

SADDLE MOUNTAIN STATE NATURAL AREA

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INTRODUCTION

A plant association inventory of Saddle Mountain State Natural Area was completed as part of a Natural Areas Assessment for Threatened and Endangered Species, Wetlands and Plant Communities in the spring, summer and fall of 2004. The inventory and mapping effort involved detailed surveys and vegetation descriptions. Polygons mapped on a downloaded aerial photograph, and classified according to the Oregon Natural Heritage Information Center's vegetation classification, which is now part of the National Vegetation Classification System (NVCS). Field surveys for Saddle Mountain State Natural Area were conducted on May 19, June 16, August 18, October 3, 14, 21, and 28. Surveys were done by Jimmy Kagan and Charles Carter.

Most of the mapped polygons in the park were visited, with examples of each vegetation type examined. If the polygons had potential for rare, threatened or endangered species habitat, they were completely surveyed. If not, they were visited to assure that the polygon could be correctly labeled, and that the vegetation within the polygon was indeed one plant association.

A comprehensive species list has been put together for all of the sites visited this spring, including data from previous visits to the area. This list is included as Appendix B. In addition, a list of wildlife species which could potentially occur in these areas was developed from the field visits and from the GAP Analysis Project (Kagan et al. 1999) data. This wildlife species list is included as Appendix C. All areas are characterized as to quality based on the Natural Resources Conservation Service's quality rating for rangelands (Excellent, Good, Fair, Poor), and based on the NatureServe standard quality and viability ranking (Element Occurrence Ranks see <http://whiteoak.natureserve.org/eodraft/5.pdf>). Descriptions of the NRCS types are listed below.

- 1 Excellent Condition: Pristine native plant community in excellent condition, with few introduced species.
- 2 Good Condition: Natural plant community, generally dominated by native species, but may have some disturbed patches, or may have low cover of certain exotics.
- 3 Fair Condition: Native plant community moderately disturbed by historic or current human activities or by intrusion by non-native species.
- 4 Poor Condition: Generally disturbed by development or other human activities; or consists mostly of non-native species.

DESCRIPTION OF SADDLE MOUNTAIN STATE NATURAL AREA

Saddle Mountain State Natural Area is located about three miles north of Highway 26, in the Oregon Coast Range, about 20 miles from the ocean. At 3283 feet, it is the tallest peak in the northern Oregon Coast Range, although the lower parts of the park are only at 1500 feet in elevation. It includes exposed cliffs, grassy balds, montane forests, old-growth conifer forests, young mixed alder and conifer forests, wetlands and numerous small streams. Water from the peak flows into the Lewis and Clark River from its south and west slopes and into the Youngs River from its north slopes. Both of these rivers are tributaries of the Columbia. Interestingly, the East Fork of Humbug Creek drains the extreme southeast corner of the natural area, heading east, south and then west, into the Nehalem River drainage and the Pacific Ocean at Nehalem Bay.

Saddle Mountain is one of the older landscapes in the Coast Range. Following the very different climate of the Pleistocene, which in this part of Oregon was a bit warmer and drier, the grasslands and balds on Saddle Mountain provided a refugia for many of the plant species which were formerly abundant on the coastal peaks. Similar high and exposed mountains still exist in the Olympic Mountains of Washington, and the endemic flora which has developed on Saddle Mountain has most of its affinities with those species. As the remaining isolated peaks in southwestern Washington and northwestern Oregon became forested, the flora on the remaining grassy balds at Saddle Mountain, Onion Peak, and Sugarloaf Mountain became isolated and began to change. As a result, Saddle Mountain now supports a number of rare and at-risk species found only on the balds on these isolated peaks.

The once extensive forests in the northern Coast Range also have dramatically declined. Before the Tillamook fire, public lands were very limited in the north coast of Oregon. The private forests are among the most valuable and productive timberlands in the United States, and as a result, the forest have been almost entirely harvested at least once, and many private timber lands have been harvested two or three times. As a result, the age of the north coastal forests changed from a presettlement mean of 400 years old, to a current average of closer to 30 years. And the old-growth dependent species, including the red tree vole, the northern spotted owl and the marbled murrelet, are not doing well in this area. The Saddle Mountain Natural Area still contains some impressive relict, old-growth stands that are typical of the coast range forests. At the lower elevations, they are dominated by towering western hemlock and Sitka spruce, and at the upper elevations by Noble fir, Douglas fir, and western hemlock. Excellent examples of both of these remain at Saddle Mountain. The Noble fir forests at Saddle Mountain are rare and important. The habitats exist only at a few isolated, Coast Range peaks in the northern and central Oregon Coast Range, with similar habitats being dominated by Pacific silver fir in the Cascades, and with most occurrences in Oregon and Washington having been lost.

VEGETATION FOUND AT SADDLE MOUNTAIN STATE NATURAL AREA

The large size and diverse topography of site yields a wide variety of plant associations. The site includes giant coniferous forests dominated by Sitka spruce and western hemlock at the northwestern portion of the natural area, noble fir forests on the forested portions of the summits of the site, and complex mixed conifer forests of noble fir, Douglas fir, western hemlock and Sitka spruce on the slopes of the peak, and on the western flank. These mixed forests include some areas

which were high-graded at the turn of the century, with a few large trees removed, but with most of the stands left intact. They also include areas that are unlogged, as well as areas that were heavily logged, but not clearcut. Historically clearcut areas which comprise much of the southern part of the park are dominated by red alder, young Douglas fir or western hemlock or Sitka spruce. Forested riparian zones are dominated by red alder, western red cedar, western hemlock and Sitka willow. Native shrubland, grassland and forbland associations occur on grass balds, exposed slopes, cliffs, and wetlands.

Saddle Mountain State Natural Area Description

The composition, structure, and distribution of forests at Saddle Mountain State Natural Area are directly related to the physical setting including the nature of the moderately defined, radial drainage pattern. In general, the ridges and valleys trend either northwest-southeast or northeast-southwest. There is however, a dominant ridge that controls the topographic expression at Saddle Mountain State Natural Area. This ridge, which has an arc-like form, trends from the southeast part of the Park to the northwest until about the summit (elevation 3283 ft and former site of a forest lookout tower); it then makes a fairly sharp bend to the north and then continues to bend around to the east-northeast. Smaller ridges and associated valleys trend away from this dominant ridge (herein named the Saddle Mountain Ridge) and these smaller features can be grouped into three, topographically-distinct areas: the southwest area, the northwest area, and the northeast area.

The southwest area, which slopes to the southwest away from Saddle Mountain ridge and whose creeks flow into the Lewis and Clark River is characterized by steep slopes that form a 2000 ft band adjacent to the ridge and gentle slopes that form an apron at the base. The steep slopes range from about 30 to 40 degrees and lie between 3200 ft at the Saddle Mountain ridge top to 1700 feet at the slope base. The trees along this steep slope consist largely of noble fir with minor Sitka spruce, Douglas-fir, and western hemlock on the grasslands – bluffs mapping units, whereas the trees in the deeper draws that lie adjacent to the grasslands in the central part of the slope are largely western hemlock, Sitka spruce, and Douglas-fir. On the other hand, the trees at the ends of the band adjacent to the grasslands are largely red alder with small (<1 ft DBH) mixed conifers.

The gentle slopes on the apron range from about 7 to 10 degrees and lie between 1700 and 1200 ft. The trees on the apron consist largely of partially-closed canopy stands of red alder and stands of western hemlock, Sitka spruce, and Douglas-fir. The stands with the densest concentration of conifers occur at the lowest elevations. Also, in hiking up the Saddle Mountain trail, which lies along this southwest area, noble fir increases upslope.

The northwest area has steep slopes similar to the southwest area but the slope break is not as well defined. The secondary ridges and associated valleys that trend from the northwest to the northeast are more pronounced for the most part than the ones in the southwest area and in particular there are two narrow but deep, slot-like valleys connected to the apron and Fox Creek. The slopes that dip away from the Saddle Mountain ridge to the northwest range from about 30 to 40 degrees at elevations ranging from 1400 to 3000 ft. And unlike the southwest area, there is only one part in the extreme northwest corner of the Park with a gentle slope/apron of about 13 degrees; elevations here range from 900 to 1400 ft.

The trees on the apron in the northwest corner, are large Sitka spruce and western hemlock as well as large western red cedar snags. Western hemlock occupies the highest places on the apron. These

trees also occur in the two slot-like valleys that run almost to the Saddle Mountain ridge. Smaller, mixed conifers also occur in the shallower valleys along with red alder. The two, deep valleys separate 3 secondary ridges that consist of patches of grasslands adjacent to areas of red alder. Higher up on the slopes adjacent to the Saddle Mountain ridge are areas dominated by noble fir.

The northeast area, which is the most rugged, is separated from the southwest and northwest areas by the Saddle Mountain ridge that also forms part of the northern border of Saddle Mountain State Natural Area. This area is characterized by two north-trending ridges with southeast and northwest facing slopes. These ridges, along with the Saddle Mountain ridge, define two main drainage basins whose steep, logjam-filled creeks flow into the South Fork Youngs River.

The slopes adjacent to these ridges range from about 30 to 40 degrees, but at the upper reaches of these headward-eroding streams the slopes are nearly vertical. Unlike the slopes of the areas on the other side of Saddle Mountain ridge, these slopes lack an apron/fan at their bases. Elevations in this area range from about 1000 to 3200 feet. In these drainage basins, red alder with small, mixed conifers make up most of the ridges and low elevation areas whereas adjacent to Saddle Mountain ridge in the steep, headwater areas and in the valleys are large Sitka spruce, western hemlock, and noble fir. The red alder covered ridges intrude the large conifer covered valleys.

The one prominent, southeast facing slope at the north side of the area consists mostly of grassland. This grassland is characterized by noble fir and large Douglas-fir. Adjacent to the Park boundary at the east end of the grassland the grassland merges downslope into large Douglas-fir, western hemlock, western red cedar, and minor noble fir. In addition, there is the northeast facing slope at the southeastern part of Saddle Mountain State Natural Area whose creeks also flow into the South Fork Youngs River. Here there are two slopes, the steeper higher one of about 35 degrees and the basal one of about 10 degrees. Elevations here are about 1400 at the base and 3100 at the top. The trees along this southeastern border make up a uniform stand of medium size western hemlock, with diameters averaging about one foot, and with minor Sitka spruce at the base. These trees grade into large western hemlock, noble fir, and Sitka spruce, with minor western red cedar.

Recent Successional Changes: 195X, 1977, and 200X

An oblique aerial photograph of Saddle Mountain taken in 195X (Baldwin, 1964, p.16) shows the southwest slope of the western part of Saddle Mountain ridge. The photograph is particularly interesting because it shows hundreds of standing and downed snags along a largely denuded, southwest slope and ridgeline. The area of snags appears to be confined to a band from the area of the middle peak (3,267 ft) downslope to the apron at the foot of the ridge to about a mile southeast to the slope break at the base of the southeast end of the Saddle Mountain ridge. In this band are three irregular areas of several hectares of what appear to be red alder as well as a stand of old/large conifers about 4 hectares in area near the top of the ridge just south of the southern peak (3126 ft). These conifers appear continuous with a larger stand of conifers (partially visible from the southeast) that covers the northeast slope at the east end of Saddle Mountain ridge.

Perhaps a fire driven by westerly winds burned this area. A road lies along the central apron of this denuded southwest slope. Could logging operations have triggered the fire(s) or was the road built to salvage the snags and/or to cut snags to reduce the likelihood of fire? Fires in the Park on Thanksgiving Day 1936 and another in 1939 caused considerable damage to the young trees and the few remaining stands of older trees (Armstrong, 1965, p. 183). Also, the moister conditions that

promote the growth of western hemlock and Sitka spruce around the base of the mountain may have limited the extent of the fire.

The photo also shows a slope largely without snags, but with irregular, several hectare stands of conifers and/or alders along the southwest slope between the northern peak (3283 feet) and the middle peak (3,267 feet). One of these stands, which occurs in a valley cut into basaltic breccia, appears similar to the stand of conifers near the east end of the Saddle Mountain ridge. The Saddle Mountain State Natural Area trail crosses one of the eastern conifer stands. The trees consist of Douglas-fir, western hemlock, and Sitka spruce along the lower part of the slope with noble fir more common upslope along with minor Sitka spruce and western hemlock.

The vegetation map in the “Preserve Analysis Saddle Mountain,” (Alaback and Frenkel, 1978, p. 18) is small scale (about 1:27,000) and hence fairly general. Overall, the map shows a broad fringe of second-growth, mixed conifer (western hemlock, Douglas-fir, and Sitka spruce) surrounding the ridge to the southeast, southwest, and northwest although there is a stand of about 100 hectares of old-growth forest in the northwest corner of the Park, and one of about 40 hectares near the southern end of the ridge (they show the 4 hectare stand, which is on the aerial photo (Baldwin, 1964, p. 16), as part of this 40 hectare stand.) The remainder of the map – essentially the slopes forming the ridge and the central northeast part – they show as largely “rock slopes, brushy thickets, residual Douglas-fir or red alder, and meadows, rock, and balds.” The “residual Douglas-fir or red alder” stands shown on the central southwest slope of their map are probably the “...irregular several hectare stands of conifers and/or alders” that appear evident on the 195X photo.

There is little difference between the 195X aerial photo and the map (Alaback and Frenkel, 1978) of the southwest side of the Saddle Mountain ridge. The map naturally is more general and doesn't show some of the small stands of mixed conifers to the northwest, but overall the largely denuded slopes on the 195X photo fit the map classification of “Rock Slopes” of 1978. A comparison of the 1978 map, on the other hand, to the 200X photo shows several differences, some due to succession and some due to the detail/scale of the map. On the southwest side of the Saddle Mountain ridge the “Rock Slopes” areas of 1978 are now largely covered with red alder and small mixed conifers. Also, the “Residual Douglas-fir or red alder” areas of 1978 consist largely of mixed conifer as Sitka spruce, western hemlock, and noble fir have succeeded the red alder.

On the northeast side of the Saddle Mountain ridge, the “Brushy thicket: young conifer, salmonberry, and huckleberry” of 1978 are now largely red alder and young Douglas-fir or young mixed conifer. And a major difference between the 1978 map and the 200X photo is in the mapping of old/old-growth forest. The five areas mapped in 1978 on the northwest and northeast side of the Saddle Mountain ridge as “Residual Douglas-fir or red alder” are old growth forest, consisting largely of western hemlock, Sitka spruce, and noble fir. Moreover, these stands of old trees form an irregular, discontinuous band adjacent and east of the Saddle Mountain ridge along the northeast slope and in the deeply incised valleys of the northwest slopes.

The maps on the following page, show the vegetation at the Saddle Mountain State Natural Area, as mapped for this 2004 inventory, classified to vegetation type and ecological system.

Figure 1. Vegetation of Saddle Mountain State Natural Area.

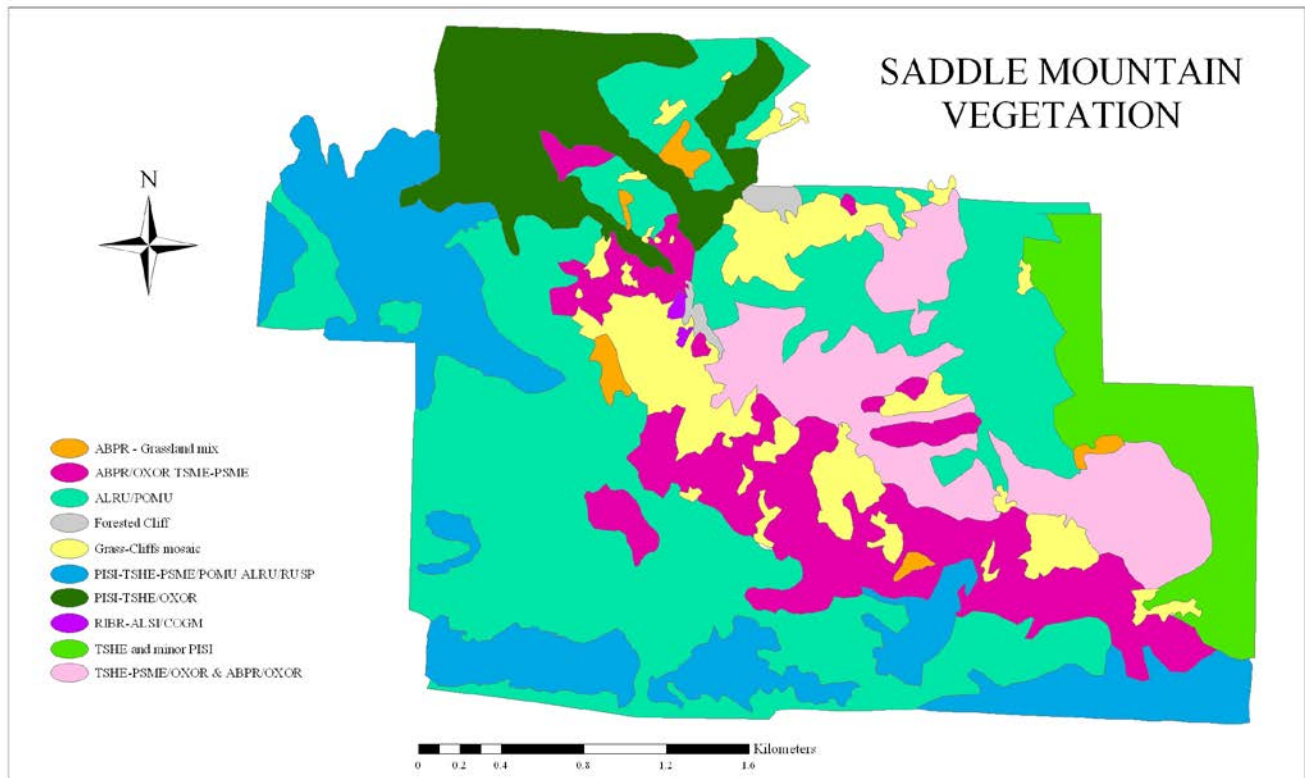
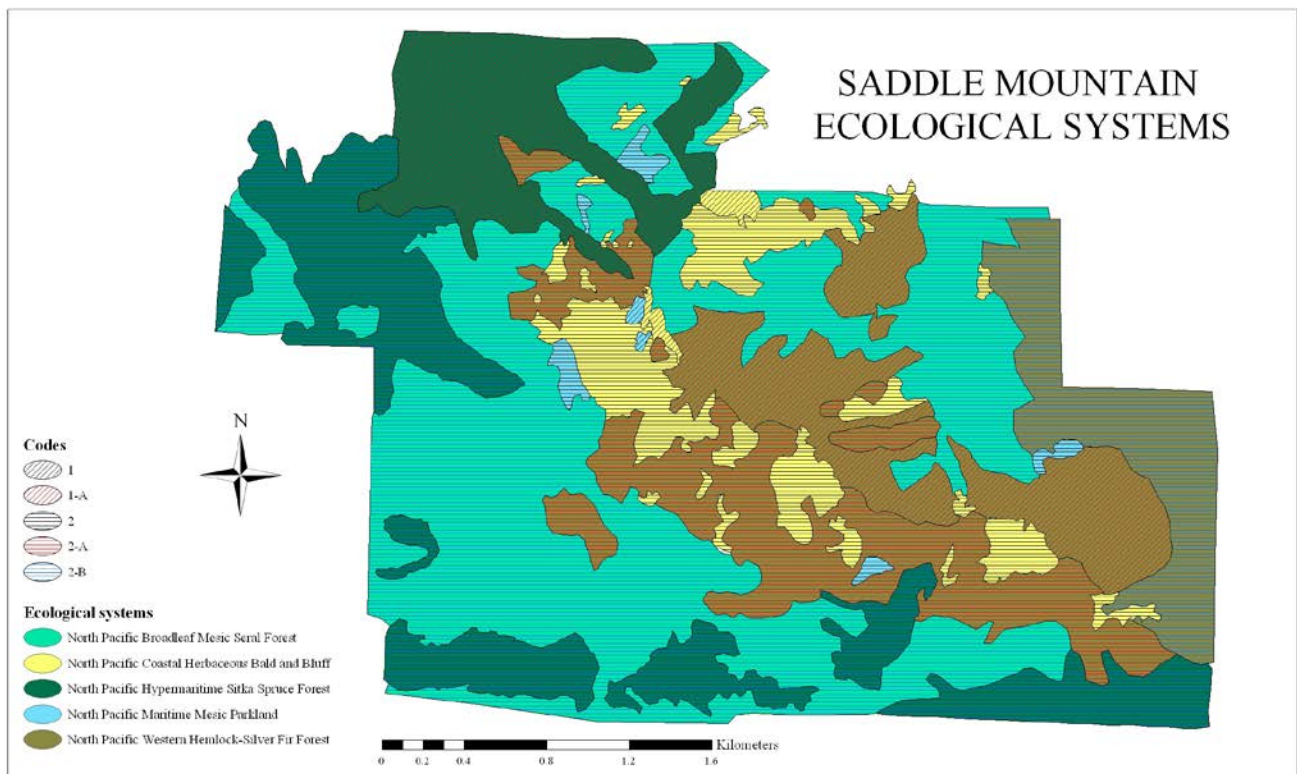


Figure 2. Ecological Systems of Saddle Mountain State Natural Area



PLANT ASSOCIATION DESCRIPTIONS

FOREST ASSOCIATIONS

Old-growth, Sitka spruce forest - The stand at Saddle Mountain is a mix of three types: Sitka spruce / fools huckleberry – red huckleberry (*Picea sitchensis* / *Menziesia ferruinea* – *Vaccinium parvifolium*) G3 S3; Sitka spruce / sword fern (*Picea sitchensis* / *Polystichum munitum*) G3S3; and Sitka spruce / Oregon oxalis (*Picea sitchensis* / *Oxalis oregana*) G3 S2, all in Excellent Condition, very late seral.

North Pacific Hypermaritime Sitka Spruce Forest Ecological System

The northwest corner of the natural area has a pristine old-growth forest stand, one of the larger remaining stands in the northern portion of the Oregon Coast Range. The forest occurs at the boundary between the Sitka Spruce zone, found in the coastal fog belt, and the western hemlock zone, which is found just inland. In spite of occurring at the inland margin of the spruce zone, it has fairly typical Sitka spruce forests. A few of the other stands on the southern part of the park are more transitional. The stand varies from 900 to 1700 feet, with the majority of the forest composed of large Sitka spruce, up to 2 meters in diameter, and giant western hemlock (*Tsuga heterophylla*) up to 1.3 meters in diameter, and a few giant western red cedar (*Thuja plicata*). The understory is mostly composed of swordfern and Oregon oxalis with some patches of vine maple in the more open areas. A few of the north and northeast facing areas have small patches with fools huckleberry and red huckleberry, but the Oregon oxalis type is the most significant. As is typical of these forests, the stand has some large western red cedar (*Thuja plicata*) trees and snags, occurring mostly on gentle slopes.

Sitka spruce-western hemlock/sword fern-oxalis (*Picea sitchensis*-*Tsuga heterophylla* / *Polystichum munitum*-*Oxalis oregana*) forest (G3 S3), Good Condition, Mid seral

North Pacific Sitka spruce Forest Ecological System

There are four large patches and another four small patches of this successional forest mapped at Saddle Mountain, mostly on the southern portion of the park. They represent stands that were logged, but were not clearcut, so has much of the canopy with trees over 100 feet tall and about 0.75 meters in diameter. The species are similar to the climax forest type described above, except that these stands have significant amounts of Douglas fir (*Pseudotsuga menziesii*) as well, generally with a patchy canopy of mostly fir and hemlock, but with spruce found throughout as well. The understory is very similar to the old-growth stands, although generally a bit more open. The stands almost always occur within the matrix of red alder and Douglas-fir younger forests, and they are mapped as a Sitka spruce - western hemlock – Douglas-fir / swordfern forest – red alder / salmonberry forest complex.

Old-growth Noble fir / Oregon oxalis forest (*Abies procera* / *Oxalis oregana*) – G1 S1, Excellent Condition, late seral

North Pacific Western Hemlock – Silver Fir Forest Ecological System

This is a very rare plant community, restricted to high coastal peaks in northwestern Oregon. Known from only 10 or so small stands, some of the best quality examples are found at Saddle Mountain. The U.S. Forest Service has described two variants (or phases) of this type. One (called *Abies procera* / *Oregon oxalis*) has more Oregon oxalis in the understory, and with Noble fir dominant, with western hemlock and some Douglas fir, and with high cover of Oregon oxalis and occasionally big huckleberry. The other (called *Abies procera* / *Oregon oxalis* – *Polystichum*

munitum) has Douglas fir and Noble fir codominant in the canopy, and has equal amounts of oxalis and swordfern in the understory. Both of these phases are found in the park. The forests occur as three moderately large, stands of almost pure noble fir near the top of the peak.

Mixed Noble fir – Douglas fir forests with hemlock and Sitka spruce (*Tsuga heterophylla* / *Acer circinatum* / *Polystichum munitum* G3 S3, *Tsuga heterophylla* / *Oxalis oregana* G3G4 S3) plus the Spruce and Noble fir associations listed above. All in Good Condition, late seral

North Pacific Western Hemlock – Silver Fir Forest Ecological System

These are old-growth forests, or more often mature forests with some historic, selective logging that occurred many years ago (hand sawing with springboard marks remaining in the stumps). There is also one stand at the northwest part of the park, which has not been logged at all. The upper ends of the stand are examples of the Noble fir / Oregon oxalis community. Five patches of this mixed noble fir with western hemlock, Douglas fir or Sitka spruce communities were mapped slightly lower elevations near the margins between the hemlock or spruce zone, and the fir zone.

Old-growth Western Hemlock forest (*Tsuga heterophylla* / *Oxalis oregana*) G3G4 S3, Excellent Condition, late seral

North Pacific Western Hemlock – Silver Fir Ecological System

The east slope of Saddle Mountain contains a fairly large, old-growth forest remnant which is largely out of the Sitka spruce zone. The majority of the forest canopy is dominated by old-growth western hemlock and Douglas fir, although the stand does extend high enough on the mountain that noble fir becomes common and almost codominant in the upper reaches of this stand. Occasional western red cedar, pacific yew, and big leaf maple can be found in the stand. The understory is fairly depauperate, dominated by Oregon sorrel and swordfern, with very minor amounts of red huckleberry, common Oregon grape and salal. The forest is a very high quality remnant in a landscape large devoid of similar older forests, and is quite important.

Second-growth Western Hemlock forest (*Tsuga heterophylla* / *Oxalis oregana*) G3G4 S3, Good Condition, mid seral

North Pacific Western Hemlock – Silver Fir Ecological System

The south side of Saddle Mountain contains one stand of a second growth western hemlock – Douglas fir forest which has almost no Sitka spruce in it, and so could not be mapped or classified with the bulk of the second-growth forests (as mid seral Sitka spruce – western hemlock). This stand is composed of small to moderately large western hemlock and Douglas fir, with significant amounts of red alder throughout. The understory is quite mixed, with vine maple, Oregon sorrel, swordfern, red huckleberry, red elderberry, common Oregon grape, thimbleberry, salmonberry and salal all found. The forest is unusual at the site, but not very significant.

Red alder / sword fern (This is actually a mosaic of two types, *Alnus rubra* / *Rubus spectabilis* and *Alnus rubra* / *Polystichum munitum*) both ranked G4G5 S4, both in Good Condition.

North Pacific Broadleaf Landslide Forest and Shrubland Ecological System

The red alder / swordfern association is the common post-disturbance forest type is found growing on logged over areas as well as sites where other disturbances, such as road construction activities have occurred. On drier sites the sword fern is dominant, often to the complete exclusion of salmonberry, whereas in wetter sites the salmonberry is usually dominant. There may be large numbers of regenerating Sitka spruce or Douglas-fir in the understory or becoming codominant.

Other tree species that may be present include bigleaf maple, Sitka spruce, and western hemlock. Common understory species include red elderberry, Oregon grape, miner's lettuce, sweetscented bedstraw, hedge-nettle, Oregon oxalis, and thimbleberry, and starflower. Sadly, a significant portion of the forests at Saddle Mountain are this early successional forest.

Red alder/salmonberry (*Alnus rubra*/*Rubus spectabilis*) forest – NOT MAPPED

North Pacific Lowland Riparian Forest and Shrubland

This is a riparian forest type along streams throughout the State Park. Floristically these forests are similar to disturbance-created red alder forests, but are natural, containing riparian zone species, such as piggyback, blue currant, coltsfoot, hedge-nettle and Oregon oxalis. Non-native species are infrequent. Bigleaf maple is the most common associated tree and some Sitka spruce, western red cedar, Douglas-fir, and western hemlock often occur at low densities along the streams in the riparian zone. Red elderberry is the most commonly associated shrub. Red alder/salmonberry forests occur on flat areas next to creeks to very steep slopes in canyons and seepage areas. Standing and fallen dead wood is plentiful due to large numbers of snags and tip-ups. These forested riparian zones are critical wildlife habitat, particularly for amphibians.

The following four wetland and riparian alder forest communities all are found within the natural area boundaries, but were not mapped due to the small size of the occurrences.

Red alder/ladyfern (*Alnus rubra*/*Athyrium filix femina*)

Red alder/ladyfern-skunk cabbage (*Alnus rubra*/*Athyrium filix femina*-*Lysichiton americanum*)

Red alder/salmonberry/slough sedge-skunk cabbage (*Alnus rubra*/*Rubus spectabilis*/
Carex obnupta-*Lysichiton americanum*)

Red alder/piggyback-hedge-nettle (*Alnus rubra*/*Tolmeia menziesii*-*Stachys ciliata*).

These forested wetland types were found as small, unmappable patches in red alder/salmonberry (*Alnus rubra*/*Rubus spectabilis*) riparian wetland forests. They also occur along the streams and in some small wetlands created by local landslides in the seral conifer forests (although were not seen in the old-growth forested stands. Bigleaf maple (*Acer macrophyllum*) is a common associate of these types.

SHRUB ASSOCIATIONS

Alpine thickets (undescribed association)

North Pacific Maritime Mesic Parkland Ecological System

There are no shrub associations that have been classified that describe the mesic shrublands near the summit of Saddle Mountain. Two small patches of a shrubland – forbland - grassland mixed habitat were mapped. In their original preserve analysis, Paul Alaback and Bob Frenkel (1978) included a type called “moist herbaceous thicket”, but mapped it as “brushy thicket”. Kenton Chambers (1973) called it an “alpine thicket”, but included some species from the adjacent noble fir forests. These are quite diverse habitats, and very difficult to characterize. Both of these areas are mixed shrubs (*Rubus parviflorus*, *R. spectabilis*, *Ribes bracteosum*, *Menziesia ferruginea*, *Alnus sinuata*, and *Sorbus sitchensis* the last two which are often trees, but were shrubs here), tall forbs (*Conioselinum gmelinii*, *Aquilegia formosa*, *Hieracleum lanatum*, and *Delphinium trolliifolium*) and grasses (*Elymus glaucus*, *Bromus sitchensis*, and *Calamagrostis nootkaensis*). When additional sites are sampled, this community can be properly classified.

HERBACEOUS ASSOCIATIONS

Two herbaceous communities occur in a matrix with exposed and largely unvegetated cliffs at and below the summit of Saddle Mountain. These are mapped as a single unit, which are called Grass-Cliffs mosaic. The condition of these grasslands and forblands ranges from fair to good. Historical grazing allowed for the introduction of non-native species, and the spread of non-native species which increase with grazing. In Carlson's MS Thesis (1997) fall dandelion (*Leontodon autumnalis*) and yarrow (*Achillea millefolium*) were used to describe the summit and bald vegetation at Saddle Mountain. Fall dandelion is an introduced perennial forb, which occurs at the site due to historical disturbance. Yarrow is a native perennial forb which occurs in all grassland communities in Oregon. Neither of these are good species to use for describing natural vegetation.

There are two native plant associations which have been described that represent the habitats in these native grass and forblands, the Cascade desert parsley rock garden community, and the Roemer fescue grassland community. They are described below.

Cascade desert parsley (*Lomatium martendalei*) rock garden – G2 S2
North Pacific Montane Grasslands

Steep rock substrate headland dominated by native forbs and occasional grasses. Dominant species include Cascade desert parsley, strawberry, stonecrop, native rare forbs, sword fern, licorice fern, and a few other native and non-native species. Oregon grape, red elderberry, and red-flowering currant cover is usually quite low in this type and the substrate is steeply sloping rock. At Saddle Mountain, the very steep slopes protect these habitats from non-natural disturbances. Deer and Elk are creating trails and soil erosion in some of these areas, and some control of their populations may be necessary.

Roemer fescue montane grassland (*Festuca roemerii* – *Poa secunda*) – G2 S2
North Pacific Montane Grasslands

This is a rare plant community known only from a limited number of coastal peaks in northwestern Oregon (Saddle Mountain, Grassy Mountain, and Mary's Peak are the only large stands) and southwestern Washington, as well as a few isolated occurrences along the western edge of the Cascades. Formerly called, Red Fescue Montane Grasslands, the identification of the dominant grass has been changed, apparently to *Festuca roemerii*. The community is forb rich, and provides habitat for many of the endemic forbs and mosses.

NONVEGETATED AREAS

Exposed cliffs
North Pacific Cliff and Canyon Ecological System

This mapping unit consists of exposed rock. The south facing bluffs were mapped in the grassland forbland complex described above. The steep north facing cliffs appear completely black on the image. They are generally barren cliffs and are difficult to map, as they are vertical. At Saddle Mountain, they are variable, with some trees, shrubs, forbs, and grasses, but are characterized by exposed rock.

Developed non-forested areas

These consist of non-forested areas with buildings, parking lots, landscaped plantings, and clearings created for recreation. Any area that is regularly mowed is included in this unit. Unpaved roads or clearings maintained by vehicle use are classified here. They are very limited at the site. There are very few developed forested areas, which consist of developed campground and picnic areas under a forest canopy. Trees are usually Sitka spruce, Douglas-fir, western hemlock and red alder. This is present by the road, but the occurrences are too small to map.

AT-RISK AND PROTECTED SPECIES

As part of the Saddle Mountain Natural Area inventory, Heritage staff searched for all potential threatened and endangered plants as well as for any wildlife species that could be found during the botanical/ecological inventories. Over the years, this site has had extensive inventories, both zoological and botanical, and the information from these past inventories is also included below.

Plants

The site is a hotspot for sensitive plants, both vascular and non-vascular. It includes local endemics, plants at the southern edge of their range, and plants disjunct from occurrences in the Olympic Mountains, Columbia River Gorge and the Cascades (Chambers 1973, Detling 1954). It is especially important for non-vascular plants, which are much less well known and studied. The vascular and then the non-vascular plants are discussed below.

Vascular Plants

Saddle Mountain bittercress (*Cardamine pattersonii*) – G2 S2, USFWS SoC, ODA C

This species is a very local endemic, restricted to only a few peaks in the northern Oregon Coast Range, Saddle Mountain, Onion Peak, and Sugarloaf Mountain). The population present at Saddle Mountain is found on the exposed, grass balds and moist cliffs. It is easily seen from the trail, and occurs widely on all the opening visited, where it mostly grows as an annual forb. It is quite abundant in these openings, generally from 2200 to 3200 feet in elevation.

Alaska long-awned sedge (*Carex macrochaeta*) – G5 S2

This boreal species is known only from the moist meadows found just to the east of the western summit of Saddle Mountain, and in a few patches in the steep grassy slope below the summit. It forms dense, matted colonies in this area, but has not been seen elsewhere on the mountain.

Chambers Indian paintbrush (*Castilleja chambersii*) – G1 S1, USFWS SoC

This is a newly described, local endemic species, found only at one other site in the Oregon Coast Range.

Willamette Valley larkspur (*Delphinium oregonum*) – G1Q S1, USFWS SoC, ODA C

This Oregon endemic is known from the Willamette Valley and only one Coastal (this) occurrence.

Frigid shootingstar (*Dodecatheon austrofrigidum*) – G2 S2, USFWS SoC

This is another recently described (or perhaps still in press), local endemic species found only on a few coastal peaks in Oregon and southwestern Washington.

Smooth-leaved douglasia (*Douglasia laevigata*) – G3 SNR

This is a rare species which is not tracked by the heritage program, because of lack of threats and concern. It is fairly widely distributed, and occurs on cliffs and very steep slopes, that are often inherently protected from disturbance. However, it is a very beautiful, showy flower, which is fairly rare at the site, found only along the upper south facing bluffs facing the summit. Only about 20 plants were seen in 1983 and 1996, while 9 were seen again in 2004. However, the plants were not in flower in 2004, and were much more difficult to spot.

Wandering daisy (*Erigeron peregrinus* var. *peregrinus*) – G5T4 S2

This plant is restricted to grassy slopes near the saddle of the mountain, between 2500 and 3000 feet in elevation. It is not common, but apparently secure, with similar plant numbers seen in 1983 – 1996.

Western red avens (*Geum triflorum* var. *campanulatum*) – G5T4 S1

This is a species that is known from only a few sites in Oregon, although is more common in Washington. The population at Saddle Mountain is found on the upper, grassy slopes, and the plants are quite evident and fairly abundant, although only found at the upper end of the site, from 2700 feet to the summit.

Rosy lewisia (*Lewisia columbiana* var. *rupicola*) – G4T4 S2

This plant is found in the Columbia Gorge of Washington, the Olympic Mountains, but remains somewhat rare in Oregon. The population at Saddle Mountain is fairly small, with only 8 patches of plants seen in 1998. The population was almost identical in size in 2004, apparently secure but not expanding.

Saddle Mountain saxifrage (*Saxifraga hitchcockiana*) – G1 S1

This is one of the plants named for Saddle Mountain, and restricted to very few sites on the planet (Saddle Mountain, Sugarloaf Mountain and Onion Peak). The species was first collected in 1918, and is alternately reported as being abundant or fairly limited. In 2004, the plant had an exceptional year, with late rains causing large, spectacular blooms of the species, which blanketed many of the open grasslands and bluffs. It remains abundant at the site, and at least in 2004, no threats appeared evident at the site.

Bristley-stemmed sidalcea (*Sidalcea hirtipes*) – G2 S2

This is a large, fairly showy grassland forb which occurs along the northern Oregon coastal headland grasslands, on a few of the Coast Range grass balds, and north into southwestern Washington. It was formerly quite abundant along the Oregon coast, but the largest populations in the world, found at Oswald West State Park, and at a number of the coastal headlands, have steadily declined as the lack of fire turned their grassland habitats into dense shrublands and forests.

The population at Saddle Mountain is found on a number of sites on the south facing, open grassy slopes, from 2900 to 3300 feet. The population appears to be stable, with numbers not changing from 1983 to 1998 to the 2004 inventory. Fortunately, succession does not appear to be a problem, due to the steep slopes and exposures.

Non-Vascular Plants

Encalypta brevipes – Moss – G3 S1

This moss species is reported from slopes and bluffs near the summit.

Iwatsukiella leucotricha – Moss – G2G3 S1

Found growing on noble fir tree bark and live trunks, this moss has been seen at a number of sites along the trail.

Rhytidium rugosum – Moss – G2G3 S1

This is a large moss found in open grasslands between 3200 and the summit, on exposed outcrop ledges and soil.

Bryoria bicolor – Lichen – G4 S1

This lichen is very rare in Oregon. It was included on the lichen species list for the site, but no other information is available.

Bryoria subcana – Lichen – G2G4 S1

This is a ground dwelling lichen reported from the summit of Saddle Mountain.

Sticta arctica – Lichen – G3G4 S1

This lichen was found on the upper slopes of the trail, on basalt outcrops. It is also found occasionally on the lower elevation mixed conifer forests, by the trail.

Diplophyllum plicatum – Liverwort – G4 S2

This liverwort was reported on the steep north slope below the peak, by the summit, in 1978 and again in 1984.

Herbertus aduncus – Liverwort – G5 S1

This liverwort was reported from the trail to the summit, on the slopes and peak, in 1978. It has not been seen since.

Herbertus sakurarii – Liverwort – G4 S1

This species was seen growing on noble fir trunks, and on moist cliffs near the ridgetop at Saddle Mountain. Fairly abundant between 2470 and 3200 feet in elevation.

Plagiochilla semidecurrrens var. *alaskana* – Liverwort – G4T3 S1

Plagiochilla is a rare liverwort seen near the trail, on open north facing cliffs and moist rock faces, near the summit.

Radula brunnea – Liverwort – G3 S1

This rare liverwort is found on open, north facing, exposed rock outcrops at the saddle.

Tritomaria quinquedentata – Liverwort – G5 S1

This rare liverwort is found on steep, seepy, north-facing slopes, between 2800 and 3000 feet. It is locally abundant, and grows with *Radula brunnea*.

Animals

Cope's giant salamander (*Dicamptodon copei*) G3G4 S2, ORNHIC List 2, ODFW SU (old list) and SV (new list)

Found throughout the site by R.A. Nussbaum, with 53 specimens collected on seven different occasions, although last collected in 1970. The species is believed to be present and doing fine at the site.

Oregon silverspot butterfly (*Speyeria zerene hippolyta*) G5T1 S1, USFWS Listed Endangered

This butterfly was last seen at Saddle Mountain in 1973, and is currently presumed to be extinct. The meadows and headlands still contain exceptional habitat for the species, including lots of *Viola adunca*, the host plant for ovipositing eggs, and nectar plants for summer survival. The site should be considered as a potential for restoration, if captive raised butterflies are available from the Oregon Zoo.

Old-Growth Forest Species (northern spotted owl, marbled murrelet, northwestern Red Tree vole)

There are no documented records of any of these species from Saddle Mountain State Natural Area. However, there are many reports that indicate that marbled murrelets are present and nesting at the site, in the stand at the northwest portion of the park. The marbled murrelet (*Brachyramphus marmoratus*) has a threatened status on both the Federal and State lists. This sensitive species is dependent on old growth trees for nesting, which are only available in the area at Saddle Mountain State Natural Area. According to an email from Kim Jones at OSU, the manager of the marbled murrelet information for the state, "marbled murrelets have been detected over numerous years in the late 1980s and early 1990s. My crew did some of the intensive surveys, but most of the surveys were conducted by Neal Maine and the North Coast Land Conservancy folks. I would guess that murrelets are still nesting in the old-growth stand in the NW corner of the park."

There are almost certainly northwestern tree voles present at the site. The northwestern red tree vole is of particular interest in this area. This is because it represents a valid variety only known from the northwestern Coast Range of Oregon, characterized by its darker fur than the more common red tree vole from southwestern Oregon and the Oregon Cascades. In spite of fairly intensive searching on federal lands in the northern Coast Range, no individuals of this species were found in any of the survey and manage inventories over the last 5 years. Currently, the only evidence that this variety is not extinct is the presence of individuals (3) found in spotted owl pellets in the Tillamook State Forest. However, there is little doubt that the forests, especially those on the northwestern corner of the natural area, are large enough to support this species, and that it is probably present.

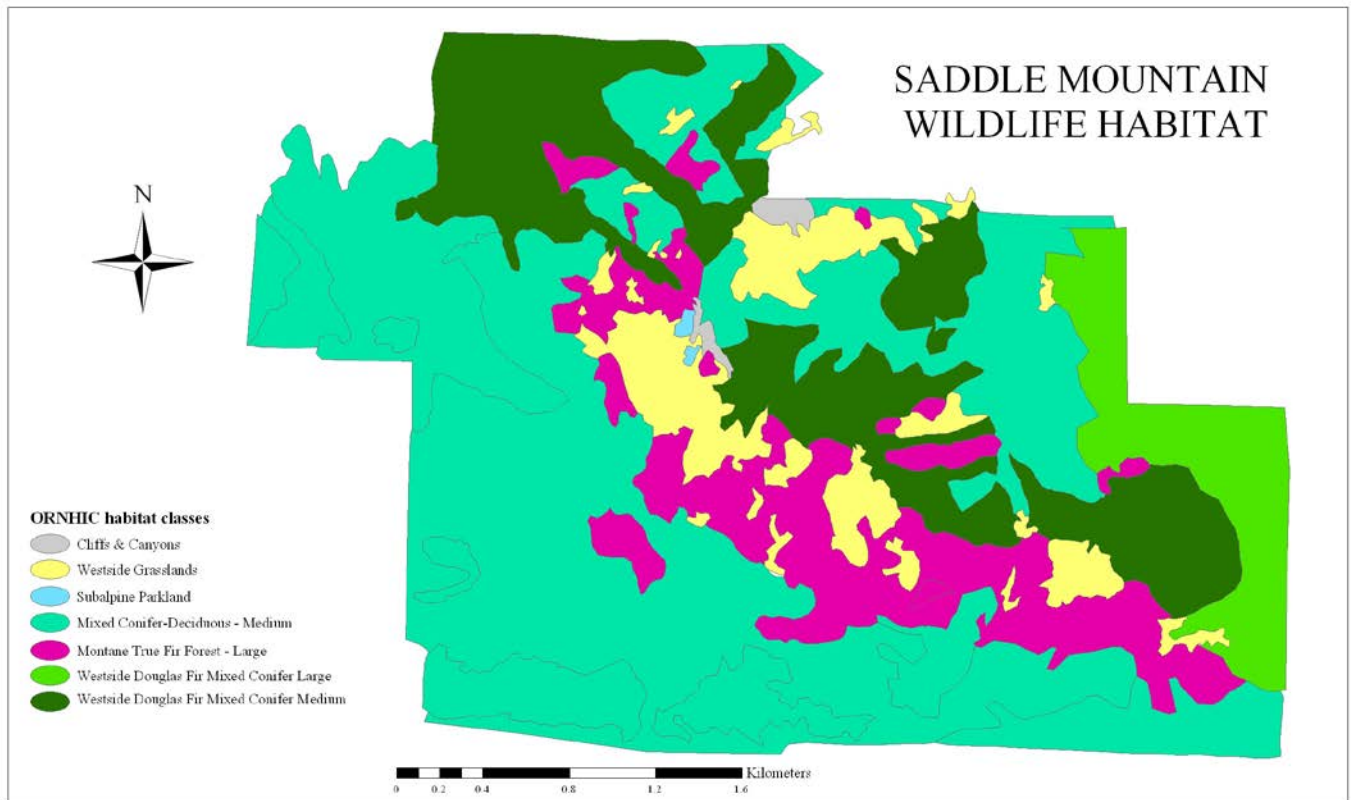
No spotted owl nests are known from the site, although they are known from the Clatsop State Forest about 5 miles east of the site. In its current condition, it may be too small to support northern spotted owls, but it certainly is close to being large enough to support a nesting pair, and with some habitat restoration, it should certainly be large enough.

The construction of, and use of a loop trail would certainly not impact the populations of the red tree vole. It may impact nesting populations of marbled murrelets and spotted owls, and more intense surveys would be required before siting the trail. Potential impacts are discussed in the management recommendations section of the report. However, the trail could greatly increase the ease of monitoring the status of all of these species at the site.

WILDLIFE HABITATS

Wildlife habitats, based on those defined in the Oregon Gap Analysis Project (Kagan *et al.* 2000) were mapped at the Saddle Mountain State Natural Area. Figure 3 below shows these. The habitats, along with the associated wildlife habitat suitability index, were used to generate the list of species which potentially occur at the site, in Appendix C.

Figure 3. Wildlife Habitats at Saddle Mountain State Natural Area



WETLANDS

There is little wetland acreage at Saddle State Natural Area. The majority of these are high quality, diverse, forested wetlands. These are critical amphibian habitat and are important to other wildlife species as well. The alder wetlands are of some conservation importance, but mostly are significant as fish habitat, and as habitat for *Filipendula occidentalis*.

MANAGEMENT RECOMMENDATIONS

Saddle Mountain State Natural Area represents an important site to learn about and understand the natural history of the Oregon Coast Range. It is a place of great rugged beauty. It contains an abundance of high quality forest communities, spectacular grasslands, forblands and cliffs, amazing views, and one of the very few remaining natural areas in this part of the Oregon Coast Range.

Summit Trail Erosion

The site receives very extensive recreational use, almost entirely focused on the three-mile hike to the summit. There are some campgrounds around the trailhead, which receive some summer use, but most park usage appears to be day hikes up the mountain. The trail to the summit is quite steep, and historically there has been significant but local erosion, particularly in the native grass bald habitats that support the at-risk plant species populations. Based on the surveys in 2004, it does not appear that the erosion from the trail is causing significant damage to any of the at-risk species or the rare habitats at the site. However, it does appear that some damage is occurring, and that long-term trail maintenance will be necessary to assure erosion does not increase, and that the safety of hikers is maintained. This is most likely to impact at-risk species just below the summit, and on the main traverse below the summit.

New Loop Trail

As a state natural area, the site should be, and has been, managed to support the natural features present at the site. However, in spite of the significance and rarity of the old-growth forests present at Saddle Mountain, they have received very little study, and little public appreciation. The Natural Areas community has always worried about potential impacts of heavy recreational use in natural areas. Hikers often will remove long-term monitoring markers, and campers can significantly change the natural features of a forest with fires and wood removal. However, I would recommend that OPRD consider constructing a loop trail around Saddle Mountain within the park, to expand access to the public to the exceptional forests. The southern side of the park has a old logging road which has become a trail, which could serve as a significant portion of this trail. The trail would stay within the forest, would allow the public to view the two wonderful old-growth stands at the west and the northeast ends of the park, and would remove some of the hiking traffic to the peak, hopefully reducing some of the impacts to this area. Unfortunately, it would almost certainly be necessary to either acquire either the land or an easement from the Weyerhaeuser Corporation on the northeastern edge of the park to build the trail through this area, since the OPRD lands are too steep for the trail in this area.

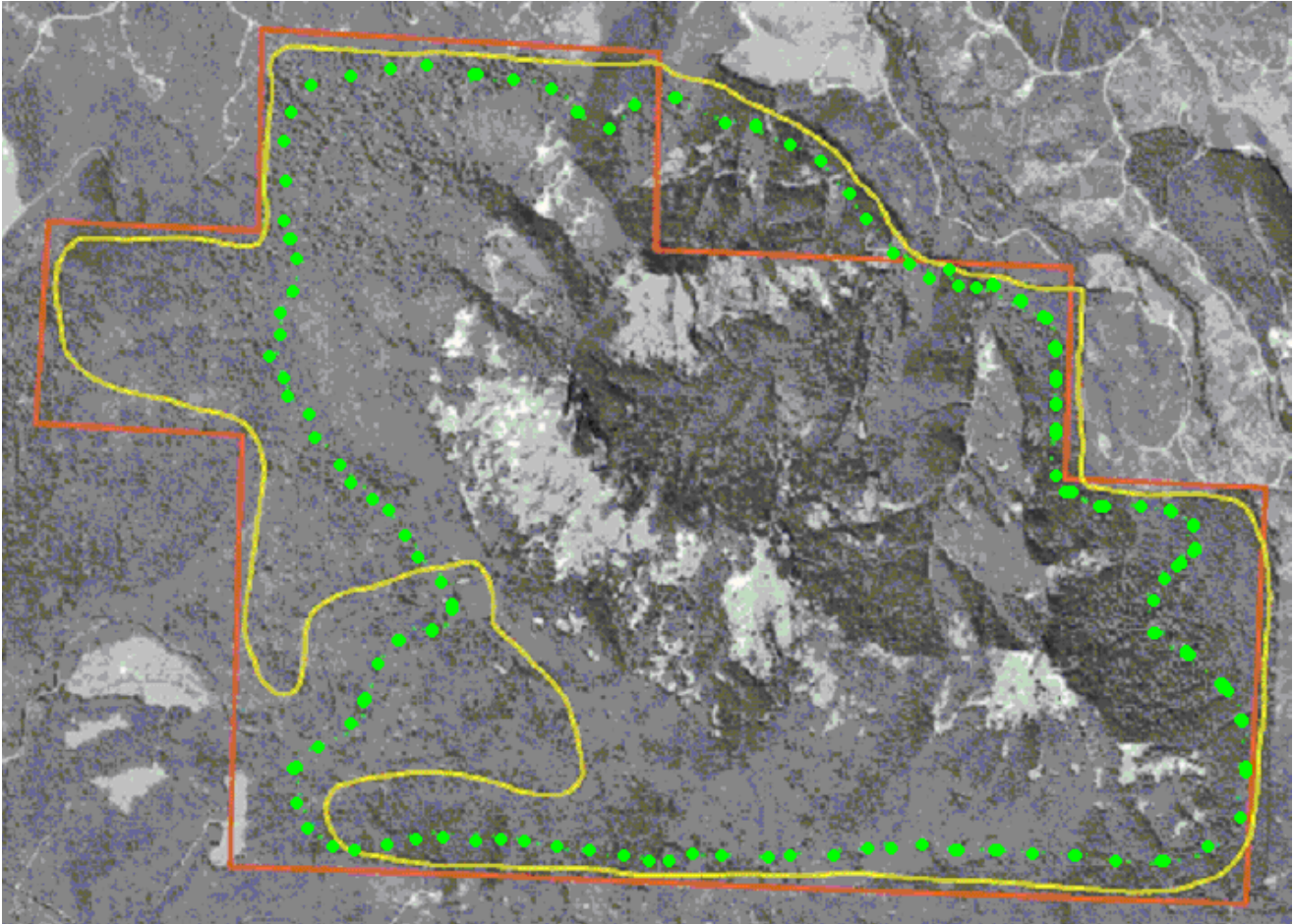
Kim Jones was contacted regarding the potential impact this trail might have on Marbled Murrelets at the site. Her response is as follows:

The effect of the loop trail on murrelets will depend on a variety of factors, including number of people expected to use the trail, limits on food in the area, and whether folks will be required to stay on the trail. Significant disturbance to murrelets could be caused by large numbers of people on the trail and in the forest, and by picnics nearby (attracts corvids which eat murrelets). If numbers could somehow be restricted, the forest kept closed (foot traffic restricted to the trail), food prohibited in the area, and signs educating everyone about the murrelets and potential disturbance I think it would work fine. If you want to review an example check out information about the Headwaters Forest in northern California. The BLM maintains the property and only allows access to the trails with forest rangers. The rangers take guided hikes into the forest and thereby has the ability to limit numbers, food and noise. I am not suggesting that rangers be required, but some means of minimizing the disturbance would be great. It would be a good opportunity to educate the public about the murrelet as well.

I would guess that USFWS would need to know about and review any plans for a trail into an occupied site since the species is listed as threatened. Contact Lee Folliard (Lee_Folliard@fws.gov) with any questions about that.

Figure 4 below shows a very approximate potential loop trail, just to show the idea. The existing trail / road along the southern edge of the state natural area is not visible on the image, and should certainly be followed along the southern boundary of the site. The trail would have to avoid some wetlands and cliffs, and would clearly need some professional placement in areas.

Figure 4. The potential loop trail (in green dots), and potential natural area boundary.



Camping

The current level of camping at the site is not impacting the significant natural features that led to the recommendation to dedicate the site as a State Natural Area. The important features, primarily the old-growth forests, the noble fir forests and the grassland and montane balds are not near or impacted by camping at the site. The original Natural Area boundaries drawn by Frenkel and Alabeck (1978) include the entire park ownership, and recommend the inclusion of some adjacent private lands. However, we feel that the campground area, the parking area, and the small developments are not only not essential to the natural area, but probably should be excluded from

the boundaries. However, there is likely to be an increasing demand for campsites, and expansion of the camping area within the site could easily lead to significant natural area impacts. So, it is recommended that the camp area be clearly identified, and that camping activities be restricted to the areas already developed.

Non-native, Invasive Species

As in all the State Natural Areas, non-native species are of concern here. Fortunately, there are no non-native plants or animals found at the site that are particularly invasive or noxious. Some plants, particularly non-native pasture grasses and introduced annual grasses, are distributed throughout the site, and some non-native forbs and shrubs occur along the trail. Whenever possible, these species should be removed. However vigilance to assure that particularly noxious species do not become established is the most critical activity that is required.

Forest Restoration

A very large portion of the southern slopes of Saddle Mountain were clearcut in the past, and were poorly reforested. As a result, red alder forests with limited conifer regeneration are the dominant forest type in this area. These forests could provide an opportunity to study secondary succession after logging, and there are few areas where this can occur. However, the area provides the opportunity to examine restoration techniques as well, and is large enough to support both research objectives. Forest restoration, and the creation of old-growth habitats is part of the management objectives of the U.S. Forest Service, the Bureau of Land Management and the Oregon Department of Forestry in the northern Coast Range. The Nature Conservancy is examining restoration techniques in a coastal watershed in southwestern Washington, and there may be interest in pursuing these types of studies in some of the forests. This type of research historically was not considered exactly compatible with natural area designation, but could be, provided a large area of the habitat type remained as a control.. OPRD could bring this question to the Natural Heritage Advisory Council for their recommendation. Experiments that examine growth rates and forest change following different thinning techniques may be occurring at the H.J. Andrews Experimental Forest, but I don't believe they are going on anywhere else in the Oregon Coast Range. It is likely that the value of the timber removed could entirely cover the costs of both the thinning and the research at the site.

Natural Area Boundaries and Dedication

Because this has long been known and managed as a State Natural Area, it has largely received de facto protection under the Oregon Natural Heritage Act. To meet the guidelines in the Oregon Natural Heritage Plan, the site needs a dedication agreement which specifies the boundaries of the site and the natural area values present, and a basic management plan. This report can serve as the description of the natural area values, and the following map shows the recommended boundaries for a natural heritage conservation area (state natural area) at Saddle Mountain. The Natural Heritage Advisory Council also contracted with Lynn Cornelius in 1994 to develop materials to assist the Oregon Parks and Recreation Department in moving forward with dedication. These include a dedication agreement, the Natural Heritage Advisory Council's Registration Summary Form and the management plan. These documents, updated with current information, are included as Appendix A.

Figure 5. Proposed Natural Area Boundaries for Saddle Mountain State Natural Area



Note that the red boundaries are only an estimate of the ownership, based on information from the available maps. Where the yellow, potential natural area boundary line approaches the boundary line, it is meant to be an approximate boundary. The central developed area was enlarged to provide for additional potential development, and to provide an area for forest restoration experimentation.

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Appendix A. Saddle Mountain Natural Area Management Information from Cornelius, 1994. Dedication Agreement, NHAC Summary Form, and Management Agreement (updated)

DEDICATION AGREEMENT FOR SADDLE MOUNTAIN AS A
NATURAL HERITAGE CONSERVATION AREA

The Oregon State Land Board and the Oregon Parks and Recreation Department (OPRD), hereby agree to the following provisions as they pertain to Saddle Mountain, located in Clatsop County, approximately 10 miles east of the Pacific Ocean and 3 miles north of State Highway 26, in Saddle Mountain State Park, (T6N R8W, portions of Sections 28, 29, 32, 33, and 34). By virtue of this agreement, the above-described site is dedicated as a Natural Heritage Conservation Area as provided for in the Oregon Natural Heritage Act, as amended.

This agreement is entered into for the purpose of promoting natural diversity of native species and ecosystems in Oregon, and specifically to protect the designated area as the primary representative site for the natural elements listed in the Natural Heritage Registry Summary Form (Attachment 1) as identified in the Oregon Natural Heritage Plan of 2003.

This agreement includes as additional instruments of dedication the appended documents as follows:

- (1) The Natural Heritage Registry Summary Form for the site;
- (2) A statement of management objectives for the site.
- (3) A map delineating the boundary of the site.

Either party to this agreement may terminate it in accordance with the provisions of the Oregon Natural Heritage Act upon 60 days written notice, including specific reasons for termination.

Approved and signed on the ____ day of _____, 2005.

Ted Kulongoski, Governor

Bill Bradbury, Secretary of State

Randall Edwards, State Treasurer

Tim Wood, Director
Oregon Parks and Recreation Department

Miles Hemstrom, Chair
Natural Heritage Advisory Council

NATURAL HERITAGE ADVISORY COUNCIL
OREGON REGISTER OF NATURAL HERITAGE RESOURCES
SUMMARY FORM

1. NATURAL AREA NAME: Saddle Mountain
2. LOCATION: Clatsop County, About 10 miles from the Pacific Ocean, and 3 miles north of State Highway 26. T6N R8W Sections 28, 29, 32, 33, and 34.
3. SIZE: 1653 acres (669 ha).
4. OWNERSHIP: The entire area to be registered is included in Saddle Mountain State Park, owned by Oregon State Parks and Recreation Division of the Oregon Department of Transportation.
5. CONSENT OF OWNER (PRIVATE), DATE: n.a.
6. REGISTER CATEGORY: Registered State Natural Area.
7. PRINCIPAL NATURAL HERITAGE RESOURCES: Oregon Coast Range, # 3, Sitka spruce/oxalis with devils club if possible (ONHP p. 38); # 25, Noble fir-western hemlock forest (ONHP p. 38), # 34, Grass bald on Coast Range Mountain (ONHP p. 39), # 35, "Rock garden" community on Coast Range Mountain (ONHP p. 39).
8. SPECIAL SPECIES: Plants: *Cardamine pattersonii*, *Carex macrochaeta*, *Erigeron peregrinus* subsp. *peregrinus*, *Geum triflorum* var. *campanulatum*, *Lewisia columbiana* var. *rupicola*, *Saxifraga hitchcockiana*, and *Sidalcea hirtipes*.
9. EVALUATION OF CRITERIA FOR REGISTRATION
 - A. PRIORITY IN PLAN: All of the cells are presumed to be filled at this site with the exception of # 3, Sitka spruce / oxalis forest, which is a high priority, unfilled cell.
 - B. ADEQUATE REPRESENTATION: The first forested cells, # 3 provides only partial representation. The other cells are adequately represented at this site alone.
 - C. DEGREE OF DISTURBANCE: The area receives extensive visitation, but is in very good condition. Part of the rock garden community and the grass bald have been degraded by visitor use and plant collection. However, there are still high quality, undisturbed areas appropriate for research.
 - D. VIABILITY: The area and the cells are viable and protectable, and being managed well by the State Parks Division.
 - E. UNIQUE GEOLOGICAL VALUES: None present.
 - F. PRIORITY FOR SPECIAL SPECIES: Plants: *Cardamine pattersonii* List 1, *Carex macrochaeta* List 2, *Erigeron peregrinus* subsp. *peregrinus* List 2, *Geum triflorum* var. *campanulatum* List 2, *Lewisia columbiana* var. *rupicola* Watch List, *Saxifraga hitchcockiana* List 1, and *Sidalcea hirtipes* List 1. Animals: Cope's giant salamander (*Dicamptodon copei*) List 2, Oregon silverspot butterfly (*Speyeria zerene hippolyta*) List 1, and marbled murrelet (*Brachyramphus marmoratus*) List 1. The plants are all presumed to be protected at this site.
 - G. SPECIAL SPECIES PROTECTION CAPABILITY: All of the special plant species can be easily protected at the site. The Oregon silverspot butterfly is extirpated and could be reintroduced, but would be hard to manage. The marbled murrelet occurrence is small but important.
 - H. MANAGEABILITY: In spite of the extensive visitor use, the area can also be managed quite well for its natural values.

10. SPECIAL REMARKS OR COMMENTS: Oregon State Parks and Recreation Division has yet to complete a master plan. Registration by the State Land Board may provide direction and impetus for this plan.

11. DATE OF COUNCIL RECOMMENDATION: 1 March 1988

12. DATE OF LAND BOARD APPROVAL: 24 April 1989

13. SOURCE OF ADDITIONAL INFORMATION: Oregon Natural Heritage Program, The Nature Conservancy, 821 SE 14th Ave, Portland, OR 97214. Preserve Analysis: Saddle Mountain, 1978, Alaback and Frenkel, Division of State Lands, Salem, OR 97310.

14. IMPORTANCE OF THE SITE IN LAYMAN'S TERMS: The mountain harbors a number of rare plant species and unique plant community types. The only remaining examples of inland Sitka spruce forests and Coast Range noble fir forests can be found here. Other important features include a grassy bald, rock garden communities, open slopes and streamsides, all of which house rare plants. It is nationally known for its ecological and biological significance.

MANAGEMENT OBJECTIVES FOR THE SADDLE MOUNTAIN NATURAL HERITAGE CONSERVATION AREA

Purpose and Goals

Natural Heritage Conservation Areas (NHCAs) are established (1) to protect examples of terrestrial and aquatic ecosystems, and important geologic features; (2) to serve as gene pool reserves; (3) to serve as benchmarks against which the influences of modern human activities may be compared; (4) to serve as outdoor laboratories for research, education, and nature interpretation.

In general, the goals for NHCA management are to allow natural ecological and geological processes to predominate and continue at a pre-Euro-American settlement rate, with a minimum of human interference. Among the natural processes are fire, wind, floods, earth movements, natural aging and mortality, decay, evolution, and plant succession. In some cases exceptions to preferred management must be made to prevent loss of life or property, or due to a confining landscape setting. Management manipulations (such as planting, cutting, thinning, enhancement, re-introduction) are not compatible in a NHCA unless necessary to reverse or prevent further human-induced change (such as control of non-native weeds or exotic animals, revegetation of surface damage, recovery from livestock grazing, and in some cases carefully prescribed fire). Exceptions may also be required to retain a plant community, animal or plant population if it is a primary feature for which the area was established. Controlled low-impact human visitor access is generally compatible with a NHCA when kept from overuse levels which degrade the natural values of the area.

Management needs for the Saddle Mountain Natural Heritage Conservation Area present no undue special demands beyond current management practices for this area. There is currently no detailed Oregon Parks and Recreation Department (OPRD) Natural Resource Management Plan in place except for certain forest management directives. This document highlights topical areas which could be used as the basis for development of an OPRD management plan. The NHCA boundary consists of the Saddle Mountain Registered State Park Natural Area boundary. Although there is yet no formalized master plan for Saddle Mountain State Park, the NHCA consists of the area within the park currently receiving ad hoc maintenance as a Primary Protection Area.

Access

Access by the existing trail to the northwest peak is compatible with the NHCA. Corrective maintenance should be continued to protect the trail in steep, wet, or unstable areas as needed to prevent erosion and reduce trampling from ad hoc trail development.

Fire and Windthrow

Fire is a normal and integral process in nearly all natural ecosystem types in the Pacific Northwest. However, for forest ecosystems in the Oregon Coast Range, natural fire has been a relatively infrequent event, often occurring at intervals of 200 years or more on average (there may be a greater frequency of small lightning-strike ignitions on the Saddle Mountain peaks). As a result, there is in general no urgent need for the use of prescribed fire in managing forest, grass bald, and rock garden habitats.

An apparently human-induced fire did occur more recently on a portion of the site (not the old-growth forest stands). The Preserve Analysis: Saddle Mountain report prepared by Alaback and Frenkel for the Oregon Natural Area Preserves Advisory Committee to the State Land Board, 1978, states on page 23: "The remaining forested areas [except for the two old-growth stands] were logged principally during the period 1920-30, and subsequently burned in 1936 and 1939..." While natural fires are infrequent, accidental or human-caused fires can occur. A fire would not likely damage the grass bald or rare plant species, although it would alter forest structure to a younger post-fire stage.

Due to the long fire frequency, and the conservation priority to protect older post-fire forest stages, fires on the NHCA should be suppressed for the next 1-2 decades, or until more detailed investigations on fire history and ecology of the site suggest otherwise. However, if fire cannot be controlled by aerial or road-based application of freshwater, it would be better to let the fire burn through an area (if at all possible without danger to life or property) than to cut or clear fire breaks. Cutting or clearing of fire breaks, and especially the use of heavy equipment, should be discouraged to avoid permanent physical damage to vegetation, soil, and ground surface conditions (difficult topography in many places generally precludes the use of heavy equipment). Use of chemical fire retardant, which could adversely impact special plant species and plant communities through a fertilizing effect, should be avoided in favor of water-only application.

A more detailed fire management/suppression plan should be prepared for the special needs of the NHCA, using the above discussion as a topical skeleton, and utilizing natural fire breaks such as roads, rock outcrops, and water bodies. A brief investigation and summary of fire history at the site is recommended as a component of the fire plan.

Forest windthrow is part of natural ecosystem function at the site and should remain in place, with the exception of the need to cut passages through downed material for normal trail clearing and maintenance.

Weed Control

Regular surveillance and control of exotic non-native plant species within the NHCA is necessary to protect native plants communities and is encouraged as needed. However, weed control techniques will be used (for example spot versus broadcast treatment) which minimize impacts to the surrounding native plant cover. Special precaution will be needed in and around rare plant populations and in the grassy bald and rock garden communities. Currently, there are no significant weed problems known at Saddle Mountain NHCA.

Monitoring

Basic biological monitoring of the special plant species, rock garden community, and grass bald community is encouraged in order to document the ongoing status of these features. Monitoring of the other terrestrial ecosystem and geological values of the site are not required, but a basic record of condition would be useful to monitor long-term changes (such as erosion) and provide a baseline against natural or artificial catastrophic events such as fire, windthrow, or landslides. Funds for monitoring could be sought from the U.S. Fish and Wildlife Service endangered species programs, the Oregon Department of Agriculture, and private sources.

Resource Protection

Under currently planned levels of use, no special resource protection is required beyond the trail, fire, weed, and monitoring mentioned above. Forest Management at the Class 1A level, Natural, is compatible with the NHCA. Part of the rock garden community and the grass bald have been degraded by past visitor use and plant collection. The taking of any plants or animals will be discouraged pursuant to the rules governing NHAC's. This is especially important at Saddle Mountain due to the statewide significance of the several special plant species, rock garden community, and grassy bald habitat. Should visitor traffic and impacts become too great, it may be necessary at some time in future to manage visitor use. Permission to conduct research or educational uses should be obtained in writing through the OPRD Area Manager and any other agency as appropriate, including but not limited to the Oregon Department of Fish and Wildlife. Minimal trailhead signing identifying the NHCA would be appropriate.

Other Management Needs

The Natural Heritage Advisory Council is available for advice and consultation regarding any additional or unforeseen management needs which may arise. Recommendations to the Council to expand the NHCA, especially along the north boundary, would be appropriate.

Appendix B. Plant List from Saddle Mountain, primarily by K.L. Chambers, from Alabeck and Frenkel (1978) and a 2000 update, with additions by J. Kagan and K. Sayce. *Blue = exotic species*

FERN AND FERN ALLIES

Equisetaceae

Equisetum telmateia

Lycopodiaceae

Lycopodium clavatum

Polypodiaceae

Adiantum pedatum

Athyrium filix-femina

Blechnum spicant

Cryptogramma crispa var. *acrostichoides*

Cystopteris fragilis

Dryopteris austriaca

Gymnocarpium dryopteris

Polypodium amorphum

Polypodium glycyrrhiza

Polypodium hesperium

Polystichum munitum

Pteridium aquilinum

Selaginellaceae

Seleginella oregana

Selaginella wallacei

CONIFERS

Cupressaceae

Thuja plicata

Pinaceae

Abies amabilis

Abies grandis

Abies procera

Pseudotsuga menziesii

Picea sitchensis

Tsuga heterophylla

Taxaceae

Taxus brevifolius

MONOCOTS

Araceae

Lysichitum americanum

Cyperaceae

Carex deweyana

Carex hendersonii

Carex macrochaeta

Carex mertensii

Carex pachystachya

Carex rossii

Scirpus microcarpus

Iridaceae

Iris tenax

Sisyrinchium angustifolium

Juncaceae

Juncus bufonius

Juncus effuses var. *gracilis*

Juncus ensifolius

Luzula campestris

Luzula divaricata

Luzula parviflora

Liliaceae

Allium cernuum

Allium crenulatum

Clintonia uniflora

Erythronium grandiflorum var. *pallidum*

Erythronium oreganum

Erythronium revolutum

Fritillaria affinis

Lilium columbianum

Lloydia serotina

Maianthemum dilatatum

Maianthemum racemosum var. *amplexicaule*
Maianthemum stellata
Prosartes hookeri
Prosartes smithii
Stenanthium occidentale
Streptopus amplexifolius
Streptopus lanceolatus var. *curvipes*
Trillium ovatum

Orchidaceae

Corallorhiza maculata
Corallorhiza mertensiana
Goodyera oblongifolia
Listera caurina
Listera coroata
Pipera elegans ssp. *elegans*
Pipera unalascensis

Poaceae

Agrostis capillaris
Agrostis diegoensis
Agrostis exarata
Aira caryophyllea
Aira praecox
Anthoxanthum odoratum
Bromus carinatus
Bromus hordaceus
Bromus japonicus
Bromus sitchensis
Bromus vulgaris
Calamagrostis nutkaensis
Cinna latifolia
Danthonia californica
Deschampsia elongata
Elymus glaucus
Elymus hirsutus
Elymus repens
Elymus trachycaulis
Festuca occidentalis
Festuca roemeri
Festuca rubra

Festuca subulata
Festuca viridula
Holcus lanatus
Lolium arundinaceum
Lolium rigidum
Koeleria nitida
Melica subulata
Phleum alpinum
Poa annua
Poa compressa
Poa gracillima
Poa laxiflora
Poa marcida
Poa secunda
Poa trivialis
Trisetum canescens
Trisetum cernuum
Vulpia bromoides
Vulpia microstachys
Vulpia myuros

DICOTS

Aceraceae

Acer circinatum
Acer glabrum

Apiaceae

Angelica arguta
Conioselinum gmelinii (*C. pacificum*)
Heracleum lanatum
Lomatium dissectum var. *eatonii*
Lomatium martindalei var. *flavum*
Oenanthe sarmentosa
Osmorhiza chilensis
Osmorhiza occidentalis
Osmorhiza purpurea
Perideridia gairdneri ssp. *borealis*
Sanicula crassicaulis
Sanicula graveolens

Aquifoliaceae

Ilex aquifolium

Araliaceae

Oplopanax horridus

Aristolochiaceae

Asarum caudatum

Asteraceae

Achillea millefolium

Adenocaulon bicolor

Agoseris aurantiaca

Agoseris grandiflora

Anaphalis margaritacea

Antennaria racemosa

Arnica amplexicaulis

Arnica latifolia

Artemisia douglasiana

Aster subspicatus

Bellis perennis

Cirsium edule

Crepis capillaris

Erechtites prenanthoides

Erigeron aliciae

Erigeron peregrinus ssp. *peregrinus*

Eriophyllum lanatum var. *lanatum*

Gnaphalium purpureum

Hieracium albiflorum

Hypochaeris radicata

Lactuca muralis

Lapsana communis

Leucanthemum vulgare

Madia madioides

Petasites frigidus var. *palmatus*

Prenanthes alata

Rudbeckia occidentalis

Senecio bolanderi var. *hartfordii*

Senecio jacobea

Senecio macounii

Senecio sylvaticus

Senecio vulgare

Solidago canadensis var. *salebrosa*

Sonchus asper

Sonchus oleraceus

Taraxacum officinale

Berberidaceae

Achlys triphylla

Berberis aquifolium

Berberis nervosa

Vancouveria hexandra

Betulaceae

Alnus rubra

Alnus viridis ssp. *sinuata*

Boraginaceae

Cryptantha intermedia var. *grandiflora*

Mertensia platyphyllum

Brassicaceae

Arabis glabra

Arabis hirsuta var. *escholtziana*

Cardamine angulata

Cardamine integrifolia

Cardamine oligosperma

Cardamine pattersonii

Cardamine pucherrima var. *pulcherrima*

Cardamine pucherrima var. *tenella*

Draba verna

Erysimum asperum

Campanulaceae

Campanula rotundifolia

Campanula scouleri

Caprifoliaceae

Linnaea borealis

Lonicera ciliosa

Lonicera involucrata

Sambucus racemosa ssp. *arborescens*

Symphoricarpos albus
Virburnum edule

Caryophyllaceae

Cerastium arvense
Cerastium glomeratum
Cerastium viscosum
Minuartia rubella
Minuartia stricta
Moehringia macrophylla
Silene douglasii var. *douglasii*
Stellaria calycantha
Stellaria crispa.
Stellaria media

Crassulaceae

Sedum oreganum
Sedum spathulifolium

Cucurbitaceae

Marah oregana

Ericaceae

Chimophila menziesii
Cladothamnus pyrolaeiflorus
Gaultheria shallon
Hypopitys monotropa
Menziesia ferruginea
Moneses uniflora
Monotropa uniflora
Pyrola asparifolia
Pyrola picta
Vaccinium ovalifolium
Vaccinium parvifolium
Vaccinium scoparium

Fabaceae

Lathyrus nevadensis ssp. *lanceolatus*
Lotus micranthus
Lotus nevadensis

Trifolium longipes ssp. *caurinum*
Trifolium microcephalum
Trifolium microdon
Trifolium oliganthum
Trifolium procumbens
Trifolium repens
Trifolium tridentatum
Vicia americana var. *truncate*

Fumariaceae

Corydalis scouleri
Dicentra cucullaria
Dicentra Formosa

Grossulariaceae

Ribes bracteosum
Ribes lacustre
Ribes laxiflorum
Ribes sanguineum

Hydrangeaceae

Philadelphus lewisii

Hydrophyllaceae

Hydrophyllum tenuipes
Nemophila parviflora
Phacelia nemoralis ssp. *oregonensis*
Romanzoffia sitchensis

Hypericaceae

Hypericum perforatum

Lamiaceae

Prunella vulgaris
Stachys mexicana

Malvaceae

Sidalcea hirtipes

Onagraceae

Circaea alpina
Clarkia amoena ssp. *caurina*
Epilobium angustifolium
Epilobium ciliatum ssp. *watsonii*
Epilobium glaberrimum var. *fastigiatum*
Epilobium lactiflorum
Epilobium minutum

Orobanchaceae

Orobanche uniflora

Oxalidaceae

Oxalis oregana

Plantaginaceae

Plantago lanceolata
Plantago major

Polemoniaceae

Collomia heterophylla
Phlox diffusa ssp. *longistylus*
Phlox gracilis

Polygonaceae

Polygonum bistortoides
Polygonum douglasii
Polygonum nuttallii
Rumex acetosella
Rumex obtusifolius

Portulacaceae

Claytonia exigua ssp. *glauca*
Claytonia sibirica
Lewisia columbiana var. *rupicola*
Montia fontana
Montia parvifolia

Primulaceae

Dodecatheon austrofrigidum

Douglasia laevigata var. *ciliolata*
Trientalis latifolia

Ranunculaceae

Actaea rubra
Anemone deltoidea
Anemone lyallii
Anemone multifida
Anemone oregana
Aquilegia formosa
Coptis laciniata
Delphinium menziesii
Delphinium oreganum
Delphinium trolliifolium
Ranunculus occidentalis
Ranunculus repens
Ranunculus uncinatus var. *parviflorus*
Thalictrum occidentals

Rhamnaceae

Rhamnus purshiana

Rosaceae

Amelanchier alnifolia
Aruncus sylvestris
Crataegus douglasii var. *suksdorfii*
Fragaria vesca
Fragaria virginiana
Geum macrophyllum
Geum triflorum var. *campanulatum*
Holodiscus discolor
Physocarpus capitatus
Potentilla glandulosa
Potentilla gracilis var. *graolis*
Prunus emarginata
Prunus virginiana var. *demissa*
Rosa gymnocarpa
Rosa nutkana
Rubus laciniatus
Rubus parviflorus

Rubus pedatus
Rubus spectabilis
Rubus ursinus
Sorbus sitchensis

Rubiaceae

Galium boreale
Galium aparine
Galium oreganum
Galium triflorum

Salicaceae

Salix hookeriana
Salix scouleriana

Saxifragaceae

Boykinia elata
Chrysosplenium glechomaefolium
Filipendula occidentalis
Heuchera micrantha var. *diversifolia*
Lithophragma parviflora
Saxifraga bronchialis var. *vespertina*
Saxifraga caespitosa var. *subgemmifera*
Saxifraga ferruginea var. *macounii*
Saxifraga hitchcockiana
Saxifraga mertensiana
Saxifraga nuttallii
Saxifraga occidentalis var. *dentata*
Saxifraga occidentalis var. *rufidula*
Tellima grandiflora
Tiarella trifoliata
Tolmiea menziesii

Scrophulariaceae

Castilleja chambersii
Castilleja miniata
Collinsia parviflora
Digitalis purpurea
Mimulus alsinoides
Mimulus dentatus

Mimulus guttatus var. *depauperatus*
Mimulus guttatus ssp. *guttatus*
Nothochelone nemorosa
Penstemon cardwellii
Penstemon davidsonii var. *menziesii*
Penstemon serrulatus
Rhinanthus crista-galli
Scrophularia californica
Synthyris schizantha
Triphysaria pusella (*Orthocarpus pusillus*)
Veronica americana
Veronica arvensis
Veronica serpyllifolia

Valerianaceae

Plectritis congesta ssp. *brachystemona*
Plectritis congesta ssp. *congesta*
Valeriana scouleri

Violaceae

Viola adunca
Viola glabella
Viola sempervirens

Nonvascular Plants

Bryophytes

Liverworts

Apometzgeria pubescens
Asterella gracilis
Athalamia hyalina
Barbilophozia barbata
Barbilophozia lycopodioides
Blepharostoma trichophyllum
Calypogeia fissa
Calypogeia muelleriana
Calypogeia trichomanis
Cephalozia bicuspidata
Cephalozia lunulifolia
Cephaloziella divaricata
Cephaloziella. divaricata var. *scabra*

Chiloscyphus cuspidatus
Conocephalum conicum
Diplophyllum albicans
Diplophyllum obtusifolium
Diplophyllum plicatum
Diplophyllum taxifolium
Douinia ovata
Fossombronia longiseta
Frullania nisquallensis
Gymnomitrium obtusum
Herbertus aduncus
Herbertus sakuraii
Jungermannia atrovirens
Jungermannia hyalina
Jungermannia pumila
Jungermannia rubra
Lepidozia reptans
Lophocolea cuspidata
Lophozia excisa
Lophozia incisa
Lophozia obtusa
Lophozia ventricosa
Marsupella emarginata
Metzgeria conjugata
Pellia neesiana
Plagiochila asplenoides
Plagiochila semidecurrens var. *alaskana*
Porella cordaeana
Porella navicularis
Porella roellii
Ptilidium californicum
Radula bolanderi
Radula brunnea
Radula complanata
Radula obtusiloba ssp. *polyclada*
Riccia sorocarpa
Scapania americana
Scapania bolanderi
Scapania mucronata
Scapania paludosa

Scapania umbrosa
Scapania undulata
Tritomaria quinquedentata

Hornworts

Anthoceros punctatus

Mosses

Amblystegium serpens
Amphidium californicum
Anacolia menziesii
Andreaea rupestris
Anomobryum filiforme
Antitrichia californica
Antitrichia curtispindula
Atrichum selwynii
Aulacomnium androgynum
Barbula cylindrica
Bartramia pomiformis
Blindia acuta
Brachythecium albicans
Brachythecium asperrimum
Brachythecium frigidum
Brachythecium plumosum
Brachythecium starkei
Bryum miniatum
Bryum argenteum
Bryum capillare
Ceratodon purpureus
Claopodium bolanderi
Claopodium crispifolium
Claopodium whippleanum
Cynodontium jenneri
Dichodontium pellucidum
Dicranoweisia cirrata
Dicranum fuscescens
Dicranum scoparium
Dicranum tauricum
Ditrichum flexicaule var. *sterile*
Ditrichum montanum

Dryptodon patens
Encalypta brevipes
Encalypta ciliata
Encalypta procera
Eurhynchium oreganum
Eurhynchium praelongum
Eurhynchium pulchellum
Eurhynchium substrigosum
Fissidens adianthoides
Grimmia apocarpa
Grimmia elatior
Grimmia tenerrima
Grimmia torquata
Grimmia trichophylla
Heterocladium dimorphum
Heterocladium macounii
Homalothecium aeneum
Homalothecium fulgescens
Homalothecium nuttallii
Homalothecium pinnatifidum
Hygrohypnum bestii
Hylocomium splendens
Hypnum callichroum
Hypnum circinale
Hypnum dieckii
Hypnum subimponens
Isopterygiopsis pulchella
Isothecium stoloniferum
Iwatsukiella lencotracha
Leucolepis acanthoneuron
Metaneckera menziesii
Minum thomsonii
Neckera douglasii
Orthotrichum consimile
Orthotrichum lyellii
Orthotrichum rupestre
Oxystegus tenuirostris
Philonotis capillaris
Philonotis fontana
Plagiobryum zieri
Plagioninium insigne
Plagioninium venustum
Plagiopus oederiana
Plagiothecium cavifolium
Plagiothecium denticulatum
Plagiothecium piliferum
Plagiothecium undulatum
Pogonatum alpinum
Pogonatum alpinum var. macounii
Pogonatum urnigerum
Pohlia filiformis
Pohlia cruda
Polytrichum juniperinum
Polytrichum piliferum
Porotrichum bigelovii
Pseudoleskea patens
Pseudoleskea stenophylla
Pseudotaxiphyllum elegans
Pterigynandrum filiforme
Pterogonium gracile
Racomitrium aciculare
Racomitrium brevipes
Racomitrium canescens
Racomitrium heterostichum
Racomitrium lanuginosum
Racomitrium occidentale
Racomitrium varium
Rhizomnium glabrescens
Rhytidiadelphus loreus
Rhytidiadelphus triquetrus
Rhytidium rugosum
Scleropodium cespitans
Scleropodium obtusifolium
Scleropodium touretii
Tetraphis pellucida
Timmia austriaca
Tortella tortuosa var. arctica
Tortula princeps
Tortula ruralis
Tortula ruraliformis

Tortula subulata
Ulotia obtusiuscula
Ulotia megalospora.

Ulotia reptans
Weissia controversa
Zygodon viridissimus var. *rupestris*

Appendix C. Wildlife List from Saddle Mountain

Scientific Name	Common Name	RHG	RANK	USES	SPROT
<i>Ambystoma gracile</i>	Northwestern Salamander	61	G5S5		
<i>Ambystoma macrodactylum</i>	Long-Toed Salamander	60	G5S5	(PS)	
<i>Aneides ferreus</i>	Clouded Salamander	16	G3S3		SU
<i>Batrachoseps attenuatus</i>	California Slender Salamander	26	G5S2		SP
<i>Ensatina eschscholtzii</i>	Ensatina	66	G5S5		
<i>Plethodon dunni</i>	Dunn's Salamander	70	G4S4		
<i>Plethodon elongatus</i>	Del Norte Salamander	40	G3S2	SOC	SV
<i>Plethodon vehiculum</i>	Western Redback Salamander	70	G5S5		
<i>Taricha granulosa</i>	Roughskin Newt	66	G5S5		
<i>Dicamptodon copei</i>	Cope's Giant Salamander	51	G3S2		SU
<i>Dicamptodon tenebrosus</i>	Pacific Giant Salamander	54	G5S4		
<i>Rhyacotriton kezeri</i>	Columbia Torrent Salamander	42	G3S3		SC
<i>Ascaphus truei</i>	Coastal Tailed Frog	54	G4S3	SOC	SV
<i>Bufo boreas</i>	Western Toad	61	G4S4		SV
<i>Hyla regilla</i>	Pacific Treefrog	64	G5S5		
<i>Rana aurora</i>	Red-Legged Frog	60	G4S3		
<i>Rana boylei</i>	Foothill Yellow-Legged Frog	28	G3S2	SOC	SV
<i>Rana catesbeiana</i>	Bullfrog	57	G5SE		
<i>Podilymbus podiceps</i>	Pied-Billed Grebe	10	G5S5		
<i>Phalacrocorax auritus</i>	Double-Crested Cormorant	10	G5S5		
<i>Botaurus lentiginosus</i>	American Bittern	5	G4S4		
<i>Ardea herodias</i>	Great Blue Heron	97	G5S4		
<i>Butorides virescens</i>	Green Heron	89	G5S4		
<i>Branta canadensis</i>	Canada Goose	28	G5S5	(PS)	
<i>Aix sponsa</i>	Wood Duck	120	G5S4		
<i>Anas platyrhynchos</i>	Mallard	154	G5S5		
<i>Anas discors</i>	Blue-Winged Teal	117	G5S4		
<i>Anas cyanoptera</i>	Cinnamon Teal	141	G5S5		
<i>Histrionicus histrionicus</i>	Harlequin Duck	76	N	SOC	SU
<i>Lophodytes cucullatus</i>	Hooded Merganser	120	G5S4		
<i>Mergus merganser</i>	Common Merganser	134	G5S4		
<i>Cathartes aura</i>	Turkey Vulture	147	G5S5		
<i>Pandion haliaetus</i>	Osprey	53	G5S4		
<i>Haliaeetus leucocephalus</i>	Bald Eagle	141	N	LT-P	LT
<i>Circus cyaneus</i>	Northern Harrier	6	G5S5		
<i>Accipiter striatus</i>	Sharp-Shinned Hawk	145	G5S4		
<i>Accipiter cooperii</i>	Cooper's Hawk	121	G5S4		
<i>Buteo jamaicensis</i>	Red-Tailed Hawk	124	G5S5		
<i>Aquila chrysaetos</i>	Golden Eagle	75	G5S4		
<i>Falco sparverius</i>	American Kestrel	52	G5S5		
<i>Falco peregrinus</i>	Peregrine Falcon	125	G4S1		LE
<i>Phasianus colchicus</i>	Ring-Necked Pheasant	16	G5SE		
<i>Dendragapus obscurus</i>	Blue Grouse	146	G5S4		
<i>Bonasa umbellus</i>	Ruffed Grouse	130	G5S4?		
<i>Meleagris gallopavo</i>	Wild Turkey	82	G5SE		
<i>Callipepla californica</i>	California Quail	30	G5SE4		

Scientific Name	Common Name	RHG	RANK	USES	SPROT
<i>Oreortyx pictus</i>	Mountain Quail	96	G5S4?	SOC	SU
<i>Rallus limicola</i>	Virginia Rail	11	G5S4		
<i>Porzana carolina</i>	Sora	10	G5S4		
<i>Fulica americana</i>	American Coot	10	G5S5		
<i>Actitis macularia</i>	Spotted Sandpiper	157	G5S4		
<i>Brachyramphus marmoratus</i>	Marbled Murrelet	69	G3G4S2	LT	LT
<i>Columba livia</i>	Rock Dove	20	G5SE		
<i>Columba fasciata</i>	Band-Tailed Pigeon	158	G4S4	SOC	
<i>Zenaidura macroura</i>	Mourning Dove	48	G5S5		
<i>Tyto alba</i>	Barn Owl	90	G5S4?		
<i>Otus kennicottii</i>	Western Screech-Owl	124	G5S4?		
<i>Bubo virginianus</i>	Great Horned Owl	164	G5S5		
<i>Glaucoedon gnoma</i>	Northern Pygmy-Owl	129	G5S4?		SC
<i>Strix occidentalis</i>	Spotted Owl	94	G3S3	(PS)	
<i>Strix varia</i>	Barred Owl	94	G5SU		
<i>Aegolius acadicus</i>	Northern Saw-Whet Owl	118	G5S4?		
<i>Chordeiles minor</i>	Common Nighthawk	152	G5S5		SC
<i>Chaetura vauxi</i>	Vaux's Swift	94	G5S5		
<i>Calypte anna</i>	Anna's Hummingbird	44	G5S4?		
<i>Stellula calliope</i>	Calliope Hummingbird	57	G5S4?		
<i>Selasphorus rufus</i>	Rufous Hummingbird	136	G5S4		
<i>Ceryle alcyon</i>	Belted Kingfisher	138	G5S4		
<i>Sphyrapicus ruber</i>	Red-Breasted Sapsucker	118	G5S4		
<i>Picoides pubescens</i>	Downy Woodpecker	124	G5S4		
<i>Picoides villosus</i>	Hairy Woodpecker	124	G5S4		
<i>Colaptes auratus</i>	Northern Flicker	136	G5S5		
<i>Dryocopus pileatus</i>	Pileated Woodpecker	93	G5S4?		SV
<i>Contopus cooperi</i>	Olive-Sided Flycatcher	140	G4S4	SOC	SV
<i>Contopus sordidulus</i>	Western Wood-Pewee	134	G5S4		
<i>Empidonax traillii</i>	Willow Flycatcher	136	G5S4	(PS)	
<i>Empidonax hammondi</i>	Hammond's Flycatcher	112	G5S4		
<i>Empidonax difficilis</i>	Pacific Slope Flycatcher	118	G5S4		
<i>Progne subis</i>	Purple Martin	38	G5S3B	SOC	SC
<i>Tachycineta bicolor</i>	Tree Swallow	140	G5S5		
<i>Tachycineta thalassina</i>	Violet-Green Swallow	152	G5S5		
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	172	G5S5		
<i>Hirundo rustica</i>	Barn Swallow	136	G5S5		
<i>Perisoreus canadensis</i>	Gray Jay	124	G5S4		
<i>Cyanocitta stelleri</i>	Steller's Jay	141	G5S5		
<i>Aphelocoma californica</i>	Western Scrub-Jay	86	G5S5		
<i>Corvus brachyrhynchos</i>	American Crow	68	G5S5		
<i>Corvus corax</i>	Common Raven	158	G5S4		
<i>Poecile atricapilla</i>	Black-Capped Chickadee	136	G5S5		
<i>Poecile rufescens</i>	Chestnut-Backed Chickadee	129	G5S5		
<i>Psaltriparus minimus</i>	Bushtit	114	G5S5		
<i>Sitta canadensis</i>	Red-Breasted Nuthatch	152	G5S5		

Scientific Name	Common Name	RHG	RANK	USES	SPROT
<i>Sitta carolinensis</i>	White-Breasted Nuthatch	68	G5S4		
<i>Certhia americana</i>	Brown Creeper	123	G5S4		
<i>Thryomanes bewickii</i>	Bewick's Wren	140	G5S4		
<i>Troglodytes aedon</i>	House Wren	142	G5S4		
<i>Troglodytes troglodytes</i>	Winter Wren	130	G5S4		
<i>Cistothorus palustris</i>	Marsh Wren	140	G5S5		
<i>Cinclus mexicanus</i>	American Dipper	18	G5S4		
<i>Regulus satrapa</i>	Golden-Crowned Kinglet	95	G5S4		
<i>Sialia mexicana</i>	Western Bluebird	76	N		SV
<i>Sialia currucoides</i>	Mountain Bluebird	18	G5S4		
<i>Myadestes townsendi</i>	Townsend's Solitaire	86	G5S4		
<i>Catharus ustulatus</i>	Swainson's Thrush	140	G5S5		
<i>Catharus guttatus</i>	Hermit Thrush	76	G5S4		
<i>Turdus migratorius</i>	American Robin	178	G5S5		
<i>Ixoreus naevius</i>	Varied Thrush	118	G5S4		
<i>Chamaea fasciata</i>	Wrentit	76	G5S5		
<i>Bombycilla cedrorum</i>	Cedar Waxwing	130	G5S5		
<i>Sturnus vulgaris</i>	European Starling	29	G5SE		
<i>Vireo huttoni</i>	Hutton's Vireo	162	G5S4		
<i>Vireo gilvus</i>	Warbling Vireo	108	G5S5		
<i>Vireo olivaceus</i>	Red-Eyed Vireo	26	G5S4		
<i>Vireo cassinii</i>	Cassin's Vireo	136	G5S4?B		
<i>Vermivora celata</i>	Orange-Crowned Warbler	124	G5S5		
<i>Vermivora ruficapilla</i>	Nashville Warbler	19	G5S4?		
<i>Dendroica petechia</i>	Yellow Warbler	49	G5S4		
<i>Dendroica coronata</i>	Yellow-Rumped Warbler	112	G5S5		
<i>Dendroica nigrescens</i>	Black-Throated Gray Warbler	170	G5S5		
<i>Dendroica occidentalis</i>	Hermit Warbler	129	G4G5S4		
<i>Oporornis tolmiei</i>	Macgillivray's Warbler	142	G5S4		
<i>Geothlypis trichas</i>	Common Yellowthroat	146	G5S5		
<i>Wilsonia pusilla</i>	Wilson's Warbler	136	G5S5		
<i>Icteria virens</i>	Yellow-Breasted Chat	10	G5S4?	SOC	SC
<i>Piranga ludoviciana</i>	Western Tanager	129	G5S4		
<i>Pheucticus melanocephalus</i>	Black-Headed Grosbeak	140	G5S5		
<i>Passerina amoena</i>	Lazuli Bunting	42	G5S4		
<i>Pipilo maculatus</i>	Spotted Towhee	142	G5S5		
<i>Spizella passerina</i>	Chipping Sparrow	12	G5S4		
<i>Passerculus sandwichensis</i>	Savannah Sparrow	8	G5S5		
<i>Melospiza melodia</i>	Song Sparrow	142	G5S5		
<i>Zonotrichia leucophrys</i>	White-Crowned Sparrow	142	G5S5		
<i>Junco hyemalis</i>	Dark-Eyed Junco	152	G5S5		
<i>Agelaius phoeniceus</i>	Red-Winged Blackbird	144	G5S5		
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird	136	G5S5		
<i>Molothrus ater</i>	Brown-Headed Cowbird	174	G5S5		
<i>Icterus bullockii</i>	Bullock's Oriole	25	G5S4		
<i>Carpodacus purpureus</i>	Purple Finch	136	G5S4		

Scientific Name	Common Name	RHG	RANK	USESA	SPROT
<i>Carpodacus mexicanus</i>	House Finch	27	G5S5		
<i>Loxia curvirostra</i>	Red Crossbill	152	G5S4		
<i>Carduelis pinus</i>	Pine Siskin	140	G5S5		
<i>Carduelis tristis</i>	American Goldfinch	52	G5S4		
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	147	G5S5		
<i>Didelphis virginiana</i>	Virginia Opossum	82	G5SE		
<i>Sorex vagrans</i>	Vagrant Shrew	67	G5S4		
<i>Sorex monticolus</i>	Dusky Shrew	8	G5S4		
<i>Sorex pacificus</i>	Pacific Shrew	45	G3G4S3S4		
<i>Sorex bendirii</i>	Pacific Water Shrew	67	G4S4		
<i>Sorex trowbridgii</i>	Trowbridge's Shrew	63	G5S4		
<i>Sorex bairdi</i>	Baird's Shrew	69	G4SU		
<i>Sorex sonomae</i>	Fog Shrew	36	G5SU		
<i>Neurotrichus gibbsii</i>	Shrew-Mole	64	G5S4		
<i>Scapanus townsendii</i>	Townsend's Mole	64	G5S4		
<i>Scapanus orarius</i>	Coast Mole	64	G5S5?		
<i>Myotis lucifugus</i>	Little Brown Myotis	79	G5S4		
<i>Myotis yumanensis</i>	Yuma Bat	84	G5S3	SOC	
<i>Myotis evotis</i>	Long-Eared Bat	64	G5S3	SOC	SU
<i>Myotis thysanodes</i>	Fringed Bat	65	G4G5S2?	SOC	SV
<i>Myotis volans</i>	Long-Legged Bat	66	G5S3	SOC	SU
<i>Myotis californicus</i>	California Myotis	68	G5S4		
<i>Lasionycteris noctivagans</i>	Silver-Haired Bat	68	G5S4?	SOC	SU
<i>Eptesicus fuscus</i>	Big Brown Bat	74	G5S4		
<i>Lasiurus cinereus</i>	Hoary Bat	64	G5S4?		
<i>townsendii</i>	Pacific Western Big-Eared Bat	8	?	SOC	SC
<i>Sylvilagus bachmani</i>	Brush Rabbit	56	G5S5		
<i>Sylvilagus floridanus</i>	Eastern Cottontail	31	G5SE		
<i>Lepus americanus</i>	Snowshoe Hare	80	G5S4		
<i>Lepus californicus</i>	Black-Tailed Jack Rabbit	42	G5S4		
<i>Aplodontia rufa</i>	Mountain Beaver	77	G5S4		
<i>Tamias townsendii</i>	Townsend's Chipmunk	75	G5S4		
<i>Spermophilus beecheyi</i>	California Ground Squirrel	64	G5S5		
<i>Sciurus griseus</i>	Western Gray Squirrel	8	G5S4?		SU
<i>Tamiasciurus douglasii</i>	Douglas' Squirrel	59	G5S5		
<i>Glaucomys sabrinus</i>	Northern Flying Squirrel	61	G5S4		
<i>Thomomys mazama</i>	Western Pocket Gopher	32	G4G5S?		
<i>Castor canadensis</i>	American Beaver	71	G5S5		
<i>Peromyscus maniculatus</i>	Deer Mouse	69	G5S5		
<i>Peromyscus truei</i>	Pinon Mouse	36	G5S4?		
<i>Neotoma fuscipes</i>	Dusky-Footed Woodrat	36	G5S4		
<i>Neotoma cinerea</i>	Bushy-Tailed Woodrat	81	G5S5		
<i>Clethrionomys californicus</i>	Western Red-Backed Vole	56	G5S4		
<i>Microtus townsendii</i>	Townsend's Vole	38	G5S4		
<i>Microtus longicaudus</i>	Long-Tailed Vole	72	G5S5		
<i>Microtus oregoni</i>	Creeping Vole	9	G5S4		

Scientific Name	Common Name	RHG	RANK	USES	SPROT
<i>Ondatra zibethicus</i>	Muskrat	62	G5S5		
<i>Zapus trinotatus</i>	Pacific Jumping Mouse	58	G5S4		
<i>Erethizon dorsatum</i>	Common Porcupine	80	G5S5		
<i>Myocastor coypus</i>	Nutria	57	G5SE		
<i>Canis latrans</i>	Coyote	59	G5S5		
<i>Vulpes vulpes</i>	Red Fox	70	G5S4?		
<i>Ursus americanus</i>	Black Bear	77	G5S4		
<i>Bassariscus astutus</i>	Ringtail	24	G5S3		SU
<i>Procyon lotor</i>	Common Raccoon	84	G5S5		
<i>Martes americana</i>	American Marten	6	G5S3		SV
<i>Martes pennanti</i>	Fisher	6	G5S2		SC
<i>Mustela erminea</i>	Ermine	64	G5S5		
<i>Mustela frenata</i>	Long-Tailed Weasel	68	G5S5		
<i>Mustela vison</i>	Mink	78	G5S5		
<i>Spilogale gracilis</i>	Western Spotted Skunk	76	G5S4		
<i>Mephitis mephitis</i>	Striped Skunk	71	G5S5		
<i>Lynx rufus</i>	Bobcat	75	G5S4		
<i>Cervus elaphus</i>	Elk	75	G5S5		
<i>Odocoileus hemionus</i>	Black-Tailed Deer	72	G5S5		
<i>Elgaria coerulea</i>	Northern Alligator Lizard	31	G5S5		
<i>Sceloporus occidentalis</i>	Western Fence Lizard	10	G5S5		
<i>Eumeces skiltonianus</i>	Western Skink	4	G5S5		
<i>Charina bottae</i>	Rubber Boa	20	G5S4		
<i>Contia tenuis</i>	Sharptail Snake	15	G5S3		SV
<i>Diadophis punctatus</i>	Ringneck Snake	4	G5S4?		
<i>Thamnophis elegans</i>	Western Terrestrial Garter Snake	45	G5S5		
<i>Thamnophis ordinoides</i>	Northwestern Garter Snake	80	G5S5		
<i>Thamnophis sirtalis</i>	Common Garter Snake	88	G5S5		
<i>Thamnophis atratus</i>	Pacific Coast Aquatic Garter Snake	85	G5S4?		

RHG is a measure of how good and abundant habitat for the species is at the site. Values of 20 or less indicate limited habitat at the site, values of 5 or less means the species is probably not present. USESA is the Endangered Species Act status. Values included: LT = Listed Threatened, SOC = Species of Concern, (PS) = Partial Status or Listed Elsewhere or with a sub-taxon listed. SPROT is the current ODFW Sensitive Species Designation: SC = Sensitive Critical, SV = Sensitive Peripheral, SU = Sensitive Unknown, & SP = Sensitive Peripheral. These are species expected to occur because the site is in their range, and habitat is present. The habitat used to determine the species presence was based on the SageMap imagery for the area, which was from a 2001 image.