OREGON FLORA NEWSLETTER

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John B. Leiberg 1853-1913, Northwest botanist and forester

by Sarah Walker, Idaho Native Plant Society

John Leiberg surveyed western flora and forest reserves as a field agent for the U.S. Department of Agriculture (USDA) and the U.S. Geological Survey (USGS) during the late 1800s and early 1900s. An energetic and insightful botanist, he was fascinated with Oregon, writing in a 1903 letter that he found the eastern part of the state "teeming with curious and undescribed species of plants." His impressive personal collection, which he gave to the herbarium of the University of Oregon, formed one of its important early acquisitions.

Leiberg was born in Sweden and was interested in plants from an early age. His family moved to Iowa when he was fifteen. He collected plants and worked as a railroad agent,

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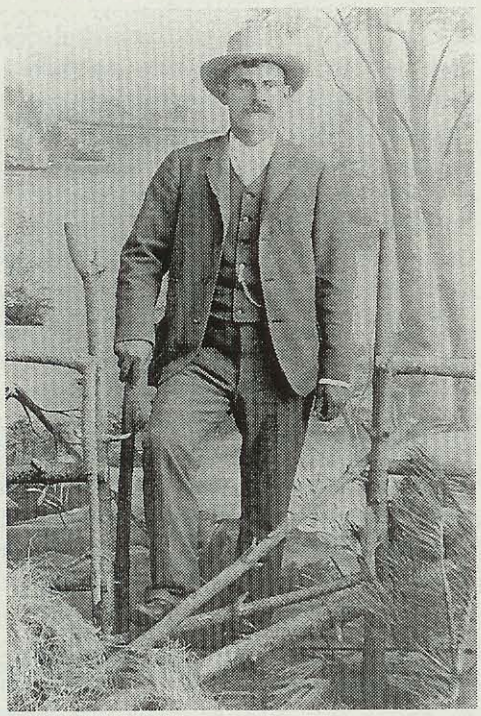

In 1890, John Leiberg sent this photograph of himself to Elizabeth Britton: "I am not very fond of having my photograph taken. It was done this time at the request of Mrs. Leiberg . . . I think some time ago you asked for my picture for the [Torrey Botanical] Club and I promised you one." Photo courtesy of NY Botanical Garden. Reprinted with permission.

Oregon delphiniums -- easy to collect but hard to identify, Part I

by Kenton L. Chambers

Early this year, I took on the job of writing a treatment of the genus *Delphinium* (larkspur) for the Oregon Vascular Plant Checklist. Not having studied the group before, I decided to acquaint myself with its diversity by examining all the herbarium collections of larkspurs at Oregon State University. Now, three months and over 1000 specimens later, I have a newfound respect for the taxonomic complexity of *Delphinium*! One major difficulty with the genus is deciding where to draw the boundaries between its species. Due to their generally similar floral structure, as well as the absence of genetic barriers to intercrossing, species of larkspur are known to hybridize in many different combinations. We would expect that if gene exchange continues long enough, the morphological gaps between particular taxa may become blurred, and novel combinations of traits may arise. As I suggest below, this appears to have happened more than once among our Oregon larkspurs, and perhaps it even gave rise to a new species of hybrid origin.

Delphinium species occupy a wide range of environments, from arid to moist, high elevations to near sea level, shady forests to open meadows, sagebrush scrub to grasslands. They are found almost throughout Oregon, are showy, and as I said in the title, are easy for botanists to collect. Herbarium specimens make excellent study material, retaining their floral colors for 100 years or more. Important taxonomic traits occur in the flowers, stem pubescence, leaf arrangement on the stem, leaf shape and degree of dissection, and in the underground parts—the roots and rootstocks. Other characters seem to vary with the environment, especially height, degree of branching, and size of inflorescence. In the discussion below, I will focus on the species that are found west of the Cascade Range, saving my comments on the east-side taxa for a second article.

The number of *Delphinium* taxa that I recognize from west of the Cascade crest is 11, which coincidentally is the same number for this area as one finds in M. E. Peck's *Manual of the Higher Plants of Oregon*. Peck's list of taxa is not identical to mine, however, and I assign a different geographical range than he did to certain species. For example, *Delphinium glareosum* (rockslide larkspur), which is

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first in frontier Iowa, then in Minnesota, South Dakota, and Montana. He was drawn to Idaho by the 1883 gold rush and later settled on Lake Pend Oreille with his wife Carrie, who was a doctor, and their young son.

He was intrigued with the moss flora he observed while prospecting in the forests of the North Fork of the Coeur d'Alene River and began a life-long correspondence with Elizabeth Britton, bryologist at Columbia College in New York. The outcome of Leiberg's prospecting is not known. In 1893 he was hired by the USDA botanist Frederick Coville to assist J. H. Sandberg, another Swedish botanist. Their assignment was to explore and collect the flora of the plains of the Columbia and to determine the eastern and western boundary of the same. This may have been his first job as a botanist.

Leiberg worked as a government field agent in the west for the next thirteen years as a botanist for the USDA and National Herbarium, and as a forester for the USGS. His work took him to Idaho, Washington, Oregon, Montana, California, Arizona, and even the Philippine Islands.

He was assigned to eastern and central Oregon and the south Cascades during the field seasons of 1894, 1896, and 1899. In letters that Leiberg wrote to Coville from the field in Oregon, he described his adventures and discoveries in terms that are familiar to today's field workers. He began each field season eagerly, only to swear he'd never do it again come fall. In the spring of 1894 he was delayed by rainy weather, irregular trains crowded with unemployed workers from the 1893 financial crash, and muddy roads. He wrote Coville: "Going across the Columbia Plains in Washington last year was child's play compared with this" adding that now he understood why there'd been few botanical explorations in central Oregon. His papers were soaked, it was hard to dry his specimens, and he had to find post offices to mail back the bundles of dried plants. By August 6 he had several thousand specimens to ship.

He wrote Coville about the landscape, flora, Indians, grazing, and weeds. He described the Umatilla tribe's system for drying the roots of "Cous" and the Klamath tribe's preparation of "Wo-Kash" from the seeds of *Nuphar polysepalum*, "the making of it is destined to pass away before long. It is now wholly confined to the old people." From Heppner he reported: "Wherever the land has been grazed more than 70% of the vegetation are composed of one single species *Erodium cicutarium*," while the area 30 miles southwest of Heppner was the "best and most abundantly grassed section I have ever seen west of the Rockies."

Leiberg's last field season in Oregon, 1899, was spent in the Ashland and Cascades forest reserves in Jackson and Douglas Counties. He also visited Crater Lake on this trip.

Leiberg found over 50 species previously undocumented in Oregon. Several are considered rare today: *Amsinckia carinata*, *Collomia macrocalyx*, *Cryptantha propria*, *Eriogonum ochrocephalum* ssp. *calcareum*, and *Trifolium leibergii*. When he and Coville collected together at Crater Lake in 1896, they documented *Castilleja chlorotica* from Gearhart Mountain and *Collomia mazama* from Crater Lake. Another Oregon species still named for him is *Poa leibergii*.

Leiberg's government work ended in 1906 and he moved to Leaburg, Oregon. He continued to collect mosses, and took up the study of termite parasites. Sadly, he died shortly after his sixtieth birthday from complications of diabetes. Very little has been written about his life and the facts of his education are not known. Most of the reports he wrote while working for the USDA were not published (while all of the USGS forest reserve reports were published). His letters and plant catalogues are archived in various herbaria, libraries, and the National Archives.

References:

Leiberg, J.B. "Sandberg Cat. & Journal, Wash. 1893," Smithsonian Library, Washington DC.

Leiberg, J.B., in F.V. Coville, Letters. "Records of the Bureau of Plant Industry, Record Group 54," National Archives, Washington DC.

Leiberg, J.B., in C.V. Piper, Papers. Washington State University Libraries, Pullman, WA.

Illustrations of *Erythronium oregonum* on the front and back covers by Linda Ann Vorobik.

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Oregon sandworts

by Henrietta Chambers

North American botanists have been slow to accept the narrower generic concept of *Arenaria* (Sandworts) adopted by European botanists in the early years of the twentieth century. These workers segregated *Minuartia*, *Moehringia*, and *Honkenya* (our genera) from *Arenaria*. According to McNeill (1980), the genera which were formerly included in *Arenaria* fall into two groups. In one, the capsule splits into as many valves or segments as there are styles, and in the other group, the capsule splits open by twice as many valves as styles. The number of valves is best determined by counting the teeth on the open capsule. *Minuartia* and *Honkenya* are in the first group, and *Arenaria* and *Moehringia* in the second. *Moehringia* is separated from *Arenaria* by the presence of appendaged seeds and slim branching rhizomes.

We now recognize seven species of *Arenaria* in Oregon. Two other species have been transferred to *Moehrigia*, and six to *Minuartia*. Earlier Oregon floras had already recognized *Honkenya*. The following discussion covers Oregon *Arenaria*.

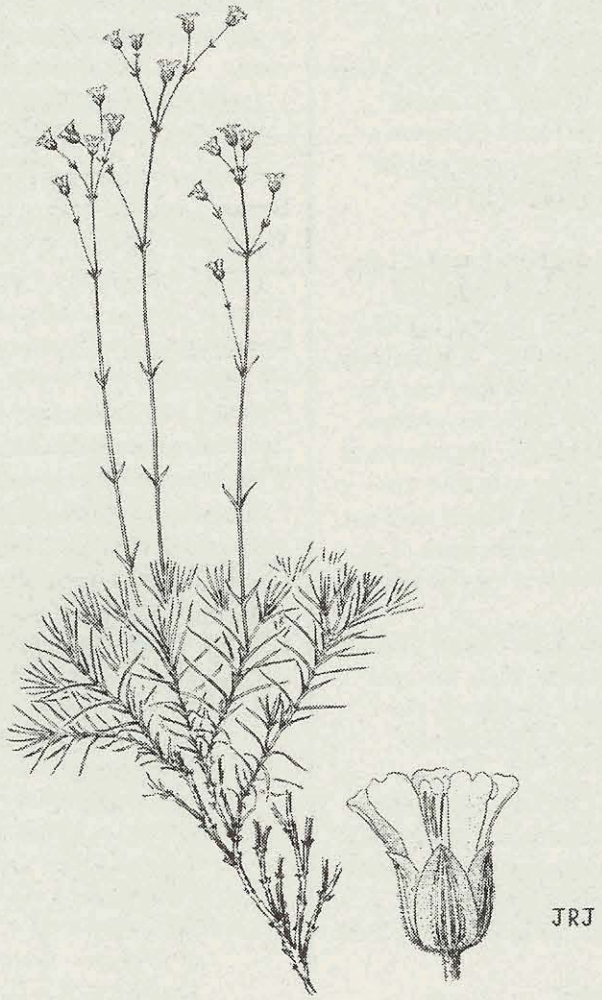
Hickman (1971) states that *Arenaria* is one of the taxonomically most difficult genera in western North America. Five of the seven species that occur in Oregon, (all except *A. serpyllifolia* and *A. franklinii*) belong to the section *Eremogone* that he studied. Some of the species are quite localized in their distribution and others are widespread. *Arenaria serpyllifolia* is a common Eurasian weed which has become widespread in North America. Ours, *A. serpyllifolia* ssp. *serpyllifolia* (thyme leaf sandwort) grows at low elevations and can tolerate habitat extremes: dry to moist, clay or sandy soil, grassy or wooded sites. It is our only annual species, and its most significant diagnostic character is the presence of minute hairs on the stems, leaf margins, sepal margins and veins (ribs) of the sepals. It is very slender, with tiny ovate to lanceolate leaves (3-7 mm long) and flowers that are borne in loose cymes.

Arenaria franklinii is distinct from the other eastern Oregon species because the flowers are not elevated above the leaves but sit in clusters at the tips of the vegetative branches. Morphological differences of the flowers divide this taxon into two varieties, which also coincide with a geographical separation. *A. franklinii* var. *franklinii* (Franklin's sandwort) grows on sand dunes, ash and ash-clay soils, scablands and sagebrush hills throughout eastern Oregon. The calyces of these plants are longer than other sandworts in the state (8-12 mm) and have acuminate teeth extending 2-3 mm beyond the petals. The second variety, *Arenaria franklinii* var. *thompsonii*, (Thompson's sandwort) has shorter sepals (5-8 mm long) which are approximately the same length as the petals. It is a narrow endemic that grows in sandy or rocky soils along the Columbia River in Wasco, Gilliam and Morrow Counties.

There are four species of tufted perennial sandworts which can be difficult to distinguish (Hickman, 1971). They all have inflorescences elevated above the clusters of needle-like leaves. Their calyces vary from acute to ovate to obtuse and have white or hyaline margins. *Arenaria pumicola* (Crater Lake sandwort) is an alpine perennial, most commonly found in southern Oregon but occurring as far north as Marion County, north of Jefferson Park. The type locality is Crater Lake where it grows in the Pumice Desert, Llao Rock, and many peaks in the vicinity (Mt. Thielsen, Mt. Bailey, Devil's Peak). The plants have straight, tufted leaves, which are usually less than 3 cm long. The sepals are broadly acute to obtuse with wide, papery white margins.

Arenaria kingii var. *glabrescens* (King's sandwort) grows in Malheur and Lake Counties. This distribution represents the northeastern extreme of its range, which is primarily south to central California and east to central Idaho. These plants are more delicate and finer-leaved than the other eastern Oregon species, which tend to have rather stiff, sometimes very sharp-tipped leaves. The small flowers are borne in loose cymes and have ovate to lanceolate sepals (6 mm long) that are green along the midrib and have white margins. The sepals are often purplish and can be thickened at the base. There is a similarity in the habit of this taxon with *A. congesta* var. *prolifera* but the calyces are longer, narrower and more pointed in the latter and the inflorescences are more

See Arenaria, page 11



Prickly sandwort, Arenaria aculeata, *is a perennial with tall, open inflorescences and glaucus leaves with sharp, yellow tips. Illustrations on this page and pages 10 and 12 by Jeanne R. Janish from Hitchcock et al. 1969,* Vascular Plants of the Pacific Northwest, *courtesy of University of Washington Press.*

Leapfrogging Lane County

by Charlene Simpson,
Emerald Chapter, NPSO

I am not writing about the celebrated jumping frogs of Calaveras County, but rather about plant species that apparently "leap over" Lane County. These leapfrogging species have been identified as Emerald Chapter NPSO botanists have done research for the Lane County Checklist (see OFN 2(1):4). So far we have failed to find evidence of occurrence in Lane County of a number of taxa known from locations both to the south and north of our region.

During the early stages of our research we looked for these taxa, unwilling to accept that they seemingly leap over our area. We remained optimistic considering Lane County's large size and habitat diversity. Surely, we thought, the absent species were out there just waiting to be found. However, as herbarium and field searches failed to document any of the missing species we deleted them one by one from our Checklist.

Why have the species listed below not been found in Lane County? Are some perhaps plants which lived within the boundaries of what is now Lane County in the past, but which have been extirpated for one reason or another? Alternatively, have some never been distributed here —have they found no niche in our territory to their liking? We know, for example that Lane County has limited estuarine habitat. Perhaps these scenarios may apply to some, but we prefer to believe that most on our list are present in our county but simply have not been looked for in the right places or at the right times. If so, we reason that some sharp-eyed OFN readers may be able to help fill in some of the gaps.

Why are we interested? Because the Lane County Checklist of Vascular Plants Project is alive and well. Eight Emerald Chapter members plus Scott Sundberg of the Oregon Flora Project are actively working to prepare our Checklist for publication.

The list below represents Emerald Chapter's Most Wanted list of missing taxa. If readers have information leading to a Lane County location for any of the following, please contact Charlene Simpson, Lane Checklist Project Manager, at csimpson@oregon.uoregon.edu or call her at (541) 465-1059.

List of Lane County "Leapfroggers"

•*Agrostis densiflora*, coastal bluff bentgrass. Coastal Curry and Lincoln Counties on sandy soils and sea-facing bluffs.

•*Allium unifolium*, one leaved onion. Coast Ranges of California and interior valleys of Polk and Yamhill Counties, along grassy stream banks on moist clay.

• *Cacaliopsis nardosmia* ssp. *glabrata*, tall silvercrown. Coast and Cascade ranges and interior valleys of Douglas and Benton Counties, in meadows and open woods.

• *Carex vulpinoidea*, fox sedge. Interior valleys and foothills of the western Cascades of Multnomah, Josephine and Jackson Counties, in marshes or standing water.

•*Cordylanthus maritimus* ssp. *palustris*, salt marsh bird's beak. Coastal salt marshes of Coos, Lincoln, and Tillamook Counties.

• *Darmera peltata*, umbrella plant, wild rhubarb. Coast Range of Coos, Josephine, Curry and Benton Counties, on wet rocks in streams and along stream banks

• *Enemion stipitatum* (*Isopyrum stipitatum*), dwarf isopyrum. Interior valleys of Benton, Polk, Yamhill, and Douglas Counties, and in California, in oak woodland and low elevation evergreen forest.

• *Hydrocotyle verticillata*, whorled marsh pennywort. Douglas, Coos, Curry, and Benton Counties, on swampy ground and lake margins in the interior valleys and along the coast.

• *Limonium californicum*, western marsh rosemary. Coastal salt marshes of Lincoln and Coos Counties.

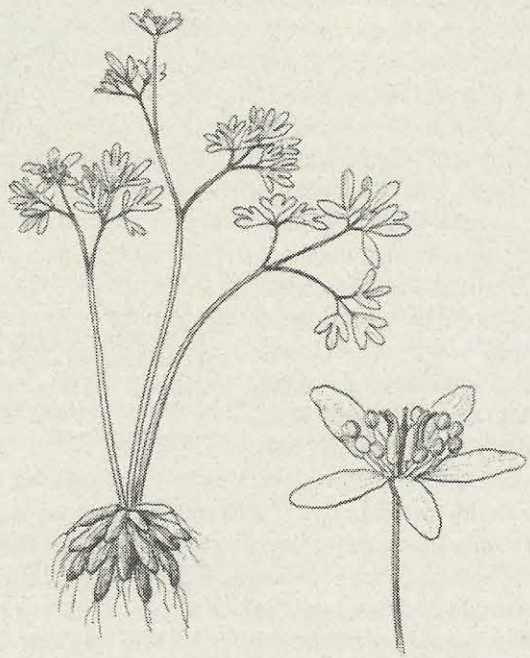
• *Mimulus tricolor*, tricolored monkeyflower. Klamath, Benton, Linn, and Marion Counties. To be expected in the Willamette Valley on vernally wet flood plains.

• *Polystichum californicum*, California sword fern. Coast Range of Coos and Curry Counties and Western Cascades of Douglas and Linn Counties, along forested stream banks, wet cut banks and rocky slopes.

• *Ranunculus lobbii*, Lobb's aquatic buttercup. Wasco and Benton Counties and in California. To be expected in the Willamette Valley in vernal pools and shallow water.

• *Sanguisorba officinalis*, red burnet. Sphagnum bogs, marshes, and swamps of coastal Coos, Curry, Tillamook, and Lincoln Counties, and High Cascades of Clackamas County.

• *Spirodela punctata*, dotted duckmeat. Interior valleys of Douglas and Benton Counties, in still water, backwaters, and log ponds.



Enemion stipitatum, *dwarf isopyrum*

Arenaria, from page 9

condensed. Both can be found growing on white-ash soils.

Arenaria aculeata and *A. capillaris* var. *americana* are two widespread taxa which occur in similar habitats. According to Hitchcock (1964) they occupy gravelly, sagebrush-covered hills ranging from 2,000 m up to alpine. Many of their differences are subtle and often comparative rather than quantitative. The calyces of both taxa can be glandular and purple or purple-tinged. The sepals of both taxa usually have conspicuous hyaline, white or purplish margins which contrasts with the green midrib. The basal leaves and the leaves on the flowering stems are better developed (longer) in *Arenaria capillaris* var. *americana* (mountain sandwort) than in *A. aculeata* (prickly sandwort) although there is a diminution in size progressing up the peduncle in both taxa. Leaf size overlaps in these taxa (*A. capillaris* var. *americana* leaves are 1-6 cm long while *A. aculeata* leaves are 1-3 cm long.). The leaves of the latter are also straight and rigid, and have a sharp yellow, tip which measures approximately 1 mm long. The dead leaves persist on the tufted stems making a somewhat shrub-like appearance. The leaves of *A. capillaris* var. *americana* may be straight or curved but they are more flexuous (less rigid), and the tips may be pale and apiculate but are not sharp and yellowed as in *A. aculeata*. Hickman (1968, 1971) states that *A. capillaris* var. *americana* appears to intergrade with all other species in Section *Eremogone* in Oregon. He annotated many collections as hybrids or intermediate in morphology between two or three taxa.

The variability of *Arenaria congesta* in Oregon is recognized by dividing the species into two varieties which are separate geographically as well as morphologically. The typical variety, *A. congesta* var. *congesta* (ballhead sandwort) is the more widespread, occurring in three of the four corners of the state: Mt. Ashland, Steens Mountain, and the Wallowas as well as many localities in between. The flowers are clustered into a tight inflorescence which distinguishes it from other species. It has the habit of a clumpy grass or sedge because the leaves are narrow and distinctly longer than in the species previously described. Also, the tight clusters of flowers are more elevated above the basal leaves than in the taxa with cymose inflorescences. The stem leaves decrease in size toward the flower clusters. *Arenaria congesta* var. *prolifera* (glabrous sandwort) is found only in Malheur County, in the southeastern corner of the state. Its flower clusters are looser and can best be described as subcongested or umbellate.

A third variety, *A. congesta* var. *suffrutescens* has been cited from Oregon (Maguire, 1947) from a 1939 collection from Lake Mountain, Siskyou Mountains, Josephine County. However, there are no specimens from Oregon at OSU and we have not added this taxon to the Checklist. Hitchcock (1964) includes southern Oregon in the range of a fourth variety, *A. congesta* var. *cephaloidea*. This has tight heads like the typical variety, but is described as having calyx teeth that are narrower and with sharp-pointed tips. This seems to be a variable character however, and I have chosen not to recognize the latter variety.

The following key was devised using dried specimens and the keys from some of the cited references. It has not been tested in the field. Hickman (1971) preferred not to use sepal characteristics in his keys, but I have not had success in separating the taxa without using sepal shapes as diagnostic traits.

Key to the Oregon Species of *Arenaria*

1. Slender, erect, branching annuals, leaves ovate, Eurasian weed
   A. serpyllifolia ssp. *serpyllifolia*, thyme leaf sandwort
1. Caespitose, erect or procumbent perennials, leaves narrowly linear, native plants
   2. Inflorescences not elevated above the basal leaves
      3. Petals longer than the calyx teeth
         A. franklinii var. *franklinii*, Franklin's sandwort
      3. Petals shorter or the same length as the calyx teeth
         A. franklinii var. *thompsonii*, Thompson's sandwort
   2. Inflorescences distinctly elevated above the basal leaves
      4. Inflorescence cymose or umbellate
         5. Sepals obtuse, sometimes acute, apiculate
            6. Longest leaves 1-3 cm long
               7. Leaves stiff, somewhat fleshy, glaucous, with sharp yellow tips
                  A. aculeata, prickly sandwort
               7. Leaves thinner, often apiculate but lacking sharp yellow tips
                  A. pumicola, Crater lake sandwort
            6. Longest leaves 3-6 cm long
               A. capillaris var. *americana*, mountain sandwort
         5. Sepals acute or acuminate
            8. Inflorescence a condensed umbel-like cyme, pedicels mostly shorter than the sepals
               A. congesta var. *prolifera*, glabrous sandwort
            8. Inflorescence loosely cymose, pedicels longer than the sepals
               A. kingii var. *glabrescens*, King's sandwort
      4. Inflorescence tightly capitate
         A. congesta var. *congesta*, ballhead sandwort

References:

Hickman, J.C. 1971. *Arenaria* Section *Eremogone* (Caryophyllaceae) in the Pacific Northwest: A key and discussion. *Madroño* 21: 201-207.

Hitchcock, C.L. and A. Cronquist. 1964. *Vascular Plants of the Pacific Northwest. Vol. 2.* University of Washington Press, Seattle.

MacNeill, J. 1980. The delimitation of *Arenaria* (Caryophyllaceae) and related genera in North America with 11 new combinations in *Minuartia*. *Rhodora* 82: 495-502.

Maguire, B. 1947. Studies in the Caryophyllaceae III. A synopsis of the North American species of *Arenaria*, Section *Eremogone* Fenzl. *Bull. Torrey Bot. Club.* 74:38-56.

Maguire, B. 1951. Studies in the Caryophyllaceae V. *Arenaria* in America north of Mexico. *Amer. Midl. Nat.* 46:493-511.

Delphiniums, continued from front page

best developed in the Olympic Mountains and the Cascades of Washington, comes south into Oregon only on the high peaks of the Coast Range of Clatsop and Tillamook Counties, rather than extending through the Oregon Cascades south to Lane County as previously supposed. Also, *Delphinium decorum* (coast larkspur), a species of the California Coast Ranges, enters Oregon only on the narrow coastal strip of Curry County and is not in the interior mountains as Peck thought. In my view, the common blue-flowered larkspurs of the Siskiyou Mountains in Oregon all represent *D. nuttallianum* (upland larkspur), which Peck believed was entirely east of the Cascades. The name *D. sonnei*, which was used by Peck for much of *D. nuttallianum* in southwestern Oregon, has dropped into synonymy both in my list and in the new *Jepson Manual: Higher Plants of California*.

There are three western Oregon larkspur species that are distinctive and show little confusing variability. These are the red-flowered *Delphinium nudicaule* (red larkspur) of the Siskiyou Mountains; the blue-flowered *D. trolliifolium* (poison larkspur), a tall, leafy-stemmed species with widely spreading sepals, found from the Columbia Gorge south to northwestern California; and the purple-flowered *D. glaucum* (mountain larkspur), also tall and leafy-stemmed but with forward-pointing sepals, common in the southern Oregon Cascades and ranging south to the Sierra Nevada and north to Alaska. Another blue-flowered western Oregon species that is reasonably distinctive is *D. nuttallii* (Nuttall's larkspur), found in the Columbia Gorge and in Clark and Skamania Counties, Washington. It has enlarged, tuber-like roots and resembles the much more common tuber-rooted species *D. menziesii* (Menzies' larkspur), but it has smaller flowers with forward pointing (rather than widely spreading) sepals, shorter floral pedicels (hence a narrower raceme inflorescence), and a distinctly hairy pair of drooping petals in the center of the flower. These two larkspur species are important to my theory of the origin of *D. oreganum* (Willamette Valley larkspur), described below.

On the state list of rare, threatened or endangered plants are three additional larkspur species of the Willamette Valley—*Delphinium oreganum*, *D. leucophaeum* (white rock larkspur), and *D. pavonaceum* (peacock larkspur). What surprising coincidence, one wonders, caused this concentration of rare species of a single genus, in such a limited geographical area! The range of *D. oreganum* is from Clackamas County to Linn County, almost entirely east of the Willamette River; *D. leucophaeum* is highly localized near the Willamette River just south of Portland; and *D. pavonaceum* is centered in Polk and Benton Counties, mainly west of the Willamette River. In terms of their morphological features, these three taxa can be characterized as follows: (1) *D. oreganum* is intermediate, in its floral and inflorescence traits, between *D. nuttallii* and *D. menziesii*; (2) *D. leucophaeum* almost exactly resembles *D. nuttallii*, but its sepals are white instead of blue; (3) *D. pavonaceum* is very similar to *D. menziesii* in all its features except flower color—it has white sepals and blue upper petals, instead of the blue sepals and white upper petals of *D. menziesii*! It seems evident that these five larkspurs are very closely related and have undergone some rapid evolutionary divergence, perhaps in the recent geological past.

My theory of the evolution of these fascinating *Delphinium* taxa is based on the catastrophic Ice Age flooding that occurred in the Willamette Valley, between 15,000 and 12,800 years ago. An excellent description of these Pleistocene floods of the Columbia River, called the Bretz Floods or Spokane Floods, can be found in the book *Cataclysms on the Columbia*, by J. E. Allen and M. Burns (Timber Press, Portland, OR, 1986). At least 40 times, at about 50-year intervals, a huge glacier-dammed lake in Montana burst forth and inundated over 16,000 square miles of Washington and Oregon landscape. The Willamette Valley was flood-scoured at its north end and filled by a temporary lake, up to an elevation of 400 feet, which extended south to the present location of Eugene. The repeated filling and then rapid draining of the lake must have created large areas of habitat disturbance, fresh deposits of silt and gravel, alteration of stream courses, and destruction of established vegetation. New genetic forms of *Delphinium*, produced by hybridization and/or mutation, became established in these disturbed sites, I believe, and evolved to form the three endemic species, whose ranges are even today exactly limited to the area of this so-called Lake Allison in the Willamette Valley.

Valuable studies of populations of these rare Willamette Valley larkspurs have been carried out by Gaylee Goodrich (M.S. thesis, University of Oregon, 1983) and by Lynda Boyer (M.S. thesis, Portland State University, 1999). Dr. Keith Karoly of Reed College is doing further research on their genetic differences. These new studies may help to clarify my hypothesis of rapid evolution in habitats that were disturbed by Pleistocene flooding; for example, that *D. oreganum* arose through genetic stabilization of hybrid populations between *D. nuttallii* and *D. menziesii*. The two white-flowered species, *D. leucophaeum* and *D. pavonaceum*, seem to have evolved directly from their respective parental blue-flowered taxa, *D. nuttallii* and *D. menziesii*. Isolation through altered pollination behaviors by insects, due to the changed flower-color patterns, seems a likely hypothesis in both cases.

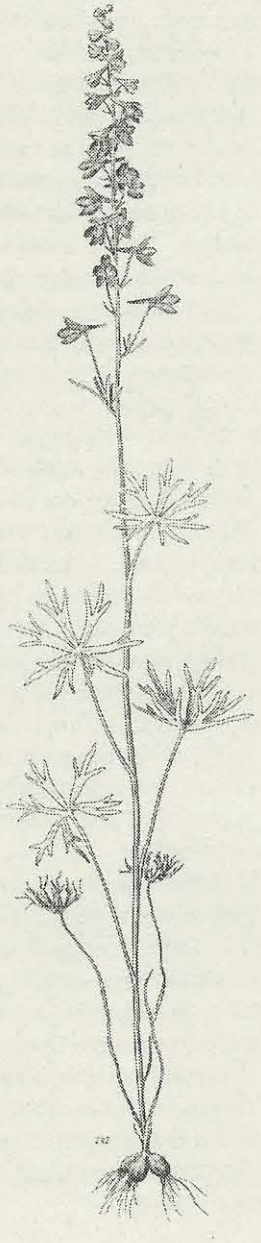


Illustration: Delphinium nuttallii

Friends News

by Linda Hardison

We have designated April as our Friends of the Oregon Flora membership campaign month. Some of you may have received a notice to renew your annual membership with a donation, and we thank those of you who responded. More thanks are due to the generous donors of our Wish List items; we now have a new color printer, a scanner, and an essential illustrated text! The Friends had an information table at the Mount Pisgah Arboretum Wildflower Show in May where we passed out materials to interested visitors. Margaret Meierhenry showed our display at the Shady Cove Annual Wildflower Show and at a meeting of the North American Rock Garden Society. The OSU Press service recently released to statewide news media a short article about the Flora Project. Have you seen it in your local newspaper? We're excited to have more people learn about this important project.

Project News

by Scott Sundberg

The Oregon Vascular Plant Checklist: Asteraceae, by Kenton L. Chambers and Scott Sundberg, has been reprinted. The second printing has minor changes in the main text and also includes an appendix with four additions to the checklist, two name changes, and updated notes on ten taxa. The appendix is free of charge. To receive a copy, please send a self-addressed stamped envelope to Scott Sundberg at the address on page 8. The entire checklist is available in return for a donation of any amount, or is free to people who have donated or volunteered in the past. Our cost for printing, mailing and handling is four dollars.

The Atlas project has recently gotten a big boost. Clay Gautier has produced Version 2.0 of a computer program for producing plant distribution maps over the Internet. It is now being evaluated by Atlas project leaders. We hope to complete an online demonstration of the Atlas within a few months.

We have made lists of plant species, subspecies and varieties (taxa) for each Atlas block (see map on back) using data in our database. Records for three blocks include over 1,000 taxa and 43 have over 500. We hope to obtain more records from many areas of the state, especially Eastern Oregon.

Aaron Hodges, who has worked for the Flora project for three years on database management tasks and has assisted with the OFN for a year, is graduating this month. We will miss Aaron and wish him the best of luck in his new job in Beaverton, Oregon.

Thanks

Thanks to the May Department Stores Foundation, Portland Garden Club, The Nature Conservancy, the Native Plant Society of Oregon and the Washington Native Plant Society, who have made significant contributions to the Oregon Flora Project. Thanks also to the Blue Mountain, Cheahmill, Siskiyou, and Umpqua Valley Chapters of the NPSO for their support.

The following donors have also recently contributed via the OSU Foundation or the NPSO Friends:

New publications of note

Flora of North America Editorial Committee, Ed. 2000. *Flora of North America, North of Mexico, Vol. 22. Magnoliophyta: Alismatidae, Arecidae, Commelinidae (in part), and Zingiberidae*. New York: Oxford University Press.

Mansfield, D. H. 2000. *Flora of Steens Mountain*. Corvallis: Oregon State University Press.

Moving?

If you are changing your address or would like your name removed from our mailing list please let us know.

Would you like to make a donation?

Tax-deductable donations can be made to the Oregon Flora Project by sending a check made out to the Oregon State University Foundation to Scott Sundberg at the address on this page. Please note on the check that it is for the Oregon Flora Project. Your donations go primarily toward newsletter expenses and student wages.

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Scott Sundberg
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Corvallis, OR 97331-2902

☐ Please check here if you do not wish to have your name listed in our "Thanks" column or on our Internet web site.

☐ Please send the Asteraceae Checklist (include check if appropriate).

☐ Please put me on the *Oregon Flora Newsletter* mailing list.

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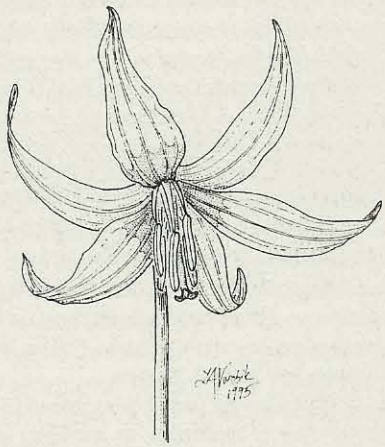
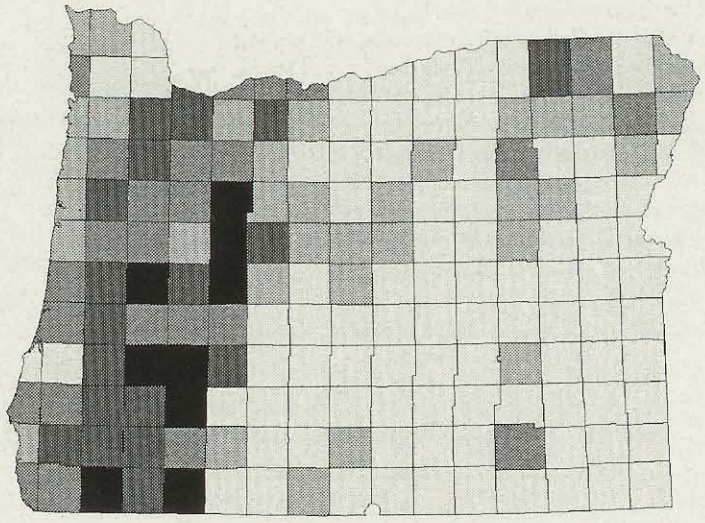


Did you know?

• Northwest collectors John B. Leiberg and Louis F. Henderson (OFN, 1999) were born in the same year, 1853. Both collected in Idaho in the 1890s for USDA botanist Frederick Coville. The two corresponded with each other and exchanged specimens; however, according to notes left by Henderson, they never met.

• In 1896 Leiberg collected a *Collomia* in Barren Valley, Malheur County, which he annotated, "Probably an undescribed species." The specimen eventually found its way to the California Academy of Sciences Herbarium, annotated *C. macrocalyx*. In 1983, Elaine Joyal, then a graduate student at OSU, relocated Lieberg's collection site in Barren Valley and subsequently determined that the plant was indeed an unnamed species to which she gave the name *Collomia renacta*, literally "*Collomia* re-stumbled upon."

• In 1911 Leiberg was living in Leaburg, a village on the McKenzie River east of Eugene. At that time he gave his large and very valuable personal herbarium to the University of Oregon because, as he wrote to Coville, Oregon was a poor state which needed to build up its collection. The Leiberg sheets are now part of the collection at OSU.



Number of species, subspecies and varieties per Atlas block in the Atlas database.

This summarizes data in the Atlas database of plant observations and herbarium specimens as of June, 2000. Hundreds of thousands of additional records will eventually be added from herbarium specimens and other sources. See OFN 5(1) for comparison to January 1999 data.

Jason Alexander assisted with map production.