

## APPENDIX E      BIOLOGICAL ASSESSMENT





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**FINAL**

**Cape Meares Road Relocation Project  
Biological Assessment**

**OR TILLAMOOK B780(1)  
Cape Meares Loop Road**

June 2017

Prepared for

**U.S. Department of Transportation  
Federal Highway Administration  
Western Federal Lands Highway Division**

Prepared by

**SWCA Environmental Consultants**





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CAPE MEARES ROAD RELOCATION PROJECT  
BIOLOGICAL ASSESSMENT**

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CAPE MEARES LOOP ROAD**

Prepared for

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## EXECUTIVE SUMMARY

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with Tillamook County (County), are proposing to restore service on Cape Meares Loop Road and reopen this section of the Three Capes Scenic Route that provides visitor access to Cape Meares National Wildlife Refuge and Cape Meares State Scenic Viewpoint and Lighthouse. The project proposes to construct a bypass around a historic landslide area that closed a 1.5-mile section of Cape Meares Loop Road located between the communities of Oceanside and Cape Meares on January 11, 2013. The proposed Cape Meares Road Relocation Project (project) is located in the northern Coast Range in Tillamook County, Oregon, approximately 5.7 miles west of Tillamook. The project is located in Section 18 of Township 1 South, Range 10 West.

Cape Meares Loop Road is part of the Three Capes Scenic Loop that provides visitor access to Cape Meares National Wildlife Refuge and Cape Meares State Scenic Viewpoint and Lighthouse, and connects Cape Meares State Park, Cape Lookout State Park, and Cape Kiwanda State Park. With Cape Meares Loop Road closed to through traffic, visitors and local residents may only access the wildlife refuge and lighthouse from the south.

After evaluating multiple alternatives, including options to repair the existing alignment and other bypass routes, the North alignment was selected as the project's preferred alternative. As described in detail in the January 20, 2017, *Cape Meares Road Relocation Project Alternatives Analysis Memorandum* the North alignment was selected as the preferred alternative because it met the project's purpose and need and best met the screening criteria; including having the lowest estimated construction cost and project risk (U.S. Department of Transportation, Federal Highway Administration, WFLHD 2017). The North alignment is approximately 1.7 miles long. Beginning in the north, the North alignment uses a small section of the existing roadway before traversing south, west, and south again (along existing topography to the extent possible) and connecting back to the existing roadway to the north of an existing gravel quarry (the Lighthouse Quarry). Subject to available funding, construction is scheduled for 2020.

The project's overall action area for evaluating impacts to sensitive species was determined by the anticipated extent of the physical ground disturbance impact and the noise impacts from the construction activities to the surrounding area. The overall action area for the preferred alternative includes all four of the action areas that would be affected by the implementation of the proposed actions. These include:

- 1) Road construction disturbance corridor: an 100-foot-wide corridor, centered on the preferred alternative's centerline
- 2) 65-yard noise disturbance buffer – Northern Spotted Owl (*Strix occidentalis caurina*): a 65-yard noise disturbance buffer from the edge of the road construction disturbance corridor
- 3) 110-yard noise disturbance buffer – Marbled Murrelet (*Brachyramphus marmoratus*): a 110-yard noise disturbance buffer from the edge of the road construction disturbance corridor

- 4) 0.25-mile noise disturbance buffer – both Northern Spotted Owl and Marbled Murrelet:  
0.25-mile lower-intensity noise disturbance buffer from the edge of the road construction disturbance corridor for both species

The proposed project actions include one or more actions that would have negative effects on northern spotted owls and marbled murrelets. These include tree removal along the road construction disturbance corridor, which would potentially have long-term effects on available habitat, and noise disturbance to nesting individuals within 0.25 mile of the road construction disturbance corridor. The table below summarizes the effects determinations outlined in this biological assessment.

Summary of Effect Determinations for the Preferred Alternative

<b>Species</b>	<b>Listing Status</b>	<b>Effect Determination on Species</b>	<b>Effect Determination on Designated Critical Habitat</b>
<b>USFWS Jurisdiction</b>			
Marbled murrelet	Threatened	May Effect, Likely to Adversely Affect (LAA)	No Effect (NE)
Northern spotted owl	Threatened	May Effect, Likely to Adversely Affect (LAA)	No Effect (NE)

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## CHAPTER 1. PROJECT OVERVIEW

The Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration (FHWA), in cooperation with Tillamook County (County), is proposing to restore service on Cape Meares Loop Road and reopen this section of the Three Capes Scenic Route that provides visitor access to Cape Meares National Wildlife Refuge and Cape Meares State Scenic Viewpoint and Lighthouse. The project proposes to construct a bypass around a historic landslide area that closed a 1.5-mile section of Cape Meares Loop Road located between the communities of Oceanside and Cape Meares on January 11, 2013. The proposed Cape Meares Road Relocation Project (project) is located in the northern Coast Range in Tillamook County, Oregon, approximately 5.7 miles west of Tillamook. See Figure 1 for a project vicinity map. The project is located in Section 18 of Township (T) 1 South (S), Range (R) 10 West (W), Willamette Meridian.

Cape Meares Loop Road is part of the Three Capes Scenic Loop that provides visitor access to Cape Meares National Wildlife Refuge and Cape Meares State Scenic Viewpoint and Lighthouse, and connects Cape Meares State Park, Cape Lookout State Park, and Cape Kiwanda State Park. With Cape Meares Loop Road closed to through traffic, visitors and local residents may only access the wildlife refuge and lighthouse from the south.

The purpose of this biological assessment (BA) is to address the potential effects associated with the project on species listed as endangered or threatened under the federal Endangered Species Act (ESA) and their critical habitat.

### 1.1. Federal Nexus

The County has received Federal Lands Access Program (FLAP) grants for the project. The federal funding through FLAP constitutes a federal nexus for the project.

#### 1.1.1. *Endangered Species Act*

Section 7 of the ESA requires that federal agencies consult with the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) for marine and anadromous species and with the U.S. Fish and Wildlife Service (USFWS) for freshwater species and wildlife if there is a proposed action that may affect ESA-listed species or their designated critical habitat. An "action" is defined broadly to include funding, permitting, and other regulatory actions (50 Code of Federal Regulations [CFR] 402.02). WFLHD is the lead federal agency for Section 7 consultation with NMFS and USFWS for listed species.

#### 1.1.2. *Magnuson-Stevens Fishery Conservation and Management Act*

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires federal agencies to consult with NMFS on all activities or proposed activities authorized, funded, or undertaken by the agency that may adversely affect essential fish habitat (EFH). The project would have no effect on EFH because no occurrence of EFH occurs within the road construction disturbance corridor action area (further described in Section 1.4 and

Chapter 5); therefore, this project would not require consultation with NMFS. The analysis of EFH related to this project is provided in Appendix A.

## 1.2. Project Description

After evaluating multiple alternatives, including options to repair the existing alignment and other bypass routes, the North alignment was selected as the project's preferred alternative. As part of the alternatives evaluation process three alignments—the Existing, North, and South alignments—were evaluated for potential impacts to sensitive species and waters of the U.S. As described in detail in the January 20, 2017, *Cape Meares Road Relocation Project Alternatives Analysis Memorandum* the North alignment was selected as the preferred alternative because it met the project's purpose and need and best met the screening criteria; including having the lowest estimated construction cost and project risk (U.S. Department of Transportation, Federal Highway Administration, WFLHD 2017). This BA analyzes the preferred alternative.

The alignment of the preferred alternative is shown in Figure 1 and an additional map is provided in Appendix B. At the northeast end, the preferred alternative would use a section of the existing roadway for a short distance. Then the alignment would travel south along the east side of Coleman Creek, following the existing topography to the extent possible, before crossing Coleman Creek and passing to the west of Oceanside Water District (OWD) property. From there, the preferred alternative would travel west and south, connecting back to the existing roadway to the north of an existing gravel quarry (the Lighthouse Quarry). The preferred alternative has a total length of approximately 1.7 miles. The alignment would use existing (private) forest roads where possible; however, it could require up to 16.2 acres of new right-of-way.

Activities along the preferred alternative have the potential to alter the existing conditions of biological resources. The preferred alternative would cross forested upland areas and would include retaining walls and several stream and wetland crossings. Most of the potentially impacted property is owned by Stimson Lumber Company and is zoned forest land. Preliminary outreach to USFWS was initiated in mid-2016 to allow adequate time for the necessary consultation period before the currently scheduled construction start date. Construction is scheduled to begin in 2020 and last approximately 2 years. This schedule (further detailed in Section 4.1.1) is preliminary and subject to change. Construction of the preferred alternative includes:

- Pre-construction geotechnical activities (anticipated for 2018 or 2019)
- Clearing vegetation
- Earthwork including excavation (with some areas of potential rock blasting), embankment construction, and grading of the roadbed
- Construction of walls (wall type to be determined)
- Asphalt paving
- Installing of culverts and other drainage features, as needed
- Installation of permanent traffic control, such as painted striping and signage
- Revegetation

A potential interrelated project is the relocation of the OWD water intake system upstream of the preferred alternative. There are no interdependent projects.

### **1.2.1. Applicant-Committed Conservation Measures**

As described in Chapter 2, the proposed project would be expected to impact ESA-listed species in the overall action area (see Section 1.3 for a description of the overall action area). However, WFLHD and the County would implement the following conservation measures as part of the preferred alternative in an attempt to minimize expected impacts to sensitive species:

- 1) Restrict tree removal to October 1 through February 28, outside of the nesting season for marbled murrelet (*Brachyramphus marmoratus*) and northern spotted owl (*Strix occidentalis*).
- 2) Restrict blasting for roadway construction to October 1 through February 28, outside of the nesting season for marbled murrelet and northern spotted owl.
- 3) Use existing public and private roads to the extent feasible to reduce the amount of forest clearing.
- 4) Road construction activities within the 65 yard noise disturbance buffer of nesting northern spotted owls would be avoided from March 1 through July 15. Road construction activities within the 110 yard noise disturbance buffer of nesting marbled murrelets would be avoided from April 1 to August 5 (USFWS 2015). Prior to conducting road construction activities from March 1 through August 5, these noise disturbance buffer areas, shown in Figure 3, would be field surveyed to determine whether suitable nesting habitat for these species is present. Currently, this field verification has been completed within the field survey area shown in Figure 4. In areas where the additional field surveys identify the presence of suitable nesting habitat, nesting activity would be determined through protocol-level surveys to determine the presence/absence of nesting northern spotted owls or marbled murrelets. If no active nests are identified for either species, road construction activities could occur from March 1 through August 5.

## **1.3. Project and Action Area Setting**

The project area is located in the northern Coast Range in Tillamook County, Oregon (see Figure 1). The project area is approximately 5.7 miles west of Tillamook, the largest nearby city with a population of approximately 5,000 people. The project is located in Section 18, T 1 S, R 10 W. The preferred alternative would cross existing public and private roads and some forested areas. The total length of the preferred alternative is approximately 1.7 miles.

The project's overall action area for evaluating impacts to sensitive species was determined by the anticipated extent of the physical ground disturbance impact and the noise impacts from the construction activities to the surrounding area. The overall action area for the preferred alternative includes four action areas that would be affected by the implementation of the proposed actions. These four action areas include:

- 1) Road construction disturbance corridor: a 100-foot-wide road construction disturbance corridor, centered on the preferred alternative’s centerline
- 2) 65-yard noise disturbance buffer – Northern Spotted Owl: a 65-yard noise disturbance buffer from the edge of the road construction disturbance corridor
- 3) 110-yard noise disturbance buffer – Marbled Murrelet: a 110-yard noise disturbance buffer from the edge of the road construction disturbance corridor
- 4) 0.25-mile noise disturbance buffer – both Northern Spotted Owl and Marbled Murrelet: a 0.25-mile lower-intensity noise disturbance buffer from the edge of the road construction disturbance corridor for both species

Refer to Chapter 5 of this BA for a detailed description of each of the action areas. The limits of these action areas are depicted in Figure 2. Most of the project’s overall action area is owned by Stimson Lumber Company and is zoned forest land. The remaining land is owned by OWD and Green Crow Corporation. Land uses surrounding the overall action area are a commercial gravel quarry, Cape Meares National Wildlife Refuge, Cape Meares State Scenic Viewpoint, commercial logging, and a private residence.

## 1.4. Consultation History

Coordination with USFWS was initiated in April 2016, to determine the necessary procedural requirements and relevant species for the proposed project. Table 1 is a summary of coordination to-date between WFLHD and USFWS.

**Table 1.** Summary of Coordination between the Western Federal Lands Highway Division and the U.S. Fish and Wildlife Service Oregon Fish and Wildlife Office on the *Cape Meares Road Relocation Project*

Date	Event
April 2016	Kevin Maurice deemed lead USFWS contact for consultation
April 5, 2016	USFWS Information for Planning and Conservation (IPaC) system queried
April 27, 2016	USFWS and consultant biologists discussed the project and surrounding suitable habitat for marbled murrelet
May 3 and 4, 2016	WFLHD and consultant biologists discussed the project and surrounding suitable habitat for marbled murrelet and northern spotted owl with USFWS
May 9, 2016	USFWS received WFLHD’s invitation letter to be a participating and cooperating agency
May 9, 2016	USFWS received WFLHD’s invitation letter to be a participating and cooperating agency
February 10, 2017	USFWS received the project’s alternatives analysis memorandum
April 24, 2017	USFWS IPaC system queried

The USFWS and NMFS ESA species lists for Tillamook County was accessed on April 5, 2016, and April 24, 2017, to generate a list of federally listed species that could occur in the project’s overall action area (Appendix C, USFWS 2017).

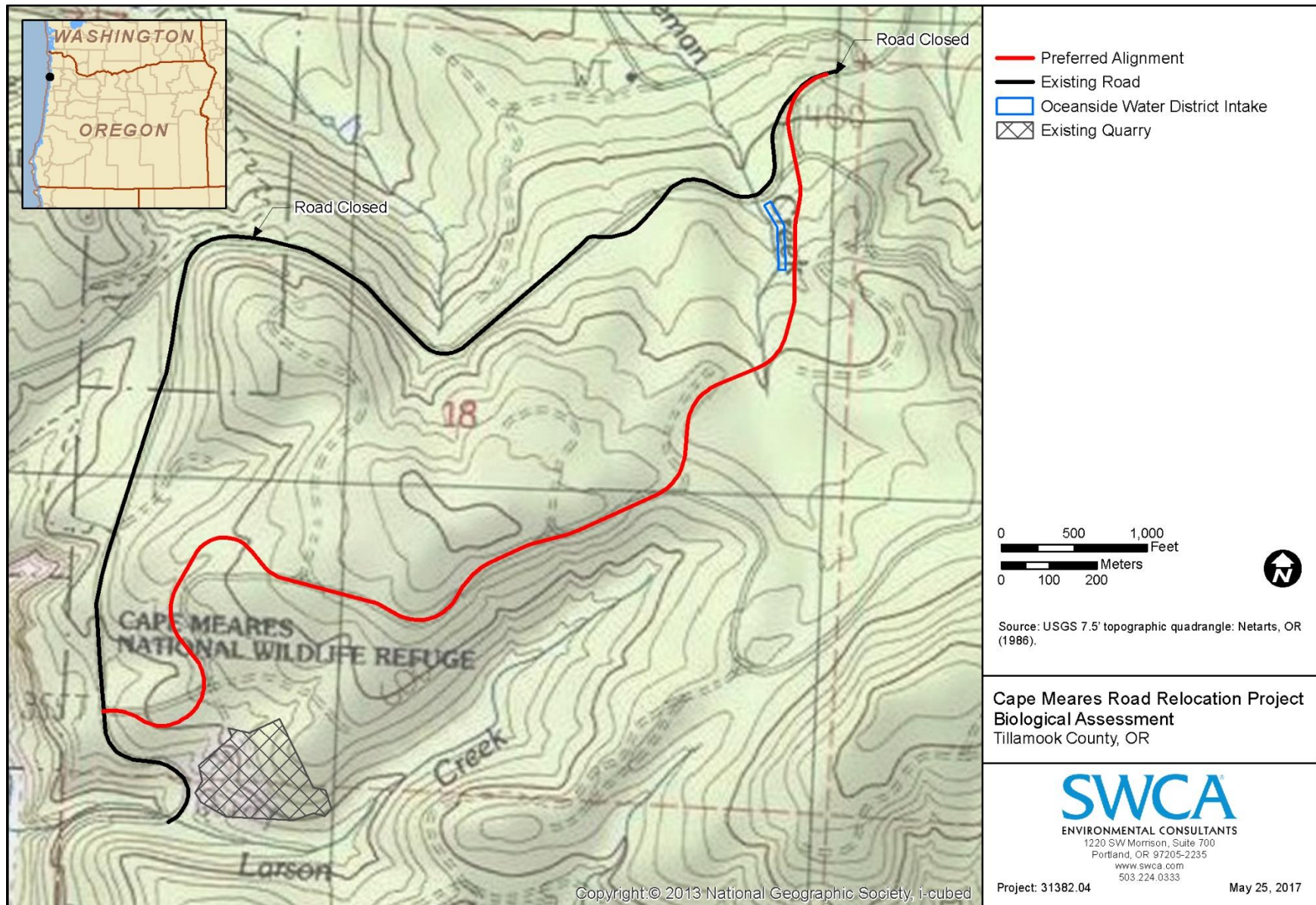


Figure 1. Vicinity map showing preferred alternative.

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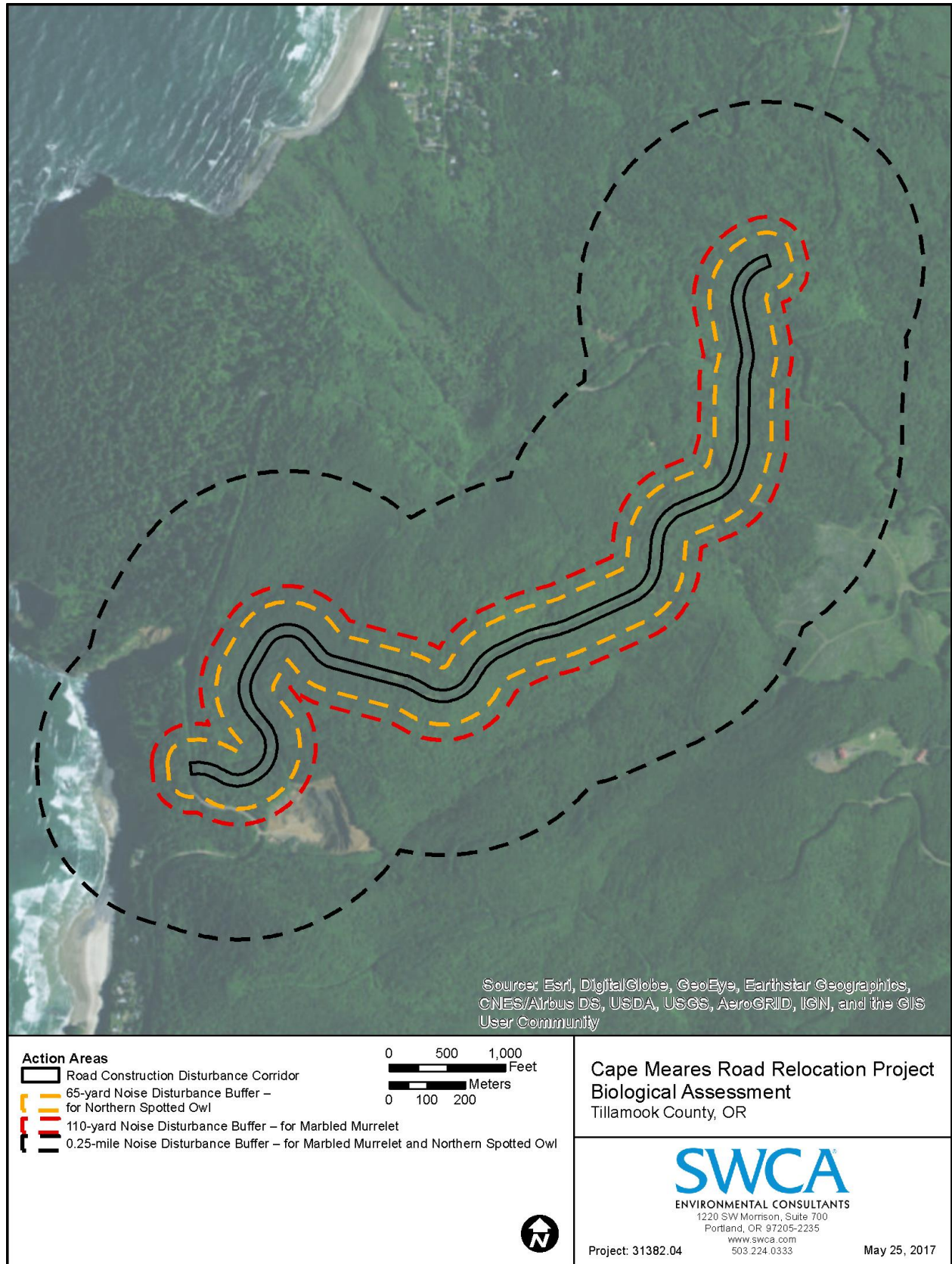


Figure 2. Preferred alternative action areas map.



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## CHAPTER 2. FEDERALLY PROPOSED AND LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

Within the project's overall action area mature coastal coniferous forest and old-growth forest habitats are the primary habitats of concern because they could provide habitat for the marbled murrelet and/or the northern spotted owl, which are both listed as threatened by USFWS under the ESA. ESA-listed fish species are not known to occur in the road construction disturbance corridor action area due to the lack of suitable habitat and lack of adequate fish passage downstream of the overall action area; further discussion of ESA-listed fish species is included in Appendix A. Other ESA-listed species that may be present in Tillamook County are not likely to occur within the overall action area due to a lack of suitable habitat. A complete list of these species is included in Appendix C (USFWS 2017). The red tree vole (*Arborimus longicaudus*) is a candidate species with the potential to occur in the overall action area and is discussed in Appendix D. Threatened species with the potential to occur in the overall action area are discussed in more detail below. Throughout this document, discussions of suitable habitat pertain to suitable nesting habitat.

### 2.1. Marbled Murrelet (*Brachyramphus marmoratus*)

#### 2.1.1. Status and Life History

Marbled murrelet is listed as threatened under the ESA and is under the jurisdiction of the USFWS. The marbled murrelet occurs from the Aleutian Islands and southern Alaska to central California, spending most of its life at the ocean, roosting and feeding (USFWS 2016). This species nests up to 50 miles inland in coniferous forest stands with old-growth components. The *Biological Opinion for FY 13-14 LAA Habitat and Disruption Projects, North Coast Planning Province* (USFWS 2015) provides the following criteria for marbled murrelet nesting structures:

- Must be within 50 miles of the coast.
- Must be in a conifer tree.
- Tree diameter must be at least 19.1 inches, and at least 107 feet high, and have at least one platform that is at least 4 inches in diameter. Nesting substrate must be present on the platform in the form of moss, epiphytes, or duff.
- Stand must have good canopy access, enabling murrelets to approach and land on platform.
- Platforms must be at least 32.5 feet above ground.
- Platform trees (or adjacent trees) must have a tree branch or foliage that provides protective cover over the platform.

### **2.1.2. Occurrence in Overall Action Area**

A desktop analysis of potential marbled murrelet habitat was conducted prior to field surveys of the project's preferred alternative. Field surveys for the project were conducted on April 11–13, 2016 and March 29–30, 2017. The field survey conducted on April 11-13, 2016 included the Existing and South alignments that were also being evaluated at that time. During the March 29-30, 2017 field survey an area ranging from 200 to 350 feet wide, centered on the preferred alternative, was surveyed to determine if suitable habitat occurs near the road construction disturbance corridor action area. Areas outside of what was field surveyed, but within the 0.25-mile noise disturbance action area, were evaluated using vegetation data from the Gap Analysis Project (GAP). Areas that the GAP vegetation data showed as mature forest communities were assumed to be suitable nesting habitat for marbled murrelet (Geospatial Enterprise Office 2016). In Figure 3, the areas not shown as suitable habitat for marbled murrelet were either not defined in the GAP vegetation dataset or were field-mapped as an unsuitable habitat type.

Field surveys determined that suitable marbled murrelet habitat did not occur within most of the field survey area, except in two small patches near the western end of the preferred alternative. These two small patches are separated by an existing logging road. The patch of suitable habitat north of the existing road includes one potential nesting stand (Stand 1) (Figure 3). The patch of habitat south of the existing road does not include a potential nesting stand. A 20-foot buffer of suitable habitat was added around the potential nesting stand (Stand 1) as described below. Southeast and northwest of the preferred alternative additional potential nesting stands (Stands 2 and 3) were discovered along the alignments that were evaluated in April 11-13, 2016 (see Figure 3).

The potential nesting stand (Stand 1) is in mature coniferous forest and is near the western end of the preferred alternative situated along an existing gravel road (Figure 3). Here, at least five large platforms (>4 inches in diameter), in the form of dwarf mistletoe on large branches, were observed in two mature spruce trees. These trees are approximately 3 feet in diameter, the platforms are of appropriate size, and the stand is 0.3 mile from the coast. This stand has some open canopy, providing good access, but also contains branches higher up that provide cover.

Although the platforms in Stands 1 and 2 meet the nesting structure criteria, they are isolated and not within a large old-growth forest community. However, along the north coast of Oregon within this species' range, it is common for marbled murrelets to nest in isolated stands of mature trees, surrounded by younger trees, if suitable nesting structures are present (Tuerler 2016). Stand 3 is within more suitable habitat that is contiguous with the Cape Meares National Wildlife Refuge and near designated critical habitat. Due to the proximity to suitable habitat and designated critical habitat within the nearby Cape Meares National Wildlife Refuge and the presence of a potential nesting stand (Stand 1) along the preferred alternative, the potential for this species to occur within the overall action area is moderate to high.

### **2.1.3. Critical Habitat**

Critical habitat for the marbled murrelet in western California, Oregon, and Washington was designated in 1996 and revised in 2011 (USFWS 1996, 2011a). Marbled murrelet designated critical habitat primary constituent elements (PCE) include: 1) individual trees with potential

nesting platforms, and 2) forested areas within 0.5 mile of individual trees with potential nesting platforms, and with a canopy height of at least one-half the site-potential tree height; this includes all such forest, regardless of contiguity (USFWS 1996). Figure 3 shows the designated critical habitat within the Cape Meares National Wildlife Refuge west of the preferred alternative (USFWS 2011b).

## **2.2. Northern Spotted Owl (*Strix occidentalis*)**

### **2.2.1. Status and Life History**

Northern spotted owl is listed as threatened under the ESA and is under the jurisdiction of the USFWS. Northern spotted owls generally rely on old growth forest habitats because they contain the structures and characteristics required for nesting, roosting, foraging, and dispersal. These characteristics of older forests include the following: a multi-layered, multi-species canopy dominated by large overstory trees; moderate to high canopy closure; a high incidence of trees with large cavities and other types of deformities; numerous large snags; an abundance of large, dead wood on the ground; and open space within and below the upper canopy for owls to fly (Thomas et al. 1990; USFWS 2011c). Forest stands with high canopy closure also provide thermal cover (Weathers et al. 2001), as well as protection from predation. Generally, northern spotted owls do not select intermediate- or younger-aged stands (Solis and Gutierrez 1990).

Foraging habitat is the most variable of all habitats used by territorial owls (Thomas et al. 1990). Foraging habitat ranges from complex structure (Solis and Gutierrez 1990) to forests with lower canopy closure and smaller trees (Gutierrez 1996). In a study of northern spotted owl juvenile and adult dispersal, owls never crossed large bodies of water (Forsman et al. 2002).

### **2.2.2. Occurrence in Overall Action Area**

The potential for northern spotted owls to occur in the overall action area is driven by the presence of suitable nesting habitat and abundant prey species, such as rodents. Although species-specific surveys for northern spotted owl were not conducted in the 200- to 350-foot-wide area that was field surveyed, it is likely that they occur in this area and the overall action area because of the large areas of suitable foraging and nesting habitat in the form of mature forests with a multi-layered canopy, trees with large cavities and deformities, large snags, an abundance of dead wood on the ground, and open space within and below the upper canopy.

Using GAP vegetation data, suitable habitat in the overall action area for northern spotted owls was assumed to be present in all areas mapped as harvested forest-tree regeneration, North Pacific (NP) hyper-maritime Sitka spruce forest, NP lowland riparian forest and shrubland, and NP maritime mesic-wet Douglas-fir–western hemlock forest (Geospatial Enterprise Office 2016). Suitable habitat occurs along the majority of the preferred alternative (see Figure 3). In Figure 3, the areas not shown as suitable habitat for northern spotted owls were either not defined in the GAP vegetation dataset or were field-mapped as an unsuitable habitat type. No individuals or signs were observed in this area; however, the potential for northern spotted owls to occur, and possibly nest, within the overall action area is moderate to high.

### **2.2.3. Critical Habitat**

USFWS determined that certain physical and biological habitat features are essential to support nesting, roosting, foraging, and dispersal of northern spotted owls (such as canopy cover, older trees, presence of snags, etc.) and are considered critical habitat. The nearest northern spotted owl designated critical habitat is located approximately 5 miles east of the overall action area and would not be affected by the proposed project. Therefore, the preferred alternative would not effect designated critical habitat for northern spotted owl and it is not further analyzed in this BA.

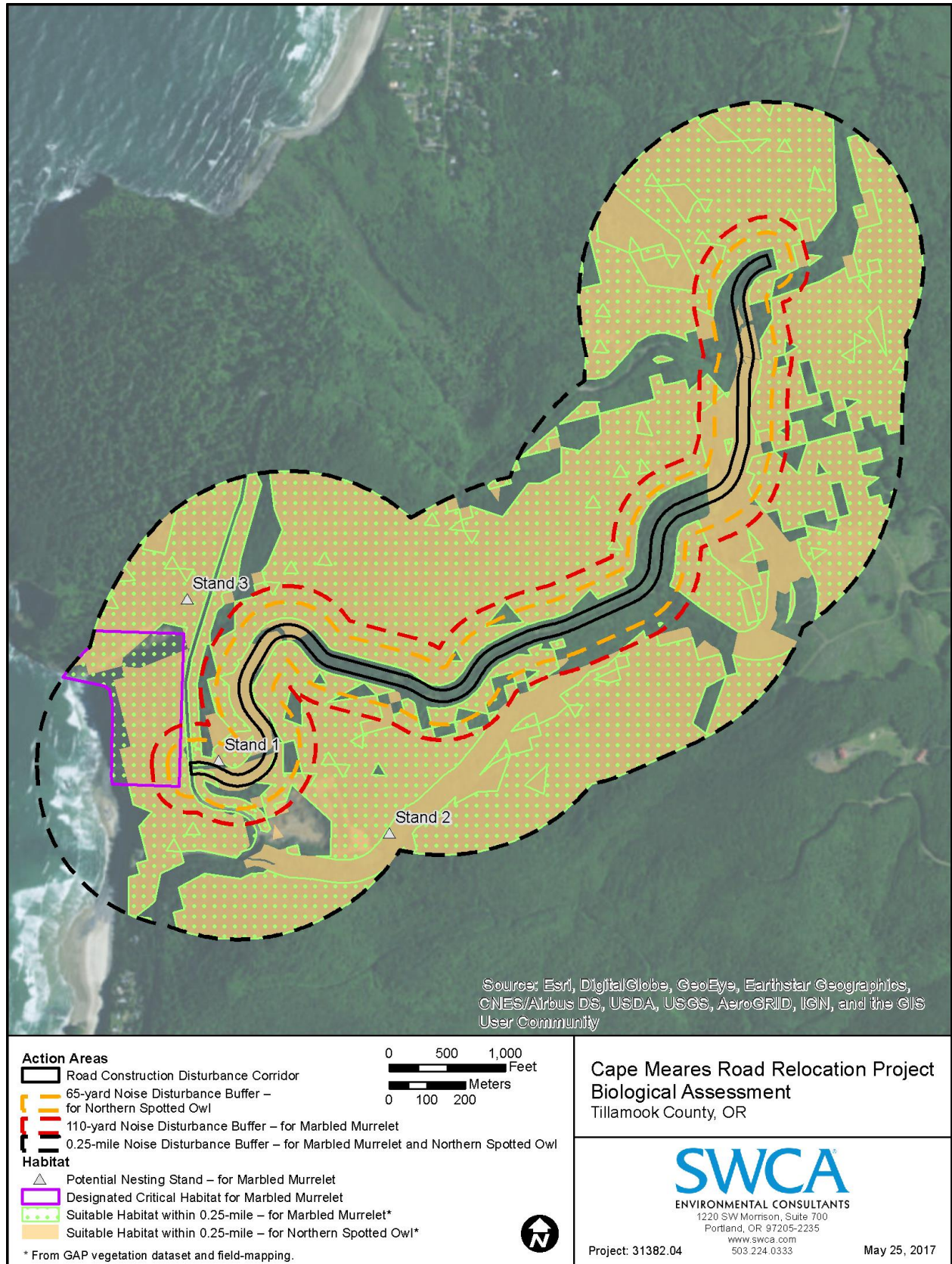


Figure 3. Map of suitable nesting habitat in the vicinity of the preferred alternative.

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## CHAPTER 3. ENVIRONMENTAL BASELINE

### 3.1. Environmental Baseline Information

The overall action area is located within the Volcanics Level IV ecoregion (Pater et al. 1998), which often contains headlands with streams of steep gradients and slopes dominated by Douglas-fir/western hemlock forests with inclusions of Sitka spruce forest communities intermixed. Much of the surrounding forests are managed for logging, but some rural residential development and recreational parks and preserves are interspersed along the coastline. This ecoregion is marine-influenced with an extended winter rainy season and minimal seasonal temperature extremes. During the dry season, abundant fog reduces vegetation moisture stress.

The overall action area is located in the *Picea sitchensis* Forest Zone (Franklin and Dyrness 1973). The landscape is dominated by seral forest communities as a result of logging activities. Wetland seeps and drainages are common in valleys throughout the field survey area and are the only locations exhibiting a robust herbaceous understory. Cape Meares Loop Road and logging roads run perpendicular to steep forested slopes throughout the landscape, and provide habitat for non-native and noxious plant species. Biological resources surveys were conducted from April 11 to 13, 2016, and from March 29 to 30, 2017, by SWCA biologists within a 200- to 350-foot-wide field survey area centered on the proposed road alignment. During the biological resources surveys, six distinguishable vegetation communities were identified in the field survey area: 1) disturbed land (road prism/logging infrastructure), 2) mature coniferous forest (Sitka spruce–western hemlock/swordfern), 3) riparian forest (including survey area streams), 4) seral coniferous forest (Sitka spruce–western hemlock/salal–swordfern), 5) shrub meadow (salal), and 6) wetland. Approximate acreages of each community type within the field survey area are provided in Table 2 and their locations are shown in Figure 4. Descriptions of these communities are provided in the following sections.

**Table 2.** Vegetation Community Summary in the Field Survey Area

Vegetation Community	Approximate Acreage
Disturbed land (road prism/logging infrastructure)	6.0
Mature coniferous forest (Sitka spruce–western hemlock/salal–swordfern)	0.7
Riparian forest (including study-area streams)	2.3
Seral coniferous forest (Sitka spruce–western hemlock/salal–swordfern)	36.9
Shrub meadow (salal)	0.5
Wetland	0.1
<b>Total</b>	<b>46.5</b>

#### Disturbed Land (road prism/logging infrastructure)

Several gravel roads and the existing paved Cape Meares Loop Road are located in the field survey area (see Figure 4). These road prisms display a mix of native, non-native, and invasive plant species growing in or adjacent to the roadway. Common non-native herbaceous species



found throughout the road prisms include creeping buttercup (*Ranunculus repens*), velvet grass (*Holcus lanatus*), orchard grass (*Dactylis glomerata*), purple foxglove (*Digitalis purpurea*), plantain species (*Plantago lanceolata* and *P. major*), and hairy cat's ear (*Hypochaeris radicata*). Swordfern (*Polystichum munitum*) and other native plants are scattered along the edge of the road prism.

#### Mature Coniferous Forest (Sitka spruce–western hemlock/swordfern)

Mature coniferous forest dominated by Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), and swordfern is located northwest of the preferred alternative, south of where the existing road is closed (see Figure 4). Additional inclusions of mature coniferous forest are located near the western end of the preferred alternative situated along an existing gravel road, near where the preferred alternative connects back to the existing Cape Meares Loop Road (where potential nesting Stand 1 is located). These forests contain Sitka spruce that are greater than 32 inches in diameter at breast height (DBH). Large stumps greater than 48 inches DBH provide evidence of historic logging activities and differentiate this forest community from the old-growth forest described below. Swordfern, salal (*Gaultheria shallon*), and Oregon beaked moss (*Kindbergia oregana*) are common in the understory. Western dwarf mistletoe is present in at least two spruce trees.

#### Riparian Forest (including survey area streams)

Riparian forests adjacent to streams (locations shown in Figure 4) are represented by the same tree species as the seral coniferous forest described below; however, tree density is much lower in these areas and allows more light to penetrate the canopy. As a result, the shrub and herbaceous strata are well represented and high in vigor. Dominant herbaceous and woody riparian vegetation includes swordfern, redwood-sorrel (*Oxalis oregana*), deer fern (*Blechnum spicant*), false lily of the valley (*Maianthemum dilatatum*), Siberian springbeauty (*Claytonia sibirica*), piggyback-plant (*Tolmiea menziesii*), Scouler's fumewort (*Corydalis scouleri*), salmonberry (*Rubus spectabilis*), red elderberry (*Sambucus racemosa*), and red huckleberry (*Vaccinium parvifolium*). Red alder (*Alnus rubra*) is typically present in or near these communities, and an Oregon beaked moss ground cover is common throughout these areas as well.

#### Seral Coniferous Forest (Sitka spruce–western hemlock/salal–swordfern)

The most common vegetation community found in the field survey area (locations shown in Figure 4) is a seral coniferous forest dominated by Sitka spruce, western hemlock, salal, and swordfern. These forests consist mostly of even-aged stands that were last logged an estimated 35 to 40 years ago. The closed canopy forest transitions from western hemlock dominance in the northern portion of the field survey area to Sitka spruce and western hemlock co-dominance in the southern portions. Tree density is high and representative of revegetation following clear-cut forest practices. Shrubs and herbaceous plants are generally absent from the forest understory; however, abundant tall stands of salal as well as stands of evergreen huckleberry (*Vaccinium ovatum*), both greater than 6 feet in height, are present in openings where trees have fallen or have been prevented from growing due to early successional shrub growth. The understory is characterized by fuels including duff, fallen branches, thickets of dead salal stems, and small dead trees. Scattered herbaceous plants such as swordfern and drops-of-gold (*Prosartes hookeri*)

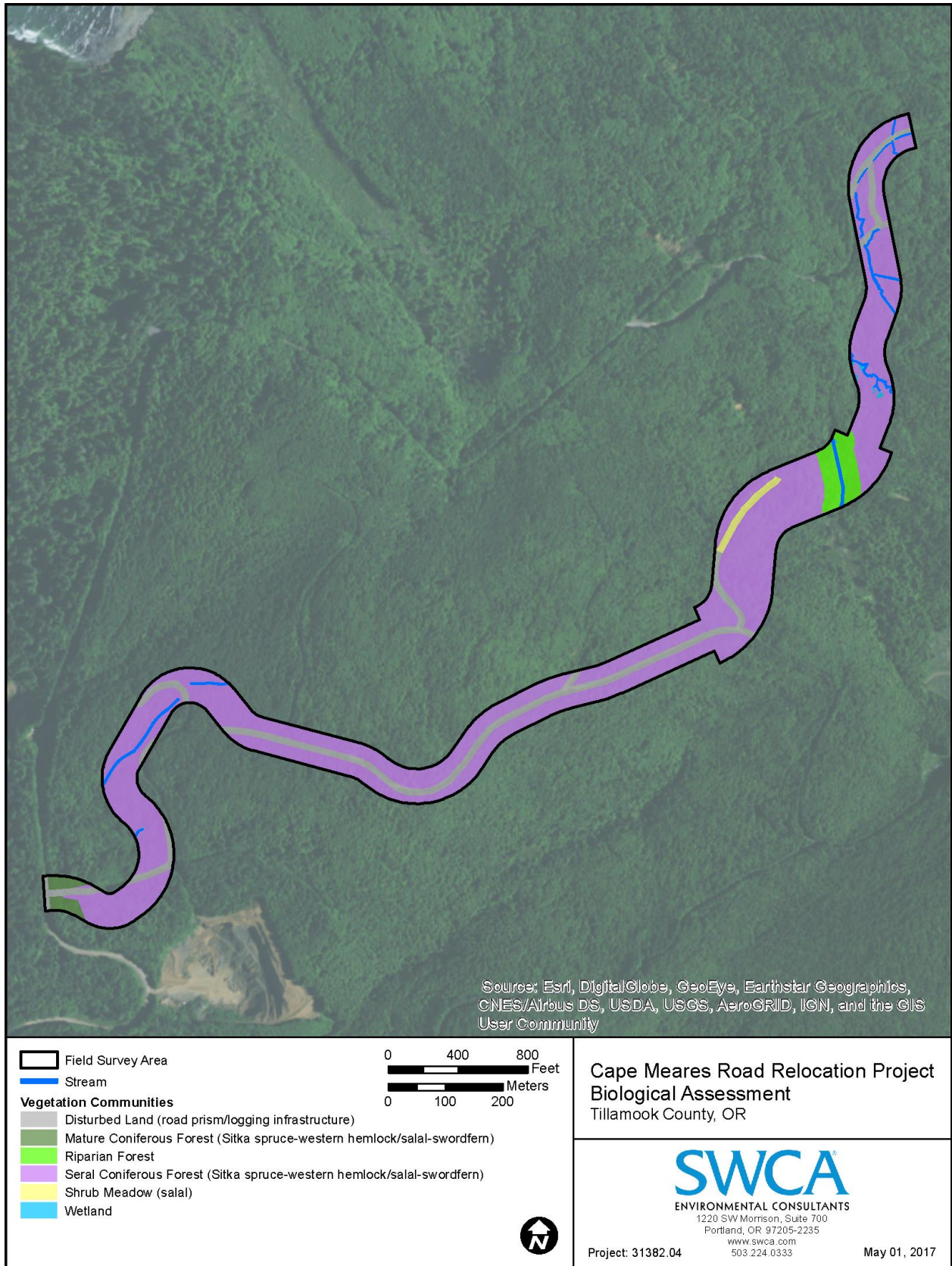
are the exception. There are several downed trees and tree stumps greater than 48 inches DBH scattered throughout the field survey area, but there are no standing snags. There are several occurrences of wetland and riparian areas (described below and above, respectively) throughout the seral coniferous forest where understory vegetation is common.

#### Shrub Meadow (salal)

Salal is the dominant species of the one shrub-dominated community that exists on steep slopes in the northeastern portion of the field survey area (see Figure 4). Other shrub species include red alder, red huckleberry, and salmonberry. Herbaceous plants are lacking in this area.

#### Wetland

Wetland seeps are scattered throughout the field survey area (see Figure 4). Dominant herbaceous wetland vegetation includes Pacific golden-saxifrage (*Chrysosplenium glechomifolium*), seaside bittercress (*Cardamine angulata*), Pacific water-dropwort (*Oenanthe sarmentosa*), Mexican hedge-nettle (*Stachys mexicana*), and skunk cabbage (*Lysichiton americanus*). Salmonberry and red alder are typically present at or near the boundaries of these wetlands.



**Figure 4.** Vegetation communities along the preferred alternative.

## CHAPTER 4. PROJECT DETAILS

### 4.1. Construction

The preferred alternative would reroute the roadway around a portion of the existing Cape Meares Loop Road that was impacted by the 2012 landslide. The preferred alternative is approximately 1.7 miles long and crosses existing public and private roads and additional forested landscape. The preferred alternative would have an approximately 100-foot-wide road construction disturbance corridor, centered on the preferred alignment. The construction of the preferred alternative would result in an approximately 28-foot-wide paved roadway, which would include two 11-foot-wide travel lanes with 2-foot-wide shoulders on each side. The additional width of the road construction corridor accounts for the maximum potential extent of side slopes for the roadway and ground-disturbing activities that may occur during construction activities. Although the current design plans are at approximately 30 percent completion, the preferred alternative would likely involve the following construction activities (while adhering to the applicant-committed measures discussed in Section 1.2.1):

- Pre-construction geotechnical activities (anticipated for 2018 or 2019)
  - This work would be of brief duration: 1 to 4 days at each specific borehole and up to a couple of weeks total to cover the entire preferred alignment
  - The sound produced by this equipment would be similar to that of road construction equipment with the sound level ranging from 70-85 A-weighted decibels (dBa) at 50 feet
- Clearing of vegetation within the road construction corridor, including the removal of some large trees (planned to occur between October 1 and February 28)
- Earthwork including excavation (rock blasting within the roadway alignment, planned to occur between October 1 and February 28), embankment construction, and grading of the roadbed
- Construction of walls (wall type to be determined)
- Grading and preparation of the roadbed
- Asphalt paving
- Installation of culverts and other drainage features, as needed
- Installation of permanent traffic control (striping and signage)
- Revegetation

All of the construction activity would be limited to within the road construction corridor and would not extend off-site or in water.

#### 4.1.1. *Project Timeline and Sequencing*

Preconstruction survey for suitable nesting habitat and nesting activity, as well as geotechnical activities would occur in 2018 and 2019. Project construction is expected to begin in 2020 and

take approximately 2 years to complete. This construction schedule is preliminary and subject to change. The proposed construction activities would likely be sequenced as follows:

#### Preconstruction Surveys (2018-2020)

- Field surveys to determine the presence of northern spotted owl and marbled murrelet suitable nesting habitat.
- Protocol-level nest surveys in areas determined to have suitable nesting habitat.
- Geotechnical surveys. Because of their brief duration and low sound level, preconstruction geotechnical activities could occur at any time, upon signing the Finding of No Significant Impact (anticipated for early 2018). If the construction schedule can accommodate these timing suggestions, these activities would:
  - Be completed for the west end of the preferred alignment outside of the “critical” marbled murrelets nesting period (April 1 to August 5) to avoid affecting marbled murrelets using the potential nesting stands near the west end.
  - Be conducted outside of the “critical” nesting period for northern spotted owl (March 1 to July 7).

#### Construction Activities/Sequencing (2020-2022)

- Clearing (includes tree removal) and grubbing
- Earthwork – excavation (including rock blasting) and embankment construction
- Construction of retaining walls
- Installation of culverts and other drainage features
- Asphalt paving and sealing
- Installation of permanent traffic control (i.e., striping and signs)
- Revegetation with native plants

No activities that cause excessive noise disturbance (e.g. rock blasting) would occur within 0.25 mile of suitable nesting habitat between March 1 and August 5 to avoid the “critical” nesting seasons for the northern spotted owl and marbled murrelet (USFWS 2016). All tree removal, vegetation clearing, and rock blasting would occur outside of the full nesting seasons for both species; i.e. these activities are planned for October 1 through February 28.

#### **4.1.2. Site Preparation**

Before beginning project-related ground-disturbing activities, the contractor would install erosion-control measures, such as sediment fences, as described in the project’s stormwater pollution prevention plan (SWPPP), to prevent soil erosion into nearby waterbodies or ditches.

Removal of mature trees and other vegetation would likely be necessary along the preferred alternative and would involve heavy machinery. Removal of mature trees along the portion of the preferred alternative that overlaps the existing roadway would not be necessary. Erosion-control measures would be in place to reduce or eliminate potential soil erosion from tree removal and other site preparation activities.

#### **4.1.3. Construction Access and Staging**

All construction access and staging would be contained within existing roadways and designated construction corridors. Access to the construction area would be exclusively from Cape Meares Loop Road and existing private roads. No access or transportation would be conducted in or over water. Figures showing the construction area and plan drawings are provided in Appendix B.

#### **4.1.4. In-Water Work**

During project construction there would be in-water work to install a culvert where the alignment crosses Coleman Creek and at other stream locations throughout the alignment. This in-water work would not impact listed and/or residential fish; due to downstream blockages/waterfalls there is no documented fish presence on streams in the project area.

#### **4.1.5. Potential Impacts on Water Quality**

Impacts to water quality from the proposed construction activities would likely be low. During culvert replacement/installation, work would be conducted in a manner to reduce turbidity and erosion impacts downstream of the construction area. In total, the construction activities would add approximately 5.35 acres of impervious surfaces to the landscape. A SWPPP would be prepared and a National Pollutant Discharge Elimination System (NPDES) permit would be received before construction activities. It is believed that the project improvements would not trigger the need for stormwater treatment or flow control. Therefore, stormwater treatment would likely not be necessary for the construction activities.

#### **4.1.6. Post-Project Site Restoration**

After construction has been completed, revegetation of the road shoulder and affected areas would be implemented, with erosion-control measures remaining in place until vegetation becomes established. Revegetation would be accomplished with native vegetation only. No other restoration activities are planned within the road construction disturbance corridor action area.

### **4.2. Operations**

The primary purpose and operation of the roadway would be to restore the access and connection to the Cape Meares National Wildlife Refuge, Cape Meares State Scenic Viewpoint and Lighthouse, and Cape Kiwanda State Park. The vehicular road use of the new route would be the only operation on the project site, which would be similar to that of the existing road prior to its closure.

### **4.3. Maintenance**

The road would be maintained by Tillamook County. Maintenance would be similar to that of other existing roads in the area. However, the long-term road maintenance of the Cape Meares Loop Road is expected to decrease as a result of this project because it would address the road safety and maintenance issues that have occurred in the recent past.

## CHAPTER 5. PROJECT ACTION AREAS

USFWS regulations define an action area as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved by the action” (50 CFR 402). The defined action areas for this project are based on both the potential extent of ground disturbance from clearing vegetation for the road corridor and on the construction noise disturbance impacts and the species’ relative noise tolerances during specific portions of their respective nesting seasons. Any blasting that would be required to construct this project would be conducted from October 1 through February 28, outside of the nesting seasons for both the marbled murrelet and the northern spotted owl; therefore, noise disturbance buffer for blasting activities is not required.

### 5.1. Limits of the Action Areas

The overall action area for the preferred alternative includes all four of the action areas that would be affected by the implementation of the proposed actions. The limits to each of the four action areas for the preferred alternative are described below:

- Road construction disturbance corridor: The road construction disturbance corridor action area encompasses all areas that would be directly affected by geotechnical activities or physical ground disturbance from construction activities and vegetation clearing and is confined within a road construction corridor centered on the preferred alternative. The road construction disturbance corridor action area is approximately 100 feet wide, centered on the preferred alternative.
- 65-yard noise disturbance buffer – Northern Spotted Owl: This noise disturbance action area was calculated based on the type of disturbance (geotechnical activities, heavy equipment for road construction, or construction equipment driving the newly-installed roadway) and the timing of construction. The noise disturbance action area for northern spotted owl is 65 yards from the edge of the road construction disturbance corridor action area for the preferred alternative during the “critical” nesting season from March 1 through July 7 (USFWS 2016).
- 110-yard noise disturbance buffer – Marbled Murrelet: This noise disturbance action area was calculated based on the type of disturbance (geotechnical activities, heavy equipment for road construction, or construction equipment driving the newly-installed roadway) and the timing of construction. The noise disturbance action area for marbled murrelet is 110 yards from the edge of the road construction disturbance corridor action area for the preferred alternative during the “critical” nesting season from April 1 through August 5 (USFWS 2016).
- 0.25-mile noise disturbance buffer – both Northern Spotted Owl and Marbled Murrelet: This noise disturbance action area was calculated based on the type of disturbance (geotechnical activities, heavy equipment for road construction, or construction equipment driving the newly-installed roadway) and the timing of construction. The area outside of the 110-yard and 65-yard noise disturbance action areas for each of the species listed above may also experience minor noise disturbance during their respective nesting



seasons up to 0.25 mile from the edge of the road construction disturbance corridor action area for the preferred alternative (USFWS 2016).

## **5.2. Ground Disturbance**

Ground disturbance would be limited to within the road construction disturbance corridor action area, which is defined above for the preferred alternative. This action area encompasses all areas temporarily affected by site preparation, construction access and staging, construction activities, and site restoration, outlined in the previous section. Any temporary impacts and staging would be limited to within this road construction disturbance corridor action area.

## **5.3. Noise Disturbance**

Existing background noise levels in the general area are moderate to high due to the nearby logging activities and gravel quarry that operates for most of the year. Although it is unconfirmed when the quarry conducts blasting operations, it has been assumed for the purposes of this BA that these activities are conducted outside of the nesting seasons of both marbled murrelets and northern spotted owls and, therefore, would not have any deterrent effect on these species. However, heavy equipment is continually operated at the quarry throughout the year, including during nesting seasons, which may have an effect on marbled murrelet and northern spotted owl nesting site selection within 0.25 mile of the quarry. The possible site avoidance by these species due to noise from the quarry was not taken into account when calculating the noise disturbance buffers for this project.

Until species-specific surveys are conducted within the nesting season prior to starting construction activities, suitable nesting habitat is assumed to occur in the areas depicted in Figure 3. Therefore, the following buffer distances would apply to these species during their respective nesting seasons:

- For northern spotted owl, construction activities conducted within 65 yards of suitable nesting habitat may disrupt nesting behaviors for this species. Therefore, a noise disturbance action area of 65 yards from the edge of construction activities was used to determine potential effects on nearby northern spotted owls during their “critical” nesting season of March 1 through July 7 (see Figure 3). To a lesser degree, the construction activities may also disturb northern spotted owls within 0.25 mile from the construction activities for their entire nesting season, March 1 through September 30 (USFWS 2016).
- For the marbled murrelet, construction activities conducted within 110 yards of suitable nesting habitat may disrupt nesting behaviors for this species. Therefore, a noise disturbance action area of 110 yards from the edge of construction activities was used to determine potential effects on nearby marbled murrelets during their “critical” nesting season of April 1 through August 5 (see Figure 3). To a lesser degree, the construction activities may also disturb marbled murrelets within 0.25 mile from the construction activities for their entire nesting season, April 1 through September 15 (USFWS 2016).

## **CHAPTER 6. EFFECTS ANALYSIS**

This section analyzes the preferred alternative's direct, indirect, and cumulative effects to individuals of listed species, their habitat, and designated critical habitat. Direct effects include all immediate impacts caused by the preferred alternative (such as construction) and directly related to actions that occur at or very close to the time of implementation (such as displacement due to noise disturbance). Indirect effects are impacts that are caused by the project, but that occur later in time or are farther removed in distance from the overall action area and are still reasonably certain to occur. Cumulative effects are effects resulting from future state or private activities (not involving federal activities) that are reasonably certain to occur within the overall action area of the federal action subject to consultation.

This section also analyzes the effects of interrelated and interdependent actions on listed species and critical habitat (USFWS and NMFS 1998). An interrelated action is one that is part of a larger action and depends on the larger action for its justification. An interdependent action is one that has no independent utility apart from the proposed action.

### **6.1. Direct Effects**

#### **6.1.1. Ground Disturbance Impacts**

The preferred alternative crosses primarily mature forested upland habitat and ground disturbance and tree removal within the road construction corridor would occur throughout all or portions of this alignment (see Figure 3). Permanent effects within the road construction disturbance corridor would likely result from these proposed actions. The total number and type of trees to be removed have not yet been determined, but their removal would reduce the existing canopy cover. The removal of these trees within marbled murrelet and northern spotted owl suitable habitat would cause a direct negative impact on the available habitat for both of these species, removing 0.27 acre and 8.34 acres, respectively. The clearing and tree removal activities would be limited to between October 1 and February 28, outside of the nesting seasons for both species.

#### **6.1.2. Noise Disturbance Impacts**

Construction of the preferred alternative would involve the use of heavy equipment. This machinery would cause increased noise disturbance in the immediate area and up to 0.25 mile from the source of the construction activity (see Figure 3). These increased noise levels would be temporary and would only occur during road construction activities, which could occur year round following surveys for nesting marbled murrelets and northern spotted owl.

Noise disturbance from construction activities would have a direct effect on birds nesting in the marbled murrelet and northern spotted owl noise disturbance action areas (see Figure 3). Marbled murrelet nesting behavior may be disrupted when construction activities are within 110 yards of their nesting sites during their "critical" nesting season (April 1 to August 5) and activities within that distance may even cause nest abandonment (USFWS 2016). Similarly, northern spotted owls would be disturbed when construction activities are within 65 yards of

their nesting sites during their “critical” nesting period, between March 1 and July 7 (USFWS 2016). However, nesting surveys would be conducted prior to construction and construction activities would only proceed outside of a 65-yard or 110-yard noise disturbance buffer from active nests.

The raised noise levels may still initiate some minor displacement or behavior-altering effects on both species up to 0.25 mile from the source of the noise disturbance. During their respective nesting seasons marbled murrelets and northern spotted owls would be disrupted, to a lesser degree, up to 0.25 mile from construction activities.

### **6.1.3. *Runoff and Turbidity Impacts***

Construction of the project would involve some culvert replacement/installation along the preferred alternative at creeks or smaller drainages within the road construction disturbance corridor action area, including Coleman Creek. ESA-listed fish species do not occur within the road construction disturbance corridor action area; therefore, project activities that would have short-term and minor impacts to water quality would have no effect on sensitive fish species. In addition, prey species for the marbled murrelet and northern spotted owl are not present within the creeks and drainages within the road construction disturbance corridor action area; therefore, these proposed actions would have no effect on marbled murrelets and northern spotted owl.

## **6.2. Indirect Effects**

### **6.2.1. *Altered Predator-Prey Relationships***

No impacts to predator-prey relationships are likely to occur for marbled murrelet as a result of this project because of the lack of aquatic prey species within the road construction disturbance corridor action area. Northern spotted owl may be affected by the removal of suitable foraging habitat along portions of the alternative where tree removal and ground disturbance would occur (see Sections 6.1.1 and 6.2.2). The clearing of forest litter along the preferred alternative could decrease the available habitat for prey species, such as rodents. These actions would potentially affect 8.34 acres of northern spotted owl suitable habitat along the preferred alternative.

### **6.2.2. *Long-Term Habitat Alteration***

Because of the likely removal of mature conifer trees within the road construction corridor along the preferred alternative, the project would likely have a long-term effect on the available forested habitat within the road corridor. The number and types of trees that would be removed as a result of this project have not yet been determined, but it is estimated that approximately 8.34 acres of mature conifer trees could be removed.

Tree removal along the preferred alternative would likely cause long-term habitat alteration in areas of the alignment that cross fully-forested habitat types. Areas that were previously forested would now have a paved road bisecting them, and long-term vegetation maintenance along the roadsides would keep vegetation away from the road prism. Approximately 8.34 acres of northern spotted owl suitable habitat may experience long-term habitat alteration along the preferred alternative. In addition, approximately 0.27 acre of marbled murrelet suitable habitat

exists along this alignment and may be negatively affected by this alignment; therefore, there may be a long-term removal or alteration of these species suitable habitat to some degree.

### **6.2.3. Indirect Land Use Impacts**

The project would restore visitor access to Cape Meares National Wildlife Refuge from the south, and Cape Meares State Scenic Viewpoint and Lighthouse, and would connect Cape Meares State Park, Cape Lookout State Park, and Cape Kiwanda State Park. Since the 2012 landslide, the Cape Meares Loop Road has been closed to through traffic, limiting access to the wildlife refuge and lighthouse. The project would not be expected to cause an increase to long-term use of the general area compared to pre-landslide levels.

Along the preferred alternative, northern spotted owls that forage in areas that do not currently contain infrastructure could be affected by the presence of road traffic after the project's implementation. Road traffic in new areas could increase the likelihood of vehicle-owl collisions.

## **6.3. Interrelated and Interdependent Actions and Activities**

The OWD water intake is currently located upstream of the existing Cape Meares Loop Road but it would be located downstream of the preferred alternative (see Figure 1). The OWD will likely relocate their water intake upstream of the preferred alternative. This action would be considered an interrelated action to the proposed project.

There are no projects interdependent to the preferred alternative.

## **6.4. Cumulative Effects**

Timber harvest has previously occurred on private lands in the majority of the project's overall action area and is likely to continue to occur in the reasonably foreseeable future. The previously harvested areas are not high quality habitat, but do provide suitable habitat for the marbled murrelet and the northern spotted owl. Reasonably foreseeable future timber harvest together with the preferred alternative creates the potential for the following cumulative impacts:

- Further reducing available habitat over the long term for both the marbled murrelet and northern spotted owl
- Depending on the timber harvest timing:
  - destroying nests of both species
  - disturbing nesting individuals of both species within the timber harvest units and out to areas within 0.25 mile
- Reducing the northern spotted owl prey source (rodents) because of the reduction in suitable foraging habitat

- Increasing traffic associated with timber harvest that could increase the likelihood of vehicle-owl collisions

State and federal lands occur in the project's overall action area, but no reasonably foreseeable future projects are expected to occur on those lands that would affect listed species or their suitable habitat. Therefore no cumulative effects would occur on state or federal lands.

## CHAPTER 7. EFFECT DETERMINATIONS

Based on the preferred alternative’s effects presented in Chapter 6, the effect determinations for each ESA-listed species that may occur in the overall action area are presented in Table 3. Effect determinations take into account all of the possible project effects.

**Table 3.** Effect Determinations for Each Species and Critical Habitat

Federal Status	Species Common Name	Effect Determination for Species	Effect Determination for Critical Habitat
Threatened	Marbled murrelet	LAA	NE
Threatened	Northern spotted owl	LAA	NE

Notes: NE = no effect; LAA = may affect, likely to adversely affect.

### 7.1. Effect Determination for Listed Species

#### 7.1.1. *Marbled Murrelet*

The project **may affect** marbled murrelet in the overall action area, as follows:

- Activities in the road construction disturbance corridor action area, such as ground disturbance and vegetation removal, may remove a small portion of marbled murrelet mature forest habitat (0.27 acre) at the western end of the preferred alternative.
- Some construction activities would likely occur during marbled murrelet nesting season, which may affect those individuals within the 110-yard marbled murrelet noise disturbance action area.

The project is **likely to adversely affect** marbled murrelet, as follows:

- The likely removal of mature trees within the road construction disturbance corridor action area would cause a slight decline in available habitat for marbled murrelets. This is a long-term effect on available habitat. However, the relative amount of habitat loss would be minimal and tree removal would be conducted outside of the nesting season.
- Between April 1 and August 5, construction activities would not occur within 110-yards of nesting marbled murrelets (informed by protocol-level presence/absence surveys). Between August 6 and September 15 construction activities would likely cause noise disturbances to nesting marbled murrelets within 110 yards of the construction area. However, these noise disturbances would be short term and outside of the “critical” nesting season, and the 110-yard marbled murrelet noise disturbance action area would return to near-background levels after construction is completed. Construction activities that are more than 110 yards from but within 0.25 mile of nesting marbled murrelets would have less of a noise impact on nesting marbled murrelets, because individuals would be further than 110 yards away. However, marbled murrelet individuals may still be affected to some degree.

### **7.1.2. Northern Spotted Owl**

The project **may affect** northern spotted owl in the overall action area, as follows:

- Activities in the road construction disturbance corridor action area, such as ground disturbance and vegetation removal, are likely to remove a portion of northern spotted owl mature forest nesting and foraging habitat (8.34 acres) along large portions of the preferred alternative.
- Some construction activities would likely occur during the northern spotted owl nesting season, which may affect those individuals within the 65-yard northern spotted owl noise disturbance action area.

The project is **likely to adversely affect** northern spotted owl, as follows:

- The likely removal of mature trees within the road construction disturbance corridor action area would cause a decline in available mature forest habitat for northern spotted owls. This is a long-term effect on available habitat and would likely have an adverse effect on northern spotted owls. Any necessary tree clearing would be conducted outside of the nesting season to prevent harm or disruption to nesting individuals.
- Between March 1 and July 7, construction activities would not occur within 65-yards of nesting northern spotted owls (informed by protocol-level presence/absence surveys). Between July 8 and September 30, construction activities would likely cause noise disturbances to nesting northern spotted owls within 65 yards of the construction area. However, these noise disturbances would be short term and outside of the “critical” nesting season, and the 65-yard northern spotted owl noise disturbance action area would return to near-background levels after construction is completed. Construction activities that are more than 65 yards from but within 0.25 mile of nesting spotted owls would have less of a noise impact on nesting northern spotted owls, because individuals would be further than 65 yards away. However, northern spotted owl individuals may still be affected to some degree.

## **7.2. Effect Determination for Critical Habitat**

### **7.2.1. Marbled Murrelet**

The approximately 24.5 acres of designated critical habitat that occur west of the project in the Cape Meares National Wildlife Refuge (USFWS 2011b) provide the two PCEs that are required for marbled murrelets: 1) the presence of adequate nesting platforms and 2) contiguous mature forest. The marbled murrelet designated critical habitat is located approximately 100 feet from the edge of the road construction disturbance corridor action area for the preferred alternative and would not be directly impacted by the proposed construction activities. No trees would be removed or habitat modification made within designated critical habitat. Therefore, the project would have **no effect** on designated critical habitat for marbled murrelet.

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## **Appendix A**

### **Essential Fish Habitat and Endangered Species Act–Listed Species**

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## **APPENDIX A. ESSENTIAL FISH HABITAT AND ENDANGERED SPECIES ACT–LISTED FISH SPECIES**

### Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) includes a mandate that National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NMFS) must identify essential fish habitat (EFH) for federally managed marine fishes, and federal agencies must consult with NMFS on all activities or proposed activities authorized, funded, or undertaken by the agency that may adversely affect EFH. The Cape Meares Road Relocation Project road construction disturbance corridor action area does not include any aquatic habitat that has been designated by the Pacific Fisheries Management Council (PFMC) for EFH species (PFMC 1999, 2005). The nearest designated EFH habitat is outside of the overall action area (0.25 mile from the road construction disturbance corridor); therefore, the project would have no effect on EFH.

### Endangered Species Act–Listed Fish Species

The physical structure of streams, rivers, and estuaries plays a significant role in determining the suitability of aquatic habitats for salmonids and other organisms that salmonids depend on for food. Large wood creates habitat heterogeneity in smaller streams and estuaries; undercut banks, overhanging vegetation, large boulders, and coarse substrate provide shelter from predators and fast currents. During upstream migrations, anadromous salmonids need holding or resting sites, as well as suitable flow and water quality. In-stream structures provide hydraulic diversity (e.g., eddies or localized areas of slow water) and pool habitats that serve as resting stations for fish as they migrate upstream to spawn. These structures also facilitate temperature stratification and the development of thermal refugia by isolating pockets of cold water (Spence et al. 1996).

Larson Creek flows through portions of the overall action area but is located more than 400 feet from the preferred alternative’s road construction corridor and would not be impacted by the proposed road construction. Therefore, no impact to water quality would occur as a result of the proposed project. In addition, no in-water work would be conducted during the road construction.

Larson Creek is not accessible to salmonids migrating from the ocean due to an over 100-foot vertical waterfall near the outfall of the creek at the ocean, which precludes any fish migration upstream. Therefore, the project would have no effect on ESA-listed salmonids (see the list of these species in Appendix C).

### **Literature Cited**

Pacific Fishery Management Council (PFMC). 1999. *Identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon*. Appendix A to Amendment 14, Pacific Coast salmon fishery management plan. Revised May 2, 2011. Pacific Fishery Management Council.

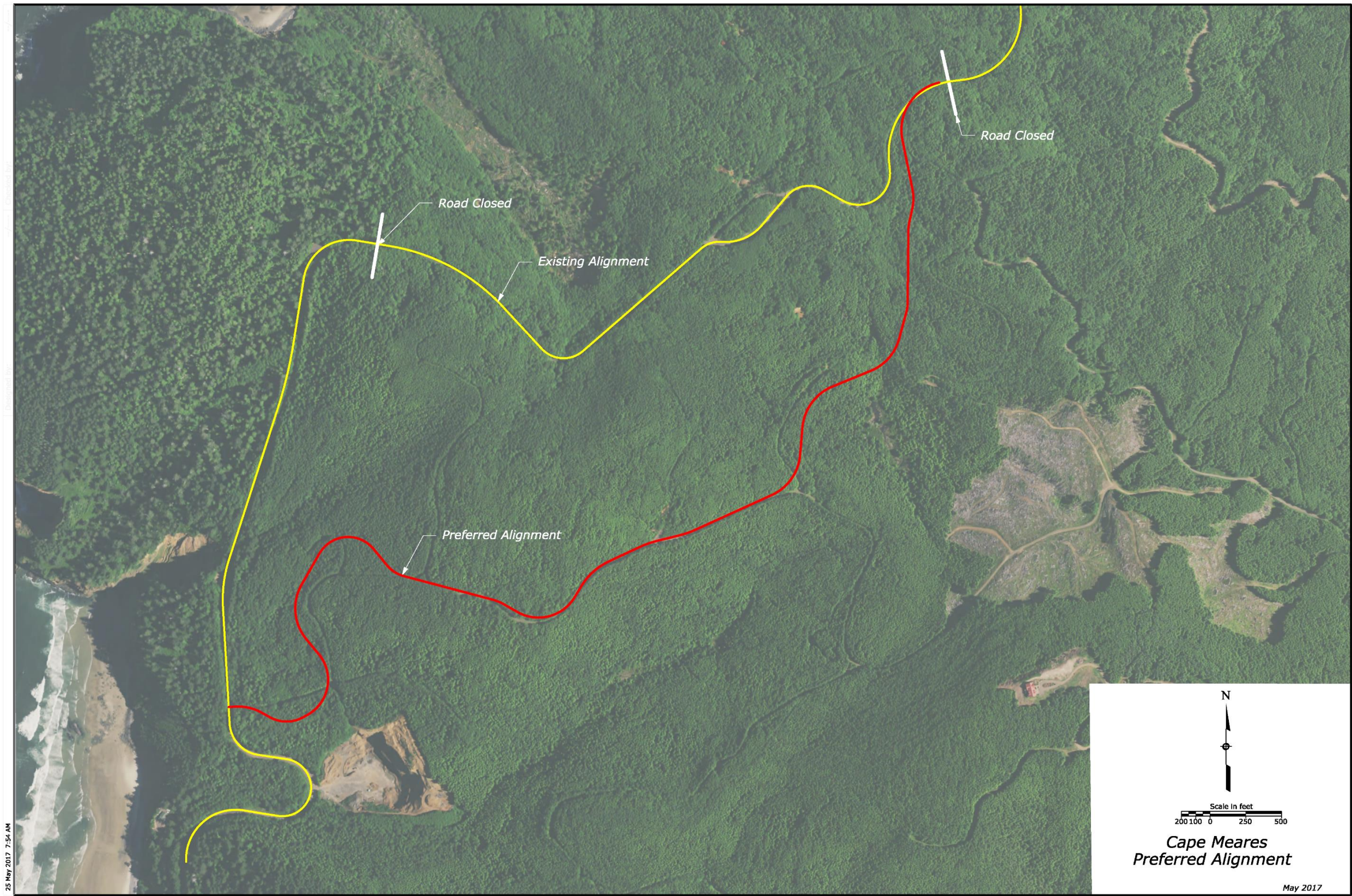
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- Spence, B.C., G.A. Lomnicky, R.M. Hughes, and R.P. Novitzki. 1996. *An Ecosystem Approach to Salmonid Conservation*. TR-4501-96-6057. Corvallis, Oregon: ManTech Environmental Research Services Corp.

## **Appendix B**

### **Preliminary Map of Preferred Alternative (refer to North Alignment)**

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## **Appendix C**

### **U.S. Fish and Wildlife Service and National Marine Fisheries Service Threatened and Endangered Species Lists**

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## IPaC Information for Planning and Consultation U.S. Fish & Wildlife Service

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as trust resources) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the Introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location


Tillamook County, Oregon



## Local office

Oregon Fish And Wildlife Office

☎ (503) 231-6179

 (503) 231-6195

2600 Southeast 98th Avenue, Suite 100  
Portland, OR 97266-1398

<https://www.fws.gov/oregonfwo/articles.cfm?id=149489416>

## Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC

also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

## Birds

NAME	STATUS
<b>Marbled Murrelet</b> <i>Brachyramphus marmoratus</i> There is a final <b>critical habitat</b> designated for this species. Your location overlaps the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/4467">https://ecos.fws.gov/ecp/species/4467</a>	Threatened
<b>Northern Spotted Owl</b> <i>Strix occidentalis caurina</i> There is a final <b>critical habitat</b> designated for this species. Your location overlaps the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/1123">https://ecos.fws.gov/ecp/species/1123</a>	Threatened
<b>Short-tailed Albatross</b> <i>Phoebastria (=Diomedea) albatrus</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/433">https://ecos.fws.gov/ecp/species/433</a>	Endangered
<b>Western Snowy Plover</b> <i>Charadrius alexandrinus nivosus</i> There is a final <b>critical habitat</b> designated for this species. Your location overlaps the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/8035">https://ecos.fws.gov/ecp/species/8035</a>	Threatened

## Flowering Plants

NAME	STATUS
<b>Bradshaw's Desert-parsley</b> <i>Lomatium bradshawii</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/5743">https://ecos.fws.gov/ecp/species/5743</a>	Endangered
<b>Kincaid's Lupine</b> <i>Lupinus sulphureus</i> ssp. <i>kincaidii</i> There is a final <b>critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/3747">https://ecos.fws.gov/ecp/species/3747</a>	Threatened
<b>Nelson's Checker-mallow</b> <i>Sidalcea nelsoniana</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/7340">https://ecos.fws.gov/ecp/species/7340</a>	Threatened

**Willamette Daisy** *Erigeron decumbens* **Endangered**  
 There is a final critical habitat designated for this species.  
 Your location is outside the designated critical habitat.  
<https://ecos.fws.gov/ecp/species/6270>

## Insects

NAME	STATUS
<b>Fender's Blue Butterfly</b> <i>Icaricia icarioides fenderi</i> There is a final <u>critical habitat</u> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/6659">https://ecos.fws.gov/ecp/species/6659</a>	<b>Endangered</b>
<b>Oregon Silverspot Butterfly</b> <i>Speyeria zerene hippolyta</i> There is a final <u>critical habitat</u> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/6930">https://ecos.fws.gov/ecp/species/6930</a>	<b>Threatened</b>

## Mammals

NAME	STATUS
<b>Red Tree Vole</b> <i>Arborimus longicaudus</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/8830">https://ecos.fws.gov/ecp/species/8830</a>	<b>Candidate</b>

## Reptiles

NAME	STATUS
<b>Leatherback Sea Turtle</b> <i>Dermochelys coriacea</i> There is a final <u>critical habitat</u> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/1493">https://ecos.fws.gov/ecp/species/1493</a>	<b>Endangered</b>
<b>Loggerhead Sea Turtle</b> <i>Caretta caretta</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/1110">https://ecos.fws.gov/ecp/species/1110</a>	<b>Endangered</b>
<b>Olive Ridley Sea Turtle</b> <i>Lepidochelys olivacea</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/1513">https://ecos.fws.gov/ecp/species/1513</a>	<b>Threatened</b>

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Marbled Murrelet <i>Brachyramphus marmoratus</i> <a href="https://ecos.fws.gov/ecp/species/4467#crithab">https://ecos.fws.gov/ecp/species/4467#crithab</a>	Final designated
Northern Spotted Owl <i>Strix occidentalis caurina</i> <a href="https://ecos.fws.gov/ecp/species/1123#crithab">https://ecos.fws.gov/ecp/species/1123#crithab</a>	Final designated
Western Snowy Plover <i>Charadrius alexandrinus nivosus</i> <a href="https://ecos.fws.gov/ecp/species/8035#crithab">https://ecos.fws.gov/ecp/species/8035#crithab</a>	Final designated

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service<sup>3</sup>. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>



- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
<b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i> <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Year-round
<b>Black Oystercatcher</b> <i>Haematopus bachmani</i> <a href="https://ecos.fws.gov/ecp/species/9591">https://ecos.fws.gov/ecp/species/9591</a>	Year-round
<b>Caspian Tern</b> <i>Hydroprogne caspia</i>	Breeding
<b>Fox Sparrow</b> <i>Passerella iliaca</i>	Wintering
<b>Lewis's Woodpecker</b> <i>Melanerpes lewis</i> <a href="https://ecos.fws.gov/ecp/species/9408">https://ecos.fws.gov/ecp/species/9408</a>	Year-round
<b>Marbled Godwit</b> <i>Limosa fedoa</i> <a href="https://ecos.fws.gov/ecp/species/9481">https://ecos.fws.gov/ecp/species/9481</a>	Wintering
<b>Olive-sided Flycatcher</b> <i>Contopus cooperi</i> <a href="https://ecos.fws.gov/ecp/species/3914">https://ecos.fws.gov/ecp/species/3914</a>	Breeding
<b>Oregon Vesper Sparrow</b> <i>Poocetes gramineus ssp. affinis</i> <a href="https://ecos.fws.gov/ecp/species/5141">https://ecos.fws.gov/ecp/species/5141</a>	Breeding

Peregrine Falcon	Falco peregrinus <a href="https://ecos.fws.gov/ecp/species/8831">https://ecos.fws.gov/ecp/species/8831</a>	Year-round
Pink-footed Shearwater	Puffinus creatopus	Year-round
Purple Finch	Carpodacus purpureus	Year-round
Rufous Hummingbird	selasphorus rufus <a href="https://ecos.fws.gov/ecp/species/8002">https://ecos.fws.gov/ecp/species/8002</a>	Breeding
Short-eared Owl	Asio flammeus <a href="https://ecos.fws.gov/ecp/species/9295">https://ecos.fws.gov/ecp/species/9295</a>	Year-round
Snowy Plover	Charadrius alexandrinus	Breeding
Western Grebe	aechmophorus occidentalis <a href="https://ecos.fws.gov/ecp/species/6743">https://ecos.fws.gov/ecp/species/6743</a>	Breeding, Wintering
Willow Flycatcher	Empidonax traillii <a href="https://ecos.fws.gov/ecp/species/3482">https://ecos.fws.gov/ecp/species/3482</a>	Breeding

**What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?**

**Landbirds:**

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

**Atlantic Seabirds:**

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they

may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAAANCCOS models: the models were developed as part of the NOAAANCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

#### **Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?**

##### **Landbirds:**

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which **draws from the data** within the AKN (latest, survey, point count, citizen science datasets) to create a view of **relative abundance** of species within a particular location over the course of the year. The results of the tool **depict** the frequency of detection of a species in survey events, averaged between multiple **datasets** within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the **graphs produced** to appear with the list of trust resources generated by IPaC, providing you with an **additional level of detail** about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

##### **Atlantic Seabirds:**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAAANCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

## Facilities

### Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

## Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of

aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

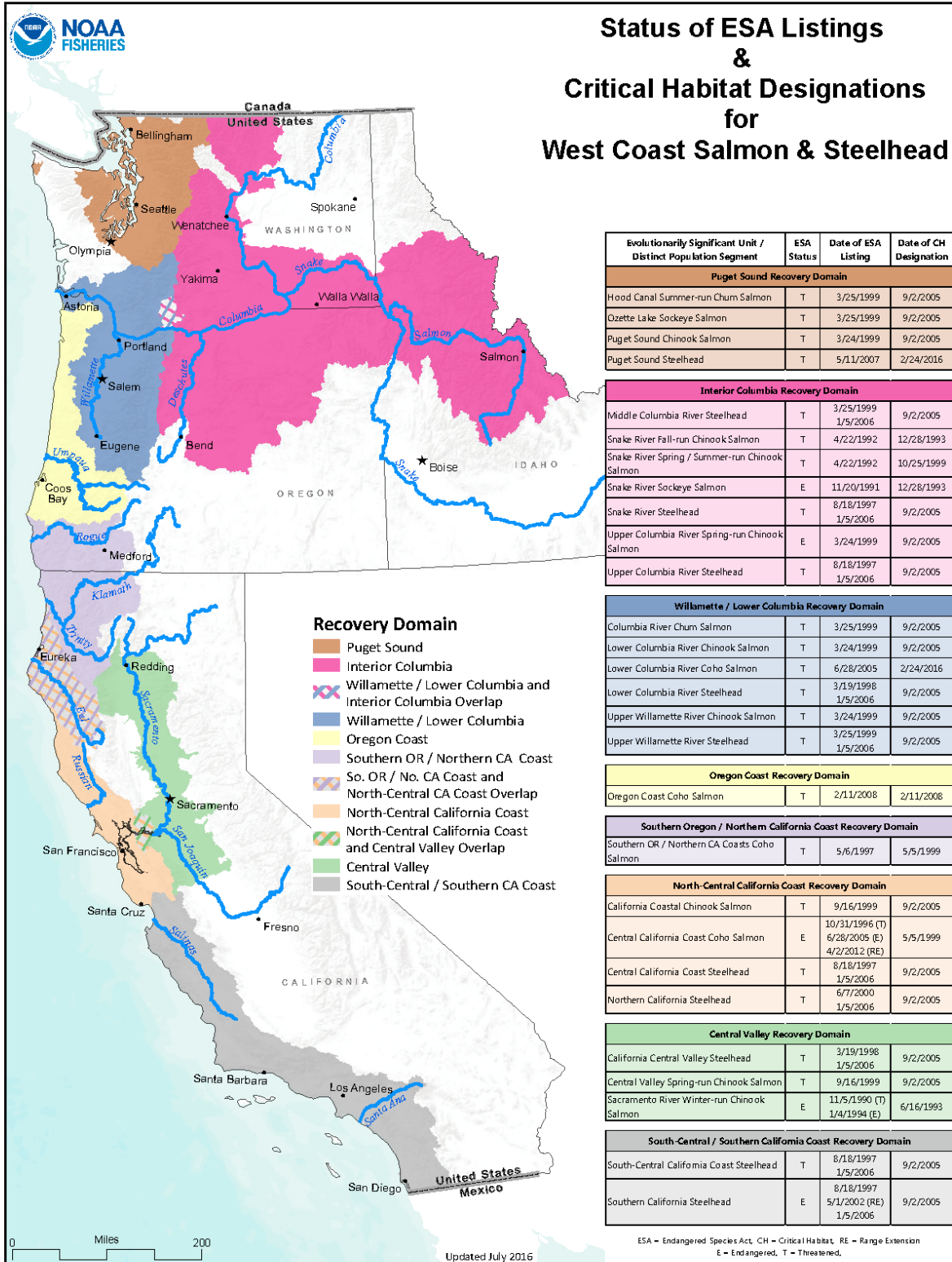
**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

**Not for  
consultation**



# Status of ESA Listings & Critical Habitat Designations for West Coast Salmon & Steelhead



#### Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

#### ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon

**Appendix D**  
**Candidate Species Information**



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## APPENDIX D. CANDIDATE SPECIES

### Red Tree Vole

The North Oregon Coast population of the red tree vole (*Arborimus longicaudus*) became a candidate for Endangered Species Act (ESA) protection in 2011 (U.S. Fish and Wildlife Service [USFWS] 2011).

The North Oregon Coast population of the red tree vole is found in late-successional coniferous forests in western Oregon and northwestern California. This species nests in larger-diameter trees, and expanses of land without suitable cover can be a barrier to its movement and population connectivity (USFWS 2017).

Suitable habitat is present in the overall action area anywhere that mature coniferous forest or old-growth forest habitats occur, but no individuals or signs of the red tree vole were incidentally observed.

The most recent documentation of red tree voles within 0.5 mile of the road construction disturbance corridor action area was in 1996 during a small mammal survey at Cape Meares National Wildlife Refuge. In all, 606 small mammal individuals were recorded, comprising 17 species. Three out of the 606 individual recordings were of the red tree vole (Gomez et al. 1997). A more recent red tree vole–focused survey was conducted in 2011–2013 in the nearby Tillamook and Clatsop State Forests, within 6 miles of the overall action area (Price et al. 2015). Thirty-three red tree vole nests were located, 60 percent of which were in old forests (more than 80 years old) (Price et al. 2015). Based on these data, and because the overall action area contains some mature coniferous forest in and adjacent to it, the potential for this species to occur in the overall action area is considered moderate.

### **Literature Cited**

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