

JEWELL MEADOWS WILDLIFE AREA MANAGEMENT PLAN

**April 2007
(Updated August 2017)**

**Oregon Department of Fish and Wildlife
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Executive Summary

Jewell Meadows Wildlife Area is located in the Oregon Coast Range mountains, in the northwestern part of the state. The wildlife area encompasses 1,114 acres owned and managed by the Oregon Department of Fish and Wildlife. The wildlife area was established in 1969, with an initial purchase of 183 acres. The wildlife area's purpose is to protect and enhance habitat to benefit native wildlife species, to reduce wildlife damage to adjacent properties, and to provide the public with an opportunity to observe wildlife in a natural setting.

Although there have been management documents developed for the wildlife area since its establishment, the most recent long range management plan was adopted by the Fish and Wildlife Commission in 2007. This 2017 Jewell Meadows Wildlife Area management plan is based on a review and revision of this adopted plan.

The 2017 Jewell Meadows Wildlife Area Management Plan offers a comprehensive vision and action plan for the next 10 years. This plan describes the wildlife area's management issues and provides actions for addressing them. These actions will be implemented during the life of this plan, but are subject to funding and personnel availability. The management plan will be reviewed in 2022 to gauge the implementation progress and make necessary revisions and reviewed in its entirety in 2027.

Introduction

Purpose of the Plan

This document is a long range plan designed to guide the management of the Jewell Meadows Wildlife Area (JMWA) for the next 10 years. The Oregon Department of Fish and Wildlife's (Department) management planning process for wildlife areas involves the development of broad goals for the areas, and formulation of specific objectives and management strategies to achieve those goals. The purposes of this plan are:

- To provide clear direction for the management of the JMWA over the next 10 years;
- To provide long-term continuity in wildlife area management;
- To communicate the department's management priorities for the JMWA to its neighbors, visitors, and to the public;
- To ensure that management programs on the JMWA are consistent with the original mandate and purpose of the area when it was first established;
- To ensure that management of JMWA is consistent with Federal, State, and local plans, and;
- To provide details on staffing, operations, maintenance, and capital improvement needs on the JMWA.

Oregon Department of Fish and Wildlife Mission and Authority

The mission of the Oregon Department of Fish and Wildlife is to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. The department is the only state agency charged exclusively with protecting Oregon's fish and wildlife resources. The state Wildlife Policy (ORS 496.012) and Food Fish Management Policy (ORS 506.109) are the primary statutes that govern the management of fish and wildlife resources.

Purpose and Need of the Jewell Meadows Wildlife Area

The purpose of the JMWA is to manage habitats to enhance populations of Roosevelt elk (*Cervus elaphus roosevelti*), black-tailed deer (*Odocoileus hemionus columbianus*) and other native wildlife. In addition, the wildlife area provides habitat to alleviate potential big game damage to adjacent lands, to promote conditions for observation and study of native wildlife, and to maintain wildlife populations at levels compatible with surrounding land uses.

A portion of the JMWA is managed specifically to provide opportunities for large numbers of people to observe, photograph, and study wildlife, with an emphasis on Roosevelt elk. To protect the animals from human disturbance and to create desirable wildlife viewing conditions, certain portions of the wildlife area are posted as refuge and are closed to hunting and other public access. Other portions have been managed for wintering habitat for elk and other wildlife and these areas are currently open to some hunting during the authorized seasons. This additional winter range acreage is instrumental in increasing the elk carrying-capacity and creating more consumptive and non-consumptive use opportunities, while remaining compatible with adjacent land uses.

The natural resources available on the JMWA will be managed to protect, maintain, enhance and restore fish and wildlife habitats to support optimum population levels of all desirable species for the enjoyment of present and future citizens. To protect these natural resources, management programs and strategies utilized on the JMWA will meet or exceed habitat protection policies and standards set by the department.

Jewell Meadows Wildlife Area Vision Statement

The vision for the JMWA is as follows:

The Jewell Meadows Wildlife Area provides habitat for Roosevelt elk, black-tailed deer and other native wildlife species, reduces big game conflicts to adjacent lands and provides quality wildlife oriented recreational opportunities for the enjoyment of present and future generations.

Wildlife Area Goals and Objectives

Wildlife area goals are broad, open-ended statements of desired future conditions that convey a purpose but do not define measurable units. In contrast, objectives are more concise statements of what the department wants to achieve, how much the department wants to achieve, when and where to achieve it, and who will be responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring wildlife area accomplishments, and evaluating the success of strategies.

The goals and objectives for the JMWA are:

Goal 1: To protect, enhance and restore habitats to benefit fish and wildlife species.

Objective 1.1: To protect, enhance, and restore 432 acres of agricultural areas to provide habitat for up to 200 elk on the Fishhawk Tract, 250 elk on the Beneke Tract, and 50 elk on the Humbug Tract.

Objective 1.2: To protect, enhance, and restore 489 acres of mixed coniferous and hardwood forest habitat.

Objective 1.3: To protect, enhance, and restore 46 acres of freshwater aquatic habitat and 118 acres of riparian habitats for the benefit of fish and wildlife.

Objective 1.4: To protect, enhance, and restore 11 acres of seasonal wetland habitat.

Objective 1.5: To maintain and enhance wildlife area facilities, structures, and equipment to conduct habitat management and public use projects on the wildlife area.

Goal 2: To minimize or alleviate conflicts caused by elk to adjacent lands which are compatible with Goal 1.

Objective 2.1: To provide supplemental feed to elk on the wildlife area during low natural forage production periods.

Objective 2.2: To control elk populations on the wildlife area at levels compatible with adjacent land use practices and current habitat conditions.

Goal 3: To provide a variety of wildlife oriented recreational and educational opportunities to the public which are compatible with Goals 1 and 2.

Objective 3.1: To provide approximately 550 hunting, trapping and angling use days annually.

Objective 3.2: To provide approximately 78,000 wildlife viewing and education/interpretation use days annually.

Wildlife Area Establishment

The development of the JMWA began in 1969 with the first acquisition of 183 acres. In 1971 an additional 112 acres was purchased from three landowners. These four acquisitions, accomplished with state and federal Land and Water Conservation funds, form what is presently known as the Fishhawk Tract. The 673 acre Beneke Tract was purchased in 1973 and the 155 acre Humbug Tract was purchased in 1976, both with federal Land and Water Conservation funds. After several land trades to straighten boundary lines, JMWA presently consists of approximately 1,114 acres of department-owned land. An additional 1,827 acres of Oregon Department of Forestry and private lands under cooperative or land use agreements make up the Contract Refuge Tract.

Description and Environment

Physical Resources

Location

The JMWA is located about 65 miles northwest of Portland, Oregon, near U.S. Highway 26 and State Highway 202, in Clatsop County. The wildlife area consists of four separate parcels or tracts within 7.5 air miles of one another. The Fishhawk Tract, located 1.5 miles west of the community of Jewell, consists of 336 acres, in Township 6 North, Range 7 West, Willamette Meridian (W.M). The Beneke Tract is located immediately north of Jewell. It consists of 624 acres in Township 5 and 6 North, Range 7 and 8 West, W.M. The Humbug Tract, 155 acres in size, is located 1/2 mile north of the community of Elsie, in Township 5 North, Range 7 and 8 West W.M. The Contract Refuge Tract lies immediately north and south of the Fishhawk Tract and consists of approximately 1,827 acres. The wildlife area headquarters is located on the Fishhawk Track adjacent to Highway 202. (See Figures 1.1, 1.2, & 1.3)

Figure 1.1 - Jewell Meadows Wildlife Area Features and Ownership

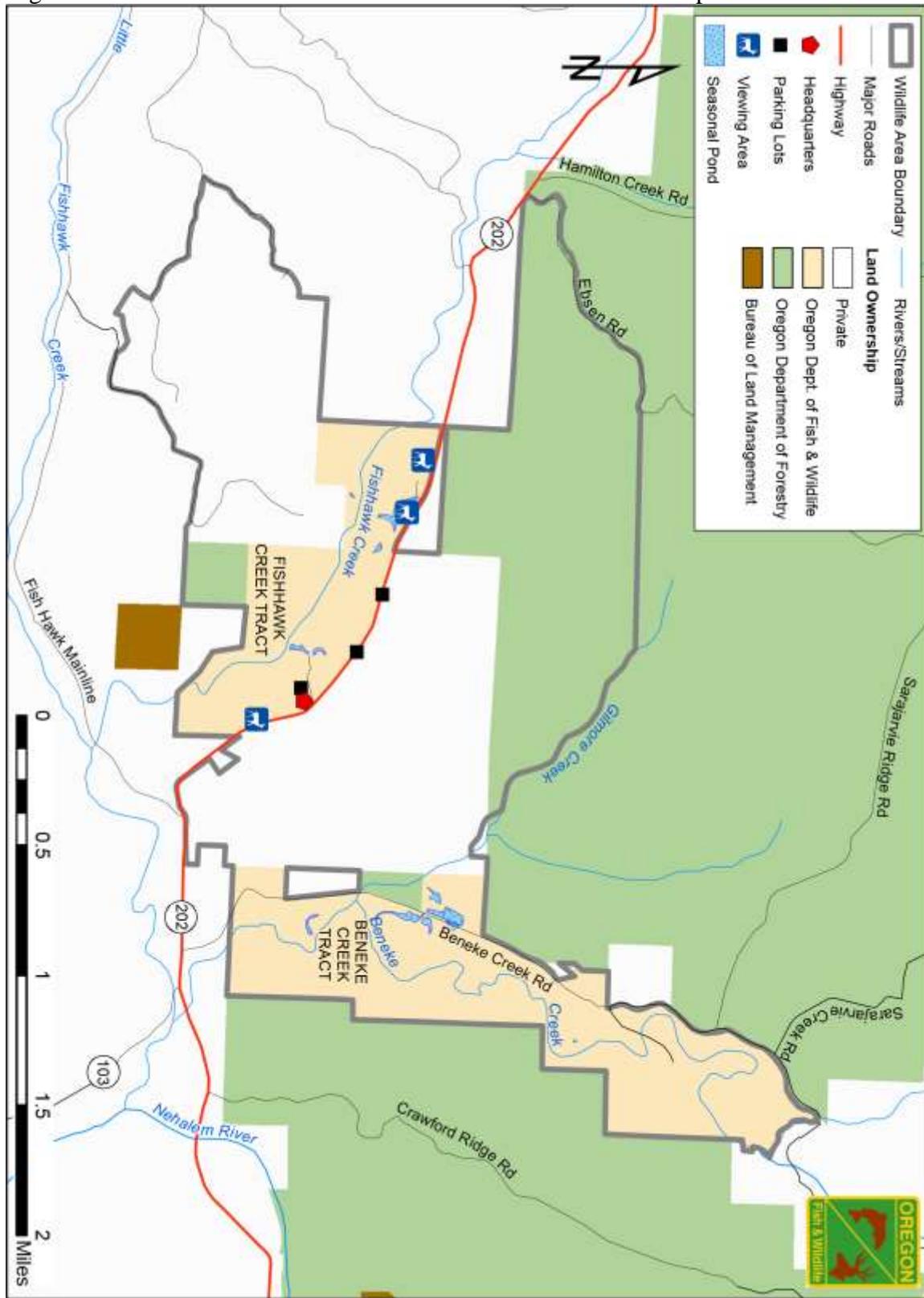
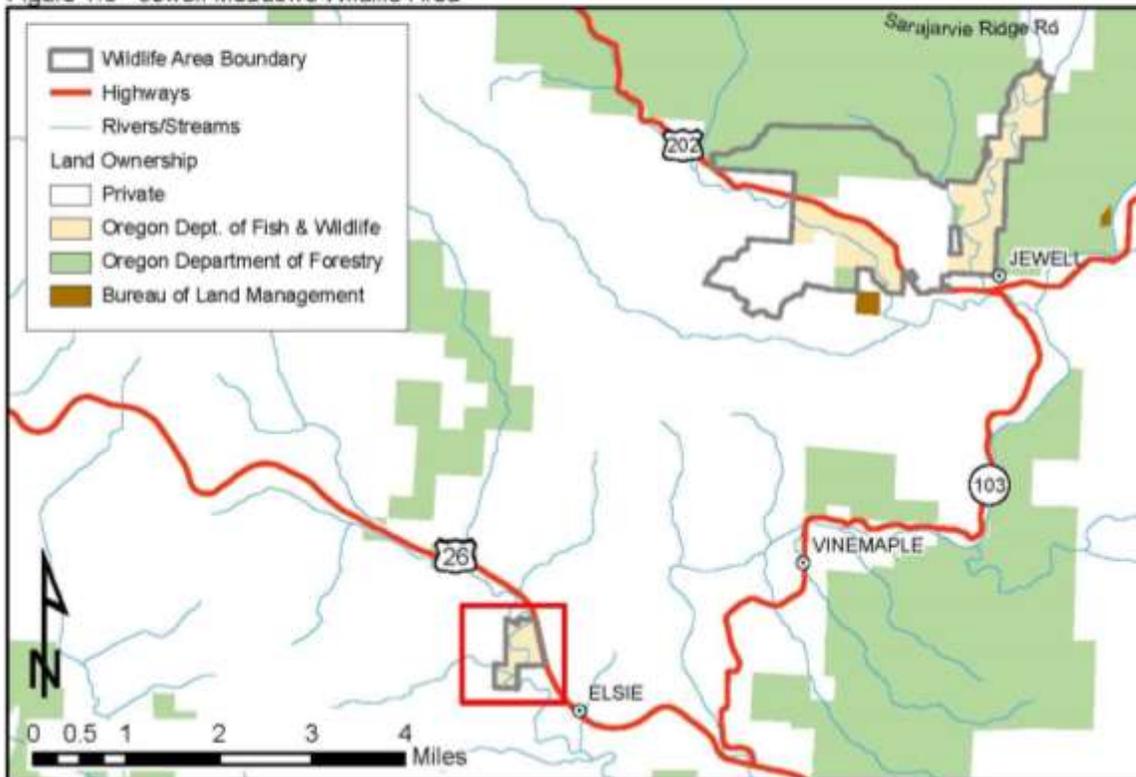


Figure 1.2 - Jewell Meadows Wildlife Area - Humbug Tract



Figure 1.3 - Jewell Meadows Wildlife Area



Climate

The JMWA has a temperate coniferous rain forest climate typical of the Coast Range in northwestern Oregon. The tracts range in elevation from 500 to 700 (950 for Contract Refuge) feet above sea level. Annual precipitation, while occurring in all months, falls primarily as rain between October and April, with an average of 85 inches. However rainfall amounts have ranged from 62 inches to nearly 117 inches over the past 24 years (NCDC, 1989-2012). Annual temperatures can range from a low of 10°F to a high of 105°F. Since the wildlife area tracts are within close proximity, they share similar climatic conditions.

Topography and Soils

The three department-owned tracts of the JMWA are similar in topography and soil types. These three parcels are mostly open and level pastures with slight upsloping timbered areas. Soils consist of several silt-loam types such as Nehalem, Ellertson, Elsie, Kirkendall, McNulty, Mues, Natal, Northrup, and Treharne.

Habitat Types

There are seven habitat types within the borders of the JMWA. These habitat types are shown in **Figure 2**. In terms of acreage, the largest habitat types include agriculture or pasture and mixed hardwood forests while the smallest include seasonal wetlands. Because the wildlife viewing areas and structures comprise several acres on the wildlife area they are included as a habitat type. These habitat types are described in further detail below.

Many of the plant communities on the JMWA have been altered from their original condition by various types of human activities and introduction of non-native plants. Historically the JMWA lands had been cleared for agriculture and current timbered areas were logged by prior landowners.

Agriculture is currently used as a management tool on portions of the wildlife area to provide forage for big game. The JMWA also provides supplemental feeding to reduce private property damage caused by elk, for increased public viewing opportunities and to aid in big game capture and relocation projects.

Agricultural

Approximately 432 acres are classified as agricultural and are predominantly permanent pastures. The major species are annual ryegrass (*Lolium multiflorum*) perennial ryegrass (*Lolium perenne*), orchard grass (*Dactylis glomerata*), New Zealand white clover (*Trifolium repens*), medium red clover (*Trifolium pratense*), and birdsfoot trefoil (*Lotus corniculatus*). Other species include tall fescue (*Festuca arundinacea*), meadow foxtail (*Alopecurus pratensis*), colonial bentgrass (*Agrostis tenuis*), and lotus (*Lotus pedunculatus*). Undesirable invasive plants include reed canary grass (*Phalaris*

arudinacea), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and oxeye daisy (*Chrysanthemum leucanthemum*).

Pastures are plowed and replanted on a seven to ten year rotation depending on forage quality and quantity. Surplus forage is removed during the summer months by mowing or cooperative haying through forage removal agreements. Pastures are fertilized in the fall to stimulate fall regrowth and provide a higher quality big game forage base.

Mixed Coniferous

Approximately 146 acres are classified as mixed coniferous forest. This classification is described as having approximately 50% or more of the canopy closure in coniferous tree species. Major species include western hemlock (*Tsuga plicata*), Douglas fir (*Pseudotsuga menziesii*), Sitka spruce (*Picea sitchensis*), western red cedar (*Thuja plicata*), red alder (*Alnus rubra*), and bigleaf maple (*Acer macrophyllum*). Understory species are dominated by salmonberry (*Rubus spectabilis*), trailing blackberry (*Rubus ursinus*), sword fern (*Polystichum munitum*), and vine maple (*Acer circinatum*).

The JMWA has cooperative or land use agreements that include approximately 1,827 acres of mixed coniferous forest habitat. These lands are referred to as the Contact Refuge Tract and are owned by Oregon Department of Forestry (723 acres), Weyerhaeuser Company (456 acres), and Stimson Lumber Company (648 acres). The Oregon Department of Forestry lands are mixed coniferous forest primarily consisting of older age class Douglas fir, Western hemlock, and red alder. The Weyerhaeuser and Stimson lands are zoned as industrial forest and have varying age classes of Douglas fir and western hemlock.

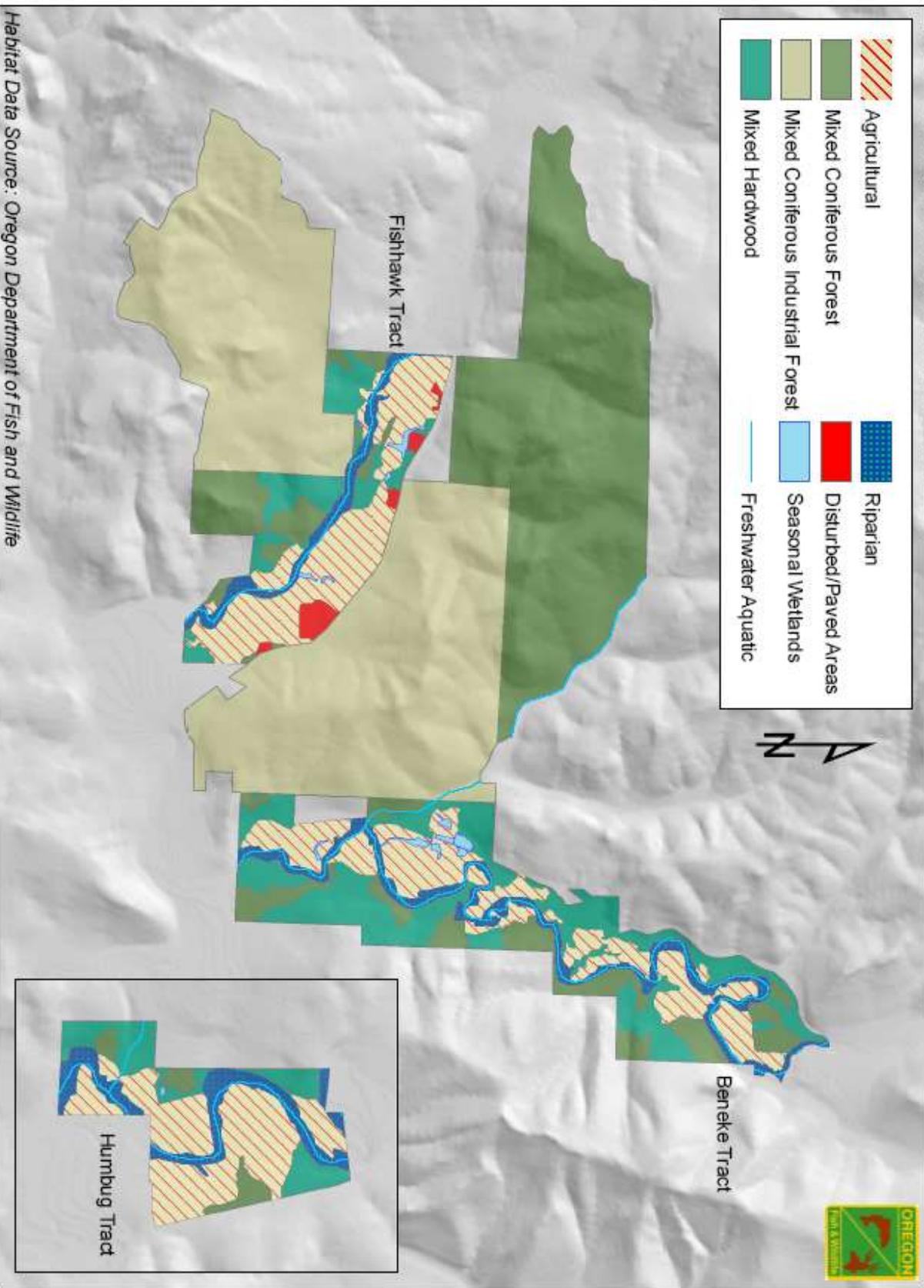
Mixed Hardwood

Approximately 343 acres are classified as mixed hardwood forest. This habitat type includes upland areas and field edges. Major upland species include red alder and big leaf maple with few mixed conifers. Major field edge species include red alder, cascara buckthorn (*Rhamnus purshiana*), Oregon crabapple (*Malus fusca*), wild cherry (*Prunus emarginata*), and Oregon ash (*Fraxinus latifolia*). Understory species are similar to those described for mixed coniferous. The major non-native invasive species in this habitat type is evergreen blackberry (*Rubus laciniatus*).

Riparian

Approximately eight miles of major streams flow through the JMWA. These include reaches of Fishhawk Creek, Beneke Creek, and Humbug Creek. The riparian plant communities which border these streams comprise approximately 118 acres and consist of red alder, bigleaf maple, Cascara buckthorn, and Sitka spruce, with an understory of snowberry (*Symphoricarpos albus*), salmonberry, red elderberry (*Sambucus racemosa*), vine maple, and trailing blackberry. Invasive species include reed canary grass, evergreen blackberry, stinging nettle (*Urtica dioica*), and very isolated patches of Japanese knotweed (*Polygonum cuspidate*).

Figure 2 - Habitat Types within Jewell Meadows Wildlife Area



Habitat Data Source: Oregon Department of Fish and Wildlife

Freshwater Aquatic

Freshwater aquatic habitat of JMWA lies within the Fishhawk, Beneke, and Humbug Creek subbasins of the Nehalem River. Approximately 46 acres of freshwater habitat are contained in the eight miles of these streams that flow through the wildlife area. Based on aquatic habitat surveys for portions of all three streams and/or associated tributaries they are considered to have moderate to high intrinsic potential for winter habitat for coho salmon but are lacking in suitable spawning gravels, instream complexity and off-channel refugia for these fish. Associated riparian areas are dominated by red alder creating minimal recruitment potential for large woody debris.

Seasonal Wetlands

Wetland habitats, totaling approximately 11 acres, include seasonal open water, off channel or alcove sites, and wooded wetlands. In the 1990s, the Department enhanced the seasonal open water wetlands by lowering the overall elevation to hold an increased volume of water later into the spring. Typical plant species found in this habitat type include snowberry, nootka rose (*Rosa nutkana*), common rush (*Juncus effuses*), and slough sedge (*Carex obnupta*). Alcove sites were created for off channel rearing habitat for salmonids and these areas are also composed of the plant species listed above. The wildlife area also has two small ash wetlands dominated by Oregon ash and slough sedge which is now considered a rare habitat type (Guard, 1995).

Viewing Areas and Structures

Viewing areas and structures total over 18 acres on the Fishhawk Tract. These areas are comprised of mainly parking areas and lawns with a mix of tree and shrub species. Major species include perennial rye grass, red alder, bigleaf maple, wild cherry, incense cedar (*Calocedrus decurrens*), multiflora rose (*Rosa* spp.), Douglas fir, and apple (*Pyrus malus*). Major invasive plants include evergreen blackberry and dandelion (*Taraxacum officinale*).

A summary of the habitat types and their approximate acreages within the three tracts (Fishhawk, Beneke and Humbug) are shown in **Table 1**.

Table 1. Habitat Types and Approximate Acreages on the Jewell Meadows Wildlife Area.

Habitat Type	Acres
Agriculture	432
Mixed conifer forest	146
Mixed Hardwood forest	343
Riparian	118
Freshwater Aquatic	46
Seasonal Wetlands	11
Viewing areas/structures	18
Total	1,114

Appendix A contains a list of trees, shrubs, forbs, legumes and grasses found on the JMWA. Formal botanical surveys to document and identify all plant species present in the area have not been conducted. Therefore, Appendix A provides only a partial

accounting of the plants on the wildlife area.

Description of Tracts

The JMWA consists of three department-owned tracts: Fishhawk Tract, Beneke Tract and Humbug Tract. A fourth tract, Contract Refuge Tract, is managed under cooperative or land use agreements.

Fishhawk Tract

The Fishhawk Tract is located approximately one half mile west of the community of Jewell along Highway 202. This tract consists of 336 acres owned by the Department and includes all seven habitat types. Approximately 170 acres of the tract consist of agricultural lands (improved pasture or meadows). Another 37 acres is covered by mixed coniferous forest while 64 acres are made up of mixed hardwood forest. This tract includes 1.57 miles of Fishhawk Creek with 29 acres of associated riparian habitat. There are 12 acres of freshwater aquatic habitat, four acres of seasonal wetlands, and 18 acres of viewing areas and structures.

The Fishhawk tract was established primarily for wildlife viewing and education, with an emphasis on viewing Roosevelt elk. To create conditions desirable for viewing, this tract is posted as wildlife refuge and no public access is allowed outside of the posted viewing areas. Four established viewing areas are located adjacent to the 1.5 miles of Highway 202 which bisects the tract. The main viewing area consists of a paved parking area, an information kiosk, public restrooms, picnic tables and sidewalks. The east viewing area is located one third mile east of the main viewing area and consists of a paved parking surface and a picnic table. The new viewing area is located three quarters of a mile west of the main viewing area and consists of a gravel parking area, picnic tables, and is enclosed by a wood rail fence. The west viewing area is located one mile west of the main viewing area and is similar in design to the new viewing area.

In addition to these four established viewing areas the department also maintains approximately 0.3 miles of improved highway shoulder, between the main and new viewing areas, for additional wildlife viewing and parking opportunities.

The wildlife area headquarters is located within this tract.

Beneke Tract

Beneke Tract is located half a mile north of the community of Jewell, along Beneke Creek Road. This tract consists of approximately 623 acres. The Beneke Tract was established to provide additional big game winter forage areas and to provide habitat for other native species. The tract consists of approximately 180 acres of agricultural lands including two small orchard sites, 97 acres of mixed coniferous forest, 246 acres of mixed hardwood forest, 64 acres of riparian habitat bordering five miles of Beneke Creek, 28 acres of freshwater aquatic habitat, and seven acres of seasonal wetlands.

Approximately 43 acres, located on the west side of Beneke Road, is posted as wildlife refuge and no public access is allowed. The remaining 580 acres of this tract are open

to public access, except those posted areas which are closed during authorized elk hunting seasons.

Humbug Tract

The Humbug Tract is located one half mile north of Elsie, adjacent to Highway 26. This tract consists of approximately 155 acres. The tract was also established to provide additional big game winter forage areas and provide habitat for other native wildlife species. The Humbug Tract consists of approximately 81 acres of agricultural land, 11 acres of mixed coniferous forest, 33 acres of mixed hardwood forest and 24 acres of riparian habitat bordering 1.28 miles of Humbug Creek. In addition, 6 acres of freshwater aquatic habitat, and 0.14 acres of seasonal wetlands also occur on this tract. The entire 155 acres of this tract are accessible to the public.

Contract Refuge Tract

The Contract Refuge Tract is located north and south of the Fishhawk Tract and west of the south portion of the Beneke Tract. It consists of approximately 723 acres owned by the Oregon Department of Forestry, 456 acres owned by the Weyerhaeuser Company, and 648 acres owned by Stimson Lumber Company. These lands are classified as mixed coniferous forests. Under agreement, the department controls public access to these lands. Public entry is prohibited year round.

Biological Resources

With habitat types ranging from open pastures, riparian, and mixed forests, the JMWA supports numerous species of fish and wildlife. Management that benefits elk and deer also provides benefits to other wildlife such as furbearers, other mammals, upland game birds, waterfowl, songbirds, reptiles, amphibians and fish.

Over 216 species of wildlife have been identified or are expected to occur on the JMWA, including 136 species of birds, 55 species of mammals, 7 species of fish, and 18 species of amphibians and reptiles. See **Appendix B** for a detailed list of species.

Mammals

The JMWA is managed primarily for Roosevelt elk and black-tailed deer. Elk and deer within the wildlife area are members of resident populations which are on site throughout the year. Small mammals, furbearers and other larger mammals use the JMWA either seasonally or year round.

Roosevelt elk use the agricultural areas for foraging and resting areas throughout the year. Forested areas provide thermal cover and adequate calving habitat for this species. The major streams, wetlands, and riparian areas also provide water, thermal cover and wallowing habitat.

Black-tailed deer are widespread and are usually observed as single animals or in small groups. They prefer the forested and brush areas for cover and forage along the edges of pastures.

The JMWA provides abundant roosting and foraging habitats for bats. Both man-made structures and forested habitats provide roost sites. Insect populations associated with wetlands, riparian areas, and agriculture lands provide a stable food source for bats. No monitoring on the wildlife area for bat species is conducted by wildlife area staff at this time.

Several state and federal candidate or species of concern may occur on the JMWA, including the red tree vole (*Arborimus longicaudus*). These species are described in greater detail in the Species of Conservation Concern section.

Birds

A wide variety of resident and migratory bird species can be found throughout the wildlife area due to the diversity of habitat types present. Snags, dying trees and over 200 artificial nest structures on the JMWA supply cavity nesting habitat for swallows, small owls, wrens, and other birds. Forest, riparian, and wetland habitats provide abundant food sources as well as water for drinking and bathing. Plant species and structural diversity creates patches for nesting, hiding, and foraging. An abundance of berry producing shrubs and trees on JMWA provides an important food source for both resident and migratory species.

Mallards (*Anas platyrhynchos*), wood ducks (*Aix sponsa*), and hooded mergansers (*Lophodytes cucullatus*) are the most common nesting waterfowl species on the wildlife area. Pintail (*Anas acuta*) and green-winged teal (*Anas carolinensis*) are frequent migrants.

Ruffed grouse (*Bonasa umbellus*), mountain quail (*Oreortyx pictus*), and band-tailed pigeons (*Columba fasciata*) are the most numerous and most hunted upland game birds in the county. Although there are no identified mineral springs on the JMWA, band-tailed pigeons have been observed using seasonally wet areas as spring type habitat. The abundance of fruit producing shrubs and trees on JMWA is likely to benefit these species. While they are a product of the vast areas in forest lands, not a great deal is known about managing habitats to increase populations.

Several state and federal species of concern may occur on the JMWA, including the northern spotted owl (*Strix occidentalis caurina*), and marbled murrelet (*Brachyramphus marmoratus*). These species are described in greater detail in the Species of Conservation Concern section.

Amphibians and Reptiles

Native species of reptiles and amphibians are plentiful on the wildlife area. Common species include the Pacific tree frog (*Pseudacris regilla*), garter snake (*Thamnophis sirtalis*), long-toed salamander (*Ambystoma macrodactylum*), and rough-skinned newt (*Taricha granulosa*). Several state and federal species of concern may occur on the JMWA, including the coastal tailed frog (*Ascaphus truei*). These species are described in greater detail in the Species of Conservation Concern section. No specific management for reptiles and amphibians occurs at this time on the JMWA. However,

habitat management is conducted to provide a diversity of types and structure to benefit these species.

Fish

The JMWA lies within the Fishhawk Creek, Beneke Creek, and Humbug Creek watersheds within the Nehalem River subbasin. All three watersheds contain populations of coho salmon (*Oncorhynchus kisutch*), fall run Chinook salmon (*Oncorhynchus tshawytscha*), winter run steelhead (*Oncorhynchus mykiss*), and coastal cutthroat trout (*Oncorhynchus clarki clarki*). Summer Chinook were present historically in Humbug Creek and may have been present in Fishhawk and Beneke creeks. There is currently no indication that these creeks are used by summer Chinook. Other fish species include Pacific lamprey (*Lampetra tridentata*), Western brook lamprey (*Lampetra richardsoni*), and sculpin (*Cottus* spp.). **Table 2** provides a list of fish species occurring within JMWA boundaries and describes their current conservation status.

Table 2. Fish species present in Fishhawk, Beneke, and Humbug creeks within Jewell Meadows Wildlife Area.

(Species Management Unit (SMU) Status is from ODFW 2005 – Native Fish Status Report.)

Common Name	Scientific Name	Federal Status
Oregon Coast Coho Salmon	<i>Oncorhynchus kisutch</i>	Threatened
Chinook Salmon (Fall)	<i>Oncorhynchus tshawytscha</i>	Not Listed
Steelhead (Winter)	<i>Oncorhynchus mykiss</i>	Not Listed
Coastal Cutthroat Trout	<i>Oncorhynchus clarki clarki</i>	Species of Concern
Pacific Lamprey	<i>Lampetra tridentata</i>	Species of Concern
Western Brook Lamprey	<i>Lampetra richardsoni</i>	Not Listed
Sculpin (spp.)	<i>Cottus (spp.)</i>	Not Listed

Species of Conservation Concern

There have been few formal surveys on the JMWA specifically to document the presence of state listed or federally listed Threatened or Endangered species. However, ten federally listed Threatened and Candidate species and 22 Species of Concern are potentially present in Clatsop County. Of these, JMWA staff has incidentally documented at least one observation of the following: northern red-legged frog (*Rana aurora aurora*), northern spotted owl, Oregon Coast Coho salmon, and coastal cutthroat.

Plant species of conservation concern that are thought or known to occur in Clatsop County are: Howellia (*Howellia aquatilis*) (Federally listed as Threatened), pink sand verbena (*Abronia umbellata* ssp.), Saddle Mountain bittercress (*Cardamine pattersonii*), Chambers paintbrush (*Castilleja chambersii*), frigid shootingstar (*Dodecantheon austrofrigidum*), Queen of the forest (*Filipendula occidentalis*), moss (*Limbella fryei*), and Saddle Mountain saxifrage (*Saxifraga hitchcockiana*).

None of these species are known to exist on the JWMA primarily since the range of these species lies outside the wildlife area boundaries. It is also thought that there is no suitable habitat within the wildlife area.

Activities within the JMWA are conducted within the guidelines of the Endangered Species Act to ensure no adverse effects on listed species. These species are listed in **Table 3**.

Table 3. Federal and State Listed Endangered, Threatened, Candidate and Species of Concern Potentially Present in Clatsop County.

Common Name	Scientific Name	Federal Status	State Status
Red tree vole	<i>Arborimus longicaudus</i>	Candidate	None
Silver-haired bat	<i>Lasiorycteris noctivagans</i>	Species of Concern	Sensitive-Undetermined
California myotis	<i>Myotis californicus</i>	None	Sensitive
Townsend's big-eared bat	<i>Corynorhinus townsendii townsendii</i>	Species of Concern	Sensitive - Critical
Fringed myotis	<i>Myotis thysanodes</i>	Species of Concern	Sensitive - Vulnerable
Long-legged myotis	<i>Myotis volans</i>	Species of Concern	Sensitive - Undetermined
Hoary bat	<i>Lasiurus cinereus</i>	Species of Concern	Sensitive
Northern spotted owl	<i>Strix occidentalis caurina</i>	Threatened	Threatened
Marbled murrelet	<i>Brachyramphus marmoratus</i>	Threatened	Threatened
Olive-sided flycatcher	<i>Contopus cooperi</i>	Species of Concern	Sensitive-Vulnerable
Coastal tailed frog	<i>Ascaphus truei</i>	Species of Concern	Sensitive-Vulnerable
Northern red-legged frog	<i>Rana aurora aurora</i>	Species of Concern	Sensitive-Undetermined
Western toad	<i>Bufo boreas</i>	None	Sensitive - Vulnerable
Columbia torrent salamander	<i>Rhyacotriton kezeri</i>	None	Sensitive – Critical
Cope's giant salamander	<i>Dicamptodon copei</i>	None	Sensitive - Undetermined
Clouded salamander	<i>Aneides ferreus</i>	None	Sensitive - Undetermined
Coastal cutthroat (sea-run)	<i>Oncorhynchus clarki</i>	Species of Concern	Sensitive-Vulnerable
Oregon Coast Coho	<i>Oncorhynchus kisutch</i>	Threatened	Threatened
Pacific lamprey	<i>Lampetra tridentata</i>	Species of Concern	Sensitive
Western brook lamprey	<i>Lampetra richardsoni</i>	None	Sensitive

The red tree vole, one of the main prey species for the northern spotted owl, may occur on the JMWA or on adjacent timber lands. It is completely arboreal and is associated with mature conifer forests.

Several bat species likely occur on the JMWA. Unidentified bat species are known to roost and forage on the wildlife area.

The northern spotted owl is typically associated with mixed forest stands. Large mature trees are needed for nesting. There are three known spotted owl activity centers adjacent to JMWA lands. The JMWA's small timber holdings may be of some benefit to this species by providing foraging and roosting habitat.

The olive-sided flycatcher (*Contopus cooperi*) is likely to occur on the JMWA. The JMWA provides forested edges near streams and other wetlands, which are the preferred habitat of this species.

The marbled murrelet may be a flyover species. There is designated critical habitat within one mile of the wildlife area. JMWA small timber holdings may be of some benefit for nesting habitat.

The coastal tailed frog, the Columbia torrent salamander (*Rhyacotriton kezeri*) and Cope's giant salamander (*Dicamptodon copei*) may occur in the colder, higher elevation streams on or adjacent to the JMWA. These species have been documented in streams upriver from and adjacent to the JMWA (ODF, 2005 Upper Nehalem Watershed Analysis)(A. Kastberg, personal communication 2016).

The northern red-legged frog (*Rana aurora aurora*) is present on the JMWA. Suitable breeding habitat consists of ponds which provide aquatic vegetation with underwater stems for egg mass attachment. Adjacent moist forest areas provide important foraging and over-wintering habitat for adult red-legged frogs which are highly terrestrial.

The western toad (*Bufo boreas*) may occur on the JMWA in association with humid forests and brushy areas. Wetlands on the JMWA also may provide suitable breeding habitat for this species.

The clouded salamander (*Aneides ferreus*) may occur on the JMWA. This species is associated with forested areas and is often found under the loose bark of decaying logs and stumps.

Coastal cutthroat trout and Oregon Coast Coho salmon inhabit all three area streams. These species need clean gravel, cool water temperatures, and complex instream woody debris, as well as off channel refugia during periods of high water.

Pacific lamprey and western brook lamprey are known to exist in Fishhawk creek and may occur in other area streams. These species may aggregate in high densities and spawn in fine gravel beds with larvae burrowing into sediment until ready to migrate.

Non-Native Species

Non-native species on the JMWA include the nutria (*Myocastor coypus*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*) and opossum

(*Didelphus virginiana*) (**Table 4**). Upland game species such as wild turkey (*Meleagris gallopavo*) and California quail (*Callipepla californica*) have been introduced on the wildlife area in the past but recent surveys have shown no evidence that these two species still inhabit the wildlife area. At this time there is no management effort on the JMWA aimed specifically at control of non-native wildlife.

Table 4. Non-native Wildlife Species that May Occur on the Jewell Meadows Wildlife Area.

Common Name	Scientific Name	Common Name	Scientific Name
Virginia opossum	<i>Didelphus virginiana</i>	European starling	<i>Sturnus vulgaris</i>
Nutria	<i>Myocastor coypus</i>	Rock pigeon	<i>Columba livia</i>
House mouse	<i>Mus musculus</i>	House sparrow	<i>Passer domesticus</i>
Norway rat	<i>Rattus norvegicus</i>		

Non-native plants on the JMWA include several that are on the Clatsop County noxious weed list (**Table 5**). These may be subject to control activities including mechanical, chemical and biological methods. Plants that are currently controlled include Canada thistle, bull thistle, oxeye daisy, and small isolated patches of scotch broom (*Cytisus scoparius*), tansy ragwort (*Senecio jacobaea*), and Japanese knotweed. Aside from these invasive species, there are a number of other non-native plants present on the JMWA. Some have been cultivated in pasture areas, others have spread naturally to the area and are either beneficial as wildlife forage or have shown no serious deleterious effects to existing habitats.

Table 5. Noxious Weeds present in Clatsop County.

Common Name	Scientific Name	Common Name	Scientific Name
Butterfly bush	<i>Buddleja davidii</i>	Old man's beard	<i>Clematis vitalba</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>	Purple loosestrife	<i>Lythrum salicaria</i>
Giant knotweed	<i>Polygonum sachalinense</i>	Scotch broom	<i>Cytisus scoparius</i>
Gorse	<i>Ulex europaeus</i>	Tansy ragwort	<i>Senecio jacobaea</i>
Himalayan blackberry	<i>Rubus discolor (precerus)</i>	Yellow flag iris	<i>Iris pseudacorus</i>
Himalayan knotweed	<i>Polygonum polystachyum</i>	Japanese knotweed	<i>Polygonum cuspidatu</i>
Bull Thistle	<i>Cirsium vulgare</i>		

Monitoring

Monitoring of all management activities will be completed by Department staff on an annual basis.

Informal monitoring is also conducted by members of the public during their visits to the area. This monitoring is submitted via verbal or written feedback and suggestions to JMWA staff.

Contact with the viewing public occurs on an almost a daily basis and provides the area staff with a sense of whether the type of viewing and educational opportunities offered are meeting the public's needs. In addition, periodic reviews of area plans give the public opportunity to comment on area management activities, goals, and objectives.

Elk, when present, are counted and the information recorded monthly. This information is used to determine population status and if population levels are within management objectives for the wildlife area.

Soil samples are taken every couple of years to determine the type and amount of fertilizer needed to provide the best quality of forage. The wildlife area's agricultural fields are monitored to determine forage production levels and quality. To determine field production, haying contractors are required on an annual basis to inform wildlife area staff of the number of bales removed from area fields.

Riparian and freshwater aquatic habitats are surveyed annually by wildlife area personnel. District fish biologists are consulted to determine if any improvements or maintenance activities are needed on existing waterways.

Big Game

Elk numbers are monitored by area staff throughout the year with monthly surveys during the winter. Animals are classified by age, sex, and overall condition. These surveys are used to determine elk populations within the wildlife area and to aid in calculating winter supplemental feed. Total area populations and individual group sizes play a key role in determining population control measures consistent with the management objectives of the area. Deer populations are also surveyed in the winter and spring in conjunction with West Region Wildlife District surveys. Deer are classified by age, sex, and condition. This information is compiled by the District for evaluation of big game hunting unit management objectives.

Management objectives for post season bull:cow and buck:doe ratios and for winter elk and deer populations have been set forth as part of the Department's 2003 Elk wildlife management plan.

Other Wildlife

Informal monitoring of other wildlife will be conducted incidental to other activities. Incidental observations of unusual wildlife by department staff and members of the public will be recorded with the date, location and species observed. These sightings are forwarded to the local district biologist.

Fish

Fish populations will be monitored through creel checks and stream surveys by Oregon

State Police (OSP) and Department staff. Monitoring will be conducted opportunistically and/or as scheduled by fisheries personnel.

Wildlife Diseases

Wildlife diseases are monitored by sampling elk captured for relocation or other special projects. Samples are also taken from hunter-harvested big game animals and natural mortalities. Disease monitoring is consistent with the department's established policies, guidelines, protocols, and consultation with department and Oregon Department of Agriculture veterinarians.

Forest Stands

Forest stand conditions may be monitored to determine appropriate silvicultural practices to improve and increase wildlife habitat, improve forest health, control insect infested and diseased stands of timber, and reduce fire danger.

There have been no formal timber inventories conducted on the JMWA Department owned lands.

Oregon legislative action in 2005 resulted in the passage of two forestry-related laws, HB 3152 and HB 2344, which may impact management activities on the JMWA. These laws are described below and in further detail in **Appendix D**.

HB 3152 requires the Department of Administrative Services to coordinate with the Department of Fish and Wildlife, the Parks and Recreation Department, the Department of Forestry, the Division of State Lands and other agencies with state forestland oversight responsibilities to adopt forest management plans or policies.

HB 2344 directs state agencies to develop plans for timber salvage operations to restore and recover forest lands burned by fire.

Water Use

Water usage is monitored by wildlife area staff. Irrigation water will be measured as used and reported annually to the Oregon Water Resources Department.

Public Use

Monitoring of public use of the area may be conducted to determine if the JMWA is providing the type of recreational opportunities and experiences desired by the public. Estimates of area use and needs will be recorded and used for informational purposes. Consumptive use activity surveys will include: vehicle counts and interviews at key parking areas, interviews conducted at hunter check stations, fishing sites, by telephone, by Oregon State Police wildlife officers and department personnel. Non-consumptive use of the area is estimated based on traffic counter data at the main viewing area, random surveys of individuals per vehicle, and individual interviews at all viewing areas. Additional public use information is collected from visitors participating in the winter elk feeding program and other organized programs on the wildlife area.

Cultural Resources

The geographic area that the wildlife area now encompasses was once occupied by Native Americans of the Nehalem tribe. These people inhabited the Nehalem River watershed for thousands of years before contact with European explorers, beginning in the late 1770s (Johnston, 1999). The Clatsop Indians also inhabited the northern areas of the watershed and likely had frequent contact with the Nehalem tribe.

Diseases introduced by European traders who were exploring the Oregon coastline killed 75% to 90% of the Nehalem people in 1782-1783. The Clatsop people also experienced epidemics from introduced diseases.

The first European Americans actively exploring the interior region were fur trappers from the Canadian Northwest Company and the Pacific Fur Company. In the 1840s, surveyors visited the region to determine its value for future settlements. The first settlers did not arrive until the 1870s. These settlers were interested primarily in subsistence farming and built cabins and homesteads mostly along the rivers and streams. Small scale timber harvesting began in the late 1890s, followed by large scale logging in the early 1900s (ODF, 2005).

For many years prior to the department's acquisition of the lands, hunting, trapping, logging and grazing were the known historical/cultural practices that occurred on the JMWA.

The Department is responsible for coordinating with the State Historic Preservation Office (SHPO) on an annual basis, when applying for federal grants for all wildlife areas, to ensure that proposed area management activities comply with State and Federal cultural resource laws. A historic review was conducted on the headquarters building and surrounding land in 2016. No other comprehensive cultural resource surveys have been conducted on the JMWA and no significant cultural resources have been identified on the wildlife area.

Social Environment

Demographics

The JMWA is located 65 miles northeast of Portland, near the communities of Jewell and Elsie, in Clatsop County.

Census figures indicate approximately 35% of the county's 2016 estimated 38,225 residents live in unincorporated areas (PSU Population Research Center)). Although the population in Clatsop County is small, JMWA is approximately a 1.5 hour drive from the Portland Metropolitan area, the largest population concentration in the state.

Land Use

Wildlife area lands are classified in local zoning codes as natural resource management and are surrounded almost entirely by forestry/open space lands used for timber

production. Rural residential land borders the wildlife area on the southeast portion of the Fishhawk tract and south portion of the Beneke tract. Agricultural lands border the Humbug tract on the west and north. These and other agricultural lands near by consist of pastures used for livestock grazing and hay production.

Figure 3 shows the land uses surrounding the Jewell Meadows Wildlife Area.

Infrastructure

Developments/Facilities

The facilities present on each tract are listed in **Table 6**.

Developments on the Fishhawk Tract include the headquarters building, volunteer host site, two asphalt parking lots (one with ADA-accessible restroom facilities), and two graveled parking lots. There is a public information kiosk, a low wattage radio station (530 AM) and numerous picnic tables available to the public which meet ADA standards. The area manager’s residence, maintenance shop, gas house, pump house, and two pole barns are also on the east end of the Fishhawk Tract. A storage barn, a second residence, and small pole barn are on the west end of the Fishhawk Track.

Approximately seven acres, including the headquarters building, manager’s residence, shop, and pole barn are enclosed by 1,750 feet of seven feet high woven wire fence, accessible by cattle guards and gates. The two western viewing areas are surrounded by a combined 1,200 feet of wooden rail fence. These fences were constructed to keep visitors within the established viewing area.

The Beneke Tract developments include a volunteer host site, a garage, a pole barn including an elk handling facility, a pump house, and one vehicle bridge.. Approximately 450 feet of eight feet high woven wire fence protects an establishing orchard.

There are currently no facilities on the Humbug Tract.

Table 6. Facilities and Developments on the Jewell Meadows Wildlife Area.

Development Type	Location/Tract Name(s)
Viewing areas	Fishhawk (5)
Picnic areas (3-8 tables)	Fishhawk (3)
Public restrooms (1 wheelchair accessible)	Fishhawk (1)
Parking lots	Fishhawk (4),
Maintenance Shop	Fishhawk (1)
Headquarters office	Fishhawk (1)
Equipment shed	Fishhawk (2),
Storage buildings	Fishhawk (3), Beneke (2)
Hay barns	Fishhawk (1)
Residences	Fishhawk (2)
Host sites	Fishhawk (1), Beneke (1)
Pump house	Fishhawk (1), Beneke (1)

Fences	Fishhawk (3), Beneke (1)
Bridges (one vehicle and one foot bridge)	Beneke (2)
Creek crossings	Fishhawk (3), Beneke (6), Humbug (4)
Orchards	Fishhawk (2 maintained), Beneke (2 maintained)

Water Rights

The Fishhawk Tract has one water right of record (Certificate # 22351) for 1.46 cfs, for irrigation. The Fishhawk and the Beneke Tract previously had one water right on record each that were converted into instream water use. There are no water rights for the Humbug Tract.

Water use is monitored and reported to the Oregon Water Resources Department on an annual basis.

Easements/Access Agreements

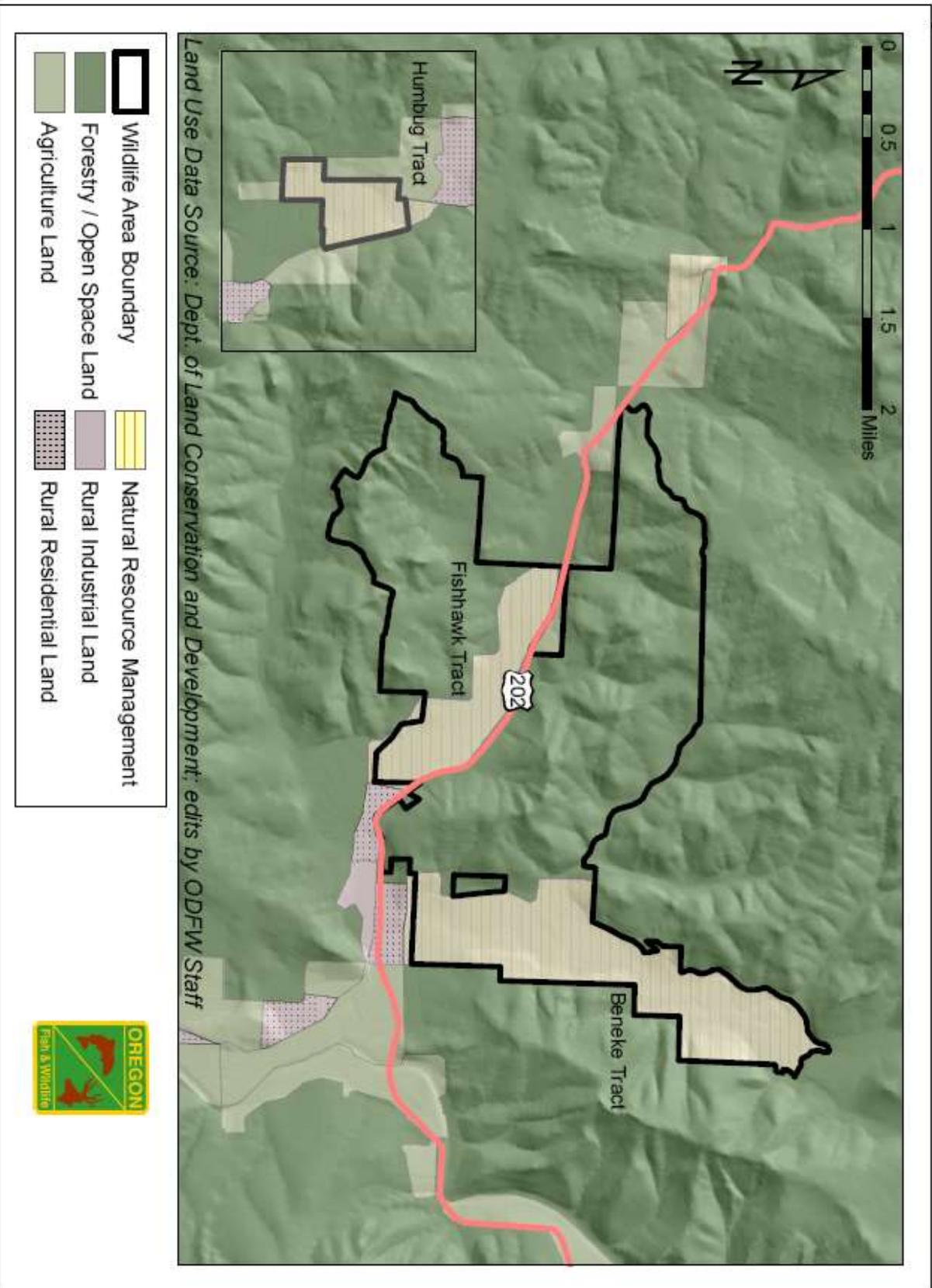
The Fishhawk Tract has one filed agreement with a private landowner allowing construction and operation of a well and water pipeline for domestic use along Fishhawk Creek and subsequent piping and wiring to a private residence. Agreements are also filed with Oregon State Department of Forestry, Stimson Lumber Company and Weyerhaeuser Company concerning approximately 1,826 acres of contract refuge.

The JMWA currently has land use agreements with Weyerhaeuser Company (456 acres) and Stimson Lumber Company (648 acres) for the use of their timber lands, to be managed by the Department as wildlife refuge. These agreements allow the Department to control public access on lands surrounding the Fishhawk Tract.

The Beneke Tract has two easements for a pump house and water pipeline for domestic water use. The Humbug Tract has a similar easement. The Humbug Tract also has an easement for administrative access from an adjacent landowner.

Appendix C lists the numerous changes in property owned, leased, and managed under agreement and easements filed since the original purchase in 1969.

Figure 3 - Jewell Meadows Wildlife Area Land Use



Land Acquisition and Adjustment

It is the policy of the department to only acquire land or interests in lands, including easements and leases, from willing sellers consistent with statutory authority and the department's mission. Acquisitions and adjustments must be for the conservation of fish and wildlife and their habitats and to provide fish and wildlife-oriented public use for educational and recreational purposes. Land adjustments would allow for the sale, trade or exchange of land with willing landowners to enable the department to consolidate wildlife area boundaries.

There are three categories of lands that may be considered for acquisition. These include: 1) Significant or unique habitats, especially those beneficial to threatened or endangered sensitive species; 2) Sites, or access to sites that provide wildlife-related recreational opportunities; and, 3) Properties to facilitate the performance of the Department's mandated duties (e.g., storage and warehouse, feeding barns, etc.).

At the current time no new land acquisitions are planned. However lands adjacent to or within current wildlife area boundaries that may become available and would enhance JMWA operations or management capabilities will be considered on an individual basis.

Public Use

Public Access

The wildlife area lands are open to the public for wildlife-oriented recreational purposes throughout the year. Public access is prohibited on posted portions of the Beneke Tract during elk seasons and on Fishhawk and Contract Refuge tracts year round, except by permit.

Hunting and Angling

The JMWA is open for hunting and angling except those posted portions of tracts described above. Hunting and angling use is estimated based on a combination of interviews conducted during authorized seasons, vehicle counts at established sites, by telephone, by OSP wildlife officers and department personnel. (**Table 7**).

Non-consumptive

The JMWA is open all year to the general public for wildlife oriented recreational opportunities with an emphasis on wildlife viewing and education. Other activities include photography, hiking, and limited camping by permit. Other uses for the area include organized events not associated with wildlife viewing (i.e. Hood-to-Coast run, cycling events). The JMWA has four established viewing areas in addition to 0.3 miles of improved highway shoulder.

Table 7. Estimated Annual Hunting and Angling Use Days on Jewell Meadows Wildlife Area.

Activity	Estimated Annual Use Days
Hunting	
Big Game	400
Waterfowl	20
Upland Game	20
Unprotected Wildlife	20
Angling	75
Total	535

Wildlife viewing areas are located along the Fishhawk Tract and reached via Highway 202 (see Fishhawk Tract description). The main viewing area at the headquarters and the east viewing area are ADA accessible. The main viewing area has an interpretive kiosk and public restrooms. Additional viewing is available along the Beneke Tract from the county road and Humbug from Highway 26.

In addition to wildlife viewing, JMWA offers the public an opportunity to assist with the winter elk feeding program. Area staff leads wagon tours for an average of 950 individuals each winter, to observe feeding elk. This program has become very popular with individuals, organized groups and schools and has been featured in numerous publications, newspapers, and local television news programs. Due to its popularity reservations are required.

Non-consumptive use of the wildlife area is estimated using traffic counter data at the main viewing area, random counts and interviews by area staff of individuals at other viewing areas, of organized special use groups, and of winter elk feeding tours. The majority of the information on non-consumptive use is based on surveys conducted on the Fishhawk Tract. During the 2016 fiscal year, it is estimated that 36,037 visitor use days occurred at the main viewing area. Additional surveys indicated that of the total number of visitors 24% stopped at the main viewing area and 76% used only the other viewing areas. This provided an estimate of an additional 91,316 visitor use days for a total estimate of 127,353 on the Fishhawk tract (See **Table 8**). A more intensive public use survey was conducted in 2016 and results of that survey are not available at this time.

Table 8. Estimated Annual Non-consumptive Use Days on the Jewell Meadows Wildlife Area.

Activity	Estimated Annual Use Days
Wildlife Viewing	115,000
Winter Elk Feeding	950
Photography	3,000
Hiking	200
Camping	1700
Other miscellaneous (picnicking, restrooms)	9000
Total	129,850

Educational/Interpretive

An interpretive kiosk is located at the main viewing area and contains information about the area, wildlife, and other wildlife areas. Area brochures are also provided at this site. A low watt radio station (530 AM) broadcasts 24 hours a day and provides additional information about the wildlife area. Other interpretive signs are located in the main viewing area. Regulatory signs are posted at all public areas and along the nearly 23 miles of wildlife area boundaries.

JMWA provides viewing and education during the winter elk feeding program to the public, including organized youth groups and schools. Outdoor schools use the area annually for their programs. Local scouting programs use the area for day use and camping on portions of the Beneke Tract by permit.

Objectives and Strategies

Objectives and Strategies

As stated previously, objectives are concise statements of what the department wants to achieve, how much the department wants to achieve, when and where to achieve it and who will be responsible for the work. Objectives derive from goals and provide the basis for determining strategies. Strategies describe the specific actions, tools, techniques or a combination of these elements used to meet an objective.

The following objectives and strategies are based on the three goals described on pages 3 and 4. They identify the management activities and priorities of the Jewell Meadows Wildlife Area Management Plan:

(Goal 1: To protect, enhance and restore habitats to benefit fish and wildlife species.)

Objective 1.1: To protect, enhance, and restore 432 acres of agricultural areas to provide habitat for up to 200 elk on the Fishhawk Tract, 250 elk on the Beneke Tract, and 50 elk on the Humbug Tract.

Rationale

Agricultural areas in the form of improved pastures provide an important forage base for Roosevelt elk. Mereszczak (1978) found, of three vegetation types evaluated, treated perennial rye grass pastures provided the best elk winter range in terms of attracting and holding animals and providing adequate winter nutrition. Agricultural areas also provide valuable open habitat for other species.

Strategy 1. Maintain 432 acres of open agricultural areas by removing surplus forage during the summer to condition vegetation for fall regrowth. Remove surplus forage by mowing, cooperative haying agreements, or other methods. Forage removal will be consistent with the Departments forage removal policy.

This strategy also reduces the invasion of brush species and maintains integrity of the open habitat.

Strategy 2. Fertilize 330 acres of pastures in the fall to stimulate green-up, produce higher quality and quantity of forage, and increase overall plant health.

Strategy 3. Control noxious weeds and other undesirable invasive species on 432 acres by mechanical, chemical or biological methods.

Strategy 4. Monitor annual forage production through forage removal programs or other methods.

Strategy 5. Renovate up to 20 acres of pastures annually to promote high quality big game forage. A mix of grasses and legumes such as the NW Region big game forage mix or similar will be planted.

Strategy 6. Maintain four established orchard sites to provide forage for big game, small mammals, and birds.

Objective 1.2: To protect, enhance, and restore 489 acres of mixed coniferous and hardwood forest habitat.

Rationale

Coniferous and hardwood forests provide habitats for a variety of species including several which are sensitive or of conservation concern. These habitats also provide critical thermal cover and secure calving habitat for elk. With the current surrounding land use practices, mature forest habitat on the area may become more valuable for wildlife. The department's Oregon Conservation Strategy identifies late successional conifer forest as a Strategy Habitat in the Coast Range ecoregion. Maintenance of existing late successional forest and initiation of actions to develop or restore late successional forest is supported by the Oregon Conservation Strategy and other conservation planning efforts.

Strategy 1. Maintain and improve habitat diversity by snag retention, protecting older trees (especially large conifers), and maintaining a mix of tree species.

Strategy 2. Protect, enhance, and restore 20 acres of mixed hardwood and brush areas along field edges to promote fruit production for small mammals and birds.

Strategy 3. Explore possibilities to seek funding and assistance from other agencies, Oregon State University, or others to evaluate forest stand conditions for habitat diversity.

Strategy 4. Explore possibilities and seek funding to convert up to 40 of 246 acres of hardwood forest to mixed coniferous forests.

Objective 1.3: To protect, enhance, and restore 46 acres of freshwater aquatic and 118 acres of riparian habitats for the benefit of fish and wildlife.

Rationale

The Nehalem River basin once supported robust populations of coho and chinook salmon, as well as other important fish species. Basin-wide depletion of habitat quality and quantity, as well as other influences, has resulted in populations of salmonids that are well below historic levels. Factors limiting production of fish species such as coho salmon include reductions of over-wintering habitat attributed to loss of instream complexity. As part of the department's ongoing commitment to the State of Oregon's Oregon Plan for Salmon and Watersheds and the department's Oregon Coast Coho Conservation Plan, the department will undertake a suite of strategies focused on improving instream and riparian habitats within the wildlife area's boundaries. Riparian habitats also support a wide diversity of wildlife species including birds, small mammals, and amphibians. The Oregon Conservation Strategy describes riparian habitats as having high species diversity, critical for wildlife as travel corridors, and essential wintering areas.

Strategy 1. Maintain establish field setbacks to protect and restore riparian buffer between agricultural areas and streams.

Strategy 2. Work with the department's Fish District staff to complete aquatic habitat inventories for stream and tributary reaches.

Strategy 3. Work with the Fish District to develop a comprehensive aquatic and riparian habitat restoration strategy that addresses potential limiting factors to fish production and establishes restoration benchmarks within each subbasin.

Strategy 4. Work with the Fish District in conjunction with the Upper Nehalem Watershed Council, Clatsop Soil and Water Conservation District, and other interested partners, to seek funding for design, implementation, and maintenance of aquatic habitat restoration projects.

Strategy 5. Work with the Fish District to monitor physical habitat conditions and fish abundance at regular intervals to assess changes over time and prescribe measures needed to achieve desired benchmarks.

Objective 1.4: To protect, enhance, and restore 11 acres of seasonal wetland habitat and alcove sites.

Rationale

Wetland habitats provide food, cover, and nesting areas for a wide variety of species on the area including birds, bats, other small mammals, amphibians, and as off channel habitat for salmonids. The Oregon Conservation Strategy identifies wetland habitats as a Strategy Habitat in the Coast Range ecoregion.

Strategy 1. Protect existing wetland habitats. Evaluate other wet areas for possibilities of creating or enhancing additional seasonal wetlands.

Strategy 2. Maintain a mix of open water and associated uplands for nesting and rearing of waterfowl, other birds, and amphibians.

Strategy 3. Manage five acres of moist soil areas in enhanced seasonal wetlands by mechanized disturbance every three to four years to increase forage production.

Strategy 4. Maintain three alcove or off channel sites for water retention and fish passage.

Objective 1.5: To maintain and enhance wildlife area facilities, structures, and equipment to facilitate habitat management and public use projects.

Rationale

Facilities, structures and equipment are necessary to the overall operation and maintenance of the wildlife area. Several structures are in need of major repairs due to poor initial construction and/or the wet climate, while other structures only need routine maintenance. The priority of repairs will be based on the department's 2005 Maintenance Master Plan. Inspection and maintenance of parking and viewing areas, fences, gates, bridges, and restrooms are necessary for public safety. Properly functioning equipment in good condition is essential for conducting habitat management and for the safety of staff.

Strategy 1. Conduct annual inspections on all facilities, structures, and equipment to determine condition, needed maintenance, and safety requirements.

Strategy 2. Maintain 16 buildings and structures on the area including major repairs to the headquarters building on Fishhawk Tract. **Strategy 3.** Maintain four viewing areas, 0.3 miles of improved highway shoulder, ADA accessible public restrooms, information kiosk, picnic tables, and low watt radio station.

Strategy 4. Conduct routine maintenance and repairs to facilities and equipment.

(Goal 2: To minimize or alleviate conflicts caused by elk to adjacent lands which are compatible with Goal 1.)

Objective 2.1: To provide supplemental feed to elk during low natural forage production periods.

Rationale

Adjacent land use practices include timber production and agriculture. Elk, while adequate natural forage exists on the area, tend to wander onto adjacent lands. To minimize damage to young conifer trees, agriculture crops (pastures), and fences JMWA provides a partial diet of high quality supplemental forage in addition to strategies outlined in Objective 1.1 to keep elk on department lands. An established refuge provides secure habitat and decreased disturbance which decreases the incidence of adjacent land conflicts. In addition to addressing conflicts the supplemental feed also tends to keep elk in open pastures for longer periods which benefit the viewing public.

Strategy 1. Provide supplemental feed for up to 200 elk on the Fishhawk Tract and up to 250 elk on the Beneke Tract during the winter or as forage conditions dictate. Provide supplemental feed on the Humbug Tract for up to 50 elk as needed or when damage complaints increase.

Strategy 2. Monitor elk weekly during winter by visual inspection for overall health and disease.

Strategy 3. Work with the department's regional Wildlife District staff to address damage complaints on lands adjacent to the JMWA and to implement additional strategies consistent with the department's damage policy and other approved practices.

Strategy 4. Work with the Department's regional Wildlife District staff, Wildlife Division staff, and the Wildlife Veterinarian to ensure that supplemental feeding remains a safe and effective tool which does not contribute to wildlife disease transmission.

Objective 2.2: To control elk populations on the JMWA to be compatible with adjacent land use practices and current habitat conditions.

Rationale

Surrounding land use practices include timber production and agriculture. Timber production includes a large portion of private land with many plantations in young trees. Agriculture areas are primarily small farms with pasture lands for grazing or hay production. As elk populations increase, damage to young plantations and agricultural areas also increase. Controlling the elk population to levels outlined in 1.1 helps alleviate damage and maintains adequate natural forage. Since a major portion of the wildlife area is managed as a Wildlife Refuge, unique challenges are faced to control the resident elk populations. All capture and relocation of elk will follow department policies, guidelines, and recommendations.

Strategy 1. Capture and relocate up to 50 elk per year to keep population at established levels consistent with Objective 1.1 and/or current adjacent land use practices.

Strategy 2. Monitor captured elk for diseases including visual inspections and blood testing.

Strategy 3. Allow hunting on portions of the Beneke and Humbug Tracts during authorized seasons.

Strategy 4. Consider other population control measures if Strategy 1 is no longer feasible.

(Goal 3: To provide a variety of wildlife oriented recreational and educational opportunities to the public which are compatible with Goals 1 and 2.)

Objective 3.1: To provide approximately 550 hunting, trapping and angling use days annually.

Rationale

The department has a statutory obligation to protect and enhance Oregon's fish and wildlife and their habitats for use and enjoyment by present and future generations. This, along with funding for the wildlife area generated from the sale of hunting licenses and tags, provides the strong commitment to provide wildlife-oriented recreational opportunities for the citizens of Oregon. In addition to hunting on wildlife area lands, big game from the wildlife area also significantly contribute to the consumptive harvest occurring on adjacent lands.

Strategy 1. Monitor use and explore possibilities to maintain or increase hunter use days consistent with Goals 1 and 2.

Strategy 2. Provide signage to identify open and closed lands for hunting on the JMWA.

Strategy 3. Explore opportunities to generate increased angling use days on Beneke and Humbug creeks to past levels.

Strategy 4. Explore opportunities to allow trapping where consistent with the other objectives of the area.

Objective 3.2: To provide approximately 78,000 wildlife viewing and education/interpretation use days annually.

Rationale

Non-consumptive use including viewing and education constitutes the majority of public use. The Fishhawk Tract was developed to provide viewing and educational opportunities with an emphasis on Roosevelt elk in a natural setting. To create conditions desirable for viewing and decrease disturbance of wildlife, a refuge was established which restricts public access. The establishment of viewing areas provides

optimum viewing throughout the year. A kiosk with wildlife information, interpretive signing, a low watt radio station, and updated brochures provide the public with information. Viewers are drawn from local communities, the Portland Metropolitan area, throughout Oregon and Washington, and across the United States. Newspapers and television news stations in Oregon and Washington, as well as national publications, have featured the JMWA and its wildlife viewing opportunities. The winter elk feeding program is very popular and approximately 950 individuals participate in this program each year.

Strategy 1. Provide supplemental feed to elk during the winter to keep elk visible to the public.

Strategy 2. Continue a winter elk feeding program that offers the public an opportunity to assist staff by means of an elk feeding tour.

Strategy 3. Monitor public use at viewing sites on the Fishhawk tract throughout the year.

Strategy 4. Maintain existing informational and regulatory signage. Explore possibilities and funding of additional interpretive signage.

Strategy 5. Update brochures every five years or when major changes occur and make available to the public on site, at department offices, local retailers, local chambers of commerce, and other sites.

Strategy 6. Continue to work with schools, youth groups, colleges and universities, and other agencies to promote wildlife education and use of the area for wildlife-related studies.

Strategy 7. Continue to work through cooperative or land use agreements to maintain an established wildlife refuge.

Plan Implementation

Funding

Funding for the operation and maintenance of JMWA is accomplished through an annual federal grant under the Federal Aid to Wildlife Restoration (WR) Program. This program was created with the passage of the Pittman- Robertson (PR) Act in 1937. The PR Act authorizes the U.S. Fish and Wildlife Service to cooperate with the States, through their respective State fish and wildlife departments, to fund wildlife restoration projects. Eligible types of projects include restoration, conservation, management, and enhancement of wild birds, wild mammals and their habitats, and providing for public use and benefit from these resources.

Funding for WR is derived from a federal excise tax on the sale of firearms, ammunition, and archery equipment. Funding is then apportioned to states based on a mathematical

formula of area of the state in square miles (50%) and total number of hunting licenses sold annually (50%). Under the program no state may receive more than 5%, nor less than 0.5% of the total money available.

To be eligible, States must have assented to the provisions of the PR Act and passed laws for the conservation of wildlife that include a prohibition against the diversion of license fees paid by hunters for any other purpose than the administration of the State fish and wildlife department. Another major requirement is that states have to contribute up to 25% of the total grant cost since federal participation is limited to 75% of eligible costs incurred under a grant. The Department provides its 25% cost share from annual license and tag revenues.

Over the past 5 years, funding for the operation and maintenance of the JMWA has averaged approximately \$341,000 annually. Implementation of many of the management actions and achievement of the objectives and goals of this management plan may require additional funding and staff. Any upgrades of existing facilities, construction of new facilities or amenities (e.g. orientation kiosks and interpretive signs), and species and habitat monitoring may be limited without such increases.

Accomplishments

Since the 2007 JMWA Management Plan review, there has been some major accomplishments that are summarized in this section:

Comprehensive aquatic habitat surveys were conducted on Beneke and Fishhawk creeks in 2007 by department fish research program in conjunction with fish districts.

Two instream large wood projects were completed on Fishhawk (2008) and Beneke (2012) creeks with assistance from the fish districts and the Upper Nehalem Watershed Council.

A riparian restoration project was completed between 2007 and 2014. The project involved planting and protecting trees and shrubs on approximately 4.1 linear miles along Fishhawk and Beneke creeks. This project was implemented with assistance from the fish districts and Upper Nehalem Watershed Council.

The residential mobile home was replaced with a wood frame house in 2012. A damaged garage was replaced with a storage shed in 2007. The hay barn at Humbug was damaged by heavy snowfall and removed in 2009. The west barn was deemed unsafe by department engineers and replaced in 2014.

The main view area parking lot was repaired and repaved in 2015 and the public restrooms were remodeled to provide ADA accessibility to both sides in 2016.

Several capital equipment purchases occurred since 2007 to replace aging equipment including a tractor, large truck, equipment trailer, and backhoe.

A cultural historic review was completed for the headquarters facility in 2016.

A field surveys for a yearlong public use study, including economic information was conducted in 2016. Results of that project are not yet available.

Regulation change in 2012 which re-established some deer hunting opportunities on the Beneke tract.

The statewide wildlife area parking permit program was initiated at JMWA in 2014.

Funding for the JMWA changed from state license and tag funds (2004 to 2009) back to Federal aid (WR) in 2009.

Staffing/Organization

The Department manages seventeen major wildlife areas statewide. The wildlife areas encompass approximately 200,000 acres and are found in both department administrative regions; the JMWA is located in the West Region.

The JMWA is currently staffed by two full time employees, a Manager 1 and a Fish and Wildlife Technician Senior.

Compliance Requirements

This management plan was developed to comply with all Federal and State laws, Oregon Revised Statutes (ORSs), Oregon Administrative Rules (OARs), and department policies. Full implementation of all components of this plan will require compliance with the laws, regulations, rules, and policies listed in **Appendix D**.

Most of the guiding regulations complement the mission of the JMWA. However, the requirements of some regulations may limit management options in a variety of ways. While the intent of the regulations is generally resource protection, the cost of compliance through significant research and reporting is often prohibitive and precludes action, including some habitat enhancement, in the JMWA.

Partnerships

A number of other state, federal, and local agencies and interest groups assist with management activities on the JMWA. These partners play an important role helping the department achieve its mission and the JMWA goals. The department will continue to rely on these and other partners in the future to help implement this plan and provide input for future updates. Of particular note is the department's volunteer program, specifically the Fish and Wildlife Area Hosts. Through this program, where volunteers reside on the area in their own recreational vehicles for periods of weeks or months, the JMWA receives significant assistance. This management plan identifies projects that provide new opportunities for existing or new partners. The department welcomes and encourages more public participation in the administration of the wildlife area.

Adaptive Management

This plan provides for adaptive management of the wildlife area. Adaptive management is a flexible approach to long-term management of resources that is directed by the results of ongoing monitoring activities and latest data. Management techniques and strategies are regularly evaluated in light of monitoring results, new scientific understanding, and other new information. These periodic evaluations are used over time to adapt both management techniques and strategies to better achieve the area goals.

Monitoring is an essential component of adaptive management in general, and of this plan in particular; specific monitoring strategies have been integrated into the goals and objectives described in this plan whenever possible. Where possible, habitat management activities will be monitored to assess whether the desired effects on wildlife and habitat components have been achieved.

Plan Amendment and Revision

Wildlife area management plans are meant to evolve with each individual area, and as such each plan will be formally revisited after 5 years and updated every 10 years. In the meantime, however, the department will be reviewing and updating this plan periodically based on the results of the adaptive management program. This plan will also be informally reviewed by area staff while preparing annual work plans. It may also be reviewed during routine inspections or programmatic evaluations. Results of any or all of these reviews may indicate a need to modify the plan. The goals and objectives described in this plan will not change until they are re-evaluated as part of the formal plan revision process. However, the strategies may be revised to better address changing circumstances or due to increased knowledge of the resources on the area. If changes are required, the level of public involvement and associated compliance requirements will be determined by the department.

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Appendices

**Appendix A. Plant Species Known
to Occur on the Jewell Meadows Wildlife Area**

Conifer Trees

Douglas fir (<i>Pseudotsuga menziesii</i>)	Sitka spruce (<i>Picea sitchensis</i>)
Western hemlock (<i>Tsuga heterophylla</i>)	Incense cedar (<i>Calocedrus decurrens</i>)
Western red cedar (<i>Thuja plicata</i>)	

Deciduous Trees

Red alder (<i>Alnus rubra</i>)	Cascara buckthorn (<i>Rhamnus purshiana</i>)
Big-leaf maple (<i>Acer macrophyllum</i>)	Apple (<i>Pyrus malus</i>)
Oregon crabapple (<i>Malus fusca</i>)	English holly (<i>Ilex aquifolium</i>)
Oregon ash (<i>Fraxinus latifolia</i>)	Mountain ash (<i>Sorbus scopulina</i>)
Wild cherry (<i>Prunus emarginata</i>)	
Willow (<i>Salix</i> spp.)	

Shrubs

Devil's club (<i>Oplopanax horridum</i>)	Blue elderberry (<i>Sambucus glauca</i>)
Kinnikinnik (<i>Arctostaphylos uva-ursi</i>)	Pacific dogwood (<i>Cornus nuttallii</i>)
Ocean-spray (<i>Holodiscus discolor</i>)	Thimbleberry (<i>Rubus parviflorus</i>)
Oregon boxwood (<i>Pachistima myrsinites</i>)	Black cap raspberry (<i>Rubus leucodermis</i>)
Red-osier dogwood (<i>Cornus sericea</i>)	Trailing blackberry (<i>Rubus parviflorus</i>)
Red huckleberry (<i>Vaccinium parvifolium</i>)	Evergreen blackberry (<i>Rubus laciniatus</i>)
Salal (<i>Gaultheria shallon</i>)	Himalayan blackberry (<i>Rubus procerus</i>)
Salmonberry (<i>Rubus spectabilis</i>)	Pacific ninebark (<i>Physocarpus capitatus</i>)
Snowberry (<i>Symphoricarpos albus</i>)	Nootka rose (<i>Rosa nutkana</i>)
Serviceberry (<i>Amelanchier alnifolia</i>)	Multiflora rose (<i>Rosa</i> spp.)
Tall Oregongrape (<i>Berberis aquifolium</i>)	Red elderberry (<i>Sambucus racemosa</i>)
Vine maple (<i>Acer circinatum</i>)	Scotch broom (<i>Cytisus scoparius</i>)

Grasses

Perennial ryegrass (<i>Lolium perenne</i>)	Barnyard grass (<i>Echinochloa crus-galli</i>)
Annual ryegrass (<i>Lolium multiflorum</i>)	Witchgrass (<i>Panicum capillare</i>)
Orchardgrass (<i>Dactylis glomerata</i>)	Rice cut-grass (<i>Leersia oryzoides</i>)
Tall fescue (<i>Festuca arundinacea</i>)	Slough sedge (<i>Carex obnupta</i>)
Colonial bentgrass (<i>Agrostis tenuis</i>)	Sedges (<i>Carex</i> spp.)
Velvet grass (<i>Holcus lanatus</i>)	Soft rush (<i>Juncus effuses</i>)
Timothy grass (<i>Phleum pratense</i>)	Rushes (<i>Juncus</i> spp.)
Meadow foxtail (<i>Alopecurus pratensis</i>)	Reed canary grass (<i>Phalaris arundinacea</i>)
Tufted hairgrass (<i>Deschampsia cespitosa</i>)	

New Zealand white clover (*Trifolium repens*)
Subterranean clover (*Trifolium subterraneum*)

Skunk cabbage (*Lysichitum americanum*)
Swordfern (*Polystichum munitum*)
Twinflower (*Linnaea borealis*)
Vanilla leaf (*Achlys triphylla*)
Western bleeding heart (*Dicentra formosa*)
Bracken fern (*Pteridium aquilinum*)
Broadleaf lupine (*Lupinus latifolia*)
Oregon iris (*Iris tenax*)
Oregon oxalis (*Oxalis oregano*)
Pacific trillium (*Trillium ovatum*)
Licorice fern (*Polypodium glycyrrhiza*)
Deer fern (*Blechnum spicant*)
Common horsetail (*Equisetum arvense*)
Stinging nettle (*Urtica dioica*)
Fireweed (*Epilobium angustifolium*)
Foxglove (*Digitalis purpureum*)
Lance leaf plantain (*Plantago lanceolata*)
Oxeye daisy (*Chrysanthemum leucanthemum*)
Canada goldenrod (*Solidago Canadensis*)

Legumes

Red clover (*Trifolium pratense*)
Birdsfoot trefoil (*Lotus corniculatus*)
Big trefoil (*Lotus pedunculatus*)

Forbs

Tansy ragwort (*Senecio jacobaea*)
Wood groundsel (*Senecio sylvaticus*)
Narrow-leaved Hawkweed (*Hieracium umbellatum*)
Large-leaf lupine (*Lupinus polyphyllus*)
Western buttercup (*Ranunculus occidentalis*)
Creeping buttercup (*Ranunculus repens*)
Common wild radish (*Raphanus sativus*)
Smartweed (*Polygonum* spp.)
Curly dock (*Rumex crispus*)
Sheep sorrel (*Rumex acetosella*)
Common dandelion (*Taraxacum officinale*)
False lily of the valley (*Maianthemum dilatatum*)
Western star flower (*Smilacina racemosa*)
Douglas' Iris (*Iris douglasiana*)
Japanese knotweed (*Polygonum cuspidatum*)

**Appendix B. Wildlife Species Known to Occur
on the Jewell Meadows Wildlife Area.**

The following table and letter keys identify the species presence/sightability by season and relative abundances:

W-winter, S-summer, S-spring, F-fall A-abundant, C-common, U-uncommon, R-rare,

Common Name	Scientific Name	W	S	S	F
Amphibians					
Clouded Salamander	<i>Aneides ferreus</i>	U	U	U	U
Northwestern Salamander	<i>Ambystoma gracile</i>	C	C	C	C
Long-toed Salamander	<i>Ambystoma macrodactylum</i>	A	A	A	A
Cope's Giant Salamander	<i>Dicamptodon copei</i>	R	R	R	R
Pacific Giant Salamander	<i>Dicamptodon tenebrosus</i>	U	U	U	U
Ensatina	<i>Ensatina eschscholtzii</i>	C	C	C	C
Columbia Torrent Salamander	<i>Rhyacotriton kezeri</i>	R	R	R	R
Rough-skinned Newt	<i>Taricha granulosa</i>	A	A	A	A
Dunn's Salamander	<i>Plethodon dunni</i>	C	C	C	C
Western Red-backed Salamander	<i>Plethodon vehiculum</i>	C	C	C	C
Coastal Tailed Frog	<i>Ascaphus truei</i>	U	U	U	U
Western Toad	<i>Bufo boreas</i>	U	U	U	U
Pacific Tree Frog	<i>Pseudacris regilla</i>	A	A	A	A
Northern Red-legged Frog	<i>Rana aurora aurora</i>	U	U	U	U
Total Amphibians:	14				
Birds					
Common Loon	<i>Gavia immer</i>	U	R	R	R
Pied-billed Grebe	<i>Podilymbus podiceps</i>	U	R	R	R
Horned Grebe	<i>Podiceps auritus</i>	U	R	R	R
Eared Grebe	<i>Podiceps nigricollis</i>	U	R	R	R
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	U	R	R	R
Green Heron	<i>Butorides virescens</i>	U	U	U	U
Great Blue Heron	<i>Ardea herodias</i>	A	A	A	A
Western Canada Goose	<i>Branta canadensis moffitti</i>	U	U	U	U
Dusky Canada Goose	<i>Branta canadensis occidentalis</i>	U	R	R	R
Tavener's Canada Goose	<i>Branta canadensis taverneri</i>	U	R	R	R
Greater White-fronted Goose	<i>Anser albifrons</i>	U	U	U	U
American Widgeon	<i>Anas penelope</i>	U	U	U	U
Gadwall	<i>Anas strepera</i>	U	U	U	U
Cinnamon Teal	<i>Anas cyanoptera</i>	U	U	U	U
Green-winged Teal	<i>Anas carolinensis</i>	C	C	C	C
Redhead	<i>Aythya americana</i>	U	U	U	U
Northern Shoveler	<i>Anas clypeata</i>	U	U	U	U
Northern Pintail	<i>Anas acuta</i>	C	C	C	C
Mallard	<i>Anas platyrhynchos</i>	A	A	A	A
Wood Duck	<i>Aix sponsa</i>	A	A	A	A
Ring-necked Duck	<i>Aythya collaris</i>	C	U	U	U
Bufflehead	<i>Bucephala albeola</i>	U	R	R	R
Hooded Merganser	<i>Lophodytes cucullatus</i>	A	A	A	A

Common Name	Scientific Name	W	S	S	F
Common Merganser	<i>Mergus merganser</i>	A	A	A	A
Osprey	<i>Pandion haliaetus</i>	U	U	U	U
Turkey Vulture	<i>Cathartes aura</i>	U	A	A	A
Bald Eagle	<i>Haliaeetus leucocephalus</i>	C	C	U	U
Northern Harrier	<i>Circus cyaneus</i>	C	C	C	C
Sharp-shinned Hawk	<i>Accipiter striatus</i>	U	C	C	C
Cooper's Hawk	<i>Accipiter cooperii</i>	U	C	C	C
Northern Goshawk	<i>Accipiter gentilis</i>	U	U	U	U
Red-tailed Hawk	<i>Buteo jamaicensis</i>	A	A	A	A
Ferruginous Hawk	<i>Buteo regalis</i>	U	R	R	R
Rough-legged Hawk	<i>Buteo lagopus</i>	U	R	R	R
Merlin	<i>Falco columbarius</i>	U	R	R	R
American Kestrel	<i>Falco sparverius</i>	C	C	C	C
Barn Owl	<i>Tyto alba</i>	A	A	A	A
Western Screech-owl	<i>Otus kennicottii</i>	A	A	A	A
Great Horned Owl	<i>Bubo virginianus</i>	A	A	A	A
Northern Pygmy-owl	<i>Glaucidium gnoma</i>	C	C	C	C
Northern Spotted Owl	<i>Strix occidentalis caurina</i>	R	R	R	R
Barred Owl	<i>Strix varia</i>	U	U	U	U
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	U	U	U	U
Mountain Quail	<i>Oreortyx pictus</i>	U	U	U	U
Ruffed Grouse	<i>Bonasa umbellus</i>	A	A	A	A
Sooty Grouse	<i>Dendragapus fuliginosus</i>	U	U	U	U
American Coot	<i>Fulica americana</i>	U	U	U	U
Killdeer	<i>Charadrius vociferus</i>	C	C	C	C
Spotted Sandpiper	<i>Actitis macularia</i>	U	U	U	U
Short-billed Dowitcher	<i>Limnodromus griseus</i>	U	U	U	U
Wilson's Snipe	<i>Gallinago delicata</i>	A	A	A	A
Band-tailed Pigeon	<i>Columba fasciata</i>	U	A	A	C
Mourning Dove	<i>Zenaidura macroura</i>	R	U	U	R
Mew Gull	<i>Larus canus</i>	U	R	R	R
Ring-billed Gull	<i>Larus delawarensis</i>	U	R	R	R
California Gull	<i>Larus californicus</i>	U	R	R	R
Glaucous Gull	<i>Larus hyperboreus</i>	U	R	R	R
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	U	U	U	U
Common Nighthawk	<i>Chordeiles minor</i>	R	U	U	U
Vaux's Swift	<i>Chaetura vauxi</i>	U	C	C	C
Anna's Hummingbird	<i>Calypte anna</i>	U	U	U	U
Rufus Hummingbird	<i>Selasphorus rufus</i>	U	A	A	A
Belted Kingfisher	<i>Ceryle alcyon</i>	A	A	A	A
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>	C	A	A	A
Downy Woodpecker	<i>Picoides pubescens</i>	A	A	A	A
Hairy Woodpecker	<i>Picoides villosus</i>	A	A	A	A
Northern Flicker	<i>Colaptes auratus</i>	A	A	A	A
Pileated Woodpecker	<i>Dryocopus pileatus</i>	C	C	C	C
Olive-sided Flycatcher	<i>Contopus cooperi</i>	R	C	C	U
Willow Flycatcher	<i>Empidonax traillii</i>	R	U	U	R

Common Name	Scientific Name	W	S	S	F
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>	R	U	U	R
Western Wood Peewee	<i>Contopus sordidulus</i>	R	U	U	R
Western Kingbird	<i>Tyrannus verticalis</i>	R	U	U	R
Hutton's Vireo	<i>Vireo huttoni</i>	U	U	U	U
Warbling Vireo	<i>Vireo gilvus</i>	R	C	C	U
Gray Jay	<i>Perisoreus canadensis</i>	U	U	U	U
Steller's Jay	<i>Cyanocitta stelleri</i>	A	A	A	A
Western Scrub-jay	<i>Aphelocoma californica</i>	C	C	C	C
Brown Creeper	<i>Certhia americana</i>	U	U	U	U
American Crow	<i>Corvus brachyrhynchos</i>	A	A	A	A
Common Raven	<i>Corvus corax</i>	A	A	A	A
Tree Swallow	<i>Tachycineta bicolor</i>	R	C	A	C
Violet-green Swallow	<i>Tachycineta thalassina</i>	R	C	A	C
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	R	C	A	U
Barn Swallow	<i>Hirundo rustica</i>	R	C	A	C
Black-capped Chickadee	<i>Poecile atricapillus</i>	A	A	A	A
Chestnut-backed Chickadee	<i>Poecile rufescens</i>	C	C	C	C
Bushtit	<i>Psaltriparus minimus</i>	C	C	C	C
Red-breasted Nuthatch	<i>Sitta canadensis</i>	C	C	C	C
Slender-billed Nuthatch	<i>Sitta carolinensis</i>	C	C	C	C
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	C	C	C	C
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>	C	U	R	C
Chipping Sparrow	<i>Spizella passerina</i>	R	U	U	U
Vesper Sparrow	<i>Poocetes gramineus</i>	R	U	U	R
Savannah Sparrow	<i>Passerculus sandwichensis</i>	R	U	U	U
Fox Sparrow	<i>Passerella iliaca</i>	R	U	R	R
Song Sparrow	<i>Melospiza melodia</i>	U	A	A	U
Lincoln's Sparrow	<i>Melospiza lincolni</i>	R	U	R	R
Dark-eyed Junco	<i>Junco hyemalis</i>	A	A	A	A
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	C	A	A	C
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	R	U	U	R
House Wren	<i>Troglodytes aedon</i>	R	U	U	U
Winter Wren	<i>Troglodytes troglodytes</i>	C	A	A	A
Bewick's Wren	<i>Thryomanes bewickii</i>	C	C	C	C
American Dipper	<i>Cinclus mexicanus</i>	U	U	U	U
Golden-crowned Kinglet	<i>Regulus satrapa</i>	R	U	U	U
Ruby-crowned Kinglet	<i>Regulus calendula</i>	R	U	U	U
Western Bluebird	<i>Sialia mexicana</i>	R	U	U	U
Townsend's Solitaire	<i>Myadestes townsendi</i>	R	U	U	U
Swainson's Thrush	<i>Catharus ustulatus</i>	R	U	U	U
Hermit Thrush	<i>Catharus guttatus</i>	R	U	U	U
Varied Thrush	<i>Ixoreus naevius</i>	U	A	A	U
American Robin	<i>Turdus migratorius</i>	U	A	A	U
Cedar Waxwing	<i>Bombycilla cedrorum</i>	R	U	U	U
Orange-crowned Warbler	<i>Vermivora celata</i>	R	C	C	R
Yellow Warbler	<i>Dendroica petechia</i>	R	C	C	R
Yellow-rumped Warbler	<i>Dendroica coronata</i>	R	C	C	R

Common Name	Scientific Name	W	S	S	F
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	R	C	C	R
Hermit Warbler	<i>Dendroica occidentalis</i>	R	C	C	R
McGillivray's Warbler	<i>Oporomis tolmiei</i>	R	C	C	R
Wilson's Warbler	<i>Wilsonia pusilla</i>	R	C	C	R
Common Yellowthroat	<i>Geothlypis trichas</i>	R	U	U	R
Western Tanager	<i>Piranga ludoviciana</i>	R	U	U	R
Spotted Towhee	<i>Pipilo maculatus</i>	U	A	A	U
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	U	C	C	C
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	U	C	C	C
Brown-headed Cowbird	<i>Molothrus ater</i>	U	C	C	C
Purple Finch	<i>Carpodacus purpureus</i>	C	A	A	C
House Finch	<i>Carpodacus mexicanus</i>	A	A	A	A
Cassin's Finch	<i>Carpodacus cassinii</i>	U	R	R	U
Pine Siskin	<i>Carduelis pinus</i>	A	A	A	A
Red Crossbill	<i>Loxia curvirostra</i>	U	U	U	U
Lesser Goldfinch	<i>Carduelis psaltria</i>	C	A	A	C
American Goldfinch	<i>Carduelis tristis</i>	R	C	C	U
European Starling	<i>Sturnus vulgaris</i>	C	A	A	C
House Sparrow	<i>Passer domesticus</i>	C	C	C	C
Total Birds:	136				
Mammals					
Roosevelt Elk	<i>Cervus elaphus roosevelti</i>	A	A	A	A
Black-tailed Deer	<i>Odocoileus hemionus columbianus</i>	C	C	C	C
Mountain Lion/Cougar	<i>Puma concolor</i>	U	U	C	U
Bobcat	<i>Lynx rufus</i>	C	C	C	C
Spotted Skunk	<i>Spilogale gracilis</i>	C	C	C	C
Striped Skunk	<i>Mephitis mephitis</i>	U	U	U	U
Short-tailed Weasel	<i>Mustela erminea</i>	A	A	A	A
Long-tailed Weasel	<i>Mustela frenata</i>	A	A	A	A
Mink	<i>Mustela vison</i>	A	A	A	A
River Otter	<i>Lutra canadensis</i>	A	A	A	A
Raccoon	<i>Procyon lotor</i>	A	A	A	A
Black Bear	<i>Ursus americanus</i>	U	C	C	C
Coyote	<i>Canis latrans</i>	A	A	A	A
Red Fox	<i>Vulpes vulpes</i>	R	R	R	R
Porcupine	<i>Erethizon dorsatum</i>	U	U	U	U
Virginia Opossum	<i>Didelphis virginiana</i>	C	C	C	C
Nutria	<i>Myocastor coypus</i>	C	C	C	C
American Beaver	<i>Castor canadensis</i>	A	A	A	A
Mountain Beaver	<i>Aplodontia rufa</i>	A	A	A	A
Muskrat	<i>Ondatra zibethicus</i>	C	C	C	C
Western Red Bat	<i>Lasiurus blossevilli</i>	U	U	U	U
Hoary Bat	<i>Lasiurus cinereus</i>	U	U	U	U
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	U	U	U	U
Big Brown Bat	<i>Eptesicus fuscus</i>	U	C	C	C
Western Big-eared Bat	<i>Corynorhinus townsendii</i>	U	U	U	U
Long-legged Myotis	<i>Myotis volans</i>	U	C	C	C

Common Name	Scientific Name	W	S	S	F
Long-eared Myotis	<i>Myotis evotis</i>	U	C	C	C
California Myotis	<i>Myotis californicus</i>	U	U	U	U
Little Brown Myotis	<i>Myotis lucifugus</i>	U	A	A	A
Fringed Myotis	<i>Myotis thysanodes</i>	U	U	U	U
Yuma Myotis	<i>Myotis yumanensis</i>	U	U	U	U
California Ground Squirrel	<i>Spermophilus beecheyii</i>	A	A	A	A
Townsend's Chipmunk	<i>Tamias townsendii</i>	A	A	A	A
Western Pocket Gopher	<i>Thomomys mazama</i>	U	U	U	U
Douglas' Squirrel	<i>Tamiasciurus douglasii</i>	A	A	A	A
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	U	U	U	U
Pacific Jumping Mouse	<i>Zapus trinotatus</i>	A	A	A	A
Deer Mouse	<i>Peromyscus maniculatus</i>	A	A	A	A
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>	A	A	A	A
White-footed Vole	<i>Arborimus albipes</i>	U	U	U	U
Red Tree Vole	<i>Arborimus longicaudus</i>	U	U	U	U
Western Red-backed Vole	<i>Clethrionomys californicus</i>	C	C	C	C
Townsend's Vole	<i>Microtus townsendii</i>	A	A	A	A
Long-tailed Vole	<i>Microtus longicaudis</i>	C	C	C	C
Creeping Vole	<i>Microtus oregoni</i>	C	C	C	C
Brush Rabbit	<i>Sylvilagus bachmani</i>	A	A	A	A
Snowshoe Hare	<i>Lepus americanus</i>	C	C	C	C
Vagrant Shrew	<i>Sorex vagrans</i>	A	A	A	A
Montane Shrew	<i>Sorex monticolus</i>	C	C	C	C
Trowbridge's Shrew	<i>Sorex trowbridgii</i>	U	U	U	U
Baird's Shrew	<i>Sorex bairdii</i>	C	C	C	C
Pacific Marsh Shrew	<i>Sorex bendirii</i>	U	U	U	U
American Shrew-mole	<i>Neurotrichus gibbsii</i>	U	U	U	U
Townsend's Mole	<i>Scapanus townsendii</i>	A	A	A	A
Coast Mole	<i>Scapanus orarius</i>	A	A	A	A
Total Mammals:	55				
Reptiles					
Northern Alligator Lizard	<i>Elgaria coerulea</i>	A	A	A	A
Rubber Boa	<i>Charina bottae</i>	R	U	U	U
Common Garter Snake	<i>Thamnophis sirtalis</i>	A	A	A	A
Northwestern Garter Snake	<i>Thamnophis ordinoides</i>	A	A	A	A
Total Reptiles:	4				

**Appendix C. Land Acquisitions, Adjustments, Easements and Agreements
Involving the Jewell Meadows Wildlife Area.**

Date	Acres	Action	Principal
1969	183.10	Fee title	from Engbretson
1971	38.00	Fee title	from Olson
1971	72.00	Fee title	from Soderback
1971		Quitclaim	from Engbretson
1971	1.90	Fee title	from Espey
1973	672.96	Fee title	from Baskens and Nickel
1973	pipeline	agreement	to Baskens
1973		Option	from Nickel
1973		Option	from Baskens
1973		Correction	from Baskens and Nickel
1974	pipeline	easement	to Oregon Dept. Forestry
1975	pipeline	easement	to Nickel
1975	road	easement	to Oregon Dept. Forestry
1976	155.10	Fee title	from Wilson
1976	1.0	easement	from Wilson
1976	pipeline	easement	to Wilson
1980	gas/oil	lease	to Snyder Oil Company
1980	pipeline	agreement	to Holmes
1983	house	lease	to John & Charles Olson
1987	58.43	Fee title (trade)	from Oregon Dept. Forestry
1987	70.88	Fee title (trade)	to Oregon Dept. Forestry
1989	land use	lease	from Cavenham Forest Industries
1996	house	terminate lease	from Charles Olson
2001	land use	agreement	from Willamette Industries
2004	land use	agreement	from Weyerhaeuser Company
2014	land use	agreement	from Weyerhaeuser Company
2014	land use	agreement	from Stimson Lumber Company

Appendix D. Legal Obligations Influencing Management of the Jewell Meadows Wildlife Area

Federal Laws

Federal Aid in Wildlife Restoration Act
Pittman- Robertson Act of 1937
The Endangered Species Act of 1973, as amended
National Historic Preservation Act
National Environmental Policy Act
Americans with Disabilities Act

Oregon Revised Statutes

ORS 496.012 Oregon's Wildlife Policy
ORS 496.138 General Duties and Powers; Rulemaking Authority
ORS 496.146 Additional Powers of the Commission
ORS 496.162 Establishing seasons, amounts and manner of taking wildlife; rules
ORS 496.992 Penalties

Oregon Administrative Rules

Division 008 - Department of Fish and Wildlife Lands

635-008-0015 Agreements to Restrict Motor-propelled Vehicles
635-008-0040 Forage Removal from State Lands
635-008-0050 Fish and Wildlife Commission to Post and Enforce Rules
635-008-0110 Jewell Meadows Wildlife Area

Division 011 - Statewide Angling Regulations

635-011-0050 Procedure of Promulgation of Angling Regulations
635-011-0100 General Rule

Division 50 - Furbearer and Unprotected Mammal Regulations

635-050-0015 - Purpose
635-050-0045 - General Furbearer Regulations
635-050-0210 - Areas closed to Hunting or Trapping (except by permit)

Division 051 - General Game Bird Regulations

635-051-0000 Purpose and General Information
635-051-0065 State Wildlife Area Regulations

Division 065 - Game Mammal General Seasons and Regulations

635-065-0001 Purpose and General Information
635-065-0625 Regulations on State Wildlife Areas, Refuges and Special Areas

HB 3152: Requires the Department of Administrative Services to coordinate with the Department of Fish and Wildlife, the Parks and Recreation Department, the State Forestry Department, the Division of State Lands and other agencies with state forestland oversight responsibilities to adopt forest management plans or policies. The bill also establishes provisions whereby state forestland plans may address excess fuels build up and forest health. Calls for efforts to determine necessary silvicultural practices to improve and increase wildlife habitat, improve forest health, control insect-infested and diseased-stands of timber, and reduce fire danger.

HB 2344: Directs state agencies to develop plans for timber salvage operations to restore and recover forest lands burned by fire.