OREGON FLORA *Newsletter*

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Funding crucial for Flora progress

by Linda Hardison, Project Coordinator

In the decade that the Oregon Flora Project has been in existence, we have experienced amazing progress and growth. Success has come through the combined efforts of our dedicated staff and the volunteerism that reflects the project's commitment to public involvement.

We can point with pride to numerous accomplishments in the past year:

- In March we made the Oregon Plant Atlas available to the public. This online mapping program allows users to create maps showing the location of ~383,000 occurrences of Oregon plants with details of each sighting.
- Our collaboration on a grant with the OSU Herbarium has resulted in the databasing and georeferencing of virtually all Oregon herbarium specimens at Oregon State University. This is an outstanding resource available to all plant enthusiasts as well as anyone interested in the lives of Oregon's collectors.
- Significant improvement has occurred within the Checklist through restructuring the database, streamlining data entry, and adding the capacity to trace the history of each plant name.
- The prototype of our Photo Gallery will provide the public with nearly 6,000 images of live plants and herbarium specimens.
- The latter will be coordinated with the release of our Digital Field Guide in the coming months.

See Funding, page 22

Photo: Rhoda Love

OFP Staff. Left to right: Katie Mitchell, Rena Schlachter, Thea Cook, and Linda Hardison.

Increased access to the OSU Herbarium specimen database

by Aaron Liston

When Microsoft named their database software "Access" they made a prescient choice. This software is central to all of Oregon State University Herbarium's efforts to facilitate public "access" to our collection of plant specimens. This is the software we use to enter, maintain, and archive all our specimen label information. The specimen database now contains over 150,000 records (including non-Oregon specimens), and the process of retrospective data capture for all Oregon specimens is nearly complete. In addition to providing novel insights into the history and composition of the collection (see box, page 24), the database serves as a central data resource for the Oregon Flora Project.

The specimen database is now accessible online in four formats, each with a distinct purpose and audience. The specimen information has been available for several years in the Oregon Vascular Plant Database. Here users can obtain complete label information for over 4,500 Oregon species, subspecies, and varieties, represented by 122,162 specimens. It was last updated in April, 2005. It provides access to the most extensive label and annotation data for each specimen, and is heavily utilized by students, researchers, and others.

Newsletter readers are probably most familiar with the specimen database as used in the Oregon Vascular Plant Atlas. Here the specimen records are combined with observational data to produce distribution maps for most Oregon plant taxa. The same set of specimen records is used in both the online Database and Atlas. These have undergone extensive quality checking before being placed online, including standardization of the primary collector and county names. In addition, the taxonomic nomenclature reflects the

See specimen database, page 24

About that date above the mailing address...

If you check your mailing address, you'll notice we have added a month and year above your name. This is the date the Oregon Flora Project last received a contribution from you. If you have donated recently, thank you *very* much! If it's been a while, it would mean so much to us to have your financial support. Your dollars pay for the production of this newsletter, as well as the basic research behind it. Help keep these newsletters appearing in your mailbox—contribute now!

Funding, continued from front page

In the last year, this progress has occurred with our four staff members funded at an average of less than one-half time. Our current employment level is equivalent to only 1.65 full-time positions, and our monthly operating budget is ~$7,500. Under these stringent circumstances, it is astonishing to consider the volume of work that the OFP staff and volunteers have accomplished in the past twelve months.

However, to maintain even our present minimal level of staffing, we need your help. Without additional funds, the OFP will be unable to provide to the public—*free of charge, as it always has been*—the accurate information that users have come to expect. Maintenance of existing OFP information and the addition, improvement, and curation of botanical data require adequate financing. As we continue to seek funding from granting agencies and Oregon State University, we need the sustained financial support of all of you who have an interest and investment in the success of our Flora Project.

Think now what can be accomplished if we move ***beyond*** our current level of activity with an ***increase*** in our operating budget. We can make additional botanical information accessible to all users by adding details to each facet of the project. With your generous donation:

- We will be able to complete and publish our Checklist of all plant species known to occur in Oregon.
- We will be able to extend the multiple entry key component of our Digital Field Guide so that users may identify plants to family, genus, and species.
- We will be able to add thousands of photographs of wildflowers to our Photo Gallery.
- Most significantly, we will be able to advance on the specific task of completing the *Flora of Oregon*.

As you enjoy this issue of the *Oregon Flora Newsletter*, or perhaps peruse the Atlas mapping program, or consult with one of our staff for a particular nugget of information, think for a moment of the many individuals (including most likely yourself!) whose efforts have made these resources possible. We are extremely grateful for the support of the many Friends of the Oregon Flora Project, and ask for your financial assistance at this time to help us ascend to a new level of activity within the Project and bring about the completion of the new *Flora of Oregon*. **Please give as generously as you are able at this holiday time.**

All contributions are tax-deductible. Checks can be made out either to NPSO or the OSU Foundation; please include "Oregon Flora Project" on the memo line, and mail to: Oregon Flora Project, P.O. Box 402, Corvallis, OR 97339-0402.

The Checklist:
foundation of the new Flora of Oregon
by Linda Hardison

Before we can write the new *Flora of Oregon*, we must first complete the Checklist. Why? Because the job of the Checklist is to provide the framework of scientific names for Oregon's vascular plants; thus it is the foundation of the entire Flora Project.

The overall goal of the Checklist is to identify every vascular plant growing in Oregon that is native, introduced, or has become established in a natural setting. A second goal of the Checklist is to associate each plant with its correct and defining scientific name, and to account for all other names that have ever been associated with that plant. If you have identified a plant under one name in one flora, and have then been unable to find it under that name in a different flora, you are well aware of the problem that the Checklist attempts to address. The inconsistency across multiple references, and the lack of one comprehensive flora for all of Oregon were indeed two of the factors that motivated Scott Sundberg to begin work on the new *Flora of Oregon*. It is clear that completion of the Checklist is an essential step in the preparation of the Flora.

We have designed the electronic component of the Checklist so as to understand clearly the characteristics of a given plant; accordingly, irregardless of its name, we refer to each unique plant in our database as a "concept." This captures the idea of what a particular plant is and accommodates multiple names that may be associated with it. In the Checklist, we assign each botanical concept a unique number. Therefore several scientific names may have the same number, and the unique number lets us know that each of those names refers to the same plant (See back cover).

Another accomplishment has been the development of the Checklist's research component. A research table records

See Checklist, page 25

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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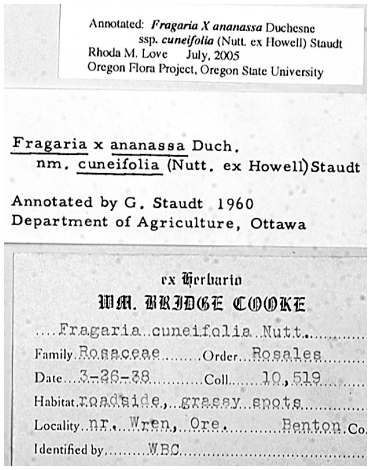
Oregon's strawberries: some genetic complexity

by Rhoda Love

Strawberries have not been overlooked by song writers, poets or taxonomists. John Lennon and Paul McCartney wrote the song, "Strawberry Fields Forever," and Kipling mentioned the fruit in his Victorian-era poem, "An English Garden." Systematists have not ignored strawberries either. Linnaeus gave the genus *Fragaria* its name, from the Latin word for the fruit – *fragum*, and he collaborated with A. N. Duchesne on the earliest treatment of the genus. In our own time, Germany's Günter Staudt has devoted 40 years to the study and classification of the world's strawberries.

It is Staudt's detailed 1999 monograph of the American strawberries that I have followed in my treatment for the Oregon Flora Project. According to this treatment, we have three species and five subspecies of *Fragaria* in Oregon. Older names such as variety *crinita* have been superceded by new combinations, and we need to watch for a recently recognized hybrid entity that may be new to many *Newsletter* readers. For added complexity, Staudt tells us we can expect to find back-crosses between the hybrid and one or both parents, and he also mentions the possibility of genes from cultivated strawberries mixing with our wild taxa.



Annotated: *Fragaria X ananassa* Duchesne ssp. *cuneifolia* (Nutt. ex Howell) Staudt
Rhoda M. Love July, 2005
Oregon Flora Project, Oregon State University

Fragaria x ananassa Duch.
nm. cuneifolia (Nutt. ex Howell) Staudt

Annotated by G. Staudt 1960
Department of Agriculture, Ottawa

ex Herbario
WM. BRIDGE COOKE

Fragaria cuneifolia Nutt.
Family Rosaceae Order Rosales
Date 3-26-38 Coll. 10,519
Habitat roadside, grassy spots
Locality nr. Wren, Ore. Benton Co.
Identified by WBC

Fragaria × ananassa *Duch. ssp.* cuneifolia (Nutt. ex Howell) Staudt. *This is the putative hybrid between* F. chiloensis *and* F. virginiana. *It was collected by W. B. Cook, near Wren, Oregon in 1938.*

Starting with the familiar Oregon species, our old friend mountain strawberry retains the name *Fragaria virginiana*, however Staudt places the Oregon plants in subspecies *platypetala*. Other subspecies of *F. virginiana* occur elsewhere in North America. *F. virginiana* subspecies *platypetala* grows in the Oregon Cascades and westward and also in northeast Oregon. We know it by the terminal leaf tooth which is usually shorter than the adjacent teeth. The leaves are often bluish-green. Mountain strawberry is octoploid with 2n = 56.

Another old strawberry friend is *Fragaria vesca*, woods strawberry. Most *F. vesca* in Oregon belong to subspecies *bracteata*. Staudt has submerged Hitchcock's variety *crinita* here, however he recognizes another subspecies, *F. vesca* ssp. *californica*, in California which just gets over the border into Curry County. Woods strawberry generally has the terminal leaf tooth longer than the lateral teeth; leaf color is bright green. *F. vesca* is diploid with 2n =14. It is sympatric with *F. virginiana* in many parts of Oregon but is not known to hybridize with the latter, no doubt due to the difference in chromosome number.

Our much-loved coast strawberry or beach strawberry, *Fragaria chiloensis*, keeps its familiar name, but Staudt recognizes two subspecies which he separates on the basis of the stem hairs. My simple Key to Oregon Strawberries in this issue indicates that subspecies *lucida* has appressed-ascending hairs, while subspecies *pacifica* has hairs which are dense and spreading. Staudt's map shows the subspecies interspersed along the Oregon coast. My studies of OSC and WILLU herbarium sheets indicate that the differences may not be as clear cut as the key implies; however, I am following Staudt's treatment at this time. Beach strawberry is octoploid with 2n = 56.

The major strawberry surprise is that Staudt recognizes a natural hybrid between *F. chiloensis* and *F. virginiana* for our state. Recall that both beach strawberry and mountain strawberry have 56 chromosomes. The *F. chiloensis* × *F. virginiana* entity was discovered early in Oregon history by Thomas Nuttall near the mouth of the Columbia River and has at times been known as *F. cuneifolia*. Now it is called *Fragaria* × *ananassa* ssp. *cuneifolia*. Interestingly, the *chiloensis* × *virginiana* combination is also that of the cultivated strawberry, *Fragaria* × *ananassa* ssp. *ananassa*, grown on farms and in gardens.

Alert readers will immediately realize that since strawberries are cultivated throughout much of Oregon and no doubt escape rather regularly, we may have both "wild" and "tame" hybrid individuals existing in various places. In addition, there are apparently no genetic barriers preventing the putative hybrids from back-crossing with either *chiloensis* or *virginiana*. In other words, one may encounter strawberries with a mixture of genes from either parent in almost any location where parents and hybrids coexist. Staudt includes a nice discussion of this situation in his 1999 monograph which is well worth reading by anyone who has been puzzled by the intermediate appearance of some of our plants.

One need not be a poet, songwriter or professional taxonomist to appreciate Oregon's Fragarias. From seashore to fields, woods, and mountains our strawberries brighten the seasons with their pretty leaves, cheery flowers and jewel-like fruits. The taxonomic complexity of the *chiloensis-virginiana* group simply adds a soupçon of spice to the mix.

Reference: Staudt, Günter. 1999. Systematics and geographic distribution of the American strawberries. *University of California Publications in Botany*. Vol. 81. UC Press, Berkeley.

Specimen database, continued from front page

draft Oregon Flora Checklist. Several thousand specimens bear names that are now considered synonyms of other taxa in the checklist. These specimens appear online under the checklist name, but would be found in the herbarium under the original name. A "virtual annotation" alerts the user to this fact.

Two new access points to the OSU Herbarium specimen database have been introduced this fall. The Global Biodiversity Information Facility (GBIF) is an international effort aimed at increasing access to primary data on all organisms. GBIF does not maintain or curate data, but rather serves as a portal to 142 institutions in 39 countries. Over 70 million records (specimens and observations) are currently available, and the number of data providers and records is constantly growing. The key to GBIF is that each data provider posts their data in a standardized, relatively streamlined format. This allows for efficient searching across separate databases, and provides a single entry point for access to numerous information sources. However, there are some aspects of GBIF that limit its usefulness. First, the standardized format does not accommodate all types of information. For example, the annotation history of specimens is not available. Second, GBIF currently supports only searches based on the scientific or common name of a plant. Thus one cannot query the database for all specimens from a specific county or collector. Finally, although GBIF does utilize a nomenclatural framework, it is not as comprehensive, nor well-researched for Oregon plants, as the draft Checklist used in the Oregon Atlas and Specimen databases. Although the number of records provided by the OSU Herbarium represents only 0.2% of those available on GBIF, our data can have a dramatic impact for some taxa. For example, prior to the OSU Herbarium data, there were only four records for the Oregon endemic genus *Kalmiopsis*; now there are 31!

The most significant specimens in the OSU Herbarium are the types. These are the specimens upon which the names of new taxa are based. Valid description of a new taxon requires the designation of a type specimen. If there is ever any doubt about the application of a name, the type specimen and the original description must be consulted. Type specimens in the OSU Herbarium have been described in dozens of different journals published over the past 125 years. In collaboration with the OSU Valley Library, we have placed images of 1210 type specimens of Oregon plants, together with copies of their original descriptions, in the Digital Collections of the library. Several other herbaria have placed images of their type specimens online, and many libraries have made botanical literature available on the web. However, this is the first example, as far as we are aware, of a single site that combines the two resources, both photos and descriptions. The result is a unique research resource for taxonomists studying the flora of Oregon and the Pacific Northwest. It also allows the general public to browse these historic specimens and read the accompanying descriptions. These bring a new dimension to the specimens, and provide an opportunity for enhanced appreciation of Oregon's plant diversity. Four thousand additional photos of OSU herbarium sheets will soon be available to the public electronically as part of the Oregon Flora Project Photo Gallery.

The increased access to the OSU Herbarium specimens would not be possible without the exceptional efforts of several people. Scott Sundberg of the Flora Project was co-author of a successful grant proposal which funded much of the data entry and Flora Project labor provided a head start to the entire endeavor. Elize Stander and Clif Johnson contributed their database and computing expertise to the placement of our data on GBIF. Valley Library staff members Michael Boock, May Chau, Terry Reese and Ryan Wick were central to the types project, and students Diana Wageman and Philip Vue compiled the literature and photographed the specimens, respectively. Data managers Thea Cook and Katie Mitchell were pivotal to both efforts. Links to all of the above resources can be found at: *oregonstate.edu/dept/botany/herbarium/db.php*

Specimen database discoveries in the OSU Herbarium

- Oldest Oregon specimen: *Montia parvifolia*, collected by Elihu Hall in 1871. This specimen was received from the Smithsonian Institution in the 1920s (based on the accession number). It is the only specimen in our herbarium collected by this botanical pioneer, for whom *Scoliopus hallii*, *Viola hallii* and several other species were named.
- Most collected species: *Mimulus guttatus* with 453 Oregon specimens! *Delphinium nuttallianum* (342), *Collinsia parviflora* (342) and *Lupinus arbustus* (335) are distant runners up.
- The five most prolific collectors: Morton Peck (20,652 specimens), Louis Henderson (10,402), Georgia Mason (4,445), Lilla Leach (4,122), and Leroy Detling (3,837). Morton Peck was a Willamette University professor, while the other four were associated with the University of Oregon. The most prolific Oregon State University collector is the current curator, Richard Halse (3,664 specimens).
- The most productive year: 1927 with 5,849 specimens. By coincidence, Peck, Henderson & Leach all collected more specimens that year than any other, over a thousand each!
- The two persons who have identified the most specimens: Henrietta Chambers (32,009) and Kenton Chambers (29,035). Most of this tremendous contribution has been as volunteers for the Oregon Flora Project.
- Most collected county: Lane with 12,714 specimens.
- Least collected county: Columbia with 353 specimens.

Key to Oregon Strawberries

We have 5 taxa of wild strawberries in Oregon plus one hybrid taxon which is intermediate between its putative parents.

1. Leaves noticeably thick and coriaceous, strongly reticulate-veiny beneath; strictly coastal…….....*Fragaria chiloensis*
   2. Hairs on stem appressed-ascending …….....ssp. *lucida*
   2. Hairs on stems dense and spreading …….....ssp. *pacifica*
1. Leaves generally thinner, not restricted to the coast
   3. Terminal leaf tooth usually shorter than lateral teeth
      4. Leaves thin, green to bluish-green, Oregon Cascades and westward, also in Blue and Wallowa mountains.....
      .....F*ragaria virginiana* ssp. *platypetala*
      4. Leaves somewhat leathery; hybrids intermediate between *F. chiloensis* and *F. virginiana*; to be expected where parental species are sympatric……
      ….....*Fragaria* × *ananassa* ssp. *cuneifolia*
   3. Terminal leaf tooth usually longer than lateral teeth ……
   …….....*Fragaria vesca*
      5. Leaflets ovate or obovate; common in western Oregon, Wallowa and Blue Mountains ….....*ssp. bracteata*
      5. Leaflets approximately round; extreme southwest Oregon (Curry County)……...ssp. *californica*

Fragaria chiloensis *ssp.* pacifica. *Illustration by Rena Schlachter, OFP Illustrations Editor.*

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; and **(2)** through the Friends of the Oregon Flora Project, with a check payable to the Native Plant Society of Oregon, attn: OFP.

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.

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

Checklist, continued from page 22

published references to a checklist name, and indicates discrepancies between the OFP checklist entry and the data found in a given reference. We are beginning with the nine basic floras and field guides, such as Peck and Hitchcock, that cover portions of Oregon, and we will eventually include journal articles and monographs. This information is extremely helpful to Checklist and Flora contributors, as it puts at their fingertips comparative information which can assist in their nomenclatural decision-making. This valuable cross-reference will also be available to the general public when the Draft Checklist is released in Spring 2006.

The Oregon Flora Checklist currently contains 10,251 plant names at the species, subspecies, or varietal level. Each plant name is assigned a single nomenclatural status: either accepted, synonym, evaluate, or excluded. It is up to the checklist author to decide which status he or she will attribute to each name. As suggested by the category 'evaluate,' further study of specimens or the literature may be needed to make a final decision on a proposed name.

True to the grassroots nature of the Oregon Flora Project, it is a group of skilled volunteers who do the research and decision-making for each Checklist treatment. The 18 members of the Checklist Advisory Board and the Checklist Project Leaders (see pg. 22) are overseeing the process, and many of these individuals have contributed numerous treatments. Each author is responsible for preparing the treatment for an entire genus; the 972 genera of Oregon plants have been distributed to over 40 authors for completion. One of our most prolific contributors of Checklist manuscripts is Advisory Board member Henny Chambers; thus far she has prepared treatments for 248 genera, from *Ajuga* to *Zizia*. The Checklist has benefited from the expertise of botanists around the state and beyond—for example, Clifford Schmidt of Salem prepared the treatment of *Ceanothus*, and Dr. Jim Reveal of Montrose, Colorado has submitted his work on the buckwheat genus *Eriogonum*. We give hearty thanks to all the Checklist contributors who are moving us ever closer to our final goal, the new *Flora of Oregon*.

Thanks

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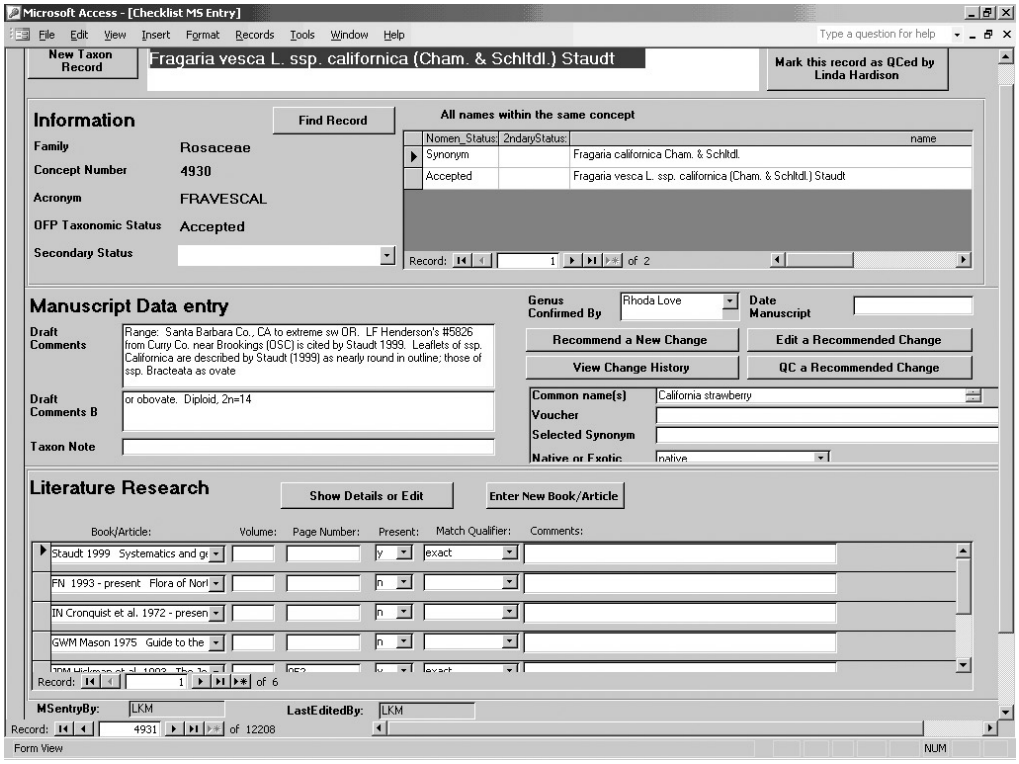
Did you know?

France's Antoine Duchesne (1747-1827) gave the cultivated strawberry its present name *Fragaria ananassa,* leaving us to wonder about the meaning of the specific epithet which is something of a tongue-twister. Reference books tell us:

- The word *ananas* is French for "pineapple."
- The word *anassa* is Greek for "queen."

Putting these together as Duchesne may have done in the word *ananassa* might have been his playful attempt to describe the strawberry as fruit fit for a queen.

(We would be glad to hear other interpretations.)



This view from the checklist database illustrates many of the categories of data gathered for each taxon (see article on page 22).