

# **Biological Assessment**

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**Wagner Dock  
35030 NE Wilsonville Rd  
Newberg, Oregon 97132  
45.1516 N, 122.5242 W**

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**Prepared for:  
The Army Corps of Engineers**

**Prepared on Behalf of:  
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## **1.0 Background**

The purpose of this Biological Assessment is to address the effect of the Wagner Dock construction project (Proposed Action) on species listed as endangered or threatened under the Endangered Species Act (ESA), or their designated critical habitat. This document was prepared to support a Removal-Fill permit jointly submitted to the Oregon Department of State Lands and the Army Corps of Engineers (ACOE). It is anticipated that this document may be submitted to the United States Fish and Wildlife Service and/or the National Marine Fisheries Service in order to ensure compliance with ESA requirements. The ACOE must approve the accompanying permit prior to implementation of the Proposed Action.

The project involves the installation of a prefabricated dock along the banks of the mainstem Willamette River in Yamhill County, Oregon (see Appendix A for a project location and overview maps). Because work will occur adjacent to designated critical habitat, it has the potential to impact the following ESA-listed anadromous species that occur in the area: Steelhead and Chinook. Additional, analysis was conducted to assess the potential impacts of the Proposed Action on all ESA listed species occurring within Yamhill and Marion Counties.

The need for the Proposed Action is to allow the landowners (Chris and Cindy Wagner) access to the mainstem Willamette River adjacent to their property while minimizing any potential negative impacts to the environment, especially ESA listed species. The purpose of the Proposed Action is to install a prefabricated dock along the banks of the Willamette River adjacent to the landowner's property.

## **2.0 Description of the Action**

A prefabricated boat dock and gangway are proposed for installation on the north bank of the Willamette River (See section 4 for a discussion of the current baseline conditions of the site). The boat dock is an irregularly shaped floating platform totaling 495 sq ft in surface area (see Appendix B for construction diagrams and photos). 18 regularly spaced floats are positioned on the underside. A gangway will be positioned to connect the dock from the bank to the floating dock. The gangway is 54' wide and 60' long. It will be placed on the upper edge of the existing bench well above the average annual high water line (this bench is located roughly 25 feet above the water's surface). Three 12" diameter hollow steel pilings will be used to secure the dock and the gangway into place. Two will be placed in the water; one will be placed in the bank to secure the gangway in the event of extreme high water. Because they are hollow, they constitute minimal fill, well below the 50 cu yd exemption. All pilings will be installed using a barge mounted vibratory hammer to drive them into the terrace and river bottom substrate. As a result, no ground based disturbance will be required for the project. Construction will occur following final approval of all required permits, with a desired construction period of summer 2011. No toxic chemicals will be used during this project. Appropriate construction BMPs will be applied during the course of construction. Vegetation removal will be limited to minimal (if any) branch clearing of streamside shrubs. The dock purchased for this proposed action will be relocated from its current location along the banks of the Willamette near Camby, Oregon using a locally owned and operated barge to float it to the proposed site location.

### **3.0 Site Conditions**

The proposed action will take place at taxlot 1700 in Township 04S, Range 2W, Section 1. A site survey was conducted on May 6<sup>th</sup>, 2011 to assess site conditions. All work will take place either in the mainstem Willamette or on a bench located along the bank (see Appendix C for photos of the site). This bench is located roughly 25 feet above the water's surface. The lower ~15 of the bank is nearly vertical, with a 45 degree bend near the top. Vegetation includes a sparse shrub community along the bank, with cottonwoods dominating the canopy of the bench. Invasive English ivy, Poison oak, and a sparse grass community characterize the understory. No evidence of wetland soils or wetland associated plants was observed during the field survey referenced above. No evidence of any ESA listed species was observed.

A visual inspection of fish presence was conducted from the top of a fallen Cottonwood which extended roughly 20 feet into the water in the area proposed for dock placement. Numerous dead branches and other vegetation extended into the water, providing the type of habitat commonly utilized by juvenile salmonids. No fish were observed. The aquatic habitat adjacent to the project site is characterized by very low gradient, deep conditions with no evidence of gravels and limited complexity.

Soils were evaluated using data provided by the Natural Resources Conservation Service web soil survey (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>). Based on this information, all soils within the project area are classified as Cloquato silt loam.

### **4.0 Listed Species and Critical Habitat**

Because the project site is located along the boundary of Yamhill and Marion Counties, ESA listed species information was evaluated for both counties.

A review of the Oregon USFWS office's most recent listing of threatened and endangered species (federal designation) in Yamhill and Marion Counties (dated April 30, 2011 and Mat 7, 2011 respectively), revealed three endangered species (Willamette Daisy, Bradshaw's desert parsley, and Fender's blue butterfly) and eight threatened species (Marbled murrelet, Northern spotted owl, Water howellia, Kincaid's lupine, Nelson's checker-mallow, Golden Paintbrush, Silverspot butterfly, and Oregon Chub).

Information from the Office of Protected Resources (OPR), a division of the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service, was evaluated to determine if the project would have any impact on marine species, such as anadromous fish that migrate between saltwater and freshwater environments. The OPR information listed the spring run on the Upper Willamette of Chinook salmon and Upper Willamette Steelhead trout. [://www.nmfs.noaa.gov/pr/species/esa/fish.htm](http://www.nmfs.noaa.gov/pr/species/esa/fish.htm)) The mainstem Willamette adjacent to the project site is designated as critical habitat for both of these species (see Appendix D for critical habitat maps)

## Species Information

The following information (with the exception of the anadromous species) was derived from the USFWS Oregon endangered species data website listed below.

( [://www.fws.gov/oregonfwo/Species/Data/Default.asp#Fish](http://www.fws.gov/oregonfwo/Species/Data/Default.asp#Fish) )

### **Marbled Murrelet** *Brachyramphus marmoratus*

The marbled murrelet is a small, robin-sized, diving seabird that feeds primarily on fish and invertebrates in near-shore marine waters. It spends the majority of its time on the ocean, roosting and feeding, but comes inland up to 80 kilometers (50 miles) to nest in forest stands with old growth forest characteristics. These dense shady forests are generally characterized by large trees with large branches or deformities for use as nest platforms. Murrelets nest in stands varying in size from several acres to thousands of acres. However, larger, unfragmented stands of old growth appear to be the highest quality habitat for marbled murrelet nesting. Nesting stands are dominated by Douglas fir in Oregon and Washington and by old-growth redwoods in California.

### **Northern Spotted Owl** *Strix occidentalis caurina*

Northern spotted owls live in forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and live trees with broken tops. Although they are known to nest, roost, and feed in a wide variety of habitat types, these owls prefer older forest stands with variety: multi-layered canopies of several tree species of varying size and age, both standing and fallen dead trees, and open space among the lower branches to allow flight under the canopy. Typically, forests do not attain these characteristics until they are at least 150 to 200 years old.

### **Chinook Salmon** *Oncorhynchus tshawytscha*

The Chinook salmon are the largest of the salmon species, weighing in at over 40 pounds on average. The Chinook is blue-green and silver with black spots on the tail. These fish migrate from freshwater to the ocean and then back to their natal stream to spawn, after which they die. On average, Chinook generally spend less than a year in freshwater, followed by one to six years in saltwater. Chinook salmon are in decline mostly due to human-induced conditions, such as, construction of hydro-electric dams and commercial over-fishing.

### **Steelhead** *Oncorhynchus mykiss*

On average, Steelhead are eight to eleven pounds but can get as large as forty pounds in size. Steelhead and Rainbow trout are the same species, but Steelhead migrates to the ocean, whereas Rainbow trout do not. Steelhead is usually dark-olive colored with silver undersides, pink sides and black speckles all over. Juveniles generally spend two years in freshwater before migrating to the sea for up to three years before returning to freshwater to spawn. Unlike most other salmon species, the Steelhead does not necessarily die after spawning. These fish need cold,

highly oxygenated streams to survive. The species is in jeopardy because of human induced habitat destruction.

**Oregon Chub** *Oregonichthys crameri*

The Oregon chub is a small minnow with an olive-colored back grading to silver on the sides and white on the belly. Adults are typically less than nine centimeters (3.5 inches) in length. Adults feed in the water column on the tiny larvae of aquatic invertebrates, such as mosquitoes and other insects. Spawning occurs from the end of April through early August when water temperatures are between 16 degrees and 28 degrees C (60 degrees and 82 degrees F). Oregon chub are found in slack water off-channel habitats such as beaver ponds, oxbows, side channels, backwater sloughs, low gradient tributaries, and flooded marshes. These habitats usually have little or no water flow, silty and organic substrate, and aquatic vegetation as cover for hiding and spawning. The average depth of Oregon chub habitats is typically less than two meters (six feet) and the summer water temperature typically exceeds 16 degrees C (61 degrees F).

**Willamette Daisy** *Erigeron decumbens* var. *decumbens*

Willamette daisy is a perennial herb in the composite family (Asteraceae) and can reach 15-62 cm (6-24 in) tall. Basal leaves are 5-18 cm (2-7 in) long and less than 1.2 cm (0.5 in) wide, becoming gradually shorter along the stem. This species occurs on alluvial soils (deposited by flowing waters). The Willamette daisy occurs on soils in the Wapto, Bashaw and Mcalpin Series Willamette daisy populations are known mainly from bottomland but one population is found in an upland prairie remnant.

**Water Howellia** *Howellia aquatili*

Water howellia is an annual aquatic species in the bellflower family (Campanulaceae). Individuals are mostly submerged and rooted in bottom sediments. Information on herbarium labels or Oregon collections describe the habitat as "ponds in woods", "pond in shaded woods", and "stagnant ponds in the timber". Information from other locales indicate that this species is restricted to small, vernal, freshwater wetlands, glacial pothole ponds, or former river oxbows that have an annual cycle of filling with water over the fall, winter and early spring, followed by drying during the summer months. These habitats are generally small (<1 ha [2.5 ac]) and shallow (<1 m [3 ft] deep). Most locations were surrounded by deciduous trees and howellia was found in shallow water or around the edges of deep ponds. Associated species include duckweed (*Lemna* spp.), water starworts (*Callitriche* spp.), water buttercup (*Ranunculus aquatilis*), yellow water-lily (*Nuphar polysepalum*), bladderwort (*Utricularia vulgaris*), and pondweeds (*Potamogeton* spp.)

**Kincaid's Lupine** *Lupinus sulphureus* ssp. *kincaidii*

Kincaid's lupine is a perennial species in the pea or legume family (Fabaceae). With its low growing habit and unbranched flower stalk, Kincaid's lupine is easily distinguished from other species of lupine. Kincaid's lupine is found mainly in the Willamette Valley, Oregon where it occupies native grassland habitats. Kincaid's lupine is typically found in native upland prairie

with the dominant species being red fescue (*Festuca rubra*) and/or Idaho fescue (*Festuca idahoensis*). Tolmie's mariposa (*Calochortus tolmiei*), Hooker's catchfly (*Silene hookeri*), broadpetal strawberry (*Fragaria virginiana*), rose checker-mallow (*Sidalcea virgata*), and common lomatium (*Lomatium* spp.) serve as herbaceous indicator species. These dry, fescue prairies make up the majority of habitat for Kincaid's lupine. Although Kincaid's lupine is occasionally found on steep, south-facing slopes and barren rocky cliffs, it does not appear capable of occupying the most xeric oatgrass communities on these south facing slopes. The plant's distribution implies a close association with native upland prairie sites that are characterized by heavier soils and mesic to slightly xeric soil moisture levels. At the southern limit of its range, this species occurs on well-developed soils adjacent to serpentine outcrops (high in magnesium, iron and certain toxic metals) where it is often found under scattered oaks.

#### **Nelson's Checker Mallow** *Sidalcea nelsoniana*

Nelson's checkermallow is a perennial herb in the mallow family (Malvaceae). It has tall, lavender to deep pink flowers. Within the Willamette Valley, Nelson's checkermallow most frequently occurs in Oregon ash (*Fraxinus latifolia*) swales and meadows with wet depressions, or along streams. The species also grows in wetlands within remnant prairie grasslands. Some populations occur along roadsides at stream crossings where non-native plants, such as reed canarygrass (*Phalaris arundinacea*), blackberry (*Rubus* spp.), and Queen Anne's lace (*Daucus carota*), are also present. Nelson's checkermallow primarily occurs in open areas with little or no shade and will not tolerate encroachment of woody species. In the Willamette Valley, Nelson's checkermallow occurs on soils in the Wapto, Bashaw and Mcalpin Series and Malabon, Coburg and Salem Series.

#### **Golden Paintbrush** *Castilleja levisecta*

Golden paintbrush is a perennial herb in the figwort or snapdragon family (Scrophulariaceae). It often has from 5-to-15 unbranched stems. The stems may be erect or spreading, in the latter case giving the appearance of being several plants, especially when in tall grass. Plants are up to 30 cm (12 inches) tall and are covered with soft, somewhat sticky hairs. The lower leaves are broader, with 1-to-3 pairs of short lateral lobes near the terminal third. The showy bracts are about the same width as the upper leaves, softly hairy and sticky, and are golden yellow. The bracts effectively hide the flowers. Plants may flower as early as February, and flowers are observed into summer.

Habitat descriptions for golden paintbrush are based on those extant populations in Washington and British Columbia; absent comparable habitat information for Oregon, we assume that the habitat of the extirpated populations in the Willamette Valley was similar. Golden paintbrush occurs in upland prairies, on generally flat grasslands, including some that are characterized by mounded topography.

#### **Bradshaw's Desert Parsley** *Lomatium bradshawii*

Bradshaw's lomatium is perennial herb in the parsley family (Apiaceae). It can reach 20-50 cm (8-20 in) in height, with mature plants having only 2-6 leaves. The yellow flowers are small, measuring about 1 mm (0.05 in) long and 0.5 mm (0.025 in) across, and are grouped into asymmetrical umbels. Bradshaw's lomatium blooms during April and early May, with fruits appearing in late May and June. Fruits are oblong, about 1.2 cm (0.5 in) long, corky and thick-winged along the margin, and have thread-like ribs on the dorsal surface. This plant reproduces entirely from seed.

The majority of Bradshaw's lomatium populations occur on seasonally saturated or flooded prairies, adjacent to creeks and small rivers in the southern Willamette Valley. Soils at these sites are dense, heavy clays, with a slowly permeable clay layer located 15-30 cm (6-12 in) below the surface. This clay layer results in a perched water table during winter and spring, and is critical to the wetland character of these grasslands, known as tufted hair-grass (*Deschampsia cespitosa*) prairies. Bradshaw's lomatium occurs on alluvial (deposited by flowing water) soils. The species occurs on soils in the Wapto, Bashaw and Mcalpin Series.

### **Fender's blue butterfly** *Icaricia icarioides fenderi*

Fender's blue butterfly is a relatively small butterfly with a wingspan of approximately 2.5 centimeters (1 inch). The upper wings of the males are brilliant blue with a blackish wing margin and a white fringe of scales. The upper wings of the females are brown with a white fringe of scales. The undersides of the wings of both sexes are creamish-tan with black spots surrounded by a fine, white border or halo. The life cycle of a Fender's blue butterfly begins in late spring or early summer when an adult female deposits an egg on the underside of a Kincaid's lupine leaflet.

Fender's blue butterfly occurs in native prairie habitats. Fender's blue butterfly is typically found in native upland prairies, dominated by red fescue (*Festuca rubra*) and/or Idaho fescue (*F. idahoensis*). The butterfly uses three lupine species as larval food plants which include: Kincaid's lupine (*Lupinus sulphureus kincaidii*), sickle-keeled lupine (*L. albicaulis*) and spur lupine (*L. arbustus*).

### **Oregon silverspot butterfly** *Speyeria zerene hippolyta*

The Oregon silverspot is a medium-sized, orange and brown butterfly with black veins and spots on the dorsal (upper) wing surface, and a yellowish submarginal band and bright metallic silver spots on the ventral (under-side) wing surface. The life history of the Oregon silverspot revolves around its obligatory host plant, the early blue violet (*Viola adunca*), usually in late August and early September. Sites with good sun exposure are favored. The eggs hatch in approximately 16 days and the newly hatched larvae wander short distances to find a suitable site for diapause (suspended growth for overwintering). Mating occurs through August and September.

The Oregon silverspot occupies three types of grassland habitat. One type consists of marine terrace and coastal headland salt-spray meadows (e.g., Cascade Head, Bray Point Rock Creek-Big Creek and portions of Del Norte sites). The second consists of stabilized dunes as found at the Long Beach Peninsula, Clatsop Plains, and the remainder of Del Norte. Both of these habitats

are strongly influenced by proximity to the ocean, mild temperatures, high rainfall, and persistent fog. The third habitat type consists of montane grasslands found on Mount Hebo and Fairview Mountains. Conditions at these sites include colder temperatures, significant snow accumulations, less coastal fog, and no salt spray. The most important feature of the habitat of the Oregon silverspot is the presence of the early blue violet.

## **5.0 Action Effects**

Potential action effects are described below for each ESA listed species identified above.

### **Marbled Murrelet** *Brachyramphus marmoratus*

This species prefers old growth habitat which is not present at the proposed project site. No designated critical habitat is within the project vicinity. Additionally, the site is located well inland. Vegetation impacts will be limited to minimal (if any) branch clearing to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

### **Northern Spotted Owl** *Strix occidentalis caurina*

This species requires old growth habitat which is not present at the proposed project site. No designated critical habitat is within the project vicinity. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

### **Chinook Salmon** *Oncorhynchus tshawytscha*

This species prefers gravel rich, cold, well oxygenated, medium to large streams with high levels of hydraulic complexity for spawning and rearing. No gravels suitable for spawning were observed in the project vicinity, and no high quality rearing areas are present. No juvenile salmonids were observed adjacent to the project site. It is anticipated that the primary use of this portion of the Willamette would be for adult migration to upstream spawning reaches, and downstream juvenile migration on their way to the ocean. Cold water, channel margin complexity, and cover from predation are important components of the habitat for migrating salmonids. The proposed structure is expected to increase cover from avian predation, decrease solar exposure, and increase hydraulic roughness (albeit very minimally). The construction techniques used for this project will result in limited impacts to aquatic habitat. River traffic on this section of the Willamette is quite common (four boats are visible on the aerial photo contained in Appendix A), and is not substantially different than that which will be required for construction of this dock or expected following dock construction. The slow speed of the barge which will tow the dock into place is expected to minimize any potential impacts to migrating salmonids. The river is very large through this reach, and there is ample room for the barge and salmonids to occupy it at the same time. Sediment inputs into the water column are expected to be minimal (if any) as no ground based disturbance will occur, and the only impacts to the river bottom will be the installation of the two, hollow steel pilings. Therefore, no negative impacts to this species are expected.

### **Steelhead** *Oncorhynchus mykiss*

This species prefers gravel rich, cold, well oxygenated, small streams with high levels of hydraulic complexity for spawning and rearing. No gravels suitable for spawning were observed in the project vicinity, and no high quality rearing areas are present. No juvenile salmonids were observed adjacent to the project site. It is anticipated that the primary use of this portion of the Willamette would be for adult migration to upstream spawning reaches, and downstream juvenile migration on their way to the ocean. Cold water, channel margin complexity, and cover from predation are important components of the habitat for migrating salmonids. The proposed structure is expected to increase cover from avian predation, decrease solar exposure, and increase hydraulic roughness (albeit very minimally). The construction techniques used for this project will result in limited impacts to aquatic habitat. River traffic on this section of the Willamette is quite common (four boats are visible on the aerial photo contained in Appendix A), and is not substantially different than that which will be required for construction of this dock or expected following dock construction. Additionally, construction is anticipated to occur during the mid-summer of 2011, a time when Steelhead are unlikely to be present in great numbers if at all. Sediment inputs into the water column are expected to be minimal (if any) as no ground based disturbance will occur, and the only impacts to the river bottom will be the installation of the two, hollow steel pilings. Therefore, no negative impacts to this species are expected.

### **Oregon Chub** *Oregonichthys crameri*

This species prefers shallow, slackwater aquatic habitat which is not present at this site. Additionally, no fish were observed during the field survey conducted for this analysis. No aquatic vegetation was visible from the surface. The construction techniques used for this project will result in limited impacts to aquatic habitat. The proposed structure is expected to increase cover from avian predation, decrease solar exposure, and increase hydraulic roughness (albeit very minimally). No designated critical habitat is within the project vicinity. Therefore, no negative impacts to this species are expected.

### **Willamette Daisy** *Erigeron decumbens* var. *decumbens*

The soils found at the project location are not appropriate for this species. Additionally, the site is highly disturbed with a dense population of invasive weeds. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

### **Water Howellia** *Howellia aquatili*

This species requires freshwater wetland habitat which is not present at the project site. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

**Kincaid's Lupine** *Lupinus sulphureus ssp. kincaidii*

This species grows in upland prairie habitat or on steep rocky cliffs which are not present at the project site. Additionally, the site is highly disturbed with a dense population of invasive weeds. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

**Nelson's Checker Mallow** *Sidalcea nelsoniana*

This species requires wetland habitat which is not present at the project site. Additionally, the site is highly disturbed with a dense population of invasive weeds. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

**Golden Paintbrush** *Castilleja levisecta*

This species utilizes prairie or grassland habitat which is not present at the project site. . Additionally, the site is highly disturbed with a dense population of invasive weeds. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

**Bradshaw's Desert Parsley** *Lomatium bradshawii*

This species requires wetland habitat which is not present at the project site and the soils which underlay the project site are not the heavy clay soils preferred by this species. Additionally, the site is highly disturbed with a dense population of invasive weeds. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

**Fender's blue butterfly** *Icaricia icarioides fenderi*

This species utilizes native prairie habitat which is not present at the project site. None of the lupines that this species utilizes for food was observed during the field survey conducted for this assessment were observed. Additionally, the site is highly disturbed with a dense population of invasive weeds. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

**Oregon silverspot butterfly** *Speyeria zerene hippolyta*

This species requires specific grassland habitat which is not present at this site. Additionally, the site is highly disturbed with a dense population of invasive weeds. No evidence of this species was observed during the field survey conducted for this project. Vegetation impacts will be limited to minimal (if any) branch clearing along the channel margin to permit positioning of the gangway. Therefore, no negative impacts to this species are expected.

## 6.0 Conclusions

Docks of this type are already present at many of the adjacent properties and boat traffic is common (see Appendix A for aerial photos). Additionally, it is likely that the proposed project will have a positive (albeit very small) impact on the habitat of the anadromous species which utilize the mainstem Willamette for migration. Finally, as the dock is currently located at another location along the banks of the mainstem Willamette, relocating it to the proposed location will not result in a net increase in manmade structures along the river. ***Based on these conclusions and the analysis described in section 5 of this document, no ESA listed species or designated critical habitat is likely to be adversely effected by the proposed action.***

## 7.0 References

- Oregon County Species Lists - [www.fws.gov/oregonfwo/Species/Lists/](http://www.fws.gov/oregonfwo/Species/Lists/)
- Oregon Species Fact Sheets - [www.fws.gov/oregonfwo/Species/default.asp#FactSheets](http://www.fws.gov/oregonfwo/Species/default.asp#FactSheets)
- Critical Habitat Mapper - <http://crithab.fws.gov/>
- NOAA Anadromous Fish - <http://www.nmfs.noaa.gov/pr/species/esa/fish.htm>
- Natural Resources Conservation Service Web Soil Survey - (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>)
- USFWS Critical Habitat Mapper - <http://crithab.fws.gov/>