SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Headwaters of the Cultus River Research Natural Area

Deschutes National Forest

Deschutes County, Oregon

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met and that boundaries are clearly identified in accordance with FSM 4063.21 Mapping and Recordation, and FSM 4063.41, Establishment Record Content, in arriving at this recommendation

Prepared by _____ Date 4/19/15
Richard E. Brainerd, Senior Botanist, Carex Working Group, LLC

Reviewed by _____ Date 4/24/15
Robin Vora, RNA Program Manager, Deschutes National Forest

Recommended by _____ Date 4/27/15
Kevin Larkin, District Ranger, Bend-Fort Rock Ranger District

Recommended by _____ Date 4/29/15
John Allen, Forest Supervisor, Deschutes National Forest

Concurrence of _____ Date 5/5/15
Robert Mangold, Station Director, Pacific Northwest Research Station

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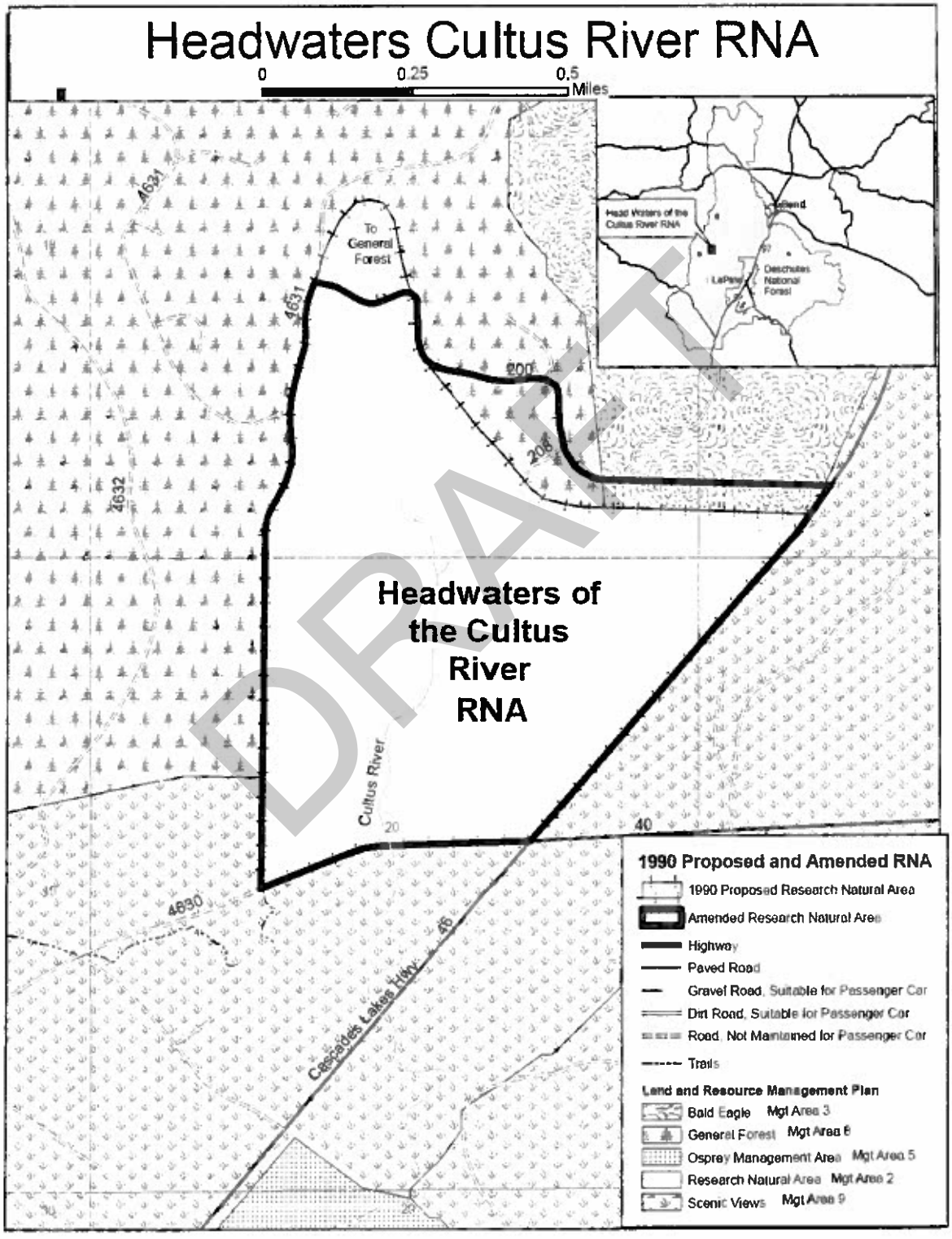
LOCATION AND BOUNDARY MAP

Figure 1. Location and boundary map of Headwaters of the Cultus River Research Natural Area, Deschutes National Forest.



LEGAL DESCRIPTION

HEADWATERS OF THE CULTUS RIVER RESEARCH NATURAL AREA
BOUNDARY DESCRIPTION

The RNA boundary begins at a point 100 feet (30.48 meters) from the intersection of the Cascades Lake Highway, also known as County Road 46 and Forest Road 4630 in Section 20, Township 20 South, Range 8 East, Willamette Meridian. The boundary follows a series of metes and bounds courses, most of them at a 100 foot (30.48 meters) offset from roads. Coordinates generated by GIS are used to describe the major angle points of the description. The positions are given in the Oregon State Plane Coordinate System, South Zone, NAD 1983, and are to the nearest one foot (0.3048 meter). Where bearings are listed, they are to the nearest 10 seconds and distances are to the nearest foot (0.3048 meter). The intent is to have the coordinates used as a guide, with the boundary to fit the actual conditions on the ground (e.g. referenced roads), if the RNA boundary is formally surveyed, with the notable exception of the Northing coordinate for Point 2. The centerlines of the roads are determined to be acceptable monuments for determining boundary locations. The area of the RNA is 333 acres (135 hectares), more or less.

NARRATIVE

Point 1
Beginning at a point 100 feet (30.48 meters) Northwesterly from the centerline/centerline intersection of County Road 46 and Forest Road 4630. The position is to be determined by bisecting the centerline bearings of the two roads for approximately 300 feet (91.44 meters) in each direction, Northeast along Road 46 and Westerly along Road 4630. The coordinate for this point is N. 789909, E. 4580111.

Thence Northeasterly along a line which is 100 feet (30.48 meters) Northwest of, parallel to and perpendicular from County Road 46, approximately 4048 feet (1233.83 meters) to;

Point 2
A point with the coordinates of N. 793012, E. 22458710. This point is controlled by the Northing coordinate and is 100 feet (30.48 meters) perpendicular from the centerline of County Road 46.

Thence on a bearing of approximately N.88 50'20"W., for a distance of 1973 feet (601.37 meters) to;

Point 3
A point determined to be 100 feet (30.48 meters) south of the most southerly extent of Forest Road 4631-200. The coordinate for this point is N. 793052, E. 4580737.

Thence, Northwesterly, along a line which is 100 feet (30.48 meters) Southwesterly of, parallel to and perpendicular from Forest Road 4631-200, crossing Forest Road 4631-208, 100 feet Southwesterly from the intersection of the centerlines of Forest Roads 4631-208 and 4631-200 and continuing along a line which is 100 feet (30.48 meters) parallel to and perpendicular to aforesaid Forest Road 4631-200 to;

Point 4
A point Southeasterly of the centerline/centerline intersection of Forest Roads 4631 and 4631-200. The position is to be determined by bisecting the centerline bearings of the two roads for approximately 300 feet (91.44 meters) in each direction, Southeasterly along Forest Road 4631-200 and Southerly along Forest Road 4631. The coordinate for this point is N. 794759, E. 4578228.

Thence, Southerly along a line which is 100 feet (30.48 meters) Easterly of, parallel to and perpendicular from Forest Road 4631 to;

Point 5
A point determined to be 100 feet (30.48 meters) Northeast of the centerline/centerline intersection of Forest Roads 4631 and 4630. The position is to be determined by bisecting the centerline bearings of the two roads for approximately 300 feet (91.44 meters) in each direction, Northerly along Forest Road 4631 and Northeasterly along Forest Road 4630. The coordinate for this point is N. 789483, E. 4577787.

Thence, Northeasterly along a line which is 100 feet (30.48 meters) Northerly of, parallel to and perpendicular from Forest Road 4630 to the point of beginning.

Description written by Bill Ham, Boundary Manager
Sept. 27, 2009

ESTABLISHMENT RECORD FOR THE HEADWATERS OF THE CULTUS RIVER RESEARCH NATURAL AREA WITHIN DESCHUTES NATIONAL FOREST, DESCHUTES COUNTY, OREGON

A. INTRODUCTION

The Headwaters of the Cultus River Research Natural Area (RNA) occupies approximately 333 acres (134.8 ha) in the High Cascades physiographic province (Franklin and Dyrness 1973) and the East Cascades Ecoregion of Oregon (Oregon Natural Heritage Program 2003), and lies within the Deschutes National Forest (DNF). The RNA is located near the western edge of the Central Oregon pumice plateau, an area of numerous small cinder cones, extensive pumice deposits, young lava flows and lakes. The RNA contains the headwaters and upper reaches of the Cultus River which arises from a large, perennial, upwelling cold spring emerging from the base of Bench Mark Butte.

Old growth ponderosa pine (*Pinus ponderosa*) and mixed conifer forest grows on the slopes of the south portion of Bench Mark Butte. Moist bottomland Engelmann spruce (*Picea engelmannii*) forest grows in the lowlands along the river and riparian and upland lodgepole pine (*Pinus contorta*) forest occupies the remainder of the RNA.

B. JUSTIFICATION

JUSTIFICATION STATEMENT

The Headwaters of the Cultus River RNA fills a unique RNA need for representation of the following natural heritage elements (Oregon Natural Heritage Program 2003):

- Flowing and pooled cold springs
- Engelmann spruce bottomland forest with ponderosa and lodgepole pine

In addition, the RNA provides regional cell representation of a lodgepole pine/bitterbrush (*Purshia tridentata*)/long-rhizome sedge (*Carex inops* ssp. *inops*) community.

PRINCIPAL DISTINGUISHING FEATURES

Headwaters of the Cultus River RNA contains large, cold, flowing and pooled springs that arise at the southern base of Bench Mark Butte and form the origin of the Cultus River, a major tributary of the Deschutes River. The river emerges from the base of a 150 foot (46 meter) high toeslope of blocky basalt and flows south through the center of the RNA. The river is nearly 50 feet (16 meters) wide at the origin and about 12 inches (30 centimeters) deep. Along the base of the butte are several other springs that form tributary streams to the river. An intermittent tributary stream that originates west of the RNA also drains to

the river through the western part of the RNA. The river is clear, cold and fast-flowing and hosts spawning populations of both native and introduced fish species.

Bench Mark Butte is a flat-topped, steep-sided lava dome. Its shape suggests that it formed when a volcano erupted into a glacial lake of meltwater that resulted from the volcano's heat. The southern portion of the butte is included within the RNA and is characterized by short steep pitches and draws. South of Bench Mark Butte the topography of the RNA is nearly flat. The substrate of this area is glacial till overlain by air-laid pumice from the eruption of Mt. Mazama.

Engelmann spruce bottomland forest is located along the Cultus River and its tributaries. This community grades into a wet lodgepole pine forest with increasing distance from the river. Both of these communities have diverse and dense understory layers. Dry lodgepole pine forest with a sparse understory occurs on well-drained soils farthest from the river. Old growth ponderosa pine forest with a mixed conifer understory occurs on the slopes of Bench Mark Butte. The butte was selectively logged for Douglas-fir (*Pseudotsuga menziesii*) long ago, and stumps and old skid roads are still evident.

OBJECTIVE

The objective of Headwaters of the Cultus River RNA is to protect the ecological processes represented by the biotic communities found within the RNA, to provide a reference area for determining long-term intrinsic ecological changes, and to serve as a benchmark for comparison with intensively used or managed sites supporting similar vegetation.

C. LAND MANAGEMENT PLANNING

Headwaters of the Cultus River RNA was included as a proposed RNA in the Land and Resource Management Plan (LRMP) of the Deschutes National Forest (USDA Forest Service 1990a) and the Final Environmental Impact Statement (FEIS) for the LRMP (USDA Forest Service 1990b).

The north boundary of the RNA has been amended from an irregular line to one that follows Forest Road 4631-200. The original acreage of the RNA as proposed in the LRMP was 315 acres (127 hectares). The amended acreage is 333 acres (135 hectares).

D. MANAGEMENT PRESCRIPTION

The Headwaters Cultus River RNA is included, along with other established and proposed RNAs, in the Deschutes National Forest Plan in Management Area 2, Research Natural Areas (USDA Forest Service 1990a). Management of the RNA will be directed toward maintaining natural ecological processes and conditions. Activities such as logging, livestock grazing and mining will be prohibited. Recreational use will not be encouraged. No new roads or trails will be constructed. Management actions commensurate with RNA

objectives may be taken to control or eradicate noxious weeds or exotic species, including the use of herbicides or biological control organisms. Any pest management activities will be as specific as possible against target organisms and will be designed to induce minimal impact to ecosystem processes. The standards and guidelines for management of MA-2 are described in the Forest Plan pages 4-92 to 4-93.

E. APPENDICES

Documentation for natural diversity elements can be found in Appendix E page 13 of the FEIS for the DNF LRMP (USDA Forest Service 1990b). Cells represented by Headwaters of the Cultus River RNA are documented in the Oregon Natural Heritage Plan, Chapter 10, pages 98 and 100 (Oregon Natural Heritage Program 2003).

ECOLOGICAL EVALUATION

A. PHYSICAL SITE DESCRIPTION AND CLIMATIC CONDITIONS

LOCATION

Headwaters of the Cultus River RNA is located in the Deschutes National Forest on the Bend-Fort Rock Ranger District in Deschutes County, Oregon (Figure 1). The approximate center of the RNA is at latitude 43° 50' 00" North and longitude 121° 47' 35" West (Map datum: NAD 1983). The RNA is located in Sections 16, 17, 20, and 21 of Township 20 South, Range 8 East, Willamette Meridian, approximately 28.5 air miles (45 kilometers) southwest of Bend, Oregon and 2 miles (3 kilometers) east of Cultus Lake.

AREA

Total area of Headwaters of the Cultus River RNA is approximately 333 acres (135 hectares).

ELEVATION RANGE

Elevations within the RNA range from about 4460 feet (1359 meters) where the Cultus River exits the RNA to 4650 feet (1417 meters) on Bench Mark Butte along the northern boundary.

ACCESS

From downtown Bend, Oregon take County Road 46 (Cascade Lakes Highway) 43.6 miles (70.2 kilometers) west and south to the intersection with Forest Service Road 4630.

This intersection forms the southeast corner of the RNA. The west side of the RNA can be accessed from County Road 46 and the south side from Forest Service Road 4630. East of the Cultus River FS Road 4630 can be accessed from its intersection with County Road 46; however, the road does not cross the Cultus River. To reach the western part of the RNA continue 1.25 mile (2 kilometers) south on County Road 46 to FS Road 4635 and turn right (northwest). Go 0.75 mile (1.2 kilometers) on FS Road 4635 to the intersection with FS Road 4630 and turn right (northeast) Go 1 mile (1.6 kilometers) on FS Road 4630 to the intersection with FS Road 4631. This intersection forms the southwest corner of the RNA and FS Road 4630 continues along the south side of the RNA to Cultus River. FS Road 4631 provides access along the west side of the RNA. There is a locked gate on FS Road 4631 approximately 0.75 mile (1.2 kilometer) north of FS Road 4630. FS Road 4631-200 provides foot access along a portion of the north side and FS Road 4631-208 enters the RNA from FS Road 4631-200. FS Road 4631-208 also provides foot access into the northern part of the RNA. There is a 100 foot (30.48 meter) buffer between all roads and the RNA boundary, except for FS Road 4631-208 which is entirely included within the RNA boundary.

CLIMATIC DATA

The central Oregon climate is characterized by warm summers and cold winters. Most of the limited precipitation falls as snow during the winter with some rainfall occurring in the spring. Frost can occur in any month of the year. The frost-free season is very short with the average growing season approaching only 100 days. Summers are typically dry with high daytime temperatures and cool nighttime temperatures. Winds during the summer are typically light and from the northwest. During spring and fall, very strong easterly winds may occur, increasing fire hazards. Winter snowstorms generally come from the southwest with occasional frigid storms from the northwest.

Wickiup Dam, Oregon, is the closest recording National Oceanographic and Atmospheric Administration (NOAA) weather station. It is located approximately 11.5 miles (18.5 kilometers) to the southeast at an elevation of 4360 feet (1329 meters) above sea level. The Wickiup Dam station has a mean annual temperature of 43.5° F (6.4° C) and receives average annual precipitation of 20.72 inches (52.6 centimeters) and average annual snowfall of 78.7 inches (199.9 centimeters). Nearly half of the annual precipitation falls between November and February. Summer high temperatures regularly reach into the 80's F (27-31° C), while winter lows often drop into the 20's F (-6.6 to -1.6° C). Monthly climatic data for Wickiup Dam are illustrated in Figures 2 and 3.

Figure 2. Average monthly temperature and precipitation data for Wickiup Reservoir, Oregon between 1971 and 2000 (National Oceanic Atmospheric Administration 2000).

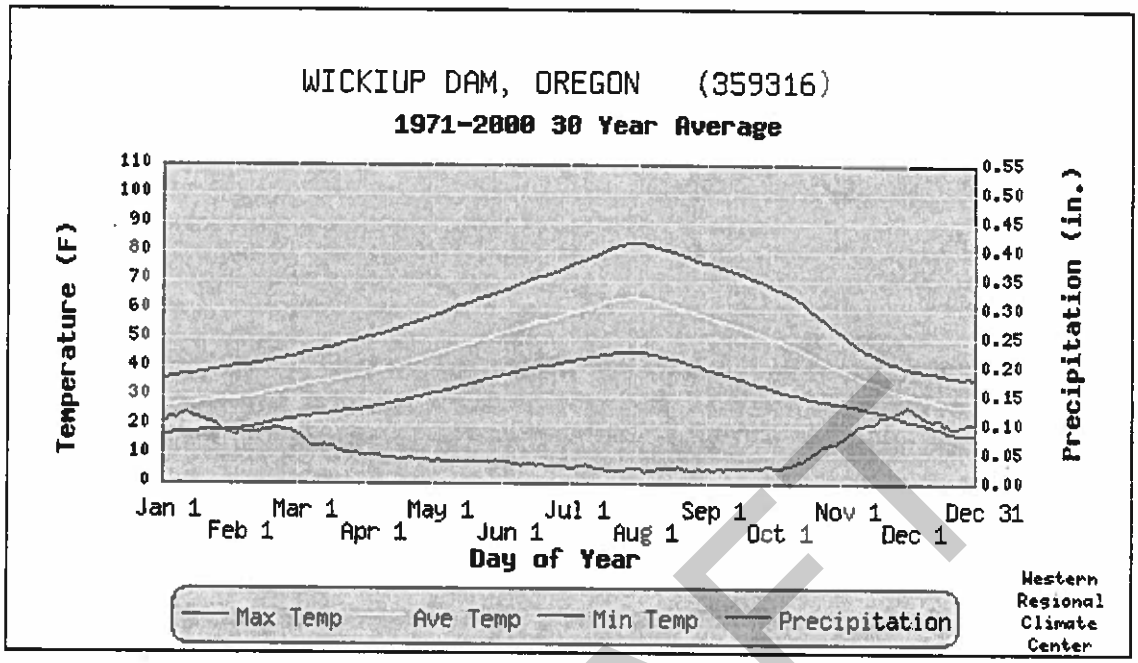
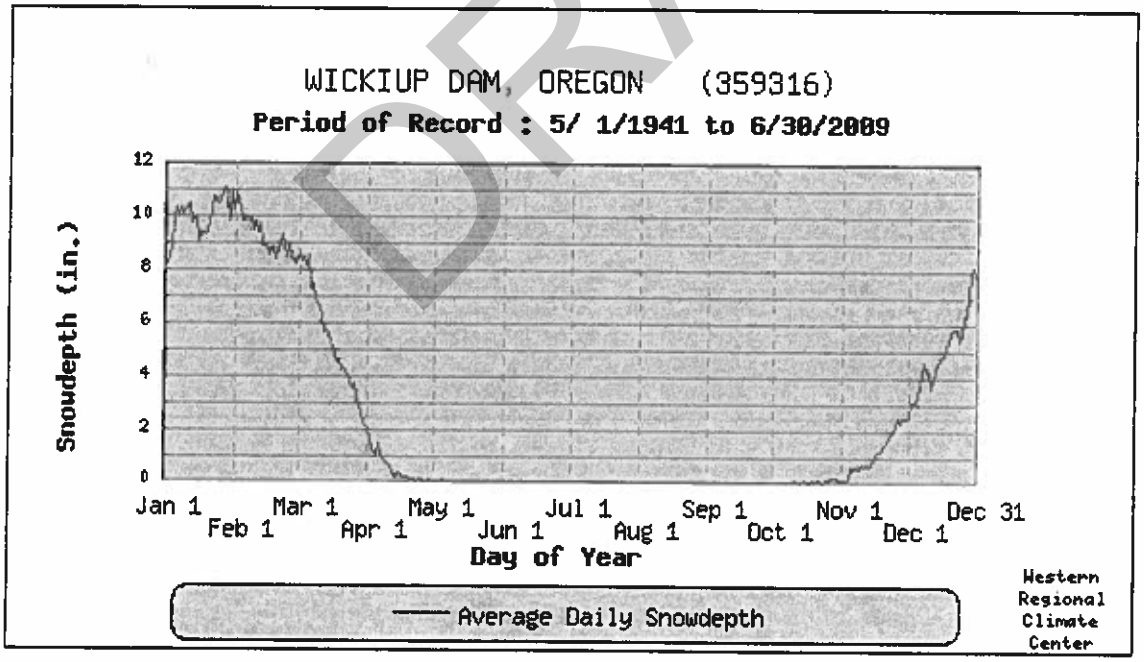


Figure 3. Average daily snow depth data for Wickiup Reservoir, Oregon between 1971 and 2000 (National Oceanic Atmospheric Administration 2000).



B. ECOLOGICAL DESCRIPTION

ECOREGION

Headwaters of the Cultus River RNA is located in the Humid Temperate Domain, Marine Division/Marine Regime Mountains, Cascade Mixed Forest – Coniferous Forest Province, Eastern Cascades Section (Bailey 1994).

Thorson et al. (2003) placed Headwaters of the Cultus River RNA in the Northwestern Forested Mountains, Western Cordillera, East Cascades Slopes and Foothills Ecoregion, Pumice Plateau Basins subregion of Oregon.

VEGETATION TYPES

The vegetation of Headwaters of the Cultus River RNA has not been studied or mapped in detail. Three plant association groups are mapped by the Deschutes National Forest within the RNA: Mixed Conifer Wet, Mixed Conifer Dry and Lodgepole Pine Wet (Figure 4, Table 1).

Figure 4. Plant association groups of Headwaters of the Cultus River Research Natural Area.

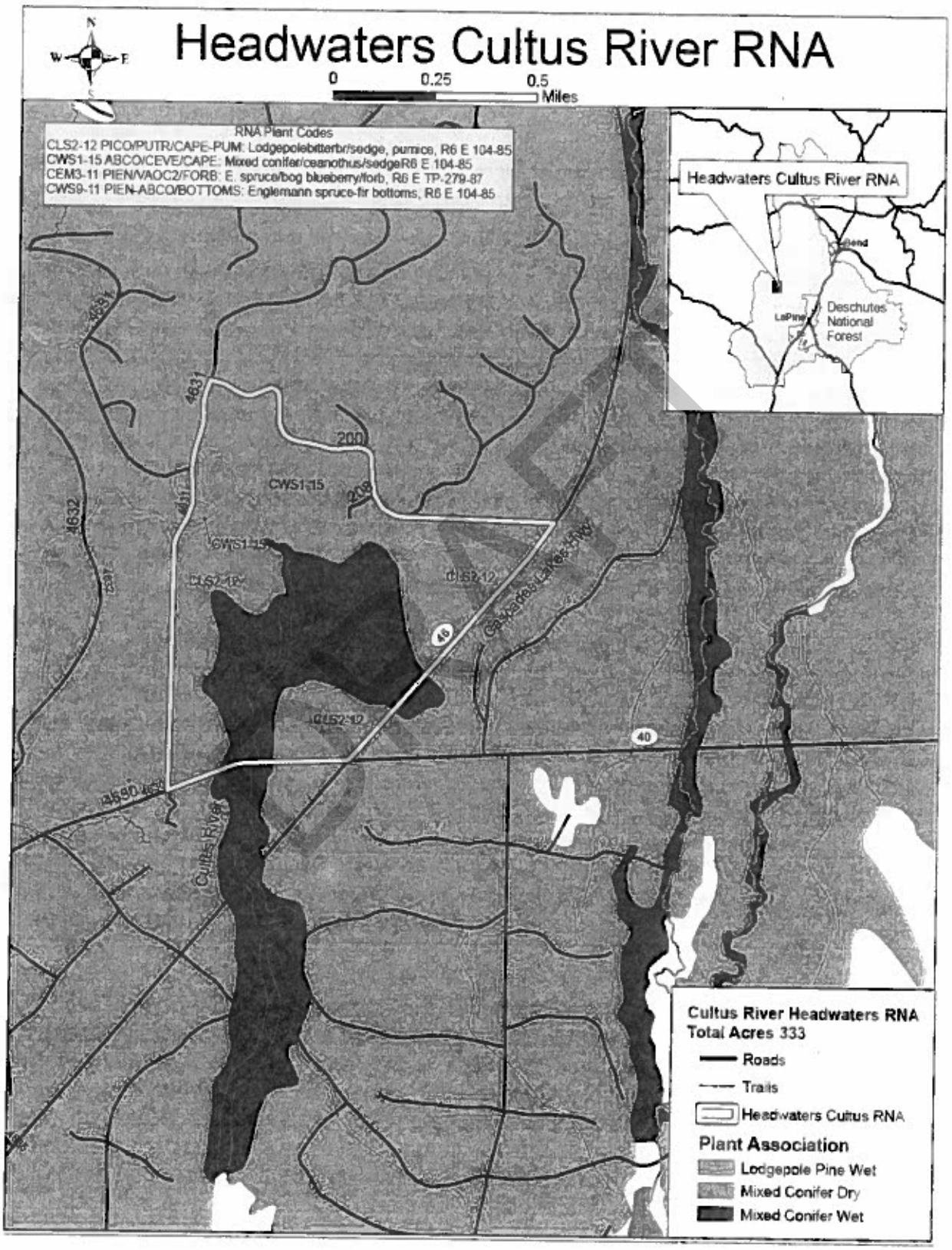


Table 1. Plant association groups and acreages within Headwaters of the Cultus River Research Natural Area.

Plant Association Group	Acres	Hectares
Mixed Conifer Wet	105	42.5
Mixed Conifer Dry	84	34.0
Lodgepole Pine Wet	144	58.3

At Headwaters of the Cultus River RNA the Mixed Conifer Wet plant association group is represented by two plant associations: Engelmann spruce/bog blueberry (*Vaccinium uliginosum*)/forb and Engelmann spruce-fir (*Abies* sp.) bottoms. These plant associations cover about 32% of the RNA and are located in the riparian corridor along the Cultus River and on the adjacent bottomlands in the center of the RNA. This plant association group occurs on imperfectly drained soil formed in air-laid pumice over glacial till on relatively flat bottomlands (Volland 1985). The overstory is dominated by Engelmann spruce and may contain lodgepole pine, ponderosa pine, white fir x grand fir (*Abies concolor x grandis*) hybrid and Douglas-fir. The shrub layer may contain currant (*Ribes* sp.), snowberry (*Symphoricarpos* sp.), pearhip rose (*Rosa woodsii*) and serviceberry (*Amelanchier alnifolia*). Herbaceous species often include starry Solomon plume (*Maianthemum stellatum*), queen's cup (*Clintonia uniflora*), sidebells pyrola (*Orthilia secunda*), bedstraw (*Galium* sp.) and bearded melic (*Melica aristata*).

The Mixed Conifer Dry plant association group is represented by the Mixed conifer/snowbrush (*Ceanothus velutinus*)/long-rhizome sedge plant association. This plant association occupies about 25% of the RNA in the northern portion on the slopes of Bench Mark Butte. It occurs on air-laid or transported pumice or on ash over lava flow substrates (Volland 1985). The overstory often is dominated by ponderosa pine, lodgepole pine and white fir x grand fir hybrid, Shasta red fir (*Abies magnifica x procera*), and sugar pine (*Pinus lambertiana*) may be present as regeneration in the understory. Snowbrush, greenleaf manzanita (*Arctostaphylos patula*), and pinemat manzanita (*A. nevadensis*) may be present in the shrub layer and squirreltail (*Elymus elymoides*), yarrow (*Achillea millefolium*), kelloggia (*Kellogia gallioides*), fireweed (*Chamerion angustifolium*), dogbane (*Apocymum androsaemifolium*) and broadpetal strawberry (*Fragaria virginiana*) in the herb layer.

The Lodgepole Pine Wet plant association group is represented by the Lodgepole pine/bitterbrush/long-rhizome sedge, pumice plant association. This plant association is currently included in the Lodgepole pine/long-rhizome sedge plant association (Simpson 2007). Although current plant association group mapping shows this plant association to be a wet lodgepole pine plant association, Simpson (2007) considers it to be a dry association. This plant association occupies about 43% of the RNA on bottomlands east and west of the riparian corridor and south of Bench Mark Butte. It occurs on airfall pumice and pumice alluvium/lava colluvium (Simpson 2007). Lodgepole pine is the

climax species on flats. The shrub layer is dominated by bitterbrush and there is a sparse herb layer of long-rhizome sedge, Ross's sedge (*Carex rossii*), squirreltail, western needlegrass (*Achnatherum occidentale*), silvery lupine *(Lupinus argenteus*) and broadpetal strawberry (Simpson 2007).

Existing vegetation of the RNA was described in the LRMP FEIS (1990b) and by Titus (1998). Because of their similarity, several of Titus' communities were combined to form seven communities constituting the current vegetation of the RNA (Table 2).

Table 2. Existing plant communities and acreages within the Headwaters of the Cultus River Research Natural Area.

Plant Community	Acres	Hectares
Engelmann spruce bottomlands	80	32.4
Lodgepole pine/bog blueberry/forb	3	1.2
Lodgepole pine/long-rhizome sedge	157	63.5
Ponderosa pine/bitterbrush-greenleaf manzanita/needlegrass	91	36.8
Wet meadow	2	0.8
White water crowfoot-cold brachythecium moss aquatic	0.5	0.2

The Engelmann spruce bottomlands community is located along the river and near its tributary streams. This community generally occurs within 100 feet (30.5 meters) of the river. Engelmann spruce dominates the overstory and all ages of spruce are present. Basal area of Engelmann spruce averages 100 feet^2 per acre (23.3 meters^2 per hectare). Overstory spruce trees average 70 feet (21 meters) in height and 11 inches (28 centimeters) diameter at breast height (dbh) with maximum height of 90 feet (27 meters) and maximum dbh of 34 inches (86 centimeters). Many mature lodgepole pine are present along with lodgepole pine regeneration up to 20 feet (6 meters) in height. Mature lodgepole pine average 100 feet (30.5 meters) in height and 12 inches (31 centimeters) dbh. A few lodgepole snags are scattered along the river. The basal area of the lodgepole pine varies from near zero to 100 feet^2 per acre (23.3 meters^2 per hectare). The canopy is fairly open with about 60 percent cover, but there are a few dense spruce patches with nearly closed canopy along the riverbanks. White fir x grand fir hybrid occurs in the understory reaching 50 feet (15 meters) in height and 5 inches (13 centimeters) dbh. Western twinflower (*Linnaea borealis*), black alpine sedge (*Carex nigricans*), and southern beaked sedge (*Carex utriculata*) dominate the ground cover and narrow-leaved sedge (*Carex angustata*) forms dense patches along the river shoreline. The herb layer is diverse and includes beadlily, Lyall's anemone (*Anemone lyallii*), broadpetal strawberry, American vetch (*Vicia americana*), starry Solomon plum, tall mountain shooting star (*Dodecatheon jeffreyi*), Oregon agrostis (*Agrostis oregonensis*), white-flowered bog orchid (*Platanthera dilatata*), bigleaf lupine (*Lupinus polyphyllus*), and narrow-spiked reedgrass (*Calamagrostis stricta*).

The Lodgepole pine/bog blueberry/forb wetlands community occurs near the river in the southwest part of the RNA in areas with a high water table. Surface soils are wet and rich in organic matter. The wet soils result in a climax lodgepole pine forest with occasional pole-sized white fir x grand fir hybrid and silver fir (*Abies amabilis*). Lodgepole pine dominates the forest. Mature trees average 100 feet (30.5 meters) in height and 8 inches (20 centimeters) dbh with maximum height of 120 feet (37 meters) and maximum dbh of 14 inches (36 centimeters). Bog blueberry dominates the shrub layer and the herb layer is very diverse. Pinegrass (*Calamagrostis rubescens*) dominates the herbaceous layer and many forb species are present. Common understory species include bigleaf lupine, big huckleberry (*Vaccinium membranaceum*), grouse huckleberry (*Vaccinium scoparium*), Oregon checkermallow (*Sidalcea oregana*), sidebells pyrola, western blue violet (*Viola adunca*), short-beak sedge (*Carex simulata*), narrow-leaved sedge, broadpetal strawberry, beadlily, western St. John's wort and purple-flowered honeysuckle.

The climax Lodgepole pine/long-rhizome sedge community occurs on dry pumice soils on flats away from the river and south of Bench Mark Butte. The forest is two-aged with an overstory and a regeneration layer of nearly pure lodgepole pine. Ponderosa pine and white fir saplings are rare in the understory. Average basal area is 100 feet^2 per acre (23.3 meters^2 per hectare). There are many lodgepole pine snags, likely from bark beetle attack. Bitterbrush forms a sparse shrub layer. Prostrate ceanothus (*Ceanothus prostratus*) and pinemat manzanita are common and wax currant (*Ribes cereum*) and snowbrush are scattered in the shrub layer. Long-rhizome sedge dominates the sparse herb layer. Several species of grasses are also present including western needlegrass, pinegrass and squirreltail. Dominant forbs are broad-petal strawberry, prairie lupine (*Lupinus lepidus),* and American vetch. Kinnikinnick (*Arctostaphylos uva-ursi*) is scattered in the understory in transitional areas between the dry and wet lodgepole pine forest.

The Ponderosa pine/bitterbrush-greenleaf manzanita/needlegrass plant community occurs on the slopes of Bench Mark Butte in the northern part of the RNA. Old growth ponderosa pine is the dominant overstory species. The ponderosa pines average 160 feet (49 meters) in height and 30 inches (76 centimeters) dbh with the largest attaining 170 feet (52 meters) in height and 50 inches (127 centimeters) dbh. Most of large pines bear deep fire scars. Other tree species are present only as regeneration including Douglas-fir, lodgepole pine, white fir x grand fir hybrid, Engelmann spruce, and mountain hemlock (*Tsuga mertensiana*). There is also a small amount of ponderosa pine regeneration in the understory. Numerous Douglas-fir stumps on the butte indicate that Douglas-fir may have been codominant with ponderosa pine before the area was logged. Stumps are as large as 60 inches (152 cm) in diameter. White fir x grand fir hybrid is the climax species on this site. Total basal area for all tree species averages 120 feet^2 per acre (28 meters^2 per hectare). Bitterbrush and green-leaf manzanita are present in the shrub layer in approximately equal amounts and there is a scattering of snowbrush. Prostrate ceanothus and grouse huckleberry dominate the low shrub layer. Pinegrass, long-rhizome sedge and western needlegrass are common in the herb layer in many areas. Common forbs include broadpetal strawberry, pipsissewa, fireweed, ash penstemon (*Penstemon cinicola*) and white-flowered hawkweed (*Hieraceum albiflorum)*

The wet meadow community occurs intermittently along the Cultus River and its tributary springs and intermittent streams. Dominant meadow species include narrow-leaved sedge, tall mannagrass (*Glyceria elata*) and arrowleaf groundsel (*Senecio triangularis*). Other common species include short-beak sedge, southern beaked sedge, narrow-spiked reedgrass, Columbia monkshood (*Aconitum columbianum*), Oregon bentgrass, orange arnica (*Arnica fulgens*), leathery grapefern (*Botrychium multifidum*), smooth willowherb (*Epilobium glaberrimum*), and yellow monkeyflower (*Mimulus guttatus*).

The white water crowfoot (*Ranunculus aquatilis*)-cold brachythecium moss (*Brachythecium frigidum*) community is an aquatic community occurring in the Cultus River. Both species are aquatic plants that are rooted in the submerged riverbed.

DESCRIPTION OF VALUES

Headwaters of the Cultus River RNA represents flowing and pooled, cold springs which emerge from the base of a lava dome and form the origin of the Cultus River which then flows through the RNA. The river hosts a spawning population of native mountain whitefish (*Prosopium williamsonii*). Several tributary streams also originate at the base of the lava dome and flow into the Cultus River.

The RNA is almost entirely forested by Engelmann spruce bottomland forest, xeric and riparian lodgepole pine forest, and ponderosa pine forest. Small areas of wet meadows also occur in the RNA

A nesting pair of the Northern Spotted Owl (*Strix occidentalis caurina*), which is federally listed as Threatened, has been documented northwest of the RNA, and its home range is mapped by the DNF to include approximately the northwestern half of the RNA. The RNA is included within a Northern Spotted Owl Critical Habitat Unit and small portions of the RNA on Bench Mark Butte are mapped by the DNF as Nesting, Roosting, Foraging habitat for this species.

Several vascular plant species lists have been compiled for the RNA (USDA Forest Service 1990a; Moholt 1996; Titus 1998; Carex Working Group 2008). The fauna of Headwaters of the Cultus River RNA have not been systematically inventoried; a list of wildlife species that potentially use the area has been compiled (see below).

Flora List

A plant survey was done of Headwaters of the Cultus River RNA and surrounding areas in 1996 (Moholt 1996) and a floristic survey was completed in 1998 (Titus 1998). Table 3 lists plant species that have been observed in the RNA (USDA Forest Service 1990a; Moholt 1996, Titus 1998; Carex Working Group 2008).

Table 3. Plant species list for Headwaters of the Cultus River Research Natural Area. Nomenclature follows the PLANTS Database (USDA NRCS 2009), the Oregon Flora Project (2009), and Flora North America (1993+). Key: E = exotic, non-native species.

Scientific name	Common name
TREES	
Abies amabilis	silver fir
Abies concolor x grandis	white fir x grand fir hybrid
Abies lasiocarpa	subalpine fir
Picea engelmannii	Engelmann spruce
Pinus contorta var. *latifolia*	lodgepole pine
Pinus monticola	western white pine
Pinus ponderosa	ponderosa pine
Pseudotsuga menziesii var. *menziesii*	Douglas-fir
Tsuga mertensiana	mountain hemlock
SHRUBS	
Amelanchier alnifolia	serviceberry
Arctostaphylos nevadensis	pinemat manzanita
Arctostaphylos patula	greenleaf manzanita
Arctostaphylos uva-ursi	kinnikinnick
Ceanothus prostratus	prostrate ceanothus
Ceanothus velutinus	snowbrush
Chrysolepis chrysophylla var. *chrysophylla*	golden chinquapin
Ericameria viscidiflora	green rabbitbrush
Holodiscus dumosus var. *glabrescens*	dwarf oceanspray
Lonicera conjugialis	purple-flowered honeysuckle
Lonicera involucrata var. *involucrata*	black twinberry
Paxistima myrsinites	Oregon boxwood
Purshia tridentata	antelope bitterbrush
Rhamnus alnifolia	alderleaf buckthorn
Ribes cereum var. *cereum*	wax currant
Ribes hudsonianum var. *petiolare*	western black currant
Ribes viscosissimum	sticky currant
Rosa woodsii var. *ultramontana*	pearhip rose
Rubus leucodermis	blackcap raspberry
Rubus parviflorus	thimbleberry
Salix sp.	willow
Spiraea douglasii	hardhack
Symphoricarpos sp.	snowberry
Vaccinium membranaceum	big huckleberry
Vaccinium scoparium	grouse huckleberry
Vaccinium uliginosum	bog blueberry

FORBS

Achillea millefolium	common yarrow
Aconitum columbianum	Columbia monkshood
Agoseris aurantiaca	orange agoseris
Agoseris glauca var. *glauca*	pale agoseris
Anaphalis margaritacea	pearly everlasting
Anemone deltoidea	western white anemone
Anemone lyallii	Lyall's anemone
Antennaria rosea	rosy pussytoes
Apocynum androsaemifolium	spreading dogbane
Aquilegia formosa	red columbine
Arabis holboellii	Holboell's rockcress
Arceuthobium americanum	lodgepole pine dwarf mistletoe
Arnica fulgens	foothill arnica
Bistorta bistortoides	American bistort
Botrychium multifidum	leathery grapefern
Calochortus subalpinus	mountain cat's ear
Castilleja miniata	scarlet paintbrush
Centaurea stoebe ssp. *micranthos*	spotted knapweed
Cerastium glomeratum (E)	sticky chickweed
Chamerion angustifolium var. *canescens*	fireweed
Chimaphila umbellata	pipsissewa
Cirsium remotifolium	fewleaf thistle
Cirsium vulgare (E)	bull thistle
Cistanthe umbellata	umbellate pussypaws
Clintonia uniflora	bead lily
Collinsia parviflora	small-flowered blue-eyed Mary
Cornus unalaschkensis	bunchberry
Cryptantha torreyana	Torrey's cryptantha
Delphinium sp.	larkspur
Dodecatheon jeffreyi	tall mountain shooting star
Epilobium brachycarpum	fall willowherb
Epilobium ciliatum ssp. *glandulosum*	glandular willowherb
Epilobium glaberrimum ssp. *fastigiatum*	smooth willowherb
Epilobium minutum	small-flowered willowherb
Equisetum arvense	field horsetail
Equisetum palustre	marsh horsetail
Ericameria bloomeri	rabbitbrush goldenweed
Eriogonum umbellatum	sulfur buckwheat
Eriophyllum lanatum	Oregon sunshine
Fragaria virginiana var. *platypetala*	broadpetal strawberry
Galium aparine	cleavers
Galium oreganum	Oregon bedstraw
Galium triflorum	fragrant bedstraw
Gayophytum diffusum	spreading groundsmoke
Geum allepicum	yellow avens

Gnaphalium canescens ssp. *thermale*	slender cudweed
Gnaphalium palustre	lowland cudweed
Goodyera oblongifolia	rattlesnake plantain
Hemitomes congestum	gnome plant
Hemizonella minima	opposite-leaved tarweed
Heuchera cylindrica	roundleaf alumroot
Heuchera micrantha	small-flowered alumroot
Hieracium albiflorum	white flowered hawkweed
Horkelia fusca	dusky horkelia
Hypericum anagalloides	bog St. John's wort
Hypericum formosum var. *scouleri*	western St. John's wort
Kelloggia gallioides	kelloggia
Lathyrus lanszwertii var. *aridus*	Nevada pea
Ligusticum grayi	Gray's lovage
Linnaea borealis	twinflower
Listera cordata	heart-leaved twayblade
Lupinus argenteus	silvery lupine
Lupinus lepidus	prairie lupine
Lupinus polyphyllus	bigleaf lupine
Machaeranthera canescens var. *canescens*	hoary aster
Maianthemum stellatum	starry Solomon plume
Microseris alpestris	alpine lake false dandelion
Mimulus breweri	Brewer's monkeyflower
Mimulus guttatus	yellow monkeyflower
*Mimulus jepsonii**	Jepson's monkeyflower
Mimulus moschatus	musk monkeyflower
Mimulus primuloides	primrose monkeyflower
Mitella caulescens	leafy mitrewort
Monotropa hypopitys	pinesap
Navarretia sp.	Navarretia
Orthilia secunda	sidebells pyrola
Osmorhiza sp.	sweet cicely
Pedicularis racemosa	leafy lousewort
Penstemon cinicola	ash penstemon
Phacelia heterophylla ssp. *virgata*	varileaf phacelia
Plagiobothrys hispidus	Cascade popcornflower
Plantago major (E)	common plantain
Platanthera dilatata var. *leucostachys*	white-flowered bog orchid
Polemonium occidentale	western polemonium
Polygonum douglasii ssp. *douglasii*	Douglas' knotweed
Polygonum kelloggii	Kellogg's knotweed
Polystichum imbricans	imbricate fern
Polystichum munitum	western sword fern
Potentilla drummondii	Drummond's cinquefoil
Potentilla glandulosa	sticky cinquefoil
Potentilla rivalis	brook cinquefoil

Prunella vulgaris ssp. *vulgaris* (E)	self heal
Pterospora andromedea	pinedrops
Ranunculus aquatilis	white water crowfoot
Rumex occidentalis var. *procerus*	western dock
Senecio triangularis var. *triangularis*	arrowleaf groundsel
Sidalcea oregana	Oregon checkermallow
Silene menziesii	Menzies' catchfly
Sisyrinchium sp.	blue-eyed grass
Solidago canadensis	Canada goldenrod
Spiranthes romanzoffiana	hooded ladies' tresses
Stellaria jamesiana	sticky starwort
Stephanomeria sp.	wirelettuce
Symphyotrichum spathulatum	western mountain aster
Taraxacum officinale (E)	common dandelion
Trifolium longipes	long-stalked clover
Trifolium repens (E)	white clover
Veratrum californicum	California false hellebore
Veronica americana	American brooklime
Veronica serpyllifolia ssp. *humifusa*	thyme-leaved speedwell
Veronica wormskjoldii	American alpine speedwell
Vicia americana	American vetch
Viola adunca	western blue violet
Viola nuttalii	Nuttall's violet
Viola purpurea	goosefoot violet

GRAMINOIDS

Achnatherum occidentale ssp. *occidentale*	western needlegrass
Agrostis exarata	spike bentgrass
Agrostis oregonensis	Oregon bentgrass
Agrostis scabra	rough bentgrass
Alopecurus aequalis	shortawn foxtail
Bromus carinatus var. *marginatus*	mountain brome
Bromus inermis	smooth brome
Calamagrostis rubescens	pinegrass
Calamagrostis stricta ssp. *inexpansa*	narrow-spiked reedgrass
Carex angustata	narrow-leaved sedge
Carex aquatilis var. *aquatilis*	water sedge
Carex cusickii	Cusick's sedge
Carex disperma	two-seed sedge
Carex halliana	Hall's sedge
Carex inops ssp. *inops*	long-rhizome sedge
Carex jonesii	Jones' sedge
Carex nebrascensis	Nebraska sedge
Carex nigricans	black alpine sedge
Carex simulata	short-beak sedge

Carex utriculata	southern beaked sedge
Dactylis glomerata (E)	orchardgrass
Danthonia californica	California oatgrass
Danthonia intermedia	timber oatgrass
Deschampsia cespitosa	tufted hairgrass
Deschampsia danthonioides	annual hairgrass
Eleocharis quinqueflora	few-flower spikerush
Elymus canadensis	Canada wildrye
Elymus elymoides	squirreltail
Elymus glaucus ssp. *glaucus*	blue wildrye
Festuca occidentalis	western fescue
Glyceria elata	tall mannagrass
Glyceria grandis	American mannagrass
Hordeum brachyantherum	meadow barley
Juncus balticus	baltic rush
Juncus ensifolius	dagger-leaved rush
Juncus nevadensis	Nevada rush
Lolium perenne (E)	perennial ryegrass
Luzula comosa	Pacific woodrush
Melica subulata	Alaska oniongrass
Muhlenbergia filiformis	pullup muhly
Phleum pratense (E)	timothy
Pleuropogon refractus	nodding semaphoregrass
Poa pratensis (E)	Kentucky bluegrass
Pseudoroegneria spicata	bluebunch wheatgrass
Torreyochloa pallida var. *pauciflora*	weak mannagrass
Trisetum canescens	tall trisetum

Fauna List

The fauna of Headwaters of the Cultus River RNA has not been systematically studied or inventoried. Table 4 lists potentially occurring terrestrial vertebrates (Oregon State University 2009). Fish known to be present in the RNA were listed in the draft establishment report that was written in 1998 (Titus 1998). No information on invertebrates is available for the RNA.

Table 4. Potential fauna list for Headwaters of the Cultus River RNA (Oregon State University 2009). Key: E = exotic (non-native) species; * = taxa with Oregon Natural Heritage Information Center status (Oregon Natural Heritage Information Center 2007, 2009).

Scientific name	**Common name**

Fish

Salmonidae	
Gasterosteus aculeatus (E)	Three spine stickleback
Oncorhynchus mykiss (E)	Rainbow trout
Oncorhynchus nerka (E)	Kokanee
Prosopium williamsonii	Mountain whitefish
Salvelinus fontinalis (E)	Brook trout

Amphibians

Ambystomatidae	
Ambystoma gracile	Northwestern salamander
Ambystoma macrodactylum	Long-toed salamander
Salamandridae	
Taricha granulosa	Rough-skinned newt
Ascaphidae	
*Ascaphus truei**	Coastal tailed frog
Bufonidae	
*Bufo boreas**	Western toad
Hylidae	
Pseudacris regilla	Pacific chorus frog
Ranidae	
*Rana cascadae**	Cascades frog
*Rana pretiosa**	Oregon spotted frog

Reptiles

Anguidae	
Elgaria coerulea	Northern alligator lizard
Phrynosomatidae	
*Sceloporus graciosus**	Sagebrush lizard
Sceloporus occidentalis	Western fence lizard
Scincidae	
Eumeces skiltonianus	Western skink
Colubridae	
Coluber constrictor	Racer
Thamnophis elegans	Western terrestrial garter snake

Thamnophis ordinoides	Northwestern garter snake
Thamnophis sirtalis	Common garter snake
Viperidae	
*Crotalus oreganus**	Western rattlesnake
Boidae	
Charina bottae	Rubber boa

Birds

Ardeidae	
Ardea herodias	Great blue heron
Botaurus lentiginosus	American bittern
Nycticorax nycticorax	Black-crowned night-heron
Anatidae	
Aix sponsa	Wood duck
Anas acuta	Northern pintail
Anas americana	American wigeon
Anas clypeata	Northern shoveler
Anas cyanoptera	Cinnamon teal
Anas discors	Blue-winged teal
Anas platyrhynchos	Mallard
Anas strepera	Gadwall
Aythya affinis	Lesser scaup
Aythya americana	Redhead
Aythya collaris	Ring-necked duck
Aythya valisineria	Canvasback
Branta canadensis	Canada goose
*Bucephala albeola**	Bufflehead
*Bucephala islandica**	Barrow's goldeneye
Lophodytes cucullatus	Hooded merganser
Mergus merganser	Common merganser
Oxyura jamaicensis	Ruddy duck
Cathartidae	
Cathartes aura	Turkey vulture
Accipitridae	
Accipiter cooperii	Cooper's hawk
*Accipiter gentilis**	Northern goshawk
Accipiter striatus	Sharp-shinned hawk
Aquila chrysaetos	Golden eagle
Buteo jamaicensis	Red-tailed hawk
Circus cyaneus	Northern harrier

*Haliaeetus leucocephalus**	Bald eagle
Pandion haliaetus	Osprey
Odontophoridae	
Callipepla californica	California quail
*Oreortyx pictus**	Mountain quail
Phasianidae	
Bonasa umbellus	Ruffed grouse
Dendragapus obscurus	Blue grouse
Rallidae	
Fulica americana	American coot
Porzana carolina	Sora
Rallus limicola	Virginia rail
Charadriidae	
Charadrius vociferus	Killdeer
Scolopacidae	
Actitis macularius	Spotted sandpiper
Gallinago delicata	Wilson's snipe
Columbidae	
Columba livia (E)	Rock pigeon
Zenaida macroura	Mourning dove
Strigidae	
Aegolius acadicus	Northern saw-whet owl
Asio otus	Long-eared owl
Bubo virginianus	Great horned owl
Glaucidium gnoma	Northern pygmy-owl
Megascops kennicottii	Western screech-owl
*Otus flammeolus**	Flammulated owl
*Strix nebulosa**	Great gray owl
Strix occidentalis caurina	Northern spotted owl
Strix varia	Barred owl
Caprimulgidae	
*Chordeiles minor**	Common nighthawk
Phalaenoptilus nuttallii	Common poorwill
Alcedinidae	
Ceryle alcyon	Belted kingfisher
Apodidae	

Chaetura vauxi	Vaux's swift
Trochilidae	
Calypte anna	Anna's hummingbird
Selasphorus rufus	Rufous hummingbird
Stellula calliope	Calliope hummingbird
Picidae	
Colaptes auratus	Northern flicker
*Dryocopus pileatus**	Pileated woodpecker
*Picoides albolarvatus**	White-headed woodpecker
*Picoides arcticus**	Black-backed woodpecker
*Picoides dorsalis**	American three-toed woodpecker
Picoides pubescens	Downy woodpecker
Picoides villosus	Hairy woodpecker
Sphyrapicus nuchalis	Red-naped sapsucker
Sphyrapicus ruber	Red-breasted sapsucker
Sphyrapicus thyroideus	Williamson's sapsucker
Tyrannidae	
*Contopus cooperi**	Olive-sided flycatcher
Contopus sordidulus	Western wood-pewee
Empidonax difficilis	Pacific slope flycatcher
Empidonax hammondii	Hammond's flycatcher
Empidonax oberholseri	Dusky flycatcher
Empidonax occidentalis	Cordilleran flycatcher
*Empidonax traillii**	Willow flycatcher
Tyrannus verticalis	Western kingbird
Vireonidae	
Vireo cassinii	Cassin's vireo
Vireo gilvus	Warbling vireo
Vireo huttoni	Hutton's vireo
Corvidae	
Corvus corax	Common raven
Cyanocitta stelleri	Steller's jay
Perisoreus canadensis	Gray jay
Hirundinidae	
Petrochelidon pyrrhonota	Cliff swallow
Riparia riparia	Bank swallow
Stelgidopteryx serripennis	Northern rough-winged swallow
Tachycineta bicolor	Tree swallow
Tachycineta thalassina	Violet-green swallow

Paridae	
Poecile atricapillus	Black-capped chickadee
Poecile gambeli	Mountain chickadee
Poecile rufescens	Chestnut-backed chickadee
Aegithalidae	
Psaltriparus minimus	Bushtit
Sittidae	
Sitta canadensis	Red-breasted nuthatch
Sitta carolinensis	White-breasted nuthatch
Sitta pygmaea	Pygmy nuthatch
Certhiidae	
Certhia americana	Brown creeper
Troglodytidae	
Catherpes mexicanus	Canyon wren
Cistothorus palustris	Marsh wren
Salpinctes obsoletus	Rock wren
Troglodytes aedon	House wren
Troglodytes troglodytes	Winter wren
Cinclidae	
Cinclus mexicanus	American dipper
Regulidae	
Regulus calendula	Ruby-crowned kinglet
Regulus satrapa	Golden-crowned kinglet
Turdidae	
Catharus guttatus	Hermit thrush
Catharus ustulatus	Swainson's thrush
Ixoreus naevius	Varied thrush
Myadestes townsendi	Townsend's solitaire
Sialia currucoides	Mountain bluebird
*Sialia mexicana**	Western bluebird
Turdus migratorius	American robin
Motacillidae	
Anthus rubescens	American pipit
Bombycillidae	
Bombycilla cedrorum	Cedar waxwing
Sturnidae	

Sturnus vulgaris (E)	European starling
Parulidae	
Dendroica coronata	Yellow-rumped warbler
Dendroica nigrescens	Black-throated gray warbler
Dendroica occidentalis	Hermit warbler
Dendroica petechia	Yellow warbler
Dendroica townsendi	Townsend's warbler
Geothlypis trichas	Common yellowthroat
*Icteria virens**	Yellow-breasted chat
Oporornis tolmiei	Macgillivray's warbler
*Seiurus noveboracensis**	Northern waterthrush
Setophaga ruticilla	American redstart
Vermivora celata	Orange-crowned warbler
Vermivora ruficapilla	Nashville warbler
Wilsonia pusilla	Wilson's warbler
Thraupidae	
Piranga ludoviciana	Western tanager
Cardinalidae	
Passerina amoena	Lazuli bunting
Pheucticus melanocephalus	Black-headed grosbeak
Emberizidae	
Junco hyemalis	Dark-eyed junco
Melospiza lincolnii	Lincoln's sparrow
Melospiza melodia	Song sparrow
Passerculus sandwichensis	Savannah sparrow
Passerella iliaca	Fox sparrow
Pipilo chlorurus	Green-tailed towhee
Pipilo maculatus	Spotted towhee
Pooecetes gramineus	Vesper sparrow
Spizella breweri	Brewer's sparrow
Spizella passerina	Chipping sparrow
Zonotrichia leucophrys	White-crowned sparrow
Icteridae	
Agelaius phoeniceus	Red-winged blackbird
Euphagus cyanocephalus	Brewer's blackbird
Icterus bullockii	Bullock's oriole
Molothrus ater	Brown-headed cowbird
Xanthocephalus xanthocephalus	Yellow-headed blackbird
Fringillidae	
Carduelis pinus	Pine siskin

Carduelis psaltria	Lesser goldfinch
Carduelis tristis	American goldfinch
Carpodacus cassinii	Cassin's finch
Carpodacus mexicanus	House finch
Carpodacus purpureus	Purple finch
Coccothraustes vespertinus	Evening grosbeak
Leucosticte tephrocotis	Gray-crowned rosy-finch
Loxia curvirostra	Red crossbill
Loxia leucoptera	White-winged crossbill
Passeridae	
Passer domesticus (E)	House sparrow

Mammals

Soricidae	
Sorex bairdi	Baird's shrew
Sorex bendirii	Pacific water shrew
Sorex pacificus	Pacific shrew
Sorex palustris	Water shrew
Sorex sonomae	Fog shrew
Sorex trowbridgii	Trowbridge's shrew
Sorex vagrans	Vagrant shrew
Talpidae	
Neurotrichus gibbsii	Shrew-mole
Scapanus orarius	Coast mole
Vespertilionidae	
*Antrozous pallidus**	Pallid bat
Eptesicus fuscus	Big brown bat
*Lasionycteris noctivagans**	Silver-haired bat
*Lasiurus cinereus**	Hoary bat
*Myotis californicus**	California myotis
*Myotis ciliolabrum**	Western small-footed myotis
*Myotis evotis**	Long-eared myotis
Myotis lucifugus	Little brown myotis
*Myotis volans**	Long-legged myotis
*Myotis yumanensis**	Yuma myotis
Ochotonidae	
Ochotona princeps	American pika
Leporidae	
Lepus americanus	Snowshoe hare
*Lepus californicus**	Black-tailed jack rabbit

Sylvilagus bachmani	Brush rabbit
Sciuridae	
Glaucomys sabrinus	Northern flying squirrel
Marmota flaviventris	Yellow-bellied marmot
Neotamias amoenus	Yellow-pine chipmunk
Neotamias minimus	Least chipmunk
Neotamias senex	Allen's chipmunk
Neotamias townsendii	Townsend's chipmunk
*Sciurus griseus**	Western gray squirrel
Spermophilus beecheyi	California ground squirrel
Spermophilus beldingi	Belding's ground squirrel
Spermophilus lateralis	Golden-mantled ground squirrel
Tamiasciurus douglasii	Douglas' squirrel
Geomyidae	
Thomomys mazama	Western pocket gopher
Heteromyidae	
Perognathus parvus	Great Basin pocket mouse
Castoridae	
Castor canadensis	American beaver
Cricetidae	
Microtus longicaudus	Long-tailed vole
Microtus montanus	Montane vole
Microtus oregoni	Creeping vole
Microtus richardsoni	Water vole
Myodes californicus	Western red-backed vole
Neotoma cinerea	Bushy-tailed woodrat
Ondatra zibethicus	Muskrat
Peromyscus maniculatus	Deer mouse
Peromyscus truei	Pinon mouse
Phenacomys intermedius	Heather vole
Muridae	
Mus musculus (E)	House mouse
Dipodidae	
Zapus princeps	Western jumping mouse
Zapus trinotatus	Pacific jumping mouse
Erethizontidae	
Erethizon dorsatum	Common porcupine

Canidae	
Canis latrans	Coyote
Urocyon cinereoargenteus	Common gray fox
Vulpes vulpes	Red fox
Ursidae	
Ursus americanus	Black bear
Procyonidae	
Procyon lotor	Common raccoon
Mustelidae	
*Gulo gulo**	Wolverine
Lontra canadensis	Northern river otter
*Martes americana**	American marten
*Martes pennanti**	Fisher
Mustela erminea	Ermine
Mustela frenata	Long-tailed weasel
Neovison vison	Mink
Taxidea taxus	American badger
Mephitidae	
Mephitis mephitis	Striped skunk
Spilogale gracilis	Western spotted skunk
Felidae	
Lynx rufus	Bobcat
Puma concolor	Mountain lion
Cervidae	
Cervus canadensis	Elk
Odocoileus hemionus	Mule deer

Geology

The Headwaters of the Cultus River RNA lies within the Cascade Range geologic physiographic province. The modern High Cascade Range is a constructional feature of north-south trending volcanic eruptive centers that extends from northern California to southern British Columbia and has been very active for the past four million years to the present (Orr and Orr 1999). The eruptive centers that comprise the Cascade Range in Central Oregon are numerous stratovolcanoes, shield volcanoes, cinder cones, silicic domes, tuyas, and maars (MacLeod and Sherrod 1992). Over the past 1.8 million years, the Cascade Range has experienced a dozen major glaciation periods the last of which was the Suttle Lake advance of Cabot Creek glaciation which culminated about 22,000 to 18,000 years ago (Scott 1988).

The Headwaters of the Cultus River RNA is primarily underlain by glacially derived outwash material consisting of unconsolidated to moderately indurated fluvial gravel, sand, and silts that were likely deposited during the Suttle Lake advance of Cabot Creek glaciation between 22,000 to 18,000 years ago (MacLeod and Sherrod 1992). The north end of the RNA contains the south flank of Bench Mark Butte which is a flat-topped dome of massive black dacite and silicic andesite volcanic eruptive center which is dated younger than 730,000 years but older than the Suttle Lake advance about 22,000 years ago. Bench Mark Butte's flat top and steep sides is characteristic of volcanoes that erupt into a lake thawed in a glacier by the volcano's heat. These subglacial volcanoes are known as tuya volcanoes. However, Bench Mark Butte lacks direct evidence for subglacial eruptions which could be buried by colluvium on the flanks of the butte (MacLeod and Sherrod 1992). Overlying both the outwash gravels and dacite rock is a blanket of ash from Mount Mazama which erupted 7,700 years ago (Bacon 1983). A cluster of groundwater-derived springs rises from the south base of Bench Mark Butte at an elevation of 4495 feet (1370 meters) and form the Headwaters of Cultus River. These springs are classified as gravity springs in which water moving along an elevation gradient emerges at the surface. This gravity spring forms at the geologic contact boundary between the relatively permeable silicic dacite rocks that overlie the gravels of a lower permeability.

Soils

Surface soils are comprised primarily of a moderately thick layer of Mount Mazama ash and pumice over glacial till. Surface soils typically have a loamy sand texture and buried soils typically have a stony or cobbly sandy loam texture

Topography

The northern portion of the RNA includes the southern slope of Bench Mark Butte, a flat-topped, steep-sided lava butte. Gentle slopes along the northern boundary give way to steep rocky pitches and small steep drainages which drop to the nearly flat plain that constitutes the remainder of the RNA. South of the Bench Mark Butte the flat plain slopes slightly to the south. Slopes within the RNA range from about 50% on Bench Mark Butte to flat in some areas of the bottomland plain.

Aquatic/Riparian

The Cultus River flows south through the center of the RNA from its origin at the southern base of Bench Mark Butte. The water emerges cold, clean and clear and is well shaded by surrounding riparian forest as it flows through the RNA. Several springs along the base of Bench Mark Butte feed short tributary streams to the river. An intermittent stream flows through the western part of the RNA. It originates at the base of a lava flow west of

the RNA and empties into the Cultus River inside the RNA and near the river it has deep pools that retain water year-round.

Five species of fish spawn in the river: the native mountain whitefish and the introduced three spine stickleback (*Gasterosteus aculeatus*), rainbow trout (*Oncorhynchus mykiss*), kokanee salmon (*Onchorhynchus nerka*) and brook trout (*Salvelinus fontinalis*). Aquatic habitats also provide breeding habitat for native amphibians such as western toads, frogs and salamanders.

The riparian corridor is well forested with Engelmann spruce and lodgepole pine. Streamside vegetation is in good condition with dense patches of narrow-leaved sedge and a diversity of other moist site graminoids and forbs. The river is shallow and fast-flowing, and numerous logs add to channel complexity.

Rare, Threatened, Endangered, or Sensitive Species

No threatened, endangered or Forest Service sensitive plant or animal species have been documented within Headwaters of the Cultus River RNA.

A nesting pair of the Northern Spotted Owl, which is federally listed as Threatened, has been documented northwest of the RNA, and its home range is mapped by the DNF to include approximately the northwestern half of the RNA. The RNA is included within a Northern Spotted Owl Critical Habitat Unit and small portions of the RNA on Bench Mark Butte are mapped by the DNF as Nesting, Roosting, Foraging habitat for this species.

A population of Jepson's monkeyflower (*Mimulus jepsonii*) has been documented in the northwest part of the RNA in open lodgepole pine forest. Jepson's monkeyflower is on Oregon Natural Heritage Information Center's List 4 (Oregon Natural Heritage Center 2007). List 4 includes taxa that are of conservation concern but are not currently threatened or endangered, and that require continued monitoring.

Several special status wildlife species potentially inhabit or use the RNA for breeding or foraging (Table 5). The establishment of the RNA should have no adverse effects on populations of any of these species if they are present.

Table 5. Rare, threatened, endangered or sensitive animal species potentially occurring in Headwaters of the Cultus River RNA (Oregon Natural Heritage Information Center 2007, 2009; USDA Forest Service 2009). Key: C=Proposed federal candidate; SOC=Federal species of concern; SC=State of Oregon Sensitive-Critical; SV=State of Oregon Sensitive-Vulnerable; SU=State of Oregon Status Unknown; 2=ORNHIC List 2; 3=ORNHIC List 3; 4=ORNHIC List 4.

Species	Federal	FS	Oregon	ORNHIC
Amphibians				
Ascaphus truei	SOC		SV	4
Bufo boreas				4
Rana cascadae	SOC		SV	4
Rana pretiosa	C	Sensitive	SC	1
Reptiles				
Sceloporus graciosus	SOC		SV	4
Crotalus oreganus				4
Birds				
Bucephala albeola		Sensitive		2
Bucephala islandica				4
Accipiter gentilis	SOC		SV	4
Haliaeetus leucocephalus		Sensitive	LT	4
Oreortyx pictus	SOC		SV	4
Otus flammeolus			SV	4
Strix nebulosa			SV	4
Strix occidentalis caurina	LT		LT	1
Chordeiles minor			SC	4
Dryocopus pileatus			SV	4
Picoides albolarvatus	SOC	Sensitive	SC	2
Picoides arcticus			SV	4
Picoides dorsalis			SV	4
Contopus cooperi	SOC		SV	4
Empidonax traillii	SOC		SV	4
Sialia mexicana			SV	4
Icteria virens	SOC		SC	4
Seiurus noveboracensis		Sensitive		2
Mammals				
Antrozous pallidus	SOC		SV	2
Lasionycteris noctivagans	SOC		SV	4
Lasiurus cinereus			SV	4
Myotis californicus			SV	4
Myotis ciliolabrum	SOC			4

Species	Federal	FS	Oregon	ORNHIC
Myotis evotis	SOC			4
Myotis volans	SOC		SV	4
Myotis yumanensis	SOC			4
Lepus californicus				4
Sciurus griseus			SU	4
Gulo gulo	SOC	Sensitive	SC	2
Martes americana				4
Martes pennanti	C	Sensitive	SC	2

List of Rare Elements and Rare Plant Communities

The Ponderosa pine/greenleaf manzanita-bitterbrush community has been identified as rare, threatened or uncommon globally and in Oregon (G3S3) by the Oregon Natural Heritage Information Center (Kagan et al. 2004).

C. RESOURCE INFORMATION

MINERALS

There were no active locatable mining claims within or adjacent to the Headwaters of the Cultus River RNA as of November 25, 2009, based on a search of the BLM LR2000 public website (USDI Bureau of Land Management 2009). There are no known locatable minerals in the area of the RNA. There are no Forest Service mineral material pits or quarries located within the RNA. The Headwaters of the Cultus River RNA is a potential mineral resource of sand and gravel but is not likely to be developed because its high water table makes it uneconomical to mine and there are numerous alternative gravel pits that exist in the area.

There are no known significant mineral resources within the area. The Deschutes National Forest may pursue an application to the Bureau of Land Management to formally withdraw the area within the RNA from mineral entry. While the RNA is within land open to leasing for oil and gas and for geothermal energy, there are no active leases or applications for leases.

GRAZING

There are no active grazing allotments within or adjacent to Headwaters of the Cultus River RNA. Grazing within the RNA will not be allowed.

PLANTS

Timber harvesting, timber salvage and firewood cutting are not permitted within RNAs on the Deschutes National Forest (USFS 1990a). Timber resources within the RNA are not included in the DNF timber base. Harvest of special forest products from within the RNA is not permitted, although activities associated with light recreational use, such as berry picking, are permitted as long as they do not impair research or educational values of the RNA.

WATERSHED VALUES

The Headwaters of the Cultus River RNA contains the source of the Cultus River, a major tributary to the Deschutes River. The confluence of these rivers is at Crane Prairie Reservoir about 1.25 mile (2 kilometers) south of the RNA. Crane Prairie Reservoir then flows into Wickiup Reservoir which supplies irrigation water for central Oregon through the Bureau of Reclamation's Deschutes Project (USDI Bureau of Reclamation 2009). Native mountain whitefish spawn in the Cultus River. The springs at the source of the Cultus River supply cold, high quality water within the RNA and downstream for fish habitat, recreation, irrigation and other uses.

RECREATION USE

There are no developed recreation facilities or trails within Headwaters of the Cultus River RNA and none will be constructed. Cultus Horse Camp is located just to the south of the RNA. A portion of FS Road 4631 along the west side of the RNA is used as a horse trail. There are informal trails on both sides of Cultus River used by anglers and day hikers. Motor vehicle use, including the use of all-terrain vehicles, is prohibited within the RNA. Very light impacts of recreation use are evident in the RNA, including the trails along the river and associated light litter. Recreation use should not be encouraged but will be permitted as long as it does not conflict with the purpose for establishing the RNA.

WILDLIFE

Establishment of the Headwaters of the Cultus River RNA would have no detrimental effects on wildlife habitats or wildlife species, including any special status species that may use the area.

TRANSPORTATION/ROAD SYSTEM

County Road 46 borders the RNA on the east side. Forest Service Roads 4630 and 4631 border the RNA on the south and west sides respectively. FS Road 4631 is blocked by a locked gate approximately 0.75 mile (1.2 kilometer) north of FS Road 4630. FS Road 4631-200 borders the RNA along a portion of the north boundary and FS Road 4631-208 enters the RNA from FS Road 4631-200 in the northern portion of the RNA. Roads north

of the gate on FS Road 4631 are not maintained and are not drivable. With the exception of FS Road 4631-208 there is a 100 foot (30.5 meter) buffer between RNA boundaries and all roads. The RNA will be closed to motor vehicles. There are no conflicts with the DNF Transportation Plan.

D. HISTORICAL INFORMATION

RESEARCH/EDUCATIONAL USE AND INTEREST: HISTORY OF ESTABLISHMENT

No research or educational activities have been undertaken within Headwaters of the Cultus River RNA.

Headwaters of the Cultus River was identified as a potential RNA in the 1970s by Area Ecologist William Hopkins (USDA Forest Service 1990b). In the 1978 DNF Land Management Plan (USDA Forest Service 1978) the area was listed as one of 16 areas selected as possible candidates to meet identified RNA needs, and one of 11 selected to be protected until more detailed studies could be made. As part of the planning effort for the 1990 LRMP the 16 areas were reviewed. Seven areas, including Headwaters of the Cultus River, were selected as potential RNAs (USDA Forest Service 1990a, 1990b). William Hopkins field checked the area prior to inclusion in the 1990 LRMP (USDA Forest Service 1990b).

CULTURAL/HERITAGE

There are no known cultural resources located within Headwaters of the Cultus River RNA. A complete cultural inventory of the site has not been conducted to date.

DISTURBANCE HISTORY

The pumice plateau lodgepole pine forests of the East Cascades ecoregion originate from periodic catastrophic fire, windthrow or insect epidemics, or a combination of these processes, resulting in patches of more or less even-aged trees (Eckert et al. 2008). The frequency of stand replacement fires in these forests ranges from 50 to 80+ years. Following fire, dense stands regenerate and are susceptible to bark beetle outbreaks due to competition stress. Tree mortality caused by bark beetles leads to heavy fuel loads and high likelihood of another stand replacing fire. In stands of greater than 80 years of age, bark beetle outbreaks are the primary forest disturbance. Even low intensity fires can cause significant mortality in lodgepole pine because of thin bark. Dry lodgepole pine forest has been classified as Fire Regime 4 with stand-replacing fires and wet lodgepole pine forest has been classified as Fire Regime 3 with mixed severity fires (Waltz et al. 2009).

There has been high mortality of lodgepole pine in the RNA due to insect attack. As a result, fuel loads are high in many areas of the lodgepole forest type and these stands likely are susceptible to stand replacement fire in the near to mid-term.

Ponderosa pine forests often experience more frequent but low intensity fires with return intervals between 5 and 35 years (Eckert et al. 2008). Large pines with thick bark are resistant to these low intensity fires and experience low mortality (Eckert et al. 2008). Mixed conifer forests experience fire return intervals of 10 to 100 years depending on site moisture regime (Eckert et al. 2008). Fire effects are variable and often produce mosaics of surface, understory and crown fires (Eckert et al. 2008). Ponderosa pine and dry mixed conifer forests have been classified as Fire Regime 1 with low and mixed intensity fires (Waltz et al. 2009).

In 1996, the 47 acre (19 hectare) Cultus Corral Fire burned near the southeast corner of the RNA. Approximately 7 acres (3 hectares) burned north of FS Road 4630 both inside the RNA and in the buffer between the road and the RNA boundary.

Selective harvest of Douglas-fir occurred long ago (date unknown) in the mixed conifer and ponderosa pine forest on Bench Mark Butte in the northern part of the RNA. Large cut stumps and old skid roads are still visible in this area.

OCCURRENCE OF EXOTIC SPECIES

A small population of spotted knapweed (*Centaurea stoebe* ssp. *micranthos*) has been documented along the southern edge of the RNA along FS Road 4630 east of the Cultus River. The population does not extend into the RNA but is located within the 100 foot buffer between the road and the RNA boundary. Spotted knapweed is classified as a List B Noxious Weed in Oregon (Oregon Department of Agriculture 2009).

Four species of exotic fish occur in the Cultus River, all of them spawning from populations that have been stocked in Crane Prairie Reservoir. Exotic fish documented within the RNA are three spine stickleback, rainbow trout kokanee salmon and brook trout.

E. OTHER INFORMATION

PERMANENT RESEARCH PLOTS AND/OR PHOTO POINTS

There are no permanent research plots or photo points established within Headwaters of the Cultus River RNA.

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Bill Ham, Land Surveyor, Deschutes/Ochoco National Forests; boundary description
Caleb Hennekey, Heritage Stewardship Group; cultural resources
Charmane Powers, District Botanist/Ecologist; Bend-Fort Rock Ranger District; plants, noxious weeds, fire history, recreation
Dana Simon, Data Services Specialist, Ochoco National Forest; Northern Spotted Owl mapping
Deb Mafera, IDT Leader for the Invasive Plant Project; noxious weeds
Geoff Babb, Fire Ecologist; fire history and fire regime
Gery Ferguson, Planner; NEPA and scoping
Jim Lowrie, Wildlife Biologist, Bend-Fort Rock Ranger District; wildlife
Katie Grenier, Forest Botanist; plants

Lauri Turner, Forest Wildlife Biologist; wildlife
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Marvin Lang, Recreation Forester; fire history, recreation
Mike Simpson, Ecologist; plant associations, vegetation cover types
Mose Harris IV, FOIA Coordinator; NEPA and scoping
Paul Claeyssens, Supervisory Archaeologist; cultural resources
Peter Sussman, Forest Soil Scientist; soils
Rachel Armstrong, Customer Service Area 3; GIS mapping
Scott E. McBride, Special Uses, Lands and Minerals Administrator; minerals
Susan Skakel, Planning and Environmental Coordination; forest planning and NEPA
Tom Walker, Fish Biologist, Bend-Fort Rock Ranger District; fish

POTENTIAL RESEARCH PROJECTS

Headwaters of the Cultus River RNA provides an opportunity to study riparian vegetation communities and their relationship to upland dry sites. Relationships between plant community composition and soil moisture and groundwater gradients could be investigated. Additional research could focus on stream-meadow-forest succession. Studies of aquatic ecology could be carried out on the Cultus River and the tributary springs. The effects of global warming on habitats represented in the RNA could be studied particularly as they relate to lodgepole pine age and susceptibility to bark beetle attack and stand replacement wildfires.

F. EVALUATION OF SPECIFIC MANAGEMENT RECOMMENDATIONS ON THE RESEARCH NATURAL AREA

POTENTIAL OR EXISTING CONFLICTS

No existing conflicts have been identified for the Headwaters of the Cultus River RNA. Current recreational use is light and generally limited to horse riding, fishing and day hiking. Use of off-road vehicles, snowmobiles and all other motorized is prohibited within the RNA. Recreational use should not be encouraged and may be restricted in the future if it impacts the natural ecological processes occurring within the RNA.

SPECIAL MANAGEMENT AREA

Establishment of Headwaters of the Cultus River RNA does not impact any congressionally designated areas.

Lands bordering the RNA to the northeast are designated Management Area 3 – Bald Eagle; lands to the east, south, and southwest are designated Management Area 9 – Scenic Views; lands to the west and north are designated Management Area 8 – General

Forest (USDA Forest Service 1990a). Expansion of the RNA from the acreage that was proposed in the LRMP included lands from Management Areas 3 and 8 within the RNA boundary. An area at the northern tip of the RNA excludes an area that was proposed as part of the RNA in the LRMP that will become Management Area 8 – General Forest.

A powerline runs along the southern boundary of the RNA in the 100 foot (30.5 meter) buffer between FS Road 4630 and the RNA boundary. The powerline corridor is outside the RNA.

G. PHOTOGRAPHS

Figure 5a. Source of the Cultus River where it emerges from the base of Bench Mark Butte.

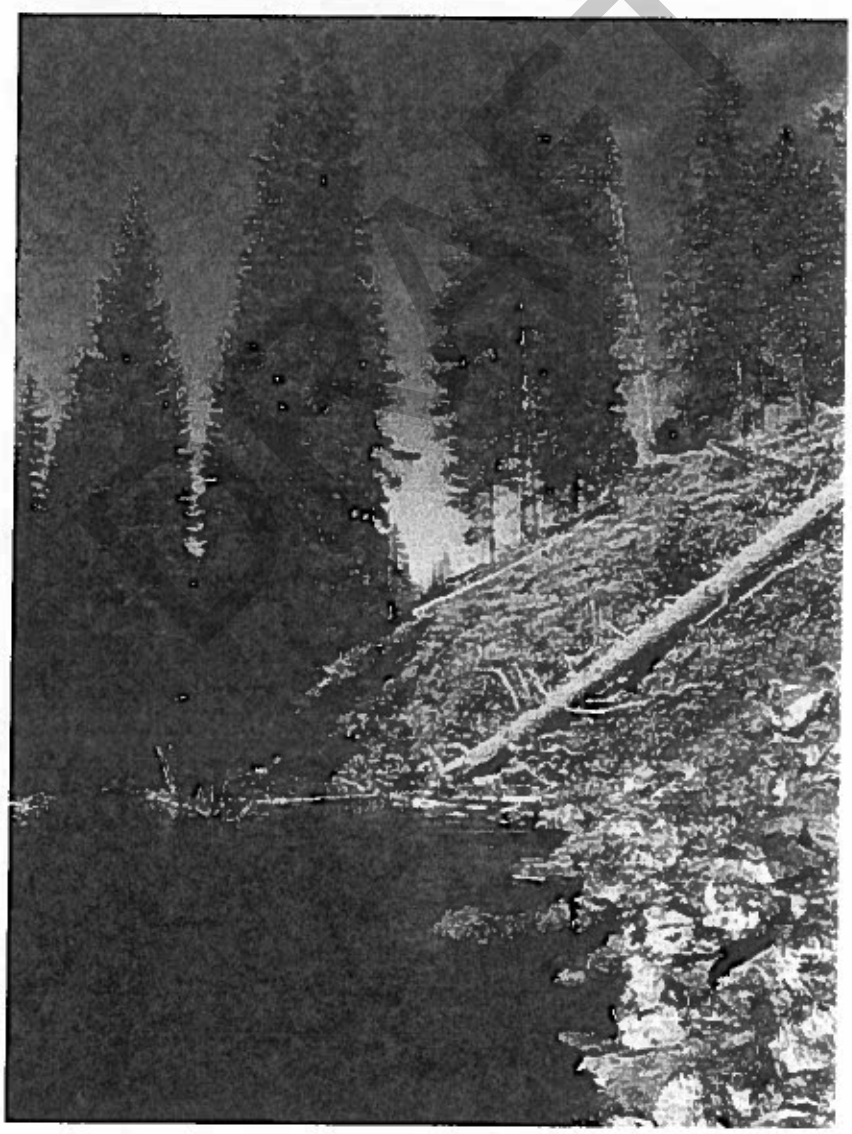


Figure 5b. Cultus River with Engelmann spruce riparian forest; viewing upstream at the source and the base of Bench Mark Butte.

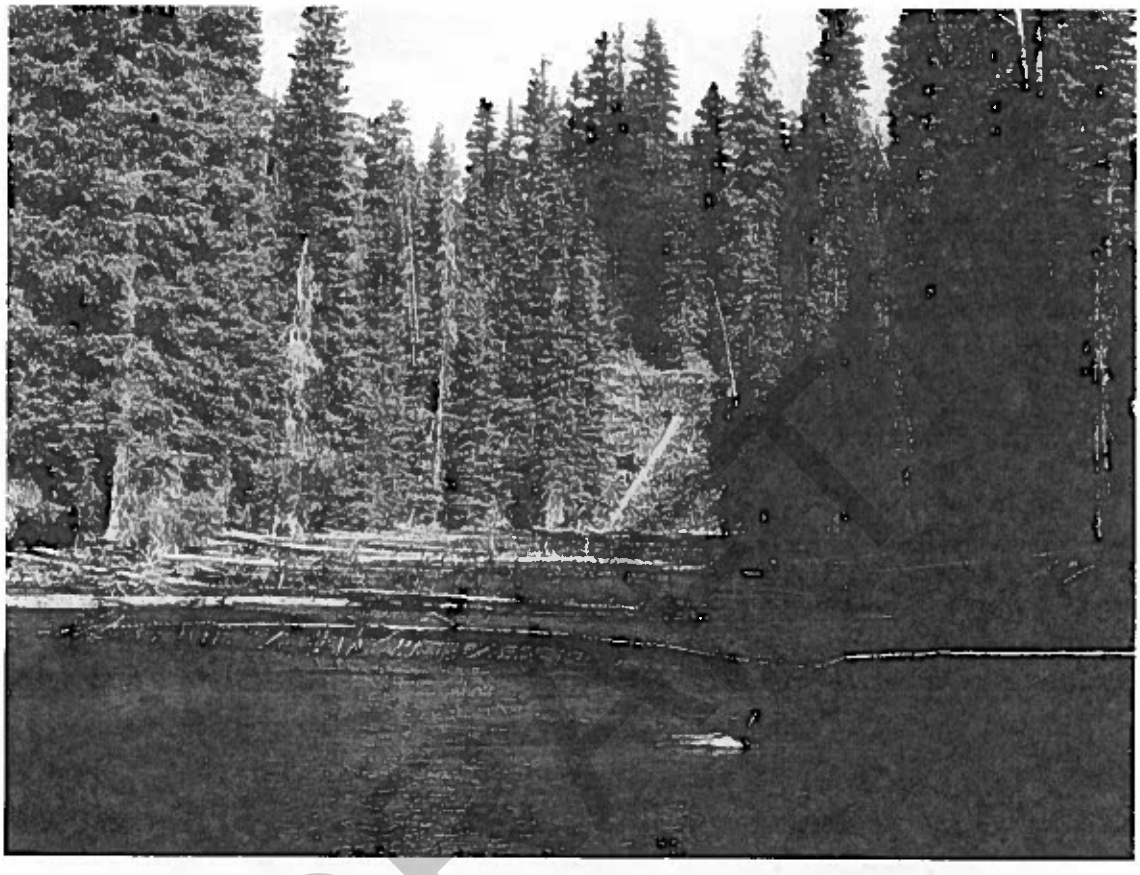
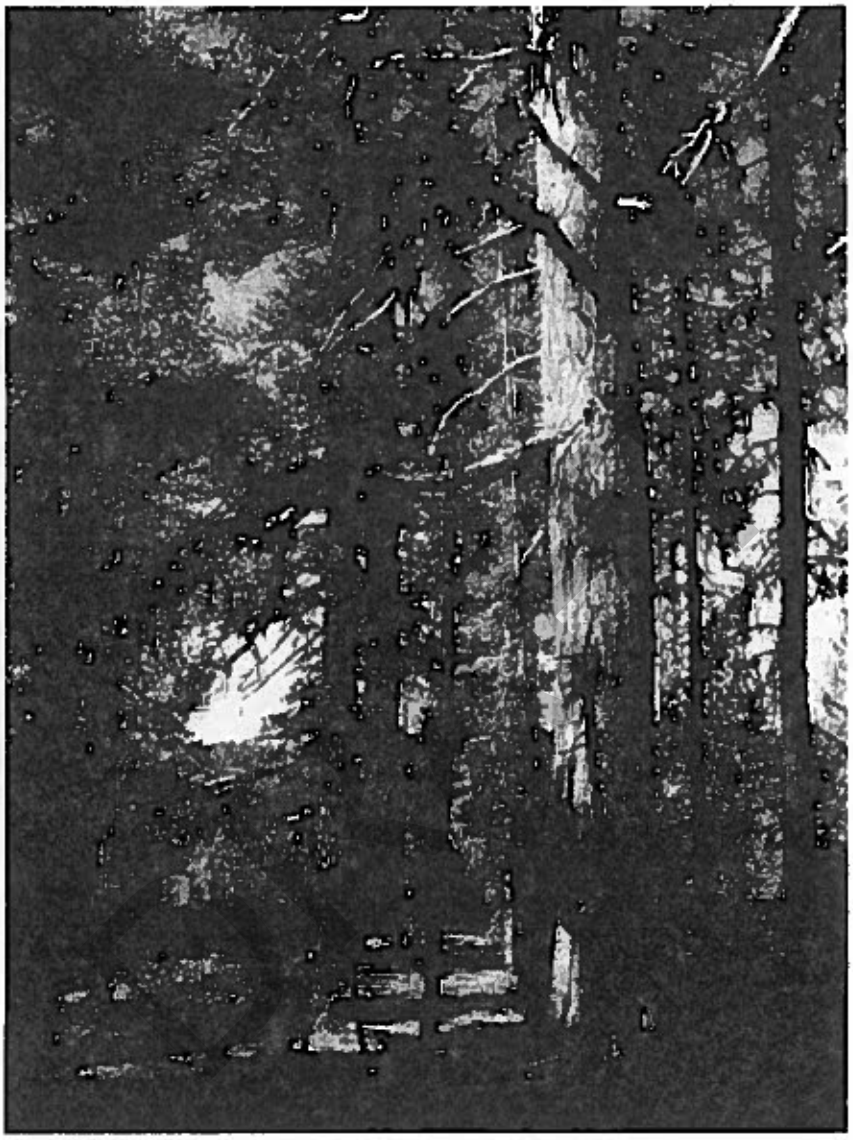


Figure 5c. Old growth ponderosa pine forest on Bench Mark Butte at Headwaters of the Cultus River RNA.



DECISION NOTICE / DESIGNATION ORDER

DECISION NOTICE/ FOREST PLAN AMENDMENT
And Finding of No Significant Impact

Headwaters of the Cultus River Research Natural Area
Deschutes National Forest, Bend/Ft. Rock Ranger District
Deschutes County, Oregon
T20S, R8E, Sections 17 and 20, Willamette Meridian

BACKGROUND

An environmental assessment (EA) that discusses the designation of the Headwaters of the Cultus River Research Natural Area (RNA) on the Bend/Ft. Rock Ranger District is available for public review at the Forest Supervisor's Office, Deschutes National Forest in Bend, Oregon.

The Headwaters Cultus River area was identified in the Deschutes National Forest Land and Resource Management Plan (LRMP) (USDA Forest Service 1990), as a "proposed" RNA based on the unique nature of the area, and recognition that designation of this area as an RNA would make an important contribution by filling a need for natural heritage elements.

The newly established RNA will consist of approximately 333 acres on the west side of the Bend/Ft. Rock Ranger District. The area includes the headwaters of the Cultus River. The central feature is a large, cold spring that emerges from the base of Bench Mark Butte, and then flows south. The Headwaters of the Cultus River was proposed for designation as an RNA in the Deschutes National Forest Land and Resource Management Plan (Forest Plan, 1990) in order to fill an element in the State of Oregon Natural Heritage Program. The proposed RNA has been managed as a regular RNA since 1990. This project to "establish" the RNA is to formalize the designation and protect this area permanently.

The system of RNAs was established with the goal of allowing natural processes to dominate. RNAs preserve natural features and plant communities for research and educational purposes. The objectives of RNAs are (Franklin et al. 1972):

- to provide baseline areas against which the effects of human activities in similar environments can be measured;
- to provide sites for study of natural processes in undisturbed ecosystems;
- to provide gene pool preserves for plant and animal species.

The purpose of establishing the RNA in the Headwaters of the Cultus River area is to contribute to a series of RNAs designated to "illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance" (36 CFR 251.23). The area provides representation of:

- Flowing and pooled cold springs;
- Engelmann spruce bottomland forest with ponderosa and lodgepole pine.

In addition, the RNA provides regional cell representation of a lodgepole pine/bitterbrush/long rhizome sedge community.

An establishment record is being completed for the proposed Headwaters Cultus River RNA and is currently on file at the Bend/Ft. Rock Ranger District. The establishment record is to be completed with the final Decision Notice.

DECISION and DECISION RATIONALE

Our decision is to select the Proposed Action as described in the *Headwaters of the Cultus River Research Natural Area Environmental Assessment* (Deschutes National Forest 2015). Specifically, we are deciding to amend the Forest Plan to officially designate the 333 acres located at T20S, R8E, Sections 17 and 20 on the west side of the Bend/Ft. Rock Ranger District as a Research Natural Area.

The purpose of establishing the Headwaters Cultus River RNA is to contribute to a series of RNAs designated to "illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance" (36 CFR 251.23).

Deschutes National Forest staff has re-examined the rationale to ensure that the environmental effects of establishing the area as an RNA have not changed since 1990 when the Forest Plan was established. A complete Ecological Evaluation is included in the Establishment Record. We selected the Proposed Action because it provides long-term protection and recognition of the Engelmann spruce bottomland forest type as well as flowing and pooled cold springs, and provides opportunities for long-term observation of the development of this fores type.

The selected alternative will allow ecological processes to proceed without active management intervention in the area as described in the EA pp. 8-10. This decision includes a modification to the boundary of the RNA as shown on the map in Appendix A of this Decision Notice. The changed boundary is easier to describe and recognize, and provides for roadside management acivities such as hazard tree removal.

This decision is a non-significant amendment to the Deschutes Land and Resource Management Plan. Formal designation of the RNA by the Regional Forester would amend the Forest Plan under the provisions of the 1982 planning regulations in accordance with 36 CFR 219.17(b)(3).

The regulations for forest planning under the 1982 National Forest Management Act (36 CFR Part 219) provide procedures for the Responsible Officials to amend a Forest Plan. The regulations state: "If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, the Forest Supervisor may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures" (36 CFR 219.10(f)). The proposal to amend the Forest Plan was described in a scoping letter mailed to the public in 2009.

Additional guidance on amending Forest Plans is provided in the Forest Service Manual 1900- Planning. Section 1926.51 of the manual describes non-significant amendments as:

- Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management;

- Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management;
- Minor changes in standards and guidelines; and/or
- Opportunities for additional management practices that would contribute to achievement of the management prescriptions.

The RNA in the Headwaters of the Cultus River area would be designated Management Area 2 (MA-2) in the Forest Plan. Proposed and designated RNAs in the Forest Plan are listed as Management Area 2. Standards and guidelines for this management area are noted in the Forest Plan and listed in the EA pages 8 - 10. These standards and guidelines apply to proposed RNAs that are actively being evaluated for RNA status through the Forest Planning process. Presently the area is being managed in accordance with this management area so designation would not impact other programs or activities; therefore, officially designating the area would not be a significant amendment to the Forest Plan.

The Headwaters Cultus River RNA will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding RNA, and in accordance with the management direction identified in the Forest Plan as amended by the Northwest Forest Plan.

OTHER ALTERNATIVES CONSIDERED

One other alternative was considered. The No Action alternative would continue the management of the proposed RNA as a proposed RNA in the short-term. Long-term management would be determined during the next Forest Plan revision.

No Action was not selected because it would not address the purpose and need to contribute to a series of RNAs and in particular to designate an area that fills a need for representation of natural heritage elements identified in the 2003 Natural Heritage Plan. No Action would only provide short-term protection of the area. The team evaluating the establishment strongly felt that this area was still deserving of the designation and research attention that the Forest Plan proposed.

PUBLIC INVOLVEMENT

The proposal of this RNA establishement was first initiated in 2009. Scoping letters were sent out to the Forest's mailing list including Federal and State agencies, the Confederated Tribes of the Warm Springs, environmental groups, and interested citizens. The project was also listed on the *Schedule of Projects* and posted to the Forest's NEPA project web apge. Two public scoping comments were received in response, both supportive of the designation.

A draft Environmental Assessment was made vailable for a 30-day public comment period, beginning October 17, 2014. Three comment letters were received in response to the draft EA. The comments received were supportive of RNA establishment. Specific comments are addressed in Appendix A of the final EA.

FINDING OF NO SIGNIFICANT IMPACT

We find that this action is consistent with the Forest Plan, as amended by the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA, USDI 1994).

We have determined through the EA that the proposed action is not a major Federal action that would significantly affect the quality of the human environment, therefore, an environmental impact statement is not needed. This determination is based on the following factors (40 CFR 1508.27):

Context:

Although this is an addition to the national system of RNA, we find that both short-term and long-term physical and biological effects are limited to the local area. This decision officially designates 333 acres as an RNA on a 1.6 million acre forest.

Intensity:

1. Adverse and beneficial impacts have been assessed and found to be not significant. The analysis considered not only the direct and indirect effects of the projects but also their contribution to cumulative effects (Fire Risk Management, EA, page 13; Wildlife Species of Concern, EA, pages 14, 17, 18; Management on RNA Objectives, EA, pages 15, 16; Hydrology and Aquatic Species of Concern, EA, Page 17; Botanical Species of Concern and Invasive Plants, EA, page 18, 19; Cultural Resource, EA, page 18; Recreation, EA, page 19). My finding of no significant environmental effects is not biased by the beneficial effects of the action. No significant cumulative or secondary effects were identified.

2. We find there will be no significant effects to public health and safety. No public health and safety issues were raised during scoping (EA, Appendix A, Response to Comments). Public access and use of the RNA is not encouraged and officially designating the RNA will not change recreational use.

3. We find there will be no significant effects on unique characteristics or ecologically critical areas, including historic or cultural resources, park lands, prime farmlands, rangelands, wetlands, or Wild and Scenic Rivers. No heritage resource properties which meet the criteria for inclusion in the National Register of Historic Places were documented in the Area of Potential Effect (APE) (EA, page 18; Heritage Resource Report). There are no other unique characteristics or ecologically critical areas in the area. Because these features do not exist within the RNA boundaries, there would be no effect to park lands, farmlands, or rangelands, wetlands or Wild and Scenic Rivers (EA, pages 19-21).

4. The effects on the quality of the human environment are not likely to be highly controversial. No comments were received from the public concerning the scientific controversy over the impacts of the project (EA, Appendix A, Response to Comments pages 51-53).

5. The Forest Service has experience designating lands as RNAs and we find that the effects are not uncertain, and do not involve unique or unknown risk.

6. We find this action is one of several similar actions undertaken on National Forest System lands and is not likely to establish a precedent for future actions with significant

effects, or represent a decision in principle. The decision implements the Deschutes Forest Plan, as amended (EA, page 4, 8-10).

7. We find the cumulative impacts are not significant. Cumulative impacts are addressed in Chapter 3 of the EA (EA pages 13-39).

8. We find the action will have no significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places. No heritage resource properties which meet the criteria for inclusion in the National Register of Historic Places were documented in the RNA (EA, page 38; Heritage Resource Report).

9. We have considered the degree to which the actions will adversely affect endangered or threatened species or their habitat that have been determined to be critical under the Endangered Species Act of 1973.There are no threatened, endangered or proposed plant or fish species located in the area affected by the designation; therefore there would be no effect to any federally-listed plant or fish species (EA, pages 12-15). The only federally-listed wildlife species potentially present is the northern spotted owl. Designating the Headwaters of the Cultus River as a RNA under this alternative would have no effect on spotted owls because there is no change from the existing condition.

10. We find the actions will not violate Federal, State, and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the EA. The action is consistent with the Deschutes National Forest Land and Resource Management Plan as amended.

NATIONAL FOREST MANAGEMENT ACT/ FOREST PLAN CONSISTENCY

As required by the National Forest Management Act, this decision is tiered to the Final Environmental Impact Statement that was completed to inform the *Deschutes National Forest Land and Resource Management Plan* (1990) as amended by the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (1994) (EA, page 12).

There will be no impacts to Forest Service, Region 6 Sensitive Species (EA, pages 21).

We have considered the effects to management indicator species (MIS) as disclosed in the EA (EA, pp. 31-34). MIS on the Deschutes National Forest include goshawk, Cooper's hawk, sharp-shinned hawk, great gray owl, great blue heron, golden eagle, waterfowl, woodpeckers, red-tailed hawk, osprey, American marten, deer, and elk. There will be no impact to any of the management indicator species and therefore no contribution to negative trends in viability on the Deschutes National Forest.

We find that the designation "meets" or "does not prevent attainment" of the Aquatic Conservation Strategy objectives because there are no proposed activities in the RNA or riparian reserves that would have any impact on the ACS objectives, the management direction of the NWFP will continue to apply, and the area is protected under this designation. Similarly, the

designation is consistent with the management strategy outlined for the RNA in the Cultus Mountain Successional Reserve Assessment.

OTHER LAWS AND REGULATIONS

We find this action does not violate other Federal, State, or local laws designed for the protection of the environment. Laws that were considered include the Clean Water Act, the Endangered Species Act, National Historic Preservation Act, and the National Forest Management Act.

ADMINISTRATIVE REVIEW/ OBJECTION PROCESS

The final Environmental Assessment (EA) has been made available for review at the Deschutes National Forest website: http://www.fs.usda.gov/project/?project=28900. Additional information regarding this plan amendment can be obtained from Beth Peer, Environmental Coordinator, at 541-383-4769, or email bpeer@fs.fed.us.

A draft Decision Notice was provided to the public for administrative review under 36 CFR 219, Subpart B. The objection process included in Subpart B of 36 CFR 219 gives an individual or entity an opportunity for an independent Forest Service review and resolution of issues before the approval of the plan amendment. The opportunity to file an objection ran from February 27, 2015 until April 13, 2015.

No objections were filed. Therefore, implementation of this decision may occur when it is signed.

CONTACT

For additional information concerning this decision, contact Beth Peer, Bend/Ft. Rock Ranger District Environmental Coordinator, during normal office hours (weekdays, 8:00 a.m. to 4:30 p.m.) at the Bend/Ft. Rock Ranger District office, Phone: (541) 383-4769; e-mail: bpeer@fs.fed.us. For more information on the RNA program, contact Robin Vora, RNA Program Manager, Phone: (541)383-5766; e-mail: rvora@fs.fed.us

Robert Mangold — 5/5/15

ROBERT MANGOLD
Station Director
Pacific Northwest Research Station

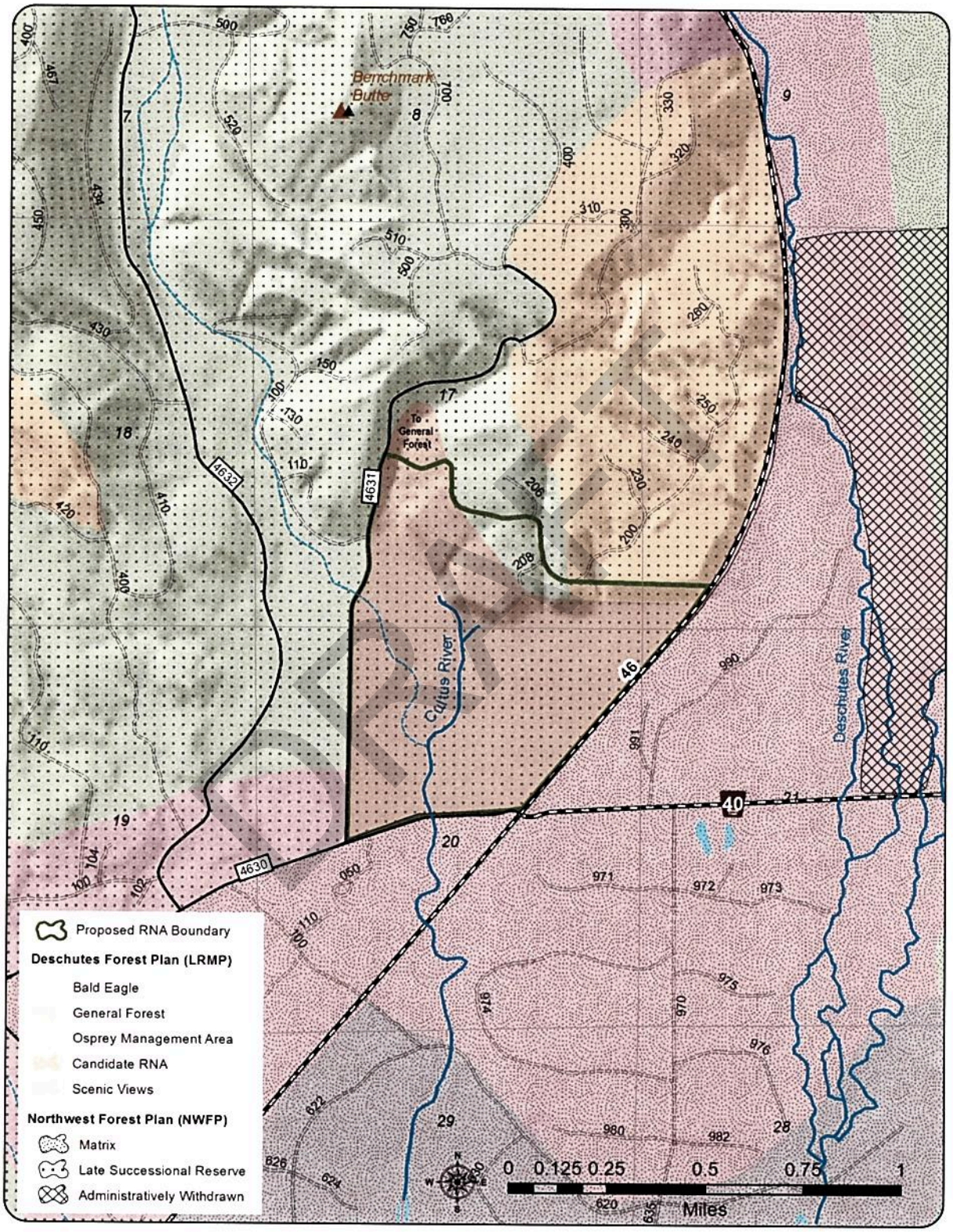
Date

James M Peña — 5/8/15

JAMES PEÑA
Regional Forester
Pacific Northwest Region

Date

Appendix A – Boundary map of the Headwaters of the Cultus River RNA



USDA

United States
Department of
Agriculture

Forest
Service

February 2015

Environmental Assessment

Designation of the Headwaters of the Cultus River Research Natural Area

Deschutes National Forest Service
Bend/Ft. Rock Ranger District
Deschutes County, Oregon

Township 20 South, Range 8 East, Sections 17, 20

Responsible Official: James M. Peña
Regional Forester
Pacific Northwest Region

For more Information: Robin Vora, RNA Program Manager
rvora@fs.fed.us
Phone: (541)383-5766

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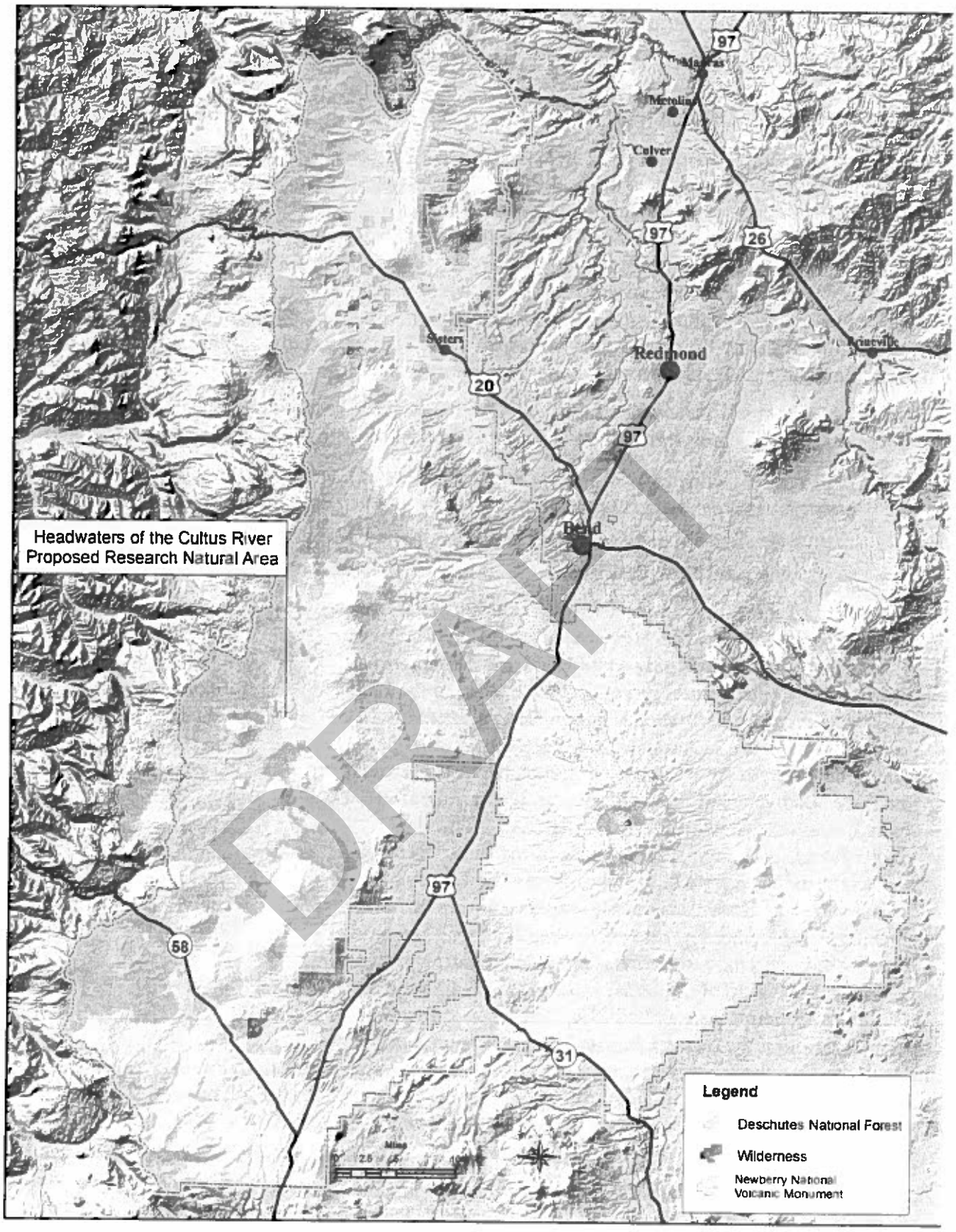

Figure 1: Vicinity of the Planning Area

Chapter 1: Purpose of and Need for Action

Introduction and Planning Area Description

This environmental assessment evaluates the proposal to formally establish the Headwaters of the Cultus River Research Natural Area (RNA). The proposed Headwaters of the Cultus River RNA is identified in the 1990 Deschutes National Forest Land and Resource Management Plan (LRMP) (USDA Forest Service 1990a) and is described in Appendix E of the 1990 Final Environmental Impact Statement (FEIS) for the LRMP (USDA Forest Service 1990b). The proposed RNA is within and completely surrounded by National Forest System lands. Establishment and designation involves: 1) completion of an environmental assessment to approve the candidate RNA with final boundaries and 2) amendment or adoption of existing LRMP Standards and Guidelines to guide management.

A national system of RNAs was established with the goal of preserving natural features and plant communities for research and educational purposes. The objectives of RNAs are:

- to provide baseline areas against which the effects of human activities in similar environments can be measured;
- to provide sites for study of natural processes in undisturbed ecosystems;
- to provide gene pool preserves for plant and animal species. (Franklin et al. 1972).

Research Natural Areas are part of a national network of ecological areas designated for research, monitoring, education, and to maintain biological diversity (USDA Forest Service manual 4063). For more information on the research arm of the Forest Service, visit www.fs.fed.us/research.

Headwaters of the Cultus River RNA is located in the Deschutes National Forest on the Bend-Fort Rock Ranger District approximately 30 miles southwest of Bend and two miles east of Cultus Lake (Figure 1 and Figure 2). It is located in the East Cascades Ecoregion of Oregon (Oregon Natural Heritage Program 2003). The central feature of the RNA is a large, cold spring that emerges from the base of Bench Mark Butte and forms the headwaters of the Cultus River, which then flows south through the southern half of the RNA. Additional tributary springs emerge from the base of the butte, forming small streams that join with the river within the RNA boundaries. The RNA includes the southern slopes of Bench Mark Butte which are forested with old growth ponderosa pine. Engelmann spruce bottomland forest dominates the riparian zone along the river south of the butte, and lodgepole pine forest dominates the remainder of the RNA. The RNA provides representation of the cold springs and two plant communities that, when protected, can serve as benchmarks for comparison with similar resources in areas that are intensively used. A full description of the Headwaters of the Cultus River RNA is found in the Establishment Record for the RNA (USDA Forest Service 2010).

RNA needs in the Pacific Northwest were originally identified by Pacific Northwest Research Station scientists in the 1960s and early 1970s following national agency direction (Dyrness et al. 1975). Extensive surveys for RNAs were conducted in Central Oregon by Deschutes National Forest Ecologist Dr. Bill Hopkins and other staff in the 1970s and 1980s and recommendations were further evaluated by Sarah Greene of the PNW Research Station. Public

involvement in the selection of the candidate RNAs occurred during the preparation and approval of the Deschutes LRMP in the late 1980s (USDA Forest Service 1990a). The Headwaters of the Cultus River RNA was identified in the 1990 Deschutes LRMP as a "proposed" RNA based on the unique nature of the area, and recognition that designation of this area as a research natural area would make an important contribution to the Natural Heritage network. A draft Establishment Record (ER) has been prepared providing specific background, justification, objectives, and management prescriptions per USDA Forest Service manual 4063.41. (USDA Forest Service 2010). The ER will be finalized concurrent with the NEPA process. The conversion from candidate to established RNA is accomplished by amending the Deschutes National Forest LRMP through a Decision Notice and Designation Order.

Purpose of and Need for Action

The purpose of establishing the RNA at Headwaters Cultus River area is to contribute to a series of RNAs designated to "illustrate adequately or typify for research or education purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance." 36 CFR 251.23

The Headwaters Cultus River RNA would fill a need for representation of the following natural heritage elements identified in the 2003 Oregon Natural Heritage Plan (Oregon Natural Heritage Program 2003):

- Flowing and pooled cold springs
- Engelmann spruce bottomland forest with ponderosa and lodgepole pine

In addition, the RNA provides regional cell representation of a lodgepole pine/bitterbrush/long-rhizome sedge community. Field monitoring in 2008 showed that all of the important ecological features for which Headwaters of the Cultus River RNA was originally proposed were still present in 2008.

There is a need to modify the boundaries of the proposed RNA to provide a boundary that can be better described and recognized, and to provide for the ability to conduct roadside management activities such as hazard tree removal.

Proposed Action

The proposed action is to formally establish Headwaters of the Cultus River RNA, to revise the boundary of the RNA, and to manage it according to the direction provided in the Deschutes LRMP (LRMP 4-92 to 4-93). Formal designation of the RNA by the Regional Forester would amend the Deschutes LRMP pursuant to 36 CFR 219.4 (under the 1982 planning regulations).

The proposed RNA would be designated Management Area 2 (MA-2). The proposed RNA is presently being managed in accordance with this allocation's direction so designation would not impact other programs or activities. Specifics are given in Chapter 2.

Decision Framework

The Regional Forester for the Pacific Northwest Region of the USDA Forest Service is the responsible official for this project. The responsible official will review the environmental assessment and the entire project record and will decide whether or not to select the proposed action. In making the decision, the responsible official will take into consideration the specific objective of providing for research and educational opportunities, as well as preserving the

unique ecological characteristics that are representative of the area. A Decision Notice would be accompanied by a Designation Order.

The final decision will be to either:

- Amend the Deschutes LRMP to establish the RNA in the Headwaters Cultus River area (Proposed Action), or
- Decline to establish the area as an RNA, resulting in removal of Headwaters Cultus River as a proposed RNA from the Forest Plan during the next Forest Plan revision, or
- Conclude that significant impacts would result from the proposed action which would warrant the preparation of an environmental impact statement.

Public Involvement

Public participation in this project began when a scoping letter and map were mailed to members of the public and to Tribal governments on March 12, 2009. The project also appeared in the Deschutes National Forest Schedule of Projects starting in March 2009 and has appeared quarterly since this initiation. An article "Forest Service Proposes Four Areas of Study" was also published in *The Bulletin* (Bend, Oregon) newspaper on March 22, 2009. The project appears on the Deschutes National Forest's project web page as well: http://data.ecosystem-management.org/nepaweb/project_list.php?forest=110601.

Two telephone calls were received. Both commenters were supportive of the proposed action. The Proposed Action is not highly controversial as evidenced by the number and tone of the responses received from the public during the scoping phase of the process. There were no issues identified that would lead to additional action alternatives.

This environmental assessment was provided for a 30-day public comment period from October 17 to November 17, 2014. Comments were received from the following individuals and organizations: George Wuerthner, Doug Heiken (Oregon Wild), and Karen Coulter (Blue Mountains Biodiversity Project). The Forest's consideration of the comments is provided in Appendix A to this environmental assessment.

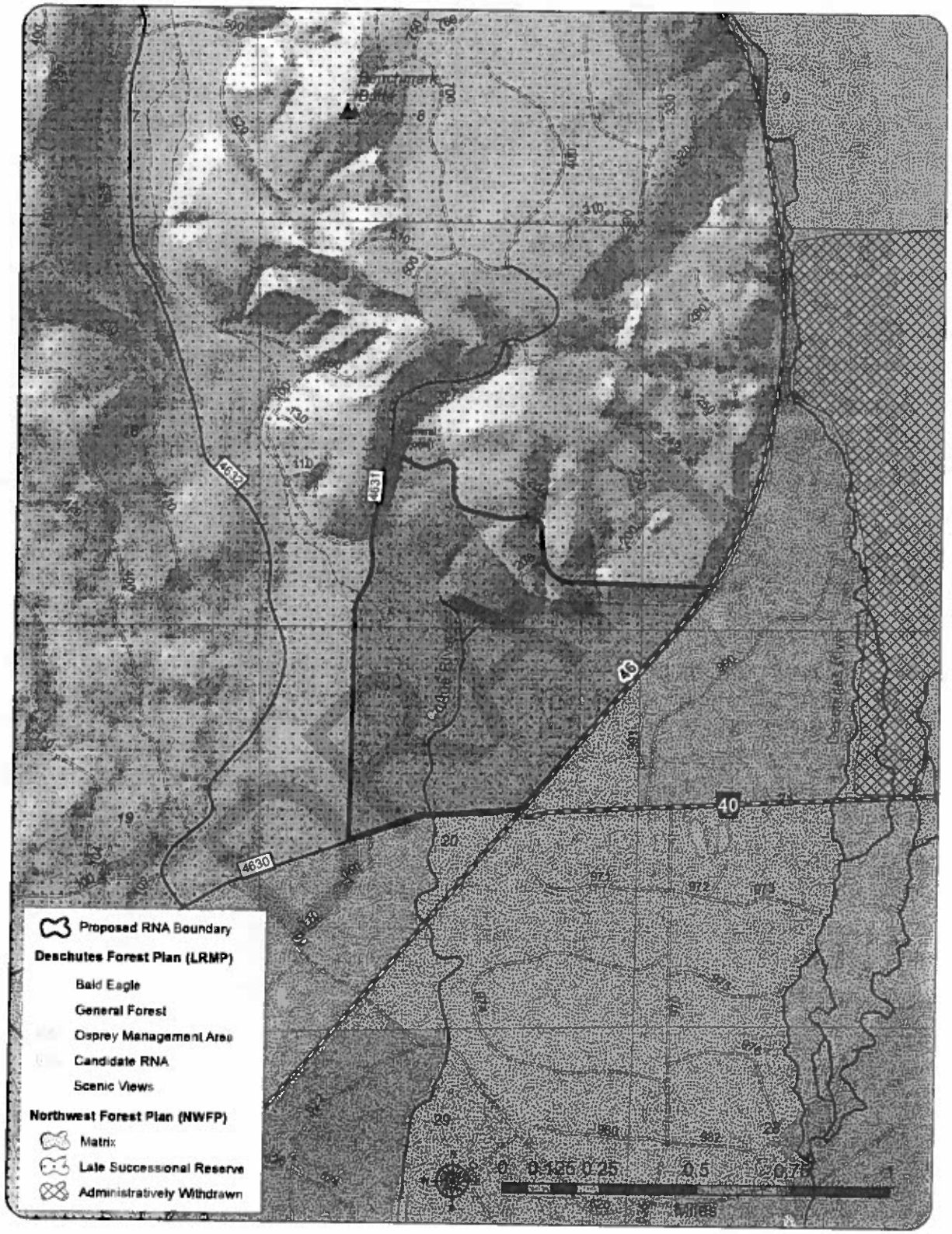

Figure 2: Map displays Deschutes LRMP allocations, including candidate RNA boundary and the proposed boundary for the Headwaters of the Cultus River Research Natural Area.

Chapter 2: Alternatives

No unresolved conflicts concerning alternative uses of available resources were identified during the scoping process. Therefore, no additional alternatives were developed beyond the No Action and Proposed Action.

No Action

Under the No Action alternative, the candidate area would continue to be managed as a proposed RNA as directed in the Deschutes National Forest LRMP. The boundary of the proposed RNA, which encompasses approximately 315 acres, would not be modified. All current management direction of the Deschutes LRMP Management Area 2 as well as the Northwest Forest Plan and Late Successional Reserves would continue to apply until the LRMP is revised.

Proposed Action

The Proposed Action would establish approximately 333 acres on the Deschutes National Forest as the Headwaters of the Cultus River RNA.

Boundary

The Proposed Action would modify the RNA boundary from what is shown in the 1990 LRMP to one that can be better described and identified. It would follow Forest Service Road 4631-200 for the western portion of the northern boundary, then follow a straight line east to County Road 46 for the eastern portion of the northern boundary (Figure 2). The actual boundary will be 100 feet from the centerline of the Forest Service system road that is shown as the boundary. This allows for hazard tree removal and permits the maintenance of a fuel break if needed to protect the RNA or adjacent forest. The proposed boundary would result in a net reduction of 8 acres in Management Area 8 - General Forest and 10 acres in Management Area 3 - Bald Eagle, and a net increase of 18 acres in Management Area 2 - Research Natural Areas. The RNA lies within the Cultus Late Successional Reserve under the Northwest Forest Plan (NWFP).

Management Direction

The RNA would be managed according to MA-2 in the 1990 Deschutes LRMP (LRMP 4-92 to 4-93). There would be no change from the existing standards and guidelines as listed here:

Standards and Guidelines in Deschutes LRMP adopted for Headwaters Cultus River RNA:

Recreation

M2-1: No physical improvements for recreation purposes such as campgrounds or buildings will be permitted.

M2-1: Picnicking, camping, collecting plants, gathering cones and herbs, picking berries, and other public uses will be allowed, though not encouraged, as long as they do not modify the area to the extent that such uses threaten impairment of research or educational values.

M2-3: The area will be closed to all off-highway motorized vehicle use if use of these vehicles

threatens natural conditions.[1]

Timber

M2-4: Timber harvest is not allowed in an RNA. No control of insect or disease should be instituted (see M2-22).

M2-5: Firewood cutting is not permitted.

M2-6: Timber harvesting will not be allowed in catastrophic situations.

Range

M2-7: Grazing is only allowed when authorized to preserve some representation of the vegetation for which the RNA was created.

M2-8: Where RNAs are located adjacent to or within grazing allotments, the boundaries will be marked and physical barriers constructed around the area to prohibit livestock entry if needed. [Note: there are no grazing allotments within or near the proposed RNA].

M2-9: Vegetation manipulation will not be allowed in catastrophic situations.

Wildlife

M2-10: Management practices may be authorized to control excessive non-game animal populations and only in cases where these populations threaten the preservation of some representation of vegetation for which the RNA was originally created.

Minerals

M2-11: Areas are to be withdrawn for mineral entry for mining claims.

M2-12: Geothermal leases will be issued with No Surface occupancy Stipulations. Leases must be approved by the Experiment Station Director.

M2-13: Pits and quarries will require approval of the Research Station Director and the Forest Supervisor.

Visual

M2-14: Management activities and research facilities should meet the visual quality level on the Visual Quality Objective Map. [Note: the Visual Quality Objective Map shows a visual quality level of Partial Retention].

Transportation

M2-15: No new roads or trails will be permitted within these areas, except those considered essential to research, protection, or educational uses.

M2-16: Any transportation facilities such as roads and trails provided for in this MA will have minimum impacts on the area ecosystems and must be located and managed to best fulfill the area's management objectives. Management of the transportation facilities could include closing facilities to all but the designated research personnel. Helispots and special uses such as telephone lines are not allowed.

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[1] Travel management regulations have since prohibited off-highway motorized vehicle use except on designated routes or areas. No such routes or areas exist in the RNA.

Wildfire

M2-17: Unless plans approved by the Station Director provide for letting natural fires burn, aggressive containment using low impact methods should be used. High impact methods will be used only to prevent a total loss of the RNA. Mop up should be minimized with natural burnout being the preferred method.

Prescribed Fire

M2-18: Prescribed fire will be used only as specified in approved RNA management goals.

Fuel Loading

M2-19: Fuels will be allowed to accumulate at natural rates.

Special Uses

M2-20: Special uses will be allowed if they support the management objectives of the area and are approved by the Research Station Director and the Forest Supervisor.

Forest Health

M2-21: Monitor the area to detect pest problems which could destroy the RNA or cause damage to adjacent lands. Reintroduction of fire should be considered to reduce possible insect epidemic conditions.

M2-22: Action should be taken when the damage has the potential to modify ecological processes to the point that the area has little value for observation and research.

M2-23: Follow Forest-wide standards/guidelines for forest health.

Northwest Forest Plan

The proposed RNA area falls within the Cultus Mountain Late Successional Reserve (LSR). An LSR Assessment was completed in 1996 (USDA Forest Service 1996). Considered in the context of the larger Cultus and Sheridan LSR landscape, the management strategy for the proposed RNA is consistent with the Deschutes LRMP standards and guidelines listed above. The management strategy recommended for the area of the Headwaters Cultus River proposed RNA (area "G" in the LSRA) consists of using prescribed fire where necessary and restoration of meadow habitat. No such activities would be undertaken in the RNA without project-level NEPA and approval by the Station Director. Additionally, Riparian Reserves are present along lake edges, along streams, and around any wetlands. Riparian Reserve direction would apply to any management actions in those areas. Specific standards and guides that apply to research activities are: RS-1 and RS-2 (research activities must not cause significant risk to watershed values and ongoing research activities were to be reviewed by the Regional Ecosystem Office; C-38).

Comparison of the Alternatives

Table 1: Comparison of the Alternatives

	No Action Alternative (Remains Proposed RNA)	Proposed Action (Establish RNA)
Acres of Proposed RNA at Headwaters of the Cultus River	315	0
Acres of Established RNA at Headwaters of the Cultus River	0	333
Short-term Management (< 10 years)	Continue Management Direction of proposed RNA under LRMP MA-2 S&Gs until Forest Plan revision.	Continue Management Direction of established RNA with existing LRMP S&Gs for MA-2.
Long-term Management (> 10 years)	To be determined during forest plan revision.	

Chapter 3: Environmental Consequences

This chapter discusses the potential effects on the human environment resulting from the implementation of the no action or proposed action alternatives. This analysis tiers to the Deschutes National Forest Land and Resource Management Plan Final Environmental Impact Statement and Record of Decision (USDA Forest Service 1990b).

Management Allocations

The proposed RNA boundary modifications will not have a measurable effect on Forest Plan goals, objectives, or outputs when considered in context of the Deschutes National Forest. The RNA would total 333 acres which is less than one of half of one percent of the Forest.

The proposed boundary modification would result in a net reduction of 8 acres in Management Area 8 General Forest and 10 acres in Management Area 3 Bald Eagle, and a net increase of 18 acres in Management Area 2 Research Natural Areas (Figure 2). This modification would change the potential management actions that could be undertaken in these areas including timber harvest, fire management and suppression, and recreation. The impact of such actions in an area of this size would be minimal when considered on a landscape level. The boundary modification is in response to the need for a boundary that can be better described.

Headwaters of the Cultus River RNA is located within a Late Successional Reserve under the Northwest Forest Plan. LSRs focus on providing habitat for species associated with late and old structure forest conditions. The proposed boundary modification will not change the LSR allocation; there will be no change in acreage to any Northwest Forest Plan allocations.

Forest Plan Amendment – Assessment of Significance

Forest Service Manual (FSM) 1926.51, the following items describe non-significant amendments:

- Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management;
- Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management;
- Minor changes in standards and guidelines; and/or
- Opportunities for additional projects or activities that will contribute to achievement of the management prescriptions.

The conversion from a proposed RNA to an established RNA would not alter the currently described goals for the area, the boundary modifications are minor, no standards and guidelines will change, and the area will permanently be subject to the management prescriptions for RNAs.

Threatened, Endangered, and Sensitive Fish Species

A Biological Evaluation (BE) was prepared in compliance with the requirements of Forest Service Manual 2630.3, FSM 2670-2671, FSM W.O. Amendments 2600-95-7, and the Endangered Species Act of 1973.

For aquatics, there are no threatened or endangered species or designated critical habitat within the proposed RNA; therefore, the proposed action will have no effect on any aquatic threatened or endangered species.

Species classified as sensitive by the Forest Service are to be considered by conducting biological evaluations (BE) to determine potential effects of all programs and activities on these species (FSM 2670.32). The BE is a documented review of Forest Service activities in sufficient detail to determine how a proposed action may impact sensitive aquatic species, and to comply with the requirements of the Endangered Species Act.

The Forest Service Region 6 Sensitive Species List (USDA 2011b) was reviewed for species that may be present on the Deschutes National Forest. In addition, redband trout, that had been on the list were removed except in the Oregon closed basins area in south east Oregon. There is currently an effort to place redband, range wide in Region 6, back on the list. After a review of records, habitat requirements, and existing habitat components, it was determined the following sensitive aquatic species currently on the list, or likely to be placed back on the list, have habitat or are known to occur in the project area and will be included in this analysis:

Table 2: Sensitive Aquatic Species Summary for the Deschutes National Forest.

Species	Status	Habitat	Habitat/Species Present
Redband trout (*Onchorhynchus mykiss*)	Regional Forester Sensitive (2014)	Streams and lakes – in the RNA Cultus River is spawning and rearing habitat for redband trout.	Yes

Summary of Conclusions for Sensitive Species

1. The No Action Alternative serves as a baseline for all sensitive species.
2. Implementation of the Proposed Action will have **"No Impact"** to the redband trout and its habitats for the Deschutes National Forest.

Environmental Consequences

Direct and Indirect Effects

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to redband trout or redband trout habitat.

Cumulative Effects

Implementation of proposed action for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the redband trout and its habitat.

Determination

The proposed action is programmatic in nature and there will be no change from the existing condition. Therefore, implementation of the proposed action will have a "No Impact" to redband trout and their habitat.

Consistency

Implementation of the Designation of the Headwaters of the Cultus River RNA is consistent with the Deschutes Land and Resource Management Plan and the Northwest Forest Plan. There are no ground disturbing activities associated with this designation therefore it is consistent with the Aquatic Conservation Strategy Objectives and maintains the existing conditions for aquatic habitats.

Threatened, Endangered, and Sensitive Plant Species

A Biological Evaluation has been prepared to determine potential effects from the proposed action on threatened, endangered, and sensitive plants in compliance with direction in the FSM 2672.4. Species considered are those on the on the current Regional Forester's Sensitive Species List (USDA Forest Service 2011) that are documented or suspected to occur on the Deschutes National Forest (see Appendix A of the Plant BE).

Summary

There are no federally listed Proposed, Threatened or Endangered plant species or their habitat in the Headwaters of the Cultus RNA on the Deschutes National Forest. Therefore, there are no effects, beneficial or negative, to these species.

No Sensitive plants are known to occur in the Headwaters of the Cultus RNA. If Sensitive plants are found in the future, the establishment of Headwaters of the Cultus RNA would be a beneficial effect to those species and their habitat.

Existing Condition

There are no federally listed Proposed Threatened or Endangered plant species or their habitat within the Headwaters of the Cultus RNA on the Deschutes National Forest.

The U.S. Forest Service Regional Forester lists 69 Sensitive plant species as suspected or documented to occur on the Deschutes National Forest Sensitive (Appendix A): 36 vascular plants (18 documented to occur), 26 bryophytes (11 documented), 2 lichens (1 documented) and 5 fungi (4 documented).

A pre-field review was completed to determine if any of the 69 Sensitive plant species occur within the RNA. The following sources were used in this review:

1. U.S. Forest Service NRIS-TESP-Invasives Database which is where U.S. Forest Service Sensitive plant locations are entered and tracked. There are no Sensitive plant locations within the proposed Headwaters of the Cultus RNA;
2. Headwaters of the Cultus RNA Plant Species List (USDA Forest Service 2010).
3. Vascular plant list provided by the Carex Working Group (2008).

Botanical surveys of the proposed Headwaters of the Cultus River RNA were completed in 1996, 1998, and 2008. There are no known populations of Sensitive plant species within the

Headwaters of the Cultus RNA. However, these surveys focused on vascular plant species and did not survey for bryophytes (mosses and liverworts), lichens, and fungi; the presence of these species is unknown.

Environmental Consequences

Under both the No Action and Proposed Action, the Headwaters of the Cultus RNA would continue to be managed as a Research Natural Area. Research Natural Areas are part of a national network of ecological areas designated for research, monitoring, education, and to maintain biological diversity (USDA Forest Service Manual 4063). RNAs are managed to allow natural processes to occur and to minimize human disturbance (USDA Forest Service Manual 4063.3).

The Proposed Action would guarantee that the RNA be managed to maintain biological diversity into perpetuity. Management of RNAs is beneficial to plants and their habitats.

Direct and Indirect Effects

There are no direct or indirect effects to Sensitive plants from the proposed action. No Sensitive plants are known to occur in the RNA. If Sensitive plants were found, establishment of the RNA would be beneficial to plants and plant habitats.

Cumulative Effects

Implementation of the proposed action for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and, therefore, will not result in any cumulative effects to sensitive plants.

Threatened, Endangered, and Sensitive Wildlife

A Biological Evaluation has been prepared in compliance with the requirements of Forest Service Manual (FSM) 2630.3., FSM 2670-2671, FSM W.O. Amendments 2600-95-7, and the Endangered Species Act (ESA) of 1973. A Biological Assessment (BA) will be prepared in compliance with the requirements of Forest Service Manual (FSM) 2630.3, FSM 2672.4 and the Endangered Species Act of 1973 (Subpart B: 402.12, Section 7 Consultation, as amended) on actions and programs authorized, funded, or carried out by the Forest Service to assess their potential for effect on threatened and endangered species and species proposed for federal listing (FSM 2670.1). This EA includes a summary of the BE.

Those species thought to occur presently or historically on the Deschutes National Forest and analyzed in this document include the northern spotted owl (*Strix occidentalis*), gray wolf, Oregon spotted frog, northern spotted owl critical habitat, and Oregon spotted frog critical habitat.

Table 3: Threatened and Endangered Species Summary

Species	Status	Habitat	Presence
Northern Spotted Owl	Federal Threatened, MIS	Old Growth Mixed Conifer Forests	Yes
Gray Wolf	Federal Endangered	Generalist	Yes
Oregon Spotted Frog	Federal Threatened, Regional Forester Sensitive	Stream, Marsh	Yes
Northern Spotted Owl Critical Habitat			Yes
Oregon Spotted Frog Proposed Critical Habitat			No

Table 4: Summary of Effects to Threatened, Endangered, Candidate and Proposed Species.

Species/Habitat	Action Alternatives
Northern Spotted Owl	"No Effect"
Gray Wolf	"No Effect"
Oregon Spotted Frog	"No Effect"
Northern Spotted Owl Critical Habitat	"No Effect"
Oregon Spotted Frog Proposed Critical Habitat	"N/A"

Summary of Conclusions for T&E Species

1. The Proposed Action will have "**No Effect**" on the northern spotted owl, Oregon spotted frog, or gray wolf and their habitats. Consultation is not required.

2. The Proposed Action will have "**No Effect**" on designated critical habitat for the northern spotted owl or proposed critical habitat for the Oregon spotted frog. Consultation is not required.

Northern Spotted Owl, Federal Threatened, MIS

The BE includes a thorough description of the habitat and prey needs for the northern spotted owl and its critical habitat on the Deschutes National Forest. The Headwaters Cultus River RNA includes approximately 45 acres of nesting, roosting, and foraging (NRF) habitat.

Environmental Consequences

Proposed Action

Direct and Indirect Effects

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to suitable spotted owl habitat, dispersal habitat, known home ranges, or designated Critical Habitat.

Cumulative Effects

Implementation of proposed action for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the spotted owl and its habitat.

Determination

The proposed action is programmatic in nature and there will be no change from the existing condition. Therefore, implementation of the proposed action will have a "No Effect" to spotted owls and their habitat.

Critical Habitat Units

The proposed action is programmatic in nature and there will be no change from the existing condition. Therefore, implementation of the proposed action will have a "No Effect" to spotted owls critical habitat.

Communication with U.S. Fish and Wildlife Service

This project is not covered under the current FY2014 Programmatic Biological Assessment. Further communication with U.S. Fish and Wildlife Service is not recommended.

Consistency

Implementation of the Designation of the Headwaters of the Cultus River RNA is consistent with the Deschutes Land and Resource Management Plan, the Deschutes National Forest Late-Successional Reserve Assessments, and the 2011 Critical Habitat Rule.

Gray Wolf, Federal Endangered

The BE includes a thorough description of the habitat needs and existing habitat on the Deschutes National Forest.

Environmental Consequences

Proposed Action

Direct and Indirect Effects

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to gray wolf habitat.

Cumulative Effects

Implementation of proposed action for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the gray wolf and its habitat.

Determination

The proposed action is programmatic in nature and there will be no change from the existing condition. Therefore, implementation of the proposed action will have a "No Effect" to gray wolves and their habitat.

Communication with U.S. Fish and Wildlife Service

This project is not covered under the current FY2014 Programmatic Biological Assessment. Further communication with U.S. Fish and Wildlife Service is not recommended.

Consistency

Implementation of the Designation of the Headwaters of the Cultus River RNA is consistent with the Deschutes Land and Resource Management Plan and the Deschutes National Forest Late-Successional Reserve Assessments.

Oregon Spotted Frog, Federal Threatened

The BE includes a thorough description of the Oregon spotted frogs and their habitat requirements. Oregon spotted frog inhabits emergent wetland habitats in forested landscapes, although it is not typically found under forest canopy. This is the most aquatic native frog species in the Pacific Northwest, as all other species have a terrestrial life stage. It is almost always found in or near a perennial body of water, such as a spring, pond, lake sluggish stream, irrigation canal, or roadside ditch (Engler 1999, pers. comm.). Breeding habitats occur in the Upper Deschutes River sub-basin.

The Proposed Rule for the designation of critical habitat for the Oregon spotted frog was published in the Federal Register on August 29, 2013 (50 CFR Part 17). Proposed critical habitat occurs on the Deschutes National Forest but there is no proposed critical habitat within the Headwaters of the Cultus River RNA.

Environmental Consequences

Implementation of proposed designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore will not result in any cumulative effects for the Oregon spotted frog.

Implementation of the proposed action will have a "No Effect" to Oregon spotted frog and their habitat.

Regional Forester's Sensitive Species

Species classified as sensitive by the Forest Service are to be considered by conducting biological evaluations (BE) to determine potential effects of all programs and activities on these species (FSM 2670.32). The BE is a documented review of Forest Service activities in sufficient detail to determine how a proposed action may impact sensitive wildlife species, and to comply

with the requirements of the Endangered Species Act.

The Forest Service Region 6 Sensitive Species List (USDA 2011) was reviewed for species that may be present on the Deschutes National Forest. After a review of records, habitat requirements, and existing habitat components, it was determined the following sensitive animal species have habitat or are known to occur in the project area and will be included in this analysis:

Table 5: Sensitive Species Summary for the Deschutes National Forest.

Species	Status	Habitat	Habitat/Species Present
Northern Bald Eagle (*Haliaeetus leucocephalus*)	Regional Forester Sensitive, MIS	Lakeside with Large Trees	Yes
Bufflehead (*Bucephala albeola*)	Regional Forester Sensitive	Lakes, Snags	No
Harlequin Duck (*Histrionicus histrionicus*)	Regional Forester Sensitive	Rapid Streams, Large Trees	No
Tricolored Blackbird (*Agelaius tricolor*)	Regional Forester Sensitive	Lakeside, Bullrush	No
Yellow Rail (*Coturnicops noveboracensis*)	Regional Forester Sensitive	Marsh	No
Greater (Western) Sage Grouse (*Centrocercus urophasianus phaeios*)	Federal Candidate, Regional Forester Sensitive	Sagebrush Flats	No
American Peregrine Falcon (*Falco peregrinus anatum*)	Regional Forester Sensitive, MIS	Riparian, Cliffs	No
Lewis' Woodpecker (*Melanerpes lewis*)	Regional Forester Sensitive, MIS	Large, open ponderosa pine and burned forests	Yes
White-headed Woodpecker (*Picoides albolarvatus*)	Regional Forester Sensitive, MIS	Large, open ponderosa pine	Yes
Northern Waterthrush (*Seiurus noveboracensis*)	Regional Forester Sensitive	Riparian vegetation including willows and alder	No
Horned Grebe (*Podiceps auritus*)	Regional Forester Sensitive, MIS	Lakes	No
Tule White-fronted Goose (*Anser albifrons elgasi*)	Regional Forester Sensitive, MIS	Large rivers, marsh/lakeshore habitat with emergent vegetation	No
Pacific Fisher (*Martes pennanti*)	Federal Candidate, Regional Forester	Mixed, Complex	Yes

	Sensitive		
North American Wolverine (*Gulo gulo luscus*)	Regional Forester Sensitive, MIS	Mix, High Elevation	No
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	Regional Forester Sensitive, MIS	Caves	No
Pallid Bat (*Antrozous pallidus*)	Regional Forester Sensitive	Canyons, cliffs, caves, and buildings	No
Spotted Bat (*Euderma maculatum*)	Regional Forester Sensitive	Canyons, cliffs, caves, and buildings	No
Fringed Myotis (*Myotis thysanodes*)	Regional Forester Sensitive	Canyons, cliffs, caves, buildings, and large snags	Yes
Columbia Spotted Frog (*Rana luteiventris*)	Federal Candidate, Regional Forester Sensitive	Stream, Marsh	No
Crater Lake Tightcoil (*Pristiloma arcticum crateris*)	Regional Forester Sensitive	Riparian, Perennially Wet	Yes
Evening Field Slug (*Deroceras hesperium*)	Regional Forester Sensitive	Perennially wet meadows	Yes
Silver-bordered Fritillary (*Boloria selene atrocostalis*)	Regional Forester Sensitive	Open riparian bogs and marshes	Yes
Johnson's Hairstreak (*Mitoura johnsonii*) (*Callophrys johnsonii*)	Regional Forester Sensitive	Coniferous forests with mistletoe	Yes
Western Bumblebee (*Bombus occidentalis*)	Regional Forester Sensitive	Meadows with floral resources	Yes

Summary of Conclusions for Sensitive Species

1. The No Action Alternative serves as a baseline for all sensitive species.
2. Implementation of the Proposed Action will have **"No Impact"** to the bald eagle, Lewis' woodpecker, white-headed woodpecker, Pacific fisher, fringed myotis, Crater Lake tightcoil, evening field slug, silver-bordered fritillary, Johnson's hairstreak, and western bumble bee and their habitats for the Deschutes National Forest.
3. There is no habitat in the Proposed RNA for the bufflehead, harlequin duck, tri-colored blackbird, yellow rail, greater sage grouse, American peregrine falcon, northern waterthrush, horned grebe, Tule white-fronted goose, North American wolverine, Townsend's big-eared bat, pallid bat, spotted bat, and Columbia spotted frog and their habitats for the Deschutes National Forest.

After a review of records, habitat requirements, and existing habitat components, it was determined the remaining sensitive species do not occur and have no habitat in the project area

and will not be included in any further analysis: bufflehead, harlequin duck, tricolored blackbird, yellow rail, greater sage grouse, peregrine falcon, northern waterthrush, horned grebe, North American wolverine, Townsend's big-eared bat, pallid bat, spotted bat, and Columbia spotted frog. The rationale for that determination is found in the BE.

Table 6 displays those Region 6 Sensitive Species that are known to occur or have habitat within the Headwaters of Cultus River RNA. The Oregon spotted frog is previously discussed in the TE section above.

Table 6: Summary of Conclusion of Impacts, Region 6 Sensitive Species for the Designation of the Headwaters of the Cultus River RNA.

Species	Action Alternative
Northern Bald Eagle	NI
Lewis' Woodpecker	NI
White-headed Woodpecker	NI
Pacific Fisher	NI
Fringed Myotis	NI
Crater Lake Tightcoil	NI
Evening Field Slug	NI
Silver-bordered Fritillary	NI
Johnson's Hairstreak	NI
Western Bumblebee	NI

NI = No Impact
MIIH = May impact individuals or habitat, but will not likely contribute a trend toward federal listing or loss of viability to the population or species
BI = Beneficial Impact

Bald Eagle, Federal Threatened, MIS

Existing Condition/No Action

The bald eagle, formerly a threatened species in the lower 48 states under the Endangered Species Act, has been delisted (August 8, 2007) because it has recovered from being at risk of extinction (Fed Reg 2007). It will continue to be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is now designated a Regional Forester Sensitive Species. The FWS has issued National Bald Eagle Management Guidelines (USFWS 2007b) intended to minimize activities that could interfere with the eagle's ability to forage, nest, roost, breed, or raise young. Such impacts to bald eagles, where they may constitute "disturbance", are prohibited by the Eagle Act. The guidelines identify management practices that can be used for added benefit to bald eagles.

On the Deschutes National Forest, ponderosa pine and Douglas-fir trees averaging 32 inch+ dbh with live large, open limb structure are preferred for nesting. Nests consist of bulky stick platforms built in the super-canopy of such trees, or less frequently on cliffs. They are typically constructed within one mile of appropriate foraging habitat, which includes rivers and large lakes and reservoirs. Bald eagles are sit-and-wait predators, which predominantly capture prey from

perches over water; ideal perches are large trees and snags within 330 ft. (100 m) of water (Anthony et al. 1995). Prey items include fish, waterfowl and other birds, small mammals, and carrion (Stalmaster 1987).

There are 881 acres of potential bald eagle habitat within the proposed Headwaters of the Cultus River RNA. However, there are no known bald eagle territories found in this proposed RNA.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to bald eagle.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the bald eagle and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable bald eagle habitat. Therefore, the Action Alternative will have "No Impact" to bald eagles or their habitat.

Lewis' Woodpecker, Region 6 Sensitive and MIS

Existing Condition/No Action

Formerly widespread, this species is common year-round only in the white oak ponderosa pine belt east of Mt. Hood. Habitat for the Lewis' woodpecker, a migrant in this part of its range, includes old-forest, single-storied ponderosa pine. Burned ponderosa pine forests created by stand-replacing fires provide highly productive habitats as compared to unburned pine (Wisdom et al. 2000). Lewis' woodpeckers feed on flying insects and are not strong cavity excavators. They require large snags in an advanced state of decay that are easy to excavate, or they use old cavities created by other woodpeckers. Nest trees generally average 17 to 44 inches (Saab and Dudley 1998, Wisdom et al. 2000). Known breeding has been documented in low numbers along Why-chus Creek (Marshall et al. 2003) and in recent burned areas across the Deschutes.

In evaluating landscape predictor variables for the Lewis's woodpecker, Saab et al. (2002) found a negative relation to burned ponderosa pine/Douglas-fir stands with high crown closure (>70%) but was positively associated with low snag densities overall. However, although it selects for more open stands, this species selected nest sites with higher densities of large snags (>20"dbh) (Saab and Dudley 1998). Lewis' woodpeckers are different than other woodpeckers. They are aerial insectivores during the breeding season and use lower densities of smaller snags but rely more heavily on large snags (Saab and Dudley 1998). Habitat for Lewis' woodpecker will increase 5-10 years after in fire areas as smaller snags fall.

The Lewis' woodpecker is declining throughout its range. Threats to this species include the loss

of suitable habitat, competition for nest trees, and effects of pesticides on insects.

Habitat for the Lewis' woodpecker occurs sparingly throughout the Deschutes National Forest in the following plant associations –ponderosa pine dry and xeric ponderosa pine and in other habitat types where ponderosa pine was the dominant species in the early and mid seral stages with a minimum dbh of 15". No acres of potential habitat were mapped for this proposed RNA.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to Lewis' woodpecker habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Lewis' woodpecker and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable Lewis' woodpecker habitat. Therefore, the Action Alternative will have "No Impact" to Lewis' woodpeckers or their habitat.

White-headed Woodpecker, Region 6 Sensitive and MIS

Existing Condition/No Action

White-headed woodpeckers are uncommon permanent residents in forests east of the Cascades. They use habitat with large open ponderosa pine, low shrub levels and large snags. Dixon (1995) found white-headed woodpecker densities increased with increasing old-growth ponderosa pine trees and showed a positive association with large ponderosa pine. The white-headed woodpecker is a primary cavity excavator of soft snags. This woodpecker is the only woodpecker species to rely heavily on seeds of ponderosa pine for food (Marshall et al. 2003 p. 364).

A long term study on the white-headed woodpecker occurred on the Deschutes and Winema National Forests from 1997-2004 with several Deschutes study sites occurring in the Metolius Basin area. Frenzel (2000) calculated the mean diameter for white-headed woodpecker nest trees to be 26.2"dbh while Dixon (1995) found similar results (mean diameter of 25.6"dbh). Frenzel (2003) found nests at sites with a high density of large diameter trees had a higher survival rate than nests in recently harvested sites. Unharvested sites or sites with greater than 12 trees per acre >21"dbh had a success rate of 63.1% while nests at previously harvested sites or lower densities of large trees had a success rate of 39.8%. Therefore, white-headed woodpeckers were positively associated with higher densities of large trees. On the Winema National Forest, white-headed woodpeckers were found to be using small-diameter trees, logs in a slash pile and upturned roots (6-13"dbh) where large snags were uncommon (Frenzel 2002).

Threats to this species include increased stand densities in ponderosa pine due to fire suppression, loss of large, old ponderosa pine trees and snags, wildfire, and increased shrub densities. Increased shrub densities may be factors leading to increased mammalian nest predation and increased risk of avian predation on adults (Frenzel 2000).

Habitat for the white-headed woodpecker occurs sparingly throughout the Deschutes National Forest in ponderosa pine forests, primarily the ponderosa pine PAGs and other PAGs where ponderosa pine dominates in the early and mid seral stages in open stands where average tree size is 10"dbh or greater. Less than 1 acre of potential habitat was mapped for this proposed RNA.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to white-headed woodpecker habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the white-headed woodpecker and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable white-headed woodpecker habitat. Therefore, the Action Alternative will have "No Impact" to white-headed woodpeckers or their habitat.

Pacific Fisher, Federal Candidate, Region 6 Sensitive

Existing Condition/No Action

Fisher populations are considered to be extremely low in Oregon, Washington, and parts of the Rocky Mountains. They occur in landscapes dominated by late-successional and mature forests. Fishers have been found to use riparian areas disproportionately to what exists. On the Westside of the Cascades, fishers tend to be associated with low to mid-elevational forests dominated by late-successional and old growth Douglas-fir and western hemlock. However, on the eastside of the Cascades, they occur at higher elevations in association with true firs and mixed conifer forests. They tend to prefer areas with high canopy closure and late-successional forests with relatively low snow accumulations. Critical features of fisher habitat include physical structure of the forest and prey associated with forest structure. Structure includes vertical and horizontal complexity created by a diversity of tree sizes and shapes, light gaps, down woody material, and layers of overhead cover. Major prey species include small to medium sized mammals, birds, and carrion. Porcupine are the best known prey species but fisher will also prey on snowshoe hare, squirrels, mice and shrews. (Powell and Zielinski 1994)

Large forest openings, open hardwood forests, and recent clearcuts were found to be infrequently used by fishers in the West (Ruggerio et. al 1994). Fishers have shown an aversion to open areas

and this has affected local distributions and can limit population expansion and colonization of unoccupied areas (Coulter 1966, Earle 1978). However, Kelly (1977) found that fishers tended to use recently harvested areas when brush and saplings provided some low overhead cover but these areas were avoided during the winter.

Habitat for the Pacific fisher occurs in very minor amounts on the Deschutes National Forest in the following plant associations – lodgepole pine wet, white fir, Shasta red fir, western hemlock, silver fir, and mountain hemlock in closed stands where average tree size is 20"dbh or greater.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to Pacific fisher habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Pacific fisher and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable Pacific fisher habitat. Therefore, the Action Alternative will have "No Impact" to the Pacific fisher or their habitat.

Fringed Myotis, Region 6 Sensitive

Existing Condition/No Action

Fringed myotis are migratory to Oregon. They are a small, insectivorous bat that roosts in caves, mines, rock crevices, buildings, and other protected sites (NatureServe 2013, Harvey et. al 1999). Nursery colonies are established in caves, mines, and buildings (NatureServe 2013). Beetles and moths are common prey items and they glean insects from the ground or near thick or thorny vegetation. These bats are known to forage close to vegetative canopy and have relatively slow and highly maneuverable flight (Harvey et al. 1999). Females give birth to one young (pup) in June or July. For Oregon, NatureServe (2014) ranks the fringed myotis as S2, Imperiled. They report the greatest threat to the species is human disturbance of roost sites, especially maternity colonies, through recreational caving and mine exploration. Other threats include closure of abandoned mines, renewed mining at historic sites, toxic material impoundments, pesticide spraying, vegetation conversion, livestock grazing, timber harvest, and destruction of buildings and bridges used as roosts.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to fringed myotis habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the fringed myotis and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable fringed myotis habitat. Therefore, the Action Alternative will have "No Impact" to the fringed myotis or their habitat.

Crater Lake Tightcoil, Region 6 Sensitive

Existing Condition/No Action

"The Crater Lake Tightcoil may be found in perennially wet situations in mature conifer forests, among rushes, mosses and other surface vegetation or under rocks and woody debris within 10 m. of open water in wetlands, springs, seeps and riparian areas, generally in areas which remain under snow for long periods during the winter. Riparian habitats in the Eastern Oregon Cascades may be limited to the extent of permanent surface moisture, which is often less than 10 m. from open water" (Duncan et al. 2003).

Threats to the species include activities that compact soils, reduce litter and/or vegetative cover, or impact potential food sources (i.e. livestock grazing, heavy equipment use, ORV's, and camping on occupied habitats). Fluctuations from removal of ground vegetation on ground temperature and humidity may be less extreme at higher elevations and on wetter sites, but no studies have been conducted to evaluate such a theory. These snails appear to occur on wetter sites than general forest conditions, so activities that would lower the water table or reduce soil moisture would degrade habitat (Burke et al. 1999).

Intense fire that burns through the litter and duff layers is devastating to most gastropods, and even light burns during seasons when these animals are active can be expected to have more serious impacts than burns during their dormant periods. Snowmobiling or skiing would impact these snails if snow, over their occupied habitats, is compacted losing its insulative properties and allowing the litter or ground to freeze (Burke et al. 1999).

Habitat for the Crater Lake tightcoil includes Class 1, 2, 3, and 4 streams and lake and wetland buffers. Suitable habitat specific to the Crater Lake tightcoil has not been mapped at this time as assessments are generally conducted at a project level.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to Crater Lake tightcoil habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Crater Lake tightcoil and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable Crater Lake tightcoil habitat. Therefore, the Action Alternative will have "No Impact" to the Crater Lake tightcoil or their habitat.

Evening Field Slug, Region 6 Sensitive

Existing Condition/No Action

Scattered sites have been documented for the Evening field slug in several provinces in Oregon, including both sides of the Oregon Cascades from Hood River to the Klamath River basin in Jackson County; and from the Elliot State Forest north in the northern Coast Range. The majority of currently documented sites occur on the eastern slopes of the Oregon Cascades. The type locality was in Oswego, OR, the paratype locality in Hood River. The range extends through western Washington and on to Vancouver Island, B.C.

The Evening field slug is associated with perennially wet meadows in forested habitats; microsites include a variety of low vegetation, litter and debris; rocks may also be used as refugia. Little detail is known about exact habitat requirements for the species, due to the limited number of verified sites. However, this species appears to have high moisture requirements and is almost always found in or near herbaceous vegetation at the interface between soil and water, or under litter and other cover in wet situations where the soil and vegetation remain constantly saturated. Because of the apparent need for stable environments that remain wet throughout the year, suitable habitat may be considered to be limited to moist surface vegetation and cover objects within 30 m. (98 ft.) of perennial wetlands, springs, seeps and riparian areas. Areas with coastal fog may allow the species to occupy habitats farther from open water. Down wood may provide refugia sites for the species that remain more stable during drier periods of the year than the general habitat.

Primary threats to this species are habitat loss from draining and conversion of wet meadows for agricultural, urbanization, grazing, forest management and other uses; and from fire. Natural threats may include ingrowth of conifer or hardwood tree and shrub species in historically herbaceous habitats, changes in hydrology that reduce the availability of water in wetlands, and exposure to vertebrate and invertebrate predators (i.e., predatory snails and beetles), especially in locally restricted areas.

A study conducted by Guralnick and Roth (2013) on the Fremont Winema NF found that *Deroceras hesperium* is likely an anatomical variant of *Deroceras laeve*, a more common and widespread species.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to evening field slug habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the evening field slug and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable evening field slug habitat. Therefore, the Action Alternative will have "No Impact" to the evening field slug or their habitat.

Silver-bordered Fritillary, Region 6 Sensitive

Existing Condition/No Action

The silver-bordered fritillary is a holarctic species ranging from the Appalachians, Midwest, Rockies, and the Cascades. This species is known from three locations in Oregon – Big Summit Prairie (Crook Co.), the Strawberry Mountains (Grant Co.), and the southern Wallowa range north of Halfway (Baker Co.) (Pyle 2002, Warren 2005). They are associated with open riparian areas, bogs, and marshes dominated by *Salix* and larval foodplants (marsh violet, bog violet). The adults nectar on various composites, mints, and *Verbena*. Populations from Crook and Grant counties fly from early June to mid-August, in what is apparently a single annual brood. Threats include small populations that are stressed by habitat succession and drying (Pyle 2002).

Habitat for the silver-bordered fritillary includes wetlands. Wetlands include both the wetland and the associated buffer. Suitable habitat specific to the silver-bordered fritillary has not been mapped at this time as assessments are generally conducted at a project level.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to silver-bordered fritillary habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River

RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the silver-bordered fritillary and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable silver-bordered fritillary habitat. Therefore, the Action Alternative will have "No Impact" to the silver-bordered fritillary or their habitat.

Johnson's Hairstreak, Region 6 Sensitive

Existing Condition/No Action

The Johnson's hairstreak is an uncommon butterfly with a distribution limited to the Pacific Northwest (USFS 2008b). It has been documented from Salem, Eugene, Coos Bay and Medford BLM districts and from the Willamette, Deschutes, Umpqua, Rouge-River/Siskiyou, Fremont-Winema, Umatilla and Wallowa-Whitman National Forests. Most Oregon records (n=52) are from 2000' elevation or greater with the majority from 3500' or more to 5-6000' elevation. They are thought to be late-successional associated because of its dependence upon dwarf mistletoe. Dwarf mistletoes generally increase in incidence and intensity in older stands, however both young and maturing stands host this as well (USFS 2008b).

Larvae feed exclusively on the aerial shoots of dwarf mistletoes (USFS 2008b). Adults sip nectar at available flowers of several species (Actostaphylos, Ceanothus, Cornus, dandelion, Fragaria, Rorippa, and Spraguea) and nearby water and mud puddles (USFS 2008b). There are several closely related species with overlapping ranges making identification difficult. The Thicket Hairstreak larvae are undistinguishable with those of the Johnson's Hairstreak. Since this species spends so much time in the top of the forest canopy this may limit detection.

Threats to this species includes timber harvest in mistletoe infested areas, large stand replacement fires, Btk (insecticide) use, herbicide use on forage species, and possible hybridization with the Thicket Hairstreak (USFS 2008b).

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects Johnson's hairstreak habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Johnson's hairstreak and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable Johnson's hairstreak habitat. Therefore, the Action Alternative will have "No

Impact" to the Johnson's hairstreak or their habitat.

Western Bumble Bee, Region 6 Sensitive

Existing Condition/No Action

The western bumblebee was once widespread and common throughout the western United States and western Canada before 1998. Since 1998 populations of this bumblebee species have declined drastically throughout parts of its former range. Populations in central California, Oregon, Washington and southern British Columbia have mostly disappeared. NatureServe (2013) reported this species has declined about 70-100% since the late 1990s in many places, especially from British Columbia to California. For Oregon, NatureServe (2014) lists them as S1, Critically Imperiled and S2N, Imperiled. It is difficult to accurately assess the magnitude of these declines since most of this species' historic range has not been sampled systematically (Xerces Society 2012, Andrews 2010). Western bumble bees have been documented on the Deschutes National Forest near Sparks Lake and in the Sunriver vicinity.

The Xerces Society website (Xerces Society 2012) stated there are a number of threats facing bumblebees, any of which may be leading to the decline of *Bombus occidentalis*. The major threats to bumble bees include: spread of pests and diseases by the commercial bumble bee industry, other pests and diseases, habitat destruction or alteration, pesticides, invasive species, natural pest or predator population cycles, and climate change. Commercial bumblebee rearing is thought to be the greatest threat to the western bumblebee. Bumblebee expert, Dr. Robbin Thorp (Univ. of California, Davis) has hypothesized western bumblebee queens shipped to Europe to produce new colonies and then shipped back to the United States may have acquired a disease (mircosporidium *Nosema bombi*) from a European bumblebee at the same rearing facility. The western bumblebee would have had no prior resistance to this pathogen. While this hypothesis needs validation, the timing, speed, and severity of the population crashes strongly supports the idea that an introduced disease caused the decline of bees (Xerces Society 2012).

An unpublished document prepared by the Xerces Society (Xerces Society 2013) stated the primary threats to the western bumblebee at the sites where it currently exists in Oregon and Washington include: pathogens from commercial bumble bees and other sources, impacts from reduced genetic diversity, and habitat alterations including conifer encroachment (resulting from fire suppression), grazing, and logging. Other threats include pesticide use, fire, agricultural intensification, urban development and climate change. Indirect effects of logging (such as increased siltation in runoff) and recreation (such as off-road vehicle use) also have the potential to alter meadow ecosystems and disrupt habitat. Additional habitat alterations, such as conifer encroachment resulting from fire suppression, fire, agricultural intensification, urban, and climate may threaten the western bumblebee. (Xerces Society 2013).

Management consideration for the western bumblebee mentioned by the Xerces Society in protecting all known and potential sites from practices, such as livestock grazing, and threats such as conifer encroachment, that can interfere with the habitat requirements of this species (availability of nectar and pollen throughout the colony season and availability of underground nest sites and hibernacula).

Most common management activities should not directly affect underground nests; however, bumble bees above ground in grasses would be vulnerable to fire and to mowing if the blade is

low enough to destroy them. Hibernating queens and workers could be very vulnerable to prescribed burns if they are above ground in dry microhabitats. Thinning and prescribed burning may have positive or negative effects: direct mortality to the pollinators and change in vegetation composition and structure (NatureServe 2013). Long term, these treatments would benefit bumblebees by reducing encroaching conifers and maintain an open meadow/brush habitat. Maintaining a diverse assemblage of primarily native flora such that flowers would be constantly available throughout the active season of April to September would benefit bumble bees (NatureServe 2013).

Native bees including bumblebees are adapted to local weather conditions and can forage during cold, rainy periods. Bumble bees are generalist foragers, meaning they gather pollen and nectar from a wide variety of flowering plants and need a constant supply of flowers in bloom from spring to autumn (Evans et al. 2008). The western bumblebee visits a wide variety of wildflowers including Aster spp., Gaultheria shallon (salal), Pedicularis (Elephant's Head), Penstemon, Phacelia, Prunus spp. (cherry), Rhododendron spp., Solidago spp. (Goldenrod), Symphoricarpos spp. (snowberry), Trifolium spp. (clovers), Salix (willow) plus many others. Commercially reared colonies of western bumblebees have been used extensively for pollination of greenhouse tomatoes and field berry crops in the western United States (Evans et al. 2008). Wild colonies of western bumblebees have also been significant pollinators of cranberry farms. The species is also used to pollinate alfalfa, apples, cherries, blackberries and blueberries.

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to western bumble bee habitat.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the western bumble bee and its habitat.

Determination

Implementation of the Designation of the Headwaters of the Cultus River RNA will result in no change to suitable western bumble bee habitat. Therefore, the Action Alternative will have "No Impact" to the western bumble bee or their habitat.

Wildlife other than Federally Listed and Sensitive

The Wildlife Report documents the review of activities and projects to meet the requirements of the Forest Service Manual (2634.03-.2), the National Forest Management Act, the Land and Resource Management Plan (LRMP) for the Deschutes National Forest, the Northwest Forest Plan (NWFP), and the Decision Notice for the Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales (i.e. "Eastside

Screens"), and the Landbird Strategies. The Wildlife Report is summarized in this EA: the full report is located in the project file.

Species and Habitats

The following wildlife/habitats have been reviewed to determine if the project/activity will have any negative effects on them including LRMP Management Indicator Species (MIS), NWFP Survey and Manage (S&M) species, and landbirds.

The Deschutes National Forest Land and Resource Management Plan (LRMP) (USDA 1990) identified a group of wildlife species as management indicator species (MIS). These species were selected because they represent other species with similar habitat requirements. Management indicator species can be used to assess the impacts of management activities for a wide range of wildlife species with similar habitat needs (FSM 2620.5).

In addition to the above mentioned MIS species there have been a number of wildlife species deemed "species of concern" either through the Northwest Forest Plan (e.g. bats; pg C-43) or through other directives (e.g., landbirds).

Table 7: Deschutes NF Management Indicator Species Summary

Species	Habitat	Habitat in Project Area
Northern Goshawk (*Accipiter gentiles*)	Mature and old-growth forests; especially high canopy closure and large trees	Yes
Cooper's Hawk (*Accipiter cooperi*)	Similar to goshawk, can also use mature forests with high canopy closure/tree density	Yes
Sharp-shinned Hawk (*Accipiter striatus*)	Similar to goshawk in addition to young, dense, even-aged stands	Yes
Great Gray Owl (*Strix nebulosa*)	Mature and old growth forests associated with openings and meadows	Yes
Great Blue Heron (*Ardea herodias*)	Riparian edge habitats including lakes, streams, marshes and estuaries	Yes
Golden Eagle (*Aquila chrysaetos*)	Large open areas with cliffs and rock outcrops	No
Waterfowl	Lakes, ponds, streams	Yes
Woodpeckers (Cavity Nesters)	Snags, Mature Conifers, Hardwoods, etc.	Yes
Red-tailed Hawk (*Buteo jamaicensis*)	Large snags, open country interspersed with forests	Yes
Osprey (*Pandion haliaetus*)	Large snags associated with fish bearing water bodies	Yes
Townsend's Big-eared Bat	Caves and dwellings	No
American Marten (*Martes americana*)	Mixed Conifer or High Elevation late successional forests with abundant	Yes

	down woody material	
Elk (*Cervus elephas*)	Mixed habitats	Yes
Mule Deer (*Odocoileus hemionus*)	Mixed habitats	Yes
Snags and Down Wood Associated Species and Habitat	Snags and down woody material	Yes

The following table displays the acres of potential habitat mapped within the proposed Headwaters of the Cultus River RNA.

Table 8: Acres of potential habitat for species within the proposed Headwaters of the Cultus River RNA.

Species	Acres of Potential Habitat	Percent of Proposed RNA
Northern Goshawk	41 acres	5%
Coopers Hawk	8 acres	<1%
Sharp-shinned Hawk	10 acres	1%
Great Gray Owl	279 acres	32%
Great Blue Heron	643 acres	73%
Golden Eagle	0	
Waterfowl	15 acres	2%
Black-backed Woodpecker	5 acres	<1%
Hairy Woodpecker	3 acres	<1%
Northern Flicker	1 acre	<1%
Pileated Woodpecker	568 acres	64%
Three-toed Woodpecker	58 acres	7%
Williamson's Sapsucker	17 acres	2%
Red-tailed Hawk	17 acres	2%
Osprey	881 acres	100%
Townsend's Big-eared Bat	0	
American Marten	585 acres	66%
Elk Hiding Cover	194 acres	62%
Elk Thermal Cover	121 acres	38%
Mule Deer Hiding Cover	713 acres	81%
Mule Deer Thermal Cover	0	

Environmental Consequences

Proposed Action

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to the above management indicator species.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the above mentioned management indicator species and their habitats.

Determination

This project will not affect the above mentioned management indicator species in the project area. Therefore, the designation of the Headwaters of the Cultus River RNA project will not contribute to a negative trend in viability on the Deschutes National Forest for the above mentioned management indicator species.

Conservation Strategy for Eastslope of the Cascade Mountains

Landbird Strategic Plan

The Forest Service has prepared a Landbird Strategic Plan (January 2000) to maintain, restore, and protect habitats necessary to sustain healthy migratory and resident bird populations to achieve biological objectives. The primary purpose of the strategic plan is to provide guidance for the Landbird Conservation Program and to focus efforts in a common direction. On a more local level, individuals from multiple agencies and organizations with the Oregon-Washington Chapter of Partners in Flight participated in developing a publication for conserving landbirds in this region. A Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington was published in June 2000 (Altman 2000). This document outlines conservation measures, goals and objectives for specific habitat types found on the east-slope of the Cascades and the focal species associated with each habitat type. See Table 3 for specific habitat types highlighted in that document, the habitat features needing conservation focus and the focal bird species for each.

Table 9: East-slope Cascade Mountain landbirds.

Habitat	Habitat Feature	Focal Species for Central Oregon
Ponderosa Pine	Large patches of old forest with large snags	White-headed woodpecker
	Large trees	Pygmy nuthatch
	Open understory with regenerating pines	Chipping sparrow
	Patches of burned old forest	Lewis' woodpecker
Mixed Conifer (Late-Successional)	Large trees	Brown creeper
	Large snags	Williamson's sapsucker
	Interspersion grassy openings and dense thickets	Flammulated owl
	Multi-layered/dense canopy	Hermit thrush
	Edges and openings created by wildfire	Olive-sided flycatcher
Lodgepole Pine	Old growth	Black-backed woodpecker
Whitebark Pine	Old-growth	Clark's nutcracker
Meadows	Wet/dry	Sandhill Crane
Aspen	Large trees with regeneration	Red-naped sapsucker

Subalpine fir	Patchy presence	Blue Grouse

Birds of Conservation Concern

In January 2001, President Clinton issued an executive order on migratory birds directing federal agencies to avoid or minimize the negative impact of their actions on migratory birds, and to take active steps to protect birds and their habitats. Federal agencies were required within two years to develop a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service to conserve migratory birds including taking steps to restore and enhance planning processes whenever possible. To meet this goal in part the U.S. Fish and Wildlife Service developed the Birds of Conservation Concern released in December 2002 (USFWS 2002) and an update to the original list was released in 2008 (USFWS 2008).

The "Birds of Conservation Concern 2008" (BCC) identifies species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973. Bird species considered for inclusion on lists in this report include non-game birds, gamebirds without hunting seasons, subsistence-hunted non-game species in Alaska, landbirds, shorebirds, waterbirds, and Endangered Species Act candidate, proposed endangered or threatened, and recently delisted species. While all of the bird species included in BCC are priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing. The goal is to conserve avian diversity in North America and includes preventing or removing the need for additional ESA bird listings by implementing proactive management and conservations actions (USFWS 2008). The 2008 lists were derived from three major bird conservation plans: the Partners in Flight North American Landbird Conservation Plan, the United States Shorebird Conservation Plan, and the North American Waterbird Conservation Plan. Conservation concerns stem from population declines, naturally or human-caused small ranges or population sizes, threats to habitat, or other factors.

Bird Conservation Regions (BCRs) were developed based on similar geographic parameters and are the basic units within which all bird conservation efforts should be planned and evaluated (USFWS 2008). One BCR encompasses the Designation of the Headwaters of the Cultus River RNA Project Area – BCR 9, Great Basin. See Table 4 for a list of the bird species of concern for the area, the preferred habitat for each species, and whether there is potential habitat for each species within the Headwaters of the Cultus River project area.

Table 10: BCR 9 (Great Basin) BCC 2008 list.

Bird Species	Preferred Habitat	Habitat within the Project Area (Y or N)
Greater Sage Grouse (Columbia Basin DPS)	Sagebrush dominated Rangelands	N
Eared Grebe (non-breeding)	Open water intermixed with emergent vegetation	N
Bald Eagle	Lakeside with large trees	Y
Ferruginous Hawk	Elevated Nest Sites in Open Country	N
Golden Eagle	Elevated Nest Sites in Open Country	N
Peregrine Falcon	Cliffs	Y

Bird Species	Preferred Habitat	Habitat within the Project Area (Y or N)
Yellow Rail	Dense Marsh Habitat	N
Snowy Plover	Dry Sandy Beaches	N
Long-billed Curlew	Meadow/Marsh	Y
Marbled Godwit	Marsh/Wet Meadows	N
Yellow-billed Cuckoo	Dense riparian/cottonwoods	N
Flammulated Owl	Ponderosa pine forests	Y
Black Swift	Cliffs associated with waterfalls	N
Calliope Hummingbird	Open mountain meadows, open forests, meadow edges, and riparian areas	N
Lewis's Woodpecker	Ponderosa pine forests	Y
Williamson's Sapsucker	Ponderosa pine forests	Y
White-headed Woodpecker	Ponderosa pine forests	Y
Loggerhead Shrike	Open country with scattered trees or shrubs	N
Pinyon Jay	Juniper, juniper-ponderosa pine transition, and ponderosa pine edges	N
Sage Thrasher	Sagebrush	N
Virginia's Warbler	Scrubby vegetation within arid montane woodlands	N
Green-tailed Towhee	Open ponderosa pine with dense brush	N
Brewer's Sparrow	Sagebrush clearings in coniferous forests/bitterbrush	N
Black-chinned Sparrow	Ceanothus and oak covered hillsides	N
Sage Sparrow	Unfragmented patches of sagebrush	N
Tricolored Blackbird	Cattails or Tules	N
Black Rosy Finch	Rock outcroppings and snowfields	N

Environmental Consequences

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to the above landbirds or Birds of Conservation Concern.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the above mentioned landbirds or birds of conservation concern and their habitats.

Survey and Manage

Terrestrial species thought to occur on the Deschutes National Forest included the Crater Lake

Tightcoil (*Pristiloma arcticum crateris*) and the Great Gray Owl (*Strix nebulosa*). The Crater Lake tightcoil was included in a group of eight mollusk species where equivalent-effort pre-disturbance surveys were required even though it was considered a Category B species (species are considered rare, where pre-disturbance surveys are not practical) based on direction in the 2001 Record of Decision. In the subsequent 2002 Annual Species Review Memorandum (USDA and USDI 2003), the Crater Lake Tightcoil was changed from a Category B to a Category A species, where species are considered rare and pre-disturbance surveys are considered practical. The great gray owl was a Category C species which were species considered uncommon and where pre-disturbance surveys are practical. The status of the great gray owl has not changed during subsequent reviews. The Crater Lake tightcoil is included in the Sensitive Species update in the biological evaluation while the great gray owl is analyzed under the management indicator species section in the wildlife report.

On December 2009, the District Court for the Western District of Washington issued an order on partial summary judgment in favor of the Plaintiffs finding inadequacies in the NEPA analysis supporting the *Record of Decision to Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* (FS et al. 2007)(2007 ROD). The District Court did not issue a remedy or injunction at that time.

Plaintiffs and Defendants entered into settlement negotiations that resulted in the 2011 Survey and Manage Consent Decree, adopted by the District Court on July 6, 2011.

The Defendant-Intervenor subsequently appealed the 2011 Consent Decree to the Ninth Circuit Court of Appeals. The April 25, 2013 ruling in favor of Defendant-Intervener remanded the case back to the District Court.

On February 18, 2014, the District Court vacated the 2007 RODs. Vacatur of the 2007 RODs has the result of returning the Forest Service to the status quo in existence prior to the 2007 RODs.

The District Court and all parties agreed that projects begun in reliance on the Settlement Agreement should not be halted. The District Court order allowed for the Forest Service and BLM to continue developing and implementing projects that met the 2011 Settlement Agreement exemptions or species list, for three categories of projects. These categories include:

1) Projects in which any Survey and Manage pre-disturbance survey(s) has been initiated (defined as at least one occurrence of actual in-the-field surveying undertaken according to applicable protocol) in reliance upon the Settlement Agreement on or before April 25, 2013;
2) Projects, at any stage of project planning, in which any known site(s) (as defined by the 2001 Record of Decision) has been identified and has had known site-management recommendations for that particular species applied to the project in reliance upon the Settlement Agreement on or before April 25, 2013; and
3) Projects, at any stage of project planning, that the Agencies designed to be consistent with one or more of the new exemptions contained in the Settlement Agreement on or before April 25, 2013.

Environmental Consequences

Direct and Indirect Impacts

There will be no change from the existing condition with the implementation of the proposed action. This is an administrative change from a proposed RNA to an established RNA. There will be no activities authorized other than the establishing the RNA. Therefore, there will be no direct or indirect effects to the Crater Lake tightcoil or the great gray owl.

Cumulative Effects

Implementation of action alternative for the Designation of the Headwaters of the Cultus River RNA will not result in any direct or indirect adverse effects and therefore, will not result in any cumulative effects for the Crater Lake tightcoil or the great gray owl and their habitats.

Cultural Resources

No cultural resource sites or historic sites have been documented within the RNA (USDA Forest Service 2011). Establishing the RNA will have no impact to cultural resources and will not alter or limit existing Native American treaty rights. As per Section 106 of the National Historic Preservation Act, no ground disturbing activities will occur within the RNA without a cultural resources inventory.

Recreation

There is light recreation use within the RNA along both sides of the Cultus River by anglers and hikers. The Recreation Opportunity Spectrum for the area is Roaded Natural.

Recreational use levels and resulting impacts on the RNA are expected to remain minimal. Designation of the RNA will not impact existing opportunities for light recreation as long as use does not threaten the research value of the area. Management direction does not allow for any recreation improvements to be added.

Transportation

One closed and undriveable spur road (Forest Service Road 4631-208) is located in the north part of the RNA. No other roads are present within the area and there are no plans to construct any roads or trails in the area. Establishment of the RNA would not have any impact on the existing transportation system. Travel Management regulations do not allow off-road motorized vehicle use in the area, and the Deschutes did not designate any trails for off-road vehicle use in the area. Under standards and guidelines for MA-2 no new trails would be allowed unless necessary for research purposes.

Invasive Plants

At present one noxious weed population is known to occur adjacent to the RNA: a population of spotted knapweed is located at the southeast corner of the RNA along Forest Service Road 4630. It is unknown whether the population extends within the RNA boundary.

Treatment of invasive plants was addressed in the Deschutes-Ochoco Invasive Plant Treatment Final EIS and Record of Decision (USDA Forest Service 2012).

Establishment of the RNA does not preclude continuation of treatment of existing invasive plant

occurrences, nor would it prevent the practice of Early Detection Rapid Response (EDRR) to other invasive species, if detected within the RNA in the future. For these reasons, establishment of the RNA is not anticipated to cause an increase in establishment or spread of invasive species.

Other Required Disclosures

Effects on Prime Farmland, Rangeland, and Forestland

There is no prime farmland, rangeland, or forestland in the proposed Headwaters Cultus River RNA area.

Floodplains and Wetlands

Executive Order 11988 sets the direction of federal actions to avoid adverse impacts associated with the occupancy and modification of floodplains. Executive Order 11990 sets the direction of federal actions to avoid adverse impacts associated with destruction or modification of wetlands. The designation of the area as RNA is not expected to have any adverse impacts to floodplains or wetlands.

Potential or Unusual Expenditures of Energy

There would be no unusual expenditures of energy with this designation. The project does not involve any forms of energy expenditure.

Conflicts with Plans, Policies, or other Jurisdictions

There would be no conflicts with plans, policies, or other jurisdictions with either alternative. All overlapping plans and policies have been evaluated for consistency. The proposal to establish an RNA in this location was developed under consultation with regulatory agencies including the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, Oregon Department of Fish and Wildlife, and the State Historic Preservation Officer (See Chapter 4).

Environmental Justice

The proposed designation does not appear to have a disproportionately high or adverse effect on minority or low-income populations, or Native American tribes. No mitigation measures to offset or ameliorate adverse effects to these populations have been identified. All interested and affected parties would continue to be involved with the comment and decision-making process.

Consumers, Civil Rights, Minority Groups, and Women

The proposed designation does not appear to have a disproportionately high or adverse effect on consumers, minorities, or women. The project would not have any effect on civil rights of any human being.

Consistency with Deschutes LRMP, as Amended

Formally designating the RNA would require amending the Deschutes LRMP. The designation is consistent with all other Forest Plan standards and guidelines. The management direction listed in Chapter 2 lists the management area categories for the Forest Plan and Northwest Forest Plan.

Chapter 4: Agencies and Persons Consulted

U.S. Fish and Wildlife Service

It was determined that there would be no effect to any Federally-listed wildlife species, therefore no consultation with the U.S. Fish and Wildlife Service was required.

State Historic Preservation Officer

Designating The Headwaters of the Cultus River as an RNA would not affect any historic or pre-historic artifacts; therefore no consultation with the Oregon State Historic Preservation Officer is required.

On March 12, 2009 a scoping letter was sent to a mailing list of interested parties maintained in the project file at the Deschutes National Forest Supervisor's Office. The following list of individuals, organizations, and agencies are receiving notice of the availability of this environmental assessment for comment:

Individuals, Agencies, and Organizations

Luann Danforth
Dave Lynn
Chuck Tolboe
Matt Mahoney
Vera Riser
Steven J. McNulty, Gas Transmission NW Corp.
Ken Roadman
Wally Buckman
Lee Fischer
Gary Pankey
Larry McGlocklin
Flip Houston, Scott Logging Inc.
Scott Odgers, Central Oregon Flyfishers
Pat Schatz, Mickey Finn Guide Service
Craig Vaage, Bigfoot Guide Service
David Nissen, Wanderlust Tours
Larry Ulrich
Ed Duffy, Deschutes County 4-Wheelers
David H. Tjomsland
Robert Speik
Susan Jane Brown
Brad Chalfant, Deschutes Basin Land Trust
Jim King
Michael Krochta
Josh Laughlin, Cascadia Wildlands Project
Karen Coulter, Blue Mountains Biodiversity Project
Doug Heiken, Oregon Wild
Glen Ardt
Marilyn Miller
Stuart Garrett, MD
Scott Silver, Wild Wilderness
Matt Kern
Mike Morris
Libby Johnson, Bonneville Power Administration
Keenen Howard
Senator Ron Wyden
Sunriver Owners Association
Dick Artley
John Pindar
Dennis Krakow, Woodside Ranch Owners Association
Arlie Holm
Fred Tanis
Chuck Burley, Interfor
Gerald Keck, D.R. Johnson Lumber Co.
John Morgan, Ochoco Lumber
Shawn Gerdes, Arnold Irrigation District
Bend Metro Parks & Recreation
Dylan Darling, The Bulletin
Billy Toman
Rick Bozarth, Bozarth's Offroad Service Specialties
Gordon Baker
Bodie Dowding, Interfor
Peggy Spieger, Oregon State Snowmobile Association
Corey Heath, Oregon Department of Fish and Wildlife

Stuart Otto, Oregon Department of Forestry
John McKenzie, Sunriver Owners Association
Mark Dunaway, Pine Mountain Observatory, Univ. of Oregon
Dyarle Sharkey
Patti Gentiluomo
Wade N. Foss
Bruce Cunningham
Moon Country Snowmobilers
Scott O'Neill
June Ramey
Mark Davis
Scott McCaulou, Deschutes River Conservancy
Ryan Houston, Upper Deschutes Watershed Council
Lynne Breese, Eastern Oregon Forest Protection Association
Greg McClarren
Rick Williams, ODOT Region 4
Kate Lighthall, Project Wildfire
SROA
Northwest Environmental Defense Center
Vicki McConnell, Department of Geology and Mineral Industries
Andy Ingram
Dean Richardson
Vic Russell
Ed Keith, Deschutes County Forester
Patricia Moore
Jim Lowrie
Jim Wilson, JTS Animal Bedding
Pieter & Diane Van Gelderen
L. Ulven
Steve Johnson, Central Oregon Irrigation District
Jim Anderson
Loren Smith
Jim Larson, Upper Deschutes River Coalition
Gail Carbiener
Margie Gregory
David Pitts
Central Oregon Climate Alliance
Kreg Lindberg
Peter Geiser
Senator Jeff Merkley
Larry Pennington, Oregon Chapter, Sierra Club
Judy Meredith, East Cascades Audubon Society
Paul Bannick, Conservation Northwest
Don Franks
Lowell Franks
Matt Bales, Mule Deer Foundation
Rod Adams, Oregon Hunter's Association
Jeff Trant
Kenna Hoyser, Central Oregon Chapter, Oregon Equestrian Trails
John Zachem
Scott Walley
Lisa Clark, Central Oregon Fire Management Service
Congressman Greg Walden
George Wuerthner
Steve Bigby
Sarah Peters, Wildlands CPR
Meriel Darzen, Oregon Ch., Sierra Club, Juniper Group
Paul Dewey, Central Oregon Landwatch
Confederated Tribes of the Warm Springs
Burns Paiute Tribe
The Klamath Tribes
USDI Fish & Wildlife Service

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Appendix A – Consideration of Public Comments

During the public comment period (October 17, 2014 – November 17, 2014), three responses were received from the following individuals or organizations: George Wuerthner, Doug Heiken (Oregon Wild), Karen Coulter (Blue Mountains Biodiversity Project). Some comments are specific to just one of the RNAs, but some comments apply to all of them. This appendix incorporates all of the comments and responses regardless of whether or not they applied to just one of the RNAs.

All comments have been considered during the decision-making process for the RNA Establishment Project. Although not a requirement for environmental assessments, the responses provided here are intended to briefly discuss all major points of view and to document if comments resulted in any changes to the environmental assessment. Statements may have been summarized or paraphrased to reduce paperwork. Full text of the comment letters are on file at the Bend/Ft. Rock Ranger District.

Comment: I strongly approve of creation of these RNAs. My only comment has to do with the Many Lakes proposed NRA. It is not clear to me why the northern boundary does not extend past Deer Lake to the Three Sisters Wilderness boundary. It would seem to me to make a more logical boundary and expansion of the NRA to include Deer Lake and the surrounding area would provide more protection to the NRA and its purposes....trying to make it as large as possible because I like to have "buffers" around these areas. and it seemed somewhat logical to just go north to the Wilderness boundary. (G. Wuerthner)

Response: Boundary modifications that are included in the EAs are for the purpose of making the boundaries more easily recognized and described. The changes result in a net increase of 157 acres in the Many Lakes RNA. The Forest did not see a need to expand the Many Lakes RNA boundary further as the existing area incorporates the ecological area to be represented (Many Lakes EA pp 4-5); the purpose and need does not include making the RNAs as large as possible. Additionally, the area between the proposed boundary and the Wilderness is within the Dispersed Recreation management allocation in the Forest Plan (Many Lakes EA Figure 2, p. 7). Existing recreation sites and uses in that area may not be consistent with the direction for RNAs.

Comment: I'm very supportive of the designation. The EAs should have discussed the long-term benefits for focal species due to the preservation of habitat. (K. Coulter)

Response: The EAs describe which species may be present or have habitat within each RNA. Because there is no expected change to any existing habitat from officially designating the RNAs, the effects analysis concludes that there will be no effect to species or their habitat. The long-term objectives of the RNAs are to provide sites for study of natural processes in undisturbed ecosystems that can be compared to similar environments where human activities occur and to provide gene pool preserves for plant and animal species.

Comment: Oregon Wild supports conservation of these four RNAs. We encourage the Forest Service to go further and protect more of the landscape within which these special natural areas are embedded.

The proposed Cultus River RNA could be expanded to include sections 16 and 17 between roads 46 and 4623. This would help maintain more intact forest and protect more of the watershed of the Cultus River headwaters. (D. Heiken)

Response: The Forest did not see a need to expand the Headwaters Cultus River RNA boundary further as the existing area incorporates the ecological area to be represented (HW Cultus EA pp 4-5). This RNA falls within the Cultus Late Successional Reserve (LSR). The LSR is intended to provide habitat for species that rely on late-successional habitat and any activities must be consistent with the direction in the LSR Assessment and Northwest Forest Plan. Much of the areas outside the RNA in Sections 16 and 17 are roaded and have been managed in the past, including timber harvest.

Comment: The proposed Katsuk Butte RNA could be expanded to include the similar and connected biophysical setting including all of Section 22 and most of section 27 (south of Katsuk Butte and west of Sparks Lake and extending west to the amazing spring complex at Quinn Meadows in the southeast portion of section 21. The proposed Many Lanes RNA could be expanded northward to include sections 26 and 21 thereby encompassing Deer Lake and the small lake west of Deer Lake. (D. Heiken)

Response: The original RNA boundaries were the result of extensive surveys to identify areas that met the needs of the Research Station to represent specific forest type or plant community. The Forest did not identify a need to enlarge the proposed RNA, only to modify the boundary to make it easier to identify and describe. The result is a net increase of 226 acres over the proposed Katsuk Butte RNA. The entire Katsuk Butte RNA and most of the surrounding area fall within an Inventoried Roadless Area where timber harvest and road building are not allowed.

Comment: The proposed Wechee Butte RNA is in a heavily managed part of the forest and should be expanded to include all contiguous native forest, such as in the extreme NW corner of section 28. The FS might even consider adding the adjacent butte in section 28 and doing appropriate restoration and recovery efforts to that contributes to RNA values. (D. Heiken)

Response: The Oregon Natural Heritage Plan identified a need for representation in an "undisturbed forested cinder cone at mid-elevation with ponderosa pine-lodgepole pine climax." The focus area proposed for designation is almost entirely free of disturbance, which fits the purpose of providing a site where the study of natural processes can occur and be compared against areas where human activities are occurring. The establishment of the Wechee Butte RNA does not affect the potential to conduct restoration in areas surrounding the RNA.

Comment: There appears to be a small OHV play area on the border between section 28 and 29 that needs to be closed so that OHVs do not intrude any further into the Wechee Butte RNA. (D. Heiken)

Response: This information has been provided to Central Oregon's Combined off Highway Vehicle Operations (COHVOPS), which manages OHV use on the Deschutes National Forest. There is no designated trail or play area in this area, so the use is not in compliance with the Travel Management Rule.

Comment: The cover of the Wechee Butte RNA EA says it's located in section 27, but it's in section 29. (D. Heiken)

Response: This is corrected in the Final EA.

Comment: We strongly support standards for all RNAs that allow natural processes to function without significant intervention. As such, road building and logging must be prohibited. Native insects and disease and other natural disturbance processes are a natural and integral part of the ecosystem and should be allowed to play out. Forest health logging and salvage logging should

not be practiced. Fire should be reintroduced in appropriate forest types to maintain stands.

Some of the proposed standards & guidelines include following the Deschutes LRMP standards for "forest health." This would be inappropriate because these standards are outdated. They label native insects "pests" and they focus too much on tree "vigor" when (from an ecological standpoint) mortality processes are just as important. (LRMP p 4-36). We recommend dropping this proposed standard "M2-23: Follow Forest-wide standards/guidelines for forest health." (D. Heiken)

Response: The system of RNAs was established with the goal of preserving natural features and plant communities for research and education purposes (Cultus Headwaters EA p. 4). Therefore timber harvest, including salvage harvest is not allowed (S&Gs M2-4, M2-5, M2-6). The S&Gs do allow for the use of fire where appropriate and prescribed fire has been used in established RNAs such as the Pringle Falls RNA (see http://www.fsl.orst.edu/rna/sites/Pringle_Falls.html for a photo of burning in the Pringle Falls RNA). This web site also provides information on all RNAs in the system across the country, including the research that has been conducted.

Comment: The designation of these RNAs should not trump the protective standards that may already be in place, such as for riparian reserves, Late Successional Reserves and inventoried roadless areas. (D. Heiken)

Response: Three of the new RNAs fall within the Northwest Forest Plan, and overlapping layers of protective management direction are in place. Headwaters Cultus River and Many Lakes RNAs fall within an LSR (see Headwaters Cultus EA p. 10), and Katsuk Butte and Many Lakes RNAs fall within Inventoried Roadless Areas (also page 10 of each of those EAs). Standards and guidelines that are consistent with those for RNAs (e.g. timber harvest is not allowed in the RNAs, regardless of direction for silviculture in LSRs under the Northwest Forest Plan) are applicable, including Riparian Reserve standards and guidelines. This has been clarified within Chapter 2 of the EAs and the map of management allocations has been updated to display NWFP allocations.