

SIGNATURE PAGE

for


RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Many Lakes 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  
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## LEGAL DESCRIPTION

### MANY LAKES RESEARCH NATURAL AREA BOUNDARY DESCRIPTION

The RNA boundary begins at a point 100 feet (30.48 meters) North of the centerline of Forest Service Road 4636 approximately 900 feet (274.32 meters) Southwesterly from the intersection with Forest Road 4631-674 in Section 34, Township 20 South, Range 7 East, Willamette Meridian. The boundary follows a series of metes and bounds courses, Northerly and Westerly, skirting the edge of Little Cultus Lake, to a point approximately 2/3 of the distance between Little Cultus Lake and Cultus Lake in Section 28, then goes West to a point on the section line as shown on the USGS quad, then South along the Three Sisters Wilderness boundary to a point 100 feet (30.48 meters) north of Road 4636, then Easterly along the road to the point of beginning, maintaining an offset of 100 feet (30.48 meters) from the road. Coordinates generated by GIS are being 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 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 exception of the Northing coordinates for Points 5 and 6 and the Easting coordinates of points 1 and 6, which are to be used as control for the boundary. The centerlines of the roads and trails are determined to be acceptable monuments for determining boundary locations. The map on which this description is based is the USGS Irish Mountain Quadrangle, Oregon 1997, 7.5 minute series. The area of the RNA is 907 acres (367 hectares), more or less.

### NARRATIVE

#### Point 1

A point 100 feet (30.48 meters) North of and perpendicular to, Forest Road 4636. This point is defined by the coordinates of N. 779528, E. 4557374.

Thence N.00 02' 40"W., 870 feet (265.18 meters), to;

#### Point 2

A point with the coordinates of N. 780398, E. 4557374. Such point is to be at least 100 feet (30.48 meters) from any part of the spur road 4636-674 and is to be above the high water mark of Little Cultus Lake, as determined on the ground.

Thence Northwesterly along the high water mark on the shoreline of Little Cultus Lake and around the Northwest portion of said lake to:

#### Point 3

A point on the high water mark of Little Cultus Lake, Southwest of a small pond and defined by the coordinates of N. 782442, E. 4556450.

Thence Northeasterly, around said pond and to;

Point 4

A point defined by the coordinates of N. 782809 E. 4556576, on the most westerly point of said pond.

Thence Northwesterly to;

Point 5

A point defined by coordinates of N. 783906 E. 4555751. Said point is to be 100 feet (30.48 meters) South of and perpendicular to the Deer Lake Trail at a point where the trail is approximately 850 feet (259.08 meters) Southwest of the intersection of Forest Roads 4636-640 and 4636-644, these being respectively, the road to the West end of Cultus Lake and the road up Cultus Mountain.

Thence, Northwesterly, 100 feet (30.48 meters) Southwesterly of, parallel to and perpendicular from the Deer Lake Trail to;

Point 6

A point defined by the coordinates of N. 785319, E. 4554839. Said point being 100 feet (30.48 meters) Southwest of and perpendicular from the Deer Lake Trail.

Thence N. 87 21' 40" W., 4898 feet (1492.91 meters) to:

Point 7

A point defined by the coordinates of N. 785544, E. 4549946. Said point is on the Three Sisters Wilderness Area boundary.

Thence S. 01 14' 50" E., 6662 feet (2030.58 meters), along the boundary of the Three Sisters Wilderness Area, to;

Point 8

A point defined by the coordinates of N. 778883, E. 4550091. Such point being 100 feet (30.48 meters) North of and perpendicular to, Forest Road 4636.

Thence, Easterly, 100 feet (30.48 meters) Northerly of, parallel to and perpendicular from, Forest Road 4636, to the point of beginning.

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

**ESTABLISHMENT RECORD FOR THE  
MANY LAKES RESEARCH NATURAL AREA  
WITHIN DESCHUTES NATIONAL FOREST,  
DESCHUTES COUNTY, OREGON**

**A. INTRODUCTION**

Many Lakes Research Natural Area (RNA) occupies approximately 907 acres (367 hectares) in the High Cascades physiographic province (Franklin and Dyrness 1973) and the West Cascades and Crest Ecoregion, Cascade Crest Montane Forest subregion of Oregon (Oregon Natural Heritage Program 2003), and lies within the Deschutes National Forest. The RNA is located on glaciated uplands near the crest of the Central Oregon Cascades and contains numerous lakes, ponds, fens, wet meadows, springs and small streams. The fens and wet meadow habitats occupy approximately 115 acres of the RNA, and lakes and ponds cover another 20 acres. The history of glaciation has resulted in a landscape of irregularly shaped hills, depressional areas and rock escarpments.

The forest within the RNA has not been subject to harvest or other manipulation. Most of the RNA is forested by lodgepole pine (*Pinus contorta*), Engelmann spruce (*Picea engelmannii*) and mountain hemlock (*Tsuga mertensiana*).

**B. JUSTIFICATION**

**JUSTIFICATION STATEMENT**

Many Lakes RNA fills a Research Natural Area need for representation of the following natural heritage elements identified in the 2003 Oregon Natural Heritage Plan (Oregon Natural Heritage Program 2003):

- montane lake with aquatic beds and marshy shore
- subalpine pond with aquatic beds and marshy shore
- few-flowered spikerush (*Eleocharis quinqueflora*)/brown moss (*Hamatocaulis vernicosus*) fen with Engelmann spruce and lodgepole pine
- spring fen on seepage slope (including marsh marigold (*Caltha leptosepala*), shooting star (*Dodecatheon jeffreyi*), bistort (*Bistorta bistortoides*), arrowleaf groundsel (*Senecio triangularis*), and false hellebore (*Veratrum californicum*))
- Geyer willow (*Salix geyeriana*) shrub swamp
- bog birch (*Betula glandulosa*) shrub swamp
- bog blueberry (*Vaccinium uliginosum*) shrub swamp with Engelmann spruce, lodgepole pine and tufted hairgrass (*Deschampsia cespitosa*)
- Oregon spotted frog (*Rana pretiosa*; federal candidate for listing as Threatened or Endangered)

- American scheuchzeria (*Scheuchzeria palustris* ssp. *americana*; Forest Service Sensitive Species)

Many Lakes RNA also provides cell representation for Northern spotted owl (*Strix occidentalis caurina*; Federally Listed Threatened), Pacific fisher (*Martes pennanti*; Federal Candidate for listing), and California wolverine (*Gulo gulo*; Federal Species of Concern, Forest Service Sensitive).

## PRINCIPAL DISTINGUISHING FEATURES

Many Lakes RNA encompasses approximately 907 acres (367 hectares) in glaciated uplands 3 miles (4.8 kilometers) east of the crest of the Central Oregon Cascades. The RNA is located in a diverse area of numerous small lakes and ponds, fens and wet meadows, steep slopes and rock escarpments. Raft Lake, in the northwest corner of the RNA, has a surface area of approximately 10 acres (4 hectares) and is the deepest lake in the RNA. Extensive wetland complexes occur on slopes and in depressional areas and include fens, sloping fens, wet meadows, shrub swamps, shallow ponds and seasonal streams. The remainder of the RNA is forested with lodgepole pine, Engelmann spruce, mountain hemlock, western hemlock (*Tsuga heterophylla*), white fir x grand fir hybrid (*Abies concolor x grandis*), western white pine (*Pinus monticola*), ponderosa pine (*Pinus ponderosa*), and whitebark pine (*Pinus albicaulis*).

Rare species documented in the RNA include the Northern spotted owl, Oregon spotted frog, Pacific fisher, California wolverine, American scheuchzeria, slender pondweed (*Potamogeton pusillus* ssp. *tenuissimus*), lesser bladderwort (*Utricularia minor*), Blandow's feather moss (*Helodium blandowii*), and tomentypnum moss (*Tomentypnum nitens*).

Soils range from pumiceous sands to peats. Slopes range from 0 to 50 percent.

## OBJECTIVE

The objective of Many Lakes 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

Many Lakes 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 boundaries of the RNA have been amended to include additional wet meadow, bog and forest habitats. The original acreage of the RNA proposed in the LRMP was 750 acres (304 hectares). The amended acreage is 907 acres (367 hectares).

#### D. MANAGEMENT PRESCRIPTION

The Many Lakes 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 41 of the FEIS for the Deschutes National Forest LRMP (USDA Forest Service 1990b). Cells represented by Many Lakes RNA are documented in the Oregon Natural Heritage Plan, Chapter 9, pages 85, 86, 90 and 94 (Oregon Natural Heritage Program 2003).

### ECOLOGICAL EVALUATION

#### A. PHYSICAL SITE DESCRIPTION AND CLIMATIC CONDITIONS

##### LOCATION

Many Lakes 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° 48' 15" North and longitude 121° 53' 45" West (Map datum: NAD 1983). The RNA is located in Sections 27, 28, 33 and 34 of Township 20 South, Range 7 East, Willamette Meridian, approximately 34 air miles (55 kilometers) southwest of Bend, Oregon and 3.5 air miles (6 kilometers) west of Crane Prairie Reservoir. The Three Sisters Wilderness Area lies along the western boundary and Little Cultus Lake is located adjacent to the eastern boundary of the RNA.

##### AREA

Total area for Many Lakes RNA is approximately 907 acres (367 hectares).

## ELEVATION RANGE

Elevations within the RNA range from about 4760 feet (1451 meters) on the shore of Little Cultus Lake to about 5080 feet (1548 meters) at the northwest corner of the RNA.

## ACCESS

Many Lakes RNA can be accessed from Forest Service Road 4636 which runs along the southern boundary of the RNA. There is a 100 foot (30.5 meter) buffer between the road and the boundary. From downtown Bend, Oregon take County Road 46 (Cascade Lakes Highway) 46.9 miles (75.5 kilometers) west and south to the intersection with Forest Service Road 4635, the road to Cultus Lake Resort. Turn right and go 0.75 mile (1.2 kilometer) on FS Road 4635 to FS Road 4630. Turn left onto FS Road 4630 and go 1.7 mile (2.7 kilometers) to the junction with FS Road 4636 and continue straight 1.9 miles (3.1 kilometers) on FS Road 4636. This point is located 100 feet (30.5 meters) south of the southeast boundary of the RNA. The RNA can be accessed on foot from FS Road 4636.

The RNA can also be accessed from the Deer Lake Trail (Deschutes National Forest Trail No. 6) which runs along the northeast boundary of the RNA. There is a 100 foot (30.5 meter) buffer between the trail and the boundary. To reach the trail go 0.7 mile (1.1 kilometer) west on FS Road 4636 from its junction with FS Road 4630. Turn right on FS Road 640 and go 0.25 mile (0.4 kilometer) to the trailhead.

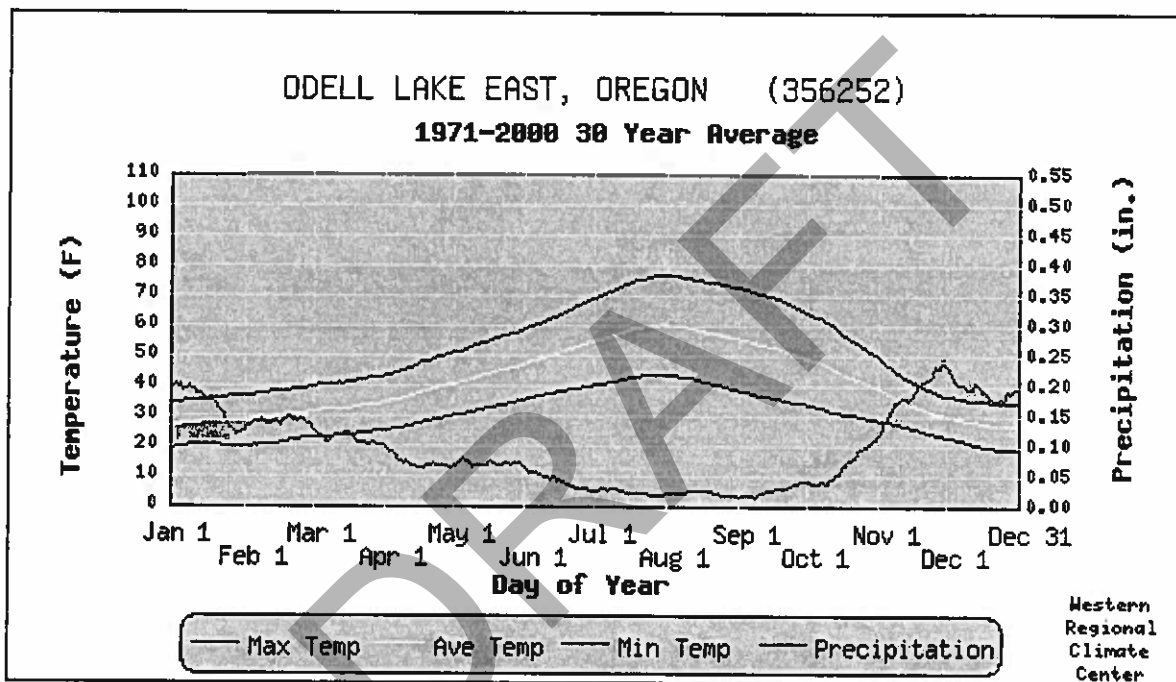
In addition, there is an informal trail into the RNA from near the southwestern corner of the RNA to Raft Lake.

## CLIMATIC DATA

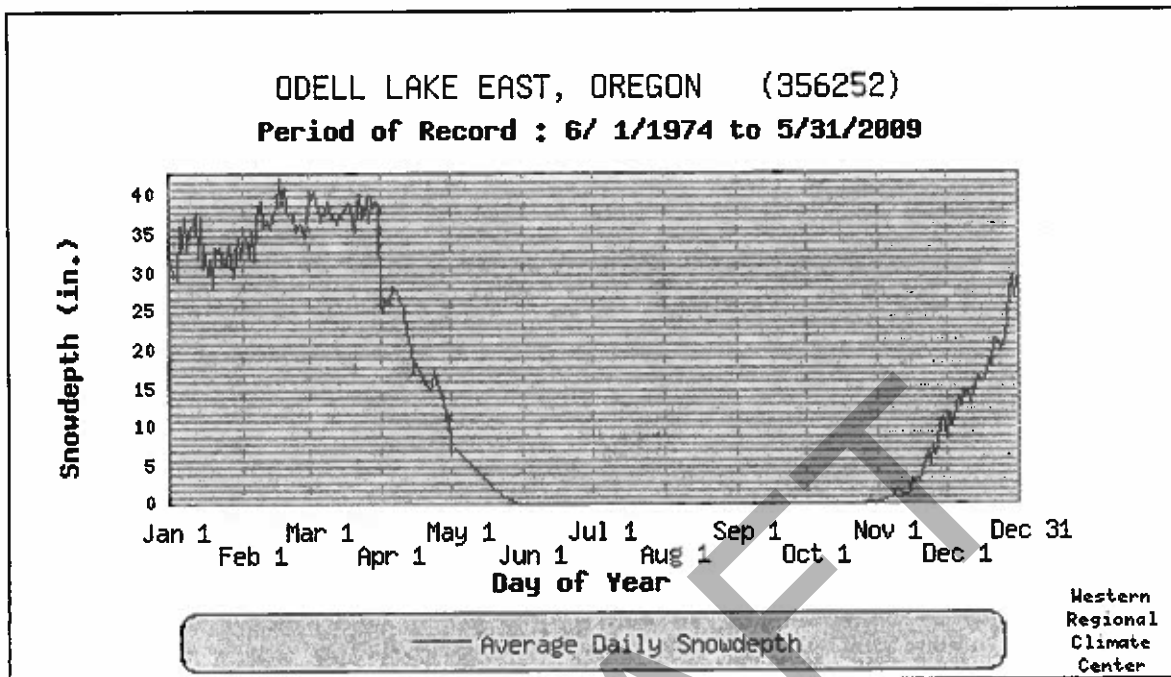
The climate of the high Cascades of central Oregon is characterized by mild summers and cold winters. Most of the precipitation falls as snow during the winter with some rainfall occurring in the spring and occasional thunderstorms in the summer. Frost can occur in any month of the year. The frost-free season is very short with the average growing season approaching only 100 days. Summers are typically dry with mild 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.

The nearest National Oceanographic and Atmospheric Administration (NOAA) weather station with similar climate is Odell Lake East station, approximately 18 miles (29 kilometers) south of the RNA. The Odell Lake East station has a mean annual temperature of 41.5° F (5.3° C), and receives average annual precipitation of 30.37 inches (28.1 cm) and average annual snowfall of 178.5 inches. Nearly half of the annual precipitation falls between November and February, much of it as snow. Summer high temperatures are moderate but can reach into the 80's F (27-31° C) and higher, while winter lows regularly drop below 20°F (-6.6° C). Monthly climatic data for Odell Lake East are illustrated in Figures 2 and 3.

**Figure 2.** Average monthly temperature and precipitation data for Odell Lake East, Oregon between 1971 and 2000 (National Oceanic Atmospheric Administration 2000).



**Figure 3.** Average daily snow depth data for Odell Lake East, Oregon between 1968 and 1981 (National Oceanic Atmospheric Administration 2000).



**B. ECOLOGICAL DESCRIPTION**

**ECOREGION**

Many Lakes RNA is located in the Humid Temperate Domain, Marine Division/Marine Regime Mountains, Cascade Mixed Forest – Coniferous Forest Province, Western Cascades Section (Bailey 1994).

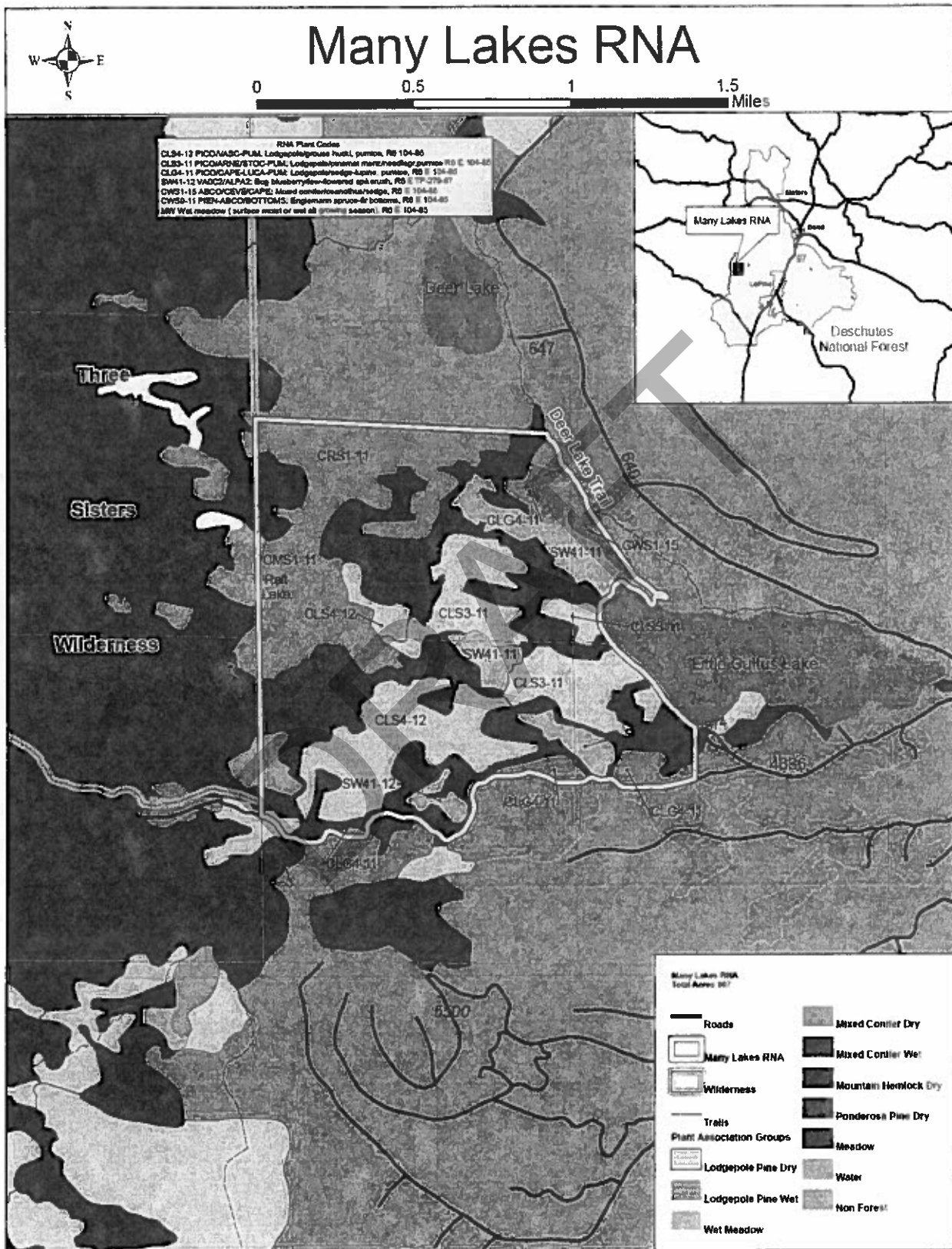
Thorson et al. (2003) placed Many Lakes RNA in the Northwestern Forested Mountains, Western Cordillera, Cascades Ecoregion, Cascade Crest Montane Forest subregion of Oregon.

**VEGETATION TYPES**

The vegetation of Many Lakes RNA has not been studied or mapped in detail. Six plant association groups are mapped by the Deschutes National Forest within the RNA: Lodgepole Pine Wet, Lodgepole Pine Dry, Mixed Conifer Wet, Mixed Conifer Dry, Mountain Hemlock Dry, and two types of wet meadow (Figure 4, Table 1). In addition, ponds and lakes occupy about 20 acres within the RNA.

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Figure 4. Plant association groups of Many Lakes Research Natural Area.



**Table 1.** Plant association groups and acreages within Many Lakes Research Natural Area.

Plant Association Group	Acre	Hectares
Lodgepole Pine Wet	36	14.6
Lodgepole Pine Dry	229	92.7
Mixed Conifer Wet	289	117.0
Mixed Conifer Dry	209	84.6
Mountain Hemlock Dry	37	15.0
Wet Meadow	87	35.2
Water	20	8.1

At Many Lakes RNA the Lodgepole Pine Wet plant association group is represented by the Lodgepole pine-long rhizome sedge (*Carex inops* ssp. *inops*)-silvery lupine (*Lupinus argenteus*) plant association of Volland (1985). 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 4% of the RNA on bottomlands in the southern and northeastern parts of the RNA. It occurs on Mount Mazama airfall ash/pumice and pumice alluvium/lava colluvium (Simpson 2007). Lodgepole pine is the climax species on flats. The shrub layer is dominated by a mixture of bitterbrush (*Purshia tridentata*) and wax currant (*Ribes cereum*) and the herb layer is dominated by graminoids including long-rhizome sedge, Ross's sedge (*Carex rossii*), squirreltail (*Elymus elymoides*), and western needlegrass (*Achnatherum occidentale*).

The Lodgepole Pine Dry plant association group is comprised of two plant associations covering about 25% of the RNA area. The Lodgepole pine/grouse huckleberry (*Vaccinium scoparium*) plant association occurs on cold, well-drained sites (Volland 1985). Lodgepole pine is the dominant tree species and the understory is sparse with low species diversity. Grouse huckleberry is dominant in the understory and wax currant and sticky currant (*Ribes viscosissimum*) occur regularly in the shrub layer. Herbaceous species include western needlegrass, squirreltail and yarrow (*Achillea millefolium*). This plant association occurs in the southern and central parts of the RNA. The Lodgepole pine/pinemat manzanita (*Arctostaphylos nevadensis*) occurs on deep Mount Mazama ash and pumice deposits (Simpson 2007). Lodgepole pine dominates sites after stand replacement fires. In bottomland areas, lodgepole pine is the climax overstory species but sites on slopes are seral to white fir x grand fir hybrid, Shasta red fir (*Abies magnifica* x *procera*), or mountain hemlock (Simpson 2007). Pinemat manzanita is dominant in the sparse understory. Few species occur in the sparse herb layer including long-rhizome sedge, Ross' sedge, squirreltail and western needlegrass. This plant association occurs in the central and eastern parts of the RNA.

The Mixed Conifer Wet plant association group is represented by the Engelmann spruce - fir (*Abies* sp.) bottoms plant association which occupies approximately 32 percent of the RNA and is scattered throughout much of the RNA. This plant association occurs on poorly 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 hybrid and Douglas-fir (*Pseudotsuga menziesii*). 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 23% of the RNA in the northwestern portion and along the northeastern boundary. 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 and sugar pine (*Pinus lambertiana*) may be present as regeneration in the understory. Snowbrush, greenleaf manzanita (*Arctostaphylos patula*), and pinemat manzanita may be present in the shrub layer and squirreltail, yarrow, kelloggia (*Kelloggia galioides*), fireweed (*Chamerion angustifolium*), dogbane (*Apocymum androsaemifolium*) and broadpetal strawberry (*Fragaria virginiana*) in the herb layer.

The Mountain Hemlock Dry plant association group is represented by the Mountain hemlock/grouse huckleberry plant association which covers approximately 4% of the RNA area along the eastern boundary. This plant association occurs on cold, well-drained sites and has low species diversity and sparse understory vegetation. Lodgepole pine is dominant in early seral stages following fire or logging, and silver fir (*Abies amabilis*) can be a co-climax species (Simpson 2007). Grouse huckleberry is the primary understory species. Pinemat manzanita and long-rhizome sedge also occur regularly.

The Wet Meadow plant association group is represented by two wet meadow plant association groups: Bog blueberry/few-flowered spikerush (*Eleocharis quinqueflora*), and Wet meadow. The Wet meadow plant associations occupy approximately 10% of the RNA, mostly in the eastern half of the area. These associations form on air-laid pumice and peat in basins, drainages and on flats (Volland 1985). Dominant species include bog blueberry, few-flowered spikerush, and a variety of sedges (*Carex* spp.)

Existing vegetation of the RNA was described in the LRMP FEIS (1990b). Five plant communities constitute the current vegetation of the RNA (Table 2): Engelmann spruce bottomlands, mountain hemlock/grouse huckleberry and lodgepole pine/grouse huckleberry, fen, and wet meadow (Table 2).



**Table 2.** Existing plant communities and acreages within the Many Lakes Research Natural Area.

Plant Community	Acres	Hectares
Lodgepole pine/grouse huckleberry	447	180.9
Mountain hemlock/grouse huckleberry	37	15.0
Engelmann spruce bottomlands	289	117.0
Fen	104	42.1
Wet meadow	10	4.0

Engelmann spruce bottomlands are found on moist sites near streams, lakes, bogs, and wet meadows. In many areas, the overstory includes old growth lodgepole pine or mountain hemlock. White fir x grand fir and Engelmann spruce dominate the regeneration layer and are the climax species. Mountain hemlock also occurs in understory layers. Large western white pine up to 33 inches (84 centimeters) diameter at breast height (dbh) and 120 feet (37 meters) in height are scattered within this community. The largest Engelmann spruce attain 41 inches (104 centimeters) dbh and 120 feet (37 meters) in height. The shrub layer is generally sparse and dominated by swamp currant (*Ribes lacustre*) and big huckleberry (*Vaccinium membranaceum*). This plant community has the richest herbaceous layer of the forested types found in the RNA. Common herbs are arrowleaf groundsel, starry Solomon plume, pipsissewa (*Chimaphila umbellata*), bigleaf lupine (*Lupinus polyphyllus*), bead lily, twinflower (*Linnaea borealis*), and oneleaf foamflower (*Tiarella trifoliata* var. *unfoliata*).

The mountain hemlock community is located in the western part of the RNA on mesic sites that have not recently burned. There is considerable variability in overstory species composition related to differences in topography, soil and moisture availability. Overstory trees are pole-sized with stems averaging 8 to 12 inches (20 to 30 centimeters) dbh and 80 feet (24 meters) tall. Western white pine of all ages are scattered in the overstory throughout this community and Engelmann spruce are scattered in the overstory in moister areas. In one particularly productive area, western hemlock, western white pine, Engelmann spruce, lodgepole pine and white fir x grand fir all occur in the overstory. The largest western hemlocks and western white pines have 24 inch (61 centimeter) and 28 inch (71 centimeter) diameters, respectively. Several ponderosa pine are present averaging 34 inches (86 centimeters) dbh and 130 feet (40 meters) in height. Golden chinquapin (*Chrysolepis chrysophylla*) is found on some rocky eastern aspects. The understory is dominated by mountain hemlock and white fir x grand fir regeneration. Lodgepole pine is also scattered in the regeneration layer. The sparse shrub layer is dominated by grouse huckleberry with sticky currant scattered throughout. Pinemat manzanita is common on rock outcrops. The herb layer is very sparse and contains scattered broadpetal strawberry and long-rhizome sedge.

The lodgepole pine/grouse huckleberry plant community occurs in the northern and western parts of the RNA on dry sites and on recently burned areas. In most locations this community is seral and maintained by fire. In some scattered frost pockets and areas with poorly developed soils it occurs as a topoedaphic climax. Pole-sized lodgepole dominates the overstory, and white fir x grand fir and mountain hemlock generally dominate the regeneration layer. The sparse shrub layer includes sticky currant, grouse huckleberry and pinemat manzanita. Common herbs are common yarrow, goldenrod (*Solidago* sp.), broadpetal strawberry and broadleaf lupine (*Lupinus latifolius*). In small patches broadleaf lupine dominates the herb layer and mountain hemlock dominates the regeneration layer. These areas probably burned in the recent past. On moist east slopes the regeneration layer is dominated by white fir x grand fir, and mountain hemlock, Engelmann spruce, and western white pine are common. Common understory species are Oregon boxwood (*Paxistima myrsinites*), pipsissewa and twinberry. In these areas overstory lodgepole pine averages 8 inches (20 centimeters) dbh and 100 feet (31 meters) in height. On rocky soils lodgepole pines are smaller, averaging 6 inches (15 centimeters) dbh and 70 feet (21 meters) in height. On northerly slopes, western white pine is more common and pipsissewa dominates the herb layer. Rock outcrops are scattered in the lodgepole pine community. Common plants on the outcrops include Oregon boxwood, sticky currant, dwarf oceanspray (*Holodiscus dumosus*), serviceberry, prostrate ceanothus (*Ceanothus prostratus*), squirreltail and needlegrass (*Achnatherum* sp.).

The fen community is a mosaic of subalpine vegetation types that vary with microtopography and associated moisture gradients. In the wettest areas, where water flows at the level of the moss layer all year, southern beaked sedge (*Carex utriculata*) and sphagnum moss (*Sphagnum* spp.) dominate and willows (*Salix* spp.) are encroaching. This vegetation type occurs primarily in the northeast part of the RNA. Other common species are English sundew (*Drosera anglica*), Oregon saxifrage (*Saxifraga oregana*), slender cotton-grass (*Eriophorum gracile*), Brewer's cinquefoil (*Potentilla drummondii* var. *breweri*), tall mountain shooting star and elephant's head (*Pedicularis groenlandica*). In slightly drier areas, dominants include Baltic rush (*Juncus balticus*), false asphodel (*Triantha occidentalis*), marsh cinquefoil (*Comarum palustrum*), and white marsh marigold. Shrubs dominate the vegetation on low rises and at the drier edges of the fens. Bog birch and bog blueberry dominate and western swamp laurel (*Kalmia microphylla*) and willow are common. The fen community type includes the following natural heritage elements: few-flowered spikerush/brown moss fen with Engelmann spruce and lodgepole pine; spring fen on seepage slope with marsh marigold, shooting star, bistort, arrowleaf groundsel, and false hellebore; Geyer willow shrub swamp; bog birch shrub swamp; and bog blueberry shrub swamp.

The wet meadow community occurs in isolated patches surrounded by forest and on the edges of lakes and ponds. Vegetation reflects a moisture gradient from wetter to drier. In the isolated patches surrounded by forest, meadows are dominated by southern beaked sedge, black alpine sedge (*Carex nigricans*), and Baltic rush. Tufted hairgrass is common in drier areas. Northern mannagrass (*Glyceria borealis*) dominates some wetter depressional areas and a small, wet depression at the west end of the meadow is nearly

pure northern mannagrass. Slimstem reedgrass (*Calamagrostis stricta*) is common at drier meadow margins. Bog blueberry dominates the vegetation between the meadow and the forest, and hardhack (*Spiraea douglasii*) and black twinberry (*Lonicera involucrata*) are common with mosses dominating the ground layer. At the edges of lakes and ponds, soils are wet to inundated all year and the plant community is simpler, usually dominated by one to three species of sedges and rushes. The most common species are southern beaked sedge, black alpine sedge and Baltic rush.

## DESCRIPTION OF VALUES

Many Lakes RNA represents nine natural heritage elements identified in the Oregon Natural Heritage Plan (Oregon Natural Heritage Program 2003):

- montane lake with aquatic beds and marshy shore
- subalpine pond with aquatic beds and marshy shore
- few-flowered spikerush/brown moss fen with Engelmann spruce and lodgepole pine
- spring fen on seepage slope (including marsh marigold, shooting star, bistort, arrowleaf groundsel, and false hellebore)
- Geyer willow shrub swamp
- bog birch shrub swamp
- bog blueberry shrub swamp with Engelmann spruce, lodgepole pine and tufted hairgrass
- Oregon spotted frog
- American scheuchzeria

Numerous lakes, ponds, and wetland complexes of fens and shrub swamps occur in the RNA, interspersed with forests of Engelmann spruce, lodgepole pine, mountain hemlock and mixed conifers. Large fens and shrub swamps are scattered through the RNA.

A nesting pair of the Northern Spotted Owl, which is federally listed as Threatened, has been documented northeast of the RNA, and its home range is mapped by the DNF to include approximately the northeastern third of the RNA. The RNA is included within a Northern Spotted Owl Critical Habitat Unit and small portions of the northern and southwestern parts of the RNA are mapped by the DNF as Nesting, Roosting, Foraging habitat for this species.

## Flora List

The vegetation of the RNA has not been studied systematically with the exception of one fen in which permanent vegetation monitoring transects have been installed. Several plant species lists have been compiled for the area. Table 3 lists plant species that have been observed in the RNA (USDA Forest Service 1990a; Christie and Wilson 1986; Schuller 2008; Carex Working Group 2008).

**Table 3.** Plant species list for Many Lakes 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.

<b>Scientific name</b>	<b>Common name</b>
<b>TREES</b>	
<i>Abies amabilis</i>	silver fir
<i>Abies concolor</i> x <i>grandis</i>	white fir x grand fir hybrid
<i>Abies lasiocarpa</i>	subalpine fir
<i>Abies magnifica</i> x <i>procera</i>	Shasta red fir
<i>Picea engelmannii</i>	Engelmann spruce
<i>Pinus albicaulis</i>	whitebark pine
<i>Pinus contorta</i> var. <i>latifolia</i>	lodgepole pine
<i>Pinus monticola</i>	western white pine
<i>Pinus ponderosa</i> var. <i>ponderosa</i>	ponderosa pine
<i>Populus trichocarpa</i>	black cottonwood
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas-fir
<i>Tsuga heterophylla</i>	western hemlock
<i>Tsuga mertensiana</i>	mountain hemlock
<b>SHRUBS</b>	
<i>Alnus incana</i> ssp. <i>tenuifolia</i>	mountain alder
<i>Alnus viridis</i> ssp. <i>sinuata</i>	Sitka alder
<i>Amelanchier alnifolia</i>	serviceberry
<i>Arctostaphylos nevadensis</i>	pinemat manzanita
<i>Arctostaphylos patula</i>	greenleaf manzanita
<i>Betula glandulosa</i>	bog birch
<i>Ceanothus prostratus</i>	prostrate ceanothus
<i>Chrysolepis chrysophylla</i> var. <i>chrysophylla</i>	golden chinquapin
<i>Gaultheria humifusa</i>	alpine wintergreen
<i>Holodiscus dumosus</i> var. <i>glabrescens</i>	dwarf oceanspray
<i>Kalmia microphylla</i>	western swamp laurel
<i>Lonicera caerulea</i>	bluefly honeysuckle
<i>Lonicera involucrata</i> var. <i>involucrata</i>	black twinberry
<i>Paxistima myrsinites</i>	Oregon boxwood
<i>Ribes lacustre</i>	swamp currant
<i>Ribes viscosissimum</i>	sticky currant
<i>Rosa gymnocarpa</i>	baldhip rose
<i>Salix boothii</i>	Booth's willow
<i>Salix commutata</i>	undergreen willow
<i>Salix geyeriana</i>	Geyer's willow
<i>Spiraea douglasii</i>	hardhack
<i>Symphoricarpos albus</i> var. <i>laevigatus</i>	common snowberry
<i>Vaccinium membranaceum</i>	big huckleberry

*Vaccinium scoparium*  
*Vaccinium uliginosum*

grouse huckleberry  
bog blueberry

## FORBS

*Achillea millefolium* common yarrow  
*Aconitum columbianum* Columbia monkshood  
*Actaea rubra* red baneberry  
*Arnica mollis* hairy arnica  
*Athyrium filix-femina* lady fern  
*Bistorta bistortoides* American bistort  
*Botrychium multifidum* leathery grapefern  
*Caltha leptosepala* white marsh marigold  
*Castilleja miniata* var. *miniata* giant red Indian paintbrush  
*Chimaphila umbellata* var. *occidentalis* pipsissewa  
*Cicuta douglasii* western water hemlock  
*Cirsium remotifolium* fewleaf thistle  
*Clintonia uniflora* bead lily  
*Comarum palustre* marsh cinquefoil  
*Cornus unalaschkensis* bunchberry  
*Dodecatheon jeffreyi* tall mountain shooting star  
*Drosera anglica* English sundew  
*Elodea canadensis* common waterweed  
*Epilobium anagallidifolium* alpine willowherb  
*Equisetum arvense* field horsetail  
*Equisetum palustre* marsh horsetail  
*Erythronium grandiflorum* yellow avalanche lily  
*Fragaria vesca* var. *bracteata* western woods strawberry  
*Fragaria virginiana* var. *platypetala* broadpetal strawberry  
*Galium aparine* cleavers  
*Galium trifidum* small bedstraw  
*Galium triflorum* fragrant bedstraw  
*Hieracium albiflorum* white-flowered hawkweed  
*Hypericum anagalloides* bog St. John's wort  
*Hypericum formosum* var. *scouleri* western St. John's wort  
*Isoetes bolanderi* Bolander's quillwort  
*Linnaea borealis* var. *longiflora* twinflower  
*Lupinus latifolius* broadleaf lupine  
*Lupinus polyphyllus* bigleaf lupine  
*Maianthemum stellatum* starry Solomon plume  
*Menyanthes trifoliata* buckbean  
*Mimulus guttatus* yellow monkeyflower  
*Mimulus primuloides* primrose monkeyflower  
*Mitella breweri* Brewer's mitrewort  
*Nuphar polysepala* yellow pondlily  
*Orthilia secunda* sidebells pyrola  
*Osmorhiza berteroi* mountain sweet cicely

*Pedicularis bracteosa* var. *flavida*  
*Pedicularis groenlandica*  
*Pedicularis racemosa*  
*Platanthera dilatata* var. *leucostachys*  
*Polemonium occidentale*  
*Polystichum munitum*  
*Potamogeton gramineus*  
*Potamogeton natans*  
*Potamogeton pusillus* ssp. *tenuissimus*\*  
*Potentilla drummondii* var. *breweri*  
*Pteridium aquilinum*  
*Pterospora andromedea*  
*Pyrola asarifolia*  
*Pyrola picta*  
*Rubus lasiococcus*  
*Rubus nivalis*  
*Rumex occidentalis* var. *procerus*  
*Saxifraga oregana*  
*Senecio triangularis* var. *triangularis*  
*Solidago* sp.  
*Sparganium angustifolium*  
*Sparganium natans*  
*Sphenosciadium capitellatum*  
*Spiranthes romanzoffiana*  
*Symphyotrichum foliaceum* var. *parryi*  
*Symphyotrichum spathulatum*  
*Tiarella trifolilata* var. *unifoliata*  
*Triantha occidentalis* ssp. *brevistyla*  
*Trifolium longipes* var. *hansenii*  
*Trillium ovatum* ssp. *ovatum*  
*Utricularia intermedia*  
*Utricularia macrorhiza*  
*Utricularia minor*\*  
*Veratrum californicum*  
*Veronica scutellata*  
*Veronica serpyllifolia* ssp. *humifusa*  
*Viola orbiculata*  
*Viola palustris*  
*Viola purpurea* ssp. *purpurea*  
*Xerophyllum tenax*

wood betony  
elephant's head  
leafy lousewort  
white-flowered bog orchid  
western polemonium  
western sword fern  
grass-leaved pondweed  
floating-leaved pondweed  
slender pondweed  
Brewer's cinquefoil  
bracken fern  
pinedrops  
bog wintergreen  
whitevein pyrola  
dwarf bramble  
snow bramble  
western dock  
Oregon saxifrage  
arrowleaf groundsel  
goldenrod  
narrowleaf burreed  
small burreed  
ranger's buttons  
hooded ladies' tresses  
Parry's aster  
western mountain aster  
oneleaf foamflower  
false asphodel  
long-stalked clover  
western trillium  
flatleaf bladderwort  
common bladderwort  
lesser bladderwort  
California false hellebore  
marsh speedwell  
thyme-leaved speedwell  
round-leaved violet  
marsh violet  
goosefoot violet  
beargrass

#### GRAMINOIDS

*Achnatherum* sp  
*Agrostis idahoensis*  
*Agrostis oregonensis*  
*Calamagrostis canadensis* var. *canadensis*

needlegrass  
Idaho bentgrass  
Oregon bentgrass  
Canada bluejoint reedgrass

<i>Calamagrostis rubescens</i>	pinegrass
<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	narrow-spiked reedgrass
<i>Calamagrostis stricta</i> ssp. <i>stricta</i>	slimstem reedgrass
<i>Carex angustata</i>	narrow-leaved sedge
<i>Carex aquatilis</i> var. <i>aquatilis</i>	water sedge
<i>Carex aquatilis</i> var. <i>dives</i>	Sitka sedge
<i>Carex arcta</i>	northern clustered sedge
<i>Carex canescens</i> ssp. <i>canescens</i>	silvery sedge
<i>Carex cusickii</i>	Cusick's sedge
<i>Carex disperma</i>	two-seed sedge
<i>Carex echinata</i> ssp. <i>echinata</i>	star sedge
<i>Carex inops</i> ssp. <i>inops</i>	long-rhizome sedge
<i>Carex jonesii</i>	Jones' sedge
<i>Carex laeviculmis</i>	smoothstem sedge
<i>Carex lenticularis</i> var. <i>lipocarpa</i>	lakeshore sedge
<i>Carex limosa</i>	mud sedge
<i>Carex luzulina</i>	woodrush sedge
<i>Carex nigricans</i>	black alpine sedge
<i>Carex rossii</i>	Ross' sedge
<i>Carex simulata</i>	short-beak sedge
<i>Carex utriculata</i>	southern beaked sedge
<i>Carex vesicaria</i>	inflated sedge
<i>Danthonia intermedia</i>	timber oatgrass
<i>Deschampsia cespitosa</i> ssp. <i>cespitosa</i>	tufted hairgrass
<i>Dulichium arundinaceum</i>	three-way sedge
<i>Eleocharis quinqueflora</i>	few-flowered spikerush
<i>Elymus elymoides</i>	squirreltail
<i>Elymus glaucus</i> ssp. <i>glaucus</i>	blue wildrye
<i>Eriophorum gracile</i>	slender cottongrass
<i>Festuca occidentalis</i>	western fescue
<i>Glyceria borealis</i>	northern mannagrass
<i>Glyceria elata</i>	tall mannagrass
<i>Hordeum brachyantherum</i> ssp. <i>brachyantherum</i>	meadow barley
<i>Juncus balticus</i>	baltic rush
<i>Juncus ensifolius</i>	dagger-leaved rush
<i>Juncus mertensianus</i>	Mertens' rush
<i>Juncus nevadensis</i>	Nevada rush
<i>Juncus orthophyllus</i>	straight-leaved rush
<i>Juncus parryi</i>	Parry's rush
<i>Luzula multiflora</i> ssp. <i>multiflora</i>	field woodrush
<i>Luzula parviflora</i>	small-flowered woodrush
<i>Muhlenbergia filiformis</i>	pullup muhly
<i>Phalaris arundinacea</i> (E)	reed canarygrass
<i>Scheuchzeria palustris</i> ssp. <i>americana</i> *	American scheuchzeria
<i>Schoenoplectus acutus</i>	hardstem bulrush
<i>Schoenoplectus tabernaemontani</i>	softstem bulrush

*Torreyochloa pallida* var. *pauciflora*

weak mannagrass

#### LIVERWORTS

*Cephalozia pleniceps*

cephalozia liverwort

*Cephaloziella* sp.

cephaloziella liverwort

*Chiloscyphus polyanthos*

chiloscyphus liverwort

*Lophocolea heterophylla*

lophocolea liverwort

*Lophozia* sp.

lophozia liverwort

*Marchantia polymorpha*

lung liverwort

*Porella pinnata*

porella liverwort

*Riccardia pinguis*

riccardia liverwort

*Scapania irrigua*

scapania liverwort

#### MOSSES

*Aulacomnium palustre*

ribbed bog moss

*Bryum* sp.

bryum moss

*Campylium polygamum*

campylium moss

*Fontinalis antipyretica*

common water moss

*Hamatocaulis vernicosus*

brown moss

*Helodium blandowii*\*

Blandow's feather moss

*Meesia triquetra*

meesia moss

*Philonotis fontana*

swamp moss

*Plagiomnium ciliare*

plagiomnium moss

*Plagiomnium insigne*

coastal leafy moss

*Rhizomnium magnifolium*

hairy lantern moss

*Sphagnum contortum*

contorted sphagnum

*Sphagnum squarrosum*

shaggy sphagnum

*Sphagnum subsecundum*

sphagnum

*Tomentypnum nitens*\*

tomentypnum moss

*Warnstorfia exannulata*

warnstorfia moss

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#### Fauna List

The fauna of Many Lakes 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 provided by DNF personnel. No information on invertebrates is available for the RNA.



**Table 4.** Potential fauna list for Many Lakes 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).

<u>Scientific name</u>	<u>Common name</u>
<b>Fish</b>	
<u>Salmonidae</u>	
<i>Oncorhynchus mykiss</i> (E)	Rainbow trout
<i>Salvelinus fontinalis</i> (E)	Brook trout
<b>Amphibians</b>	
<u>Ambystomatidae</u>	
<i>Ambystoma gracile</i>	Northwestern salamander
<i>Ambystoma macrodactylum</i>	Long-toed salamander
<u>Salamandridae</u>	
<i>Taricha granulosa</i>	Rough-skinned newt
<u>Ascaphidae</u>	
<i>Ascaphus truei</i> *	Coastal tailed frog
<u>Bufo</u>	
<i>Bufo boreas</i> *	Western toad
<u>Hylidae</u>	
<i>Pseudacris regilla</i>	Pacific chorus frog
<u>Ranidae</u>	
<i>Rana cascadae</i> *	Cascades frog
<i>Rana catesbeiana</i> (E)	Bullfrog
<i>Rana pretiosa</i> *	Oregon spotted frog
<b>Reptiles</b>	
<u>Anguillidae</u>	
<i>Elgaria coerulea</i>	Northern alligator lizard
<u>Phrynosomatidae</u>	
<i>Sceloporus graciosus</i> *	Sagebrush lizard
<i>Sceloporus occidentalis</i>	Western fence lizard
<u>Scincidae</u>	
<i>Eumeces skiltonianus</i>	Western skink

Colubridae

*Coluber constrictor*  
*Thamnophis elegans*  
*Thamnophis ordinoides*  
*Thamnophis sirtalis*

Racer  
Western terrestrial garter snake  
Northwestern garter snake  
Common garter snake

Viperidae

*Crotalus oregonus\**

Western rattlesnake

Boidae

*Charina bottae*

Rubber boa

Birds

Podicipedidae

*Aechmophorus clarkii\**  
*Aechmophorus occidentalis\**  
*Podiceps grisegena\**  
*Podiceps nigricollis*  
*Podilymbus podiceps*

Clark's grebe  
Western grebe  
Red-necked grebe  
Eared grebe  
Pied-billed grebe

Phalacrocoracidae

*Phalacrocorax auritus*

Double-crested cormorant

Ardeidae

*Ardea herodias*  
*Botaurus lentiginosus*  
*Nycticorax nycticorax*

Great blue heron  
American bittern  
Black-crowned night-heron

Anatidae

*Aix sponsa*  
*Anas acuta*  
*Anas americana*  
*Anas clypeata*  
*Anas cyanoptera*  
*Anas discors*  
*Anas platyrhynchos*  
*Anas strepera*  
*Aythya affinis*  
*Aythya americana*  
*Aythya collaris*  
*Aythya valisineria*  
*Branta canadensis*  
*Bucephala albeola\**  
*Bucephala islandica\**  
*Lophodytes cucullatus*

Wood duck  
Northern pintail  
American wigeon  
Northern shoveler  
Cinnamon teal  
Blue-winged teal  
Mallard  
Gadwall  
Lesser scaup  
Redhead  
Ring-necked duck  
Canvasback  
Canada goose  
Bufflehead  
Barrow's goldeneye  
Hooded merganser

*Mergus merganser*  
*Oxyura jamaicensis*

Common merganser  
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

Falconidae

*Falco peregrinus\**

Peregrine falcon

*Falco sparverius*

American kestrel

Odontophoridae

*Callipepla californica*

California quail

*Oreortyx pictus\**

Mountain quail

Phasianidae

*Bonasa umbellus*

Ruffed grouse

*Dendragapus obscurus*

Blue grouse

*Meleagris gallopavo*

Wild turkey

Rallidae

*Fulica americana*

American coot

*Porzana carolina*

Sora

*Rallus limicola*

Virginia rail

Gruidae

*Grus canadensis\**

Sandhill crane

Charadriidae

*Charadrius vociferus*

Killdeer

Scolopacidae

*Actitis macularius*

Spotted sandpiper

*Gallinago delicata*

Wilson's snipe

*Phalaropus tricolor*

Wilson's phalarope

*Tringa solitaria*

Solitary sandpiper

Laridae

*Chlidonias niger\**  
*Sterna forsteri\**

Black tern  
Forster's tern

Columbidae

*Columba livia* (E)  
*Patagioenas fasciata\**  
*Zenaida macroura*

Rock pigeon  
Band-tailed pigeon  
Mourning dove

Strigidae

*Aegolius acadicus*  
*Aegolius funereus\**  
*Asio otus*  
*Bubo virginianus*  
*Glaucidium gnoma*  
*Megascops kennicottii*  
*Otus flammeolus\**  
*Strix nebulosa\**  
*Strix occidentalis caurina*  
*Strix varia*

Northern saw-whet owl  
Boreal owl  
Long-eared owl  
Great horned owl  
Northern pygmy-owl  
Western screech-owl  
Flammulated owl  
Great gray owl  
Northern spotted owl  
Barred owl

Caprimulgidae

*Chordeiles minor\**  
*Phalaenoptilus nuttallii*

Common nighthawk  
Common poorwill

Alcedinidae

*Ceryle alcyon*

Belted kingfisher

Apodidae

*Chaetura vauxi*

Vaux's swift

Trochilidae

*Calypte anna*  
*Selasphorus rufus*  
*Stellula calliope*

Anna's hummingbird  
Rufous hummingbird  
Calliope hummingbird

Picidae

*Colaptes auratus*  
*Dryocopus pileatus\**  
*Melanerpes lewis\**  
*Picoides albolarvatus\**  
*Picoides arcticus\**  
*Picoides dorsalis\**  
*Picoides pubescens*  
*Picoides villosus*  
*Sphyrapicus nuchalis*

Northern flicker  
Pileated woodpecker  
Lewis's woodpecker  
White-headed woodpecker  
Black-backed woodpecker  
American three-toed woodpecker  
Downy woodpecker  
Hairy woodpecker  
Red-naped sapsucker

*Sphyrapicus ruber*  
*Sphyrapicus thyroideus*

Red-breasted sapsucker  
Williamson's sapsucker

Tyrannidae

*Contopus cooperi*\*  
*Contopus sordidulus*  
*Empidonax difficilis*  
*Empidonax hammondii*  
*Empidonax oberholseri*  
*Empidonax occidentalis*  
*Empidonax traillii*\*  
*Tyrannus verticalis*

Olive-sided flycatcher  
Western wood-pewee  
Pacific slope flycatcher  
Hammond's flycatcher  
Dusky flycatcher  
Cordilleran flycatcher  
Willow flycatcher  
Western kingbird

Vireonidae

*Vireo cassinii*  
*Vireo gilvus*  
*Vireo huttoni*

Cassin's vireo  
Warbling vireo  
Hutton's vireo

Corvidae

*Corvus brachyrhynchos*  
*Corvus corax*  
*Cyanocitta stelleri*  
*Nucifraga columbiana*  
*Perisoreus canadensis*

American crow  
Common raven  
Steller's jay  
Clark's nutcracker  
Gray jay

Alaudidae

*Eremophila alpestris*

Horned lark

Hirundinidae

*Hirundo rustica*  
*Petrochelidon pyrrhonota*  
*Riparia riparia*  
*Stelgidopteryx serripennis*  
*Tachycineta bicolor*  
*Tachycineta thalassina*

Barn swallow  
Cliff swallow  
Bank swallow  
Northern rough-winged swallow  
Tree swallow  
Violet-green swallow

Paridae

*Poecile gambeli*  
*Poecile rufescens*

Mountain chickadee  
Chestnut-backed chickadee

Aegithalidae

*Psaltriparus minimus*

Bushtit

Sittidae

*Sitta canadensis*  
*Sitta carolinensis*

Red-breasted nuthatch  
White-breasted nuthatch

<i>Sitta pygmaea</i>	Pygmy nuthatch
<u>Certhiidae</u> <i>Certhia americana</i>	Brown creeper
<u>Troglodytidae</u> <i>Catherpes mexicanus</i> <i>Cistothorus palustris</i> <i>Salpinctes obsoletus</i> <i>Troglodytes aedon</i> <i>Troglodytes troglodytes</i>	Canyon wren Marsh wren Rock wren House wren Winter wren
<u>Cinclidae</u> <i>Cinclus mexicanus</i>	American dipper
<u>Regulidae</u> <i>Regulus calendula</i> <i>Regulus satrapa</i>	Ruby-crowned kinglet Golden-crowned kinglet
<u>Turdidae</u> <i>Catharus guttatus</i> <i>Catharus ustulatus</i> <i>Ixoreus naevius</i> <i>Myadestes townsendi</i> <i>Sialia currucoides</i> <i>Sialia mexicana*</i> <i>Turdus migratorius</i>	Hermit thrush Swainson's thrush Varied thrush Townsend's solitaire Mountain bluebird Western bluebird American robin
<u>Motacillidae</u> <i>Anthus rubescens</i>	American pipit
<u>Bombycillidae</u> <i>Bombycilla cedrorum</i>	Cedar waxwing
<u>Sturnidae</u> <i>Sturnus vulgaris</i> (E)	European starling
<u>Parulidae</u> <i>Dendroica coronata</i> <i>Dendroica nigrescens</i> <i>Dendroica occidentalis</i> <i>Dendroica petechia</i> <i>Dendroica townsendi</i> <i>Geothlypis trichas</i> <i>Icteria virens*</i> <i>Oporornis tolmiei</i>	Yellow-rumped warbler Black-throated gray warbler Hermit warbler Yellow warbler Townsend's warbler Common yellowthroat Yellow-breasted chat Macgillivray's warbler

*Seiurus noveboracensis\**  
*Setophaga ruticilla*  
*Vermivora celata*  
*Vermivora ruficapilla*  
*Wilsonia pusilla*

Northern waterthrush  
American redstart  
Orange-crowned warbler  
Nashville warbler  
Wilson's warbler

Thraupidae

*Piranga ludoviciana*

Western tanager

Cardinalidae

*Passerina amoena*  
*Pheucticus melanocephalus*

Lazuli bunting  
Black-headed grosbeak

Emberizidae

*Junco hyemalis*  
*Melospiza lincolni*  
*Melospiza melodia*  
*Passerculus sandwichensis*  
*Passerella iliaca*  
*Pipilo chlorurus*  
*Pipilo maculatus*  
*Pooecetes gramineus*  
*Spizella breweri*  
*Spizella passerina*  
*Zonotrichia leucophrys*

Dark-eyed junco  
Lincoln's sparrow  
Song sparrow  
Savannah sparrow  
Fox sparrow  
Green-tailed towhee  
Spotted towhee  
Vesper sparrow  
Brewer's sparrow  
Chipping sparrow  
White-crowned sparrow

Icteridae

*Agelaius phoeniceus*  
*Euphagus cyanocephalus*  
*Icterus bullockii*  
*Molothrus ater*  
*Xanthocephalus xanthocephalus*

Red-winged blackbird  
Brewer's blackbird  
Bullock's oriole  
Brown-headed cowbird  
Yellow-headed blackbird

Fringillidae

*Carduelis pinus*  
*Carduelis psaltria*  
*Carduelis tristis*  
*Carpodacus cassinii*  
*Carpodacus mexicanus*  
*Carpodacus purpureus*  
*Coccothraustes vespertinus*  
*Leucosticte tephrocotis*  
*Loxia curvirostra*  
*Loxia leucoptera*

Pine siskin  
Lesser goldfinch  
American goldfinch  
Cassin's finch  
House finch  
Purple finch  
Evening grosbeak  
Gray-crowned rosy-finch  
Red crossbill  
White-winged crossbill

Passeridae

*Passer domesticus*

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

*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 siskiyou*

Siskiyou chipmunk

*Neotamias townsendii*

Townsend's chipmunk

*Sciurus griseus\**

Western gray squirrel

*Spermophilus beecheyi*

California ground squirrel



*Spermophilus beldingi*  
*Spermophilus lateralis*  
*Tamiasciurus douglasii*

Belding's ground squirrel  
Golden-mantled ground squirrel  
Douglas' squirrel

Geomyidae

*Thomomys mazama*

Western pocket gopher

Heteromyidae

*Perognathus parvus*

Great Basin pocket mouse

Castoridae

*Castor canadensis*

American beaver

Cricetidae

*Arborimus albipes\**

White-footed vole

*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

<i>Gulo gulo*</i>	Wolverine
<i>Lontra canadensis</i>	Northern river otter
<i>Martes americana*</i>	American marten
<i>Martes pennanti*</i>	Fisher
<i>Mustela erminea</i>	Ermine
<i>Mustela frenata</i>	Long-tailed weasel
<i>Neovison vison</i>	Mink
<i>Taxidea taxus</i>	American badger

Mephitidae

<i>Mephitis mephitis</i>	Striped skunk
<i>Spilogale gracilis</i>	Western spotted skunk

Felidae

<i>Lynx rufus</i>	Bobcat
<i>Puma concolor</i>	Mountain lion

Cervidae

<i>Cervus canadensis</i>	Elk
<i>Odocoileus hemionus</i>	Mule deer, Black-tailed deer

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Geology

Many Lakes Research Natural Area 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). Eruptive centers that comprise the Cascade Range in Central Oregon include 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 proposed Many Lakes RNA is primarily underlain by glacially derived material such as angular to subrounded pebbles, cobbles, and boulders in a sand to silt matrix. The western edge of the RNA is underlain by Pleistocene basaltic andesite lava flows (MacLeod and Sherrod 1992). The morphology of the RNA was formed as the glacier retreated after the Suttle Lake advance of Cabot Creek glaciation 18,000 years ago. The glacier's terminal moraine formed a dam against Cultus Mountain, a Pleistocene basaltic shield volcano (MacLeod and Sherrod 1992), that trapped glacial meltwater to the east of Little Cultus Lake. To the west of Little Cultus Lake, fluvio-glacial processes formed the

hummocky landforms of kame and kettle topography from glacial meltwater. The irregularly shaped hills in the RNA are kames which formed in depressions on the retreating glacier that accumulated till material. This material was then deposited on the land surface with further melting of the glacier. The many small lakes in the RNA are called kettles which resulted from blocks of ice calving from the front of the receding glacier that became partially to completely buried by glacial outwash material. When the ice blocks melted, the kettle holes filled with water, forming lakes. Due to the high water table in the area these kettles remain lakes. The numerous groundwater springs and seeps in the RNA are gravity springs in which water moving along an elevation gradient emerges at the surface. These are also known as depression springs which form in low topographic spots where the water table reaches the surface.

### Soils

Surface soils are comprised primarily of ash and pumice from Mt. Mazama overlaid on glacial till. Scoured bedrock and rock outcrops are present throughout the area. Surface soils typically have a loamy sand texture and buried soils typically have a stony or cobbly sandy loam texture.

### Topography

Many Lakes RNA is located on glaciated uplands in the High Cascades. The area is characterized by kame and kettle topography (see Geology, above) which has resulted in a mosaic of irregularly shaped hills, depressions, lakes and small ponds. Rock outcrops and escarpments are scattered through the area. The RNA slopes generally to the east and there are a few shallow drainages that flow toward Little Cultus Lake.

### Aquatic/Riparian

Many Lakes RNA contains a variety of lakes, ponds, fens, wet meadows, springs and small streams. Raft Lake, with an area of 10 acres, is the largest lake in the RNA, and is deep enough to allow fish to overwinter. There were no fish in the lake prior to the 1950s when the Oregon Department of Fish and Wildlife began stocking it every other year with Rainbow trout (*Oncorhynchus mykiss*) and Brook trout (*Salvelinus fontinalis*). Most of the shoreline of Raft Lake drops steeply into the lake resulting in a relatively narrow transition from lakeshore to upland areas. As a result there is a limited area of wet meadow and marsh around the lake. An intermittent outlet stream flows east toward Little Cultus Lake.

The other lakes and ponds are quite shallow, and most have extensive marsh and wet meadow habitats at their margins.

Fens occupy depressional areas in the eastern half of the RNA. The fen systems drain slowly toward Little Cultus Lake. A sloping spring/fen is located in the northeastern corner

of the RNA, supplying year-round water to the fen located in the depression immediately to the south. The bottomland fens contain small, but surprisingly deep potholes that are filled with water year-round.

Rare, Threatened, Endangered, or Sensitive Species

A nesting pair of the Northern Spotted Owl, which is federally listed as Threatened, has been documented northeast of the RNA, and its home range is mapped by the DNF to include approximately the northeastern third of the RNA. The RNA is included within a Northern Spotted Owl Critical Habitat Unit and small portions of the northern and southwestern parts of the RNA are mapped by the DNF as Nesting, Roosting, Foraging habitat for this species.

No other listed threatened or endangered plant or animal species have been documented within the RNA. Three other animals with federal status have been documented in the RNA: Oregon spotted frog, California wolverine, and Pacific fisher. Five rare plants have been documented in the RNA. Rare species documented to occur in the RNA are listed in Table 5. The establishment of the RNA should have no adverse effects on populations of these species.

**Table 5.** Rare or sensitive species documented within Many Lakes RNA (Christie and Wilson 1986, Schuller 2008; Carex Working Group 2008; Oregon Natural Heritage Information Center 2007; USDA Forest Service 2009). Key: 2=ORNHIC List 2; 3=ORNHIC List 3; 4=ORNHIC List 4.

Species	Federal	FS	ORNHIC
<b>Mosses</b>			
<i>Helodium blandowii</i>		Sensitive	2
<i>Tomentypnum nitens</i>		Sensitive	2
<b>Vascular Plants</b>			
<i>Potamogeton pusillus</i> ssp. <i>tenuissimus</i>			3
<i>Scheuchzeria palustris</i> ssp. <i>americana</i>		Sensitive	2
<i>Utricularia minor</i>		Sensitive	2
<b>Amphibians</b>			
<i>Rana pretiosa</i>	C	Sensitive	1
<b>Birds</b>			
<i>Strix occidentalis caurina</i>	LT		1
<b>Mammals</b>			
<i>Gulo gulo</i>	SOC	Sensitive	2
<i>Martes pennanti</i>	C	Sensitive	2

Several additional special status wildlife species potentially inhabit or use the RNA for breeding or foraging (Table 6). The establishment of the RNA should have no adverse effects on populations of these species if they are present.

**Table 6.** Rare, threatened, endangered or sensitive animal species potentially occurring in Many Lakes 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
<b>Amphibians</b>				
<i>Ascaphus truei</i>	SOC		SV	4
<i>Bufo boreas</i>				4
<i>Rana cascadae</i>	SOC		SV	4
<b>Reptiles</b>				
<i>Sceloporus graciosus</i>	SOC		SV	4
<i>Crotalus oregonus</i>				4
<b>Birds</b>				
<i>Bucephala albeola</i>		Sensitive		2
<i>Bucephala islandica</i>				4
<i>Accipiter gentilis</i>	SOC		SV	4
<i>Haliaeetus leucocephalus</i>		Sensitive	LT	4
<i>Falco peregrinus</i>		Sensitive	SV	2
<i>Oreortyx pictus</i>	SOC		SV	4
<i>Patagioenas fasciata</i>	SOC			4
<i>Aegolius funereus</i>				3
<i>Otus flammeolus</i>			SV	4
<i>Strix nebulosa</i>			SV	4
<i>Chordeiles minor</i>			SC	4
<i>Dryocopus pileatus</i>			SV	4
<i>Melanerpes lewis</i>	SOC	Sensitive	SC	2
<i>Picoides albolarvatus</i>	SOC	Sensitive	SC	2
<i>Picoides arcticus</i>			SV	4
<i>Picoides dorsalis</i>			SV	4
<i>Contopus cooperi</i>	SOC		SV	4
<i>Empidonax traillii</i>	SOC		SV	4
<i>Sialia mexicana</i>			SV	4
<i>Icteria virens</i>	SOC		SC	4

Species	Federal	FS	Oregon	ORNHIC
<i>Seiurus noveboracensis</i>		Sensitive		2
<b>Mammals</b>				
<i>Antrozous pallidus</i>	SOC		SV	2
<i>Lasionycteris noctivagans</i>	SOC		SV	4
<i>Lasiurus cinereus</i>			SV	4
<i>Myotis californicus</i>			SV	4
<i>Myotis ciliolabrum</i>	SOC			4
<i>Myotis evotis</i>	SOC			4
<i>Myotis volans</i>	SOC		SV	4
<i>Myotis yumanensis</i>	SOC			4
<i>Sciurus griseus</i>			SU	4
<i>Arborimus albipes</i>	SOC			4
<i>Martes americana</i>				4

#### List of Rare Elements and Rare Plant Communities

Two plant communities, four animal species, three vascular plant species and two mosses documented in the RNA have been identified as rare, threatened or uncommon globally and/or in Oregon by the Oregon Natural Heritage Information Center (Kagan et al. 2004, Oregon Natural Heritage Information Center 2007, 2009).

- Few-flowered spikerush/brown moss fen (Heritage Program Rank: G3S2 – uncommon globally with 21-100 occurrences; imperiled because of rarity in Oregon, with 6-20 occurrences or few remaining acres)
- Bog blueberry shrub swamp with tufted hairgrass (Heritage Program Rank: G3S3 - uncommon globally and in Oregon with 21-100 occurrences)
- Oregon spotted frog (Federal Candidate for listing as Threatened or Endangered)
- Northern spotted owl (Federally Listed Threatened)
- Pacific fisher (Federal Candidate for listing as Threatened or Endangered)
- California wolverine (Federal Species of Concern; Forest Service Sensitive)
- American scheuchzeria (Forest Service Sensitive)
- lesser bladderwort (Forest Service Sensitive)
- slender pondweed (ORNHIC List 3)
- Blandow's feather moss (Forest Service Sensitive)
- tomentypnum moss (Forest Service Sensitive)

#### C. RESOURCE INFORMATION

##### MINERALS

As of November 25, 2009, based on a search of the BLM LR2000 public website, there currently are no existing locatable mining claims and no known mining history to have occurred within or around Many Lakes RNA (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 Many Lakes RNA. The Many Lakes RNA is a potential mineral resource of sand and gravel but is not likely to be developed because its high water table would make it uneconomical to mine and there are numerous other 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 Many Lakes 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

Many Lakes RNA contains many springs, seeps, fens, shrub wetlands and small streams. The gentle topography, heavy wintertime snow accumulations and high water table result in the slow release of cold, clean water throughout much of the growing season benefitting downstream fish habitats and providing water for recreation, irrigation and other uses. The RNA supplies water to Little Cultus Lake and subsequently Deer Creek, Crane Prairie Reservoir and the Deschutes River. Crane Prairie Reservoir empties into Wickiup Reservoir which supplies irrigation water for central Oregon through the Bureau of Reclamation's Deschutes Project (USDI Bureau of Reclamation 2009).

#### RECREATION USE

There are no developed recreation facilities or trails within Many Lakes RNA and none will be constructed. The RNA is adjacent to the Three Sisters Wilderness Area. There is moderate use of the Deer Lake Trail along the northeast side of the RNA by mountain bikes, horse riders and hikers. There is a developed campground at Little Cultus Lake and dispersed campsites along FS Road 4636. Road 4636 provides access to three nearby trailheads in the summer and in the winter serves as a lightly used snowmobile trail. Light dispersed recreational use occurs within the RNA from day hikers and anglers. Very light impacts of recreation use are evident in the RNA, including informal trails along the shorelines of Little Cultus and Raft Lakes and light litter associated with fishing and hiking.

Motor vehicle use, including the use of all-terrain vehicles and snowmobiles, is prohibited within the RNA. 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 Many Lakes 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

Forest Service Road 4636 borders the RNA on the south side. There is a 100 foot (30.5 meter) buffer between RNA boundaries and the road. The RNA will be closed to motor vehicles. The RNA is in the Waldo Inventoried Roadless Area (RARE No. 06106; USDA Forest Service 1990b). There are no conflicts with the DNF Transportation Plan.

## D. HISTORICAL INFORMATION

### RESEARCH/EDUCATIONAL USE AND INTEREST: HISTORY OF ESTABLISHMENT

Permanent vegetation monitoring transects were established in one fen in the RNA in 1993 and remeasured every five years thereafter. The most recent remeasurement was in 2008. The purpose of these transects is to document changes in vegetation structure and composition across an ecotone from forest to fen. No other research or educational activities have been undertaken within the RNA.

Many Lakes 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 Many Lakes, 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

Less than 1% of the RNA has been surveyed for cultural resources. There is one known prehistoric cultural site (#06010100295) within or near the RNA boundary. Information about this site is on file at the Deschutes National Forest Supervisor's Office

## DISTURBANCE HISTORY

The Deschutes National Forest database does not contain records of any fires that have occurred within the RNA in the last 100 years. Wildfires generally occur infrequently in high elevation forests dominated by mountain hemlock or lodgepole pine due to moist conditions (Eckert et al. 2008). Because there is a long time between fires, heavy fuel loads may accumulate and severe, stand-replacing fires result when conditions permit. However, the diversity of soil, moisture and forest conditions at Many Lakes RNA has resulted in different plant association groups with different fire regimes. This has produced a mosaic of stand types shaped by varying fire history. The fire regimes of the plant association groups found at Many Lakes RNA have been classified as follows by Waltz et al. (2009):

Wet lodgepole pine and wet mixed conifer forest associations are classified as Fire Regime 3 with mixed severity fires that have a return interval of 35 to 100+ years. Stand-replacing fires are rare events and the more frequent mixed-intensity fires result in a mix of stand ages and size classes (Waltz et al. 2009)

Dry lodgepole pine forest is classified as Fire Regime 4 with stand-replacing fires that have a return interval of 35 to 100+ years. Seral communities that arise from or are maintained by stand-replacement fires, such as lodgepole pine are often important components of this fire regime. Natural ignitions within this regime that result in large fires may be relatively rare. Meadow and shrub habitats are also classified as Fire Regime 4.

Dry mixed conifer forest is classified as Fire Regime 1 with low severity fires that have a return interval of 0 to 35 years. Stand-replacing fires occur very rarely under certain weather conditions.

Mountain hemlock forest is classified as Fire Regime 5 with stand-replacing fires that have a return interval of greater than 200 years (Waltz et al. 2009). This fire regime occurs at the environmental extremes where natural ignitions are very rare or virtually non-existent or environmental conditions rarely result in large fires. Sites tend to be very cold, very hot, very wet, very dry or some combination of these conditions.

## OCCURRENCE OF EXOTIC SPECIES

A patch of Reed canarygrass (*Phalaris arundinacea*) is located in a fen on the east side of the RNA along the shore at the northwest end of Little Cultus Lake.

Rainbow and Brook trout were introduced in Raft Lake in the 1950s and 1960s as part of a fish stocking program by Oregon Department of Fish and Wildlife. A survey in 1995 documented Brook trout living in the lake. The lake is stocked every other year. Before stocking Raft Lake did not have any resident fish.

## E. OTHER INFORMATION

### PERMANENT RESEARCH PLOTS AND/OR PHOTO POINTS

Four permanent vegetation monitoring transects were installed in 1993 in the fen in the east-central part of the RNA by regional RNA coordinator Sarah Greene, DNF Ecologist Gregg Reigel, and other Deschutes National Forest personnel (pers. comm. Reid Schuller). The transects are 80 to 100 meters long, and cross ecotones from forest to fen and are intended to detect changes in vegetation structure and composition over time. The transects were reread at five year intervals (1998, 2003 and 2008). Vegetation data from the transects have been entered into the RNA database overseen by the Regional RNA Coordinator.

There are no other permanent plots or photo points within the RNA.

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Katie Grenier, Forest Botanist; plants  
Lauri Turner, Forest Wildlife Biologist; wildlife  
Leslie Moscoso, Recreation Operations Supervisor; recreation  
Marvin Lang, Recreation Forester; fire history, recreation  
Mike Simpson, Ecologist; plant associations, vegetation cover types  
Mose Harris IV, FOIA Coordinator; NEPA and scoping  
Paul Claeysens, 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

Many Lakes RNA provides an opportunity to study the successional dynamics of fen and wet meadow communities, particularly in the context of global warming. The permanent transects already installed at one of the fens could be used to provide baseline data for ongoing studies and a model for installation of similar transects elsewhere in the RNA.

Research could be done on subalpine aquatic species in the lakes. If fish stocking of Raft Lake were discontinued and remaining fish eradicated there would be an opportunity to investigate the recovery of a subalpine lake ecosystem that had no fish prior to stocking. This could include examination of aquatic invertebrates, algae and plants at multiple trophic levels. .

A number of rare animal and plant species have been documented in Many Lakes RNA. The RNA provides an opportunity to compare population trends of these species in the relatively undisturbed habitats of the RNA with populations in actively managed habitats.

Additional basic inventory work could be done to document more completely the flora and fauna of the RNA.

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

### POTENTIAL OR EXISTING CONFLICTS

No existing conflicts have been identified for the Many Lakes RNA. Current recreational use is light and generally limited to day hiking and fishing. Use of off-road vehicles, snowmobiles and all other motorized vehicle use 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 Many Lakes RNA does not impact any congressionally designated areas.

Lands bordering the RNA to the west are in the Three Sisters Wilderness Area and are designated Management Area 6 – Wilderness; lands to the south and east are designated Management Area 9 – Scenic Views; lands to the north are designated Management Area 12 – Dispersed Recreation (USDA Forest Service 1990a). Expansion of the RNA from the acreage that was proposed in the LRMP included lands from Management Area 9 within the RNA boundary. A small area at the southeastern corner of the RNA excludes an area that was proposed as part of the RNA in the LRMP that will become Management Area 9 – Scenic Views.

G. PHOTOGRAPHS

**Figure 5a.** Raft Lake viewing west from the southeast end of the lake.



**Figure 5b.** Wet meadow habitat in southwest part of Many Lakes RNA.



DECISION NOTICE / DESIGNATION ORDER

DRAFT



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

Many Lakes Research Natural Area  
Deschutes National Forest, Bend/Ft. Rock Ranger District  
Deschutes County, Oregon  
T20S, R7E, Sections 11,12,13,14, Willamette Meridian

## BACKGROUND

An environmental assessment (EA) that discuss the designation of the Many Lakes 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 Many Lakes 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 907 acres on the west side of the Bend/Ft. Rock Ranger District. The area is about 18 miles southwest of Bend and lies adjacent to Little Cultus Lake (see map Appendix A). The Many Lakes area 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 Many Lakes 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:

- a montane lake with aquatic beds and marshy shore;
- a subalpine pond with aquatic beds and marshy shore;
- few-flowered spikerush/brown moss fen with Engelmann spruce and lodgepole pine;
- spring fen on seepage slope (including marsh marigold, shooting star, bistort, arrowleaf groundsel, and false hellebore);
- Geyer willow shrub swamp;

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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](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.

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