C	+<1	+3	-2	+2	+3	+<1	+2	-<1	+1	+3	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C
Central Option 3	N/C	+<1	N/C	N/C	+<1	N/C	N/C	N/C	N/C	N/C	-<1	-<1	-<1	N/C	-1	+<1	+1	-<1	N/C	-1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C					
<b>East Alternative</b>	<1	1	2	0	3	1	2	11	0	14	2	6	45	6	59	2	6	3	12	23	0	0	0	0	0	<1	<1	0	0	1	<1	1	<1	0	1	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
East Option 1	+<1	+<1	+<1	+2	+3	N/C	N/C	N/C	N/C	N/C	-<1	+1	-4	+2	-1	+<1	+3	-<1	+1	+5	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C					
East Option 2	-<1	-<1	-2	N/C	-2	+<1	+<1	+<1	N/C	+1	+<1	-<1	-5	N/C	-5	-1	-1	-1	N/C	-3	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	-<1	-1	-<1	N/C	-1	N/C	N/C	-1	N/C	-1	N/C	N/C	N/C	N/C	N/C					
East Option 3	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	+<1	+<1	-<1	N/C	-<1	-<1	-1	-<1	N/C	-2	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C					
<b>Crossover Alternative</b>	1	1	3	2	7	0	0	0	0	0	2	7	21	8	38	3	7	5	13	28	0	0	0	0	0	<1	<1	0	0	1	<1	1	<1	0	1	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0
Crossover Option 1	+<1	-<1	N/C	N/C	-<1	N/C	N/C	N/C	N/C	N/C	+<1	+1	-<1	N/C	+1	+<1	+<1	+<1	N/C	+1	+<1	+1	N/C	N/C	+1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C					
Crossover Option 2	-<1	N/C	N/C	-2	-2	N/C	N/C	N/C	N/C	N/C	+<1	+<1	+2	-2	+<1	+<1	+<1	+<1	-1	-1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C					
Crossover Option 3	-<1	N/C	N/C	-2	-2	N/C	N/C	N/C	N/C	N/C	+<1	+<1	+2	-2	+<1	+<1	N/C	+<1	-1	-1	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C	N/C					

Notes:  
 N/C – No net change from the action alternative.  
 1. The value for each option represents the net change from the action alternative. It was calculated as the acres added by the option minus the acres in the segments the option replaces.  
 2. Freshwater wetlands are part of the WDFW priority habitat “freshwater wetlands and fresh deepwater”. Fresh deepwater areas are not included in this table as they would not be affected by towers, access roads, or substations.  
 3. Many improved access roads could be overgrown or would need to be widened; habitat would need to be removed.  
 4. Impact numbers not shown in parentheses reflect updated data, assumptions, and design refinements; impact numbers shown in parentheses reflect updated data and assumptions using the Draft EIS design.  
 Sources: BPA 2015; DEA 2009; ESA 2015; Herrera 2010, 2011a, 2011b, 2012; WDFW 2014; WDNR 2014a, 2015b; WNHP 2014

### 18.2.4.3 Special-Status Species—West Alternative

Three federally listed species and 25 other special-status species could be affected by the West Alternative, in addition to the cavity-nesting ducks and waterfowl concentration priority species groups. All documented occurrences of these species in the West Alternative are found in Washington with the exception of California floater mussel, Oregon floater mussel, western painted turtle, and western pond turtle, which are documented in Oregon only for this alternative.

#### Federally Listed Species

**Marbled Murrelet (Threatened).** Although there are no documented occurrences of marbled murrelet within 1 mile of the West Alternative, right-of-way clearing and towers, substations, and access roads would remove 377 acres of forest in the marbled murrelet conservation zone. At most, only 27 acres of this conservation zone is old-growth/mature forest (see Tables 18-5 and 18-6), potentially suitable habitat for marbled murrelet. The range of marbled murrelet falls within 55 miles of marine waters, which includes the northern end of the West Alternative; however, this portion of the study area is at the outer limit of this range, so the available suitable habitat would not likely be used for nesting. Impacts from the project would cause loss of potential habitat, but the old-growth/mature forest within this area primarily occurs in small patches, so potential habitat loss would be minor in any particular area. Given the small amount of potential habitat affected, the distance from the coast, and the lack of any documented occurrences, potential habitat loss would be a **low** impact.

#### Special-Status Species State and Global Conservation Rankings

- **Critically Imperiled:** 5 or fewer known occurrences
- **Imperiled:** 6–20 known occurrences
- **Vulnerable:** 21–100 known occurrences

Source: WNHP 2011a

**Northern Spotted Owl (Threatened).** The West Alternative route comes within 0.4 mile of a northern spotted owl circle (WDFW 2010b). The adjacent habitat that would be removed for the right-of-way includes a mix of old-growth/mature forest, forest, and production forest. In addition, the loss of 27 acres of old-growth/mature forest along the entire action alternative would remove potential nesting habitat for this species, although other stands could also provide low quality suitable habitat and dispersal habitat. Recent high resolution imagery shows most of the area is marginal habitat for the owl (BPA 2011). Impacts from the project could include temporary construction disturbance and the loss of known and potential habitat. Mitigation measures would be used to prevent loss of a nest or mortality of young. Given that the overall potential habitat is highly fragmented and generally low quality for northern spotted owl, there is a low number of documented occurrences in the study area, habitat loss impacts would be spread out along the corridor, and mitigation measures would reduce construction disturbance, the impacts on this species would not affect species recovery, and would therefore be **moderate**.

Impacts on **Yellow-billed Cuckoo (Threatened).** Although there are no documented occurrences of yellow-billed cuckoo or suitable nesting habitat within 1 mile of the West Alternative, clearing for right-of-way, towers, and access roads would remove small patches of potential foraging habitat. These patches occur where the West Alternative crosses riparian areas, particularly at the Columbia, Cowlitz, Coweeman, Lewis, and East Fork Lewis Rivers, and around Lacamas Creek, which is within the Lacamas Lake Bottoms priority area. Given that

potential habitat is generally low quality and not suitable for breeding, that a relatively small amount of potential foraging habitat would be removed, and that impacts would be spread out along the corridor, potential habitat loss would be a **low** impact.

### **Other Special-Status Wildlife Species—Birds**

**Bald Eagle (Federal SOC, WA Sensitive) and WDFW Bald Eagle Priority Area.** Bald eagles would be impacted by the project because there are eight documented occurrences of bald eagles, and two WDFW bald eagle priority areas—the Cowlitz Bald Eagle Feeding Habitat and Lewis River Winter Eagle Habitat—within 1 mile of the West Alternative. New transmission line would cross a little less than 1 mile of a WDFW bald eagle priority area, and right-of-way clearing, towers, and access roads would remove tree habitat from a total of 13 acres. Impacts would include temporary construction disturbance and loss of potential nesting and roosting habitat through tree removal in riparian areas along the West Alternative (see 18.2.4.3, Special-Status Habitats), particularly where it is in a WDFW priority area. As for other raptors, transmission line collisions are typically uncommon, but could occur. Mitigation measures would be used to ensure individual nests and young are not harmed or disrupted during the breeding season, and to reduce the risks of transmission line collisions throughout the year. Impacts on this species would be **moderate** since the species is still listed as sensitive by WDFW, is monitored by USFWS following its delisting in 2010, and impacts would not be expected to contribute to a need for federal relisting of this species based on a conservation status of secure at both the state and federal levels (NatureServe 2012).

**Cavity-Nesting Ducks (also see Waterfowl, this section).** The West Alternative could affect cavity-nesting ducks since it crosses within 1 mile of the WDFW Woodland Cavity Nesting Habitat Priority Breeding Area along the East Fork Lewis River Wintering Waterfowl priority area and the Pioneer Wetlands priority area, both of which support cavity-nesting ducks. Impacts could include habitat removal, increased transmission line collisions, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. These areas are important to a wide diversity and number of cavity-nesting ducks, but because mortalities would not contribute to a need for federal listing for any of the associated species (see further discussion of specific species that follows), and given the relatively stable conservation status of the species and since the WDFW priority area itself would not be crossed, impacts on cavity-nesting ducks would be **low-to-moderate**.

- **Barrow's Goldeneye (WDFW WA Priority).** Given that the West Alternative crosses wetland habitat within 1 mile of a documented occurrence of Barrow's goldeneye, there is a greater chance that individuals could be present and affected by the project (this is the same occurrence listed for the Crossover Alternative). Impacts would be the same as those listed for the WDFW cavity-nesting duck priority area. Since the conservation status is vulnerable (breeding) to secure (non-breeding) at the state level and secure at the federal level (NatureServe 2012), and since not many individuals would likely be affected based on just one documented occurrence, impacts would not contribute to a need for federal listing and would be **moderate**.
- **Wood Duck (WDFW WA Priority).** It is highly likely that wood duck would be adversely impacted by the West Alternative since it crosses two WDFW wood duck priority areas: the WDFW Lacamas Lake Bottoms Priority Breeding Area, and within 1 mile of the Mill Creek Tributary Priority Breeding Area. Impacts would be the same as those listed for

the WDFW cavity-nesting duck priority area. A little less than 1 mile of the WDFW wood duck priority area would be crossed by the West Alternative transmission line at Lacamas Lake Bottoms, with 14 acres lost to right-of-way tree removal, towers, and access roads (WDFW 2009). These losses would be in addition to any occurring in other riparian or wetland areas where wood duck could occur, particularly near the one documented occurrence. These would likely cause just **moderate** impacts on the species, however, since the impacts would not contribute to a need for federal listing given the relatively small area affected and the relatively stable conservation status of the species (ranges between vulnerable [non-breeding] to apparently secure [breeding] at the state level, and secure at the federal level [NatureServe 2012]).

**Great Blue Heron (WA Priority).** Since the West Alternative crosses either wetlands or riparian habitats within 1 mile of three documented occurrences of great blue heron, there is a greater chance that individuals could be present and affected by the project. Impacts would include mortality from transmission line collisions over open habitats and open water, and lost habitat due to towers and access roads placed in riparian areas and open habitat. Since the conservation status is apparently secure to secure at the state level and secure at the federal level (NatureServe 2012), impacts would not contribute to a need for federal listing and would be **moderate**.

**Mountain Quail (WA Priority, OR Sensitive-Vulnerable).** Since the West Alternative is within 1 mile of a documented occurrence of mountain quail, there is a greater chance that individuals could be present and affected by the project. Impacts could include temporary construction disturbance and habitat loss through right-of-way tree clearing, towers, and access roads. Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. Since the conservation status of this species is critically imperiled at the state level and secure at the federal level (NatureServe 2014), and since not many individuals would likely be affected given the low abundance in Clark and Cowlitz counties, impacts would not contribute to a need for federal listing and would be **moderate**.

**Northern Goshawk (Federal SOC, WA Candidate).** Because the West Alternative crosses production forest within 1 mile of a documented occurrence of northern goshawk (also in production forest), there is a greater chance the project could affect this species (this is the same documented occurrence as the one along the Central and Crossover alternatives). Impacts would include loss of old-growth/mature forest habitat and temporary construction disturbance, although mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. Although the conservation status of this species is imperiled-to-vulnerable in Washington (NatureServe 2012), it is listed as apparently secure at the federal level, and so the small amount of suitable mature/old-growth forest habitat affected (see Section 18.2.4.2, WDFW Priority Habitats—West Alternative) would be a **moderate** impact to the species. As for other raptors, transmission line collisions are typically uncommon, the rare occurrence of mortality of an individual would not affect the overall conservation status, and impacts would be **moderate**.

**Osprey (WA Monitor).** The West Alternative is within 1 mile of two documented occurrence of osprey, therefore individuals could be present and affected by the project. Impacts could include mortality from transmission line collisions over riparian and wetland habitats, and lost habitat due to towers and access roads placed in riparian areas and wetland habitat. Since the conservation status is apparently secure at the state level and secure at the federal level

(NatureServe 2012), impacts would not contribute to a need for federal listing and would be **moderate**.

**Pileated Woodpecker (WA Candidate).** Since the West Alternative crosses high-value riparian habitat within 1 mile of a documented occurrence of pileated woodpecker, there is a greater chance that individuals of this species could be present and affected by the project. Impacts could include habitat loss through right-of-way tree clearing, towers, and access roads, mortality through collisions with transmission lines, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), and since impacts would not contribute to a need for federal listing, the impact would be **moderate**.

**Purple Martin (Federal SOC, WA Candidate).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Sandhill Crane (WA Endangered).** Since the West Alternative crosses either wetlands, open water, or open habitats within 1 mile of one documented occurrence of sandhill crane, there is a greater chance that individuals could be present and affected by the project. Impacts would include mortality from transmission line collisions over open habitats and open water, and lost habitat due to towers and access roads placed in riparian areas and open habitat. Since the conservation status is vulnerable to critically imperiled at the state level but secure at the federal level (NatureServe 2012), and since not many individuals would likely be affected based on just one documented occurrence, impacts would not contribute to a need for federal listing and would be **moderate**.

**Slender-billed White-breasted Nuthatch (Federal SOC, WA Candidate, OR Sensitive-Vulnerable).** Since the West Alternative crosses within 1 mile of two documented occurrences of slender-billed white-breasted nuthatch, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat loss through tree removal, temporary construction disturbance, and transmission line collisions, although collisions are not very likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is apparently secure at the state level and secure at the federal level (NatureServe 2014), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts would occur.

**Tundra Swan (WDFW WA Priority).** Since the West Alternative crosses either riparian, open water, or open habitats within 1 mile of two documented occurrences of tundra swan, there is a greater chance that individuals could be present and affected by the project. Impacts would include mortality from transmission line collisions over open habitats and open water, and lost habitat due to towers and access roads placed in riparian areas and open habitat. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), and since not many individuals would likely be affected based on just one documented occurrence, impacts would not contribute to a need for federal listing and would be **moderate**.

**Vaux's Swift (WA Candidate).** The mention of Vaux's swift in the description of a WDFW biodiversity area and corridor priority habitat that is crossed by the West Alternative indicates

an increased likelihood for impacts on this species (see Section 18.1.4.2, Other Special-Status Wildlife Species). Impacts could include habitat loss through tree removal, temporary construction disturbance, and transmission line collisions, although collisions are not very likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is vulnerable-to-apparently secure at the state level and secure at the federal level (NatureServe 2012), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts could occur.

**Waterfowl Concentrations (WDFW Priority).** Over 1 mile of new transmission line would cross three WDFW waterfowl concentration priority areas: the East Fork Lewis Wintering Waterfowl Area, the Pioneer Wetlands, and the Coweeman Wetlands (WDFW 2012). The right-of-way would also come within 1 mile of the Kennedy Dairy, the Curtin Creek Headwaters, the Mill Creek Tributary Private Pond, the Mill Creek Wetlands, and the Ridgefield Lowlands waterfowl concentration priority areas. Impacts could include habitat removal, increased transmission line collisions, and temporary construction disturbance. Right-of-way tree removal, towers, and access roads would remove 30 acres of habitat from these important habitats. WDFW priority waterfowl concentration areas could support five special-status species: wood duck, Barrow's goldeneye, harlequin duck, tundra swan, and trumpeter swan, although only tundra swan and wood duck have been documented in a WDFW waterfowl concentration priority area within 1 mile of the West Alternative (see tundra swan and wood duck, this section). These areas are important to a wide diversity and number of waterfowl, but because mortalities would not contribute to a need for federal listing for any of the associated species, impacts would be **moderate**.

**Wild Turkey (WA Priority).** Since the West Alternative crosses forest and open habitat within 1 mile of 11 documented occurrences of wild turkey, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat removal and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Because the conservation status is secure at the national level and this species is a habitat generalist introduced to Washington state (NatureServe 2014), impacts would not contribute to a need for federal listing and would be **low**.

## Mammals

**Columbian Black-Tailed Deer (WA Priority).** The population in a WDFW biodiversity area and corridor priority habitat would experience both positive and adverse effects from the West Alternative. These would include adverse effects from the loss of habitat to towers and access roads, and positive effects from right-of-way clearing, which could help diversify the habitats available to this population. Impacts would be **low** since a relatively small portion of the habitat occupied by this population would be affected, and since the species has a secure conservation status at both state and federal levels (NatureServe 2012).

**Elk (WA Priority Species) and WDFW Elk Priority Area.** Adverse effects to elk would include temporary construction disturbance and habitat loss within the two WDFW elk winter range priority areas, including the Yale Valley priority area within the larger WDFW Mt. St. Helens/Mt. Rainier herds winter range priority area. Towers, substations, and access roads would remove about 147 acres of habitat. This would have a **low** impact on elk since a

small portion of the total WDFW elk winter range priority areas would be affected, impacts would be spread out along the corridor, and the species has a secure conservation status at both state and federal levels (NatureServe 2012). Impacts from 382 acres of right-of-way clearing could be beneficial to elk since it would create a corridor of shrubland or open habitat adjacent to forested habitat.

**Townsend's Big-Eared Bat (Federal SOC, WA Candidate).** Since the West Alternative crosses forest within about 0.15 mile of a documented occurrence of this species, there is a greater chance that individuals could be present and affected by the project. Adverse impacts would include temporary construction disturbance and loss of forest habitat due to towers and access roads. Right-of-way clearing could benefit this species since it can use open and shrubland habitats for foraging. Although the species is listed as imperiled to vulnerable at the state level (NatureServe 2012), impacts would be **low** because of the small area impacted, potential benefits, and the species is apparently secure at the federal level (NatureServe 2012).

## Amphibians

**Cascade Torrent Salamander (Federal SOC, WA Candidate, OR Sensitive-Vulnerable).** Since the West Alternative crosses riparian habitat within 1 mile of a documented occurrence of Cascade torrent salamander, there is a greater chance that individuals could be present and affected by the project. Impacts could include temporary construction disturbance, construction mortality or stress from both physical injury and increased water turbidity from in-water work, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Since its conservation status is only listed as vulnerable at both the state and federal levels (NatureServe 2012), and since only one documented occurrence of this species occurs near the affected environment, habitat loss coupled with increased mortality would not be likely to adversely affect many individuals or lead to a need for federal listing; impacts would be **moderate**.

**Cope's Giant Salamander (WA Monitor Species).** Since the West Alternative crosses riparian habitat within 1 mile of a documented occurrence of Cope's giant salamander, there is an increased likelihood that individuals could be present and affected by the project. Impacts on a population of this species could include temporary construction disturbance, construction mortality or stress from physical injury and increased water turbidity, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Since the conservation status is vulnerable-to-apparently secure at both the state and federal levels (NatureServe 2012,) and since impacts would not contribute to a need for federal listing, the impact would be **moderate**.

## Reptiles

**Ringneck Snake (WA Monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Western Painted Turtle (Federal SOC, OR Sensitive-Critical).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Western Pond Turtle (Federal SOC, WA Endangered, OR-Sensitive Critical).** All action alternatives cross wetland habitat within 1 mile of a documented occurrence representing five

western pond turtles in Oregon (near the Sundial Substation site [see Section 18.2.2.3, Sundial Substation]). Given this proximity, there is an increased chance that this species would be affected by the project. Impacts could include temporary construction disturbance, construction mortality, and loss of a nest or young if construction takes place during the breeding/nesting season, and degradation or loss of wetland habitat from the placement of towers or an access road. Because western pond turtle is rated as imperiled in Oregon and vulnerable to apparently secure nationally (NatureServe 2012), and since its population is in decline in Oregon (ODFW 2011), mortality or loss of breeding habitat potentially affecting a documented population could contribute to a need for federal listing, which would be a **moderate-to-high** impact.

## Invertebrates

**California Floater (Federal SOC, WA Candidate, OR Sensitive).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Oregon Floater (WA Monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

### 18.2.4.4 West Options 1, 2, and 3

The levels of the impacts on wildlife and WDFW priority habitats would be the same as for the West Alternative, except where stated otherwise.

Impacts on wildlife from the West Options occur near the Lacamas Prairie NAP/NRCA (see Map 18-1D and Tables 18-3 through 18-6). West Option 1 would remove or alter 33 additional acres of the three freshwater wetland habitat types, 6 additional acres of riparian habitat, and 34 additional acres of westside prairie (see Tables 18-5 and 18-6). However, it would also remove or alter 13 fewer acres of biodiversity areas and corridors. For special-status species, the option would cross an additional 3 miles of one of the two WDFW wood duck priority areas, removing 7 acres of habitat from this important area, a **moderate** impact. However, it would also avoid the Columbian black-tailed deer population in the WDFW biodiversity area and corridor priority habitat crossed by the West Alternative.

Impacts on WDFW priority habitats and special-status species are discussed for each option. See Maps 18-1A through 18-1D and Tables 18-3 through 18-6 for all impacts.

West Options 2 and 3 would have similar effects, with West Option 2 affecting slightly more acreages in some habitats. They would remove or alter fewer acres of freshwater wetlands (20 and 14 acres) and Oregon White Oak Woodlands

(just over 2 acres each), but remove more acres of old-growth/mature forest (just over 5 and 3 acres) and a WDFW biodiversity area and corridor that supports a population of Columbian black-tailed deer (16 and 15 acres). West Option 2 would remove slightly less riparian and forest habitat (2 and 4 acres, respectively, while West Option 3 would alter 1 additional acre of



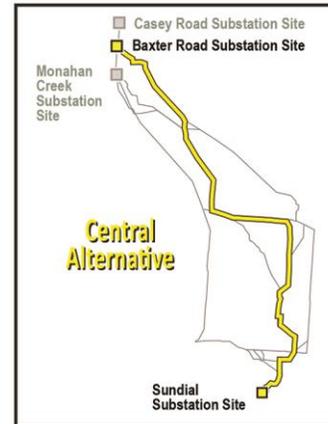
riparian habitat and remove 34 more acres of forest (see Tables 18-3 through 18-6). West Options 2 and 3 are within 1 mile of a cave with a documented bat hibernaculum. West Option 3 is within 1 mile of Little Baldy herbaceous bald priority habitat.

## 18.2.5 Central Alternative

The Central Alternative would require mostly new right-of-way (see Chapter 4, Proposed Action and Alternatives), which would increase habitat fragmentation primarily in forested habitats. However, since most of the new line would not parallel existing lines, there would be less of a fence effect to increase the collision risk for birds.

### 18.2.5.1 Wildlife Habitats and Species— Central Alternative

Impacts would be higher where WDFW priority habitats or special-status species would be affected (see Section 18.2.5.2, WDFW Priority Habitats—Central Alternative, and Section 18.2.5.3, Special-Status Species—Central Alternative).



### Wildlife in Open Habitat

Wildlife in open habitat would be less affected by the Central Alternative than wildlife in forest habitat. The proposed transmission line would cross 2 miles of open habitat—much less than forest habitat, but similar to shrubland and urban/suburban habitats (see Table 18-3). Towers, access roads, and substations would cause the permanent loss of 61 acres of open habitat (see Table 18-4). Staging areas (5-15 acres each) are more likely to be sited in open and even developed habitat than in forest areas. Helicopter fly yards (about 10 acres each) could also be developed in open habitat. The number of staging areas and helicopter fly yards needed and their locations are unknown at this time. The wildlife most affected by the project in open habitat would likely be ground-dwelling animals. They would experience both a decrease in available habitat and an increase in mortality from the increased number of perches available to predatory raptors (raptors, conversely, would experience mostly positive effects, with some potential for mortality from transmission line collisions). Impacts on wider-ranging wildlife would include a small reduction in breeding or grazing habitat. Wildlife mortality from construction and transmission-line bird collisions would also occur. Because the project would be long and narrow, any single population of animals would lose very little habitat and experience a small increase in mortality. These would cause **low** impacts from habitat loss and construction disturbance, and **moderate** impacts from mortality, since mortality of individual animals would not affect the conservation status of most species.

### Wildlife in Forest and Production Forest Habitats

Forest-dependent wildlife would be more affected than other wildlife by the Central Alternative since these species would lose the most habitat. The proposed transmission line would cross 55 miles of production forest, and 12 miles of forest (see Table 18-3). Production forest habitat would be reduced by 1,273 acres from right-of-way clearing, towers, access roads, and substations, and forest would be reduced by 255 acres from the same disturbances (see Tables 18-3 and 18-4). Some (danger) trees would be removed but new trees would be allowed

to grow back along the right-of-way if they do not pose a risk to the transmission line. Most danger trees in the Central Alternative would be in commercial timberlands. Similarly, about 40 acres of cleared land would be required for pulling and tensioning sites along the entire right-of-way, more than half (24 acres) are located in commercial forest that would eventually be harvested. Helicopter fly yards (about 10 acres each) would also be needed every 5 miles and could be on or outside the right-of-way. The number of helicopter fly yards needed and their locations are unknown at this time.

Forest-dependent wildlife would be most affected by habitat loss. Habitat generalists would be less affected since they would be able to use the altered “edge” habitat within the cleared right-of-way for foraging or hunting (shrubland and open habitat species could experience positive impacts by an increase in habitat) (see Section 18.2.2, Impacts Common to Action Alternatives). Because forest and production forest are common in the project area, and since impacts would be spread out along the corridor, most forest wildlife species would experience **low** impacts from habitat loss and construction disturbance (see Section 18.2.4.2, WDFW Priority Habitats—West Alternative, for a discussion of potentially higher impacts in old-growth/mature forests). Wildlife mortality from construction and transmission-line bird collisions would occur, but would be **moderate**, since mortality of individual animals would not affect the conservation status of most species.

### Wildlife in Shrubland Habitat

Wildlife that use shrubland habitat could benefit from the creation of 1,131 acres of shrubland habitat from right-of-way clearing in forest and production forest, and raptors would experience a positive effect from the increase in available perches (see Table 18-3). Conversely, with 4 miles of new transmission line crossing existing shrubland habitat, wildlife would also experience some adverse effects from the project, including the conversion of 68 acres of shrubland to open right-of-way, and the loss of 37 acres of habitat to towers, access roads, and substations (see Tables 18-3 and 18-4). Adverse effects would include temporary construction disturbance; the loss of existing habitat; the loss of some tall shrub nesting habitat for birds; potential construction mortality for less mobile species; and a possible increase in mortality caused by an increase in predation by raptors using the transmission lines and towers as perches, and by bird/transmission line collisions. Since impacts would be spread out along the corridor and affect a relatively small amount of habitat, the levels of adverse impacts would be similar to those for open habitat, including **low** impacts from loss of existing habitat and construction disturbance, and **moderate** impacts from mortality.

### Wildlife in Urban/Suburban Habitat

Wildlife found in urban/suburban habitat would be the least affected, with just 1 mile of new transmission line crossing this habitat. The Central Alternative would clear 24 acres of urban/suburban habitat for the right-of-way and remove 3 acres of habitat for access roads (see Tables 18-3 and 18-4). Impacts on wildlife would range among those impacts listed for open, shrubland, forest, and production forest habitats, depending on which habitats might be present in any given urban/suburban area. Given the small amounts of habitat lost and the general tolerance of urban/suburban wildlife to human disturbance, impacts related to construction and habitat loss or alteration would be **low**, while those related to an increase in mortality (such as for prey species of raptors and bird/transmission line collisions) would be **moderate**.

### 18.2.5.2 WDFW Priority Habitats—Central Alternative

This section provides the amount of WDFW priority habitats altered or removed by the Central Alternative, and the length in miles of the transmission line located in each habitat.

**Riparian Areas.** Along the Central Alternative, most impacts from habitat alteration or removal would occur in riparian habitats with 164 acres altered by right-of-way clearing (see Table 18-5) and 33 acres lost to towers, access roads, and substations (see Table 18-6.). Habitat loss would be a **low-to-high** impact to these WDFW priority habitats, depending on their condition. In addition, transmission line bird collisions would increase across 9 miles of riparian areas. This would also be a **low-to-moderate** impact depending on bird use and the effectiveness of mitigation measures, since it could reduce the ability of these habitats to safely support waterfowl, waterbirds, and raptors: an essential attribute for these habitats.

Riparian areas also occur in other priority habitats affected by the project, including biodiversity areas and corridors, wetlands, and old-growth/mature forest.

**Biodiversity Areas and Corridors.** Two documented WDFW biodiversity area and corridor priority habitats would be crossed by the Central Alternative: the East Fork Lewis River Riparian Corridor (crossed in three places at Big Tree Creek, the East Fork Lewis River, and Rock Creek) and the Lady and Akerman Islands Biodiversity Area and Corridor (WDFW 2012). Two additional documented biodiversity area and corridor priority habitat areas are within 1 mile of the Central Alternative: the Camas Biodiversity Area and the Washougal River Riparian Corridor (WDFW 2012). Fragmentation of these habitats from right-of-way clearing could adversely affect the movement of many wildlife species across a biologically diverse and relatively undisturbed area. Less than 1 mile of these habitats would be crossed by new transmission line, with 3 acres altered due to right-of-way clearing, and less than 1 acre lost to a transmission tower and new access road (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since fragmentation would diminish one of their main attributes, which is to be a “relatively undisturbed and unbroken tract of vegetation” that connects high-value habitats (WDFW 2008).

**Freshwater Wetlands and Fresh Deepwater.** Altogether, 47 acres of forested, scrub-shrub, and emergent freshwater wetlands would be altered or lost from right-of-way clearing and/or towers, access roads, and substations (see Table 18-5 and 18-6). Impacts on wildlife from the alteration and loss of wetland habitat would range from **low-to-high**, depending on the condition of each wetland. In addition, transmission line bird collisions would become more frequent over 5 miles of all three types of freshwater wetlands (see Table 18-5). Similar to riparian areas, an increase in transmission line collisions could reduce the value of these areas for wildlife habitat, a **low-to-moderate** impact. Impacts would be **low-to-moderate** on freshwater wetlands and riparian areas. There would be no impacts on fresh deepwater habitat (see Table 18-5).

**Herbaceous Balds.** The Bald Mountain and Lacamas Lake WDFW herbaceous balds priority habitat falls within 1 mile of the Central Alternative, however the Central Alternative would have no impact on them (see Tables 18-5 and 18-6).

**Old-Growth/Mature Forest.** About 10 acres of old-growth/mature forest would be removed by right-of-way clearing and a new access road (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since tree clearing would remove the main attributes of this habitat: long-lived trees and the associated understory vegetation, which have become

uncommon in the Pacific Northwest and could not be easily or quickly replaced. Removal of adjacent forested areas would also cause an indirect, **low-to-moderate** effect on the old-growth/mature forested areas that remain. These edge effects include changes in sub-canopy climate conditions, increasing temperature and humidity variation, increasing light levels, and alteration of the understory composition and/or tree species reproduction. Tree clearing can also increase the risk of windthrow in adjacent forests, extending the canopy-removal effects.

**Oregon White Oak Woodlands.** One acre of habitat within Oregon white oak woodlands would be removed by right-of-way clearing or conversion to towers, access roads, or substations (see Tables 18-5 and 18-6), and therefore there would be **no** impact to these WDFW priority habitats. Oregon white oak trees and the associated understory vegetation are becoming less common in the Pacific Northwest.

**Snag-Rich Areas.** No habitat within snag-rich priority areas would be removed by right-of-way clearing, towers, and new or improved access roads along the Central Alternative (see Tables 18-5 and 18-6). There would be **no** impacts on snag-rich areas.

### 18.2.5.3 Special-Status Species—Central Alternative

There 3 federally listed species and 19 other special-status species potentially affected by the Central Alternative, in addition to the cavity-nesting ducks and waterfowl concentration priority species groups. All documented occurrences are found in Washington with the exception of California floater mussel, Oregon floater mussel, and western painted turtle, which are found in Oregon, and the western pond turtle, which is found in Oregon and Washington.

#### Federally Listed Species

**Marbled Murrelet (Threatened).** Although there are no documented occurrences of marbled murrelet within 1 mile of the Central Alternative, there are 458 acres of forest in the marbled murrelet conservation zone within 0.5 mile of project activities (right-of-way clearing, and tower, access road, and substation construction). Based on field studies and GIS mapping, 76 of these acres are moderate quality marbled murrelet suitable habitat and 293 acres are marginal quality marbled murrelet suitable habitat. About 1 acre of marginal habitat would be removed for right-of-way, towers, access roads, and substations (Golder 2015). The range of marbled murrelet falls within 55 miles of marine waters, which includes the northern end of the Central Alternative; however, this portion of the study area is at the outer limit of this range, so the available suitable habitat would not likely be used for nesting. Impacts from the project would therefore include the loss of potential habitat. Given the small amount of potential habitat affected, the distance from the coast, and the lack of any documented occurrences, potential habitat loss would be a **low** impact.

**Northern Spotted Owl (Threatened).** The Central Alternative would remove 29 acres for right-of-way clearing, 4 acres for improved access road, and 1 acre for new road within production forest habitat in one northern spotted owl circle, and the right-of-way would pass through production forest within 1 mile of two other circles. However, GIS and field studies indicated that only 207 acres of suitable habitat in the northern spotted owl circles would be within disturbance distance (0.5 mile) of project activities, and no suitable or dispersal habitat would be removed from within the owl circles (Golder 2015). GIS and field studies throughout the Central Alternative identified 4,080 acres of suitable habitat and 2,445 acres of dispersal habitat

within disturbance distance (0.5 mile) of project activities (Golder 2015). Of this, 106 acres of suitable habitat and 53 acres of dispersal habitat would be removed. Impacts from the project could include temporary construction disturbance and the loss of known and potential habitat. Mitigation measures would be used to prevent loss of a nest or mortality of young. Given that the overall potential habitat is highly fragmented and generally low quality for northern spotted owl; there is a low number of documented occurrences in the study area; habitat loss impacts would be spread out along the corridor; and mitigation measures would reduce construction disturbance, impacts on this species would not affect species recovery, and would therefore be **moderate**.

**Yellow-billed Cuckoo (Threatened).** Although there are no documented occurrences of yellow-billed cuckoo or suitable nesting habitat within 1 mile of the Central Alternative, clearing for right-of-way, towers, and access roads would remove small patches of potential foraging habitat. These patches occur where the Central Alternative crosses riparian areas, particularly at the Columbia, Cowlitz, and Lewis rivers. Given that potential habitat is generally low quality and not suitable for breeding, that a relatively small amount of potential foraging habitat would be removed, and that impacts will be spread out along the corridor, potential habitat loss would be a **low** impact.

### **Other Special-Status Wildlife Species — Birds**

**Bald Eagle (Federal SOC, WA Sensitive) and WDFW Bald Eagle Priority Areas.** Seven documented occurrences of bald eagle nests and three WDFW bald eagle priority areas—the Gobar Creek Winter Eagle Site, the Lewis River Winter Eagle Habitat, and the Merwin South Shore Communal Night Roost—are within 1 mile of the Central Alternative. New transmission line would cross less than 1 mile of these priority areas, and right-of-way clearing would remove tree habitat from 5 acres. Impacts would include temporary construction disturbance and loss of potential nesting and roosting habitat through tree removal in riparian areas along the Central Alternative (see Section 18.2.5.3, Special-Status Habitats), particularly where it occurs in a WDFW priority area. As for other raptors, transmission line collisions are typically uncommon, but could occur. Mitigation measures would be used to ensure individual nests and young are not harmed or disrupted during the breeding season, and to reduce the risks of transmission line collisions throughout the year. Impacts on this species would be **moderate** since the species is still listed as sensitive by WDFW, is monitored by USFWS following its delisting in 2010, and impacts would not be expected to contribute to a need for federal relisting of this species based on a conservation status of secure at both the state and federal levels (NatureServe 2012).

**Cavity-Nesting Ducks (also see Waterfowl, this section).** The Central Alternative could affect cavity-nesting ducks since it crosses within 1 mile of the Longview Vicinity Wetlands, which support cavity-nesting ducks. Impacts could include habitat removal, increased transmission line collisions, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. This area is important to a wide diversity and number of cavity-nesting ducks, but because mortalities would not contribute to a need for federal listing for any of the associated species (see further discussion of specific species that follows), and since the WDFW priority area itself would not be crossed, impacts on cavity-nesting ducks would be **low-to-moderate**.

**Great Gray Owl (WA Priority).** Because the Central Alternative would remove forest and old-growth/mature forest within 1 mile of a documented occurrence of great gray owl, there is a greater chance the project could affect this species. Impacts would include loss of habitat and

temporary construction disturbance, although mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. The conservation status of this species is priority at the state level and it is apparently secure at the federal level. Therefore, the small amount of suitable habitat affected (see Sections 18.2.5.1, Wildlife Habitats and Species—Central Alternative and 18.2.5.2, WDFW Priority Habitats—Central Alternative) would be a **moderate** impact on the species.

**Mountain Quail (WA Priority, OR Sensitive-Vulnerable).** Since the Central Alternative crosses riparian habitats within 1 mile of a documented occurrence of mountain quail, there is a greater chance that individuals could be present and affected by the project. Impacts could include temporary construction disturbance and habitat loss through right-of-way tree clearing, towers, and access roads. Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. Since the conservation status is critically imperiled at the state level and secure at the federal level (NatureServe 2014), and since not many individuals would likely be affected given the low abundance in these counties, impacts would not contribute to a need for federal listing and would be **moderate**.

**Northern Goshawk (Federal SOC, WA Candidate).** Because the Central Alternative crosses production forest within 1 mile of a documented occurrence of northern goshawk (also in production forest), there is a greater chance the project could affect this species. Impacts would include loss of old-growth/mature forest habitat and temporary construction disturbance, although mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. Although the conservation status of this species is imperiled-to-vulnerable in Washington (NatureServe 2012), it is listed as apparently secure at the federal level, and so the small amount of suitable mature/old-growth forest habitat affected (see Section 18.2.5.2, WDFW Priority Habitats—Central Alternative) would be a **moderate** impact to the species. As for other raptors, transmission line collisions are typically uncommon, the rare occurrence of mortality of an individual would not affect the overall conservation status, and impacts would be **moderate**.

**Osprey (WA Monitor).** The Central Alternative is within 1 mile of 22 documented occurrences of osprey, most of which are clustered around the Lake Merwin area. Therefore, individuals could be present and affected by the project. Impacts could include mortality from transmission line collisions over riparian and wetland habitats, and lost habitat due to towers and access roads placed in riparian areas and wetland habitat. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), impacts would not contribute to a need for federal listing and would be **moderate**.

**Pileated Woodpecker (WA Candidate).** Since the Central Alternative crosses high-value riparian habitat within 1 mile of a documented occurrence of pileated woodpecker and several occurrences of pileated woodpecker sign (characteristic large, rectangular excavations), there is a greater chance that individuals of this species could be present and affected by the project. Impacts could include habitat loss through right-of-way tree clearing, towers, and access roads, mortality through collisions with transmission lines, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), and impacts would not contribute to a need for federal listing, the impact would be **moderate**.

**Purple Martin (Federal SOC, WA Candidate).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Slender-billed White-breasted Nuthatch (Federal SOC, WA Candidate, OR Sensitive-Vulnerable).** Since the Central Alternative crosses within 1 mile of one documented occurrence of slender-billed white-breasted nuthatch on Lady Island, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat loss through tree removal, temporary construction disturbance, and transmission line collisions, although collisions are not very likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is apparently secure at the state level and secure at the federal level (NatureServe 2014), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts could occur.

**Vaux's Swift (WA Candidate).** The Vaux's swift nest documented within 1 mile of the Central Alternative in a chimney in urban-suburban habitat indicates an increased chance that individuals could be present and affected by the project. However, the Central Alternative does not cross any known suitable nesting habitat within 1 mile of the occurrence, reducing the chance that Vaux's swift habitat would be affected in this area. Observations of Vaux's swift in a WDFW biodiversity area and corridor priority habitat that is crossed by the Central Alternative indicates an increased likelihood for impacts. Impacts in this area could include habitat loss through tree removal, temporary construction disturbance, and transmission line collisions, although collisions are not very likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is vulnerable-to-apparently secure at the state level and secure at the federal level (NatureServe 2012), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts could occur.

**Waterfowl Concentrations.** Because there is a WDFW waterfowl concentration priority area (at the Whittle Creek Wetlands) within 1 mile of the Central Alternative, and since the right-of-way would cross between the waterfowl concentration area and the Cowlitz River, there is a chance that waterfowl would be impacted by an increase in transmission line collisions. These areas are important to a wide diversity and number of waterfowl, but because mortalities would not contribute to a need for federal listing for any of the associated species, impacts would be **moderate**.

**Wild Turkey (WA Priority).** Since the Central Alternative crosses forest and open habitat within 1 mile of two documented occurrences of wild turkey, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat removal and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Because wild turkey conservation status is secure at the national level and this species is a habitat generalist introduced to Washington state (NatureServe 2014), impacts would not contribute to a need for federal listing and would be **low**.

## Mammals

**Elk (WA Priority Species) and WDFW Elk Priority Area.** Adverse effects to elk would include temporary construction disturbance and habitat loss within the two WDFW elk winter range priority areas, including the Kalama River, Coweeman River, and Yale Valley priority areas within the larger WDFW Mt. St. Helens/Mt. Rainier herds winter range priority area. Towers, substations, and access roads would remove 274 acres of habitat within the two WDFW elk priority area. This would have a **low** impact on elk since a relatively small portion of the total WDFW elk winter range priority areas would be affected, impacts would be spread out along the corridor, and the species has a secure conservation status at both state and federal levels (NatureServe 2012). Impacts from 519 acres of right-of-way clearing could be beneficial to elk since it would create a corridor of shrubland or open habitat adjacent to forested habitat.

## Amphibians

**Cascade Torrent Salamander (Federal SOC, WA Candidate).** Given that the Central Alternative crosses riparian habitat within 1 mile of five documented occurrences of Cascade torrent salamander, there is a high likelihood that this species could be affected by the project. Impacts could include temporary construction disturbance, construction mortality or stress from both physical injury and increased water turbidity from in-water work, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Although there are a high number of occurrences near the affected area, they mainly occur along two main streams/ivers. Also, the conservation status of the species is listed as vulnerable at the state and federal levels (NatureServe 2012). Given the limited distribution and conservation status, habitat loss coupled with increased mortality would not likely contribute to a need for federal listing; impacts on this species would be **moderate**.

**Cope's Giant Salamander (WA Monitor Species).** Since the Central Alternative crosses riparian habitat within 1 mile of a documented occurrence of Cope's giant salamander, there is a greater chance that individuals could be present and affected by the project. Impacts on a population of this species could include temporary construction disturbance, construction mortality or stress from physical injury and increased water turbidity, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Since the conservation status is vulnerable-to-apparently secure at both the state and federal levels (NatureServe 2012,) and impacts would not contribute to a need for federal listing, the impact would be **moderate**.

**Western Toad (Federal SOC, WA Candidate).** The Central Alternative crosses riparian habitat within 1 mile of a documented occurrence of western toad, increasing the chance that individuals could be affected by the project. Impacts could include temporary construction disturbance, construction mortality, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from towers and access roads. Right-of-way clearing would convert forested riparian and wetland habitats to scrub-shrub riparian and wetland habitat, which would still be suitable habitat for this species. Although this species is rated as vulnerable at both the state and federal levels, impacts would not contribute to a need for federal listing; therefore, the impact would be **moderate**.

## Reptiles

**Ringneck Snake (WA monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Western Painted Turtle (Federal SOC, OR Sensitive-Critical).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Western Pond Turtle (Federal SOC, OR Sensitive-Critical).** All action alternatives cross wetland habitat within 1 mile of a documented occurrence representing five western pond turtles in Oregon (near the Sundial substation site [see Section 18.2.2.3, Sundial Substation]). Given this proximity, there is an increased chance that this species would be affected by the project. The Central Alternative crosses wetland/riparian habitat within 1 mile of a second documented occurrence of western pond turtle, and suitable habitat exists throughout the study area. Impacts could include temporary construction disturbance, construction mortality, and loss of a nest or young if construction takes place during the breeding/nesting season, and degradation or loss of wetland habitat from the placement of towers or an access road. Because western pond turtle is rated as critically imperiled in Washington, imperiled in Oregon, and vulnerable-to-apparently secure federally (NatureServe 2012), and since its population is in decline in Oregon (ODFW 2011), mortality or loss of breeding habitat potentially affecting two documented occurrences could contribute to a need for federal listing, which would be a **moderate-to-high** impact.

## Invertebrates

**California Floater Mussel (Federal SOC, WA Candidate).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

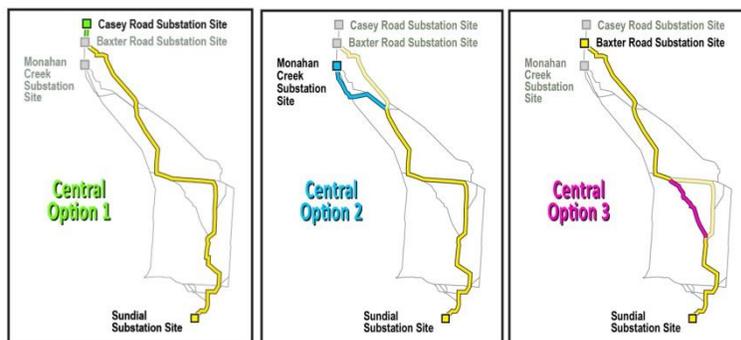
**Oregon Floater Mussel (WA Monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

### 18.2.5.4 Central Options 1, 2, and 3

The levels of the impacts on wildlife and WDFW priority habitats would be the same as for the Central Alternative, except where stated otherwise.

Central Option 1 would alter or remove 78 additional acres of the WDFW Roosevelt Elk Winter Range Priority Area.

Central Option 1 would also cross through the East Fork Lewis River Riparian Corridor. An access road would also cross riparian habitat within 1 mile of two documented occurrences of Dunn's salamander, the only occurrence of this species among all action alternatives. With a conservation status of vulnerable at the state level and apparently secure at the federal level (NatureServe 2012), potential impacts would be **moderate**.



Central Option 2 would remove 8 additional acres of old-growth/mature forest, 4 additional acres of riparian habitat, 9 additional acres of wetland habitat, and 68 additional acres of forest (see Tables 18-5 and 18-6).

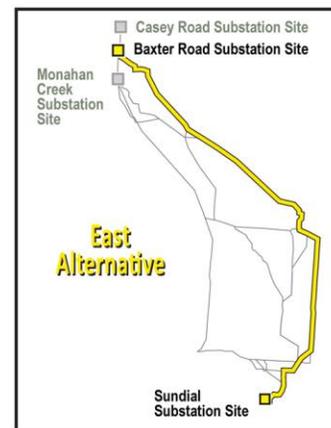
Central Option 3 would remove 3 additional acres of old-growth/mature forest and 60 more acres of forest, but would alter 12 fewer acres of riparian habitat and 4 fewer acres of wetland habitat. It would impact additional yellow-billed cuckoo potential foraging habitat along the East Fork Lewis River. It would also cross a forested riparian area within 1 mile of a WDFW cavity-nesting duck priority area. Impacts would be the same as those given for the West Alternative (**moderate**) (see Section 18.2.4.3, Special-Status Species—West Alternative). Central Option 3 would avoid two of the five documented occurrences of Cascade torrent salamander, one of three documented occurrence of western pond turtle (the one occurrence in Washington), and the one documented occurrence of Vaux’s swift.

## 18.2.6 East Alternative

The East Alternative would require mostly new right-of-way (see Chapter 4, Proposed Action and Alternatives), which would increase habitat fragmentation primarily in the forested habitats. However, since most of the new line would not parallel existing lines, there would be less of a fence effect to increase the collision risk for birds.

### 18.2.6.1 Wildlife Habitats and Species—East Alternative

Impacts could be higher where WDFW priority habitat or special-status species would be affected (see Section 18.2.6.2, WDFW Priority Habitats—East Alternative and Section 18.2.6.3 Special-Status Species—East Alternative).



### Wildlife in Open Habitat

Wildlife in open habitat would be less affected by the East Alternative than wildlife in forest habitat. The proposed transmission line would cross 5 miles of open habitat—much less than in forest habitat, but similar to shrubland and urban/suburban habitats (see Table 18-3). Towers, access roads, and substations would cause the permanent loss of 114 acres of open habitat (see Table 18-4). The wildlife most affected by the project in open habitat would likely be ground-dwelling animals. They would experience both a decrease in available habitat and an increase in mortality from the increased number of perches available to predatory raptors (raptors, conversely, would experience mostly positive effects, with some potential for mortality from transmission line collisions). Impacts on wider-ranging wildlife would include a small reduction in breeding or grazing habitat. Wildlife mortality from construction and transmission-line bird collisions would also occur. Because the project would be long and narrow, any single population of animals would lose very little habitat and experience a small increase in mortality. These would cause **low** impacts from habitat loss and construction disturbance, and **moderate** impacts from mortality, since mortality of individual animals would not affect the conservation status of most species.

## Wildlife in Forest and Production Forest Habitats

Forest-dependent wildlife would be more affected than other wildlife by the East Alternative since they would lose the most habitat. The proposed transmission line would cross 56 miles of production forest, and 10 miles of forest (see Table 18-3). Production forest habitat would be reduced by 1,386 acres from right-of-way clearing, towers, access roads, and substations, and forest would be reduced by 227 acres from the same disturbances (see Tables 18-3 and Table 18-4). Forest-dependent wildlife would be most affected by habitat loss. Habitat generalists would be less affected since they would be able to use the altered “edge” habitat within the cleared right-of-way for foraging or hunting (shrubland and open habitat species could experience positive impacts by an increase in habitat) (see Section 18.2.2, Impacts Common to Action Alternatives). Because forest and production forest are common in the project area, and since impacts would be spread out along the corridor, most forest wildlife species would experience **low** impacts from habitat loss and construction disturbance. Wildlife mortality from construction and transmission-line bird collisions would occur but would be **moderate**, since mortality of individual animals would not affect the conservation status of most species.

## Wildlife in Shrubland Habitats

Wildlife that use shrubland habitat could benefit from the creation of 1,134 acres of shrubland habitat through right-of-way clearing in forest and production forest, and raptors would experience a positive effect from the increase in available perches (see Table 18-3). Conversely, with 2 miles of new transmission line crossing existing shrubland habitat, wildlife would also experience some adverse effects from the project, including the alteration of 34 acres of tall shrubland, and the loss of 55 acres of existing habitat to towers and access roads (see Tables 18-3 and 18-4). Adverse effects would include temporary construction disturbance; the loss of existing habitat; the loss of some tall shrub nesting habitat for birds; potential construction mortality for less mobile species; and a possible increase in mortality caused by an increase in predation by raptors using the transmission lines and towers as perches, and by bird/transmission line collisions. Since impacts would be spread out along the corridor and affect a relatively small amount of habitat, the levels of adverse impacts would be similar to those for open habitat, including **low** impacts from loss of existing habitat and construction disturbance, and **moderate** impacts from mortality.

## Wildlife in Urban/Suburban habitat

Wildlife found in urban/suburban habitat would be the least affected, with just 1 mile of new transmission line crossing this habitat (see Table 18-3). The East Alternative would alter 19 acres of urban/suburban habitat by right-of-way clearing and remove 3 acres of habitat for access roads (see Tables 18-3 and 18-4). Impacts on wildlife would range among those impacts listed for open, shrubland, forest, and production forest habitats, depending on which habitats might be present in any given urban/suburban area. Given the small amounts of habitat lost and the general tolerance of urban/suburban wildlife to human disturbance, impacts related to construction and habitat loss or alteration would be **low**, while those related to an increase in mortality (such as for prey species of raptors and bird/transmission line collisions) would be **moderate**.

### 18.2.6.2 WDFW Priority Habitats—East Alternative

This section provides the amount of WDFW priority habitats altered or removed by the East Alternative, and the length in miles of the transmission line in each habitat.

**Riparian Areas.** Along the East Alternative, riparian areas would have more impacts than other WDFW priority habitats, with 166 acres of habitat altered by right-of-way clearing and 59 acres lost to towers, access roads, and substations (see Tables 18-5 and 18-6). Habitat loss would be a **low-to-high** impact on these WDFW priority habitats, depending on their condition. In addition, transmission line bird collisions would increase across 5 miles of riparian areas. This would also be a **low-to-moderate** impact depending on bird use and the effectiveness of mitigation measures, since it could reduce the ability of these habitats to safely support waterfowl, waterbirds, and raptors: an essential attribute for these habitats.

Riparian areas may encompass other priority habitats affected by the project, including biodiversity areas and corridors, wetlands, and old-growth/mature forest.

**Biodiversity Areas and Corridors.** Two documented WDFW biodiversity area and corridor priority habitats would be crossed by the East Alternative: the East Fork Lewis River Riparian Corridor (crossed in two places at the East Fork Lewis River and a tributary to King Creek) and the Lady and Akerman Islands Biodiversity Area and Corridor (WDFW 2012). (These are the same as those affected by the Crossover Alternative.) Two additional biodiversity areas are within 1 mile of the East Alternative: the Camas Biodiversity Area and the Washougal River Riparian Corridor (WDFW 2012). Fragmentation of these habitats from right-of-way clearing could adversely affect the movement of a diversity of wildlife across a biological diverse and relatively undisturbed area. A little less than 1 mile of this habitat would be crossed in four places by new transmission line, with 9 acres altered due to right-of-way clearing, and about 1 acre lost to a transmission tower and new access road (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since fragmentation would diminish one of their main attributes, which is to be a “relatively undisturbed and unbroken tract of vegetation” that connects high-value habitats (WDFW 2008).

**Freshwater Wetlands and Fresh Deepwater.** In total, 122 acres of forested, scrub-shrub, and emergent freshwater wetlands would be removed by right-of-way clearing (forested wetlands) and/or towers, access roads, and substations (see Tables 18-5 and 18-6). Twenty-three acres of scrub-shrub wetlands would be altered by right-of-way clearing (see Table 18-5). Habitat alteration and removal at the Fraser Creek Wetland would be a **high** impact, since it is known to be of high value to wildlife (WDFW 2012). Impacts on wildlife from the alteration and loss of other wetlands would range from **low-to-high**, depending on the condition of each wetland. In addition, transmission line bird collisions would become more frequent over 5 miles of freshwater wetlands (see Table 18-5). Similar to riparian areas, an increase in transmission line collisions could reduce the value of these areas for wildlife habitat, a **low-to-moderate** impact.

The only impacts on fresh deepwater would be from transmission line bird collisions, which would increase across 1 mile of fresh deepwater (see Table 18-5). As for freshwater wetlands and riparian areas, impacts would be **low-to-moderate**.

**Caves or Cave-Rich Areas.** The right-of-way would cross through less than 1 acre along the edge of a WDFW cave-rich priority area in production forest (see Table 18-5) (the same area that would be impacted by the Crossover Alternative). Impacts could include permanent removal of

production forest habitat surrounding a cave—which could remove some roosting habitat; the presence of a tower, transmission line, or access road; and temporary construction disturbance. These disturbances would generally have **low** impacts on this habitat given the small area of disturbance and the likelihood that actual cave habitat would not be permanently altered. Also, the effects on wildlife (such as Townsend’s big-eared bat) that rely on caves would not likely prevent them from using this cave habitat, while the addition of shrubland from right-of-way clearing could be beneficial for foraging purposes. Also, the placement of the disturbance along the edge of the cave-rich area would mean that the area would not be fragmented. There are two other cave-rich priority habitat areas within 1 mile of the transmission line.

**Herbaceous Balds.** About 1 acre of an improved access road would cross the southern edge of the Larch Mountain WDFW herbaceous bald priority habitat (see Table 18-6). Impacts could include permanent vegetation removal from possible widening of the access road, and temporary construction disturbance such as soil compaction. These disturbances would have **low** impacts on this WDFW priority habitat given the small areas of disturbance, the placement of the disturbance along the edge of the habitats—meaning the habitat would not be fragmented—and the existing disturbed conditions from the existing access road. The Lacamas Lake WDFW herbaceous balds priority habitat also falls within 1 mile of the East Alternative; the impact would be **low**.

**Old-Growth/Mature Forest.** Fourteen acres of old-growth/mature forest would be removed by right-of-way clearing and new and improved access roads (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since tree clearing would remove the main attributes of this habitat: long-lived trees and the associated understory vegetation, which have become uncommon in the Pacific Northwest and could not be easily or quickly replaced. Removal of adjacent forested areas would also cause an indirect, **low-to-moderate** effect on the old-growth/mature forested areas that remain. These edge effects include changes in sub-canopy climate conditions, increasing temperature and humidity variation, increasing light levels, and alteration of the understory composition and/or tree species reproduction. Tree clearing can also increase the risk of windthrow in adjacent forests, extending the canopy-removal effects.

**Oregon White Oak Woodlands.** One acre of the Washougal Oaks Woodland would be removed by right-of-way clearing (see Table 18-5). Impacts on this WDFW priority habitat would be **high** since tree clearing would remove the main attributes of this habitat: Oregon white oak trees and the associated understory vegetation, which are becoming less common in the Pacific Northwest.

**Snag-Rich Areas.** The East Alternative would remove 45 acres from the WDFW Rock Creek Snag-Rich Area priority habitat (see Tables 18-5 and 18-6). Habitat loss would be caused by right-of-way clearing, towers, and access roads. Impacts would include the permanent loss and fragmentation of snag tree habitat. There is additional unnamed snag-rich habitat within 1 mile of the East Alternative that may be impacted. Because of the scarcity of this habitat in the project area, impacts would be **high**.

**Talus.** One acre of a talus field would be permanently removed by a new access road (see Table 18-6), and less than 1 mile would be crossed by the new transmission line (see Table 18-5). Impacts would include permanent loss of habitat, potential transmission-line collisions by raptors, and temporary construction disturbance. Impacts would be **high** due to

the scarcity of this wildlife habitat, and since these areas are relatively inaccessible and more likely to be in pristine (undisturbed) condition prior to construction.

### 18.2.6.3 Special-Status Species—East Alternative

There are three federally listed species and 23 other special-status species potentially affected by the East Alternative, in addition to the cavity-nesting ducks and waterfowl concentration priority species groups. All documented occurrences are found in Washington with the exception of California floater mussel, Oregon Floater Mussel, western painted turtle, and western pond turtle, which are found in Oregon.

#### Federally Listed Species

**Marbled Murrelet (Threatened).** Although there are no documented occurrences of marbled murrelet within 1 mile of the East Alternative, right-of-way clearing and towers, substations, and access roads would remove 424 acres of forest in the marbled murrelet conservation zone. At most, only 13 acres of this conservation zone is old-growth/mature forest (see Table 18-5 and Table 18-6); potentially suitable habitat for marbled murrelet. The range of the marbled murrelet is within 55 miles of marine waters, which includes the northern end of the East Alternative; however, this portion of the study area is at the outer limit of this range, so the available suitable habitat would not likely be used for nesting. Impacts from the proposed action would only include the loss of potential habitat. The old-growth/mature forest within this area primarily occurs in small patches, so any potential habitat loss would be minor in any particular area. Given the small amount of potential habitat affected, the distance from the coast, and the lack of any documented occurrences, potential habitat loss would be a **low** impact.

**Northern Spotted Owl (Threatened).** Right-of-way clearing, towers, substations, and access roads would remove 306 acres of mostly production forest from within four northern spotted owl circles, and the right-of-way would pass within a mile of three others. In addition, about 13 acres of potentially suitable old-growth/mature forest habitat would be removed by the project. This includes habitat from the WDFW Rock Creek Snag-Rich Area priority habitat near Yale Dam (also see Section 18.2.6.2, WDFW Priority Habitats—East Alternative). This area contains potential high-quality habitat for northern spotted owl and occurs near the western edge of a northern spotted owl Conservation Support Area (CSA) designated by the USFWS (2008a). Otherwise, recent high resolution imagery shows most of the area along the East Alternative to be of marginal habitat, although other stands could also provide low quality suitable habitat and dispersal habitat (BPA 2011). Impacts on individuals of this species would include temporary construction disturbance and loss of known and high-quality potential habitat. Mitigation measures would be used to prevent loss of a nest or mortality of young. Although there are a relatively high number of documented occurrences in the affected environment and both known and potential high-quality habitat would be lost, since the amount of habitat lost is highly fragmented and of generally poor quality, with impacts spread out among a number of northern spotted owl circles and along the corridor; and since mitigation measures would reduce construction disturbance, impacts on this species would not affect species recovery and would therefore be **moderate**.

**Yellow-billed Cuckoo (Threatened).** Although there are no documented occurrences of yellow-billed cuckoo or suitable nesting habitat within 1 mile of the East Alternative, clearing for right-of-way, towers, and access roads would remove small patches of potential foraging habitat.

These patches occur where the East Alternative crosses riparian areas, particularly at the Columbia, Cowlitz, and Lewis Rivers. Given that potential habitat is generally low quality and not suitable for breeding, that a relatively small amount of potential foraging habitat would be removed, and that impacts will be spread out along the corridor, potential habitat loss would be a **low** impact.

### **Other Special-Status Wildlife Species — Birds**

**Bald Eagle (Federal SOC, WA Sensitive) and WDFW Bald Eagle Priority Areas.** Bald eagle would be impacted by the project given that within 1 mile of the East Alternative there are six documented occurrences of bald eagle nests and four WDFW bald eagle priority areas: the Gobar Creek Winter Eagle Site, Canyon Creek Communal Night Roost, Yale-Siouxon Notch Communal Night Roost, and Yale Tailrace Foraging Area. New transmission line would cross about 1 mile of the Canyon Creek Communal Night Roost and the Yale Tailrace Foraging area, and right-of-way clearing, towers, and access roads would remove tree habitat from 37 acres of this area. Impacts would include temporary construction disturbance and loss of potential nesting and roosting habitat through tree removal in riparian areas along the East Alternative (see Section 18.2.6.3, Special-Status Habitats), particularly where it occurs in a WDFW priority area. As for other raptors, transmission line collisions are typically uncommon, but could occur. Mitigation measures would be used to ensure individual nests and young are not harmed or disrupted during the breeding season, and to reduce the risks of transmission line collisions throughout the year. Impacts on this species would be **moderate** since the species is still listed as sensitive by WDFW, is monitored by USFWS following its delisting in 2010, and impacts would not be expected to contribute to a need for federal relisting of this species based on a conservation status of secure at both the state and federal levels (NatureServe 2012).

**Cavity-Nesting Ducks (also see Waterfowl, this section).** The East Alternative could affect cavity-nesting ducks since it crosses within 1 mile of the Longview Vicinity Wetlands and the Fraser Creek Wetlands, both of which support cavity-nesting ducks. Impacts could include habitat removal, increased transmission line collisions, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. These areas are important to a wide diversity and number of cavity-nesting ducks, but because mortalities would not contribute to a need for federal listing for any of the associated species (see further discussion of specific species that follows), and since the WDFW priority areas would not be crossed, impacts on cavity-nesting ducks would be **low-to-moderate**.

**Golden Eagle (WA Candidate).** The East Alternative could impact golden eagle since it crosses within 1 mile of a documented golden eagle nest. Impacts would include temporary construction disturbance and loss of potential nesting and roosting habitat through tree removal, although this species prefers to nest on cliffs (NatureServe 2014). Mitigation measures would be used to ensure individual nests and young are not harmed or disrupted during the breeding season, and to reduce the risks of transmission line collisions throughout the year. Impacts on this species would be **moderate** since the species is a candidate for listing by WDFW, is monitored by USFWS, and impacts would not be expected to contribute to a need for federal relisting of this species based on a conservation status of vulnerable at the state level and apparently secure to secure at the federal level (NatureServe 2014).

**Mountain Quail (WA Priority, OR Sensitive-Vulnerable).** Since the East Alternative crosses riparian habitats within 1 mile of a documented occurrence of mountain quail, there is a greater

chance that individuals could be present and affected by the project. Impacts could include temporary construction disturbance and habitat loss through right-of-way tree clearing, towers, and access roads. Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. Since the conservation status is critically imperiled at the state level and secure at the federal level (NatureServe 2014), and since not many individuals would likely be affected given the low abundance in these counties, impacts would not contribute to a need for federal listing and would be **moderate**.

**Osprey (WA Monitor).** The East Alternative is within 1 mile of 15 documented occurrences of osprey, most of which are clustered around the Lake Merwin area. Therefore, individuals could be present and affected by the project. Impacts could include mortality from transmission line collisions over riparian and wetland habitats, and lost habitat due to towers and access roads placed in riparian areas and wetland habitat. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), impacts would not contribute to a need for federal listing and would be **moderate**.

**Peregrine Falcon (Federal SOC, WA Sensitive).** Although there is one documented occurrence of peregrine falcon in WDFW cliffs/bluffs priority habitat within 1 mile of the East Alternative, the East Alternative does not cross any known suitable habitat (cliffs/bluffs or caves) within 1 mile of the occurrence, indicating a decreased likelihood that peregrine falcon habitat would be affected (this is the same occurrence as along the Crossover Alternative). However, the presence of new transmission line in the area could increase the chance for mortality through transmission line collisions. If suitable habitat does occur along the right-of-way or access roads, additional impacts could include habitat loss from towers and access roads and temporary construction disturbance. Mitigation measures would be used to ensure individual birds are not harmed or disrupted during the breeding season, if necessary. Positive impacts could also result from the addition of new perch sites on towers and lines from which individual birds could hunt prey. Since the conservation status of this species is imperiled (breeding) to vulnerable (non-breeding) at the state level, and apparently secure at the federal level (NatureServe 2012), mortality or loss of habitat in one location would not likely contribute to a need for federal listing, and impacts would be **moderate**.

**Pileated Woodpecker (WA Candidate).** Since the East Alternative crosses high-value riparian habitat within 1 mile of a documented occurrence of pileated woodpecker and a few occurrences of pileated woodpecker sign, there is a greater chance that individuals of this species could be present and affected by the project. Impacts could include habitat loss through right-of-way tree clearing, towers, and access roads, mortality through collisions with transmission lines, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), and impacts would not contribute to a need for federal listing, the impact would be **moderate**.

**Purple Martin (Federal SOC, WA Candidate).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Slender-billed White-breasted Nuthatch (Federal SOC, WA Candidate, OR Sensitive-Vulnerable).** Since the East Alternative crosses within 1 mile of one documented occurrence of slender-billed white-breasted nuthatch on Lady Island, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat loss through tree

removal, temporary construction disturbance, and transmission line collisions, although collisions are not very likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is apparently secure at the state level and secure at the federal level (NatureServe 2014), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts could occur.

**Vaux's Swift (WA Candidate).** Observations of Vaux's swift in a WDFW biodiversity area and corridor priority habitat that is crossed by the East Alternative indicates an increased likelihood of impacts. Impacts could include habitat loss through tree removal, temporary construction disturbance, and transmission line collisions, although collisions are not very likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is vulnerable-to-apparently secure at the state level and secure at the federal level (NatureServe 2012), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts could occur.

**Waterfowl Concentrations.** Because there is a WDFW waterfowl concentration priority area (at the Whittle Creek Wetlands) within 1 mile of the East Alternative, and since the right-of-way would cross between the waterfowl concentration area and the Cowlitz River, there is a chance that waterfowl would be impacted by an increase in transmission line collisions. Because of the importance of these areas to a wide diversity and number of waterfowl, but because mortalities would not contribute to a need for federal listing for any of the associated species, impacts would be **moderate**.

**Wild Turkey (WA Priority).** Since the East Alternative crosses forest and open habitat within 1 mile of two documented occurrences of wild turkey, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat removal and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Because the conservation status is secure at the national level and this species is a habitat generalist introduced to Washington state (NatureServe 2014), impacts would not contribute to a need for federal listing and would be **low**.

## **Mammals**

**Columbian Black-Tailed Deer (WA Priority) and WDFW Columbian Black-Tailed Deer Priority Habitat.** Impacts on this species would be similar to those for elk, including negative impacts from loss of 6 acres of habitat in a WDFW Columbian black-tailed deer wintering and migration priority area, and positive impacts from right-of-way clearing across 15 acres of this priority area. This species is also documented in the WDFW elk winter range priority area at Siouan Creek. As for elk, impacts would be **low** since a relatively small portion of the total WDFW Columbian black-tailed deer wintering and migration priority area and the WDFW elk winter range priority area would be affected and the species has a secure conservation status at both state and federal levels (NatureServe 2012).

**Elk (WA Priority) and WDFW Elk Priority Area.** Adverse effects to elk would include temporary construction disturbance and habitat loss within the two WDFW elk winter range priority areas,

including the Siouxon Creek, Coweeman River, Kalama River, and Yale Valley priority areas within the larger WDFW Mt. St. Helens/Mt. Rainier herds' winter range priority area. Towers, substations, and access roads would remove 357 acres of habitat from within the two WDFW elk winter habitat priority areas. This would have a **low** impact on elk since a relatively small portion of the total WDFW elk winter range priority areas would be affected, impacts would be spread out along the corridor, and the species has a secure conservation status at both state and federal levels (NatureServe 2012). Impacts from 655 acres of right-of-way clearing could be beneficial to elk since it would create a corridor of shrubland or open habitat adjacent to forested habitat.

## Amphibians

**Cascades Frog (WA Monitor).** The East Alternative crosses riparian habitat within 1 mile of documented occurrences of Cascade torrent salamander, so there is potential for this species to be affected by the project. Impacts could include temporary construction disturbance, construction mortality or stress from both physical injury and increased water turbidity from in-water work, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. The conservation status of the species is monitor at the state level and there is no federal protection status. Given the limited distribution and its conservation status, habitat loss coupled with increased mortality would not likely contribute to a need for federal listing; impacts on this species would be **low**.

**Cascade Torrent Salamander (Federal SOC, WA Candidate).** Given that the East Alternative crosses riparian habitat within 1 mile of 10 documented occurrences of Cascade torrent salamander, there is a high likelihood that this species could be affected by the project. Impacts could include temporary construction disturbance, construction mortality or stress from both physical injury and increased water turbidity from in-water work, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Although there are a high number of occurrences near the affected area, they mainly occur in two areas. Also, the conservation status of the species is listed as vulnerable at the state and federal levels (NatureServe 2012). Given the limited distribution and conservation status, habitat loss coupled with increased mortality would not likely contribute to a need for federal listing; impacts on this species would be **moderate**.

**Coastal Tailed Frog (WA Monitor Species, OR Sensitive-Vulnerable).** Given that the East Alternative crosses riparian habitat within 1 mile of five documented occurrences of this species, all occurring along three main streams/rivers, there is a high likelihood that it could be affected by the project. Impacts on a population of this species could include temporary construction disturbance, construction mortality, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Although its conservation status is imperiled in Washington state (NatureServe 2012) and there are a relatively high number of occurrences near the affected environment, its federal conservation status is apparently secure, and so impacts would not likely contribute to a need for federal listing and would be **moderate**.

**Larch Mountain Salamander (Federal SOC, WA Sensitive, OR Sensitive-Vulnerable).** There is one documented occurrence of this species within 1 mile of the East Alternative. There is suitable habitat (an unnamed cave) documented within 1 mile of the occurrence and within the

East Alternative, indicating that individuals could be affected. Impacts could include temporary construction disturbance, construction mortality, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from towers and access roads. Since the conservation status of this species is vulnerable at the state and federal levels (NatureServe 2012), mortality or loss of habitat would not likely contribute to a need for federal listing, indicating that impacts on this species would be **moderate**.

**Western Toad (Federal SOC, WA Candidate).** Access roads for the East Alternative cross within 0.5 mile of three documented occurrences of western toad, increasing the chance that individuals could be affected by the project. Impacts could include temporary construction disturbance, construction mortality, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from towers and access roads. Right-of-way clearing would convert forested riparian and wetland habitats to scrub-shrub riparian and wetland habitat, which would still be suitable habitat for this species. Although this species is rated as vulnerable at both the state and federal levels, impacts would not likely contribute to a need for federal listing and would be **moderate**.

## Reptiles

**Ringneck Snake (WA Monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Southern Alligator Lizard (WA Monitor).** There is a documented occurrence of southern alligator lizard within 1 mile of the East Alternative. Given this proximity, there is an increased chance that this species would be affected by the project. Impacts could include temporary construction disturbance, construction mortality, loss of a nest or young if construction takes place during the breeding/nesting season, and degradation or loss of forest habitat from the placement of towers or an access road. Because southern alligator is rated as monitored in Washington state, it has no federal protection status, and little of its preferred habitat would be removed, mortality or loss of breeding habitat potentially affecting a documented occurrence would be a **low** impact.

**Western Painted Turtle (Federal SOC, OR Sensitive Critical).** See Special Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Western Pond Turtle (Federal SOC, OR Sensitive-Critical).** All action alternatives cross wetland habitat within 1 mile of a documented occurrence representing five western pond turtles in Oregon (near the Sundial substation site [see Section 18.2.2.3, Sundial Substation]). Given this proximity, there is an increased chance that this species would be affected by the project. Impacts could include temporary construction disturbance, construction mortality, and loss of a nest or young if construction takes place during the breeding/nesting season, and degradation or loss of wetland habitat from the placement of towers or an access road. Because western pond turtle is rated as imperiled in Oregon and vulnerable-to-apparently secure federally (NatureServe 2012), and since its population is in decline in Oregon (ODFW 2011), mortality or loss of breeding habitat potentially affecting a documented occurrence could contribute to a need for federal listing, which would be a **moderate-to-high** impact.

## Invertebrates

**California Floater (Federal SOC, WA Candidate).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Oregon Floater Mussel (WA Monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

### 18.2.6.4 East Options 1, 2, and 3

The levels of impacts on wildlife and WDFW priority habitats would be the same as for the East Alternative, except where stated otherwise.

East Option 1 would remove an additional 25 acres of the three freshwater wetland types,

8 acres of old-growth/mature forest, and 42 acres of forest habitat; and alter 5 fewer acres of riparian habitat (see Tables 18-5 and 18-6). Regarding special-status species, it would avoid the WDFW waterfowl concentration priority area. However, it would remove 3 acres from an additional WDFW bald eagle priority area—the Cowlitz Bald Eagle Feeding Habitat—and cross within the buffers of two additional bald eagle nests. It would also impact more potential foraging habitat for yellow-billed cuckoo along the Coweeman River.

East Option 2 would alter or remove 9 additional acres of riparian habitat, but would remove 6 fewer acres of wetlands, 9 fewer acres of old-growth/mature forest (see Tables 18-5 and 18-6), and remove 71 fewer acres from northern spotted owl circles. It would also avoid affecting the talus slope, the Larch Mountain herbaceous bald, and the cave-rich area that are all affected by the East Alternative, although it would remove 3 acres from the North Fork Lacamas Snags, and it would cross through the East Fork Lewis River Riparian Corridor. It would cross within 1 mile of a documented occurrence of mountain quail that would not be impacted in the East Alternative and Options 1 and 3, but would avoid crossing within 1 mile of a number of special-status species occurrences that are all near the East Alternative, including three of the five occurrences of coastal tailed frog, a golden eagle nest, an occurrence of Cascades frog, and three of the six occurrences of Cascade torrent salamander. It would remove about half the amount (12 of 24 acres) of WDFW Columbian black-tailed deer priority area. It would also come within 1 mile of the cave-rich area at Tum Tum Mountain.

East Option 3 would be similar to the East Alternative, but would alter or remove 2 fewer acres of wetland habitat and 7 additional acres of riparian habitat.



## 18.2.7 Crossover Alternative

The Crossover Alternative would require new right-of-way along much of its southern half (see Chapter 4, Proposed Action and Alternatives), which would cause increased habitat fragmentation primarily in the forested habitats. In much of its northern half, it would parallel existing transmission lines, which would not create new fragmentation, although it could expand existing fragmentation where the right-of-way would need to be widened. Because the new lines would be higher than the existing lines, the parallel right-of-way would create an increased fence effect to bird flight paths and increase the risk of bird collisions.



### 18.2.7.1 Wildlife Habitats and Species—Crossover Alternative

Impacts would be higher where WDFW priority habitats or special-status species would be affected (see Section 18.2.7.2, WDFW Priority Habitats—Crossover Alternative, and Section 18.2.7.3, Special-Status Species—Crossover Alternative).

#### Wildlife in Open Habitat

Wildlife in open habitat would be less affected by the Crossover Alternative than wildlife in forest habitat. The proposed transmission line would cross 9 miles of open habitat—much less than in forest habitat, but similar to shrubland (see Table 18-3). Towers, access roads, and substations would cause the permanent loss of 126 acres of open habitat (see Table 18-4), although 2 acres of open habitat would also be created through the clearing of Oregon white oak woodlands (see Table 18-5). The wildlife most affected by the project in open habitat would likely be ground-dwelling animals. They would primarily experience both a decrease in available habitat and an increase in mortality from the increased number of perches available to predatory raptors (raptors, conversely, would experience mostly positive effects, with some potential for mortality from transmission line collisions). Impacts on wider-ranging wildlife would include a small reduction in breeding or grazing habitat. Wildlife mortality from construction and transmission-line bird collisions would also occur. Because the project would be long and narrow, any single population of animals would lose very little habitat and experience a small increase in mortality. These would cause **low** impacts from habitat loss and construction disturbance, and **moderate** impacts from mortality, since mortality of individual animals would not affect the conservation status of most species.

#### Wildlife in Forest and Production Forest Habitats

Forest-dependent wildlife would be more affected than other wildlife by the Crossover Alternative since they would lose the most habitat. The proposed transmission line would cross 35 miles of production forest, and 14 miles of forest (see Table 18-3). Production forest habitat would be reduced by 787 acres from right-of-way clearing, towers, access roads, and substations, and forest would be reduced by 360 acres from the same disturbances (see Tables 18-3 and 18-4). Forest-dependent wildlife would be most affected by habitat loss. Habitat generalists would be less affected since they would be able to use the altered “edge” habitat within the cleared right-of-way for foraging or hunting (shrubland and open habitat

species could experience positive impacts by an increase in habitat) (see Section 18.2.2, Impacts Common to Action Alternatives). Because forest and production forest are common in the project area, and since impacts would be spread out along the corridor, most forest wildlife species would experience **low** impacts from habitat loss and construction disturbance. Wildlife mortality from construction and transmission-line bird collisions would occur but would be **moderate**, since mortality of individual animals would not affect the conservation status of most species.

### Wildlife in Shrubland Habitats

Wildlife that use shrubland habitat could benefit from the creation of 864 acres of shrubland habitat through right-of-way clearing in forest and production forest, and raptors would experience a positive effect from the increase in available perches (see Table 18-3). Conversely, with 12 miles of new transmission line crossing existing shrubland habitat, wildlife would also experience some adverse effects from the project, including the alteration of 208 acres of tall shrubland, and the loss of 66 acres of existing habitat to towers, access roads, and substations (see Tables 18-3 and 18-4). Adverse effects would include temporary construction disturbance; the loss of existing habitat; the loss of some tall shrub nesting habitat for birds; potential construction mortality for less mobile species; and a possible increase in mortality caused by an increase in predation by raptors using the transmission lines and towers as perches, and by bird/transmission line collisions. Since impacts would be spread out along the corridor and affect a relatively small amount of habitat, the levels of adverse impacts would be similar to those for open habitat, including **low** impacts from loss of existing habitat and construction disturbance, and **moderate** impacts from mortality.

### Wildlife in Urban/suburban habitat

Wildlife found in urban/suburban habitat would be the least affected, with just 1 mile of new transmission line crossing this habitat. The Crossover Alternative would alter 21 acres of urban/suburban habitat by right-of-way clearing and remove 4 acres of habitat for access roads (see Tables 18-3 and 18-4). Impacts on wildlife would range among those impacts listed for open, shrubland, forest, and production forest habitats, depending on which habitats might be present in any given urban/suburban area. Given the small amounts of habitat lost and the general tolerance of urban/suburban wildlife to human disturbance, impacts related to construction and habitat loss or alteration would be **low**, while those related to an increase in mortality (such as for prey species of raptors and bird/transmission line collisions) would be **moderate**.

#### 18.2.7.2 WDFW Priority Habitat—Crossover Alternative

This section provides the amount of WDFW priority habitats that would be altered or removed by the Crossover Alternative, and the length in miles of the transmission line in each habitat.

**Riparian Areas.** Along the Crossover Alternative, most impacts on WDFW priority habitat from habitat alteration or removal would be in riparian areas, with 187 acres of habitat altered by right-of-way clearing and 38 acres lost to towers, access roads, and substations (see Tables 18-5 and 18-6). Habitat loss would be a **low-to-high** impact on these WDFW priority habitats, depending on their condition. In addition, transmission line bird collisions would increase across 11 miles of riparian habitat, particularly in the northern portion of the alternative, where the transmission line would parallel an existing line (see Table 18-5). This would also be a

**low-to-high** impact depending on bird use and the effectiveness of mitigation measures, since it could reduce the ability of these habitats to safely support waterfowl, waterbirds, and raptors; an essential attribute for these habitats. In the southern portion of the alternative where there would be no parallel existing line, impacts would be **low-to-moderate**.

Riparian areas may encompass other priority habitats affected by the project, including biodiversity areas and corridors, wetlands, and old-growth/mature forest.

**Biodiversity Areas and Corridors.** Two documented WDFW biodiversity area and corridor priority habitats would be crossed by the Crossover Alternative: the East Fork Lewis River Riparian Corridor (crossed in two places at the East Fork Lewis River and a tributary to King Creek) and the Lady and Akerman Islands Biodiversity Area and Corridor (WDFW 2012). (These are the same as those affected by the East Alternative.) Two other biodiversity areas are within 1 mile of the East Alternative: the Camas Biodiversity Area and the Washougal River Riparian Corridor (WDFW 2012). One mile of this habitat would be crossed in four places by new transmission line, with 9 acres altered due to right-of-way clearing, and about 1 acre lost to a transmission tower and new access road (see Tables 18-5 and 18-6). These are the same areas as those affected by the East Alternative. Impacts would be **high** since fragmentation would diminish one of the main attributes of these priority habitats, which is to be a “relatively undisturbed and unbroken tract of vegetation” that connects high-value habitats (WDFW 2008).

**Freshwater Wetlands and Fresh Deepwater.** In total, 153 acres of forested, scrub-shrub, and emergent freshwater wetlands would be removed by right-of-way clearing (forested wetlands) and/or towers, access roads, and substations (see Table 18-5 and 18-6). Impacts on wildlife from the alteration and loss of wetlands would range from **low-to-high**, depending on the condition of each wetland. In addition, transmission line bird collisions would become more frequent over 7 miles of all three types of freshwater wetlands (see Table 18-5). Similar to riparian areas, impacts on these WDFW priority habitats from transmission line collisions would be **low-to-high** where there would be a parallel existing line, and mostly **low-to-moderate** where there would be no parallel line.

**Caves or Cave-Rich Areas.** The right-of-way would pass through the edge of less than 1 acre of a WDFW cave-rich area priority habitat in production forest (see Table 18-5). This is the same cave-rich area affected by the East Alternative. Impacts could include permanent removal of production forest habitat surrounding a cave—which could remove some roosting habitat; the presence of a tower, transmission line, or access road; and temporary construction disturbance. These disturbances would generally have **low** impacts on this habitat given the small area of disturbance and the likelihood that actual cave habitat would not be permanently altered. Also, the effects on wildlife (such as Townsend’s big-eared bat) that rely on caves would not likely prevent them from using this cave habitat, while the addition of shrubland from right-of-way clearing could be beneficial for foraging purposes. The placement of the disturbance along the edge of the cave-rich area would mean that the area would not be fragmented.

**Herbaceous Balds.** About 1 acre of an improved access road would cross the southern edge of the Larch Mountain WDFW herbaceous bald priority habitat (see Table 18-6). This is the same herbaceous bald affected by the East Alternative. Impacts could include permanent vegetation removal from possible widening of the access road, and temporary construction disturbance such as soil compaction. These disturbances would have **low** impacts on this WDFW priority habitat given the small areas of disturbance, the placement of the disturbance along the edge of the habitats—meaning the habitat would not be fragmented—and the existing disturbed

conditions from the existing access road. The Lacamas Lake WDFW herbaceous balds priority habitat also falls within 1 mile of the Crossover Alternative.

**Old-Growth/Mature Forest.** Thirty-eight acres of old-growth/mature forest would be removed by right-of-way clearing and new and improved access roads (see Tables 18-5 and 18-6). Impacts on these WDFW priority habitats would be **high** since tree clearing would remove the main attributes of this habitat: long-lived trees and the associated understory vegetation, which have become uncommon in the Pacific Northwest and could not be easily or quickly replaced. Removal of adjacent forested areas would also cause an indirect, **low-to-moderate** effect on the old-growth/mature forested areas that remain. These edge effects include changes in sub-canopy climate conditions, increasing temperature and humidity variation, increasing light levels, and alteration of the understory composition and/or tree species reproduction. Tree clearing can also increase the risk of windthrow in adjacent forests, extending the canopy-removal effects.

**Oregon White Oak Woodlands.** One acre of the Washougal Oaks Woodland would be removed by right-of-way clearing (see Table 18-5). This is the same Oregon white oak woodlands area affected by the East Alternative. Impacts on this WDFW priority habitat would be **high** since tree clearing would remove the main attributes of this habitat: Oregon white oak trees and the associated understory vegetation, which are becoming less common in the Pacific Northwest.

**Snag-Rich Areas.** There is unnamed snag-rich habitat within 1 mile of the Crossover Alternative that may be impacted. Because of the scarcity of this habitat in the study area, impacts would be **high**.

**Talus.** One acre of a talus field would be permanently removed by a new access road (see Table 18-6), less than 1 mile of which would be crossed by new transmission line (see Table 18-5). This is the same talus field affected by the East Alternative. Impacts would include permanent loss of habitat, potential transmission-line collisions by raptors, and temporary construction disturbance. Impacts would be **high** due to the scarcity of this wildlife habitat, and since these areas are relatively inaccessible and more likely to be in pristine (undisturbed) condition prior to construction.

### 18.2.7.3 Special-Status Species—Crossover Alternative

There are 3 federally listed species and 28 other special-status species potentially affected by the Crossover Alternative, in addition to the cavity nesting ducks and waterfowl concentration priority species groups. All documented occurrences are found in Washington with the exception of California floater mussel, Oregon floater mussel, western painted turtle, and western pond turtle, which are found in Oregon.

#### Federally Listed Species

**Marbled Murrelet (Threatened).** Although there are no documented occurrences of marbled murrelet within 1 mile of the Crossover Alternative, right-of-way clearing and towers, substations, and access roads would remove 377 acres of forest in the marbled murrelet conservation zone. At most, only 45 acres of this conservation zone is old-growth/mature forest (see Tables 18-5 and 18-6); potentially suitable habitat for marbled murrelet. The range of the marbled murrelet is within 55 miles of marine waters, which includes the northern end of the Crossover Alternative; however, this portion of the study area is at the outer limit of this range,

so the available suitable habitat would not likely be used for nesting. Impacts from the proposed action would include the loss of potential habitat. The old-growth/mature forest within this area primarily occurs in small patches, so any potential habitat loss would be minor in any particular area. Because of the small amount of potential habitat affected, the distance from the coast, and the lack of any documented occurrences, potential habitat loss would be a **low** impact.

**Northern Spotted Owl (Threatened).** Right-of-way clearing, towers, substations, and access roads would remove 71 acres of habitat from a documented northern spotted owl circle of which 56 acres is forest or production forest. The right-of-way would also come within 1 mile of three other northern spotted owl circles that occur in mostly production forest. The loss of about 45 acres of old-growth/mature forest along the entire action alternative would remove potential nesting habitat for this species, although other stands could also provide low quality suitable habitat and dispersal habitat. Recent high resolution imagery shows most of the area along the Crossover Alternative to be of marginal quality habitat (BPA 2011). Impacts from the project could include temporary construction disturbance and the loss of known and potential habitat. Mitigation measures would be used to prevent loss of a nest or mortality of young. Given that the overall potential habitat is highly fragmented and generally low quality for northern spotted owl, there are a low number of documented occurrences in the study area, habitat loss impacts would be spread out along the corridor, and mitigation measures would reduce construction disturbance, impacts on this species would not affect species recovery, and would therefore be **moderate**.

**Yellow-billed Cuckoo (Threatened).** Although there are no documented occurrences of yellow-billed cuckoo or suitable nesting habitat within 1 mile of the Crossover Alternative, clearing for right-of-way, towers, and access roads would remove small patches of potential foraging habitat. These patches occur where the Crossover Alternative crosses riparian areas, particularly at the Columbia, Cowlitz, and Lewis Rivers and around Lacamas Creek, which is within the Lacamas Lake Bottoms priority area. Given that potential habitat is generally low quality and not suitable for breeding, that a relatively small amount of potential foraging habitat would be removed, and that impacts would be spread out along the corridor, potential habitat loss would create a **low** impact.

### **Other Special-Status Wildlife Species — Birds**

**Bald Eagle (Federal SOC, WA Sensitive) and WDFW Bald Eagle Priority Areas.** Bald eagle would be impacted by the project given that within 1 mile of the Crossover Alternative there are 10 documented occurrences of bald eagle nests and six WDFW bald eagle priority areas: the Cowlitz Bald Eagle Feeding Habitat, the Lewis River Winter Eagle Habitat, the Merwin South Shore Communal Night Roost, the Canyon Creek Communal Night Roost, the Yale-Siouxon Notch Communal Night Roost, and the Yale Tailrace Foraging Area. In total, new transmission line would cross 2 miles of WDFW bald eagle priority areas, and right-of-way clearing, towers, and access roads would remove tree habitat from 31 acres. Impacts would include temporary construction disturbance and loss of potential nesting and roosting habitat through tree removal in riparian areas along the East Alternative (see Section 18.2.6.3, Special-Status Habitats), particularly where it occurs in a WDFW priority area. As for other raptors, transmission line collisions are typically uncommon, but could occur. Mitigation measures would be used to ensure individual nests and young are not harmed or disrupted during the breeding season, and to reduce the risks of transmission line collisions throughout the year. Impacts on this species would be **moderate** since the species is still listed as sensitive by WDFW, is monitored by USFWS

following its delisting in 2010, and impacts would not be expected to contribute to a need for federal relisting of this species based on a conservation status of secure at both the state and federal levels (NatureServe 2012).

**Cavity-Nesting Ducks (also see Waterfowl, this section).** The Crossover Alternative could affect cavity-nesting ducks since it crosses within 1 mile of the WDFW Lacamas Lake Bottoms priority area, which supports cavity-nesting ducks. Impacts could include habitat removal, increased transmission line collisions, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. This area is important to cavity-nesting ducks, but because mortalities would not contribute to a need for federal listing for any of the associated species (see further discussion of specific species that follows), and since the WDFW priority area itself would not be crossed, impacts on cavity-nesting ducks would be **low-to-moderate**.

- **Barrow's Goldeneye (WDFW WA Priority).** Given that the Crossover Alternative crosses wetland habitat within 1 mile of a documented occurrence of Barrow's goldeneye, there is a greater chance that individuals could be present and affected by the project (this is the same occurrence as that listed for the West Alternative). Impacts could include habitat removal, increased transmission line collisions, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Since the conservation status is vulnerable (breeding) to secure (non-breeding) at the state level and secure at the federal level (NatureServe 2012), and since not many individuals would likely be affected based on just one documented occurrence, impacts would not contribute to a need for federal listing and would be **moderate**.
- **Wood Duck (WDFW WA Priority).** It is highly likely that wood duck would be adversely impacted by the Crossover Alternative since it crosses within 1 mile of the WDFW Lacamas Lake Bottoms wood duck priority area. Impacts would be the same as those listed for the WDFW cavity-nesting duck priority area. In addition, there will be loss of riparian or wetland habitat occurring in other areas where wood duck could occur. These would likely cause **moderate** impacts on the species, however, since the impacts would not contribute to a need for federal listing given the relatively small area affected and the relatively stable conservation status of the species (ranges between vulnerable [non-breeding] to apparently secure [breeding] at the state level, and secure at the federal level [NatureServe 2012]).

**Golden Eagle (WA Candidate).** The Crossover Alternative could impact golden eagle since it crosses within 1 mile of a documented golden eagle nest near Segment O. Impacts would include temporary construction disturbance and loss of potential nesting and roosting habitat through tree removal, although this species prefers to nest on cliffs (NatureServe 2014). Mitigation measures would be used to ensure individual nests and young are not harmed or disrupted during the breeding season, and to reduce the risks of transmission line collisions throughout the year. Impacts on this species would be **moderate** since the species is a candidate for listing by WDFW, is monitored by USFWS, and impacts would not be expected to contribute to a need for federal relisting of this species based on a conservation status of vulnerable at the state level and apparently secure to secure at the federal level (NatureServe 2014).

**Great Blue Heron (WA Priority).** Since the Crossover Alternative crosses either wetlands or riparian habitats within 1 mile of one documented occurrence of great blue heron, there is a greater chance that individuals could be present and affected by the project. Impacts would include mortality from transmission line collisions over open habitats and open water, and lost habitat due to towers and access roads placed in riparian areas and open habitat. Since the conservation status is apparently secure to secure at the state level and secure at the federal level (NatureServe 2012), impacts would not contribute to a need for federal listing and would be **moderate**.

**Mountain Quail (WA Priority, OR Sensitive-Vulnerable).** Since the Crossover Alternative crosses riparian habitats within 1 mile of a documented occurrence of mountain quail, there is a greater chance that individuals could be present and affected by the project. Impacts could include temporary construction disturbance and habitat loss through right-of-way tree clearing, towers, and access roads. Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. Since the conservation status is critically imperiled at the state level and secure at the federal level (NatureServe 2014), and since not many individuals would likely be affected given the low abundance in these counties, impacts would not contribute to a need for federal listing and would be **moderate**.

**Northern Goshawk (Federal SOC, WA Candidate).** Because the Crossover Alternative crosses production forest within 1 mile of a documented occurrence of northern goshawk (also in production forest), there is a greater chance the project could affect this species. Impacts would include loss of old-growth/mature forest habitat and temporary construction disturbance, although mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if necessary. Although the conservation status of this species is imperiled-to-vulnerable in Washington (NatureServe 2012), it is listed as apparently secure at the federal level, and so the small amount of suitable mature/old-growth forest habitat affected (see Section 18.2.7.2, WDFW Priority Habitats—Crossover Alternative) would be a **moderate** impact on the species. As for other raptors, transmission line collisions are typically uncommon, the rare occurrence of mortality of an individual would not affect the overall conservation status, and impacts would be **moderate**.

**Osprey (WA Monitor).** The Crossover Alternative is within 1 mile of 33 documented occurrence of osprey, most of which are clustered around the Lake Merwin area. Therefore, individuals could be present and affected by the project. Impacts could include mortality from transmission line collisions over riparian and wetland habitats, and lost habitat due to towers and access roads placed in riparian areas and wetland habitat. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), impacts would not contribute to a need for federal listing and would be **moderate**.

**Peregrine Falcon (Federal SOC, WA Sensitive).** Although there is one documented occurrence of peregrine falcon in WDFW cliffs/bluffs priority habitat within 1 mile of the Crossover Alternative, the Crossover Alternative does not cross any known suitable habitat (cliffs/bluffs or caves) within 1 mile of the occurrence, indicating a decreased likelihood that peregrine falcon habitat would be affected (this is the same occurrence as along the East Alternative). However, the presence of new transmission line in the area could increase the chance for mortality through transmission line collisions. If suitable habitat does occur along the right-of-way or access roads, additional impacts could include habitat loss from towers and access roads and temporary construction disturbance. Mitigation measures would be used to ensure individual birds are not harmed or disrupted during the breeding season, if necessary. Positive impacts

could also result from the addition of new perch sites on towers and lines from which individual birds could hunt prey. Since the conservation status of this species is imperiled (breeding) to vulnerable (non-breeding) at the state level, and apparently secure at the federal level (NatureServe 2012), mortality or loss of habitat in one location would not likely contribute to a need for federal listing, and impacts would be **moderate**.

**Pileated Woodpecker (WA Candidate).** Since the Crossover Alternative is within 1 mile of documented occurrences of pileated woodpecker and several occurrences of pileated woodpecker sign, there is a greater chance that individuals of this species could be present and affected by the project. Impacts could include habitat loss through right-of-way tree clearing, towers, and access roads, mortality through collisions with transmission lines, and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Since the conservation status is apparently secure at the state level and secure at the federal level (NatureServe 2012), and since not many individuals would likely be affected based on just two documented occurrences, impacts would not contribute to a need for federal listing and would be **moderate**.

**Purple Martin (Federal SOC, WA Candidate).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Slender-billed White-breasted Nuthatch (Federal SOC, WA Candidate, OR Sensitive-Vulnerable).** Since the Crossover Alternative crosses within 1 mile of one documented occurrence of slender-billed white-breasted nuthatch on Lady Island, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat loss through tree removal, temporary construction disturbance, and transmission line collisions, although collisions are not very likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is apparently secure at the state level and secure at the federal level (NatureServe 2014), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts could occur.

**Vaux's Swift (WA Candidate).** Observations of Vaux's swift in a WDFW biodiversity area and corridor priority habitat that is crossed by the Crossover Alternative indicates an increased likelihood for impacts. Impacts could include habitat loss through tree removal, temporary construction disturbance, and transmission line collisions, although collisions are not likely for this species (see Section 18.2.2, Impacts Common to Action Alternatives). Mitigation measures would be used to avoid mortality of young or loss of nests during the breeding season, if nests occur near the construction area. Since the conservation status of this species is vulnerable-to-apparently secure at the state level and secure at the federal level (NatureServe 2012), mortality or loss of habitat would not likely contribute to a need for federal listing and **moderate** impacts could occur.

**Waterfowl Concentrations (WDFW Priority).** The Crossover Alternative would cross one WDFW waterfowl concentration priority areas, the Coweeman Wetlands. Impacts would include habitat removal, increased transmission line collisions, and temporary construction disturbance. The WDFW priority waterfowl concentration areas could support five special-status species: wood duck, Barrow's goldeneye, harlequin duck, tundra swan, and trumpeter swan. This area is important to a wide diversity and number of waterfowl, but

because mortalities would not contribute to a need for federal listing for any of the associated species, impacts would be **moderate**.

**Wild Turkey (WA Priority).** Since the Crossover Alternative crosses forest and open habitat within 1 mile of documented occurrences of wild turkey, there is a greater chance that individuals could be present and affected by the project. Impacts could include habitat removal and temporary construction disturbance. Mitigation measures would be used to avoid harm to a nest or young during the breeding season, if necessary. Because wild turkey conservation status is secure at the national level and this species is a habitat generalist introduced to Washington state (NatureServe 2014), impacts would not contribute to a need for federal listing and would be **low**.

## Mammals

**Columbian Black-Tailed Deer (WA Priority) and WDFW Columbian Black-Tailed Deer Priority Habitat.** Impacts on this species would be similar to those for elk, including negative impacts from loss of 6 acres of habitat in a WDFW Columbian black-tailed deer wintering and migration priority area, and positive impacts from right-of-way clearing across 15 acres of this priority area. This species is also documented in the WDFW elk winter range priority area at Siouyon Creek. As for elk, impacts would be **low** since a relatively small portion of the total WDFW Columbian black-tailed deer wintering and migration priority area and the WDFW elk winter range priority area would be affected, and the species has a secure conservation status at both state and federal levels (NatureServe 2012).

**Elk (WA Priority) and WDFW Elk Priority Area.** Adverse effects to elk would include temporary construction disturbance and habitat loss within the two WDFW elk winter range priority areas, including the Siouyon Creek and Yale Valley priority areas within the larger WDFW Mount St. Helens/Mount Rainier herds winter range priority area. Towers, substations, and access roads would remove 168 acres of habitat within the WDFW elk priority areas. This would have a **low** impact on elk since a relatively small portion of the total WDFW elk winter range priority areas would be affected, impacts would be spread out along the corridor, and the species has a secure conservation status at both state and federal levels (NatureServe 2012). Impacts from 485 acres of right-of-way clearing could be beneficial to elk since it would create a corridor of shrubland or open habitat adjacent to forested habitat.

## Amphibians

**Cascades Frog (WA Monitor).** The Crossover Alternative crosses riparian habitat within 1 mile of a documented occurrence of Cascades frog, so there is potential for this species to be affected by the project. Impacts could include temporary construction disturbance, construction mortality or stress from both physical injury and increased water turbidity from in-water work, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. The conservation status of the species is monitor at the state level and there is no federal protection status. Given the limited distribution and its conservation status, habitat loss coupled with increased mortality would not likely contribute to a need for federal listing; impacts on this species would be **low**.

**Cascade Torrent Salamander (Federal SOC, WA Candidate).** Given that the Crossover Alternative crosses riparian habitat within 1 mile of 10 documented occurrences of Cascade

torrent salamander in three separate areas, there is a high likelihood that this species could be affected by the project. Impacts could include temporary construction disturbance, construction mortality or stress from both physical injury and increased water turbidity from in-water work, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Although there are a high number of occurrences near the affected area, they mainly occur in two areas. Also, the conservation status of the species is listed as vulnerable at the state and federal levels (NatureServe 2012). Given the limited distribution and conservation status, habitat loss coupled with increased mortality would not likely contribute to a need for federal listing; impacts on this species would be **moderate**.

**Coastal Tailed Frog (WA Monitor Species, OR Sensitive-Vulnerable).** Given that the Crossover Alternative crosses riparian habitat within 1 mile of three documented occurrences of this species, all occurring within one general area, there is a greater chance that it could be affected by the project. Impacts on a population of this species could include temporary construction disturbance, construction mortality, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Although its conservation status is imperiled in Washington state (NatureServe 2012) and there are a relatively high number of occurrences near the affected environment, its federal conservation status is apparently secure, and so impacts would not likely contribute to a need for federal listing and would be **moderate**.

**Cope's Giant Salamander (WA Monitor Species, OR Sensitive-Vulnerable).** Since the Crossover Alternative crosses riparian habitat within 1 mile of two documented occurrences of Cope's giant salamander, there is an increased likelihood that individuals could be present and affected by the project. Impacts on a population of this species could include temporary construction disturbance, construction mortality or stress from physical injury and increased water turbidity, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from right-of-way clearing, towers, and access roads. Since the conservation status is vulnerable-to-apparently secure at both the state and federal levels (NatureServe 2012,) and since not many individuals would likely be affected based on just two documented occurrences, impacts would not contribute to a need for federal listing and would be **moderate**.

**Larch Mountain Salamander (Federal SOC, WA Sensitive, OR Sensitive-Vulnerable).** There is one documented occurrence of this species within 1 mile of the Crossover Alternative. There is suitable habitat (an unnamed cave) documented within 1 mile of the occurrence; however, this habitat is over 1 mile from the Crossover Alternative, indicating a decreased likelihood that individuals would be affected. Impacts could include temporary construction disturbance, construction mortality, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of unmapped habitat from towers and access roads. Since the conservation status of this species is vulnerable at the state and federal levels (NatureServe 2012), mortality or loss of habitat would not likely contribute to a need for federal listing, indicating that impacts on this species would be **low-to-moderate**.

**Western Toad (Federal SOC, WA Candidate).** The Crossover Alternative crosses riparian habitat within 1 mile of a documented occurrence of western toad, increasing the chance that individuals could be affected by the project. Impacts could include temporary construction disturbance, construction mortality, reduced reproduction or loss of young if construction takes place during the breeding season, and degradation or loss of habitat from towers and access

roads. Right-of-way clearing would convert forested riparian and wetland habitats to scrub-shrub riparian and wetland habitat, which would still be suitable habitat for this species. Although this species is rated as vulnerable at both the state and federal levels, impacts would not contribute to a need for federal listing; therefore, the impact would be **moderate**.

## Reptiles

**Ringneck Snake (WA monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Southern Alligator Lizard (WA Monitor).** There is a documented occurrence of southern alligator lizard within 1 mile of the Crossover Alternative. Given this proximity, there is an increased chance that this species would be affected by the project. Impacts could include temporary construction disturbance, construction mortality, loss of a nest or young if construction takes place during the breeding/nesting season, and degradation or loss of forest habitat from the placement of towers or an access road. Because southern alligator is rated as monitored in Washington state, it has no federal protection status, and little of its preferred habitat will be removed, mortality or loss of breeding habitat potentially affecting a documented occurrence would be a **low** impact.

**Western Painted Turtle (Federal SOC, OR Sensitive Critical).** See Special Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Western Pond Turtle (Federal SOC, OR Sensitive-Critical).** All action alternatives cross wetland habitat within 1 mile of a documented occurrence representing five western pond turtles in Oregon (near the Sundial substation site [see Section 18.2.2.3, Sundial Substation Site]). Given this proximity, there is an increased chance that this species would be affected by the project. Impacts could include temporary construction disturbance, construction mortality, and loss of a nest or young if construction takes place during the breeding/nesting season, and degradation or loss of wetland habitat from the placement of towers or an access road. Because western pond turtle is rated as imperiled in Oregon and vulnerable-to-apparently secure federally (NatureServe 2012), and since its population is in decline in Oregon (ODFW 2011), mortality or loss of breeding habitat potentially affecting a documented occurrence could contribute to a need for federal listing, which would be a **moderate-to-high** impact.

## Invertebrates

**California Floater (Federal SOC, WA Candidate).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

**Oregon Floater Mussel (WA Monitor).** See Special-Status Species in Section 18.2.2, Impacts Common to Action Alternatives.

### 18.2.7.4 Crossover Options 1, 2, and 3

The levels of impacts on wildlife and WDFW priority habitats would be the same as for the Crossover Alternative, except where stated otherwise.

Crossover Option 1 would alter 14 additional acres of riparian habitat and

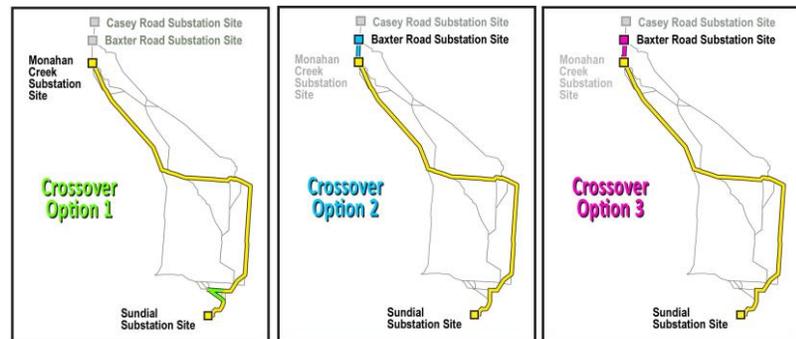
remove or alter 14 additional acres total of the three freshwater wetland types and 8 additional acres of westside prairie (see Tables 18-5 and 18-6). Crossover Option 1 would cross within 1 mile of two WDFW biodiversity areas: the Green Mountain Biodiversity Area and the Camas Biodiversity Area. For special-status species, this option would come within 1 mile of a WDFW wood duck priority area and a documented occurrence of slender-billed white-breasted nuthatch that are avoided by the Crossover Alternative. None of these areas would be directly crossed so impacts would be **low-to-moderate**.

Crossover Options 2 and 3 would have similar effects to each other, with Crossover Option 2 affecting slightly more acreages in each case. They would both remove additional acres of riparian habitat (8 and 10 acres) and 4 additional acres of the three types of freshwater wetlands each (see Table 18-5). Regarding special-status species, both Crossover Options 2 and 3 would increase the amount of WDFW Roosevelt Elk Winter Range Priority Area altered by right-of-way clearing, including an additional 70 acres by Crossover Option 2 and 66 acres by Crossover Option 3.

### 18.2.8 Recommended Mitigation Measures

Mitigation measures included as part of the project are identified in Table 3-2. BPA is considering the following additional mitigation measures to further reduce or eliminate adverse wildlife impacts by the action alternatives. If implemented, these measures would be completed before, during, or immediately after project construction unless otherwise noted.

- Consult with USFWS as required under the ESA to assess impacts and identify any necessary mitigation measures for marbled murrelet and northern spotted owl.
- Determine mitigation measures needed for marbled murrelet and northern spotted owl on WDNR lands or private timber company lands based on existing Habitat Conservation Plans for those lands.
- Coordinate with WDFW for all construction during winter on elk and Columbian black-tailed deer winter range to eliminate any significant interference with big game wintering.
- Gate and sign any new or existing roads to prevent human encroachment into elk and Columbian black-tailed deer wintering areas or significant migration corridors, consistent with landowners' wishes.
- Where possible, locate new towers in line with existing towers to minimize vertical separation between conductors.



- Install appropriate bird flight diverters on overhead ground wires or fiber optic line in areas at high risk for bird collisions. These areas may include the crossing of the Cowlitz, Coweeman, Kalama, Lewis, East Fork Lewis, Little Washougal, Washougal, and the Columbia rivers; Rock and Big Tree creeks; in wetland and riparian areas with high bird use; in WDFW waterfowl concentration priority areas; in WDFW bald eagle priority areas; and where the transmission line traverses steep slopes.
- Avoid construction activities within 0.25 mile of any active nests of peregrine falcon, bald eagle, and golden eagle during the breeding season, as determined in consultation with the USFWS and WDFW.
- Gate and sign new or existing roads at appropriate locations to prevent human encroachment into areas containing significant wildlife populations or relatively undisturbed wildlife habitat, consistent with landowners' wishes.
- Time construction, operation, and maintenance activities to avoid entry into sensitive wildlife habitats, such as blue heron rookeries and wood duck nest sites during critical breeding or nesting periods, as determined in consultation with the USFWS and WDFW.
- Limit vegetation removal to only the amount required to safely construct and operate the transmission line, substations, and new and existing access roads. Remove riparian vegetation only where necessary for safe line clearance purposes.
- Reseed disturbed areas (see mitigation measures in Chapter 17, Vegetation) with appropriate seed mixes giving emphasis to native seed mixes.
- Where possible, avoid removing green tree retention clumps and legacy trees from production forests with clear cuts.
- Limit the amount of vegetation removal in Riparian Management Zones.

### **18.2.9 Unavoidable Impacts**

Construction of towers, substations, access roads, and other facilities would cause permanent loss of wildlife habitat and temporary displacement of individuals or groups, and could harm or kill individuals. An increase in avian collisions with transmission lines could occur at river crossings, and in areas with high concentrations of waterfowl and other birds.

### **18.2.10 No Action Alternative**

The No Action Alternative would have **no** impact on wildlife because no new transmission lines, towers, or substations would be constructed. Impacts from operation and maintenance of existing lines and substations, and vegetation management activities would continue unchanged.