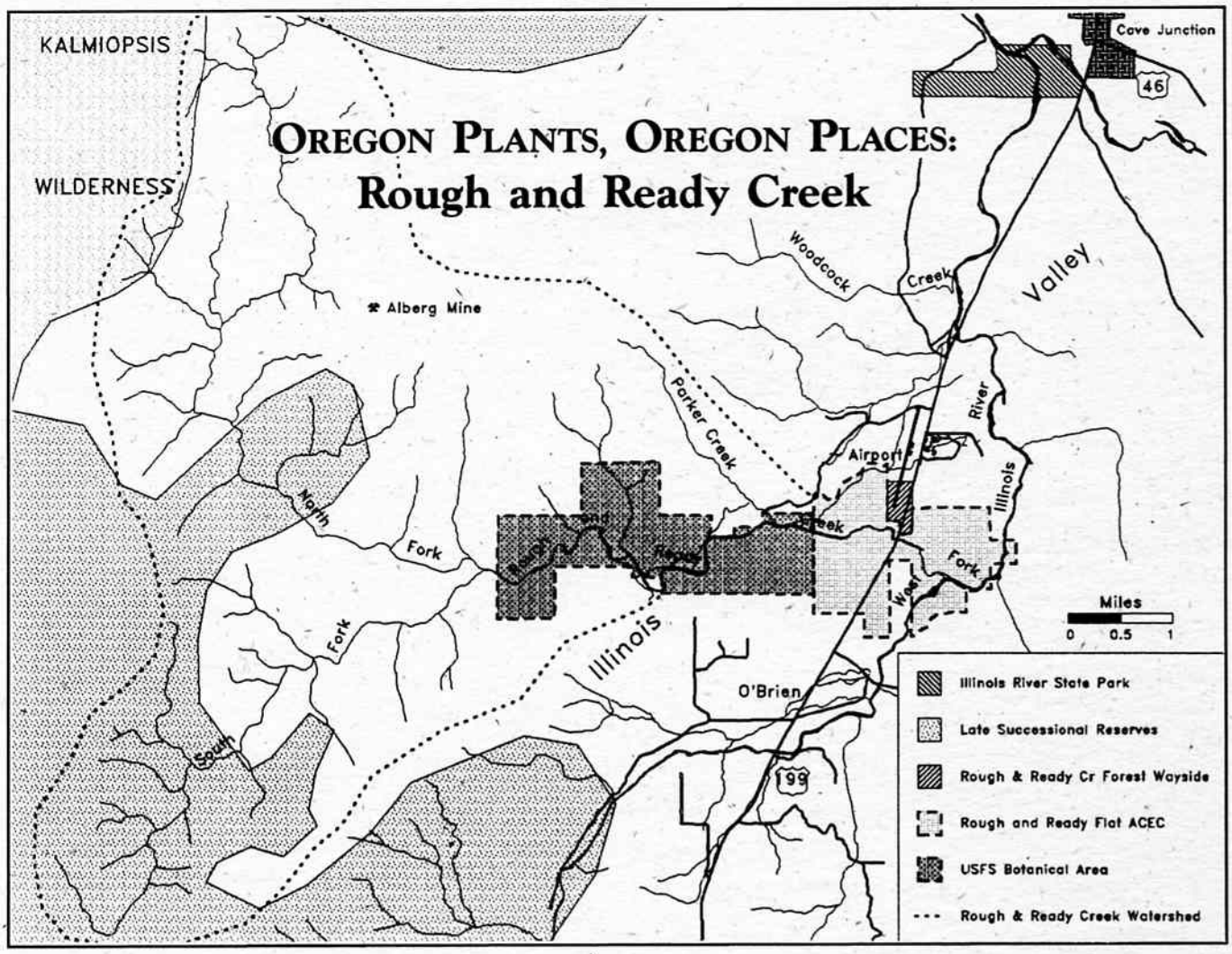
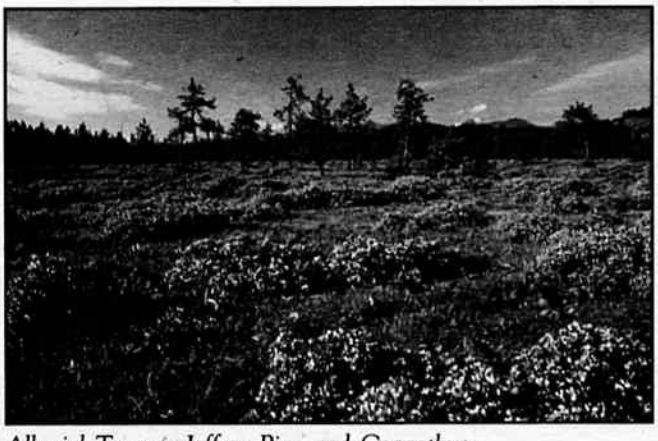


Oregon Plants, Oregon Places: Rough and Ready Creek

By DARREN BORGIAS Species list compiled by BARBARA ULLIAN

Crossing Rough and Ready Creek on Highway 199 south of Cave Junction, one might be struck by the irony of the little sign proclaiming a botanical wayside in the strangely bleak terrain. Appearing impoverished or burned over, with tortured looking trees, the observer resists the idea that the site is actually a thriving ecosystem. But native plant enthusiasts who have visited the site recognize it as a special place. Once on foot, even a casual observer will be impressed by the rich and intriguing assemblage of wildflowers. Some are rare endemics not found outside the Illinois Valley. The complementary colors and shapes of flowers and herbage between the rounded cobbles, offer aesthetic treats that diminish only with the departure of spring. Moving down to the water and up the canyon the hiker can extend the experience through the growing season. The broad alluvial bench beside Rough and Ready Creek is one of Oregon's gems. It is the only significant example of a serpentine ecosystem on the floor of the western interior valley province of Oregon (ONHP 1993).



ULLIAN

Alluvial Terrace: Jeffrey Pine and Ceanothus

The biological wealth of the Rough and Ready Creek watershed, a tributary of the Illinois River, is tied to the geologic history of the Klamath Range. This region and the specific subrange, the Siskiyou Mountains, is one of the great reservoirs of biological diversity in North America (Whittaker 1961). In his classic *The Klamath Knot,* David Rains Wallace aptly calls it "a venerable unity." The region is a crossroads in time and space where plant species have converged in unique combinations. It is also an important center of endemic

species of vascular plants (Smith and Sawyer 1988, Whittaker 1961). Relict species, lost from the adjoining regions, found refuge in the Siskiyous over a period of 40 million years. Throughout its history, the range provided geographic variation in climate and topography to meet the varied ecological tolerances of species lost elsewhere due to submergence, desiccation, and massive flows of lava or ice. The range has also bridged the evolving floras of the Great Basin and northern California and, for over 10 million years, the emergent Coast Range and Cascade Mountains.

Local speciation contributed a host of narrow endemics, adding to the celebrated species' richness. Many rare plant species of southern Oregon owe their origin to the selective pressures exerted by serpentine soils (Kruckeberg 1969). Massive sheets of ultramafic rock — generally referred to as serpentine — are one of the salient features of the range. The red, rocky soils derived from the parent material are high in magnesium and heavy metals, and are calcium-deficient. Some serpentine endemics are only found on the red ultramafic soils, while many regionally common species find the soils intolerable. The structure and composition of the communities offer a distinct and unique ecosystem that stands out abruptly from the non-serpentine matrix (Whittaker 1954).

The tectonic processes that formed the mountains and engendered these biological treasures, also made rich deposits of minerals. Gold, precipitated in hydrothermal vents on the ocean floor, was uplifted in the Klamaths (Orr et al 1992). Natural erosion and stream hydraulics concentrated large placer gold deposits in the rivers and streams. By 1853, miners from the California gold fields began working the beds of the Illinois River and its tributaries (Shennon 1933, Street and Street 1973). For eighty years, first with shovels and later with 6" diameter hydraulic cannons, called "giants," miners washed the floodplains and higher benches of streams into their muddy sluices. Rough and Ready Creek offered negligible gold, and was spared.

ULLIAN

Forbs on the alluvial terrace

Tumbling clear and cold out of the Siskiyous, Rough and Ready Creek rears cutthroat trout and winter steelhead in the unclogged gravels (USFS 1988). Below, a five mile stretch on the valley floor bears the freely braided channels of the stream. On the broad alluvial terrace above the present floodplain, the cobbly surface still displays the scars of torrential flooding released from local glaciers that once plucked boulders from the creek's headwaters during the Pleistocene Epoch (Shennon 1933).

The climate of the Rough and Ready Creek watershed varies due to wide elevational range and physiography. Maritime influences reach the peaks of the watershed at the crest of the western Siskiyou Mountains, but dissipate over the interior valley which is relatively xeric. Annual precipitation may range from 600 to 1700 mm (Franklin and Dyrness 1988). Temperatures, relative to the Cascades, are warm and wet in the winter and hot and dry in the summer.

The combined effects of varied serpentine influence, soil texture, drainage, and fire history, along with a variation in precipitation due to elevation, have generated a fascinating array of communities in the watershed and on the alluvial terrace. Rare and sensitive plants are found throughout the watershed but are concentrated along the stream corridor and on the broad alluvial terrace.

ULLIAN

Floodplain at high water

The stream is mostly unimpeded, with its floodplain system and processes largely intact. Recently deposited lenses and beds of sorted gravels nearest the shifting creek are colonized by species carried down by the stream from the highest ridges. Two species of rock cress (*Arabis modesta* and *A. koehleri* var. *stipitata*), ternate buckwheat (*Eriogonum ternatum*), and Siskiyou Mountain pennycress (*Thlaspi montanum* var. *siskiyouense*) create low miniature islands of matted vegetation. These assemble with the expected low elevation species of brodiaea, onion, and violets between glaucus, blue bunches of Idaho fescue (*Festuca idahoensis*) and Lemmon's needlegrass (*Stipa lemmonii*). Along the banks a rare willow (*Salix delnortensis*) is common.

The terrace above the riverwash supports chaparral dominated by manzanita (*Arctostaphylos viscida* and *A. canescens*) or wedgeleaf ceanothus (*Ceanothus cuneatus*). A hybrid swarm of crosses and back crosses between the *Arctostaphylos* species has been documented in the area (Gottlieb 1968). This occurs on and around non-serpentine "islands" on the terrace, and may represent the differentiation of a new species. A similar hybrid swarm between *Ceanothus cuneatus* and *C. pumilus* has also been documented in the area (Nobs 1963). A palette of colorful species lights up the terrace, including the small, strident purple blooms of Douglas' monkeyflower (*Mimulus douglasii*) together with yellow and white buckwheats,

red and pink paintbrushes, blue penstemon, and purple brodiaea, among others.

A number of different types of Jeffrey pine woodlands occur on serpentine outcrops in southwestern Oregon (Atzet 1983, White 1971), and all but one can be found in the Rough and Ready watershed. In the simplest terms, much of the terrace and the slopes of the canyon support Jeffrey pine savanna with its native perennial bunchgrass understory. The serpentine soils and intact native grass community have precluded invasion by introduced annual grasses that plague other grasslands in the West. It is on serpentine that one can glimpse what the grasslands of southern Oregon looked like at the time of settlement. The largest known population of Siskiyou fritillary *(Fritillaria glauca)* occurs here along with Howell's fawn lily *(Erythronium howellii)*. In mid-summer, three rare composites, silky balsamroot *(Balsamorhiza sericea)*, Howell's microseris *(Microseris howellii)* and Western senecio *(Senecio hesperius)* bloom with Howell's mariposa lily *(Calochortus howellii)*.

Loamier soils and sites with greater moisture availability support a unique mixed conifer community with the chaparral shrubs added, along with huckleberry oak *(Quercus vaccinifolia)* and Brewer's oak *(Quercus garryana* var. *breweri)* among others. South of the creek on the alluvial terrace, an early successional forest of knobcone pine *(Pinus attenuata)* dominates areas that have burned recently.

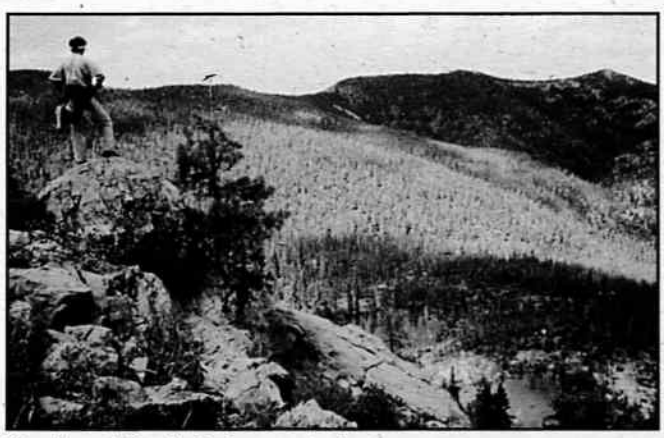
ULLIAN

Port Orford Cedar and Hemlock forest

Two rare communities occur at the highest elevations on the gently sloped ancient peneplain. On spring-moistened granitic outcrops, Western hemlock *(Tsuga heterophylla)* with Port Orford cedar *(Chamaecyperis lawsoniana)* occur as eastern extensions of a coastal type. On dry sites a hemlock forest with Sadler's oak *(Quercus sadleriana)* is also a rarity. Rough and Ready Lakes, glacial tarns at the head of the North Fork are surrounded by Western white pine *(Pinus monticola)* forest. Isolated springs and seeps along the lower slopes support serpentine hanging fens with their unique flora characterized by the insectivorous pitcher plant *(Darlingtonia californica)*. In one fen is found a population of *Hastingsia bracteosa* var. *atropurpurea* (large flowered rush lily) the southernmost documented sighting of the species.

Site Conservation

As information about Rough and Ready Creek has been gained, its importance has been recognized by the agencies



ULLIAN

Rough and Ready Lakes overlook

that manage the watershed. The impetus to protect the site began in 1937 with the Illinois Valley Garden Club led by Effie Smith. Smith, a woman who once called Mrs. Henry Ford to ask that the local dealer remove a billboard at the entrance to the valley, convinced the state to create the Rough and Ready Creek State Park. Succumbing to the pressures of development, the original 99-acre park was whittled down over time to the 11-acre botanical wayside that remains beside Highway 199. Expansion plans and new developments threaten to carve further into this park remnant and impact the larger Rough and Ready Creek watershed. Fortunately, recent federal designations have helped highlight the biological importance of the site.

Two federal agencies manage most of the 23,000-acre watershed. The Siskiyou National Forest has designated a Botanical Area extending over 1,500 acres at the mouth of the creek's canyon. After careful analysis, Forest Service staff found the stream eligible for designation as wild and scenic. The 2,000-acre North Fork headwaters lies within the boundary of the Kalmiopsis Wilderness, and most of the watershed is within the South Kalmiopsis Roadless Area. Additionally, some of the land is included in Late Successional Reserves designed to maintain habitat for the northern spotted owl. The Bureau of Land Management has designated a 1,162-acre Area of Critical Environmental Concern (ACEC). The ACEC covers the lower portions of the stream and terrace and wraps around the State Park Botanical Wayside, managed by the Oregon Parks and Recreation Department, linking protective status with the Forest Service Botanical Area.

Complementing the designations provided by the federal agencies is the protection work of the private non-profit corporation, The Nature Conservancy of Oregon. The Conservancy holds the protection of Rough and Ready Creek as one of its top priorities statewide, and has begun to acquire small private holdings on the floodplain and terrace. Support for protection efforts has been given by the Siskiyou Regional Education Project (SREP), a local environmental group. SREP drafted the nomination for the BLM ACEC. They have worked to stop development in the watershed, organized wildflower walks, and compiled the species list that follows.

Despite growing recognition for the area, impacts from planned development could negate protected status of the lands and

erode the integrity of the watershed and its natural systems. Over 4,000 acres in the core of the watershed are covered by mining claims. Nickel deposits could be mined using open pits, and extensive roads and stream crossings would have to be developed. Downstream, local officials have drawn up plans for an expanded airport and industrial park in the area proposed for the ACEC. Finally, withdrawal of water at three diversions currently reduces summer flows in the lower stretches of the creek and could be critical to the stream ecology.

Bringing all the stakeholders at Rough and Ready to the table, including conservation groups such as the Native Plant Society of Oregon, will help to encourage creative solutions that will preserve this biologically rich and intriguing site for future generations of Oregonians. This description of the site and the plant species list are offered to encourage additional biological investigation of the Rough and Ready Creek watershed and to support conservation planning there.

Directions:

Access to the Rough and Ready State Botanical Wayside and BLM Area of Critical Environmental Concern is found 4.5 miles south of Cave Junction on Hwy. 199. The Wayside, identified by a small sign, lies on the west side of the road just before the bridge over Rough and Ready Creek. Parking space is provided at the dirt turn out. There are no other facilities at the Wayside. The ACEC lies on both sides of the highway and both sides of Rough and Ready Creek. The National Forest Botanical Area is contiguous with the west boundary of the ACEC, less than a mile from the Wayside parking. To reach the headwaters of Rough and Ready Creek first stop at the USFS office in Cave Junction to get a map and to consult on whether access has been limited to protect Port Orford cedar in the watersheds from the root pathogen *Phytophthora lateralis*.

Species List

This preliminary list was compiled from a number of sources. The nomenclature for this list follows Hickman (1993) and Peck (1961). Corrections, additions and suggestions to this list may be sent to Frank Lang, Department of Biology, Southern Oregon State College, Ashland, Oregon 97520.

TREES

Alnus rubra (red alder); *Arbutus menziesii* (Pacific madrone); *Calocedrus decurrens* (incense cedar); *Chamaecyparis lawsoniana* (Port Orford cedar); *Chrysolepsis chrysophylla* var. *chrysophylla* (golden chinquapin); *Pinus attenuata* (knobcone pine); *Pinus contorta* (lodgepole pine); *Pinus jeffreyi* (Jeffrey pine); *Pinus lambertiana* (sugar pine); *Pinus monticola* (Western white pine); *Pseudotsuga menziesii* (Douglas fir); *Taxus brevifolia* (Pacific yew); *Tsuga heterophylla* (Western hemlock); *Lithocarpus densiflorus* (tanoak); *Quercus garryana* (Oregon white oak); *Quercus kelloggii* (California black oak).

SHRUBS

Amelanchier spp. (serviceberry); *Arctostaphylos canescens* (white oak-manzanita); *Arctostaphylos hispidula* (Howell's manzanita); *Arctostaphylos nevadensis* (pinemat manzanita); *Arctostaphylos viscida* (whiteleaf manzanita); *Berberis aquifolium* (tall Oregon grape); *B. aquifolium* var. *repens* [*Berberis pumila*] (pygmy Oregon grape); *Berberis nervosa* (long-leaved Oregon grape); *Ceanothus cuneatus* (wedgeleaf ceanothus); *Ceanothus integerrimus* (deerbrush); *Ceanothus prostratus* (mahala mat); *Ceanothus pumilus* (dwarf ceanothus); *Ceanothus sanguineus* (red stem ceanothus); *Cercocarpus betuloides* (birchleaf mountain-mahogany); *Chrysothamnus nauseosus* var. *albicaulis* (rubber rabbit brush); *Garrya buxifolia* (boxleaf silktassel); *Garrya fremontii* (Fremont's silktassel); *Gaultheria ovatifolia* (slender salal); *Gaultheria shallon* (salal); *Holodiscus discolor* (oceanspray); *Ledum glandulosum* (Labrador tea); *Leucothoe davisiae* (Sierra leucothoe); *Physocarpus capitatus* (Pacific ninebark); *Prunus virginiana* (chokecherry); *Quercus chrysolepsis* (canyon live oak); *Quercus garryana* var. *breweri* (Brewer's oak); *Quercus sadleriana* (Sadler's oak); *Quercus vaccinifolia* (huckleberry oak); *Rhamnus californica* (California coffeeberry); *Rhododendron macrophyllum* (Pacific rhododendron); *Rhododendron occidentale* (Western azalea); *Rubus discolor* (Himalayan blackberry); *Rubus laciniatus* (cut-leaved blackberry); *Rubus ursinus* (California blackberry); *Salix* spp. (willow); *Salix delnortensis* (Del Norte willow); *Salix tracyi* (Tracy's willow); *Spiraea douglasii* (Douglas spirea); *Umbellularia californica* (California bay/laurel); *Vaccinium ovatum* (evergreen huckleberry); *Vaccinium parvifolium* (red huckleberry); *Whipplea modesta* (whipple vine).

HERBS

Achillea millefolium (common yarrow); *Allium amplectens* (narrow-leaved onion); *Allium falcifolium* (sickle-leaved onion); *Amsinckia menziesii* [*A. intermedia*] (fiddleneck); *Antennaria dimorpha* (low everlasting); *Apocynum androsaemifolium* (spreading dogbane); *Arabis aculeolata* (Waldo rock cress); *Arabis breweri* (Brewer's rock cress); *Arabis koehleri* var. *stipitata* (Koehler's stipate rock cress); *Arabis modesta* (modest rock cress); *Arabis oregona* (Oregon rock cress); *Arnica cernua* (serpentine arnica); *Asclepias cordifolia* (heart-leaved milkweed); *Aster* spp.; *Astragalus* spp. (locoweed/milkvetch); *Balsamorhiza deltoidea* (deltoid balsamroot); *Balsamorhiza sericea* (silky balsamroot); *Brodiaea capitata* (common brodiaea); *Brodiaea coronaria* (harvest brodiaea); *Calochortus howellii* (Howell's mariposa lily); *Calochortus tolmiei* (Oregon mariposa lily); *Calochortus uniflorus* (pink star tulip); *Calycadenia truncata* (rosin weed); *Calystegia atriplicifolia* (Oregon morning glory); *Camassia howellii* (Howell's camas); *Camassia quamash* (common camas); *Campanula prenanthoides* (California bluebell); *Centaurea solstitialis* (yellow star thistle); *Cardamine gemmata* (purple toothwort); *Cardamine oligosperma* (western bittercress); *Castilleja miniata* ssp. *elata* [*Castilleja elata*] (slender paintbrush); *Castilleja pruinosa* (frosty paintbrush); *Cerastium arvense* (field chickweed); *Chaenactis douglasii* (dusty maiden); *Chlorogalum pomeridianum* (soap plant); *Cirsium* spp. (purple thistle); *Clarkia* spp.; *Claytonia exigua; Claytonia parviflora; Collinsia grandiflora* (giant blue-eyed Mary); *Collinsia rattanii* (Rattan's collinsia); *Convolvulus* spp. (morning glory); *Crocidium multicaule* (spring gold); *Cuscuta occidentalis* (Western dodder); *Cypripedium californicum* (California lady slipper); *Darlingtonia californica* (California pitcher plant); *Delphinium* spp. (larkspur); *Delphinium decorum* (low larkspur); *Dicentra formosa* [ssp. *oregana*] (Oregon bleeding heart); *Dichelostemma multiflora* (many-flowered brodiaea); *Dichelostemma capitatum* [*Brodiaea pulchella*] (blue dicks); *Disporum hookeri* [var. *oreganum*] (Oregon fairy-

bell); *Dodecatheon pulchellum* [ssp. *monanthum*] (Western shooting star); *Dodecatheon hendersonii* (Henderson's shooting star); *Downingia elegans* (elegant downingia); *Draba verna* (spring Whitlow grass); *Epilobium minutum* (willow-herb); *Epilobium rigidum* (rigid willow-herb); *Epilobium brachycarpum* (parched fireweed); *Epipactis gigantea* (stream orchid); *Erodium* spp. (storksbill); *Erigeron bloomeri* var. *bloomeri* [var. *pubescens*] (rayless aster); *Eriodictyon californicum* (yerba santa); *Eriogonum diclinum* (Jayne's Canyon buckwheat); *Eriogonum nudum* (barestem buckwheat); *Eriogonum pendulum* (Waldo eriogonum); *Eriogonum spergulinum* (hair-stemmed eriogonum); *Eriogonum ternatum* (ternate eriogonum); *Eriogonum umbellatum* (sulphur buckwheat); *Eriophyllum lanatum* (woolly sunflower); *Erysimum* spp. (wallflower); *Erysimum capitatum* (Western wallflower); *Erythronium citrinum* (lemon fawn lily); *Erythronium howellii* (Howell's fawn lily); *Erythronium oregonum* (giant fawn lily); *Eschscholzia californica* (California poppy); *Eschscholzia caespitosa* (dwarf California poppy); *Euphorbia crenulata* (Chinese caps); *Fritillaria affinis* (mission bells); *Fritillaria atropurpurea* (checker lily); *Fritillaria glauca* (Siskiyou fritillaria); *Galium ambiguum* (obscure bedstraw); *Galium aparine* (bedstraw); *Galium bolanderi* (Bolander's bedstraw); *Gentiana setigera* (elegant gentian); *Gilia capitata* (blue-headed gilia); *Goodyera oblongifolia* (Western rattlesnake plaintain); *Haplopappus* spp.; *Haplopappus racemosus* ssp. *congestus; Hastingsia alba* (rush lily); *Hastingsia bracteosa* (large-flowered rush lily); *Helenium* spp. (sneeze weed); *Hesperochiron pumilus* (California hesperochiron); *Hieracium albiflorum* (white-flowered hawkweed); *Hieracium bolanderi* (Bolander's hawkweed); *Hieracium parryi; Horkelia* spp.; *Horkelia congesta* ssp. *nemorosa* (Josephine horkelia); *Horkelia sericata* (silky horkelia); *Horkelia tridentata* (three-toothed horkelia); *Hypericum anagalloides* (trailing St. John's wort); *Hypericum perforatum* (common St. John's wort); *Iris bracteata* (Siskiyou Iris); *Lathyrus* spp. (peavine); *Lewisia leana* (Lee's lewisia); *Lewisia oppositifolia* (opposite-leaved lewisia); *Lilium bolanderi* (Bolander's lily); *Limnanthes gracilis* var. *gracilis* (slender meadow foam); *Linanthus bicolor* (two-color baby stars); *Linanthus bolanderi; Linnaea borealis* var. *longiflora* (twin flower); *Lithophragma* spp. (fringecup); *Lithophragma heterophyllum* (woodland star); *Lithophragma parviflorum* (small-flowered fringecup); *Lithospermum californicum* (Western puccoon); *Lomatium engelmannii; Lomatium macrocarpum* (giant-seeded lomatium); *Lomatium martindalei* (few-fruited desert parsley); *Lomatium nudicaule* (pestle lomatium); *Lomatium tracyi* (Tracy's lomatium); *Lomatium triternatum* (Lewis' lomatium); *Lomatium utriculatum* (fine-leaved desert parsley); *Lonicera hispidula* (hairy honeysuckle); *Lotus* spp. (deervetch); *Lotus oblongifolius* (Torrey's lotus); *Luina* spp. (luina); *Luina nardosmia* (cutleaf luina); *Lupinus albifrons* var. *collinus* [var. *fumineus*]; Lupinus nanus (dwarf lupine); *Lupinus tracyi* (Tracy's lupine); *Madia* spp. (tarweed); *Madia minima; Mentzelia laevicaulis* (giant blazing star); *Microseris howellii* (Howell's microseris); *Mimulus douglasii* (Douglas' monkeyflower); *Mimulus guttatus* (yellow monkeyflower); *Minuartia douglasii* [*Arenaria douglasii*] (sandwort); *Minuartia howellii* [*Arenaria howellii*]; *Monardella* spp. (pennyroyal); *Monardella odoratissima* (Pacific monardella); *Monardella purpurea* (Siskiyou monardella); *Montia* spp. (miner's lettuce); *Myosotis* spp. (white forget-me-not); *Narthecium californicum* (California bog asphodel); *Orobanche uniflora* (naked broom-rape); *Orobanche fasciculata* (clustered broom-rape); *Penstemon azureus* (azure penstemon); *Penstemon laetus* (gay penstemon); *Phacelia corymbosa* (phacelia); *Phlox adsurgens* (woodland phlox); *Phlox diffusa* (spreading phlox); *Phlox gracilis* (slender phlox); *Phlox speciosa* (showy phlox); *Pinguicula vulgaris* (butterwort); *Plagiobothrys* spp. (popcorn flower); *Plectritis congesta* (sea blush); *Polygala californica* (California milkwort); *Prunella vulgaris* (selfheal); *Pyrola picta* (white-veined wintergreen); *Ranunculus occidentalis* (Western buttercup); *Rudbeckia californica* (California cone flower); *Sanguisorba microcephala* (burnet); *Sanicula* spp. (sanicle); *Sanicula bipinnatifida* (purple sanicle); *Sanicula peckiana* (Peck's sanicle); *Satureja douglasii* (yerba buena); *Saxifraga oregana* (Oregon saxifrage); *Scutellaria* spp.; *Scutellaria angustifolia* var. *canescens* (narrowleaf skullcap); *Sedum laxum* ssp. *heckneri* (Heckner's sedum); *Senecio canus* (grey senecio); *Senecio hesperius* (Siskiyou butterweed); *Senecio macounii* (Siskiyou Mountains ragwort); *Sidalcea* spp. (checkermallow); *Sidalcea campestris; Sidalcea malvaeflora* spp. *asprella* [ssp. *elegans*] (checkerbloom); *Silene campanulata* (bell catchfly); *Silene hookeri* (Hooker's pink); *Sisyrinchium bellum* (blue-eyed grass); *Sisyrinchium californicum* (golden-eyed grass); *Sisyrinchium douglasii* (grass widow); *Streptanthus howellii* (Howell's streptanthus); *Synthyris reniformis* (snow queen); *Thermopsis* spp. (yellow pea); *Thermopsis macrophylla* (California false lupine); *Thlaspi alpestre* (rock penny cress); *Thlaspi montanum* var. *siskiyouense* (Siskiyou Mt. pennycress); *Tragopogon pratensis* (dwarf salsify); *Trichostema simulatum* (Siskiyou blue-curls); *Triteleia hendersonii* [*Brodiaea hendersonii*] (Henderson's brodiaea); *Triteleia hendersonii* var. *leachiae; Trifolium tridentatum* (sand clover); *Trillium ovatum* (white trillium); *Trillium rivale* (brook trillium); *Triteleia hyacinthina* (white hyaçinth); *Verbascum blattaria* (moth mullien); *Viola cuneata* (wedged leaved violet); *Viola hallii* (Hall's violet); *Viola lobata* (pine violet); *Viola orbiculata* (round-leaved violet); *Viola primulifolia* ssp. *occidentalis* (western bog violet); *Wyethia angustifolia* (narrowleaf wyethia); *Xerophyllum tenax* (bear grass); *Zigadenus micranthus* (small-flowered camas); *Zigadenus venenosus* (death çamas).

FERNS

Aspidotis densa (cliff-brake); *Pteridium aquilinum* (Western brackenfern).

GRAMINOIDS

Acnatherum lemmonii [*Stipa lemmonii*] (Lemmon's needlegrass); *Bromus tectorum* (cheatgrass); *Carex* spp. (sedge); *Danthonia californica* (California oatgrass); *Elymus elymoides* [*Sitanion hystrix*] (squirreltail); *Elymus glaucus* (blue wild rye); *Festuca californica* (California fescue); *Festuca idahoensis* (Idaho fescue); *Juncus* spp. (rush); *Koeleria macrantha* (junegrass); *Luzula* spp. (wood rush); *Melica* spp. (melic); *Poa* spp. (bluegrass); *Poa piperi* (Piper's bluegrass).

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For information and maps:
Siskiyou National Forest, Grants Pass: 471-6500
Illinois Valley Ranger District: 592-2166
U.S. Bureau of Land Management, Medford: 770-2200
The Nature Conservancy of Oregon, Ashland: 488-4485
Siskiyou Regional Education Project, Cave Junction: 592-4459

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History of the University of Oregon Herbarium (1903-1993)

By DAVID H. WAGNER

Introduction

A herbarium is one of the fundamental resources of traditional botany. Its collections, library, and staff provide a wide range of services to science and society. Most universities older than a hundred years have, or have had, a herbarium because botany was a core science at the time these universities were founded. Just like universities, herbaria have definite founding dates and occasionally dates of closure. This is the story of one of the major west coast herbaria, from beginning to end. Although a herbarium is an institution, the critical elements of the story necessarily concern the people who built and cared for its collections.

Establishment

The University of Oregon Herbarium (known as ORE in the international directory of herbaria) was established in 1903, by Albert Raddin Sweetser (1861-1940). He was a Professor of Botany since 1902 and served as head of the Department of Botany from 1909 until his retirement in 1931. Although he was not an important collector himself, he was very interested in the history of plant exploration. Soon after his arrival in Oregon he made the acquaintance of the resident pioneer botanists of Portland. His first major accomplishment, in 1903, was to secure the donation of the personal collection of Thomas Jefferson Howell (1842-1912). Howell's herbarium consisted of approximately 10,000 sheets. It included nearly 300 type specimens of plants Howell had discovered, as well as duplicates obtained in exchange from other early botanists. At that time it was considered the largest and finest herbarium at any public institution in the northwest. Howell was hired for the 1903-1904 school year to organize the collection.

FROM UO HERBARIUM FILES NOW AT OSU, CORVALLIS

Albert R. Sweetser

The Core of the Collection: The Big Six of Oregon

Howell was Oregon's premier resident plant explorer, a self-taught botanist who discovered more new species of plants in the state than any other. He began collecting in the mid-1870's with his older brother, Joseph. They sent their novelties to Asa Gray at Harvard University, who published formal descriptions. He named the genus *Howellia* to honor