

File Code: 2670

Date: 9 December 2011

Subject: Biological Evaluation –Threatened, Endangered, and Sensitive Plants
Kapka Butte Sno-Park

To: The Record

This is a biological evaluation to document consideration of Threatened, Endangered, and Sensitive (TES) plants related to the Kapka Butte Sno-Park project. It is prepared in compliance with the Forest Service Manual (FSM) 2672.4 and the Endangered Species Act of 1973 (Subpart B; 402.12, section 7 consultation).

Effects of this activity are evaluated for those TES plant species on the current Regional Forester's Sensitive Species List (FSM 2670.44, January 2008) that are documented or suspected to occur on the Deschutes National Forest.

Finding:

The action alternatives will have no impact on Proposed, Endangered, Threatened, or Sensitive plant species.

Project Description

The project is located about 15 miles west of Bend and on the south side of the Cascade Lakes Highway in Township 18 South, Range 9 East, Section 26.

Snowmobilers have been asking for a sno-park located at a higher elevation than those found at Wanoga and Edison.

Alternatives Considered in Detail

The Forest Service developed four alternatives to the Proposed Action for a total of four alternatives, including the No Action. The No Action Alternative is used as a baseline to display consequences of a passive management scenario.

Alternative 1 No Action

Under the No Action alternative, no specific management actions would be authorized as a result of the analysis. There would be no change in current management direction or in the level of ongoing management activities within the project area.

No sno-park would be built and current parking conditions would continue. There would be no additional parking for winter recreationists, motorized or non-motorized. Winter trails and recreation opportunities would remain at the current locations and conditions.

Alternative 2, Proposed Action

Alternative 2 is the proposed action, which is to build a new snopark near Kapka Butte to provide more high-elevation parking for winter recreationists along an established snowplowing route. The proposed facility would provide for a mix of vehicle parking, including vehicles towing trailers and some slots designed for smaller vehicles. In addition, new trails would be built for a variety of users to safely access other areas or provide more recreation activities at Kapka Snopark itself.

The new snopark would be located between Kapka Butte and the junction of Forest Roads 46 (Cascade Lakes Highway) and 45 (Sunriver Cutoff) .

The intent of the proposed action is to give winter recreationists another option for parking at a suitable elevation and proximity to the Dutchman trails hub or others.

Alternative 2 management activities for providing high elevation parking that will enhance a variety of winter recreation opportunities near the Cascade Lakes Highway corridor and providing safe access to over-the-snow trail systems would include:

Parking lot and associated facilities: To provide more high elevation winter parking:

- 70 parking slots designed for larger vehicles and vehicles towing trailers
- 40 parking slots for passenger vehicles
- 7.5 acres disturbed area not including trail connectors; vegetation clearing
- Entrance road 40 x 350 feet =.32 acres
- Vegetation is mostly non-merchantable other than for biomass. Excess material may be hauled off or burned on site.
- 3 single vault toilets: 2 in the trailer parking area, and 1 in the passenger vehicle parking area.

Trails: To connect to existing Nordic and motorized system and to provide new opportunities:

- 0.2 mile snowmobile trail link to trail #45,
- 0.6 mile Nordic trail connecting the Nordic system and Vista Butte Snopark north of the Cascade Lakes Highway
- 0.8 mile un-groomed snowshoe trail to the top of Kapka Butte
- 7.2 miles of groomed trails for dogs off-leash (6.2 miles non-motorized and 1 mile shared with snowmobile Trail #40)
- Realine snowmobile Trail #5 to remove sharp turns and improve sight distances

The 0.2 mile snowmobile trail would link the proposed snopark to the existing trail #45 which links to the Edison system to the southwest, the Wanoga system to the southeast, and the Dutchman and Moon Mtn. area to the north. The typical snowmobile trail would be 20 feet wide.

The 0.6 Nordic trail links Kapka Snopark to the Nordic system to the north of the Cascade Lakes Highway. Visitors may access Swampy Lakes, Meissner, Tumalo, and other back-country destinations. The typical Nordic trail is 10-15 feet wide.

The 0.8 mile snowshoe trail would be an un-groomed, marked trail, with brush and lower limbs removed. Snowshoe trails generally require no tree cutting, just bucking logs and removing brush and limbs.

The 6.2 miles groomed non-motorized trail would target users that prefer to have dogs off leash but prefer a groomed trail experience. The loops of the trail would be tied together with one mile of the existing snowmobile Trail #40. Approximately 90 % of the route is on existing, old roads. These trails would be cleared to 20 feet wide for full width grooming.

Snowmobile Trail #5 would be realigned to remove some of the sharp turns and improve the sight distance. These improvements would accommodate increased use and improve the safety of the trail. The typical snowmobile trail would be 20 feet wide. Realignment would occur outside of the Bend Watershed Inventoried Roadless Area; therefore no trees would be removed for realignment within the inventoried roadless areas, approximately 0.5 acres of vegetation would be removed outside of the IRA.

Winter trails would be constructed with material left on the ground, since snow will fall and cover the material to create a groomable surface. Material would lie within 1-2 feet off the ground.

All trail vegetation would be left on site, lopped and scattered within and adjacent to the new trails. Parking lot vegetation removal would be utilized or hauled off or burned on site.

Alternative 3

Though the Proposed Action provides additional parking for winter recreationists, extensive public comments concerning Dutchman Snopark demonstrate that it does not go far enough in alleviating the parking congestion at Dutchman Snopark. Dutchman Snopark would continue to reach capacity on holidays and weekends as winter recreationists continue to compete over the snopark's limited parking.

Alternative 3 differs from the management activities proposed in Alternative 2 in that the parking area would be smaller; and the snowshoe and the dog-friendly trails would not be constructed. Additionally, to reduce social conflict between motorized and non-motorized users on Dutchman Flat, Trail #7 would be relocated to the west edge of the flat; the snowmobile play-area would be relocated to the north end of the flat. The northern section of Dutchman Loop Nordic trail would be re-routed around the play-area, and a small Nordic connector trail from Mt. Bachelor's Dutchman Loop to USFS Dutchman Loop would be created.

To address congestion and increase parking capacity, Alternative 3 would also include a seasonal parking restriction to vehicles and vehicle-trailer combinations over 24 feet long within Dutchman Snopark during the core winter season (generally expected between January 1 and March 1). The seasonal restriction would be based on snow conditions at Kapka Snopark and would be managed year to year with signing and media. When snow accumulation at Kapka reached a level

determined to be sufficient for motorized use, vehicles and vehicle-trailer combinations over than 24 feet long would not be permitted to park at Dutchman Snopark. When snow accumulation at Kapka falls below the threshold (generally expected before January 1 and after March 1) parking at Dutchman Snopark would be open to all vehicles.

Alternative 3 management activities would include the following:

Parking lot and associated facilities: To provide more high elevation winter parking:

- 50 parking slots designed for larger vehicles and those towing trailers
- Parking lot construction; 5.5 acres disturbed area not including trail connectors.
- Entrance road 40 x 350 feet ; or approximately 0.32 acres;
- 5,300 cubic yards of soil moved.
- Vegetation would be mostly non- merchantable other than for biomass. Excess material would be hauled off or burned on site.
- 2 single vault toilets; located within the island of the parking area

Trails: To connect to existing Nordic and motorized system and to provide new recreational opportunities:

- A 0.2 mile snowmobile trail link to trail #45
- A 0.6 Nordic trail connecting the Nordic system and Vista Butte Snopark to the north of the Cascade Lakes Highway
- 0.5 miles of Trail #7 relocated to the west edge of Dutchman Flat
- Realine snowmobile Trail #5 to remove sharp turns and improve sight distances
- Relocation of the 16.6 acre snowmobile play-area from its current location (at the southern end of Dutchman Flat) to the northern edge of Dutchman Flat. The new location would be about 0.4 miles farther from Dutchman Snopark via Snowmobile Trail #7.

The 0.2 mile snowmobile trail links the proposed Kapka Snopark to the existing snowmobile trail #45 which links to the Edison system to the southwest, the Wanoga system to the southeast, and the Dutchman and Moon Mtn. area to the north.

The 0.6 mile Nordic trail links Kapka Snopark to the Nordic system north of the Cascade Lakes Highway. Visitors may access Swampy Lakes, Meissner, Tumalo, and other back-country destinations. The typical Nordic trail is 10-15 feet wide.

The 0.5 mile relocation of snowmobile Trail #7 to the west edge of Dutchman Flat would maintain the existing connection from snowmobile Trail #5 to the snowmobile play-area and the snowmobile trail system north of Dutchman. The snowmobile trails would be 20 feet wide.

Snowmobile Trail #5 would be realigned to remove some of the sharp turns and improve the sight distance. These improvements would accommodate increased use and improve the safety of the trail. The typical snowmobile trail would be 20 feet wide. Realignment would occur outside of the Bend Watershed Inventoried Roadless Area; therefore no trees would be removed for realignment within the inventoried roadless areas, approximately 0.5 acres of vegetation would be removed outside of the IRA.

The 16.6 acre snowmobile play-area would be relocated to the northern edge of Dutchman Flat. Relocation of the snowmobile trail and play-area would take advantage of openings and be outside of the tree lines.

Winter trails are constructed with material left on the ground, so snow can fall and cover it, creating a groomable surface, where necessary. Material lies within 1-2 feet off the ground. All trail vegetation would be left on site, lopped, and scattered within and adjacent to the new trails. Parking lot vegetation removal would be utilized or hauled off or burned on site.

Alternative 4

Though the Proposed Action provides additional parking for winter recreationists, it does not go far enough in alleviating the parking congestion at and Dutchman Snopark. Dutchman Snopark would continue to reach capacity on holidays and weekends as winter recreationists continue to compete over the snopark's limited parking.

Alternative 4 includes all of the Kapka Butte Snopark management activities proposed in Alternative 2. Additionally, to reduce social conflict between motorized and non-motorized users on Dutchman Flat, Trail #7 would be relocated to the west edge of the flat and the snowmobile play area would be relocated to the north end of the flat.

Alternative 4 management activities would include the following:

Parking lot and associated facilities: To provide more high elevation winter parking:

- 70 parking slots designed for larger vehicles and vehicles towing trailers
- 40 slots designed for passenger vehicles
- Parking lot construction: 7.5 acres disturbed area not including trail connectors: vegetation clearing
- Entrance road 40 x 350 feet or approximately 0.32 acres;
- Vegetation would be mostly non- merchantable other than for biomass. Excess material would be hauled off or burned on site.
- 3 single vault toilets: 2 in the trailer parking area and 1 in the passenger vehicle area.

Trails: To connect to existing Nordic and motorized systems and to provide new recreational opportunities:

- A 0.2 mile snowmobile trail link to trail #45
- A 0.6 Nordic trail connecting the Nordic system and Vista Butte Snopark to the north of the Cascade Lakes Highway
- A 0.8 mile un-groomed snowshoe trail to the top of Kapka Butte
- 7.2 miles of groomed trails for dogs off-leash (6.2 miles new, non-motorized and 1 mile shared with snowmobile Trail #40)
- Relocation of 0.5 miles of Trail #7 to the western edge of Dutchman Flat
- Realine snowmobile Trail #5 to remove sharp turns and improve sight distances
- Relocation of the 16.6 acre snowmobile play-area from its current location to the northern edge of Dutchman Flat. The new location would be 0.4 miles farther from Dutchman Snopark via Trail #7.

The 0.2 mile snowmobile trail would link the proposed Kapka Snopark to the existing snowmobile trail #45 which links to the Edison system to the southwest, the Wanoga system to the southeast, and the Dutchman and Moon Mountain areas to the north.

The 0.6 mile Nordic trail would link Kapka Snopark to the Nordic system north of the Cascade Lakes Highway. Visitors may access Swampy Lakes, Meissner, Tumalo, and other back-country destinations. The typical Nordic trail is 10-15 feet wide.

The 0.8 mile snowshoe trail would be an un-groomed, marked trail, with brush and lower limbs removed. Snowshoe trails are generally about 6 to 8 feet wide.

The 0.5 mile relocation of snowmobile Trail #7 to the west edge of Dutchman Flat would maintain the existing connection from snowmobile Trail #5 to the snowmobile play-area and the snowmobile trail system north of Dutchman. The snowmobile trails would be 20 feet wide.

Snowmobile Trail #5 would be realigned to remove some of the sharp turns and improve the sight distance. These improvements would accommodate increased use and improve the safety of the trail. The typical snowmobile trail would be 20 feet wide. Realignment would occur outside of the Bend Watershed Inventoried Roadless Area; therefore no trees would be removed for realignment within the inventoried roadless areas, approximately 0.5 acres of vegetation would be removed outside of the IRA.

The 16.6 acre snowmobile play-area would be relocated to the northern edge of Dutchman Flat. Relocation of the snowmobile trail and play-area would take advantage of openings and be outside of the tree lines.

Winter trails are constructed with material left on the ground, so snow can fall and cover it, creating a groomable surface, where necessary. Material lies within 1-2 feet off the ground. All trail vegetation would be left on site, lopped, and scattered within and adjacent to the new trails. Parking lot vegetation removal would be utilized or hauled off or burned on site.

Prefield Review

The area is dominated by a lodgepole pine/sedge-lupine plant association. The area proposed for the sno-park was hand-thinned in 1995, and the slash was treated in 1997. Soils are characterized by sandy volcanic ash and pumice over buried soils on glacial till, as well as sandy, pumiceous volcanic ash over sandy to loamy buried soils. The elevation is 5900'. The average annual precipitation measures about 35". A sensitive plant survey in 1995 located a small population of green-tinged paintbrush (*Castilleja chlorotica*), a PETS plant species, about two miles away.

Adjacent to the proposed sno-park, the areas proposed for dog-friendly trails, a nordic trail under the highway, and a snowmobile trail, all occur within habitat similar to the description in the previous paragraph.

The snowshoe trail up Kapka Butte lies within a mixed conifer plant association. The trails at Dutchman Flat occur in a dry meadow.

No habitat for Threatened, Endangered, Proposed, or Candidate plant species (these species, and their habitats, are listed in Appendices C and D) exists within the project area.

Field Reconnaissance

No field survey is required for this project; the area does not present high-probability TES plant species habitat. This determination is based on the fact that, although two small populations (consisting of 3 and 4 plants) of the green-tinged paintbrush were found 15 years ago about two and three miles away from the proposed sno-park, other comprehensive surveys in the area have not found other sites for this species, nor other sensitive plant species. Also, the author visited the one of the sites in 2007 and did not locate any of the plants; the site characteristics did not correspond with other, known, sites elsewhere on the district—the site was quite shady. It is likely that the plants were shaded out since they were originally found.



Green-tinged paintbrush

Project Effects and Finding

Alternative 1

Direct, Indirect, and Cumulative Effects: None have been identified, because no high-probability PETS plant habitat occurs in the project area, and no project would occur.

Alternatives 2-4

Direct and Indirect Effects: None have been identified, because no high-probability PETS plant habitat occurs in the project area, and the two historical green-tinged paintbrush sites do not lie within proposed disturbance areas of any of the alternatives.

Cumulative Effects: None have been identified, because no high-probability PETS plant habitat occurs in the project area, and the two historical green-tinged paintbrush sites do not lie within proposed disturbance areas of any of the alternatives.

It may be that as more openings are created in the canopy for various types of user trails, including those for this project, there may be an increased opportunity for the green-tinged paintbrush to make a small-scale reappearance in this area; currently it is hard to imagine that suitable habitat exists for it. For that matter, it is hard to imagine that habitat existed at the time the two small populations were located in the mid-1990's.

Finding:

The proposed action will have no impact on Proposed, Endangered, Threatened, or Sensitive plant species.

PREPARED BY /s/ Charmane Powers

DATE 9 December 2011

REFERENCES AND COMMUNICATIONS

Lang, Marv. Recreation Forester, Bend/Ft. Rock Ranger District
Tinderholt, Amy. Recreation Staff, Bend/Ft. Rock Ranger District
Larsen, 1976. Soil Resource Inventory, Deschutes National Forest.
Bend/Ft. Rock Ranger District surveyed areas atlas
Bend/Ft. Rock Ranger District sensitive plant species GIS layer

APPENDIX A

Deschutes National Forest Sensitive Species List

Sixty plants are currently on the Regional Forester's Sensitive Species List (FSM 2670.44, Jan.2008) for the Deschutes National Forest, as follows (BFR = Bend/Fort Rock District, CRE = Crescent District, SIS = Sisters District):

Scientific Name	Common Name	Listing Status	District		
			BFR	CRE	SIS
<i>Agoseris elata</i>	Tall agoseris	ONHP List 2	S	S	D
<i>Arabis suffrutescens</i> var. <i>horizontalis</i>	Crater Lake rockcress	Sp. Of Concern ONHP List 1	---	S	---
<i>Arnica viscosa</i>	Shasta arnica	ONHP List 2	D	S	S
<i>Astragalus peckii</i>	Peck's milk-vetch	ONHP List 1	D	D	S
<i>Barbilophozia lycopodioides</i> (LIVERWORT)		ONHP List 2	S	S	S
<i>Botrychium pumicola</i>	Pumice moonwort	ONHP List 1	D	D	---
<i>Brachydontium olympicum</i> (MOSS)		ONHP List 2	S	S	S
<i>Calamagrostis breweri</i>	Brewer's reedgrass	ONHP List 2	S	S	S
<i>Carex abrupta</i>	Abrupt-beaked sedge	ONHP List 2	S	S	S
<i>Carex capitata</i>	Capitate sedge	ONHP List 2	D	D	D
<i>Carex diandra</i>	Lesser panicked sedge	ONHP List 2	S	S	S
<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender sedge	ONHP List 2	D	S	S
<i>Carex livida</i>	Pale sedge	ONHP List 2	S	S	S
<i>Carex retrorsa</i>	Retorse sedge	ONHP List 2	S	S	S
<i>Carex vernacula</i>	Native sedge	ONHP List 2	S	S	S
<i>Castilleja chlorotica</i>	Green-tinged paintbrush	ONHP List 1	D	S	S
<i>Cheilanthes feei</i>	Fee's lip-fern	ONHP List 2	S	S	S
<i>Chiloscyphus gemmiparus</i> (LIVERWORT)		ONHP List 1	S	S	S
<i>Cicuta bulbifera</i>	Bulb-bearing water-hemlock	ONHP List 2ex	S	S	S
<i>Collomia mazama</i>	Mt. Mazama collomia	ONHP List 1	S	S	S
<i>Conostomum tetragonum</i> (MOSS)		ONHP List 2	S	S	S
<i>Cyperus acuminatus</i>	Short-pointed cyperus	ONHP List 2	D	D	S
<i>Cyperus lupulinus</i> ssp. <i>lupulinus</i>	Cyperus	ONHP List 2	S	S	S
<i>Dermatocarpon meiophyllizum</i> (LICHEN)		ONHP List 3	S	S	S
<i>Elatine brachysperma</i>	Short-seeded waterwort	ONHP List 2	S	S	S
<i>Eucephalus gormanii</i>	Gorman's aster	ONHP List 1	S	S	S
<i>Gentiana newberryi</i> var. <i>newberryi</i>	Newberry's gentian	ONHP List 2	D	S	D
<i>Helodium blandowii</i> (MOSS)		ONHP List 2	D	S	S
<i>Heliotropium curassavicum</i>	Salt heliotrope	ONHP List 2	S	S	S
<i>Leptogium cyanescens</i> (LICHEN)		ONHP List 3	S	S	S
<i>Lipocarpha aristulata</i>	Aristulate lipocarpha	ONHP List 2	S	S	S
<i>Lobelia dortmanna</i>	Water lobelia	ONHP List 2	S	S	D
<i>Lycopodiella inundata</i>	Bog club-moss	ONHP List 2	S	D	S
<i>Lycopodium complanatum</i>	Ground cedar	ONHP List 2	S	S	S
<i>Muhlenbergia minutissima</i>	Annual dropseed	ONHP List 2	S	S	S
<i>Ophioglossum pusillum</i>	Adder's-tongue	ONHP List 2	S	S	S
<i>Penstemon peckii</i>	Peck's penstemon	Sp. Of Concern ONHP List 1	S	S	D
<i>Pilularia americana</i>	American pillwort	ONHP List 2	S	S	---
<i>Pinus albicaulis</i>	Whitebark pine		D	D	D
<i>Polytrichum sphaerothecium</i> (MOSS)		ONHP List 2	S	S	S
<i>Potamogeton diversifolius</i>	Rafinesque's pondweed	ONHP List 2	S	S	S

<i>Pseudocalliergon trifarium</i> (MOSS)		ONHP List 2	S	S	S
<i>Rhizomnium nudum</i> (MOSS)		Dropped—"too common"	D	D	D
<i>Rorippa columbiae</i>	Columbia cress	ONHP List 1	S	D	S
<i>Rotala ramosior</i>	Lowland toothcup	ONHP List 2	S	S	S
<i>Scheuchzeria palustris</i> ssp. <i>americana</i>	Scheuchzeria	ONHP List 2	D	S	S
<i>Schistostega pennata</i> (MOSS)		ONHP List 2	S	D	S
<i>Schoenoplectus subterminalis</i>	Water clubrush	ONHP List 2	S	D	S
<i>Scouleria marginata</i> (MOSS)		ONHP List 3	S	S	S
<i>Splachnum ampullaceum</i> (MOSS)		ONHP List 2	S	S	S
<i>Texosporium sancti-jacobi</i> (LICHEN)		Sp. of Concern ONHP List 2	S	S	S
<i>Tomentypnum nitens</i> (MOSS)		ONHP List 2	D	D	D
<i>Trematodon boasii</i> (MOSS)		ONHP List 1	S	S	S
<i>Tritomaria exsectiformis</i> (LIVERWORT)		ONHP List 2	D	D	D
<i>Utricularia minor</i>	Lesser bladderwort	ONHP List 2	D	S	D
FUNGI (detection issues)					
<i>Alpova alexsmithii</i>		ONHP List 1	S	S	D
<i>Gastroboletus vividus</i>		ONHP List 1	S	S	S
<i>Helvella crassitunicata</i>		ONHP List 2	D on DES	D on DES	D on DES
<i>Hygrophorus caeruleus</i>		ONHP List 2	S	S	D
<i>Ramaria amyloidea</i>		ONHP List 2	S	D	S

CODES:

--- = Not documented or suspected

D = Documented

S = Suspected

Species of Concern = Federal Designation; neither Endangered or Threatened

ONHP List 1 = Oregon Natural Heritage Program List: Contains species which are endangered or threatened throughout their range or which are presumed extinct.

ONHP List 2 = Oregon Natural Heritage Program List: Contains species which are threatened, endangered or possibly extirpated from Oregon, but more common or stable elsewhere.

ONHP List 2-ex = Extirpated in Oregon.

ONHP List 3 = Oregon Natural Heritage Program List: Contains species for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range.

ONHP List 4 = Oregon Natural Heritage Program List: Contains species of concern which are not currently threatened or endangered.

APPENDIX B

Deschutes National Forest Sensitive Plant Habitat Descriptions

Vascular Plants

Agoseris elata. This species occurs in nonforest areas and openings in ponderosa pine forest between 3000 and 4800 feet elevation. Habitat includes dry edges of moist ecotones adjacent to moist meadows, lakes, stream courses, and riverbanks. The closest known sighting is on the Sisters Ranger District.

Arabis suffrutescens var. horizontalis. Crater Lake rockcress is found in meadows, woods, summits, ridges, and steep, exposed rock outcrops between 5500-8900'. Oregon Natural Heritage records (as recent as 1993) are only from Crater Lake National Park, Lake of the Woods, and Mt. McLoughlin, all in south-central and southern Oregon.

Arnica viscosa. Shasta arnica is found on the Bend/Ft. Rock Ranger District. Typical habitat is rock, scree, talus, and lava flows, between 6500-9200'. May be w/in moraine lake basins or crater lake basins. At or above subalpine mixed conifer in western white pine and mountain hemlock, sparsely vegetated openings.

Artemisia ludoviciana ssp. estesii. This robust herbaceous perennial is found within the Deschutes River floodplain habitat amidst sparse vegetation in sandy pockets among rocks and river gravel. It has been found on the Bend/Ft. Rock Ranger District.

Aster gormannii. Now *Eucephalus gormannii*.

Astragalus peckii. A perennial legume that is found in non-forested areas, forest openings, and open forest. It is most commonly found in shrub-steppe plant associations, but has also been reported from common juniper woodlands, ponderosa pine forest edge and lodgepole pine forest openings. It grows in loose, deep pumice, loamy sand, or sandy soils with flat to gentle slopes. It has often been found in or along dry watercourses, old lakebeds (basins), pumice flats and other natural openings. It has been found in previously-disturbed areas on the Crescent Ranger District, namely in a powerline corridor and between berms in a lodgepole pine plantation.

Botrychium pumicola. This inconspicuous plant is a perennial which may regrow from a bud located 1-3 inches below the ground surface. It reproduces through spore dispersal, and, vegetatively, through the formation of tiny underground buds called gemmae. This species is endemic to Central Oregon open-canopy pumice soils at high elevations in the Oregon Cascades and Newberry Crater, and at lower elevations within a lodgepole pine matrix. Within the lodgepole pine matrix, it prefers relatively flat, open basins where frost heaving tends to prevent the establishment of tree seedlings and most other vegetation as well.

Calamagrostis breweri. A perennial tufted grass found in moist to dry alpine and subalpine meadows, open slopes, streambanks, and lake margins.

Calochortus longebarbatus var. longebarbatus. Also known as the long-bearded mariposa lily, it is found in dry portions of low meadows and grassy openings in pine forest or in moist open ground along rills at 1800-3600 feet. It has not been found on the Deschutes National Forest.

Carex abrupta. Abrupt-beaked sedge. Ponderosa forests, alpine fell fields, meadows, roadsides, and open slopes, usually in dry soil. From 1,400m to high elevations. It has not been found on the Deschutes National Forest.

Carex capitata. Capitata sedge. Usually in open, wet places, but sometimes in drier sites at high elevations. Known from five sites on the Sisters, Bend, and Crescent districts of the Deschutes National Forest.

Carex diandra. Lesser paniced sedge. Swamps, sphagnum bogs, lake margins, and wet, often calcareous meadows at moderate elevations. It has not been found on the Deschutes National Forest.

Carex lasiocarpa var. americana. Slender sedge. Swamps and wet meadows at mid elevations. Found on the Deschutes National Forest along the Deschutes River, south of Bend.

Carex livida. Pale sedge is found within all forest types in peatlands including fens and bogs, as well as wet meadows with still or channelled water.

Carex retrorsa. Retrorse sedge. Wet meadows, bogs, swamps, and edges of streams, lakes, and rivers. Foothills and lowlands. ORNHIC data elevations range from 10' – 3,000'. It has not been found on the Deschutes National Forest.

Carex vernacula. Native sedge. Moist or wet places at high elevations, especially at the edges of melting snowfields and in meltwater streams. ORNHIC data elevations range from 7760' – 9110'. It has not been found on the Deschutes National Forest.

Castilleja chlorotica. Also known as the green-tinged paintbrush, this species is a perennial eastern Oregon endemic, known only from Deschutes, Lake, and Klamath Counties. It occurs on the Bend/Ft. Rock Ranger District in numerous populations. It has been found at 4300' to 8200' elevation in open and forested ponderosa, lodgepole, and mixed conifer. It has also been found in nonforested sagebrush-bitterbrush types. Soils are often very poor and rocky.

An important life history factor to note about the *Castilleja* genus is that it is hemiparasitic, which means it contains chlorophyll and may or may not be able to complete its life cycle without a host species; hemiparasites primarily draw water and minerals from the host. It is not known which species is the host for CACH, although it is suspected to be a shrub (Dr. Richard Everett, pers. comm.). On the Fremont National Forest, upon which the majority of the known CACH population exists, the host is suspected to be sagebrush; on the Deschutes National Forest sites, it may be bitterbrush. Successful CACH reestablishment after a fire or other disturbance may depend upon the reestablishment of its host.

Cheilanthes feei. Fee's lip-fern. Located in crevices on cliffs. Known from NE Oregon. It has not been found on the Deschutes National Forest.

Cicuta bulbifera. Considered by Oregon Natural Heritage ranking to be extirpated from Oregon. Shoreline marshes. Only Nature Conservancy records are for margins of Klamath Lake in 1902 and 1950. Persistence at these sites considered doubtful.

Collomia mazama. Meadows (dry to wet, level to sloping); stream banks and bars; lakeshores and vernal pool margins; forest edges and openings; alpine slopes. Numerous recent sites within Klamath, Jackson, and Douglas Counties. It has not been found on the Deschutes National Forest.

Cyperus acuminatus. Short-pointed cyperus. On the Deschutes NF, located on damp mineral soil of a broad, low-gradient shore of reservoir, in a community just below the *Spiraea* community. Sites on Crane Prairie Reservoir, Davis Lake.

Cyperus lupulinus* ssp. *lupulinus. Upper shorelines. Known from NE Oregon. It has not been found on the Deschutes National Forest.

Elatine brachysperma. Short-seeded waterwort. In California, 164 - 1640 ft elev. Hitch. and Cron. says Cent. OR. Known sites in Grant, Lake, Malheur, Union, Wallowa Counties. In addition, Lucile Housley (BLM) reported (2004) Harney, Malheur Cos. One site says heavy horse, cattle use. It has not been found on the Deschutes National Forest.

Eucephalus* (formerly *Aster*) *gormannii. A perennial member of the sunflower family that is found on dry cliffs, open rocky ridges, steep rocky washes, or fine gravelly andesic scree in subalpine and alpine areas at elevations of 5000 to 6100 feet. Dry SW, S, ESE, E exposures are most common. The closest documentation of this species is in the Mt. Jefferson Wilderness on the Willamette National Forest.

Gentiana newberryi* var. *newberryi. Newberry's gentian is a perennial species occurring between 4700 and 8700 feet in subalpine and alpine meadows in moist to moderately dry sandy loam, on level to moderate slopes. It is also found in mesic to moderately well-drained meadows or mesic grassy borders and flats adjacent to lakes and streams. It occurs on the Bend/Ft. Rock Ranger District.

Heliotropium curassavicum. Salt heliotrope. Alkaline w/ greasewood. Harney, Malheur, Union, Baker, Lake Cos. It has not been found on the Deschutes National Forest.

Lipocarpha aristulata. Aristulate lipocarpha. Wetland; Nevada willow. Documented in Washington with *Rorippa columbiae* and *Rotala ramosior*. Wallowa and Malheur Cos. It has not been found on the Deschutes National Forest.

Lobelia dortmanna. Water lobelia is a fibrous rooted aquatic perennial species, found in water of lake, pond, slow river or stream, or wet meadow. Sisters Ranger District site is the only known Oregon locality.

Lycopodiella inundata. Deflation areas in coastal back-dunes; montane bogs, including sphagnum bogs; less often, wet meadows. Known on Deschutes National Forest from the Crescent Ranger District.

Lycopodium complanatum. Edges of wet meadows; dry, forested midslope with 25% canopy cover. Associated with Englemann spruce, Douglas-fir on the Wallowa-Whitman National Forest. Has been found on the Sisters Ranger District.

Muhlenbergia minutissima. Annual dropseed. Weathered lava soils in riparian; only ORNHIC site in Oregon is Jordan Crater, Malheur Co. It has not been found on the Deschutes National Forest.

Ophioglossum pusillum. Northern adder's tongue is a fernlike plant associated with dune deflation plains, marsh edges, vernal ponds, and stream terraces in moist meadows. In Oregon, only known from Lane County; chiefly on the Siuslaw and Willamette National Forests. Not yet found on the Deschutes National Forest.

Penstemon peckii. Peck's penstemon occurs on the Sisters Ranger District in ponderosa pine openings, open ponderosa pine forests, pine/mixed conifer openings, recovering fluvial surfaces (streambanks, overflow channels, inactive floodplains), seeps, rills, springs, vernal pools; draws, ditches, skid roads; dry or intermittent stream channels; moist-wet meadows.

Pinus albicaulis. Whitebark pine is a high-elevation pine tree growing within the western North American mountains. It is dependant upon the Clark's Nutcracker to cache its seeds, from which new whitebark pine seedlings grow. The species is being decimated by the white pine blister rust, which is a non-native fungus. It is also being affected by climate change and the mountain pine beetle. It is found on all three ranger districts of the Deschutes National Forest.

Pilularia americana. American pillwort is a small grasslike plant that is found in alkali and other shallow vernal pools; not recently used stock ponds; reservoir shores. In Oregon, recent collections have been made in Deschutes, Klamath, and Jackson Counties. There is an historical site from about 100 years ago from the extreme eastern edge of the Bend/Ft. Rock Ranger District, but targeted surveys in recent years has not re-discovered it.

Potamogeton diversifolius. Rafinesque's pondweed. Lakes, ponds, including created habitat. Klamath, Harney and Lake Cos. It has not been found on the Deschutes National Forest.

Rorippa columbiae. This perennial from the mustard family occurs in wet to vernal moist sites, meadows, fields, playas, lakeshores, intermittent stream beds, banks of perennial streams, along irrigation ditches, river bars and deltas. In Oregon, this species is found in Klamath, Lake, and Harney Counties. It has been found on the Crescent district of the Deschutes National Forest.

Rotula ramosior. Lowland toothcup. In Oregon, low elevation (<2300 ft) below high water, including created habitat in wet, swampy places, lakes and pond margins, and free-flowing river reaches. Benton, Columbia, Marion, Hood River., Harney, Multnomah and Linn Cos. It has not been found on the Deschutes National Forest.

Scheuchzeria palustris ssp. americana. Open canopied bogs, fens, and other wetlands where often in shallow water. Pacific silver fir and douglas-fir forests (in west Cascades). Found on the Bend district of the Deschutes National Forest.

Schoenoplectus (formerly Scirpus) subterminalis. Swaying bulrush. Generally submerged to emergent in quiet water 2-8 decimeters deep, in peatlands, sedge fens, creeks, ditches, ponds and lakes. Found on the Crescent district of the Deschutes National Forest.

Utricularia minor. Lesser bladderwort. Occurs underwater in lowland and montane fens, sedge meadows, low-nutrient lakes and peatbog pools. Deschutes, Clackamas, Lane, Klamath, Jackson, Coos, Douglas, Harney, Marion and Linn Cos. There are documented populations on the Bend and Sisters districts of the Deschutes National Forest.

Bryophytes

Barbilophozia lycopodioides. Liverwort. Forming mats on peaty soil on damp ledges of rock outcrops and cliffs at higher elevations. Sites receive abundant snowfall. Elevations of known sites in Oregon and Washington range from 3400 to 7500 feet. Forest types include *Abies amabilis*, *Abies lasiocarpa*, *Abies procera*, *Abies lasiocarpa*, *Picea engelmannii*, *Pinus contorta* ssp. *latifolia*, and *Tsuga mertensiana* associations. It has not been found on the Deschutes National Forest.

Brachydontium olympicum. Moss. Forming loose mats on exposed acidic boulders or soil in rock crevices. In boulder fields, moraines, and ledges of cliffs, often in areas of late snowmelt. Subalpine to alpine elevations between 5,000 and 6,000 feet. On Oregon's Mt. Hood *Brachydontium* occurs above timberline at about 6,000 ft where the plant association is probably *Phyllodoce empetriformis* and *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest, *Brachydontium* probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* associations. It has not been found on the Deschutes National Forest.

Chiloscyphus gemmiparus. Liverwort. Forming small turfs or clumps on rocks in beds of cold montane streams, submerged or emergent in the splash zone, full shade to partial sun. Some streams drain lakes with motorized boating access. Elevations in Oregon range from 5000-7000 feet. Known sites in the Pacific Northwest include *Abies amabilis*, *Abies lasiocarpa*, and *Tsuga mertensiana* associations. It has not been found on the Deschutes National Forest.

Conostomum tetragonum. Moss. Occurring as small sods or inconspicuous individual shoots intermixed with other bryophytes, on soil in rock crevices in boulder fields, moraines, and ledges of cliffs. Subalpine to alpine elevations, often in areas of late snowmelt. On Oregon's Mt. Hood, *Conostomum* occurs above timberline at about 6,500 ft, where the plant association is probably *Phyllodoce empetriformis* and *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest, *Conostomum* probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* associations. It has not been found on the Deschutes National Forest.

Helodium blandowii. Moss. Forming mats and small hummocks in medium to rich montane fens with calcareous groundwater. Sometimes under sedges and shrubs around the edges of fens or along streamlets in fens. Elevations range from 5000-6000 feet. Forest types include *Abies amabilis*, *Abies concolor*, *Abies x shastensis*, and *Pinus contorta* ssp. *latifolia* associations. Accompanying vascular species include *Betula glandulosa*, *Salix geyeriana*, *Carex limosa*, *Eleocharis quinqueflora* and *Scheuchzeria palustris*. Associated mosses include *Aulacomnium palustre*, *Calliargon stramineum*, *Hamatocaulis vernicosus*, *Meesia triquetra*, and *Tomenthypnum nitens*. Found on the Bend district of the Deschutes National Forest.

Polytrichum sphaerothecium. Moss. Forming green to brown sods on igneous rocks in exposed or sheltered sites, subalpine parkland to alpine krummholz. On Oregon's Mt. Hood, *Polytrichastrum sexangulare* var. *vulcanicum* occurs at or above timberline at about 6,500 ft elevation, where the plant association is probably *Phyllodoce empetriformis* or *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest it probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and possibly *Abies amabilis* associations. Associated

bryophytes may include *Conostomum tetragonum* and *Gymnomitrium*. It has not been found on the Deschutes National Forest.

Pseudocalliergon trifarium. Moss. Forming lawns or inconspicuously intermixed with other bryophytes in medium to rich montane fens where it grows submerged to emergent in pools or on saturated ground, usually in full sunlight. Fen pools may dry up in late summer. Elevations range from 5000-6000 feet. Forest types include *Abies amabilis*, *Abies concolor*, *Abies x shastensis*, and *Pinus contorta* ssp. *latifolia* associations. Calliergon trifarium is one of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include *Eleocharis quinqueflora*, *Carex limosa*, *Scheuchzeria palustris*, and *Triglochin maritimum*. Associated bryophyte species include *Hamatocaulis vernicosus*, *Tomentypnum nitens*, *Meesia triquetra* and *Helodium blandowii*. It has not been found on the Deschutes National Forest.

Splachnum ampullaceum. Moss. Forming green sods on old dung of herbivores, or on soil enriched by dung, in peatlands or other wetlands. The sodden, decomposed dung will scarcely be visible, or may be completely humified. The two known sites for *Splachnum ampullaceum* in Oregon are at 5000 feet elevation, but Hutten et al. (2005) reported it from as low as 500 feet in Olympic National Park. Plants in Oregon occurred in fens dominated by *Eleocharis quinquefolia*, *Hamatocaulis vernicosus*, and *Pinus contorta* var. *latifolia*. *Splachnum ampullaceum* tends to outcompete *Tetraplodon mnioides* in wet habitats, indicating that wetlands are optimal habitat for this species (Studlar and Byers 2007). It has not been found on the Deschutes National Forest.

Schistostega pennata. Moss. On mineral soil in damp caves and crevices and on the soil-bearing root masses of fallen trees. Often near streams or other wet areas. Requires humid, heavily shaded microsites. Most commonly found within silver fir plant series but also common in western hemlock and mountain hemlock series. Also in lodgepole pine stands near water. Stands are typically late seral or old growth. Found on the Crescent district of the Deschutes National Forest.

Tomentypnum nitens. Moss. Forming loose or dense sods or intermixed with other bryophytes in medium to rich montane fens where it favors slightly elevated sites such as logs, stumps, or hummocks formed by *Vaccinium uliginosum* and *Betula glandulosa*. Elevations range from 5000 to 6000 feet. Fens occur in openings in forest types that include *Abies amabilis*, *Abies concolor*, *Abies lasiocarpa*, and *Pinus contorta* ssp. *latifolia* associations. *Tomentypnum nitens* is one of the more conspicuous of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include *Eleocharis quinqueflora*, *Carex limosa*, *Carex aquatilis* ssp. *dives*, *Scheuchzeria palustris*, and *Triglochin maritimum*. Associated bryophyte species include *Hamatocaulis vernicosus*, *Pseudocalliergon trifarium*, *Meesia triquetra* and *Helodium blandowii*. Many sites on all three districts of the Deschutes National Forest.

Trematodon boasii. Moss. Forming loose mats on moist bare soil along the edges of trails, streams and ponds in the subalpine zone. Soils usually have some organic content and are irrigated by meltwater from late-season snowbeds. Little is known about associated species. Habitats probably include *Phyllodoce empetriiformis* and *Cassiope mertensiana* heath and *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* forest associations. It has not been found on the Deschutes National Forest.

Tritomeria exsectiformis. Liverwort. Within the Pacific Northwest this species is currently known from mid-elevational (3200-5200 feet) riparian zones. Typically open to shaded coniferous forest in association with low volume, perennial water flow at or near springs and seeps, along very gentle topographic gradients. Lodgepole pine (*Pinus contorta*) is present at nearly all sites of *T. exsectiformis* within the Oregon and Washington Cascades. Other tree species occurring at these sites include white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*) Engelmann spruce (*Picea engelmannii*), Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), mountain hemlock (*Tsuga mertensiana*), and subalpine fir (*Abies lasiocarpa*). Currently, all but one of the *T. exsectiformis* sites in the Oregon and Washington Cascades occur within spring-fed hydrologic systems.

Lichens

Leptogium cyanescens. On trees in humid forests; widely scattered. On mossy trees and rocks or directly on rock when near water. Considered riparian through 2001. Recently documented in upland settings on vine maple, big leaf maple, and in moss on white oak. Associated with Western Hemlock and Pacific Silver Fir Zones in mixed conifer stands, mature big leaf maple and Douglas-fir stands, maple and willow thickets.

Texosporium sancti-jacobi. Documented on The Island and near Canadian Bench, Crooked River National Grassland. Undocumented occurrences by R. Demmer on BLM along breaks of lower John Day R. Most likely to occur in Central Oregon in Crooked River National Grassland habitats. It has not been found on the Deschutes National Forest.

Surveys impractical or known sites likely managed

Alpova alexsmithii. Occurs principally on soil in Pacific Silver Fir (44%) and Mountain Hemlock (44%) series at elevations of 2742-5764 feet. A mycorrhizal associate of *Tsuga*. Associated species include Pacific silver fir, lodgepole pine, Engelmann spruce and mountain hemlock. Other woody associates include *Vaccinium membranaceum* and *Vaccinium scoparium*. Fruits August-December. Documented from the Mt. Jefferson Wilderness on the Deschutes National Forest.

Dermatocarpon meiophyllizum (formerly *D. luridum*). Lichen. Usually submerged most of the year. Rocks or bedrock in streams, rivers, or seeps, usually submerged or inundated for most of the year. Associated with *Alnus rubra*, *Pseudotsuga menziesii*, *Tsuga heterophylla*, *Acer* spp., subalpine or alpine meadow vegetation.

Gastroboletus vividus. Found in association with the roots of *Abies magnifica* and *Tsuga mertensiana* above 5,000'. Fruits July-September. A known site at Crater Lake National Park. No known sites on the Deschutes National Forest.

Helvella crassitunicata. Occurs in montane forests containing *Abies* spp., from old growth and younger age groups, from low to high elevation in the fall and winter, occasionally on trails, or

other moderately disturbed areas. Documented on the Sisters district of the Deschutes National Forest.

Hygrophorus caeruleus. Associated with roots of Pinaceae; may be restricted to *Abies*. Typically fruits in mid-elevation to montane conifer forests in the spring near melting snowbanks. Fruits May-July. Documented on the Deschutes National Forest.

Ramaria amyloidea. Fungus. Coral-like fungi on moist humus or wood, or under duff. May favor hemlock. Fall species. Associated with *Abies* spp., *Pseudotsuga menziesii* and *Tsuga heterophylla*.

Rhizomnium nudum. Moss. On humus or mineral soil in seepages, vernal (at least) wet depressions or intermittently wet, low gradient channels. Exposure varies from full sun to full shade. On Deschutes NF, associated conifer types include lodgepole pine, Engelman spruce, mountain hemlock and western white pine.

Scouleria marginata. Moss. Often forming dark mats on exposed to shaded rocks in streams; seasonally submerged or emergent.

APPENDIX C

List of Federally Endangered, Threatened, and Candidate Plant Species*

Plants listed as Endangered

Arabis macdonaldiana
Astragalus applegatei
Erigeron decumbens var. *decumbens*
Fritillaria gentneri
Lilium occidentale
Limnanthes floccosa ssp. *grandiflora*
Lomatium bradshawii
Lomatium cookii
Plagiobothrys hirtus
Stephanomeria malheurensis

Plants listed as Threatened

Castilleja levisecta
Howellia aquatilis
Lupinus sulphureus ssp. *kincaidii*
Mirabilis macfarlanei
Sidalcea nelsoniana
Silene spaldingii
Thelypodium howellii ssp. *spectabilis*

Candidate Plants for listing

Artemisia campestris var. *wormskioldii*
Botrychium lineare
Calochortus persistens
Pinus albicaulis

* Source: Oregon Natural Heritage Program web site, February 2005.

APPENDIX D

List of Federally Endangered, Threatened, and Candidate Plant Species' Habitats and Ranges*

Plants listed as Endangered

Arabis macdonaldiana

Habitat Description

Open rocky areas, outcrops and cliffs, with little associated vegetation.

Range Description

Del Norte, Trinity, and Mendocino counties; along north fork of Smith River and at Red Mountain, California. Also in Curry and Josephine Counties, Oregon.

Astragalus applegatei

Habitat Description

Occurs in meadows and moist ground along wayside ditches and along the Klamath River at ca. 1250 m. Primarily in grasslands dominated by *Puccinella lemmonii* and *Poa juncifolia*, with *Chrysothamnus nauseosus* usually present. Alfalfa and other weeds also common.

Range Description

Found only in Lower Klamath Basin, e.g., near the city of Klamath Falls, in Klamath County, Oregon. Perhaps in adjacent Siskiyou County, California ('to be sought', Barneby 1964).

Erigeron decumbens var. decumbens

Habitat Description

Erigeron decumbens ssp. *decumbens* is found in all native grasslands in the Willamette Valley, including the wet tufted hairgrass bottomland prairies, and the well drained, deep soiled red fescue grasslands. Associated species: *Aster hallii*, *Festuca rubra*, *Danthonia californica*, *Deschampsia cespitosa*, *Fragaria virginiana*, and the other WV endemic plants.

Range Description

Occurs only in the southern end of the Willamette Valley, Oregon.

Fritillaria gentneri

Habitat Description

Inhabits dry open woods of fir or oak at lower elevations. Associated species: *Brodiaea* spp., *Ceanothus cuneatus*, *Phacelia* spp., *Microseris* spp., and *Erythronium* spp.

Range Description

Scattered localities in southwest Oregon along the Rogue and Illinois River drainages in Josephine and Jackson Counties, Oregon.

* © 2004 Oregon Natural Heritage Information Center. This is the source for all species listed except for *Botrychium lineare* and *Calochortus persistens* (their source listed on final page of this appendix).

APPENDIX D (continued)

Lilium occidentale

Habitat Description

Occurs in forest or thicket openings, often along the margins of ephemeral ponds and small channels, and usually established under cover of shrubs. Associates are Gaultheria shallon, Myrica californica, Vaccinium spp., Rubus spp, Lonicera involucrata, Ledum glandulosum, Pinus contorta, Picea sitchensis, Chamaecyparis lawsoniana, Salix hookeriana, Calamagrostis nutkaensis, Carex lyngbyei, Cornus canadensis, Tofieldia glutinosa, Gentiana sceptrum, Sphagnum spp., and Darlingtonia californica.

Range Description

Extremely limited distribution: a 2-mile wide strip of land along the coast in northern California and southern Oregon. Endemic to three counties. Historical occurrence in Coos County, Oregon and extant occurrences in Curry County, Oregon. One extant occurrence in Humboldt County, California.

Limnanthes floccosa ssp. grandiflora

Habitat Description

Inhabits the periphery of vernal pools at ca 375-400 m, near the wetter, inner edges as opposed to the drier outer fringes like the sympatric ssp. floccosa. Assoc. species: Lupinus sp., Trifolium sp., Myosurus minimus & Baeria chrysostoma.

Range Description

Endemic to the Rogue River Valley of Jackson County. Most populations centered in the Agate Desert region near the city of Medford, Oregon. Known populations occur within an 8 x 15 km area (5 x 9 mile area).

Lomatium bradshawii

Habitat Description

Occurs in flat bottomlands, usually Deschampsia cespitosa valley prairies, with heavy clay soils. Grows in depressions or seasonal channels or rarely in vernal pools. In the northern sites, it occurs in moist, vernal stream corridors with minimal soil over basalt.

Range Description

Regional endemic; found mainly in the south end of the Willamette Valley, in two counties. A large population has recently (1994) been discovered in Clark County, in the state of Washington.

Lomatium cookii

Habitat Description

Occurs along the margins of vernal pools in the Agate Desert, usually with native forbs and introduced annual grasses. In the Illionis Valley, it occurs in moist alluvial floodplains, with native bunchgrasses (Poa scrabrella and Danthonia californica) adjacent to Pinus ponderosa - Quercus garryana savanna with Ceanothus cuneatus and Arctostaphylos species.

Range Description

Narrow, local endemic. Restricted to two counties in the southwestern portion of the state of Oregon. It is limited to two small areas: the Agate Desert area north of the city of Medford, Jackson County, and the Illinois River Valley area near Cave Junction, Josephine County. Both are highly developed valley bottoms.

APPENDIX D (continued)

Plagiobothrys hirtus

Range Description

Plagiobothrys hirtus occurs only in Douglas County, Oregon, near the towns of Sutherlin and Yoncalla, although habitat in the valley 50 miles to the north appears to be appropriate for this species.

Stephanomeria malheurensis

Habitat Description

Found only on the top of a broad hill above surrounding flats. The soil is derived from volcanic tuff layered with thin crusts of limestone. The surrounding soils are derived from basalt. Assoc. species: *Artemisia tridentata*, *Chrysothamnus nauseosus*, *C. viscidiflorus*, *Salsola kali*, and most recently, *Bromus tectorum*. The closest similar substrate is miles away. *S. malheurensis* seems to be one of the few species able to survive near harvester ant hills.

Range Description

Endemic to central Harney Co., Oregon, U.S.A. near Malheur and Harney lakes.

Plants listed as Threatened

Castilleja levisecta

Habitat Description

Inhabits gravelly prairies at low elevations, generally where damp in the winter but not from standing water. Associated species: *Sidalcea campestris*, *Camassia* spp., *Potentilla* spp., *Delphinium pavonaceum*, *Aster hallii*, & *Deschampsia* sp.

Range Description

Historically known from low elevations west of the Cascades from Vancouver Island south through the Puget Trough of Washington to the Willamette Valley in Oregon. Currently thought to have been extirpated from Oregon and southwestern Washington.

Howellia aquatilis

Habitat Description

Inhabits low elevation ponds or sloughs, submersed or partially floating on the surface of slow moving water. Seasonal pools in *Fraxinus latifolia* woodland is one known locality in Clark County, WA. Associated species include *Spiraea douglasii*, *Callitriche heterophylla*, *Fontinalis antipyretica*, *Ranunculus aquatilis*, and *Veronica* spp. Absent from pools with introduced carp. Carp muddy water and eat all aquatic vegetation.

Range Description

W Washington and NW Montana; Idaho?; 6-10 sites recently found in Mendocino County, California (K. Wolcott, Northern Central Valley Fish and Wildlife Office, pers. comm. to K. Maybury, 7/97). Possibly extirpated in Oregon.

Lupinus sulphureus ssp. kincaidii

Habitat Description

Grasslands and open woodlands at low elevations in the Willamette and Umpqua Valleys.

Range Description

Willamette and Umpqua Valleys, Oregon.

APPENDIX D (continued)

Mirabilis macfarlanei

Habitat Description

Prefers steep slopes with sunny exposure at approx. 330-450m elevation. The substrate is talus loosely covered with soil. Assoc. species: *Agropyron spicatum*, *Balsamorhiza sagittata*, *Phacelia heterophylla*, *Phacelia linearis*, *Cryptantha* sp.

Range Description

Mirabilis macfarlanei is narrowly endemic to portions of the Snake, Salmon, and Imnaha river canyons in Wallowa County in northeastern Oregon, and adjacent Idaho County in Idaho. The species global range is approximately 28.5 miles (46 km) by 17.5 miles (28.5 km).

Sidalcea nelsoniana

Habitat Description

Inhabits gravelly, wet soils. Once an undisturbed wet prairie species, now it's found primarily where remnant patches of native grassland species still occur, often where prairie merges with deciduous woodland.

Range Description

75-80% are in Oregon's Willamette Valley; the rest are in the Coast Range (except for 1 pop. in WA, which may have been introduced).

Silene spaldingii

Habitat Description

Inhabits undisturbed prairie on loessal hills, at low to mid elevations. Occasionally found in sagebrush scabland or open woodland. Associated species: *Crataegus douglasii*, *Symphoricarpos albus* & *Festuca idahoensis*. In Oregon, most sites are east or northeast slopes, in the *Festuca idahoensis*-*Koeleria nidita* plant association. The largest populations, however, occur on the Wallowa Lake terminal and lateral moraines in various aspects, and in an unusual habitat dominated by *Artemisa ludoviciana* and *Festuca idahoensis*.

Range Description

Regional endemic restricted to remnants of the Poulouse Prairie grasslands of eastern Washington, northeastern Oregon, northern Idaho, and western Montana (barely extending into British Columbia, Canada).

Thelypodium howellii* ssp. *spectabilis

Habitat Description

Occurs in moist, alkaline valley bottoms, dominated by basin wildrye, alkali-grasses (*Distichlis stricta*, *Puccinella lemmonii*, *Poa juncifolia*), and black greasewood. Sites are usually in alluvial outwash areas, near streams or rivers, with seasonal moisture.

Range Description

Endemic to the northeastern corner of Oregon, occurring in the Baker-Powder River valley in Baker and Union Counties (Fish and Wildlife Service 1999).

APPENDIX D (continued)

Candidate Plants for listing

Artemisia campestris* var. *wormskioldii

Habitat Description

Rocky, sandy and cobbly shoreline and banks of rivers.

Range Description

The taxon is restricted to the Columbia Basin Province in Washington and historically Oregon. Only 2 EOs are known, separated by about 200 river miles. Reports of this variety from Canada, California, and Greenland (Kartesz, pre-1997 datasets) are erroneous; in the August, 1997, review draft of his revised distribution data, Kartesz accepts only the Oregon and Washington reports for this plant.

Botrychium lineare**

Habitat Comments: Wagner and Wagner (1994) stated that it is difficult to describe a typical habitat for this species because the known sites are so different. It has been found mostly at higher elevations (about 1500-3000 m) in mountains, but specific habitats have ranged from a meadow dominated by knee-high grass, shaded woods and woodlands, grassy horizontal ledges on a north-facing limestone cliff, and a flat upland section of a river valley. Possibly a colonizer of disturbed, early seral habitats (USFWS 2003).

Range: *B. lineare* is currently known from 12 widely disjunct sites in Colorado, Idaho, Oregon, Montana, Nevada, and Washington, with historic collections from California, Quebec, and possibly New Brunswick. Limited monitoring and survey efforts continue to locate some new populations (USFWS 2003).

Calochortus persistens**

Habitat Comments: Rocky, open areas within coniferous forests. 1000-1500 m elevation.

Range: Endemic to the Siskiyou Mountains of northern California and southwest Oregon.

Pinus albicaulis***

Habitat Comments: Within montane forests and on thin, rocky, cold soils at or near timberline. 1300 - 3700 m (Flora of North America 1993). In moist mountain ranges, whitebark pine is most abundant on warm, dry exposures; but in semiarid ranges, it becomes prevalent on cool exposures and moist sites (Burns and Honkala, 1990). Although its role in the plant community is changing, whitebark pine historically dominated many of the upper subalpine plant communities of the western United States and was a major component of subalpine forests in the northern Rocky Mountains, the northern Cascades, the Blue Mountains, and the Sierra Nevada. It comprises 10 to 15% of total forest cover in the northern Rocky Mountains (Fryer, 2002). It was a minor component of subalpine forests in British Columbia and Alberta, and showed scattered occurrence on the Olympic Peninsula, the southern Cascades and other ranges of southern Oregon and upper northern California, and in northern Nevada (Burns and Honkala, 1990). At high elevations, krummholz whitebark pine communities merge into alpine vegetation. At mid-elevation, whitebark pine communities merge into mixed-conifer forests (Burns and Honkala, 1990). Most whitebark pine stands grow on weakly developed (immature) soils. Many of the sites were covered by extensive mountain glaciers during the Pleistocene and have been released from glacial ice for less than 12,000 years (62); and chemical weathering is retarded by the short, cool, summer season. Throughout its distribution, whitebark pine is often found on soils lacking fine material (Burns and Honkala, 1990).

Global Range: A dominant tree in many upper subalpine forests of western North America; it is limited to subalpine and timberline zones from west-central British Columbia (55N) east to west-central Alberta and south to central Idaho, southwestern Wyoming, and southern California (36N) (Murray, 2005; Ward et al., 2006). Its distribution splits into 2 broad sections, 1 following the Coast and Cascade ranges and the Sierra Nevada, and the other following the northern Rocky Mountains. Scattered populations occur between the 2 sections in Great Basin regions of eastern Washington and Oregon and northern Nevada (Burns and

Honkala, 1990; Fryer, 2002). Little (1971) mapped the range of this species, and a digitized representation of that map (USGS 1999) covers approximately 400,000 square km.

**Copyright © 2005 NatureServe, 1101 Wilson Boulevard, 15th Floor, Arlington Virginia 22209, U.S.A. All Rights Reserved

***Copyright © 2011 NatureServe, 1101 Wilson Boulevard, 15th Floor, Arlington Virginia 22209, U.S.A. All Rights Reserved