

The Island

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The Island in 1959, prior to the filling of Lake Billy Chinook. Photo by Kinney, Oregon State Highway Department (now ODOT; Oregon State Parks Division was separated from ODOT into the Oregon State Parks Department in 1990.)

It has been grazed lightly for one season about forty years ago. It is the only sizable ungrazed shrub-grass community I know of in the Northwest, and as such is of primary value as a scientific natural area... A new reservoir has been filled and a campground constructed... For the first time, the general public will be tempted to utilize this mesa. It is just too fragile to take any intensive public use... Delays could be disastrous to this splendid natural area.

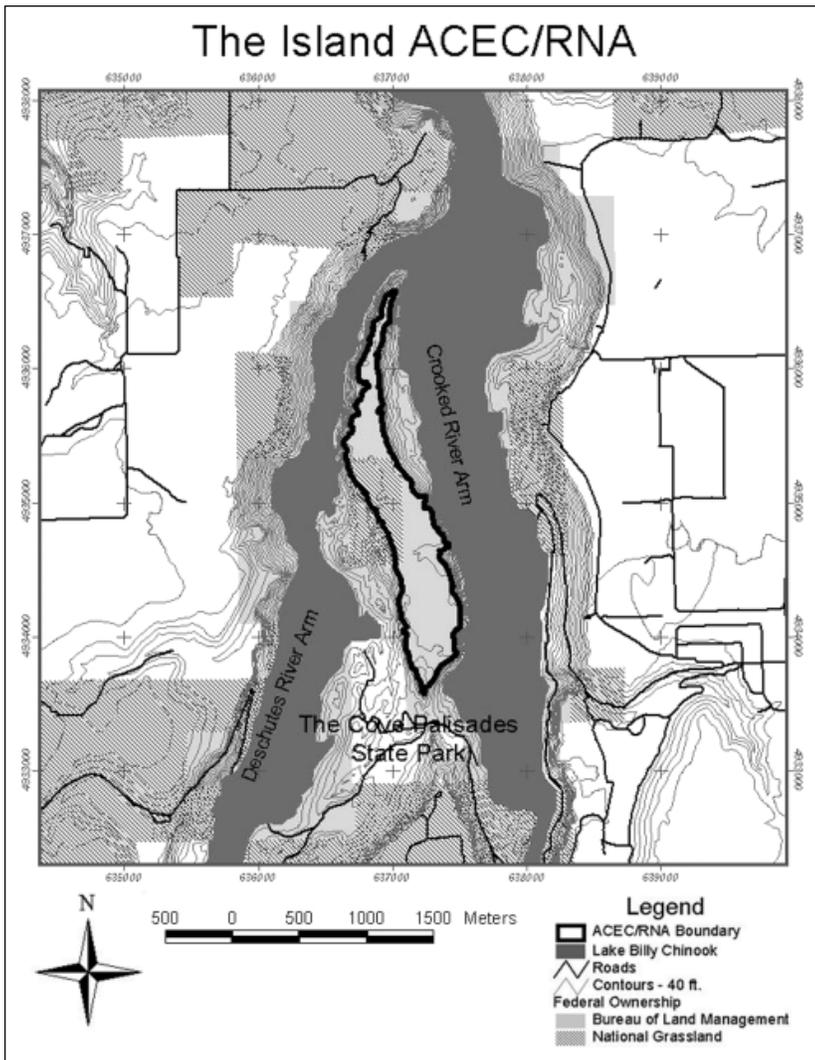
So read portions of a letter from William B. Morse, Oregon Field Representative for the Wildlife Management Institute, to Charles H. Stoddard, Director of the Bureau of Land Management (BLM), on April 7, 1965. The letter was meant to prod the BLM and Forest Service to set aside a plateau in Jefferson County, Oregon, known as “The Island,” as a natural area for research (Morse 1965).

The Island is a peninsula with vertical cliffs on three sides that rise 200 to 700 feet above the adjacent river canyon (Driscoll 1964). Despite being a full 200 feet lower than the basalt tablelands across the river, The Island is a prominent feature when viewed from several auto-accessible viewpoints to the east. Even though the apparent height of the cliffs was lessened with the filling of Lake Billy Chinook in the mid-1960s, The Island remains a formidable

fortress. One can't help but wonder how it was formed, what plants are found there and how in the world it can be ascended.

In 1986, thirty-one years after Morse's appeal, The Island was finally designated an ACEC/RNA. Located nine air miles southwest of Madras, at the confluence of the Crooked and Deschutes rivers, The Island ACEC/RNA lies within the confines of The Cove Palisades State Park. When Round Butte Dam backed up the Deschutes River on the west side of The Island and the Crooked River on the east side, forming modern Lake Billy Chinook, the plateau became a peninsula in the reservoir. The nearly 200-acre basalt plateau is managed jointly by the BLM (158 acres) and the Crooked River National Grassland of the US Forest Service (41 acres), with The Cove Palisades State Park serving as an integral partner. Although 1¾ miles long, the Natural Area measures only ¼ mile at its widest point.

The Island received RNA status because it filled cells in the Blue Mountains Ecoregion for two native plant associations, including perhaps the best remaining example of undisturbed native communities of western juniper/big sagebrush/bluebunch wheatgrass in Oregon (Greene 1984) and western juniper/big sagebrush-bitterbrush (Oregon Natural Heritage Plan). And, as mentioned in the Morse letter, domestic livestock grazed these communities only once, in 1921.



Map of The Island ACEC/RNA. The Island is a peninsula at the confluence of the Crooked and Deschutes Rivers, overlooking Lake Billy Chinook.

Climate

Since the elevation of The Island (2,400 feet) is similar to that of nearby Madras (2,440 feet), climate information from that weather station is used for the following description (Oregon Climate Service 2002). Long term annual precipitation averages 12 inches, thus plants growing on The Island are adapted to xeric conditions, typical of the shrub steppes of eastern Oregon. Most of the moisture falls as snow in the winter (average 17.7 inches per year) or in the context of short, severe summer thunderstorms. The summers are usually dry, and very warm. Mean maximum temperature in July and August is 84°F, with recorded maximums of 105 and 106°F. On average, temperatures exceed 90°F nearly 10 days during each of these two months. At times, daily high temperatures exceeding 100°F have been recorded during the months May through September. During the winter months, average temperatures hover between 30 and 40°F with recorded minimums down to -16°F.

Soils

Soils consist of the Degner and Era series (NRCS Soil Survey Division 2003). The Degner soils are gravelly clays with a depth to bedrock of about 40 inches. They are well-drained with medium to rapid runoff and moderately slow permeability. The Era series consists of deep and very deep, well drained, coarse to loamy soils formed from wind-borne parent material high in ash. They are well to somewhat excessively drained, with moderately rapid permeability.

Geology

Just looking at The Island you can tell it is the result of some magnificent geologic event from the distant past. As with much of central Oregon, its geologic history is tied to volcanic activity, including basalt flows and deposits of ash, tuff, and coarse volcanic sand. An ancient basalt flow covered the landscape of central Oregon, forming extensive plateaus, into which the Deschutes, Crooked, and Metolius rivers cut deep canyons. Later, thin fluid basalt flowed north from the flanks of Newberry Crater (south of Bend), traveling 60 miles overland to spill into the ancestral Crooked River canyon above what is now Smith Rock State Park. This flow dammed the river, causing the water to form a lake where the present city of Prineville is located. Downstream, the basalt obliterated the Crooked River, flowing through its canyon and through the Smith Rock area. Continuing through the area of The Cove Palisades State Park, the basalt backed up both the Deschutes and Metolius river canyons near Pelton Dam, about nine miles north of The Island. These flows continued, filling the canyons almost to the brim. Once the flows cooled, the rivers began eroding down through weak spots in the flows, reclaiming their canyons. Over time, virtually all of this newer intra-canyon flow of basalt eroded, leaving The Island and some other scattered “hanging plateaus” as the only remnants of this great event (P. Patton, pers. comm.).



The Island in 1964. The newly constructed office and shop complex of The Cove Palisades State Park can be seen at the base of the plateau. BLM file photo.



Native bluebunch wheatgrass community, looking northeast from the southern part of the RNA. In the foreground, scattered bitterbrush, big sagebrush and western juniper over a dense cover of bluebunch wheatgrass indicate a relatively recent wildfire. The background area of big sagebrush did not burn. BLM file photo.

Plant Communities

From a distance, The Island looks like it should harbor unique or endemic species, but the Natural Area contains species similar to other sites in the *Juniperus occidentalis* zone, which lies between the xeric shrub steppe to the southeast and the more mesic *Pinus ponderosa* forest to the west (Franklin and Dyrness 1988). The landscape of The Island is generally dominated by either big sagebrush (*Artemisia tridentata*) or antelope bitterbrush (*Purshia tridentata*) with an herbaceous understory of bluebunch wheatgrass (*Pseudoroegneria spicata*) and Idaho fescue (*Festuca idahoensis*). Western juniper (*Juniperus occidentalis*) is scattered throughout. Stiff sagebrush (*Artemisia rigida*), oceanspray (*Holodiscus discolor*) and curlleaf mountain mahogany (*Cercocarpus ledifolius*) dominate areas of shallow, rocky soils. Common understory species include fleabanes (*Erigeron*), milkvetches (*Astragalus*), buckwheats (*Eriogonum*) and penstemons (*Penstemon*), to name some of the more common genera. We have identified nearly 130 taxa so far, encompassed by 27 families.

Livestock Grazing

While the plant species and communities are common to central Oregon, the lack of grazing disturbance with European settlement sets the The Island apart. It is extremely rare to find flat, ungrazed areas in the West. The story of the single grazing event on The Island, during the spring of 1921, is a tribute to tenacity and ingenuity (Robinson 2003). A band of sheep were trailed to this “No-Man’s-Land” using a narrow passage through the boulders and cliffs on the southwest side of the Natural Area. Water for the sheep was apparently piped up from the Crooked River, hundreds of feet below, using a ram-jet type of pump (Robinson 2003).

Only minor traces of this grazing event persist. One can still find a few remains of the old sheep camp and some small areas now dominated by introduced annual vegetation may mark old sheep bed grounds, but for the most part, the vegetation appears

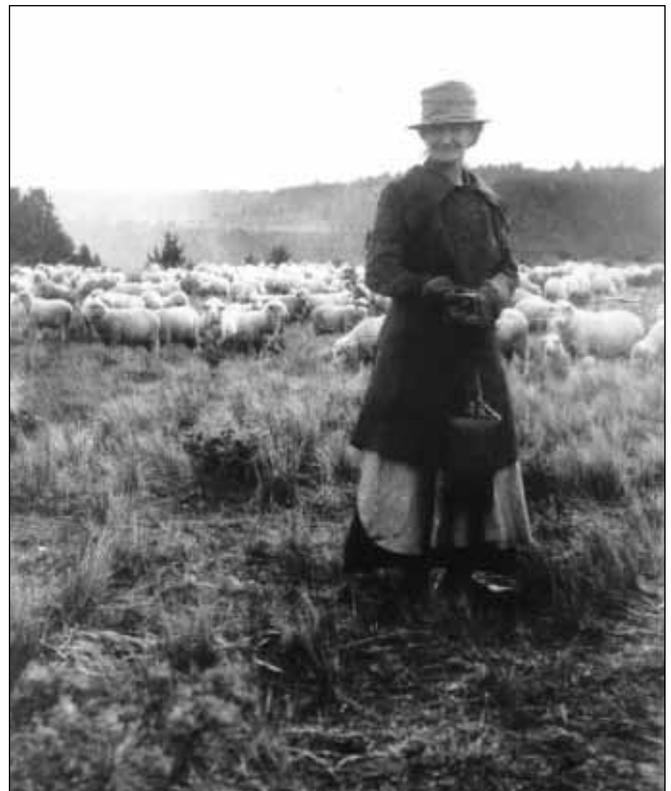
unaltered. Bluebunch wheatgrass and Idaho fescue, those bunchgrasses most palatable to livestock, remain robust, their great crowns protecting large expanses of soil with both living and dead material. Due in large part to the lack of water and the difficulty of moving animals up the steep, narrow trail, livestock grazing has historically been impractical on The Island; this impediment is now reinforced by a management plan designed to protect the nearly pristine plant communities.

Fire

Hot, dry summers punctuated by occasional thunderstorms, are the catalyst for the most obvious natural disturbance The Island faces: lightning-caused fires. If you wander across the essentially flat plateau, you will see fire-scarred hulks of ancient juniper trees that attest to various lightning-caused blazes from years past. Most of these lightning fires burned less than an acre, often only a single tree. In other places, though, lush

bunchgrass in an area lacking the juniper or sagebrush overstory testifies to a larger fire.

Since 1960, canopy coverage by western juniper has more than doubled (from just under 5% to nearly 10%), according to a study by Knapp and Soulé (1996). The absence of sizable fires in recent years is believed to have contributed to this measurable increase in



Harriet Ralston, grandmother of Dorothy Robinson, at sheep camp on The Island, in 1921. The Island was grazed during only one season, but was a popular hiking and picnic destination for homesteaders. Photo contributed by Dorothy Robinson, photographer unknown.

woody vegetation on The Island. During the last 30 years, perennial herbaceous species decreased from one-half of total cover to a little more than one-third, while shrub cover increased from one-third to two-fifths. The management plan for The Island includes a prescribed natural fire plan. If certain conditions are met (i.e., concerning weather, personnel and equipment), natural fire is allowed to burn, and monitored to prevent damage to resources outside the RNA, most importantly the Cove Palisades State Park facilities just below the rim.



A fire, ignited on July 14, 1997, burned a juniper tree and crept through a small area dominated by big sagebrush and bluebunch wheatgrass. Today, only the aging remains of the juniper and an area dominated by cheatgrass indicate where the fire burned. Photo by Ron Halvorson.

Noxious Weeds

In addition to this relative shift in dominance between woody and herbaceous components, integrity of the plant community is threatened by noxious weeds. Medusahead (*Taeniatherum caput-medusae*), an annual from the steppes of Asia, was first documented on The Island in the early 1990s. While it appears to favor the deeper clay soils, several small populations have established throughout the Natural Area. With herbicides not an option in this fragile area, hand-pulling of this pesky invader has occurred annually during the last 10 years, with BLM, the High Desert Chapter of the Native Plant Society of Oregon and the Youth Conservation Corps all participating.

BLM managers recognize that while hand-pulling of medusahead is an introduced management activity and not a natural ecosystem process, they believe that the benefits of removing an invader outweigh any potential undesirable side effects. Medusahead and other non-native plants pose a greater threat to the ecological integrity of this area than the manual weed control. It's unclear at this point if these measures are effective.

Rare/Endemic/Out-of-Range Species

While The Island contains no rare or unusual vascular plants, a healthy population of the woven-spored lichen (*Texosporium sancti-jacobi*) is found

here. This lichen enjoys a substrate of decomposing organic matter, especially that of Sandberg bluegrass (*Poa secunda*), in areas dominated by Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) and in generally undisturbed plant communities (DeBolt 1998). According to the Washington Department of Natural Resources, 15 populations are known in Washington, Idaho, California, and Oregon (DNR 1999). Fire suppression would likely benefit this little denizen because it is apparently damaged by fire (DeBolt 1998). Also, conversion to annual grassland (e.g., medusahead) would harm the lichen by shortening the fire return interval. Prescribed natural fire could also adversely affect this species.

Human History and Use

Information from other sites in the area indicates that small groups of native people were visiting the vicinity as early as 8,000 years ago (R. Gregory, pers. comm.). While in the area, native people hunted both large and small game and gathered various plants for food, medicine and shelter. They probably fished both the Deschutes and Crooked Rivers. People briefly occupied sites while local resources were harvested and then moved on to another area and different resources. The Island supports several species used by native people, although these plants are not present in great density. These species include *Allium douglasii* (Douglas' onion), *Allium macrum* (rock onion), *Allium parvum* (small onion), *Calochortus macrocarpus* (sagebrush mariposa lily), *Fritillaria pudica* (yellow fritillary), *Lomatium canbyi* (Canby's biscuitroot), *Lomatium cous* (cous biscuitroot) and *Lomatium macrocarpum* (bigseed biscuitroot). The Island and the larger adjacent area were part of the lands ceded to the Federal Government by the Warm Springs and Wasco Indians as part of the Middle Oregon Treaty of 1855 (Gregory, pers. comm.).

The Island has been a popular recreational destination since the homestead era. Prior to filling of the reservoir, there were several homesteads in the surrounding river canyons. Access to the top of the plateau was the same then as it is now: a single, steep, rocky trail on its southwest side. A 30-minute hike takes you to the top;



Woven-spored lichen (*Texosporium sancti-jacobi*), a rare cryptogam, lives on decomposing organic matter. Photo by Ron Halvorson.

one misstep on the way down could shorten the return trip to an estimated five seconds. Recalling early outings, Dorothy Robinson wrote:

At one time during my childhood my family lived for about three or four years in a three-room cabin on a small farm on the Deschutes River about two or three miles from The Island, the site of which is now under water. The plateau that you know as The Island was known to us as "No-Man's Land." During the time we lived in the canyon, a favorite outing was to hike up No-Man's Land. I can remember one such hike when I was probably about ten years of age. My dad took us on such a hike and pointed out the site of the sheep camp. I recall that at that site we found one old woman's high top shoe, which presumably belonged to my grandmother, and the broken remains of a home-made chair made from willows (Robinson 2003).

A persistent story deals with some deep basalt crevices on the western side of the Natural Area. Local lore maintains that during Prohibition one of these cracks was used to hide a moonshine still. Reportedly, there are hand-cut steps in the basalt that were used for access and copper tubing was found in the bottom. Fact or fiction, who knows?

More recently, The Island became a favorite hiking destination; the number of visitors amplified by proximity to The Cove Palisades State Park. In the 1990s concern arose over the high levels of visitor use and the impact this was having on ecological research values. Hikers were establishing casual use trails and introducing noxious weeds. By 1996, the number of visitors approached 600 annually, including nearly 200 distinct "groups" (BLM 1997).

Consequently, in 1997 The Island was closed to casual recreational access. Today access is exclusively by permit and given only to documented researchers and to field trip groups that are officially sponsored by academic/educational institutions or conservation/resource groups. The permit system is administered by The Cove Palisades State Park. Since the only access trail, a steep, rocky, veiled route through the boulders and cliffs, is directly outside the Park's office, enforcement is easy. Groups are limited to no more than 16 participants.

Wildlife

Wildlife generally consists of species common to the area such as mule deer, cottontail and jack rabbits, voles, and various species of birds and reptiles, including lizards and rattlesnakes. At least one pair of turkey vultures nests on the basalt escarpment and a golden eagle nest is frequently occupied on the cliffs to the east. To encourage eagle reproduction, the entire Natural Area is closed to all human access each year from February 15 through April 30.

The Island hosts one unusual species of wildlife, the striped whiptail lizard (*Cnemidophorus velox*). Endemic to the Desert Southwest, this lizard apparently became established in The Cove Palisades State Park by escaping from a recreational vehicle, and has expanded to the southern tip of the Natural Area (P. Patton, pers. comm.). The interesting note about this species is that it is



In May 1988 members of NPSO enjoyed a field trip learning about the flora and ecological aspects of The Island. The trip was led by Dr. Stu Garrett, seated, in the back just right of center. Photo by Ron Halvorson.

parthenogenic, i.e., it can reproduce without a mate. It is unclear what effect, if any, this species will have on the natural values of The Island.

The Island ACEC is, truly, a unique place in Oregon's geography. With proper care this area should provide an outdoor laboratory for generations to come.

Visiting The Island

From Madras, travel on SW Culver Highway approximately 7 miles to SW Gem Lane. Turn right (west) and travel 1½ miles to SW Frazier Drive. Turn left (south) and travel ¼ mile to SW Peck Road. Continue west, enter the Cove Palisades State Park and begin the descent to the Crooked River. After about 4 miles traveling south on the east side of the reservoir, cross the Crooked River and then continue north another mile to a parking area by the Crooked River Petroglyph. These are all paved roads. The moderately difficult access trail to The Island is due north of this parking area.

It is important to remember that access is limited to valid researchers and bona-fide conservation/educational groups with a permit issued by Cove Palisades State Park. *Use is tightly controlled and people can not access this RNA on their own. The natural area is closed to ALL access from February 15 through April 30.* For further information you can contact Paul Patton of Oregon Parks and Recreation Department (Smith Rock State Park, 9241 NE Crooked River Drive, Terrebonne, OR 97760) or Ron Halvorson, BLM Prineville District, 3050 NE Third St., Prineville, OR 97754.

Acknowledgments

R. Gregory, BLM cultural resource specialist, provided information on human history of The Island and Paul Patton, Oregon State Parks Department district interpretive specialist, the geological history. In addition to BLM, contributors to the vascular plant list include the High Desert Chapter of the Native Plant Society of Oregon and personnel from Oregon State University, Corvallis, Oregon.

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Vascular Plant Species List

Nomenclature follows the Oregon Flora Project checklist. Names of taxa native to Oregon are printed in italic *Garamond*; alien taxa are in italic *Gill Sans*, a sans-serif type.

FERNS AND THEIR ALLIES

PTERIDACEAE (Brake Family)

- Cheilanthes gracillima* D.C. Eaton (lace lipfern)
Pentagramma triangularis (Kaulf.) Yatsk., Windham, E. Wollenw. (goldback fern)

GYMNOSPERMS

CUPRESSACEAE (Cypress Family)

- Juniperus occidentalis* Hook. (western juniper)

DICOTYLEDONS

APIACEAE (Carrot Family)

- Lomatium canbyi* J.M. Coult. & Rose (Canby's biscuitroot)
Lomatium cous (S. Watson) J.M. Coult. & Rose (cous biscuitroot)
Lomatium macrocarpum (Nutt.) J.M. Coult. & Rose (large fruited biscuitroot)
Lomatium triternatum (Pursh) J.M. Coult. & Rose (nineleaf biscuitroot)

ASTERACEAE (Sunflower Family)

- Achillea millefolium* L. (common yarrow)
Agoseris heterophylla (Nutt.) Greene (annual agoseris)

- Antennaria dimorpha* (Nutt.) Torr. & A. Gray (low pussytoes)
Artemisia rigida (Nutt.) A. Gray (scabland sagebrush)
Artemisia tridentata Nutt. (big sagebrush)
Balsamorhiza careyana A. Gray (Carey's balsamroot)
Blepharipappus scaber Hook. (rough eyelash)
Crepis occidentalis Nutt. (largeflower hawksbeard)
Ericameria humilis (Greene) L.C. Anderson (green rabbitbrush)
Ericameria nauseosa (Pall. ex Pursh) G.L. Nesom & G.I. Baird (rubber rabbitbrush)
Ericameria resinosa Nutt. (Columbian goldenbush)
Erigeron filifolius (Hook.) Nutt. (threadleaf fleabane)
Erigeron linearis (Hook.) Piper (desert yellow fleabane)
Erigeron poliospermus A. Gray (cushion fleabane)
Eriophyllum lanatum (Pursh) J. Forbes (common woolly sunflower)
Hemizonella minima (A. Gray) A. Gray (oppositeleaved tarweed)
Lactuca serriola L. (prickly lettuce)
Lagophylla ramosissima Nutt. (branched lagophylla)
Layia glandulosa (Hook.) Hook. & Arn. (whitedaisy tidytips)
Nothocalais troximoides (A. Gray) Greene (false agoseris)
Rigiopappus leptocladus A. Gray (bristlehead)
Senecio canus Hook. (woolly groundsel)
Stylocline filaginea M. Peck (baretwig neststraw)
Tetradymia canescens DC. (spineless horsebrush)
Tragopogon dubius Scop. (yellow salsify)
Uropappus lindleyi (DC.) Nutt. (silverpuffs)

BORAGINACEAE (Borage Family)

- Amsinckia menziesii* (Lehm.) A. Nelson & J.F. Macbr. (Menzies' fiddleneck)
Cryptantha ambigua (A. Gray) Greene (obscure Cryptantha)
Cryptantha flaccida (Douglas ex Lehm.) Greene (weakstem cryptantha)
Hackelia diffusa (Lehm.) I.M. Johnst. var. *cottonii* (Piper) R.L. Carr (diffuse stickseed)
Plagiobothrys tenellus (Nutt.) A. Gray (Pacific popcornflower)
Tiquilia nuttallii (Hook.) A.T. Richardson (Nuttall's crinklemat)

BRASSICACEAE (Mustard Family)

- Arabis sparsiflora* Nutt. (sicklepod rockcress)
Camelina microcarpa Andr. ex DC. (littlepod false flax)
Descurainia pinnata (Walter) Britton (western tansymustard)
Draba verna L. (spring draba)
Idahoia scapigera (Hook.) A. Nelson & J.F. Macbr. (flatpod)
Sisymbrium altissimum L. (tall tumbledustard)
Thelypodium laciniatum (Hook.) Endl. (western thelypodium)
Thysanocarpus curvipes Hook. (sand fringe pod)

CARYOPHYLLACEAE (Pink Family)

- Holosteum umbellatum* L. (jagged chickweed)

CRASSULACEAE (Stonecrop Family)

- Sedum* (stonecrop)

FABACEAE (Legume Family)

- Astragalus conjunctus* S. Watson (Idaho milkvetch)
Astragalus filipes Torr. ex A. Gray (basalt milkvetch)
Astragalus misellus S. Watson (pauper milkvetch)
Astragalus obscurus S. Watson (arcane milkvetch)
Trifolium dubium Sibth. (suckling clover)

GERANIACEAE (Geranium Family)

- Erodium cicutarium* (L.) L'Hér. ex Aiton (redstem stork's bill)

GROSSULARIACEAE (Gooseberry Family)

Ribes cereum Douglas (wax currant)

HYDRANGACEAE (Lilac Family)

Philadelphus lewisii Pursh (Lewis' mock orange)

HYDROPHYLLACEAE (Waterleaf Family)

Nama densum Lemmon (leafy nama)

Phacelia hastata Douglas ex Lehm. (silverleaf phacelia)

Phacelia heterophylla Pursh (varileaf phacelia)

Phacelia linearis (Pursh) Holz. (threadleaf phacelia)

LAMIACEAE (Mint Family)

Scutellaria nana A. Gray (dwarf skullcap)

ONAGRACEAE (Evening Primrose Family)

Camissonia contorta (Kearney) P.H. Raven (contorted-pod evening primrose)

Clarkia (clarkia)

Epilobium brachycarpum C. Presl (*E. paniculatum*) (tall annual willowherb)

Epilobium minutum Lindl. (chaparral willowherb)

OROBANCHACEAE (Broom-rape Family)

Orobanche uniflora L. var. *purpurea* (A. Heller) Achey (one-flowered broomrape)

POLEMONIACEAE (Phlox Family)

Collomia grandiflora Douglas ex Lindl. (grand collomia)

Gilia sinuata Douglas ex Benth. (rosy gilia)

Leptodactylon pungens (Torr.) Nutt. (granite prickly phlox)

Linanthus barknessii (Curran) Greene (Harkness' flaxflower)

Phlox cespitosa Nutt. (tufted phlox)

Phlox gracilis (Hook.) Greene (slender phlox)

Phlox hoodii Richardson (spiny phlox)

Polemonium micranthum Benth. (annual polemonium)

POLYGONACEAE (Buckwheat Family)

Eriogonum heracleoides Nutt. (parsnipflower buckwheat)

Eriogonum sphaerocephalum Douglas ex Benth. var.

sphaerocephalum (rock buckwheat)

Eriogonum strictum Benth. var. *proliferum* (Torr. & A. Gray) C.L. Hitchc. (Blue Mountain buckwheat)

Eriogonum umbellatum Torr. (sulphur-flower buckwheat)

Eriogonum vimineum Douglas ex Benth. (wickerstem buckwheat)

PORTULACACEAE (Purslane Family)

Claytonia perfoliata Donn ex Willd. (miner's lettuce)

Claytonia sibirica L. (Siberian springbeauty)

RANUNCULACEAE (Buttercup Family)

Delphinium (larkspur)

ROSACEAE (Rose Family)

Amelanchier alnifolia (Nutt.) Nutt. ex M. Roem. (Saskatoon serviceberry)

Cercocarpus ledifolius Nutt. ex Torr. & A. Gray (mountain mahogany)

Holodiscus discolor (Pursh) Maxim. var. *dumosus* (glandular ocean-spray)

Potentilla glandulosa Lindl. (sticky cinquefoil)

Purshia tridentata (Pursh) DC. (bitterbrush)

RUBIACEAE (Madder Family)

Galium boreale L. (northern bedstraw)

Galium multiflorum Kellogg (shrubby bedstraw)

SAXIFRAGACEAE (Saxifrage Family)

Heuchera cylindrica Douglas ex Hook. (roundleaf alumroot)

Lithophragma glabrum Nutt. (smooth fringedcup)

Lithophragma parviflorum (Hook.) Nutt. ex Torr. & A. Gray (small flowered fringedcup)

SCROPHULARIACEAE (Figwort Family)

Castilleja applegatei Fernald (wavyleaf Indian paintbrush)

Collinsia parviflora Douglas ex Lindl. (maiden blue-eyed Mary)

Orthocarpus tenuifolius (Pursh) Benth. (thin leaved owl clover)

Penstemon deustus Douglas ex Lindl. (scabland penstemon)

Penstemon fruticosus (Pursh) Greene (bush penstemon)

Penstemon richardsonii Douglas ex Lindl. (cutleaf beardtongue)

Penstemon seorsus (A. Nelson) D.D. Keck (shortlobe penstemon)

Verbascum thapsus L. (common mullein)

VALERIANACEAE (Valerian Family)

Plectritis macrocera Torr. & A. Gray (longhorn plectritis)

Valeriana (valerian)

MONOCOTYLEDONS

LILIACEAE (Lily Family)

Allium douglasii Hook. (Douglas' onion)

Allium macrum S. Watson (rock onion)

Allium parvum Kellogg (small onion)

Calochortus macrocarpus Douglas (sagebrush mariposa lily)

Fritillaria pudica (Pursh) Spreng. (yellow fritillary)

Triteleia grandiflora Lindl. (largeflower triteleia)

Zigadenus venenosus S. Watson (meadow deathcamas)

POACEAE (Grass Family)

Achnatherum thurberianum (Piper) Barkworth (Thurber's needlegrass)

Bromus hordeaceus L. (soft brome)

Bromus rubens L. (red brome)

Bromus tectorum L. (cheatgrass)

Elymus elymoides (Raf.) Swezey (bottlebrush squirreltail)

Festuca idahoensis Elmer (Idaho fescue)

Koeleria macrantha (Ledeb.) Schult. (prairie Junegrass)

Leymus cinereus (Scribn. & Merr.) A. Löve (basin wildrye)

Poa bulbosa L. (bulbous bluegrass)

Poa secunda J. Presl (Sandberg bluegrass)

Pseudoroegneria spicata (Pursh) A. Löve (bluebunch wheatgrass)

Taeniatherum caput-medusae (L.) Nevski (medusahead wildrye)

Triticum aestivum L. (wheat)

Ventenata dubia (Leers) Coss. & Durieu (North Africa grass)

Vulpia microstachys (Nutt.) Munro ex Benth. (small fescue)

Vulpia octoflora (Walter) Rydb. (six-weeks fescue)

Ron Halvorson received a BS from California Polytechnic State University (San Luis Obispo) in 1971 and a MS from the University of Nevada, Reno, in 1974. He began his career in Prineville as a Range Conservationist with the BLM, serving in this capacity from 1974 through 1984. Since 1985 he has been natural resource specialist (District botanist), responsible for the district's special status plant and research natural area programs.
