UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

Establishment Record

For

TORREY-CHARLTON RESEARCH NATURAL AREA

Willamette National Forest
Middle Fork Ranger District

Deschutes National Forest
Bend Ranger District

Deschutes and Lane Counties, Oregon

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SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Torrey-Charlton Research Natural Area

Willamette National Forest

Lane 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 5.e(3) in arriving at this recommendation.

Prepared by: _____ Date 27 MAY 98
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Recommended by: _____ Date 6/5/98
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TITLE PAGE

Establishment Record
for
Torrey-Charlton Research Natural Area
within
Willamette and Deschutes National Forests
Lane and Deschutes Counties, Oregon.

INTRODUCTION

The proposed Torrey-Charlton Research Natural Area (RNA) is 2829 acres (1145 ha) in the central Oregon High Cascades region. About 2204 acres (892 ha) of the RNA is located within the Willamette National Forest (WNF), and 625 acres (253 ha) is in the Deschutes National Forest (DNF).

The RNA is located on a high plateau to the northwest of Waldo Lake, and is forested primarily with mountain hemlock (*Tsuga mertensiana*). The RNA is comprised of two separate units: the Torrey Unit (1053 acres, 426 hectares) contains Torrey Lake (the largest lake in the RNA) and most of the lakes, ponds, and wetland habitats. This unit also includes the southeast slopes of Taylor Butte. To the southeast, the Charlton Unit (1775 acres, 718 hectares) contains Charlton Butte, and contains a variety of mountain hemlock stands of different ages and densities, some true fir (*Abies* spp.) stands, ponds and small meadows.

The area was probably used by Native Americans for summer elk and deer hunting, and possibly for occasional whitefish fishing (Carol Winkler, pers. comm.). Current uses are hiking, hunting, fishing, and research.

The RNA and surrounding lands are entirely within national forest ownership. The Torrey Unit is entirely within the Waldo Lake Wilderness in the WNF. The Charlton Unit is mostly within the WNF, and partly within the DNF. Besides the wilderness designation, no part of the RNA is within any wild and scenic river, national recreation area, or other congressionally designated area.

Land Management Planning

The Torrey-Charlton RNA is proposed as an RNA in the WNF Land and Resource Management Plan (LRMP) (WNF 1990) and in the DNF LRMP (DNF 1990). The plans contain objectives and management guidelines applicable to all RNAs within the forests (Appendix A).

OBJECTIVES

The Torrey-Charlton RNA provides an excellent natural laboratory in which the ecology of mountain hemlock forests, and the water features and wetlands within them, can be studied. Very little research has been conducted in mountain hemlock-dominated forests, and many questions are unanswered regarding growth rates and patterns, regeneration requirements, silvicultural systems, genetic variation, pests and successional patterns. An understanding of how mountain hemlock systems function in their natural state is prerequisite to sound evaluations of management practices.

In addition to these topics, the Torrey-Charlton RNA furnishes an opportunity to study the life cycle, rate of spread, and resistance to laminated root rot (*Phellinus weirii*) which infects forests in the area. The area has also been identified as a possible site for studying the effects

of air pollution on aquatic systems (Peck, pers. comm.).

Establishment of the Torrey-Charlton RNA will preserve a High Cascades mountain hemlock forest containing an abundance of lakes, ponds, and other wetlands and non-forested habitats. Designation of the area will ensure preservation of biological diversity, prevent serious environmental disruption, provide a reference area for the studies of succession, provide opportunity for educational activities, and serve as a baseline area for measuring long-term ecological changes. Additionally, the RNA will serve as a control area for comparing results from manipulative research, and as an area where resource management techniques and practices can be monitored.

JUSTIFICATION STATEMENT FOR ESTABLISHMENT OF AREA

The Torrey-Charlton RNA fills a stated need in the Oregon Natural Heritage Plan (Appendix B) for the following cells in the west slope & crest region of the Oregon Cascades:

Terrestrial Ecosystems

1. Mountain hemlock/grouse huckleberry (*Vaccinium scoparium*)[1] community in the mountain hemlock zone.

Aquatic Ecosystems

1. Subalpine lake in South Cascades.
2. Subalpine pond.
3. Montane vernal pond.

A mosaic of forest stands representing different stages of attack and recovery from laminated root rot provides for a wide variation in successional stages within the RNA.

Additional communities of interest include: inflated sedge (*Carex vesicaria*) meadow, tufted hairgrass meadow (*Deschampsia cespitosa*), *Polytrichum* sp. meadow, and montane mire.

The lakes and ephemeral wetlands found in the Torrey Unit are representative of similar unique habitats scattered throughout the High Cascades. Their ecological diversity and ease of access in the RNA make them especially well suited for wetland and limnological research.

PRINCIPAL DISTINGUISHING FEATURES

Excellent examples of mountain hemlock-dominated forest, an important forest type in the High Cascades, are found in both units of the RNA. Old growth mountain hemlock stands occur on all aspects on the conical Charlton Butte (McKee and Franklin 1977). This butte rises 600 feet (183 m) above the High Cascade Plateau, and the varying elevation and aspects

[1] Nomenclature for flora other than trees follows Hitchcock and Cronquist (1973).

provide a diversity of mountain hemlock forest environments. Scattered infestations of laminated root rot which occur in the RNA add diversity, as they create islands of seral stands within a matrix of old growth mountain hemlock forests that are typical of Oregon's High Cascades. Recently burned areas provide early seral conditions for comparison with later successional stages.

The standing water (lentic) habitats in the Torrey Unit ranges from ephemeral ponds which dry up in late spring or summer, to permanent lakes with introduced trout populations. Many of the lakes and ponds are isolated, although one chain of lakes is connected during spring runoff. The variety of lentic habitats with differing degrees of isolation provides for aquatic communities with strikingly different phytoplankton, zooplankton, and invertebrate composition (see Attachment C). The various wet meadow communities and the mire add to the diversity of the RNA.

Several threatened, endangered, and sensitive species are known to exist in the area. Sightings of bald eagles (*Halieetus leucocephalus*; federally listed -- threatened and northern spotted owls (*Strix occidentalis caurina*; federally listed -- threatened) have both been reported in and adjacent to the RNA, but neither are known to nest within it.

A plant currently on the Willamette National Forest Review List, Baxbaum's sedge (*Carex bauxbaumii*) has been documented at Torrey Lake, and in the Torrey Lake Mire. The species is no longer listed on a ONHP category list , it has been downgraded from Category 3 to drop as it was considered but rejected as being too common (ONHP, 2995).

LOCATION

The Torrey-Charlton RNA is located within the Willamette and Deschutes national forests. The boundaries of the RNA lie approximately between 43° 45' and 43° 48' north latitude, and between 121° 57' and 122° 01' west longitude.

The Torrey-Charlton RNA is situated on the crest of the Oregon Cascades about 55 air miles (88 km) east-southeast of Eugene (Map 1). The Torrey Unit includes portions of sections 28, 33 and 34, T20S, R6E, and sections 3 and 4, T21S, R6E, Willamette Meridian. The Charlton Unit includes portions of Sec. 10, 11, 12, 13, 14, 15, T21S, R6E, Willamette Meridian.

Boundary

The boundaries of the Torrey-Charlton RNA are shown on Map 3 (provided by WNF, 1997).

Area

The area of the Torrey-Charlton RNA is 2829 acres (1145 ha).

Elevation

The lowest elevation of the plateau in the Torrey Unit is about 5365 feet (1635 m) near the southwest corner, rising to 5845 feet (1782 m) on Taylor Butte in the northwest corner. The plateau slopes up gradually to the east in the Charlton Unit, rising from 5500 feet (1676 m) to about 6000 feet (1829 m) at the base of Charlton Butte. This conical butte rises abruptly to an elevation about 6600 feet (2010 m) -- the highest point in the RNA.

Access

Access routes to the Torrey-Charlton RNA are shown on map 2.

To reach the RNA, travel approximately 22.5 miles (36 km) southeast of the Greenwaters Park Highway 58, and turn left onto Forest Service Rd. 5897 (Waldo Lake Road). Proceed north approximately 11 miles (18 km), veer left on Rd. 5898, and proceed just over one mile (1.6 km) to Rd. 511 for the most direct access to the majority of the Charlton Unit. This short spur road terminates at the Harralson Horse Camp, where there is ample parking. The Charlton Unit can be reached by keeping to the right on Rd. 5897 at the Rd. 5898 intersection, and proceeding east about 1/2 mile (0.8 km) to the intersection of the Pacific Crest Trail (No. 2000). This trail runs north-south just to the east of the middle of the Unit.

For access to the Torrey Unit, do not turn onto Rd. 511, but continue another half mile (0.8 km) towards the North Waldo Campground, to Rd. 5898-515 to 5898-514 (Taylor Burn Road). This road runs between the two units of the RNA.

High clearance vehicles can proceed north on the Taylor Burn Road about 3/4 mile (1.2 km) to gain access to either unit. Lakes and ponds within the Torrey Unit are one mile (1.6 km) or less from the road on foot over gentle to moderate terrain. If a high clearance vehicle is not used for access, park on the shoulder of the Taylor Burn Road just north of Rd. 5898 515 (where space allows), and hike up the road.

During periods of snow (approximately early November through late May), roads and trails adjacent to the RNA (and not in designated wilderness areas) are accessible by snowmobile.

Maps

The Willamette National Forest Visitor Map (1990) illustrates the described access routes to the RNA. This map is available at the WNF Supervisor's Office in Eugene, Oregon and at all WNF Ranger District offices.

The USGS 7.5 minute quad maps of Waldo Mountain and Irish Mountain (Oregon) cover the RNA. These maps show topographic features at a scale of 1:24,000, with contour intervals of 40 feet (12.2 m) on the Waldo Mountain map and 20 feet (6.1 m) on the Irish Mountain map.

The Oakridge Ranger District map is available at the Middle Fork Ranger District office in

Oakridge, and the Bend Ranger District map is available at the Bend Ranger District office in Bend. These maps have the most current road and trail information.

AREA BY COVER TYPE

The Society of American Foresters (SAF) forest cover types are illustrated in Map 4. Approximate acreages of each Kuchler cover type, SAF forest cover type, and forest series are given in the following tables:

Kuchler Cover Types (Kuchler 1966)		Acres	Hectares
4	Fir - hemlock forest (*Abies - Tsuga*)	2829	1145
Total		2829	1145

SAF Cover Types (Eyre 1980)		Acres	Hectares
205	Mountain hemlock	2621	1061
226	Coastal true fir - hemlock	51	21
N	Non-forested	38	15
W	Water	119	48
Total		2829	1145

Forest Series (Hemstrom, et al. 1987)	Acres	Hectares
Mountain hemlock	2621	1061
Pacific silver fir	51	21
Non-forest communities	38	15
Water	119	48
Total	2829	1145

PHYSICAL AND CLIMATIC CONDITIONS

The Torrey-Charlton RNA lies within the High Cascades physiographic province, a broad, weakly dissected undulating plateau with scattered volcanic peaks. The High Cascades are developed on andesitic and basaltic flows of the Pliocene Epoch. The plateau formed from a series of composite volcanoes from which flowed great quantities of lava, alternating with short periods of explosive eruptions.

Most of the RNA is comprised of gentle, west-facing slopes abutting the crest of the Cascade

Range. The east slopes of Charlton Butte are on the east side of the crest. A few larger lakes and numerous smaller lakes, ponds, wet meadows, and a mire are located within the Torrey Unit. A very few small ponds and wet meadows are located within the Charlton Unit.

The climate of the High Cascades is maritime (Franklin and Dyrness 1973) with dry summers and cool, wet winters. According to Bierlmaier and McKee (1989) precipitation from cyclonic winter storms is directed at the region by the polar jet stream. In summer, the jet stream shifts to the north and high pressure dominates. Approximately 70 percent of the annual precipitation falls between November 1 and March 31, mostly as snow. Snowpacks of 16.5 feet (5 m) are common. A six-month duration of snowpack is typical, but in certain years snow may persist for 8 months.

According to McKee and Franklin (1977), based on records from locations similar to the RNA in the Oregon High Cascades, average annual temperature is about 3.5°C (38°F), with average January and July temperatures of about -3.5°C and 13.5°C (25.5 and 56°F) respectively. Average January minimums of -8.5°C (16.5°F) and average July maximums of 21.5°C (70°F) are likely.

The following tables present climate data from the nearest weather station, Odell Lake, about 12 air miles south of the RNA. Weather data were provided by the Oregon Climate Service at Oregon State University.

CLIMATE DATA FOR ODELL LAKE, OREGON
Elevation: 4795 Feet (1462 Meters)

PRECIPITATION Mean annual total = 56.69 inches (1440 millimeters)

Month	Mean in	Mean mm	Maximum Mean in	Maximum Mean mm	Minimum Mean in	Minimum Mean mm	Record Length years
January	9.73	247	17.73	450	2.69	68	27
February	6.12	155	13.17	335	1.70	43	27
March	6.55	166	11.87	302	0.70	18	27
April	3.67	93	8.73	222	1.10	28	27
May	2.90	74	6.62	168	0.87	22	25
June	2.06	52	5.01	127	0.22	6	26
July	0.46	12	1.61	41	0.00	0	26
August	0.82	21	3.53	90	0.00	0	28
September	1.93	49	6.91	176	0.12	3	28
October	5.03	128	15.58	396	0.19	5	28
November	7.94	202	14.09	358	1.72	44	28
December	9.48	241	29.83	758	4.03	102	28

TEMPERATURE

Month	Mean °F	Mean °C	Maximum Mean °F	Maximum Mean °C	Minimum Mean °F	Minimum Mean °C	Record Length years
January	26.3	-3.2	33.3	0.7	16.2	-8.8	26
February	29.7	-1.3	37.1	2.8	24.3	-4.3	26
March	31.3	-0.4	36.3	2.4	27.7	-2.4	27
April	36.4	2.5	40.7	4.8	30.8	-0.7	27
May	43.5	6.4	49.0	9.4	39.2	4.0	25
June	50.8	10.4	56.6	13.7	44.9	7.2	26
July	58.1	14.5	61.8	16.6	53.2	11.8	26
August	56.9	13.8	62.8	17.1	51.5	10.8	28
September	50.9	10.5	55.6	13.1	47.1	8.4	28
October	42.3	5.7	48.5	9.2	37.2	2.9	26
November	34.0	1.1	40.2	4.6	30.6	-0.8	25
December	28.8	-1.8	34.7	1.5	23.0	-5.0	25

DESCRIPTION OF VALUES

Flora

Both the Torrey and Charlton units are dominated by mountain hemlock ecosystems. According to McKee and Franklin (1977), the age of old growth mountain hemlock stands in the RNA ranges from approximately 350 years old on the plateau to 400 years on Charlton Butte. Other researchers aged mountain hemlock stands about two miles south of the RNA at approximately 250 years (Cromack et al. 1991).

Mountain hemlock stands tend to be monotonous forests with sparse understory vegetation and low plant and animal species diversity under closed canopy conditions. While mountain hemlock stands are poor in vascular plant diversity, they are rich in fungal species diversity. (Dr. James Trappe, from McKee and Franklin 1977). Lodgepole pine (*Pinus contorta* var. *latifolia*) and Pacific silver fir (*Abies amabilis*) are minor components of the overstory in most areas, but constitute larger proportions of stands in drier and wetter areas, respectively.

Other tree species occasionally found in the RNA include: western white pine (*Pinus monticola*), subalpine fir (*Abies lasiocarpa*), noble fir (*Abies procera*) and Engelmann spruce (*Picea engelmannii*). A sparse shrub layer, generally less than 50 percent cover, of grouse huckleberry is typical of closed stands. The herb layer tends to have few species, with low cover values of generally less than one percent. Typical herb species are: fringed pinesap (*Hypopitys monotropa*), one-sided wintergreen (*Pyrola secunda*), Ross' sedge (*Carex rossii*) and long stolon sedge (*Carex pensylvanica*). Moss and lichen cover on the ground is generally less than 0.1 percent.

The following plant associations and communities described by Hemstrom et al. (1987) have been identified within the RNA:

1. mountain hemlock/grouse huckleberry (common throughout RNA)
2. Pacific silver fir/big huckleberry/beargrass (northwest slopes of Charlton Butte)
3. mountain hemlock/big huckleberry/beargrass (northwest portion Torrey Unit)
4. talus (small amounts on the east and northeast sides of Charlton Butte)

Rock garden communities which exist on portions of some ridges on Charlton Butte differ in plant composition from those described by Hemstrom. Several non-forested wetland and meadow plant communities dominated by sedges, grasses, and mosses, and a small area with a lodgepole pine/grouse huckleberry/moss-lichen association or community are present in the RNA and are not described as communities or associations by the WNF.

Several acres of recent blowdown were viewed in the southwest corner of the Charlton unit and on the western mid-slopes of Charlton Butte during a field visit in the summer of 1992.

A small lightening fire occurred on July 22, 1994 on the west side of Charlton Butte . According to the site visit report in October 1994 following the fire it was of low intensity and crossed a portion of the Pacific Crest Trail. The burned stand was old growth mountain

hemlock in the Mountain hemlock/Grouse whortleberry plant association. The burn pattern was described as being spotty at the edge to more continuous in the interior. Few mature mountain hemlocks had green tops left and patches of regeneration commonly appeared untouched. The site was re-visited in October 1995 to inspect post year conditions. According to the site visit report very little change was observed in the understory from the 94 fire. Resprouting of grouse whortleberry seemed common. No new conifer sprouts were observed. A small number of trees apparently died over the year since the first site visit. No recovery of defoliated trees were noted.

On August 13, 1996, the Charlton fire, part of the Moolack Complex started. This was a major fire event caused by lightening. The fire burned nearly all of the Torrey Unit and the north and west half of the Charlton Unit. The fire intensity in the Torrey area was extreme. According to the October RNA site visit report most of the trail leading to Torrey Lake was through total crown fire. Most of the overstory was observed to be dead; however, quite a variety in conditions were present. Though the fire intensity was high, wetland habitat conditions ranged from being completely burned to remaining fairly intact, depending upon topography and degree of dryness before the fire.

The Charlton Unit was not visited during the 1996 site visit. A video was made on September 9, 1996 that shows fire intensity patterns and topography. An archival copy of the video was made for RNA fire effects documentation.

The south and east sides of the Charlton Unit still contain old growth mountain hemlock stands. Now extensive early seral stands resulting from natural disturbance exist in the RNA (approximately 1,691 acres), which provide excellent opportunities for post fire studies, and can be compared with several early studies of the area. Intact lakes, ponds and mires still provide the components for the process cell for which the Torrey unit was proposed. Paired plots could be established to compare the two fire events.

Scattered through portions of forest which were untouched by fire in the Charlton Unit are pockets of laminated root rot infection. When viewed from the air, they have the appearance of an outer ring of dead and dying trees, and an interior of seedling establishment and growth. In places, these enlarging pockets have coalesced to form irregular patches. Vascular plant species diversity increases somewhat in root rot pockets following overstory tree death and subsequent colonization by pioneering plant species. A study of the root rot's effects on decomposition and nutrient mineralization was conducted just to the south of the RNA (Cromack et al. 1991). The RNA offers an excellent field site for further studies of productivity, succession and pathology.

A survey and analysis of the Torrey Lake mire, just east of Torrey Lake (Frenkel et al. 1986), contains information regarding wetland plant communities of the area. Research conducted in wetland communities within the Torrey-Charlton RNA can be compared with results obtained from studies in the Gold Lake Bog RNA, located approximately 9 miles to the south. Four wetland ecotone transects that were installed in 1993, GPS' d, and marked with rebarr should be re-established to monitor wetland recovery response.

Permanent plots were installed by PNW ecologists along a 1.6 mile (2.6 km) transect which ascends Charlton Butte (McKee and Franklin 1977). These plots are intended to provide long-term data on tree growth and mortality and understory vegetation.

No plant species listed as sensitive on the WNF (Dimling 1992) have been documented within the RNA. Suitable habitat for other species on the WNF and ONHP lists -- particularly for wetland and aquatic species -- exists within the RNA (as follows). Future surveys should be conducted to search for these species.

Species	Habitat
tall agoseris (*Agoseris elata*)	meadows and open woods
Sierra onion (*Allium campanulatum*)	openings in dry, coniferous woods
grass fern (*Asplenium septentrionale*)	moist cliff crevices, talus slopes
Newberry's gentian (*Gentiana newberryi*)	moist meadows
adder's tongue (*Ophioglossum vulgatum*)	boggy meadows, open woods and vernal pools
cow-bane (*Oxypolis occidentalis*)	mountain springs and bogs
scheuchzeria (*Scheuchzeria palustris*)	sphagnum bogs and lake margins
lesser bladderwort (*Utricularia minor*)	standing water at mid- to high elevations
water-meal (*Wolffia columbiana*)	floating below surface

FLORA OF THE TORREY-CHARLTON RNA[2]

LATIN NAME	COMMON NAME
TREES	
Abies amabilis	Pacific silver fir
Abies lasiocarpa	subalpine fir
Abies procera (magnifica var. shastensis)	noble fir
Acer glabrum	Douglas' maple
Amelanchier alnifolia var. semiintegrifolia	western serviceberry
Castanopsis chrysophylla	giant chinkapin
Picea engelmannii	Engelmann spruce
Pinus contorta var. latifolia	lodgepole pine
Pinus monticola	western white pine
Pinus ponderosa	ponderosa pine
Pseudotsuga menziesii	Douglas-fir
Rhododendron macrophyllum	Pacific rhododendron
Salix geyeriana	Geyer willow
Sambucus cerulea	blue elder
Sambucus callicarpa	red elder
Sorbus scopulina	Greene mountain-ash
Sorbus sitchensis var. sitchensis	Sitka mountain-ash
Thuja plicata	western redcedar
Tsuga mertensiana	mountain hemlock
SHRUBS	
Alnus incana var. occidentalis	mountain alder
Arctostaphylos nevadensis	pinemat manzanita
Arctostaphylos patula	green-leaf manzanita
Arctostaphylos uva-ursi	kinnikinnick
Berberis nervosa	dwarf Oregongrape
Betula glandulosa	bog birch
Ceanothus cuneatus	common buckbrush
Chimaphila menziesii	little pipsissewa
Chimaphila umbellata var. occidentalis	prince's-pine
Gaultheria humifusa	alpine wintergreen
Gaultheria ovalifolium	slender wintergreen
Holodiscus dumosus var. glabrescens	gland ocean-spray
Juniperus communis	common juniper
Kalmia microphylla	small-leaved laurel
Lonicera involucrata	black twinberry
Pachistima myrsinites	Oregon boxwood

[2] Nomenclature for trees follows Little (1979). Moss nomenclature follows Vitt et al. (1988). Other plant nomenclature follows Hitchcock and Cronquist (1973). Older synonyms shown in parentheses are preceded by recent reclassifications which are gaining general acceptance. List compiled by Herm Fitz (1979), Frenkel et al. (1986), and Salix Associates (1992).

Ribes cereum	wax currant
Ribes lacustre	swamp gooseberry
Ribes viscosissimum var. hallii	sticky currant
Rosa gymnocarpa	baldhip rose
Rubus lasiococcus	dwarf bramble
Rubus parviflorus	thimbleberry
Rubus ursinus	dewberry
Salix myrtillifolia	blueberry willow
Spiraea densiflora var. densiflora	subalpine spiraea
Spiraea douglasii var. menziesii	Douglas' spiraea
Vaccinium caespitosum	dwarf huckleberry
Vaccinium deliciosum	blue-leaf huckleberry
Vaccinium membranaceum	thin-leaved blueberry
Vaccinium ovalifolium	oval-leaf blueberry
Vaccinium scoparium	grouse huckleberry
Vaccinium uliginosum (occidentale)	bog huckleberry

FORBS

Achlys triphylla	vanillaleaf
Aconitum columbianum var. howellii	Columbian monkshood
Agoseris aurantiaca var. aurantiaca	orange agoseris
Agoseris glauca	pale agoseris
Anaphalis margaritacea	pearly everlasting
Anemone deltoidea	threeleaf anemone
Anemone oregana	Oregon anemone
Anemone lyallii	Lyall's anemone
Angelica arguta	Lyall's angelica
Antennaria microphylla	rosy pussytoes
Apargidium boreale	apargidium
Aquilegia formosa	red columbine
Arabis platysperma	flatseed rockcress
Arenaria macrophylla	bigleaf sandwort
Arnica mollis	hairy arnica
Aster ledophyllus var. covillei	Cascade aster
Aster occidentalis var. occidentalis	western mountain aster
Caltha biflora var. biflora	white marshmarigold
Cicuta douglasii	Douglas' water-hemlock
Cirsium callilepis var. oregonense	mountain thistle
Clintonia uniflora	queen's cup
Collomia linearis	narrow-leaf collomia
Collomia tinctoria	yellow-staining collomia
Comandra umbellata	bastard toad-flax
Corallorhiza maculata	spotted coral-root
Corallorhiza mertensiana	western coral-root
Cornus canadensis	bunchberry
Dicentra formosa	Pacific bleedingheart
Dodecatheon jeffreyi	Jeffrey's shooting star
Drosera rotundifolia	sundew
Epilobium alpinum var. gracillimum	alpine willow-herb
Epilobium angustifolium	fireweed
Epilobium glaberrimum	smooth willow-herb
Epilobium paniculatum	autumn willow-herb
Epilobium watsonii	Watson's willow-herb
Eriogonum marifolium	mountain buckwheat

Eriogonum nudum	barestem buckwheat
Eriogonum umbellatum var. umbellatum	sulphurflower
Fragaria vesca	woods strawberry
Fragaria virginiana var. platypetala	broadpetal strawberry
Gayophytum diffusum (nuttallii var. lasiospermum)	spreading groundsmoke
Goodyera oblongifolia	western rattlesnake-plantain
Habenaria saccata	slender bog-orchid
Hemitomes congestum	gnome-plant
Heuchera micrantha	smallflowered alumroot
Hieracium albiflorum	white-flowered hawkweed
Hieracium cynoglossoides	houndstongue hawkweed
Hieracium gracile	slender hawkweed
Hypericum anagalloides	bog St. John's-wort
Hypopitys monotropa	pinesap
Kellogia galioides	kelloggia
Leutkea pectinata	partridgefoot
Ligusticum grayi	Gray's lovage
Linanthus bicolor var. bicolor	bicolored linanthus
Linnaea borealis	twinflower
Listera caurina	western twayblade
Listera cordata	heart-leaf twayblade
Lomatium martindalei	Martindale's lomatium
Lonicera caerulea	sweet-berry honeysuckle
Lupinus latifolius var. latifolius	broadleaf lupine
Lupinus sericeus var. sericeus	silky lupine
Lysichitum americanum	skunk cabbage
Menyanthes trifoliata	buckbean
Microseris alpestris	alpine lake agoseris
Microseris nutans	nodding microseris
Microsteris gracilis	pink microsteris
Mimulus guttatus	yellow monkeyflower
Mimulus primuloides	primrose monkey-flower
Mitella breweri	Brewer's mitrewort
Mitella ovalis	oval-leaved mitrewort
Mitella pentandra	fivestamen mitrewort
Nothochelone nemorosa	woodland beard-tongue
Orobanche fasciculata	clustered broomrape
Osmorhiza chilensis	mountain sweet-root
Pedicularis attollens	little elephant's head
Pedicularis groenlandica	elephant's head
Pedicularis racemosa	leafy lousewort
Penstemon cardwellii	Cardwell's penstemon
Penstemon rupicola	cliff penstemon
Phacelia hastata var. compacta	whiteleaf phacelia
Phacelia hastata var. leptosepala	whiteleaf phacelia
Phacelia heterophylla	varileaf phacelia
Phyllodoce empetriformis	red mountain-heath
Phyllodoce glanduliflora	yellow mountain-heath
Polemonium sp.	Jacob's ladder
Polygonum bistortoides	American bistort
Polygonum newberryi	Newberry's fleeceflower
Potentilla arguta var. convallaria	tall cinquefoil
Potentilla breweri	Brewer's cinquefoil
Potentilla drummondii	Drummond's cinquefoil
Potentilla glandulosa var. intermedia	sticky cinquefoil

Potentilla palustris	marsh cinquefoil
Pyrola dentata	toothleaf pyrola
Pyrola picta	white vein pyrola
Pyrola secunda	one-sided wintergreen
Ranunculus alismaefolius var. davisii	water-plantain buttercup
Ranunculus flammula	creeping buttercup
Ranunculus gormanii	Gorman's buttercup
Rumex acetosella	sheep sorrel
Scheuchzeria palustris var. americana	scheuchzeria
Senecio cymbalarioides	few-leaved groundsel
Senecio triangularis	arrowleaf groundsel
Smilacina racemosa	false Solomon's seal
Smilacina stellata	star-flowered Solomon's seal
Solidago canadensis	Canada goldenrod
Stephanomeria lactucina	large-flowered wirelettuce
Streptopus roseus	rosy twisted-stalk
Tiarella trifoliata	foamflower
Tofieldia glutinosa	sticky tofieldia
Townsendia condensata	cushion townsendia
Trifolium longipes var. multiovulatum	long-stalked clover
Valeriana sitchensis	mountain heliotrope
Veratrum californicum	California false hellebore
Veratrum viride	American false hellebore
Veronica scutellata	marsh speedwell
Veronica serpyllifolia	thyme-leaved speedwell
Veronica wormskjoldii	American alpine speedwell
Vicia americana	American vetch
Viola glabella	stream violet
Viola macloskeyi var. macloskeyi	small white violet
Viola orbiculata	round-leaved violet
Viola palustris	marsh violet
Viola sempervirens	redwoods violet
Whipplea modesta	yerba de selva
Xerophyllum tenax	beargrass

SEDGES and RUSHES

Carex aquatilis var. dives (sitchensis)	Sitka sedge
Carex arcta	northern clustered sedge
Carex brunnescens	brownish sedge
Carex buxbaumii	Buxbaum's sedge
Carex echinata ssp. echinata (muricata)	muricate sedge
Carex halliana	Hall's sedge
Carex hoodii	Hood's sedge
Carex interrupta	green-fruited sedge
Carex jonesii	Jones' sedge
Carex lanuginosa	woolly sedge
Carex lenticularis var. impressa	shore sedge
Carex lenticularis var. lipocarpa	shore sedge
Carex luzulina	woodrush sedge
Carex neurophora	alpine nerved sedge
Carex nigricans	black alpine sedge
Carex pachystachya	thick-headed sedge
Carex inops (pensylvanica)	Pennsylvania sedge
Carex rossii	Ross' sedge

Carex simulata	short-beaked sedge
Carex utriculata (rostrata)	beaked sedge
Carex vesicaria var. vesicaria	inflated sedge
Eleocharis acicularis	needle spike-rush
Eleocharis pauciflora	few-flowered spike-rush
Juncus balticus var. balticus	Baltic rush
Juncus balticus var. vallicola	Baltic rush
Juncus bolanderi	Bolander's rush
Juncus drummondii var. drummondii	Drummond's rush
Juncus ensifolius var. ensifolius	dagger-leaf rush
Juncus filiformis	thread rush
Juncus mertensianus	Merten's rush
Juncus parryi	Parry's rush
Luzula campestris var. multiflora	field woodrush
Luzula hitchcockii	smooth woodrush
Scirpus congdonii	Congdon's bulrush

GRASSES

Agrostis exarata ssp. exarata var. exarata	spike bentgrass
Agrostis exarata ssp. minor	spike bentgrass
Agrostis idahoensis	Idaho bentgrass
Agrostis oregonensis	Oregon bentgrass
Agrostis thurberiana	Thurber's bentgrass
Agrostis variabilis	variant bentgrass
Bromus carinatus	California brome
Bromus vulgaris var. eximius	Columbia brome
Calamagrostis canadensis var. acuminata	bluejoint reedgrass
Calamagrostis canadensis var. lactea	bluejoint reedgrass
Calamagrostis canadensis var. scabra	bluejoint reedgrass
Calamagrostis stricta (inexpansa)	narrow-spiked reedgrass
Danthonia intermedia	timber danthonia
Deschampsia atropurpurea var. latifolia	mountain hairgrass
Deschampsia cespitosa var. cespitosa	tufted hairgrass
Elymus glaucus	blue wildrye
Festuca idahoensis	Idaho fescue
Festuca occidentalis	western fescue
Glyceria elata	tall mannagrass
Glyceria striata var. stricta	fowl mannagrass
Melica harfordii	Harford's melic
Muhlenbergia filiformis	pullup muhly
Poa nervosa	Wheeler's bluegrass
Sitanion hystrix	bottlebrush squirreltail
Stipa occidentalis	needlegrass
Trisetum canescens	tall trisetum
Trisetum spicatum	spike trisetum

FERNS and ALLIES

Athyrium filix-femina	lady-fern
Cheilanthes gracillima	lace lip-fern
Cryptogramma crispa	rock-brake
Cystopteris fragilis	brittle bladder-fern
Equisetum arvense	common horsetail
Lycopodium sitchense	Alaska clubmoss

Polystichum lonchitis	mountain holly-fern
Polystichum munitum	sword fern
Pteridium aquilinum	bracken
Woodsia oregana	woodsia
Woodsia scopulina	Rocky Mountain woodsia

AQUATICS

Nuphar polysepalum	yellow pond lily
Potamogeton sp.	pondweed
Sagittaria cuneata	arumleaf arrowhead
Sparganium angustifolium	narrowleaf bur-reed
Utricularia intermedia	mountain bladderwort
Utricularia vulgaris (megarhiza)	common bladderwort

MOSSES and LIVERWORTS

Andreaea blyttii	(none)
Aulacomnium palustre	
Brachythecium collinum	
Brachythecium leibergii	
Bryum pseudotriquetrum	
Calliergon stramineum	
Cephalozia sp.	
Cephaloziella sp.	
Ceratodon purpureus	
Claopodium bolanderi	
Dicranoweisia crispula var. contermina	
Dicranum pallidisetum	
Dicranum fuscescens	
Drepanocladus exannulatus	
Dryptodon patens	
Kiaeria starkei	
Marchantia sp.	
Marsupella sp.	
Philonotis fontana	
Plagiomnium insigne	
Pohlia nutans	
Pohlia cruda	
Polytrichum commune	
Polytrichum piliferum	
Racomitrium heterostichum v. sudeticum	
Rhizomnium magnifolium	
Scapania irrigua	
Sphagnum capillifolium (nemoreum)	
Sphagnum squarrosum	
Sphagnum subsecundum	

Fauna

Bald eagles (federally listed - threatened) and northern spotted owls (federally listed - threatened) have both been documented in the Waldo Lake Basin. Neither species is known to nest within the RNA, but they likely use the area for feeding, resting, or dispersal (Steele, pers. comm.). The primary factor limiting nesting in the area by these species is probably the relatively small diameter of trees and loss of canopy cover due to recent fires. The RNA is not within a Designated Late-Successional Reserve (USDI 1994) for northern spotted owls, nor within a designated Critical Habitat Unit defined by the U.S. Fish and Wildlife Service (Steele, pers. comm.).

Wolverines (candidate for federal listing) are known to inhabit the Waldo Lake Basin, and could be expected to use the RNA (Steele, pers. comm.). Based on known home range sizes, the basin could provide habitat for one male and 3 or 4 female wolverines (*ibid.*).

Several species on the State Sensitive spp. List (6/92) are known or expected to occur in the Torrey-Charlton area:

American marten (*Martes americana*)
Barrow's golden eye (*Bucephala islandica*)
Black-backed woodpecker (*Picoides arcticus*)
Bufflehead (*Bucephala albeola*)
Cascade frog (*Rana cascadae*)
Pileated woodpecker (*Dryocopus pileatus*)
Wolverine

Additionally Torrey-Charlton contains potential habitat for other state Sensitive List spp.

Boreal owl
Fisher (*Martes ennanti*)
Flamulated owl (*Otus flameolus*)
Greater sandhill crane (*Grus canadensis tabida*)
Great gray owl (*nebulosa*)
Northern goshawk (*acipiter gentilis*)
Pygmy nuthatch (*Sitta pygmaea*)
Spotted frog (*Rana pretiosa*)
Three-toed woodpecker (*Picoides tridactylus*)
White-headed woodpecker (*Picoides albolarvatus*)
Williamson's sapsucker (*Sphyrapicus thyroideus*)

High Cascades mountain hemlock stands have relatively low terrestrial vertebrate species diversity. Small mammal trapping was done in mid-September 1976 in four separate locales in the RNA (McKee and Franklin 1977). In over 1000 trap-days only 23 animals were captured: 2 Townsend chipmunks (*Eutamias townsendi*), 3 wandering shrews (*Sorex vagrans*), 10

California red-backed voles (*Clethrionomys californicus*) and 8 deer mice (*Peromyscus maniculatus*). Because the sampling was conducted during only one 10-day period, it is not known if small mammal populations are always low within the RNA. Trap lines run in other closed canopy mountain hemlock stands have indicated higher populations (Maser, in McKee and Franklin 1977).

A wide variety of aquatic habitats exists within the Torrey Unit of the RNA from ephemeral ponds to permanent lakes with introduced trout populations. The wetland habitats within the RNA provide significant habitat to amphibians and other aquatic species.

Sedell and Cummins sampled a representative set of lakes and ponds in the Torrey Unit in mid-September 1976 (McKee and Franklin 1977). Examinations and collections were made from the beds of ephemeral ponds, and bottom samples and plankton net tows were made on several lakes. Collections revealed sites with rich aquatic communities which differed widely in phytoplankton, zooplankton and invertebrate composition. A summary of the findings and a map of Torrey Unit showing the location of the sample sites is contained in Appendix C.

Differences in fish stocking programs may account for some of the variation in fauna observed between lakes (McKee and Franklin 1977). This possibility could have important implications for the management of small, high elevation lakes in the Cascades. The RNA will provide the opportunity for further research on the biology of these lakes.

Vegetation trampling by elk along lake and pond shorelines and in the small meadows is very noticeable in some areas of the Torrey Unit (as witnessed in field visits for preparation of this report). There is a lack of consensus between wildlife biologists as to whether current elk populations equal or exceed historical levels (McCabe 1992). Big game populations likely fluctuate with changes in local conditions such as fire, drought and snowpack.

The following table lists the vertebrate species known to utilize Torrey-Charlton RNA for at least a portion of the year. The list is compiled from direct observation of animals or obvious sign. Because comprehensive sampling has not been conducted within the RNA, additional species are likely to be present.

Fauna of the Torrey-Charlton RNA[3]

LATIN NAME	COMMON NAME
AMPHIBIANS	
Family Abystomatidae	
Dicamptodon ensatus	Pacific giant salamander
Ambystoma gracile	northwestern salamander
Family Salamandridae	
Taricha granulosa	rough-skinned newt
Family Ascaphidae	
Ascaphus truei	tailed frog
Family Bufonidae	
Bufo boreus	western toad
Family Ranidae	
Rana cascadae	Cascade frog
BIRDS	
Family Aythyinae	
Anas platyrhynchos	mallard
Bucephala islandica	Barrow's goldeneye
Bucephala albeola	bufflehead
Family Scolopacidae	
Tringa melanoleuca	greater yellowlegs
Actitis macularia	spotted sandpiper
Family Cathartidae	
Carthartes aura	turkey vulture
Family Accipitrinae	
Accipiter cooperii	Cooper's hawk

[3] Terrestrial vertebrates known to utilize the Torrey-Charlton Research Natural Area for at least part of the year. List compiled from field observations of individuals or positive signs (McKee and Franklin 1977, Salix Associates 1992 ,S teele 1995, Bowey 1996). Nomenclature based on Nussbaum et al. (1983) for amphibians, Scott et al. (1987) for birds, and Maser et al. (1984) and Ingles (1965) for mammals.

Family Buteoninae	
Buteo jamaicensis	red-tailed hawk
Family Tetraonidae	
Dendragapus obscurus	blue grouse
Family Picidae	
Colaptes auratus	northern flicker
Dryocopus pileatus	pileated woodpecker
Picoides villosus	hairy woodpecker
Picoides articus	black-backed woodpecker
Family Hirundinidae	
Tachycineta thalassina	violet-green swallow
Family Corvidae	
Perisoreus canadensis	gray jay
Cyanocitta stelleri	Steller's jay
Corvus corax	common raven
Nucifraga columbiana	Clark's nutcracker
Family Paridae	
Parus atricapillus	black-capped chickadee
Parus gambeli	mountain chickadee
Family Sittidae	
Sitta canadensis	red-breasted nuthatch
Family Certhiidae	
Certhia americana	brown creeper
Family Turdidae	
Turdus migratorius	American robin
Ixoreus naevius	varied thrush
Myadestes townsendi	Townsend's solitaire
Family Sylviidae	
Regulus satrapa	golden-crowned kinglet
Regulus calendula	ruby-crowned kinglet
Family Parulidae	
Dendroica townsendi	Townsend's warbler
Family Fringillidae	

Coccothraustes vespertinus	evening grosbeak
Carduelis pinus	pine siskin
Junco hyemalis	dark-eyed junco

MAMMALS

Order Insectivora	
Sorex trowbridgei	Trowbridge shrew
Sorex vagrans	wandering shrew
Order Lagomorpha	
Lepus americanus	snowshoe hare
Ochotona princeps	pika
Order Rodentia	
Clethrionomys californicus	California red-backed vole
Eutamias amoenus	yellow pine chipmunk
Eutamias townsendi	Townsend chipmunk
Neotoma cinerea	bushy-tailed wood rat
Peromyscus maniculatus	deer mouse
Spermophilus lateralis	golden-mantled ground squirrel
Tamiasciurus douglasii	chickaree
Order Carnivora	
Canis latrans	coyote
Lynx rufus	bobcat
Euarctos americanus	black bear
Order Artiodactyla	
Cervus elaphus roosevelti	Roosevelt elk
Odocoileus hemionus columbianus	black-tailed deer
Odocoileus hemionus hemionus	mule deer

Geology

The Torrey-Charlton RNA is located in an area of relatively recent volcanic activity known as the High Cascades province (McKee and Franklin 1977). The geomorphology of the RNA has developed from four separate processes: (1) the formation of Boring Lava and volcanic rocks including cinder cones, scoriaceous materials, andesites and basalts; (2) glaciation; (3) pumice and ash deposition from Mount Mazama (Crater Lake); and (4) recent development of organic and mineral soil deposits (McKee and Franklin 1977).

Recent geologic mapping of the state of Oregon (Walker and MacLeod 1991) shows the majority of the RNA as "basaltic andesite and basalt," and Charlton Butte as "mafic vent complexes." They describe these two formations as follows:

> **Basaltic andesite and basalt (Holocene and Pleistocene)** - Flows and flow breccia dominantly of basaltic andesite containing plagioclase, olivine, and pyroxene phenocrysts and olivine-bearing basalt representing part of the volcanic sequence of the High Cascade Range (Thayer 1937). Unit mostly forms small shield volcanoes, gentle-sided lava cones, and, in places, intracanyon flows.
>
> **Mafic vent complexes (Miocene)** - Intrusive plugs and dike swarms and related near-vent flows, breccias, cinders, and agglutinate of basaltic andesite, basalt, and andesite; commonly in the form of eroded piles of red, iron-stained thin flows, cinders, and agglutinate cut by mafic intrusions.

Soils

Soils within the RNA are generally deep to moderately deep, light colored pumice soils overlaying dark colored, medium-textured soils. Taylor Butte and Charlton Butte have deep light-colored pumice soils over a reddish, cindery, buried soil (McKee and Franklin 1977). According to the Soils Resource Inventory of the WNF (Legard and Meyer 1973, 1990; Peck, pers. comm.), soils within the WNF portion of the RNA are mapped and described as follows:

Landtype 6 Wet non-forest land.
Areas that have high water tables or become seasonally ponded. This mapping unit is highly variable in topographic position and is found in depressions, along streamside areas, and steep sideslopes. Boulder fields are often found within this unit on steep slopes. Vegetation consists of sedges, rushes, grasses, tag alder, devil's club, and willow.

Landtype 92 Cindery (pumice) over sandy-skeletal Typic Cryorthent.
Shallow to moderately deep, nonplastic soils derived from volcanic ejecta (pumice and ash) and glacial till. Surface soils are thin deposits of pumice and ash. Subsoils are thin to moderately thick gravely or cobbly sandy loams and loams. Bedrock is composed of competent, hard

andesite and basalt. Depth to bedrock ranges from less than 3 feet (0.9 m) to 6 feet (1.8 m). This landtype occurs on high elevation glacial flats and benches with slopes less than 35%. Up to 30% rock outcrop occurs within the mapping unit. Elevation ranges from 4300 feet (1311 m) to 6000 feet (1829 m) and supports true fir-mountain hemlock vegetation with some lodgepole pine and western white pine. Soils are excessively drained. Permeability is very rapid in the surface soils and rapid to slow in the subsoils.

Soils in the eastern portion of the RNA within the DNF are mapped and described as follows (Larsen 1976).

Landtype 12 Steep, complex, rocky slopes at high elevations.
Areas with steep, complex, rocky slopes in the Upper Forest Zone. Soils are typically very shallow to moderately deep loamy sands and are underlain primarily by hard basalts and andesites, with inclusions of tuffs, breccias, and glacial till. These sites typically show modification by glacial action. Slope gradients range from 20 to 70%. Primary vegetation is mountain hemlock and true firs.

Landtype 83 High elevation cinder cones.
Well to excessively drained soils formed from a moderately thick layer of pumice and volcanic ash over cinders or an older soil on cinders. Surface soils are typically pumiceous loamy sands, and buried soils are cindery loamy sands. Permeability is very rapid, although infiltration may be limited somewhat by non-wettable materials. Depth to cinders is 18 to 40 inches. Vegetation is composed dominantly of mountain hemlock with some true firs, lodgepole pine, and western white pine. Slopes are single, smooth, and convex with a gradient of 25 to 70%.

Landtype 85 Broad, volcanic ridgetops, benches, and toeslopes of shield and composite volcanoes.
This landtype has well to excessively drained soils formed from a moderately thick layer of pumice and volcanic ash over an older soil on complex volcanic materials. Surface soils are typically pumiceous loamy sands and buried soils are sandy loams. Permeability is very rapid in the surface soils and rapid to very rapid in the buried soil. A non-wettable zone is often present at the surface. Depth to bedrock is 20 to 70 inches. Dominant vegetation is mountain hemlock, true firs, and lodgepole pine. Slopes are smooth to uneven, with gradients of 0 to 30%.

Landtype 6H Gentle to moderately sloping lava plains and toeslopes of buttes.
This landtype has well to excessively drained soils derived from a moderately thick layer of pumice and volcanic ash over residuum on basalts and andesites. Surface soils are typically pumiceous loamy

sands, and the buried soils are sandy loams. Permeability is very rapid in the surface soils and rapid in the buried soil. Depth to bedrock is 24 to 50 inches. Dominant overstory vegetation is mostly white fir and lodgepole pine. Slopes are 0 to 30%.

Soil characteristics for the plateau area and buttes within the RNA were previously described in a manuscript by Manhart (no date, on file at the Supervisor's Office, WNF; excerpted in McKee and Franklin 1977).

Lands

All lands within the RNA boundary are reserved National forest lands. There are no outstanding rights to any lands within the boundary (Pannell, pers. comm.).

Cultural

Native American use of the area was probably not intensive, although an archeological survey has never been conducted there (Winkler, pers. comm.). Molalas probably visited the Waldo Lake basin in the summer to hunt deer and elk, and moved to lower elevations during the winter. Some fishing may have occurred in lakes with native whitefish populations (Winkler, pers. comm.), and stands of large-fruited huckleberry species may have been utilized. Few plants of these species presently exist in the RNA, which is dominated by the small-fruited grouse huckleberry.

Taylor Butte (in the northwest corner of the RNA) was named after Joe Taylor, an early sheep grazer in the area (McFarland, no date). Taylor reported that the area was an old burn when he first saw it (*ibid.*). He was probably referring to the Taylor Burn, which occurred to the northwest of the RNA.

Establishment of the RNA is unlikely to have an impact on either pre-historic or historic cultural values, however, any proposed activities within the RNA should be coordinated with Middle Fork and Bend Ranger District archeologists. Known cultural resource sites on these districts are on file at the district offices.

IMPACTS AND POSSIBLE CONFLICTS

Mineral Resources

No mineral explorations are known to have occurred in the RNA. No significant deposits are known to exist there. The area will be withdrawn from mineral entry after establishment as an RNA (Peck, pers. comm.).

Grazing

Other than occasional sheep grazing in the late 1800's and early 1900's, little grazing is known

to have occurred in the area of the RNA because forage is sparse (McCabe, pers. comm.) and access is somewhat difficult. There is no grazing in the area at present, nor has there been any for many years (*ibid*). No conflicts with grazing will result from the establishment of the RNA.

Timber

Potential annual timber production from suited acres in the RNA is 299,264 cubic feet (8438 cu m) per year. Timber volume production was calculated using the WNF forest-wide average of 112 cubic feet/acre/year (7.8 cu m/ha/yr) (Mayo, pers. comm.). This number overestimates productivity of forested lands in the RNA, which generally have a very low suitability (DNF 1976).

The RNA contains approximately 2672 acres (6600 ha) of forested land. Any land that is rated as suitable for timber production, even though the suitability is very low, is considered commercial forest land (Ragan, pers. comm.). RNA designation will have no effect on timber production because the land was not included in the timber base specified in the LRMP of the WNF or DNF.

Watershed Values

Establishment of the RNA is expected to have a neutral effect on watershed values since disturbance will be minimized.

Recreation Values

There is along history of recreational use in the Torrey-Charlton area. Substantial recreational use occurs within the RNA and can be expected to continue in the future. Four primary types of recreational use occur in the RNA: (1) hiking on the Pacific Crest Trail, trails circling Charlton Butte and to lake campsites near Lily Lake, and trails to lake campsites in the Torrey Unit and other places in the Waldo Lake Wilderness; (2) horse packing on many of the same trails; (3) angling on the lakes and larger ponds in the Torrey Unit; and (4) mountain biking, mainly on roads and trails on the periphery of the RNA. Mountain bikes are prohibited on the Pacific Crest Trail, and in the Waldo Lake Wilderness. Hunting and trapping also occur in the area.

Use of trails in the RNA may be expected to increase unless action is taken to restrict such use. In the Charlton Unit, horse user trails exist today that are not accurately mapped, conversely, a permitted trail is now obsolete. A proposal to reduce the Harralson Horse Camp to a trailhead and move the camp a few miles south to Betty Lake was dropped several years ago because of rider preference for the current location, and lack of funding (Jensen, pers. comm.).

Recreational use of lakes in the Torrey Unit is moderate. Most of this is day use by anglers visiting the lakes which periodically are planted with trout. Two lakes within the RNA are

stocked: Torrey Lake is planted with 2" fingerlings of brook, rainbow, and cutthroat trout, and Cervus Lake is stocked with fingerlings of brook trout. Some impact on the lake-side vegetation is occurring around the east and south sides of Torrey Lake.

Designation of this RNA may impact recreational values or the ability to fully meet the intended desired future condition for the RNA. Though current LRMP management objectives allow existing levels of recreation, actions taken to minimize future recreation use impacts on the RNA could affect future use patterns.

Wildlife and Plant Values

The RNA designation will preserve habitat or natural habitat development processes. Threatened, endangered and other sensitive species which may inhabit or use the area will not be adversely affected by RNA designation. In addition, wetland areas provide important habitat for frogs and salamanders as well as many other species. The recent apparent declines in amphibian populations in many parts of the world, including the Pacific Northwest, underscore the importance of maintaining suitable habitats for these animals (Nussbaum et al. 1983).

Special Management Area Values

The Torrey Unit of the RNA lies wholly within the Waldo Lake Wilderness. Establishment of the RNA will not impact the purposes or management of the wilderness area. No other congressionally-designated special management areas, such as wild and scenic river or national recreation area, occurs within the RNA.

Transportation Plans

No new roads are planned in or adjacent to the RNA. Forest transportation system plans will have no impact on the RNA. Likewise, the RNA designation will have no impact on transportation plans.

MANAGEMENT PRESCRIPTION

The Torrey-Charlton RNA will be managed according to the goals, desired future condition, and standards and guidelines set forth for RNAs in Management Area 4 of the LRMP for the WNF (1990) for the majority of the RNA which is within the Willamette National Forest, and Management Area 2 of the LRMP for the Deschutes National Forest (1991) for the eastern portion of the Charlton Unit, which is within the Deschutes National Forest (Appendix A).

According to the WNF LRMP, RNAs "will be managed to provide for naturally occurring physical and biological processes without undo human intervention." Among the standards and guidelines listed in the LRMP are the following:

- an RNA management plan and implementation schedule for baseline data collection

and periodic remeasurement shall be prepared;

- recreational activities within the RNA including camping, hiking, hunting and trapping would continue. If a conflict is identified with historic recreation use it will be analyzed with the intention of resolving the conflict in a way to meet all interests.
- recreational off-road vehicle use will be prohibited.
- new trail or road construction will not occur unless it enhances RNA values;
- existing trails will be allowed to remain if they do not compromise RNA values;
- introduction of exotic plant and animal species will be prohibited;
- no programmed timber harvest will be scheduled;
- managed or naturally occurring fire may be used to perpetuate a sere provided prudent measures are taken to avoid catastrophe;
- no action will be taken against insects or diseases unless the outbreak threatens to drastically alter the natural ecological processes within the RNA or is an immediate threat to adjacent land.
- the RNA will be recommended for withdrawal from locatable mineral exploration.

Vegetation Management

The Torrey-Charlton RNA will be managed with minimal human interference to preserve and maintain natural plant communities and ecological processes.

Exotic plant species are rare in the RNA at this time, but may appear near the camp and trails used by horse packers and near Taylor Burn Road. Surveys for noxious and undesirable non-native plant species should take place in the RNA, and manual removal methods should be employed when necessary to prevent establishment and spread to other parts of the RNA. Certified weed free feed should be used in Harralson Horse Camp and on trails inside the RNA.

Monitoring. Permanent plots were installed in the Charlton Unit in 1976 (McKee and Franklin 1977). Ongoing monitoring of these plots will provide information about tree growth and mortality and understory vegetation. Plot records are maintained by the LTER project at Oregon State University (Corvallis, Oregon).

Vegetation plots installed in the Torrey Lake Mire by Frenkel et al. in 1976 were resampled in 1993 (McCain, pers. comm.).

Roads. The roadsides adjacent to the RNA will not be developed in a way which will increase use of the RNA by recreationists. Exceptions would be development of parking facilities at existing trailheads, for safety reasons or to prevent environmental degradation. The use of off-road vehicles in the RNA is prohibited (at least on the portion of the RNA within the WNF) and will be discouraged.

Trails. Developments along trails in the RNA which would tend to increase the duration of stay of hikers and riders within the RNA will be avoided. Appropriate signs will be installed to advise hikers and riders of the reserved nature of the area. Proposed additions or alterations to the existing system of trails will be planned cooperatively by the WNF, DNF, and the Pacific Northwest Research Station. The existing trails into Torrey Lake should not be signed.

Wildlife. Impacts of fish stocking on natural aquatic ecosystems should be evaluated. Alterations in fish management programs, if necessary, will be developed cooperatively by the Oregon Department of Fish and Wildlife, the WNF, the DNF, and the Pacific Northwest Research Experiment Station.

ADMINISTRATION RECORDS AND PROTECTION

The following principal contacts are responsible for the administration and protection of the Torrey-Charlton RNA.

1. For administration and protection of the physical area:

   District Ranger
   Middle Fork Ranger District
   49098 Salmon Creek Road
   P.O. Box 1410
   Oakridge, Oregon 97463

2. For approval and coordination of research within the RNA, maintenance of the RNA databases and of lists of herbarium and animal species samples collected in the RNA:

   Director
   Pacific Northwest Research Station
   333 S.W. First Avenue
   P.O. Box 3890
   Portland, Oregon 97208

   RNA Database Coordinator
   Pacific Northwest Research Station
   Forestry Sciences Lab
   3200 Jefferson Way
   Corvallis, Oregon 97331

Records for the Torrey-Charlton RNA will be maintained in the following offices:

Regional Forester
Pacific Northwest Region
333 S.W. First Avenue
P.O. Box 3623
Portland, Oregon 97208

Director
Pacific Northwest Research Station
333 S.W. First Avenue
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Forest Supervisor
Willamette National Forest
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Eugene, Oregon 97440

District Ranger
Middle Fork Ranger district
49098 Salmon Creek Road
P.O. Box 1410
Oakridge, Oregon 97463

RNA Coordinator
Pacific Northwest Research Station
Forestry Sciences Lab
3200 Jefferson Way
Corvallis, Oregon 97331

ARCHIVING

The Pacific Northwest Research Station Director will establish and maintain a system for archiving data and reports from the RNA that will facilitate the exchange of information among Research Stations and scientists. Data from the RNA will be archived in the Forest Science Data Bank (FSDB) at the Forest Science Department, Oregon State University, Corvallis, Oregon under cooperative agreement between the FSDB and the Forest Service.

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PERSONAL COMMUNICATIONS

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Mike Ragan
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Bend Ranger District (DNF)
Marv Lang
Eileen Spencer

Beaverhead National Forest
Chuck Bowey

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[4] Reference list compiled during the summer of 1992 by JeriLynn Peck of the WNF Supervisor's Office.

APPENDICES

A - Excerpts from Land and Resource Management Plan (Willamette National Forest 1990, Deschutes National Forest 1991).

B - Excerpt from Oregon Natural Heritage Plan (Natural Heritage Advisory Council to the State Land Board 1988).

C - Phytoplankton, zooplankton and invertebrate species list from the Torrey Unit (Cummins, K. and J. Sedell, from McKee and Franklin 1977)

D - Notes on Non-forested Plant Communities of Torrey-Charlton RNA (Salix Associates 1992)

E - Boundary description for Torrey Charlton Research Natural Area, signed Surveyor's letter.

MANAGEMENT AREA 4

Emphasis: Research Natural Areas

Management Goals

The goals of this management area are to preserve naturally occurring physical and biological units where natural conditions are maintained insofar as possible for the purposes of:

- Comparison with those lands influenced by man.
- Provision of educational and research areas for ecological and environmental studies.
- Preservation of gene pools for typical as well as rare and endangered plants and animals.

Desired Future Condition

Research Natural Areas (RNAs) will be managed to provide for naturally occurring physical and biological processes without undue human intervention. Plant and animal communities native to an area will be allowed to evolve unaltered, serving as a gene pool source and as a baseline for measuring long-term ecological change. RNAs will provide for nonmanipulative environmental research, observation and study. They will serve as control areas for comparing results from manipulative research, and for monitoring effects of resource management techniques and practices. Areas will preserve a wide spectrum of pristine values or natural settings that have unique educational and scientific interest. No programmed timber harvest will occur. Access will be limited to trails and roads that do not compromise the objectives of the RNA.

Description

This prescription applies to existing RNAs and areas recommended for inclusion during the life of this Plan. The sites designated as Research Natural Areas include:

Area Name	Acres	District	Date Established
Ollalie Ridge	720	McKenzie	1963
Gold Lake Bog	463	Oakridge	1965
Wildcat Mountain	1,000	Sweet Home	1968
Middle Santiam	1,145	Sweet Home	1979
Hagan Block	1,280	Blue River	1990
McKenzie Pass	1,195	McKenzie	1990
Rigdon Point	300	Rigdon	1990
Three Creeks	661	Sweet Home	1990
Torrey-Charlton	2,154	Oakridge	1990
Wildcat Mtn Addition	384	Sweet Home	1990

Site-specific resource values and management activities will be prescribed in individual Establishment Records. The Regional Forester and Pacific Northwest Station Director will prepare an Establishment Report for each recommended area; this document will describe features, objectives for establishment, and specific management direction.

Standards and Guidelines

PLANNING

MA-4-01 **A management plan shall be prepared for each RNA to fulfill objectives of the Establishment Report.**

MA-4-02 **An implementation schedule for baseline data collection and periodic remeasurement shall be prepared for each RNA.** The baseline data will serve as a benchmark for research needs as well as for long-term assessments of changes in the forest ecosystem.

MA-4-03 **Ecological responses to management activities or natural disturbances on or adjacent to RNAs should be measured when appropriate. Studies may be prioritized based on the significance of the potential impact.**

RECREATION MANAGEMENT

MA-4-04 **Area management practices should result in a physical setting that meets or exceeds the ROS class of Roaded Natural.**

MA-4-05 **Recreation activities and uses within RNAs shall be discouraged.** This includes overnight camping; recreation use within 200 feet of lakes, ponds and streams; and pack and saddle stock use.

MA-4-06 **All recreation ORV use shall be prohibited.**

MA-4-07 **Hunting and trapping shall be discouraged.**

MA-4-08 **If other recreation use threatens research or education values, closures or permits should be instituted.**

MA-4-09 **Educational use of an RNA should generally be directed toward the graduate level, but may be approved for any educational level.**

MA-4-10 **On-site interpretive or demonstrative facilities shall be prohibited.**

MA-4-11 **Publicity that would attract the general public to the RNA shall be avoided.**

FOREST TRAIL SYSTEM

MA-4-12 **New trails shall not be constructed unless they are needed for research purposes.** Existing trails may be allowed to remain as long as the RNA objectives are not compromised.

WILDERNESS

MA-4-13 **If an RNA is established within wilderness, wilderness management direction shall take precedence.**

SCENIC RESOURCES

MA-4-14 **All design and implementation practices should be modified as necessary to meet the VQO of Preservation.**

WILDLIFE MANAGEMENT

MA-4-15 **Introduction of exotic plant and animal species shall not be permitted.** Reintroduction of former native species, including fish stocking, may be permitted if the objectives of the RNA are met.

MA-4-16 **Control of excessive animal populations should be evaluated and control activities may be implemented where such populations threaten the RNA objectives.**

Habitat improvement projects may be approved if they meet the objectives of the RNA.

TIMBER MANAGEMENT

MA-4-17 **No programmed harvest shall be scheduled.**

MA-4-18 **Cutting and removal of all vegetation, including firewood, shall be prohibited, except as part of approved scientific investigation.**

MA-4-19 **Felled trees shall remain in place, unless lying across trail or road. Trees shall not be removed.** Hazard tree felling may be permitted along boundary trails or roads for safety.

FIRE MANAGEMENT

MA-4-20 **If fire is used to perpetuate a sere, it should mimic a natural fire, but with prudent measures to avoid catastrophe.** Managed or naturally occurring fire may be used to perpetuate the sere and thus the cell that the RNA is meant to represent.

MA-4-21 **Suppression strategies, practices and activities shall be limited to those which have minimal impacts to RNA values.**

MA-4-22 **Chemical fire retardants shall be avoided.**

MA-4-23 **Fuels normally should be allowed to accumulate at natural rates unless they threaten the objectives of the RNA.**

INTEGRATED PEST MANAGEMENT

MA-4-24 No action shall be taken against insects or diseases unless the outbreak threatens to drastically alter the natural ecological processes within the RNA or is an immediate threat to adjacent lands.

LANDS

MA-4-25 Rights-of-way easements, including utility corridors, existing before RNA establishment shall be honored. Upgrading that would compromise the objectives of the RNA should be discouraged.

MA-4-26 FERC licenses or permits that compromise the objectives of the RNA shall not be recommended.

MA-4-27 All lands shall be retained and private inholdings acquired.

MINERALS AND ENERGY

MA-4-28 RNAs shall be recommended for withdrawal from locatable mineral exploration.

MA-4-29 RNAs may be recommended for lease issuance with a no surface occupancy stipulation.

FACILITIES

MA-4-30 New trail or road construction should not occur, except to enhance RNA values.

MA-4-31 Construction of new facilities shall be prohibited. Existing facilities may be allowed to deteriorate without replacement. Temporary research facilities and installations may be approved under permit.

Management Area 2 Research Natural Areas

Goal

To preserve examples of naturally occurring ecosystems in an unmodified condition for nonmanipulative research and education.

General Theme and Objectives

Research Natural Areas (RNAs) are managed to preserve the natural ecological succession. All Establishment Reports for these areas must be approved by the Chief of the Forest Service.

Research on Research Natural Areas must be essentially nondestructive in character; destructive analysis of vegetation is generally not allowed nor are studies requiring extensive forest floor modification or extensive soil excavation. Collection of plant and animal specimens should be restricted to the minimum necessary for provision of vouchers and other research needs and in no case to a degree which significantly reduces species population levels. Such collection must also be carried out in accordance with applicable State and Federal agency regulations. In consultation with Forest Supervisors and District Rangers, the Director of the Pacific Northwest Forest and Range Experiment Station is responsible for approving management implementation plans and for overseeing and coordinating approved research on all research natural areas. District Rangers administer, protect, and manage established research natural areas and report through the Forest Supervisors to the Station Director any planned activities on, or immediately adjacent to, research natural areas.

The purpose of RNAs is to provide:

1. Baseline areas against which effects of human activities can be measured.

2. Sites for study of natural processes in undisturbed ecosystems.

3. Gene pool preserves for all types of organisms.

This Management Area contains a total of 5.7 M acres. 5.7 M acres were identified as not suitable for timber production during the analysis of the management situation in accordance with CFR 219.14(a).

Standards and Guidelines

Recreation

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

M2-2 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.

Timber

M2-4 Timber harvesting is not allowed in a Research Natural Area. No control of insect or disease should be instituted.

M2-5 Firewood cutting is not permitted.

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

Range

M2-7 Grazing will only be allowed when the Regional Forester and Director of the Pacific Northwest Forest and Range Experiment Station authorize such a management practice to preserve some representation of the vegetation for which the natural area was originally created.

M2-8 Where Research Natural Areas 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.

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

Wildlife

M2-10 The Regional Forester and the Director of the Pacific Northwest Forest and Range Experiment Station may authorize management practices to control excessive non-game animal populations. This would only be done in cases where these populations threaten the preservation of some representation of vegetation for which the natural area 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 Experiment 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.

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 Management Area 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.

Fire Management

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 Research Natural Area. 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 Research Natural Area 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 they support the management objectives of the Area and are approved by the Experiment Station Director and the Forest Supervisor.

Forest Health

M2-21 Monitor the areas to detect pest problems which could destroy the Research Natural Areas 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.

Three Sisters Wilderness

Originally dedicated as a 191,000 acre primitive area in 1937, the Three Sisters Wilderness area now encompasses 283,402 acres. Some major boundary points for the Deschutes are from a couple of miles north of Black Crater to the north, near road 4601-370 to the southeast of Three-Creek Lake, Irish-Taylor Lakes to the south and the Cascade Crest or Deschutes County Line to the west.

Hikers and horseback riders can choose from approximately 433 miles of trails in this Wilderness. This includes over 42 miles of the Pacific Crest Trail. Trailheads are located on all sides of this Wilderness, in both the Deschutes and Willamette National Forests.

The dominant figures are the Three Sisters and Broken Top Mountain which exemplify the changes glaciers and time can bring to a volcano. The oldest of the four peaks, North Sister and Broken Top have both been severely eroded by glaciers. These two peaks form a sharp contrast to South Sister, the youngest of the four, which, because of light erosion, still retains its original conical shape. All four of these peaks are popular with mountain climbers.

Over 100 lakes, many formed by receding glaciers, dot the Wilderness. Many of these lakes are annually stocked with brook and rainbow trout.

In the summer months, black-tailed deer, mule deer, and Roosevelt elk roam the area. Smaller mammals are present year-round include pine marten, mink, badgers, squirrels, snow-shoe hares, yellow-bellied marmots, and pika. Many birds, including the Clark's nutcracker, gray jay, hairy woodpecker, and dark-eyed junco are common.

Nearly 200,000 acres of this Wilderness consist of forests and woodlands. On the west side, in the lower elevations you will find stands of Douglas fir. At higher elevations, on both sides of the Cascade Crest, stands of mountain hemlock and lodgepole pine are common. Alpine meadows contain a wide array of wildflowers during the short growing season.

Figure 3-5 Acres in Wilderness (Acres are from Publication 383, Land areas of The National Forest System as of 9/30/88)

Wilderness Area	Acres
Mt. Jefferson	32,734
Mt. Washington	13,563
Three Sisters	92,706
Diamond Peak	32,964
Mt. Thielsen	5,911
Total	**177,878**

Research Natural Areas

There are two designated Research Natural Areas (RNAs) on the Forest. The Metolius RNA is located within the Sisters Ranger District and contains 1,318 acres. It is occupied by the following plant communities: Ponderosa/bitterbrush/fescue, bitterbrush/needlegrass on volcanic ash, manzanita/snowbrush/needlegrass on volcanic ash, Ponderosa/snowbrush/chinquapin, and snowberry/pinegrass.

The 1,357 acre Pringle Falls RNA is located within the Experimental Forest on the Bend Ranger District. It is occupied by Ponderosa pine/ bitterbrush and lodgepole pine/bitterbrush communities.

During 1980, a survey was conducted to review the 11 proposed RNA's designated in the 1978 Forest Management Plan. It was determined that seven meet the Regional needs and requirements for RNAs. Figure 3-6 describes these candidates. For more detailed information see Appendix E.

Figure 3-6 Potential Research Natural Area Descriptions

Name	Acres	District	Meets Regional Need For:
Little Cache Mtn.	660	Sisters	Lakes at moderate elevation surrounded by mixed conifer forests.
Cultus River	300	Bend	Large, upwelling cold spring.
Katsuk Butte	990	Bend	High elevation, undisturbed entirely forested cinder cone.
Many Lakes	1,075	Bend	Typical bog areas, sub-alpine permanent ponds, alpine lakes and ponds and high elevation lodgepole pine communities.
Torrey-Charlton	500	Bend	Mountain hemlock plant community.
Mokst Butte	890[2]	Ft Rock	Entirely forested cinder cone with white fir and a recent lava flow.
Wechee Butte	425	Ft Rock	Undisturbed entirely forested cinder cone with varying topography.

[2]500 of these acres lie within the Lava Cast Forest Special Interest Area.

TERRESTRIAL ECOSYSTEMS - West Slopes and Crest, Oregon Cascades

Agency	Priority	Element Name	Present Representation
FS	M	44. White fir at high elevation with Shasta red fir, mountain hemlock, Pacific silver fir and white pine.	
	+	45. Shasta red fir forest in the high Cascades.	Wickiup Springs PRNA
FS	M	46. Shasta red fir-Alaska yellow cedar forest.	Sky Lakes Wilderness**
	+	47. Mountain meadow-forest mosaic in the southern portion of the western Cascades.	Cougar Butte PRNA
		Mountain Hemlock Zone	
FS	L	48. Mountain hemlock apine park.	
FS	M	49. Mountain hemlock/woodrush community.	
FS	L	50. Mountain hemlock/big huckleberry community.	Gold Lake Bog RNA**
FS	L	51. Mountain hemlock/rhododendron community.	
	+	52. Mountain hemlock/grouse huckleberry community.	Torrey-Charlton PRNA
FS	H	53. Mountain hemlock/dwarf bramble-big huckleberry community.	
FS	M	54. Mountain hemlock forest in the southern Cascades with rhododendron, princess pine and blackberry.	
FS	M	55. Mountain hemlock forest in the southern Cascades with manzanita, grouse huckleberry and big huckleberry on pumice.	
		Subalpine and Alpine Communities	
	+	56. Whitebark pine in the high Cascades.	Llao Rock PRNA
FS	L	57. Subalpine meadow community mosaic in the high Cascades (with as many major communities as possible).	Three Sisters Wilderness** Mt. Jefferson Wilderness**

PVT = Private Land ST = State Land FS = U.S. Forest Service NPS = National Park Service
ACE = Army Corps of Engineers FWS = US Fish & Wildlife Service BLM = Bureau of Land Management

P.. = Proposed.. RNA = Research Natural Area ACEC = Area of Critical Environmental Concern SIA = Special Interest Area
TNC = Nature Conservancy Preserve NHCA = Natural Heritage Conservation Area RSNA = Registered State Natural Area

H = High Priority M = Medium Priority L = Low Priority + = Adequately represented on proposed but not established area
* = Adequately represented in the area named ** = Partially protected due to designation, size, or quality at this site

AQUATIC ECOSYSTEMS - West Slope and Crest, Oregon Cascades

Agency	Priority	Element Name	Present Representation
	+	13. Subalpine lake in northern Cascades.	Big Bend Mtn. PRNA
	+	14. Subalpine lake in southern Cascades.	Torrey-Charleton PRNA
FS	L	15. Alpine lake.	Three Sisters Wilderness**
	+	16. Low elevation permanent pond.	Red Ponds PRNA
	*	17. Subalpine permanent pond.	Gold Lake Bog RNA Torrey-Charleton PRNA
FS	L	18. Alpine permanent pond.	Three Sisters Wilderness**
	+	19. Montane vernal pond.	Big Bend Mtn. PRNA Torrey-Charleton PRNA
		Palustrine	
ST,FS	H	20. *Sphagnum* bog in northern Cascades	
	+	21. *Sphagnum* bog in southern Cascades	Sphagnum Bog PRNA
	+	22. Sedge fen complex in northern Cascades.	Big Bend Mtn. PRNA
	*	23. Sedge fen, willow carr, and western huckleberry vegetation complex in southern Cascades.	Gold Lake Bog RNA
		Special Types	
ST,FS	H	24. Flowing and pooled hot springs complex.	
	+	25. Flowing and pooled cold springs complex.	Big Bend Mtn. PRNA Bull Run RNA

PVT = Private Land ST = State Land FS = U.S. Forest Service NPS = National Park Service
ACE = Army Corps of Engineers FWS = US Fish & Wildlife Service BLM = Bureau of Land Management

P.. = Proposed.. RNA = Research Natural Area ACEC = Area of Critical Environmental Concern SIA = Special Interest Area
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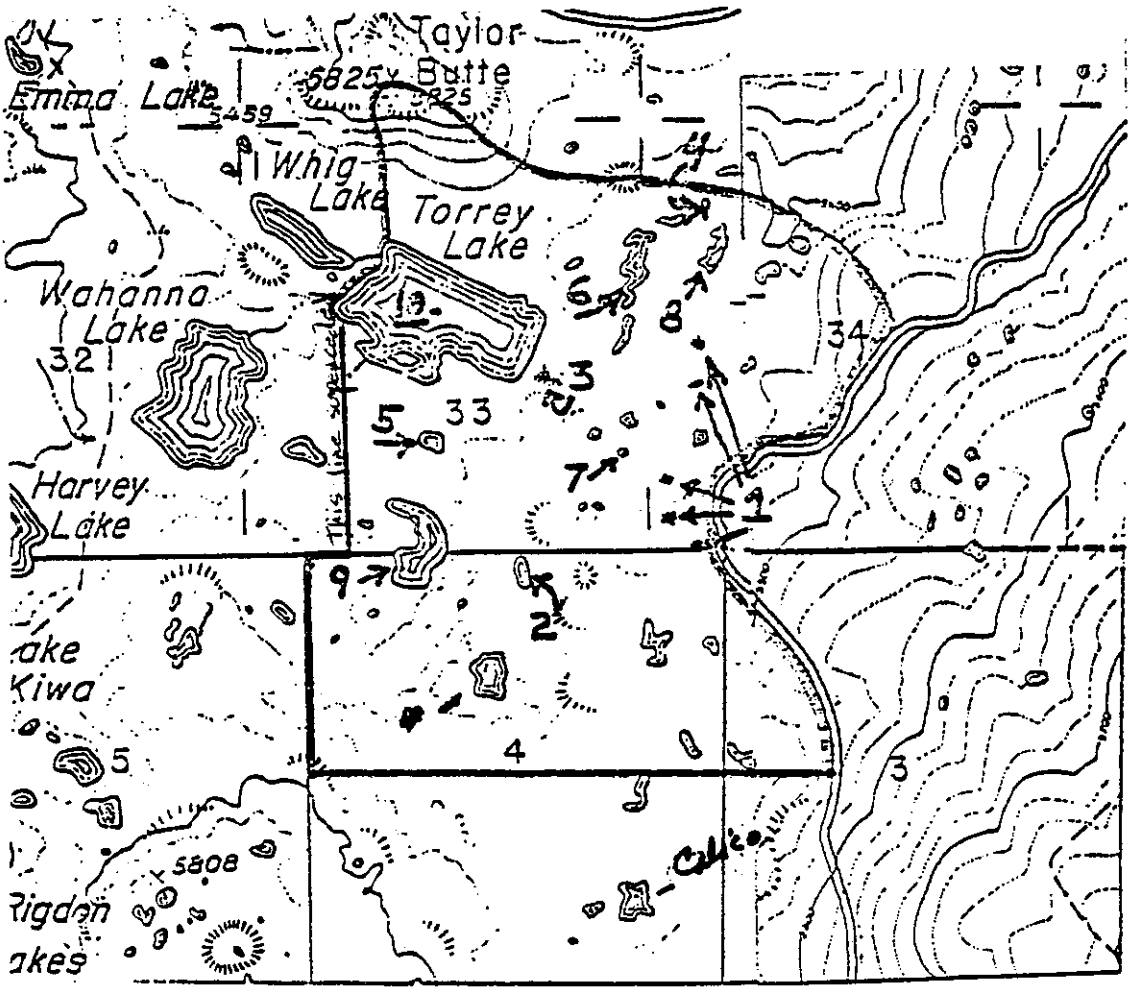
H = High Priority M = Medium Priority L = Low Priority + = Adequately represented on proposed but not established area
* = Adequately represented in the area named ** = Partially protected due to designation, size, or quality at this site

APPENDIX C



Key to lakes and ponds in Torrey Unit sampled in September 1976 by Drs. Sedell and Cummins.

1. Ephemeral ponds, drying up in spring or summer
2. Elk Print Lake
3. Pika bog
4. O'er the Ridge Lake
5. Pond 2
6. North Torrey Lake
7. Let's Wait Lake
8. Priscilla Lake
9. Cervus Lake
10. Torrey Lake

APPENDIX C

DRAFT ESTABLISHMENT REPORT FOR TORREY-CHARLTON RESEARCH NATURAL AREA, WILLAMETTE AND DESCHUTES NATIONAL FORESTS

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976

By
Dr. Kenneth Cummins, Limnologist, Michigan State University, East Lansing, Michigan
and
Dr. James Sedell, Limnologist, Oregon State University, Corvallis, Oregon

The numbers in parentheses refer to the location of the lake or pond sampled.

I. Emphemeral Ponds (1)

A. Ponds which dry in spring. These early-drying ponds held little evidence of aquatic forms, although when water is present, interesting communities are probably present.

1. Phytoplankton. When water is present, at least motile flagellate algae.

2. Zooplankton. When water is present, probably Protozoa and Rotifera and possibly fairy shrimp(Branchipoda).

3. Benthos. A few inactive whirligig beetles (Coleoptera-Grinidae) were found in the dampest spots under logs.

B. Ponds which dry in summer. These late-drying ponds held aquatic insects in several stages in damp places under logs and rocks.

1. Phytoplankton. More diverse than A when water is present. Dried mats of filamentous green algae were observed.

2. Zooplankton. More diverse than A when water is present. Undoubtedly Protozoa, Rotifera and certain microcrustacea.

3. Benthos (in damp locations)
Insecta
Odonata
Anisoptera (dragonflies)
Libellulidae mymphs
Trichoptera
Lepidostomatidae (undet. adults)
Phryganeidae (undet. adults)
Limnephilidae
Lenarchus (eggs, and early instar larvae?), prob. passes the fall and winter primarily as eggs
Coleoptera (beetles)
Gyrinidae (whirligig beetles)

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

II. Shallow Ponds

A. Elk Print Lake (2)
- Insecta
  - Odonata
    - Anisoptera
      - Libellulidae-nymphs
      - Aeschnidae-nymphs
    - Hemiptera
      - Notonectidae (back swimmers), probably *Buenoa*-nymphs
    - Trichoptera
      - Phryganeidae
        - *Banksiola*-early instars
      - Limnephilidae
        - Halesochila -probably taylori
    - Coleoptera
      - Dytiscidae
        - *Bidessus*-adults
    - Diptera
      - Chironomidae (midges)
      - Chaoboridae (phantom midges)
        - *Chaoborus*
    - Oligochaeta

1. Phytoplankton
   - Chlorophyceae
     - Undet. filamentous and colonial greens
     - Desmidaceae
       - *Staurastrum*
       - Cosmarium
     - Diatoms
       - *Navicula*-type
       - *Cymbella*
       - *Gomphonema*
       - *Eunobia*
       - **Melosira*

2. Zooplankton
   - Copepoda (Copepods)
     - *Cyclopoida
   - Cladocera (water fleas, etc.)
     - *Bosmina*
     - *Chydorus*

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

II. Shallow Ponds (continued)

B. Pika Bog (3) - Dormant forms indicated by *

1. Phytoplankton
Chlorophyceae
Undet. filamentous and colonial greens
Desmidaceae
Staurastrum
Cosmarium
Diatoms
Navicula-type
Cymbella
Gomphonema
Eunobia
*Melosira

2. Zooplankton
Copepoda (Copepods)
*Cyclopoida
Cladocera (water fleas, etc.)
Bosmina
Chydorus

3. Benthos
Insecta
Odonata
*Anisoptera
Libellulidae
Aeschnidae
Trichoptera
Limnephilidae
H. taylori? - larvae
Undet. early instar larvae
Coleoptera
Dytiscidae, probably Agabus-adults
Gyrinidae
Gyrinus-adults
Chrsomelidae
**Galerucella* - All life stages (on floating leaves of rooted aquatic plants)
Diptera
Chironomidae
Mollusca
Pelecypoda (clams)
Sphaeriidae (fingernail clams), probably Pisidium

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

II. Shallow Ponds (continued)

C. O'er the Ridge Lake (4)

1. Phytoplankton
*Desmidaceae

2. Zooplankton
Rotifera
Keratella cochlearis
Polyarthra
Conochilus unicornis
Copepoda
Diaptomus
Cladocera
Holopedium

3. Benthos
Insecta
Trichoptera
Limnephilidae
H. tayloria?-larvae
Leptoceridae-undet. larvae
Coleoptera
Chrysomelidae
**Galerucella*-all stages

D. Pond 2 (5)

1. Phytoplankton
Desmidaceae
Triplocerus
Diatoms

2. Zooplankton
Protozoa
Undet. ciliates
Rotifera
**K.cochlearis*
Polyarthra

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

II. Shallow Ponds (continued)

D. Pond 2 (5) (continued)

3. Benthos
Insecta
Odonata
Anisoptera
Aeschnidae-nymphs
Libellulidae-nymphs
Emphemeroptera (mayflies)
Baetidae
Callibaetis
Hemiptera
Notonectidae
Notonecta-nymphs
Gerridae
Gerris-adults
Megaloptera (helgramites, etc.)
Sialidae (alder flies)
Sialis probably *rotunda*-larvae
Trichoptera
Phryganeidae
Banksiola crotchi-larvae
Agryonia improba-larvae
Diptera
Chironomidae
Chaoboridae
Chaoborus
Mollusca
Pelecypoda
Sphaeriidae
Pisidium?

III. Lakes

A. North Torrey Lake (6)

1. Phytoplankton
Demidaceae

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

III. Lakes (continued)

A. North Torrey Lake (6) (continued)

2. Zooplankton
   - Rotifera
     - *C. unicornis*?
   - Copepoda
     - **Diaptomus*
   - Cladocera
     - *Bosmina*
     - *Daphnia*

3. Benthos
   - Insecta
     - Odonata
       - Anisoptera
         - Aeschnidae
       - Zygoptera (damselflies)
       - *Coenagrionidae
     - Ephemeroptera
       - Baetidae
         - *Callibaetis*-nymphs
     - Megaloptera
       - Sialidae
         - *S. rotunda*?-larvae
     - Trichoptera
       - Phryganeidae
         - *B. crotchi*-early instar larvae
       - Leptoceridae
         - Mystacides alafimbriata-early instar
       - Limnephilidae, probably *Clistoronia*, *Halesochila* early instar larvae
   - Amphipoda
     - Gammaridae

B. Let's Wait Lake (7)

1. Phytoplankton
   - Chlorophyceae
     - Undet. colonial and filamentous forms
     - Desmidaceae
       - ***Cosmarium***
   - Diatoms
     - Undet. pennate forms

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

III. Lakes (continued)

B. Let's Wait Lake (7) (continued)

2. Zooplankton
Rotifera
**K. cochlearis*
Asplanchana
Polyarthry
Copepoda
Diaptomus
Cyclopoida
Cladocera
Chydorus

3. Benthos
Insecta
Odonata
Anisoptera-undet. adults
Trichoptera
Phryganeidae
B. crotchi-larvae
Limnephilidae
**H. taylori*-larvae
Undet. larvae
Coleoptera
Chrysomelidae
Galerucella
Diptera
Chironomidae
Chaoboridae
Chaoborus

C. Priscilla Lake (8)

1. Phytoplankton
Chlorophyceae
*Undet. colonial and filamentous forms
Desmidaceae
Arthrodesmus
Diatoms
Navicula
Melosira
Synedra
Cymbella
Eunotia

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

III. Lakes (continued)

C. Priscilla Lake (8) (continued)

2. Zooplankton
   - Rotifera
     - **K. cochlearis*
     - **C. unicornis*
       - *Polyar thra vulgaris*
       - *Collotheca pelagica*
   - Copepoda
     - *Diaptomus*
   - Cladocera
     - *Holopedium*

3. Benthos
   - *Porifera-undet. erect sponges
   - Insecta
     - Odonata
       - Anisoptera
         - Libellulidae
           - *Cordulia*?
         - Aeschnidae
           - *Aeschna*?
       - Zygoptera
         - Coenagrionidae
           - *Enallagma*
     - Ephemeroptera
       - Baetidae
         - *Callibaetis*
     - Megaloptera
       - Sialidae
         - *S. rotunda*
     - Trichoptera
       - Phryganeidae
         - *A. improba*-larvae
       - Limnephilidae
         - Halesochila-early instar larvae
         - Undet. larvae
       - Leptoceridae
         - *Oecetis*-larvae
         - *M. alafimbriata*-larvae

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

III. Lakes (continued)

C. Priscilla Lake (8) (continued)

3. Benthos (continued)

Coleoptera
Dytiscidae
prob. *Hydaticus*-larvae
Diptera
Chironomidae-larvae
Chaoboridae
Chaoborus-larvae
Mollusca
Pelecypoda
Sphaeriidae
Pisidium?

D. Cervus Lake (9)

1. Phytoplankton-not sampled

2. Zooplankton
Copepoda
**Diaptomus*

3. Benthos
Porifera-undet. erect sponges
Insecta
Odonata
Anisoptera-nymphs
Ephemeroptera
**Callibaetis*-nymphs
Megaloptera
Sialidae
S. rotunda-larvae
Trichoptera
Phryganeidae
B. crotchi
Limnephilidae
Undet. early instar larvae
Diptera
Chironomidae-larvae
Chaoboridae
Chaoborus-larvae

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

III. Lakes (continued)

E. Torrey Lake (10)

1. Phytoplankton
   - Chlorophyceae
     - *Undet. colonial greens
   - Diatoms
     - Navicula
     - *Gomphonema*
     - *Cymbella*
     - *Pinnulcuria*

2. Zooplankton
   - Copepoda
     - **Diaptomus*
   - Cladocera
     - *Daphnia*
     - *Bosmina*

3. Benthos
   - Porifera-undet. erect and prostrate sponges
   - Insecta
     - Odonata
       - Anisoptera
         - Aeschnidae-nymphs
         - Libellulidae-nymphs
           - prob. Cordulia
       - Hemiptera
         - Gerridae
           - Gerris (*remigis*)-adults
       - Ephemeroptera
         - Baetidae
           - **Callibaetis*-nymphs
       - Megaloptera
         - Sialidae
           - *S. rotunda*-larvae
       - Trichoptera
         - Limnephilidae
           - *Halesochila*-early instar larvae
           - *undet. early instar larvae
         - Leptoceridae
           - *M. alafimbriata*-larvae

A SUMMARY OF COLLECTIONS MADE IN THE TORREY-CHARLTON RESEARCH NATURAL AREA, TORREY UNIT, ON SEPTEMBER 14-16, 1976 (continued)

III. Lakes (continued)

E. Torrey Lake (10) (continued)

3. Benthos (continued)

Coleoptera
Chrysomelidae
Bonacia-larvae and pupae in roots of sedges, adults on emergent plants
Gyrinidae
Gyrinus
Diptera
Chironomidae
Chaoboridae
Chaoborus
Amphipoda
Gammaridae
Hiruninea
Glossophonidae

APPENDIX D

Notes on
Non-forested Plant Communities Of
Torrey-Charlton RNA[1]

A. Open water: low fertility, few vascular plants; includes larger, deeper lakes (e.g. Torrey Lake, Cervus Lake, and unnamed lake in southern part of Torrey Unit)

B. Closed basins

1. Ponds

sparse aquatics (1 or more):

Nuphar polysepalum
Sparganium angustifolium
Eleocharis acicularis
Sagittaria cuneata
Utricularia vulgaris
aquatic moss

shorelines:

Juncus balticus (uncommon)
Carex vesicaria
Carex aquatilis
Carex lenticularis
Juncus filiformis

2. Wet basins, unconsol. bottom w/ or w/o standing water

Nuphar polysepalum
Carex vesicaria
perimeter species, when present, similar to shoreline species in #1.
scattered *Sphagnum* development

3. Meadows (also occur around edges of wet basins)

Deschampsia cespitosa
Calamagrostis canadensis
mosses around perimeter
Carex arcta, Vaccinium occidentale may dominate patches

4. Mosses: small partly shaded basins dominated solely by mosses (*Polytrichum* sp.); don't hold much water

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[1] Communities observed by Salix Associates in the summer of 1992.

C. Peat-rich mire with incised stream channel (east of Torrey Lake)

Sphagnum sp.
Kalmia microphylla
Vaccinium occidentale
Carex luzulina
Calamagrostis canadensis (margins)

D. Talus: east and northeast slopes of Charlton Butte

Juncus parryi
Holodiscus dumosus
Carex pensylvanica
Sambucus racemosa

E. Rocky ridges, ledges, scree (red slopes on southwest slopes of Charlton Butte)

Penstemon cardwellii
Arctostaphylos nevadensis
Arctostaphylos patula
Cheilanthes gracillima
Holodiscus dumosus
Ribes lacustre

F. Bracken meadow

Pteridium aquilinum
Stipa occidentalis
Carex pensylvanica

G. Forest openings (*Phellinus* pockets, blowdown areas)

Carex rossii
Carex pensylvanica
Juncus parryi
tree regeneration

H. Springs-creek-meadow complex: (east of C.B.) very diverse wetland communities observed.

Picea engelmannii (scattered around spring)
Vaccinium occidentale
Kalmia microphylla
Glyceria elata
Carex sitchensis
Carex luzulina
Caltha biflora
Trifolium longipes

Calamagrostis canadensis
mosses (diverse assemblage)
Calamagrostis inexpansa (meadow)
Deschampsia cespitosa (meadow)

Appendix E
Boundary Description

TORREY UNIT - TORREY CHARLTON RESEARCH NATURAL AREA

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
Waldo Mtn.	POB			Beginning at the east 1/4 corner of Section 4 T. 21 S. R. 6 E. W.M.
		N88/12/42W	5190.1	
	2			West 1/4 corner of Section 4 T. 21 S. R. 6 E. W.M.
		N01/24/33W	2698.9	
	3			Northwest corner of Section 4 T. 21 S. R. 6 E. W.M.
		N06/48/34W	1325.0	Ascend
	4			A point 50 feet westerly from and perpendicular to the most westerly edge of a small lake northerly of the northwest corner of Section 4.
		N19/53/43E	2061.2	Ascend
	5			A point 50 feet westerly from and perpendicular to the most westerly edge of Torrey Lake.
		N41/12/08E	108.0	
	6			
		N74/30/46E	224.8	
	7			
		N32/59/31E	138.7	
	8			50 feet northwesterly from and parallel with the shoreline of Torrey Lake.
		N66/53/52E	209.3	
	9			
		N42/01/31E	177.8	
	10			
		N01/43/02E	157.7	
	11			
		N36/58/22E	158.6	
	12			
		N54/06/08E	161.7	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	13			A point 50 feet northerly from and perpendicular to the most northerly edge of Torrey Lake.
		N01/21/04E	1972.9	Ascend
	14			Highest point on the top of Taylor Butte.
		S64/02/10E	7223.4	
Irish Mtn.	15			A point 200 feet northwesterly of centerline of USFS road 5898-514. (Also coincidental with the Waldo Lake Wilderness Boundary.)
		S89/45/03W	339.2	
	16			
		S62/37/30W	164.6	
	17			
		S43/43/16W	191.1	
	18			
		S45/58/44W	296.5	
	19			
		S50/09/25W	151.1	
	20			
		S42/40/41W	216.9	
	21			
		S49/32/39W	106.5	200 feet westerly from and parallel with the centerline of USFS road 5898-514.
	22			
		S59/19/52W	165.5	
	23			
		S65/01/52W	140.6	
	24			
		S43/48/38W	208.8	
	25			
		S34/30/24W	153.7	
	26			
		S30/54/41W	147.6	
	27			
		S29/22/40W	179.8	
	28			
		S50/06/16W	209.7	
	29			
		S57/17/09W	158.4	
	30			
		S63/56/40W	199.5	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	31			
		S53/36/15W	276.2	
	32			
		S31/22/42W	149.5	
	33			
		S29/54/52W	185.0	
	34			
		S12/47/50W	214.9	
	35			
		S04/55/49E	182.9	
	36			
		S16/38/29E	120.7	
	37			
		S25/44/27W	197.3	
	38			
		S01/22/02E	200.0	
	39			
		S25/16/05E	261.9	
	40			
		S38/56/52E	315.4	200 feet westerly from and parallel with the centerline of USFS road 5898-514.
	41			
		S49/36/34E	141.8	
	42			
		S53/52/50E	239.6	
	43			
		S56/00/11E	173.3	
	44			
		S47/39/29E	170.0	
	45			
		S55/04/47E	145.4	
	46			
		S37/42/25E	201.6	
	47			
		S36/17/44E	170.1	
	48			
		S26/40/03E	202.5	
	49			
		S17/25/17E	161.0	
	50			
		S14/57/57E	128.0	
	51			
		S10/03/28E	168.8	
	52			
		S02/46/44W	142.8	
	53			
		S00/14/13E	282.6	
	54			
		S04/06/18W	181.9	
	55			
		S03/39/31W	184.3	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	56			A point 200 feet westerly from and perpencidular to the centerline of USFS road 5898-514 and true east of the east 1/4 corner of Section 4 T. 21 S. R. 6 E. W.M.
		N90/00/00W	1348.8	Descend
	57			Point of beginning.

CHARLTON UNIT - TORREY CHARLTON RESEARCH NATURAL AREA

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	POB			Beginning at the North 1/4 corner of Section 10 T. 21 S. R. 6 E. W.M.
Irish Mtn.				
		S89/20/34E	2681.4	
	2			Northeast corner of Section 10 T. 21 S. R. 6 E. W.M.
		S89/11/41E	2638.9	
	3			North 1/4 corner of Section 11 T. 21 S. R. 6 E. W.M.
		S89/10/41E	2180.8	
	4			A point on the northern section line of Section 11, 500 feet northwesterly from and perpendicular to the shoreline of Lily Lake.
		S34/27/15W	182.5	
	5			
		S01/26/56E	118.8	
	6			
		S24/11/59E	218.9	
	7			
		S32/08/40E	163.4	
	8			500 feet westerly from
		S26/02/31E	120.8	and parallel with the
	9			shoreline of Lily Lake.
		S36/14/04E	140.6	
	10			
		S43/54/23E	146.8	
	11			
		S56/01/19E	137.8	
	12			
		S61/15/44E	247.5	
	13			
		S86/39/10E	337.4	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	14			
		N75/17/51E	165.5	
	15			Continuing 500 feet
		N77/47/20E	151.0	southerly from and
	16			parallel with the
		N74/56/29E	156.7	shoreline of Lily Lake.
	17			
		N59/50/27E	285.9	
	18			A point 500 feet southeasterly from and perpendicular to the shoreline of Lily Lake and 50 feet northeasterly from and perpendicular to the centerline of the Lily Lake trail (trail# 19.3).
		S65/33/37E	104.7	
	19			
		S63/36/13E	267.5	
	20			
		S35/02/22E	149.2	
	21			
		S30/36/43E	136.2	
	22			
		S23/21/01E	156.3	
	23			
		S16/07/21E	114.4	50 feet northeasterly of
	24			and parallel with the
		S14/37/53E	156.1	centerline of the Lily
	25			Lake trail.
		S42/39/47E	193.0	
	26			
		S42/53/22E	147.8	
	27			
		S40/20/33E	184.6	
	28			
		S53/06/30E	91.1	
	29			
		S70/40/29E	115.6	
	30			
		S76/33/35E	221.6	
	31			
		S86/22/46E	184.4	
	32			
		S44/21/46E	163.6	
	33			
		S43/14/08E	172.5	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	34			A point which is 50 feet northeasterly from and perpendicular to centerline of the Lily Lake Trail and true west of a point 150 feet true north of the most northerly point of a meadow/wetland area.
		S90/00/00E	731.2	Descend
	35			A point which is 150 feet true north from the most northerly point of a meadow/wetland area.
		S81/05/21E	86.2	150 feet northerly and easterly from and parallel with the edge of meadow/wetland area.
	36			
		S58/15/28E	240.5	
	37			
		S54/52/12E	297.8	
	38			A point 150 feet southeasterly from and perpendicular to the meadow/wetland area and 200 feet easterly from and perpendicular to the centerline of the Lemish Lake Trail (trail # 19).
		S37/11/27W	187.4	
	39			
		S37/06/12W	191.9	
	40			
		S30/26/06W	196.3	
	41			
		S34/04/19W	199.8	200 feet easterly from and parallel with the centerline of the Lemish Lake Trail.
	42			
		S00/44/32E	143.8	
	43			
		S43/47/59E	101.7	
	44			
		S59/48/26E	155.3	
	45			
		S37/39/00E	146.3	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	46			
		S17/24/29E	140.0	
	47			
		S31/25/26E	140.2	
	48			200 feet easterly from
		S30/37/39E	118.8	and parallel with the
	49			centerline of the Lemish
		S42/08/02E	144.3	Lake trail.
	50			
		S22/11/22E	117.2	
	51			
		S10/11/02E	101.5	
	52			A point 200 feet easterly from and perpendicular to the centerline of the Lemish Lake Trail and the center of an intermittent stream which flows to Clover Meadow.
		S82/34/23W	210.7	
	53			
		S65/01/04W	176.4	
	54			
		S63/28/17W	237.3	
	55			Along the centerline of
		S88/10/10W	137.7	the stream which flows
	56			to Clover Meadow.
		S72/16/19W	166.7	
	57			
		S79/59/27W	162.6	
	58			
		N89/50/37W	503.2	
	59			A point in the center of the stream which is N 45° E from the north 1/4 corner of Section 13 T. 21 S. R. 6 E. W.M.
		S45/00/00W	678.9	
	60			North 1/4 corner of Section 13 T. 21 S. R. 6 E. W.M.

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
		S45/52/49W	3757.5	
	61			West 1/4 corner of Section 13 T. 21 S. R. 6 E. W.M.
		N88/59/27W	5232.2	
	62			West 1/4 corner of Section 14 T. 21 S. R. 6 E. W.M.
		N90/00/00W	187.8	
	63			A point true west of the west 1/4 corner of Section 14 T. 21 S. R. 6 E. W.M. and 200 feet easterly from and perpendicular to the centerline of USFS road 5898.
		N14/34/46W	121.3	
	64			
		N18/51/21W	427.4	
	65			
		N20/04/23W	247.2	
	66			
		N26/57/37W	258.9	
	67			
		N25/58/01W	184.5	
	68			200 feet easterly from and parallel with the centerline of USFS road 5898.
		N09/15/04W	127.9	
	69			
		N28/42/57W	136.5	
	70			
		N19/59/43W	244.4	
	71			
		N24/49/07W	222.7	
	72			
		N22/30/19W	333.7	
	73			
		N19/22/38W	232.9	
	74			
		N24/41/21W	269.2	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	75			
		N16/54/11W	126.6	
	76			200 feet easterly from
		N30/31/47W	139.0	and parallel with the
	77			centerline of USFS road
		N23/43/55W	175.8	5898.
	78			
		N22/35/59W	174.4	
	79			A point 200 feet easterly from and perpendicular to USFS road 5898 and 400 feet easterly from and perpendicular to the centerline of USFS road 5898-511.
		N50/28/55E	106.7	
	80			
		N35/03/36E	162.5	
	81			
		N05/20/49E	218.6	
	82			
		N23/05/54W	180.4	
	83			
		N16/19/50W	153.5	400 feet easterly from
	84			and parallel with the
		N33/27/13W	155.4	centerline of USFS road
	85			5898-511.
		N77/34/52W	182.2	
	86			
		N41/33/57W	136.5	
	87			
		N22/03/52W	107.7	
	88			
		N10/00/39W	118.0	
	89			
		N19/59/22W	192.6	
	90			
		N14/50/36W	188.6	
	91			
		N06/23/48W	210.0	

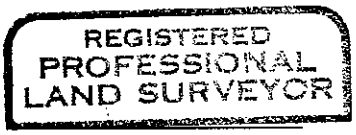
QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	92			A point 400 feet easterly from and perpendicular to the prolongation of the centerline of USFS Road 5898-511 and 200 feet northerly of the end of the said road.
		N88/34/26W	800.0	
	93			A point 400 feet westerly of and perpendicular to the prolongation of the centerline of USFS Road 5898-511 and is 200 feet northerly of the end of the said road.
		S01/38/08W	191.4	
	94			
		S02/47/49E	140.2	
	95			
		S13/12/18E	256.6	
	96			
		S16/25/13E	179.7	
	97			
		S16/44/27E	127.8	400 feet westerly from and parallel with the
	98			
		S21/36/46E	147.7	centerline of USFS road
	99			5898-511.
		S25/56/05E	285.8	
	100			
		S58/35/09E	200.0	
	101			
		S56/50/03E	167.9	
	102			
		S00/55/46E	80.3	
	103			A point 400 feet westerly from and perpendicular to USFS road 5898-511 and 200 feet northerly from and perpendicular to the centerline of USFS road 5898.

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
		S59/29/39W	180.8	
	104			
		S89/43/45W	257.9	
	105			
		S88/12/55W	236.7	
	106			
		S72/40/38W	166.3	
	107			
		S60/45/17W	144.6	
	108			200 feet northerly from
		S49/26/32W	228.2	and parallel with the
	109			centerline of USFS road
		S53/53/24W	245.6	5898.
	110			
		S31/50/44W	122.5	
	111			
		S50/26/00W	215.2	
	112			
		S60/00/57W	100.9	
	113			
		S88/28/13W	113.9	
	114			A point 200 feet northerly from and perpendicular to USFS road 5898 and 200 feet easterly from and perpendicular to the centerline of USFS road 5898-515.
		N04/19/39W	175.5	
	115			
		N13/24/24W	335.1	
	116			
		N23/23/21W	261.1	200 feet easterly from
	117			and parallel with the
		N25/22/16W	241.7	centerline of USFS road
	118			5898-515.
		N52/29/26W	155.1	
	119			
		N61/27/51W	298.5	
	120			A point 200 feet northeasterly from and perpendicular to USFS road 5898-515 and 200 feet southeasterly from and perpendicular to the centerline of USFS road 5898-514.

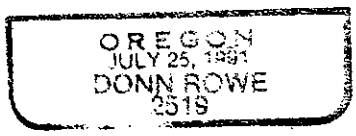
QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
		N62/40/31E	123.7	
	121			
		N74/35/31E	311.3	
	122			
		N53/29/57E	262.4	
	123			
		N50/46/09E	262.5	
	124			
		N57/13/24E	155.9	
	125			
		N40/28/19E	165.0	
	126			
		N26/12/09E	227.7	
	127			
		N15/05/13E	108.9	
	128			
		N00/58/57W	192.6	
	129			
		N12/50/20W	132.0	
	130			
		N19/27/26W	148.3	
	131			
		N51/29/10W	163.7	
	132			
		N09/38/11E	116.8	
	133			
		N27/42/27E	117.5	200 feet easterly from and parallel with the centerline of USFS road 5898-514.
	134			
		N15/06/27E	160.8	
	135			
		N18/50/25W	153.0	
	136			
		N10/44/24W	343.4	
	137			
		N02/38/22E	299.2	
	138			
		N27/19/11E	230.0	
	139			
		N25/37/23E	177.9	
	140			
		N20/52/10E	187.7	
	141			
		N00/33/11W	227.6	
	142			
		N04/20/34W	332.2	
	143			
		N16/21/44E	122.7	
	144			
		N24/25/44E	200.9	

QUAD SHEET NAME	ANGLE POINT	BEARING	DISTANCE FEET	DESCRIPTION
	145			A point 200 feet easterly from and perpendicular to the centerline of USFS road 5898-514 and true west of the north 1/4 corner of Section 10 T. 21 S. R. 6 E. W.M.
		S90/00/00E	673.4	
	146			Point of beginning.

I certify the enclosed boundary descriptions for the Torrey Charlton Research Natural Area.



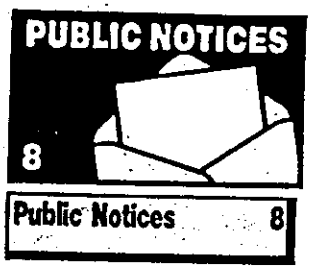
Seal



Donn Rowe, Land Surveyor

THE OREGONIAN, SATURDAY,

JULY 18, 1998



NOTICE OF DECISION

On July 13, 1998, USDA, Forest Service, Regional Forester, for the Pacific Northwest Region, made a decision to establish a 2,877 acre Torrey-Charlton Research Natural Area on the Deschutes and Willamette National Forests, in Deschutes and Lane Counties, Oregon. This decision will be implemented after July 25, 1998.

A copy of the Decision Notice/Designation Order and Finding of No Significant Impact is available upon request from the Regional Office, Environmental Coordination, P.O. Box 3623, Portland, OR 97208.

This decision is subject to appeal pursuant to Forest Service regulation 36 Code of Federal Regulation (CFR) Part 217. Any written Notice of Appeal must be fully consistent with 36 CFR 217.9 (Content of a Notice of Appeal) and must include the reasons for appeal. Any written appeal must be postmarked or received by the Appeal Deciding Officer, Chief Mike Dombeck, USDA - Forest Service, ATTN: NFS Appeals, P.O. Box 96090, Washington, D.C. 20090-6090 within 45 days of the date of this legal notice.

For further information about Torrey-Charlton RNA, contact Cindy McCain, Ecologist, Siuslaw National Forest, 4077 S.W. Research Way, P.O. Box 1148, Corvallis, Oregon 97339, phone (541) 750-7000 or Katie Grenier, Forest Botanist, Deschutes National Forest, 1645 Highway 20E, Bend, Oregon 97701, phone (541) 383-5564.

DECISION NOTICE/DESIGNATION ORDER
AND
FINDING OF NO SIGNIFICANT IMPACT

Torrey-Charlton Research Natural Area
(Deschutes & Lane Counties, Oregon)

USDA Forest Service
Pacific Northwest Region

Willamette National Forest
Middle Fork Ranger District
(Forest Amendment No. 40)

Deschutes National Forest
Bend Ranger District
(Forest Amendment No. 22)

Introduction

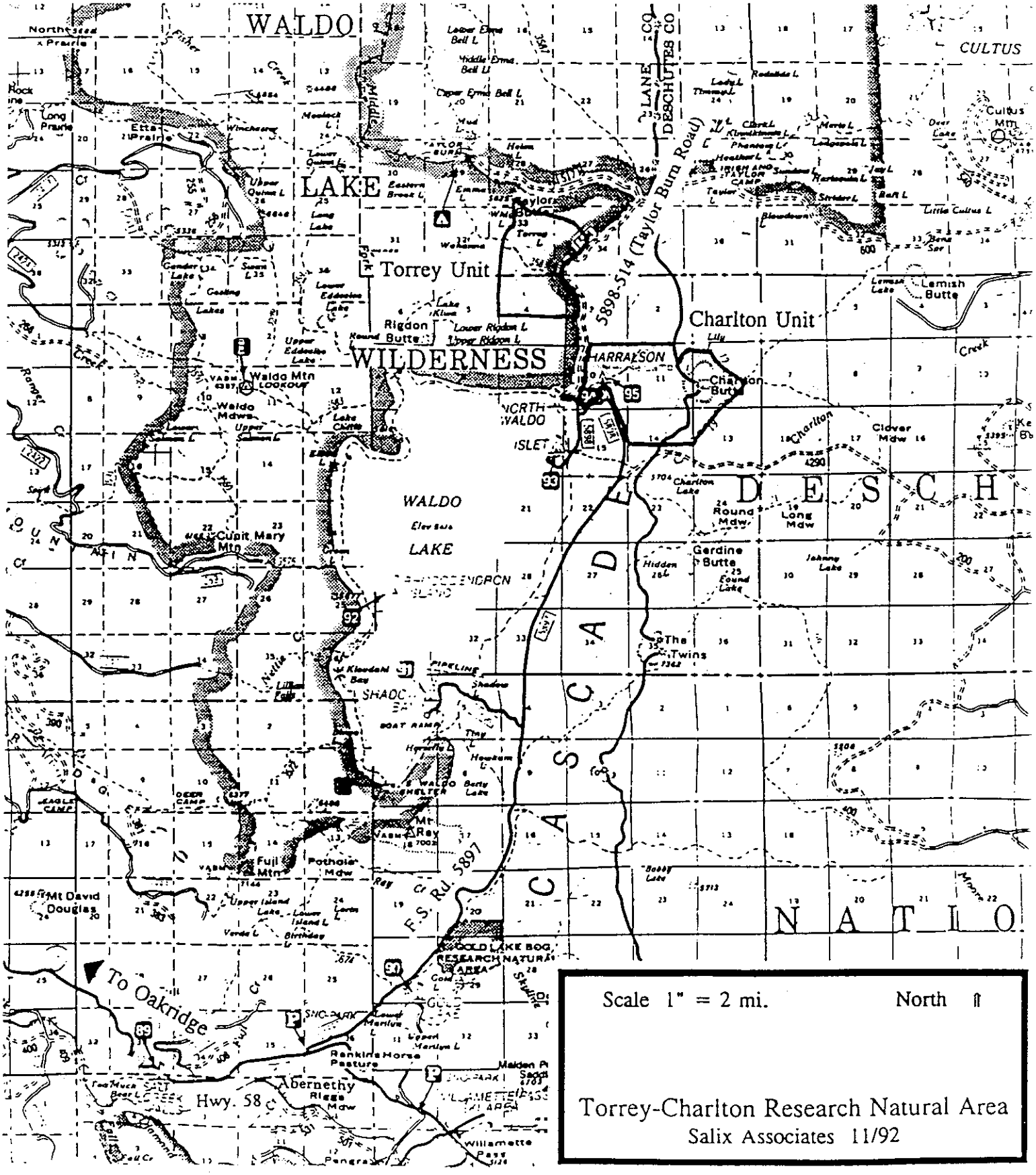
The Torrey-Charlton Research Natural Area (RNA) is located on a high plateau to the northwest of Waldo Lake, and is forested primarily with mountain hemlock. The RNA is comprised of two separate units--the **Torrey Unit** (approx 1,053 acres) contains Torrey Lake (the largest lake in the RNA) and most of the lakes, ponds, and wetland habitats. This unit also includes the southeast slopes of Taylor Butte. The **Charlton Unit** (approx. 1,775 acres) contain Charlton Butte and a variety of mountain hemlock stands of different ages and densities some true fir stands, ponds, and small meadows. (see map on next page)

The Torrey Unit is within the Upper North Fork watershed of the Middle Fork Willamette River system on the Middle Fork Ranger District [This year the Lowell, Oakridge, and Ridgon Ranger Districts combined to be come the Middle Fork Ranger District] of the Willamette National Forest (WNF). The Charlton Unit is partially within the Upper North Fork watershed of the Middle Fork of the Willamette River system on the Middle Fork Ranger District and partially within the Upper Deschutes watershed of the Deschutes River system on the Bend Ranger District of the Deschutes National Forest (DNF).

The RNA and surrounding lands are entirely within National Forest ownership. The Torrey Unit is entirely within the Waldo Lake Wilderness in the WNF. Besides the wilderness designation, no part of the RNA is within any wild and scenic river, national recreation area, or other congressionally designated area.

The purpose of establishing the Torrey-Charlton RNA is to contribute to a series of RNAs designated. The Torrey-Charlton RNA contributes to this series of RNAs by providing an example of a Mountain hemlock/grouse huckleberry community in the mountain hemlock zone, subalpine lakes, ponds, and Montane vernal ponds as discussed in the WNF, final EIS (chapter III, p. 170), and the DNF, final EIS (chapter 3, p. 24).

The Torrey-Charlton area was identified in the WNF and DNF Plans as a "proposed" RNA based on the relatively undisturbed conditions of these types in the area at that time. Comments received from interested and affected publics supported establishment of an RNA in the area at that time.


WALDO
LAKE
WILDERNESS
Torrey Unit
Charlton Unit
5898-514 (Taylor Burn Road)
CULTUS
CASCADE DESCH
NATIO
WALDO
LAKE
Waldo Mtn Lookout
Cupit Mary Mtn
Fuji Mtn
Mt Ray
Mt David Douglas
Gerdine Butte
The Twins
Lemish Butte
Clover Mdw
Round Mdw
Long Mdw
Hidden
Pothole Mdw
Abernethy Ridge Mdw
Hwy. 58
To Oakridge
F.S. Rd. 5897
GOLD LAKE BOG RESEARCH NATURAL AREA
Rankins Horse Pasture
Willamette Pass
Scale 1" = 2 mi.
North
Torrey-Charlton Research Natural Area
Salix Associates 11/92

I "proposed" the establishment of this RNA in the Records of for the WNF and DNF Land and Resource Management Plans (Forest Plans) in 1990. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. Results of that analysis are documented in the Forest Plans and final EIS which are available to the public. I have reexamined the Torrey-Charlton area to ensure that the environmental effects of establishing the area as an RNA have not changed since 1990.

Issues raised in this reexamination included: (1) Current boundary locations may result in some conflicts between recreation use of the Charlton Unit and RNA management objectives. (2) Inconsistent management direction between WNF and DNF Forest Plans for the Torrey-Charlton proposed RNA, or with adjacent management areas (EA, pp. 4-5).

Decision

By virtue of the authority delegated to me by the Chief of the Forest Service in FSM 4063, I hereby select Alternative B and establish the 2,877 acre Torrey-Charlton RNA. This decision will amend the DNF (DNF Plan Amendment No. 22) and WNF (WNF Plan Amendment No. 40) Forest Plans by making minor boundary modifications. It will also amend the Deschutes Forest Plan by changing selected Standards and Guidelines to match the Willamette Forest Plan language concerning management of the RNA. These are non-significant Forest Plan amendments [36 CFR 219.10(f)].

The modifications to the boundary for the Charlton Unit of the RNA are the following:

1. The current description of the unit boundary around Harralson Horse Camp is 200 feet from the centerline of FS Road 5898-511, which encompasses areas currently used for camping and stock tethering. To avoid conflict establish a 400 foot distance from the centerline.

2. Run the northeast boundary corner straight across section 11 and around Lily Lake until it rejoins the current RNA boundary. This will simplify surveying needs associated with establishing the boundary and does not include any atypical vegetation types in the northeastern corner near Lily Lake. The current description of the boundary line along the westerly and easterly edge of Lily Lake is 50-200 feet from shoreline. Move the boundary back 500 feet from the shorline to allow dispersed camping 200 feet away from the lake.

3. Incorporate the 5 acre creek/spring/wetland meadow complex into the RNA. This complex demonstrates some very unique, high elevation wetland habitats and would be a positive addition to the RNA. The existing Lily Lake Trail route should be reviewed and evaluated for relocation out of the upper reaches of the non-forested complex with a 150 foot slope distance reserve around the edge of complex

(approx. 13 acres) would result, including a portion of the Lemmish Lake Trail within the RNA boundary. Normal trail maintenance including repair and relocation was necessary within or without the RNA boundary to protect resource values would continue.

4. Run the boundary from the trail junction by the spring to the 1/4 corner of section 13. This line would run off established corners and would simplify surveying and marking boundaries. There is no evidence of atypical vegetation included in this boundary change.

5. Standards and guidelines in the DNF Forest Plan would be amended as follows and would be specific to the management of the Torrey-Charlton RNA.

M2-2: Picnicking, camping, 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: All recreation Off Road Vehicle use shall be prohibited.

M2-4: Cutting and removal of all vegetation, including firewood, shall be prohibited, except as part of approved scientific investigation.

M2-5: Deleted.

No changes to DNF M2-17 or to WNF MA-4-22.

The acreage and boundary of the RNA in MA-4 and MA-2 will be finalized with this decision.

Alternative B is selected because it provides long-term protection and recognition of Mountain hemlock/grouse huckleberry community type and Subalpine lakes, ponds, and Montane vernal ponds without diminishing recreational or research opportunities (issue #1). Alternative B also provides consistent management direction across the WNF and DNF boundaries for the RNA (issue #2).

Public Involvement

Of the public comments received for the WNF draft EIS and Forest Plan (1990), fifty comments identified were relevant to RNAs and MA 4A/4B. In general, the comments received were supportive of the RNA and the program. (see Content Analysis Report No. 1652, 1990 Planning Records)

Scoping was initiated during the process of updating information to determine whether to proceed with establishment of this RNA as proposed in the Forest Plans. Internal scoping began in September 1993, when forest specialists reviewed the existing condition of the RNA and proposed boundary changes to the Charlton Unit. Public (external) scoping

started on April 20, 1994 with the release of the Oakridge Ranger District (WNF) "Schedule of Proposed Actions". The public was invited to provide comment on the proposal to establish the Torrey-Charlton RNA. In May 1997, a notice of this RNA proposal was mailed to the DNF "Schedule of Proposed Actions" mailing list. No comments were received by either forest.

Alternatives Considered

Alternative A would establish the 2,761 acre area as proposed in the Establishment Record and be managed according to the management prescription in the Forest Plans (WNF, pp. 134-137; DNF, pp. 92-93) as amended by this alternative (EA, pp. 5-6) without changes to Forest Plan standards and guidelines.

Alternative A was not selected because it did not adequately respond to the issues raised regarding potential recreational and research conflicts due to the proposed boundary location. This alternative did not address the conflicting standards and guidelines between forest plans.

Alternative C, the No Action Alternative, would continue management of the 2,761 acre Torrey-Charlton area as a "proposed" RNA.

Alternative C was not selected because it would only provide short-term protection of the 2,761 acre area.

Finding Of No Significant Impact

It has been determined through this environmental analysis that this decision is not a major federal action that would significantly affect the quality of the human environment. Therefore, an environmental impact statement is not needed (40 CFR 1508.27).

Context

Although this is an addition to the national system of RNAs, both short-term and long-term physical and biological effects are limited to the local area.

Intensity

*Beneficial and adverse effects have been disclosed and there are no significant adverse effects (EA. pp. 8-10; Establishment Record, pp. 24-28).

*There are no significant effects on public health and safety.

*Unique characteristics of the geographic area are recognized and protected through the designation of the RNA. The designation of the RNA with the accompany standards and guidelines will help to preserve ecological systems uniquely

represented in this area (EA, pp. 6-7; Establishment Record, pp. 26-27).

*Effects on the human environment are not uncertain, do not involve unique or unknown risk, and are not likely to be highly controversial.

*The action is not likely to establish a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration.

*No significant direct, indirect, or cumulative impacts to natural resources or other components of the human environment area anticipated (EA, pp. 8-10; Establishment Record, pp. 24-28).

*The action will not affect district, sites, highways, structures, or objects listed or eligible for listing under the National Register of Historic Places (Establishment record, p. 24).

*This decision will not adversely affect any federally listed or proposed endangered or threatened species or associated critical habitat, not will it affect any regionally sensitive plant or animal species (EA, p. 9; Establishment Record, p. 3).

*This decision is consistent with Federal, State, and local laws and requirements for the protection of the environment.

Implementation

Implementation of this decision will not occur for seven days following publication of the legal notice of the decision in the newspaper of record, The Oregonian (Portland, Oregon).

Appeal Opportunities

This decision is subject to appeal pursuant to 36 CFR Part 217. A copy of the Notice of Appeal must be in writing and submitted to--

Chief
USDA - Forest Service
ATTN: NFS Appeals
14th and Independence Avenue, S.W.
P. O. Box 96090
Washington, D. C. 20090-6090

Any written Notice of Appeal if this decision must be fully consistent with 36 CFR 217.9 (Content of a Notice of Appeal) and must include the reasons for appeal and be submitted within 45 days from the date of legal notice of this decision in The Oregonian.

The Forest Supervisors of the Deschutes and Willamette National Forests shall notify the public of this decision and mail a copy of the Decision Notice/Designation Order to all persons interested in or affected by the establishment of Torrey-Charlton RNA.

For Further Information Contact

Cindy McCain, Ecologist, Siuslaw National Forest, 4077 S. W. Research Way, P. O. Box 1148, Corvallis, Oregon 97339; or phone 541-750-7000.

Katie Grenier, Forest Botanist, Deschutes National Forest, 1645 Highway 20E, Bend, Oregon 97701; or phone 541-383-5564.

for Richard A. Fenn

ROBERT W. WILLIAMS
Regional Forester
Pacific Northwest Region

Date 7/13/98

ENVIRONMENTAL ASSESSMENT

TORREY-CHARLTON RESEARCH NATURAL AREA

USDA, Forest Service
Willamette National Forest, Oakridge Ranger District
Lane County, Oregon
Deschutes National Forest, Bend Ranger District
Deschutes County, Oregon

Lead Agency:	USDA, Forest Service
Responsible Official:	Robert W. Williams Regional Forester Pacific NW Region Portland, Oregon
Prepared By:	Kim McMahan
Date Prepared:	May 4, 1998

TABLE OF CONTENTS

I. PURPOSE AND NEED FOR ACTION

A. INTRODUCTION

1. Description

This environmental assessment evaluates a proposal to amend the Willamette National Forest Land and Resource Management Plan of 1990 (Forest Plan) and the Deschutes National Forest Land and Resource Management Plan of 1990 (Forest Plan) and change the proposed Torrey-Charlton Area (RNA) on the Oakridge and Bend Ranger Districts to an established RNA. This assessment will document the analysis of the Proposed Action and two alternatives.

2. Location

The Torrey Unit is within the Upper North Fork watershed of the Middle Fork Willamette River system on the Oakridge Ranger District. Legal location is T20S.R06E.S 28, 33, and 34 and T21S.R06E.S 3 and 4. The Charlton Unit is partially within the Upper North Fork watershed of the Middle Fork of the Willamette River system on the Oakridge Ranger District and partially within the Upper Deschutes watershed of the Deschutes River system on the Bend Ranger District. Legal location T21S.R06E.S 10 - 15.

3. Current Condition

The Torrey-Charlton RNA Establishment Record (1996) describes the current condition of the RNA in detail. Torrey-Charlton includes the following RNA cell needs (or elements) in the west slope and crest regions of the Oregon Cascades. Mountain hemlock/grouse huckleberry community, Subalpine lake and subalpine permanent pond, and montane vernal pond. The Torrey and Charlton areas have a history of natural fire occurrences. Both areas are on a high elevation plateau and are dominated by old-growth Mountain hemlock with stand ages ranging from 250-400 years of age. The described boundaries of the RNA contains two separate units: the Torrey Unit contains Torrey Lake and most of the lakes, ponds, and wetland habitats. This unit also includes the southeast slopes of Taylor Butte. To the southeast, the Charlton Unit contains Charlton Butte, and is comprised of a mosaic of mountain hemlock stands of different ages and densities and some true fir stands representing different stages of attack and recovery from laminated root rot, ponds and small meadows. These sites are representative of terrestrial and aquatic ecosysytems in the central Oregon High Cascades region.

A small lightening caused fire occurred on July 22, 1994, on the west side of Charlton Butte. The 13 acre fire was low intensity and crossed through a portion of the Pacific Crest Trail.

On August 22,1996, the Moolack Fire Complex was ignited by a lightening storm. A variable, but very high intensity burn of approximately 1,691 acres occured in the Torrey unit and the Charlton unit. The 1994 Charlton Butte fire did not reburn.

Both the 1994 and 1996 fire events are not considered to have significantly altered conditions to the point of affecting the justification for

establishing the Torrey-Charlton process cell. The burn areas will provide excellent opportunities to study post-fire ecology of mountain hemlock forests. Several earlier studies in the area provide baseline pre-disturbance data. Unburned old-growth mountain hemlock stands on the south and west sides of Charlton Butte can be compared with early-seral stands (approximately 1,070 acres of Torrey/Charlton reamin unburned). Though the Torrey unit was extensively burned, the mires, ponds, and lakes which represent cell components in this unit remain fairly intact. Many wetland depressions were observed to have escaped more than just scorching, and patches of lake margins were still green. Additional detailed information is contained in the Establishment Record (ER) (1996).

4. Management Status

The Forest Plans currently list Torrey-Charlton as a proposed RNA. The 2761 acre site is designated a Management Area 4 (WNF), and Management Area 2 (DNF), Research Natural Area. The Charlton Unit lies partially within the Deschutes National Forest. The Torrey unit of the RNA lies entirely within the Waldo Wilderness in the Willamette National Forest. Establishment of the RNA would not impact the purposes or management of the wilderness area. The RNA management plan process will be developed in coordination with the Waldo Lake Wilderness planning process. WNF Plan MA-4-13 states: "If an RNA is established within wilderness, wilderness management direction shall take precedence". RNA management provides for the preservation of naturally occurring terrestrial and aquatic ecosystems for biological diversity and scientific and educational purposes.

Inconsistencies between certain standards and guidelines in the forest plans for RNAs exist. Further discussion is given in Issue 1.

B. PROPOSED ACTION

The proposed action is to formally establish the Torrey-Charlton Research Natural Area (RNA) proposed in the Willamette National Forest (WNF) Land and Resource Management Plan (USDA Forest Service 1990), and the Deschutes National Forest (DNF) Land and Resource Management Plan (USDA Forest Service 1990), and to manage it according to direction provided in the WNF (Chp. IV., pages 134-137) and DNF (Chp. 4, pages 92-93) Plans. The proposed action (Alternative A), formal designation of the RNA by the Regional Forester will amend the Forest Plans.

C. PURPOSE AND NEED FOR ACTION

The purpose of establishing the Torrey-Charlton RNA is to contribute to a series of RNA's 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 Torrey-Charlton RNA contributes to this series of RNA's by providing an example of a Mountain hemlock/grouse huckleberry community in the Mountain hemlock zone; Subalpine lakes, ponds, and Montane vernal ponds as discussed in the WNF EIS (Chp. III., p. 170), and the DNF EIS (Chp. 3, p. 24. An evaluation by the Regional RNA Committee, pursuant to direction in Forest Service Manual (FSM) 4063.04b), of the need for RNA's identified these types as suitable and desirable for inclusion in the national network. Establishment of the Torrey-Charlton RNA provides long-term protection and recognition of this type.

The Torrey-Charlton area was identified in the WNF and DNF Plans as a "proposed" RNA based on the relatively undisturbed conditions of these types in the area at that time. Comments received from interested and affected members of the public supported establishment of an RNA in the area at that time.

Finalizing the boundary description is neccessary to meet establishment requirments.

The amended DNF MA-2 standards and guidelines specific to the Torrey-Charlton RNA are neccessary to provide consistent management direction between forests.

Site conditions and public concerns have been reviewed; no important changes have occured. The effects of the 1994 and 1996 fires will not change the purpose of RNA establishment. Conditions and environmental effects of designation are the same as described on pages 167-170 of the EIS for the WNF Plan. Designation of alternate RNA's for protection of this type was considered during Forest Plan development (WNF Plan EIS, Chp. III., pages 169-170; DNF Plan EIS, Chp. 3, page 23). Torrey-Charlton was determined at that time to provide the most appropriate site for inclusion in the national network for protection of this type.

D. DECISION TO BE MADE

The Regional Forester for the Pacific Northwest Region is the responsible official for making the selection of the prefered alternative. The decision will identify whether to implement the proposed action and, if so, under what conditions.

E. ISSUES

The following were identified as significant issues through an interdisciplinary process between the Willamette and Deschutes National Forests.

Issue 1.

Current boundary locations may result in some conflicts between recreation use of the Charlton Unit and RNA management objectives.

a. The described RNA boundary location around Harralson Horse Camp is in conflict with existing dispersed camping and stock tethering sites. This close proximity of the RNA boundary to the Horse camp along the east and west sides of FS road 5898-511 would require campsites and stock tethering sites to lie within the RNA. This is in conflict with MA-4-05, which states that **"Recreation activities and uses within RNAs shall be discouraged"**, which includes overnight camping and pack and saddle stock use. There is a long history of recreational activities in both units. This use includes trail use, camping, hunting, fishing and trapping.

b. The described boundary location around the western and southern edge of Lily Lake brings the boundary within 50-200 feet of the lakeshore, conflicting with dispersed camping and equestrian use in the area. This close proximity of the RNA boundary to Lily Lake, if dispersed camping were not permitted in the RNA, would require campsites to be established within 100 feet of the lake. Dispersed camping within 100 feet of the lake has a high potential to cause soil compaction, trampling and elimination of vegetation.

Issue 2.

Inconsistent management direction between WNF and DNF Plans for the Torrey-Charlton proposed RNA, or with adjacent management areas. The following conflicting language exists for specific RNA standards and guidelines.

DNF M2-2 allows some recreation and special forest product (SFP) collection in RNA's: **"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."** WNF MA-4-18 states that **"cutting and removal of all vegetation, including firewood, shall be prohibited, except as part of approved scientific investigation."** WNF SFP Amendment 22 does not allow SFP collection of any kind in RNAs (Table IV-32a). General standards and guidelines for RNAs for Forest

Products state "No primary or secondary forest product harvest will be allowed in the RNA. Cutting and removal of live or dead vegetation will not be allowed unless in marginal quantities for research purposes."

DNF M2-4 stipulates that "Timber harvesting is not allowed in a Research Natural Area. No control of insect or disease should be instituted." however it appears to be contradicted by policies M2-22 and M2-23 for Forest Health: "Action should be taken when the damage has the potential to modify ecological processes...", and "Follow Forest-wide standards/guidelines for Forest Health."

DNF M2-3 states "The area will be closed to all off-highway motorized vehicle use if use of these vehicles threatens natural conditions", WNF MA-4-06 states "All recreation ORV use shall be prohibited." General standards and guidelines for RNAs also state "All ORV use is prohibited."

DNF M2-17 requires approved prescribed natural fire plans before any prescribed natural fire activity occurs. This is not explicitly required in the Willamette LRMP, but is required in national policies. WNF MA-4-22 precludes use of retardant, which is not precluded in the DNF LRMP. Retardant use may be required to meet desired future condition for adjacent MA's on both the Deschutes and the Willamette NF's.

The significant issues were used to formulate Alternative B, which modifies RNA boundary locations and DNF Standards and Guidelines.

II. ALTERNATIVES

A. Alternative A

Alternative A would formally establish the 2761-acre area as proposed in the draft ER as the "Torrey-Charlton RNA" and manage the area according to the management prescription in the Forest Plans, pages 134-137, WNF LRMP, and pages 92-93, DNF LRMP as amended by the adoption of this alternative. This will provide long-term protection of the area. Torrey-Charlton was estimated to be 2,133 acres in the WNF Plan (Chap. IV., p. 29); measurements given in the attached Establishment Record (ER) sets acreage at 2,761 as described on page 1 of the ER.

Management of the area discourages hunting and trapping and restricts recreation use to non-motorized use of existing trails on the Willamette National Forest. Existing recreation uses within the RNA would continue. If a conflict is identified with historic recreation, it would be analyzed with the intention of resolving the conflict in a way to meet all interests. New improvements, developments, or facilities would generally not be permitted unless necessary to protect values for which the RNA was established. No motorized vehicles would be permitted within the RNA. No cutting, removal, or other vegetative treatments would be permitted unless necessary to protect values for which the RNA was established. Insect and disease outbreaks would not be suppressed unless outbreak threatens to modify ecological processes to the point that the area has little value for observation or research. Prescribed fire (natural or management ignited) would be carried out only in conjunction with approved research or to meet specific RNA management objectives, and under an approved prescribed fire

plan. Special uses for other than research or observation purposes within the RNA would be discouraged, but could be considered if they would not adversely affect the values for which the RNA was established. No mineral explorations are known to have occurred in the RNA and no known significant mineral resources exist within the area. Salable mineral material sources would not be developed, surface occupancy would not be allowed, and the area would be recommended for withdrawal from mineral entry. Grazing does not occur at present and has not occurred for many years. No grazing would be allowed unless it would be necessary to preserve the values for which the RNA was established.

Substantial recreation use occurs within the RNA and can be expected to continue in the future. Recreation use consists of hiking, horsepacking, angling, camping, trapping and mountain biking (mountain bikes are prohibited on the Pacific Crest Trail, and in the Waldo Lake Wilderness).

The acreage and boundary of the RNA, in MA-4 and MA-2 would be finalized with this action (exact area pending final boundary survey and location).

Under this alternative, Forest Plans would be amended to formally establish the 2761-acre "Torrey-Charlton" RNA as proposed in the Deschutes and Willamette National Forest Plans with no additional changes to Forest Plan Standards and Guidelines.

B. Alternative B. Modifies Boundaries, Standards and Guidelines

Alternative B would formally establish a 2,877-acre area as the "Torrey-Charlton RNA". Under this alternative, Forest Plans would be amended to revise the acreage originally proposed and DNF Plans would be formally amended to revise standards and guidelines specific for the management of the Torrey-Charlton RNA.

This alternative proposes to modify the boundary measurements for the Charlton unit of the RNA. The intent of these proposed boundary alterations is to 1) resolve conflicts between recreational use, aquatic conservation strategy objectives and RNA objectives by considering use of dispersed camping sites near Lily Lake, recreational use of Lily Lake and Lemmish Lake trails, and avoiding areas impacted by stock use near an established recreation site (Harralson Horse Camp); 2) include a small five acre unique high elevation spring/wet meadow complex; 3) simplify surveying and marking boundary corners. Estimated measurement as proposed in this alternative sets acreage at 2,877.

A proposal to modify RNA boundaries for simplification of surveying and marking boundary corners and adding uncommon and sensitive habitat for RNA purposes (memo from Mike McCabe, dated 3-12-93) was reviewed on an annual monitoring site visit to the Charlton Unit on September 9, 1993 to field verify proposed boundary changes. Recommendations following the site visit resulted in the formulation of this alternative and are as follows.

1. The current description of the Charlton Unit boundary around Harralson Horse Camp is 200 feet from the centerline of FS Road 5898-511 which encompasses areas currently used for camping and stock tethering. To avoid conflicts establish a 400 foot distance from the centerline

2. Run the northeast boundary corner straight across section 11 and around Lily lake until it rejoins the current RNA boundary. This will simplify surveying needs associated with establishing the boundary and does not include any atypical vegetative types in the northeastern corner near Lily Lake. The current description of the boundary line along the westerly and easterly edge of Lily Lake is 50-200 feet from the shoreline. Move the boundary back 500 feet from the shoreline to allow dispersed camping 200 feet away from the lake.

3. Incorporate the 5 acre creek/spring/wetland meadow complex into the RNA. This complex demonstrates some very unique high elevational wetland habitats and would be a positive addition to the RNA. The existing Lily Lake Trail route should be reviewed and evaluated for relocation out of the upper reaches of the non-forested complex to avoid damage to stream crossings by horse use and potentially compromising RNA research objectives. Encompassing the complex with a 150 foot slope distance reserve around the complex edge (approximatly 13 acres total) would result in including a portion of the Lemmish Lake Trail within the RNA boundary. Normal trail maintenence including repair and relocation as necessary within or without the RNA boundary to protect resource values would continue.

4. Run the boundary from the trail junction by the spring to the 1/4 corner of section 13. This line would run off established corners and would simplify surveying and marking boundaries. Again there is no evidence of atypical vegetation included in this boundary change.

The acreage and boundary of the RNA, in MA-4 and MA-2 will be finalized with this action. Under this alternative, Forest Plans would be amended to formally establish the 2,877-acre "Torrey-Charlton" RNA (exact acreage pending final boundary survey and location.)

Standards and guidelines in the DNF Plan would be revised as follows and would be specific to the management of the Torrey-Charlton RNA.

M2-2: Picnicking, camping, 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: All recreation Off Road Vehicle use shall be prohibited.

M2-4: Cutting and removal of all vegetation, including firewood, shall be prohibited, except as part of approved scientific investigation.

M2-5: Deleted.

No changes to DNF M2-17 would occur, nor changes to WNF MA-4-22.

C. Alternative C, No Action

This alternative continues for a 2761-acre "proposed" RNA. Management of the area will be according to direction in the Willamette and Deschutes National Forest Plans. No formal establishment of this proposed RNA would occur.

III. ENVIRONMENTAL CONSEQUENCES

A. Alternative A

The environmental consequences of Alternative A are those described in the EIS for the WNF Plan (Chp. IV., pages 166-169, and DNF Plan EIS Chp. 4, pages 69-70). These consequences include short-term losses of opportunities to change vegetation conditions through management (WNF PLan EIS, Chp. IV., p. 168 and DNF Plan EIS, Chp. 4, p. 70).

Forested lands in the RNA are generally low in suitability for timber production. RNA designation will have no effect on timber production because the land was not included in the timber base specified in the LRMP of WNF or DNF.

No new roads or trails are planned in or adjacent to the RNA. No impacts on forest transportation system plans are expected by RNA designation and likewise no impacts will occur from new road or trail construction.

Designation of this RNA may impact recreational values or the ability to fully meet the intended desired future condition for the RNA. Though current LRMP management objectives allow existing levels of recreation, actions taken to minimize future recreation use impacts on the RNA could affect future use patterns. The high level of historic recreation development and use in this area requires that such use be fully considered in development of RNA management plans.

B. Alternative B

The environmental consequences of Alternative B are generally the same as those described for Alternative A. The inclusion of approximately 5 acres of non-forested and 111 acres of forested dispersed recreation land allocation into the RNA would not be significantly different on a landscape scale than the acreage proposed in Alternative A. The change in allocation from dispersed recreation to RNA could increase the likelihood of having fires burn under other than conventional suppression action (prescribed natural or management ignited) within the RNA. Both units evolved under a fire ecosystem, changes in management associated with establishment is not expected to result in significant adverse impacts on the landscape level to natural processes of plant community development and of wildlife interactions with it's habitat.

C. Alternative C

The environmental consequences of Alternative C are the same as described in the EIS of the WNF Plan (Chp. IV., pages 166-169). These consequences include short-term losses of opportunities to change vegetative conditions through management and the possible loss of research potential.

D. Effects on Air Quality

No affect to the designated airsheds.

E. Effects on Federally Listed Threatened, Endangered, and Sensitive (TE&S) Species

No threatened, endangered or sensitive plants are known to occur within the area. However, Bald eagles (federally listed endangered) and northern spotted owls (federally listed threatened) have been both been documented in the Waldo Basin. Neither species has been known to nest within the RNA, but they likely use the area for feeding, resting, or dispersal. Wolverines (candidate for federal listing) are known to inhabit the Waldo Lake Basin, and could be expected to use the RNA. Designation of the RNA will preserve habitat for threatened, endangered, or sensitive plant and animal species that may inhabit the area. Establishment is not expected to result in any effects to TES species.

The Alternatives are in compliance with the Record of Decision for the Amendments to Forest Service and Bureau Land Management Planning Documents Within the Range of the Northern Spotted Owl (NW Forest Plan). They are also in compliance with the Forest Ecosystem Management Assessment Team Guidelines.

F. Effects on Cultural Resources

Designation of the RNA would have no effect on cultural resources within the area.

G. Effects on Prime Farm land, Range Land, and Forest Land

Effects of alternatives on prime farm land, range land, and forest land are in keeping with the intent of the Secretary of Agriculture Memorandum 1827 for prime land. The analysis area does not contain any prime farm land or range land. "Prime" forest land does not apply to lands within the National Forest System.

H. Effects of Wetlands and Floodplains

Establishment of the RNA is expected to have a neutral effect on watershed values since disturbance will be minimized.

I. Effects on Consumers, Civil Rights, Minority Groups, and Women

The Alternatives have no quantifiable effects on consumers, civil rights, minority groups, and women.

J. Indirect Cumulative and Unavoidable Effects

There will be no significant direct, indirect, or cumulative effects to soil, water, fisheries, or wildlife resources or other components of the environment. Implementation of Alternatives will have no adverse or irreversable environmental effects. Irretrievable effects, resulting from the loss or reduction of resource outputs, are expected to be insignificant.

This Environmental Assessment is consistant with and tiered to the Final Environmental Impact Statement for the Willamette National Forest Land and Resource Management Plan of 1990 as amended by the Northwest Forest Plan.

K. Effects on the Pacific Yew

There will be no effect on the Pacific Yew.

IV. AGENCIES AND PERSONS CONSULTED

Of the public comment received for the Willamette National Forest Draft Environmental Impact Statement and Land and Resource Management Plan (WFDEIS 1990), fifty comments identified were related to Research Natural Areas and management areas 4A/4B. The comments received were, in general, positive. One substantive comment was made, and there were no negative comments (Content Analysis Report No. 1652, Planning Record 1990).

Scoping was initiated during the process of updating information to determine whether to proceed with establishment of the RNA, as proposed in the Forest Plan. Scoping began in September, 1993, when forest specialists reviewed the existing condition of the RNA and proposed boundary changes to the Charlton Unit (memo from Mike McCabe, 3-12-93). Public scoping was initiated on April 20, 1994 in the Oakridge Ranger District Schedule of Proposed Actions, where the public was invited to provide comment on the proposed formal establishment. Notice of the proposed action was mailed to the Deschutes National Forest Schedule of Actions mailing list in May, 1997. No comments were received by either forest.

V. LIST OF PREPARERS

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