



OREGON FLORA

Newsletter

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Northwest botanist William Hudson Baker (1911-1985): captivated by isolated floras

by A. R. Kruckeberg and Rhoda M. Love

William Hudson Baker made significant contributions to the knowledge of floras of Oregon and Idaho during the 20th century. Baker was born and raised in Oregon and earned all his college degrees at OSU (then Oregon State College). Although he spent over twenty years at the University of Idaho, he never abandoned his Oregon roots or his interest in the flora of our state. Flora Project records reveal that Baker deposited approximately 2,000 specimens from Oregon in the OSU Herbarium.

William Baker was born in Portland on December 14, 1911, and grew up in The Dalles. His parents were Helen Baker of The Dalles, and William T. Baker, a railroad contractor. The two married in 1910 and set up housekeeping in Portland where William was born a year later. When the boy was approximately four years old, Helen Baker returned to the Dalles and from then on raised him and his younger brother Robert alone. Money was tight; Helen took in lodgers and, while in high school, Bill worked as a church janitor.

The details of Baker's life are limited. From OSU records we know that he graduated from high school in The Dalles and subsequently spent two years at Los Angeles Junior College. He then returned to Oregon to train himself for public school teaching, enrolling at Oregon Normal School (now Western

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Photo: Courtesy of Philip Anderson, Idaho Academy of Science.

William Baker as he appeared in mid-career at the University of Idaho.

Challenge Drive 2006!

by Linda Hardison

Oregon Flora Project Coordinator


Our fundraising campaign for 2006-2007 gets under way with strong support in the form of an exciting challenge of \$25,000! We hope that from October through next January, this handsome donation will be matched dollar-for-dollar to bring the Oregon Flora Project a total of \$50,000! The generous matching funds come from two anonymous supporters as well as the Native Plant Society of Oregon, and the Corvallis and Siskiyou Chapters of NPSO. Their willingness to contribute \$25,000 demonstrates their conviction that OFP's efforts merit significant financial commitment. Won't you join them in supporting the development and maintenance of this important botanical resource?

Your matching dollars ensure that our hard-working team of three staff members and several students will remain employed. Over the past year, their work has focused on deepening the taxonomic foundation and the data resources of our important OFP components. Examples of their recent efforts are:

- Thea Cook, one of our two database managers, has conducted extensive research and quality control to prepare our Checklist information for committee review.
- Our second database manager, Katie Mitchell, has focused on Plant Atlas updates and incorporating almost a dozen sizeable datasets into our Atlas database. This will increase mappable dots for the Atlas to over 400,000.
- Thirty-one fact sheets on Oregon rare plants were prepared by student employee Jennifer Sackinger. These, along with information for another 78 taxa, will be available in a searchable format on the OFP website.

Your financial support at this time will insure that progress continues towards a new *Flora of Oregon*, while simultaneously making available online to the public the results of our recent research. We know that many of you rely on OFP data for accomplishing your work as well as enhancing teaching and other botanical pastimes. We hope that all who enjoy our botanical resources will contribute generously to insure the success and sustainability of the Oregon Flora Project.

The Oregon Flora Project greatly appreciates the many individuals and organizations who financially support our efforts. We join our loyal matching fund donors and challenge you to give generously now.

All contributions are tax-deductible. See "How can I contribute?" on page 13. 

Baker, continued from front page

Oregon University) in Monmouth where he spent four years and probably met his future wife, Molly Ann Cochran. She was a member of a Lane County pioneer family who grew up on a farm north of Eugene. Molly attended the University of Oregon, and then the Normal School at Monmouth, and may have been taking classes there in the fall of 1932 when 21-year-old Bill Baker transferred from Los Angeles.

During 1933 and 1934, Baker concentrated on his education. This was a period of deep economic depression, and he no doubt realized he would soon need to support himself as well as a wife. He took classes at Oregon State College, returning to Monmouth for his practice teaching. He and Molly were married in 1934; he was 23 and she was 21. The following year Bill completed his degree in Education at OSC, and accepted a position with the public schools in Burns, Harney County. He was promoted to Principal in 1939.

We know from transcripts and OSU Herbarium records that during this period William discovered his life's calling. In 1937 he attended summer school at OSC, studying both General Botany and Systematic Botany, no doubt with Professor Helen Gilkey, whom we must assume awakened his interest in the study of plants. Almost at once Baker began to collect specimens throughout Oregon. The Flora Project Atlas database shows us that from 1937 to 1942 he collected in Wasco, Sherman, Wheeler, Gilliam, Jefferson, Klamath, Lane, Lincoln, Douglas, Curry, Benton, and Linn Counties. In 1939 he took summer term botany courses, including Advanced Taxonomy, at the University of Idaho. In 1940 he collected at Diamond Lake with 21-year-old Arthur Cronquist who was then complet-

ing his University of Minnesota doctorate. In 1942 Baker left his administrative position and returned to OSC to work on a Master's Degree in Education with a minor in Biology. Once again under the direction of Helen Gilkey, he wrote his thesis, "Key to the Flora of Fairview Peak for Use in Teaching." (Fairview Peak, located in southeastern Lane County, supports a flora more typical of the Rogue River area to the south.) He successfully defended his thesis in 1942. In his Masters thesis, Baker thanked his wife Molly for her "...painstaking assistance in checking and proof-reading the manuscript and also for assistance in collecting plants on many field trips."

Baker was now 31 years old, and, at this point, he was either drafted or joined the United States Navy as a Lieutenant and saw service stateside as well as in the Pacific until 1944. Bill and Molly's only child, son James W. Baker, was born the following year. Back in Oregon after his military service, Baker returned to OSC and his mentor, Helen Gilkey, to begin work on a doctorate in Botany. OSC Herbarium records indicate that he botanized heavily at Fairview Peak in Lane County and at Iron Mountain in Coos County. (The flora of Iron Mountain is said to be allied to that of California.) During this time he earned advanced science credits and worked as a graduate teaching assistant.

By 1948 Baker was far enough advanced with his PhD thesis to apply for a college teaching appointment. The University of Idaho was looking for a botanist with his qualifications and that year he was hired by their Department of Biological Sciences. He moved his family to Moscow and began work as an Assistant Professor of botany in the spring of 1949. In April he successfully defended his PhD thesis, "A Taxonomic and Ecologic Comparison of the Floras of Iron and Fairview Mountains in Oregon." During his doctorate work, Baker had discovered a new species of knotweed on Fairview Mountain, which he subsequently named *Polygonum cascadenense*. He published the new name in *Madroño* in 1949; the article includes drawings by Helen Gilkey.

Although now living in Idaho, Baker was eager to botanize in his home state; consequently, during the summers of 1949 and 1950, he worked as a Ranger-Naturalist at Crater Lake National Park, taking his family with him to live in the Park. Back in Moscow he wrote to Gilkey, "I have 50 students enrolled in grasses, which is more than last year, ... this with one section of General Forest Botany and the responsibility for the weekly seminar programs round out the teaching load. Then there is the Herbarium and the ten thousand odd plants I collected this past season ..." In 1951 he published "Plants of Fairview Mountain, Calapooya Range, Oregon," in *American Midland Naturalist*. The Bakers continued to spend summers in Oregon at a house owned by Molly's family on the Rogue River near Illahe. (The dwelling was washed away in the winter floods of 1964.)

At Idaho in 1958 Baker became a full professor and founded the Idaho Academy of Science, serving as its first president. Later he became Chairman of Botany, and in 1972, head of the Department of Biological Sciences. Baker's specialties included floristics, plant distributions, flowering plants of Northwest America, weeds, range and wildlife, and food plants of Idaho. He was coauthor of the 1961 book *Wildlife of the Northern Rocky Mountains*. In 1964 he was elected a Fellow of the American Association for the Advancement of Science. Baker is said to have built up the Idaho Herbarium from around 8,000 sheets to more than 50,000 specimens.

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Erythronium oregonum logo and masthead designed by Tanya Harvey.

The Oregon Flora Newsletter is published three times a year by the Oregon Flora Project and the Oregon State University Herbarium. The Editor is Rhoda Love and the Production Assistant is Rena Schlachter.

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Is there a visitor from Chile in our *Plectritis* flora?

by Kenton L. Chambers

I have spent several weeks reviewing the literature and numerous herbarium specimens relating to *Plectritis* (Valerianaceae) for the Oregon Flora Checklist, and my conclusion is that we have only four species of this pesky little genus. These are *P. congesta*, *P. macrocera*, *P. ciliosa*, and *P. brachystemon*. Three taxonomic monographs of *Plectritis* are available (cited below), in addition to the treatments in various West Coast floras and manuals, but none of these agree precisely on a species classification. In this note, I will describe just one of the unsolved problem areas, which is nicely exemplified in Peck's *Manual of the Higher Plants of Oregon* (1961).

The distinctive one-seeded, bi-winged fruits of *Plectritis*, which are derived from an inferior ovary, have long been used to characterize and name species in the genus. Early in the last century, Wilhelm Suksdorf recognized up to 20 species, many of his own description, based on fruit differences. The number was pared down to 11 by Sarah Dyal Nielsen (1949), and finally reduced to just three by Laura-May Dempster (1958) and Dennison Morrey (1959). Corolla characteristics—size, shape, color, and spur length—were emphasized ahead of fruits by the latter two authors. However, neither of them mentions the “Chilean visitor,”

Plectritis samolifolia, cited in the title, above. It is only in Peck's *Manual* that this South American taxon makes its appearance in Oregon. From the key in his book and the numerous specimens in his herbarium to which he gave this name, we now know what Peck had in mind when he welcomed this “visitor” to the state.

Peck's key (pg. 752) first divides the species by corolla size: “Corolla bright rose-color, 5-7 mm long” = *Plectritis congesta*, versus “Corolla pale pink or white, 2-4 mm long” = the remaining four species. The smaller-flowered species are divided by fruits: “Fruit wingless, corolla bilabiate” = *P. samolifolia*, versus “Fruit winged” = three further taxa. (For reference, these are *P. macrocera*, which I recognize by that name, plus *P. aphanoptera* and *P. anomala*, which I lump under *P. brachystemon*. For those interested, my classification is the same as that by Fred Ganders in *The Jepson Manual* [1993], pg. 1084).

Unfortunately, the character “fruits wingless” vs. “fruits winged” is not a species distinction; it is a genetic polymorphism within certain species, especially *Plectritis brachystemon* and *P. congesta*. Figure 1, from Dempster (1958), shows winged and wingless fruits of these species, and a flower of *P. congesta*. Louis Henderson annotated one of his collections at ORE as “a hybrid of *P. congesta* x *P. samolifolia*,” because it had the larger flowers of the former species and the wingless fruits supposedly typical of the latter—but this plant only exemplified genetic variation within *P. congesta*. Both Peck and Henderson evidently put far too much weight, taxonomically, on this minor difference in fruit morphology. More weight should be placed on flower size, which marks a difference in breeding system between the self-pollinating *P. brachystemon* and the largely out-crossing *P. congesta*.

The genetic basis of winged vs. wingless fruits in *Plectritis* was discovered by Fred Ganders, University of British Columbia, and he and his students have published several experimental studies of this pair of related species. Inheritance is by a single pair of genes, with the gene for winged fruits (*W*) dominant over wingless (*w*). Genetically heterozygous (*Ww*) winged-fruit hybrids between pure (homozygous, *WW*) winged and pure (homozygous, *ww*) wingless genotypes show more vigorous growth—are taller, more branched, more floriferous—than either parent.

One experiment compared just the two homozygous forms, *WW* vs. *ww*, in a controlled environment. The former grew better in cool, moist conditions, and the latter was superior in warm, dry conditions (Carey and Ganders, 1980). Evidently there is a chromosome region closely linked with this pair of genes that itself contains other genes affecting the environmental growth responses of these species. The fruit difference is thus a marker for a more basic set of “growth genes,” whose mode of action is unknown. Another big question is: what advantage does it give to the plants to have winged or wingless fruits? That is, under what conditions does natural selection favor one or the other kind of fruit? It should be a lesson to us how much there is still to learn about plant biology, when a simple wildflower can pose so many unanswered questions of genetics, ecology, and evolution.

There does exist in southern South America a species—

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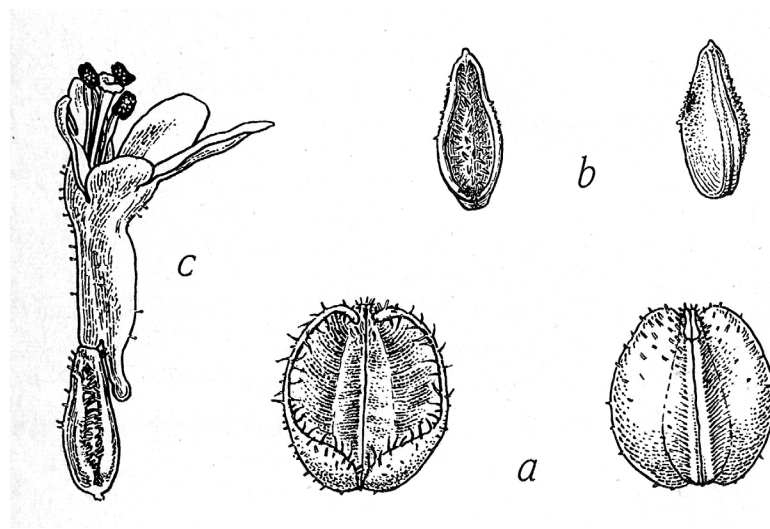
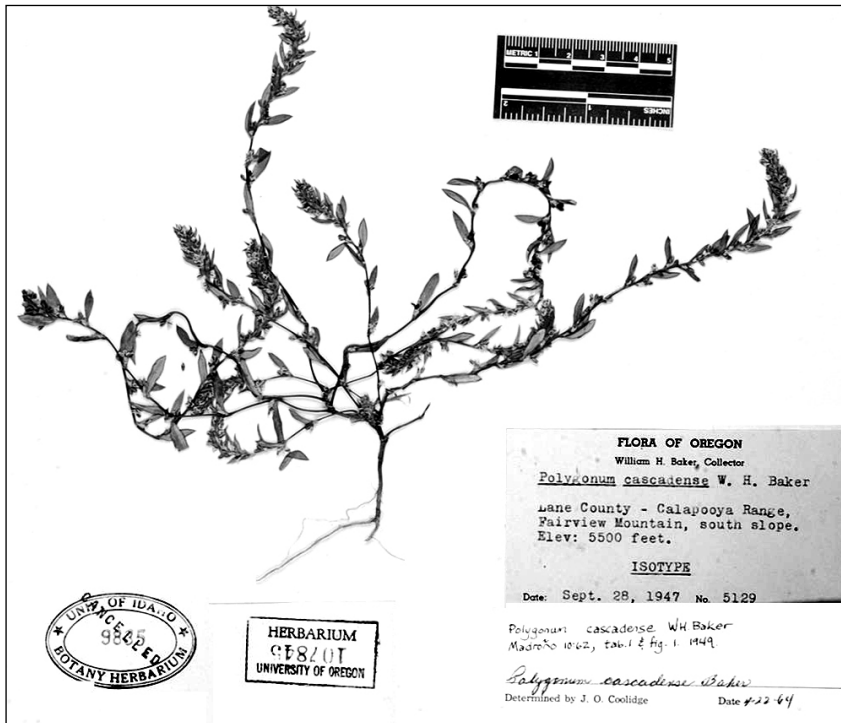


Fig. 1. a. Winged fruits of *Plectritis congesta* or *P. brachystemon*. b. Wingless fruits of *P. congesta* or *P. brachystemon* (“*samolifolia*”). c. Flower of *P. congesta*. Reprinted by permission from Dempster (1958, p. 27), copyright 1958, *The New York Botanical Garden, Bronx, New York*. Illustration reproduced by permission of *The Jepson Herbarium, University of California, Berkeley*. Lengths for scale: fruits in a, 3mm; fruits in b, 2mm; corolla in c, 6mm.



Type specimen of *Polygonum cascadense*. W. H. Baker collected the new species in September 1947 while working on his PhD thesis at OSU (then Oregon State College).

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Sadly, in 1972 at the age of 61, Baker began to show the symptoms of Parkinson's disease. His illness forced him to retire from Idaho, and at this time he and Molly moved to Eugene, purchasing a house in the Cal Young neighborhood. Here, to the best of his ability, Baker continued his botanical pursuits including offering his talents as a botanical consultant. As he gradually became more disabled, he hired an attendant who helped him move about in a wheel chair.

Molly Baker died in 1978 and is buried at Eugene's Gillespie Butte Cemetery amid the graves of her pioneer ancestors. William Baker succumbed to the effects of Parkinson's on November 22, 1985, just short of his 74th birthday, and is buried next to his wife. No obituary or eulogy appeared in a botanical publication as far as is known. In 1986 the Idaho Academy of Science established the William Baker Memorial Award for student presentations at Idaho Academy of Science meetings.

Arthur R. Kruckeberg has written, "Baker was captivated by the floras of isolated mountain ranges in southwestern Oregon. His Masters and PhD theses both reflect this interest. Baker's move back to Oregon upon retirement brought him full circle

to his beginnings. His botanical output over his lifetime was substantial. His thousands of collected specimens are to be found in herbaria throughout the Pacific Northwest." 🌿

Note: Maps of Baker's collecting sites, species, and dates, as well as those of all Oregon collectors with specimens at OSC, can be found at: www.oregonflora.org/oregonplantatlas.html

Plectritis, continued from page 11

Plectritis samolifolia—having small flowers and wingless fruits. Very likely its ancestors arose in western coastal North America, and their fruits were transported to South America by migrating birds. This pattern has been documented over and over again in various herbaceous, usually annual genera that are disjunct between, e.g., Chile and California (Raven 1963). *Plectritis brachystemon* and *P. samolifolia* may be very closely related or even identical, but there is no recent evidence (e.g. DNA studies) for or against this hypothesis as yet. If *P. samolifolia* is truly native in Oregon and not limited to South America, its name, being published earlier, will replace *P. brachystemon* on our species list. 🌿

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Publications of W. H. Baker

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Project News

by Linda Hardison

Oregon Flora Project Coordinator

It has been an interesting, busy, and productive summer for the Oregon Flora Project in Corvallis.

Many users of the Oregon Plant Atlas (www.oregonflora.org/oregonplantatlas.html) discovered that the mapping program was inaccessible for a bit over a month this summer. This was initially the result of upgrades to software and to the computer that hosts the Oregon Plant Atlas. After these upgrades were installed, access was restricted because of new computer security settings. These issues have been resolved, and the Atlas should now remain freely available to the public. We heard from a diverse group of people who missed access to this important resource. The many messages we received illustrate how essential this on-line program has become for Oregon botanists. While we regret the inconvenience, the incident reminds us of the value of the data that the OFP presents, and the importance of sustained funding to keep it available and current (see **Challenge Drive 2006!**, front page).

The Atlas, its database, and the oregonflora.org website are hosted by the Northwest Alliance for Computational Science and Engineering (NACSE). The Oregon Flora Project (OFP) partnered with NACSE on a federal grant to create the Digital Field Guide. The grant's goal of software development has been achieved and the grant has now expired, although we have not yet released the Digital Field Guide as a showcase for OFP data. Work continues to complete this project largely due to the volunteer efforts of our NACSE partner, Sherry Pittam. Sherry's efforts and the *pro bono* contributions of NACSE keep our Field Guide moving forward, the Oregon Plant Atlas available and updated, and our website online and accessible. Thanks, Sherry, for this essential work!

In June, the Emerald Chapter of the Native Plant Society of Oregon offered to match up to \$1,200 in contributions to the Oregon Flora Project. The challenge was met and the Project received 12 donations in response to this call, resulting in a combined income of \$3,132! Thank you to Emerald Chapter and donors for your generosity.

Work continues on our three major projects of the summer—the data upload for the Oregon Plant Atlas, the submittal of proposed Oregon Vascular Plant Checklist changes to committee members for review, and the subsequent

development and public online posting of a working Checklist of all vascular plants known to exist outside of cultivation in our state.

In addition, the OFP and the OSU Herbarium jointly received a small grant from US Department of Agriculture (USDA) to develop a morphology database for the gymnosperms (cone-bearing plants) of the United States. This will ultimately be used as the basis for an online key to all US plants as part of PLANTS, the USDA's botanical information website (<http://plants.usda.gov>). The grant will allow us to complete the gymnosperm section of our Digital Field Guide's multiple entry key. Interestingly, a quarter of United States gymnosperm species occur in Oregon. 🌲

In memoriam

Danna Lytjen and Mildred Thiele

We wish to acknowledge the passing of two women who generously shared their botanical expertise with the Oregon Flora Project. For many years, they both enriched our knowledge and brightened our days as they conveyed their passion for Oregon plants. We all benefit from their many contributions.

Danna Lytjen: *October 11, 1947 – September 18, 2006*

Mildred Perry Thiele: *July 13, 1915 – September 10, 2006*

Thanks

How can I contribute?

Donations to the Oregon Flora Project are a critical part of our operating budget. Your contributions help pay the salaries of our staff and students, as well as all newsletter expenses.

There are two ways to donate to the Oregon Flora Project:

- (1) With a check payable to the Oregon State University Foundation, ATTN: Oregon Flora Project.
- (2) Through the Friends of the Oregon Flora Project, with a check payable to the Native Plant Society of Oregon, attn: OFP.

Mail your check to:
Oregon Flora Project
P.O. Box 402
Corvallis, OR 97331-2902

With your contribution, please let us know if you do *not* wish your name listed in our "Thanks" column, and if you would like to be added to our *Oregon Flora Newsletter* mailing list.

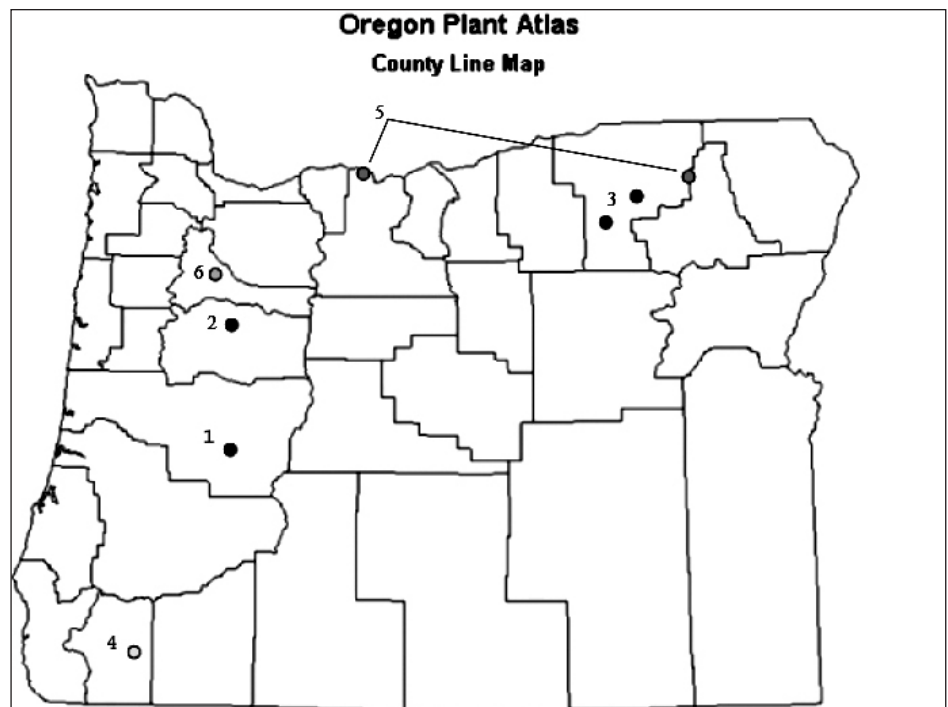


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TIME DATED MAIL

Did you know?

- Fairview Mountain, Lane County, a favorite collecting spot of Bill Baker's, is the type locality for both *Polygonum cascadense* W.H. Baker, and *Poa chambersii* Soreng.
- Baker lived in Burns from 1935 to 1942 but, according to Oregon Flora Project records, did not deposit a single plant specimen from Harney County in the OSC Herbarium.
- On March 21, 1949 Bill Baker wrote to Helen Gilkey from Moscow Idaho that the first wildflower of spring in his area was sagebrush buttercup, *Ranunculus glaber-rimus*.
- Other Bakers have contributed to knowledge of Oregon's flora. J. G. Baker (1834-1920) of Kew Gardens, described *Allium tolmiei* and *Calochortus lyallii*. M.S. Baker (1868-1956), of Santa Rosa, named *Viola cascaden-sis* (now *V. adunca* var. *cascaden-sis*). C. F. Baker (1872-1957), Pomona College, made thousands of collections. H. G. Baker (1920-2001), U. of California, co-authored *Achlys californica* (the tetraploid race of *A. triphylla*).



*Work in preparing the Checklist for review reveals that there are 72 taxa we list as accepted, but have no recorded specimen voucher for a reference. Observations of six of these are mapped above. If you have a specimen of any of these plants (or detailed photos if a sensitive taxon) please let us know! Those interested in the complete list can contact hardisol@science.oregonstate.edu. 1. *Heracleum mantegazzianum*, 2. *Fauria crista-galli*, 3. *Draba cuneifolia* var. *platycarpa*, 4. *Lagurus ovatus*, 5. *Astragalus revertiformis*, 6. *Echinocystis lobata*.*