OREGON FLORA *Newsletter*

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Jennifer Sackinger, OFP employee

by Linda Hardison

Jennifer Sackinger began working for the Oregon Flora Project in the spring of 2006 in response to an ad seeking help to produce rare plant fact sheets. At the time, she was a post-baccalaureate student at OSU taking a horticulture class.

Jennifer grew up in Ohio, the only girl among four brothers. She attended Ohio State University, earning a degree in geology in 1989. The summer after graduating, she traveled to Oregon to attend a brother's wedding in Grants Pass. Finding Oregon a pleasant place, she decided to stay and look for work.

The forests and landscapes that enticed Jennifer to stay in Oregon also fed her desire to learn more about them. After working in Salem for about half a year, she decided to return to college, this time to study fisheries

See Jennifer Sackinger, page 14

Photo: Doug Sackinger

Jennifer Sackinger with her thoroughbred Nick.

Please give generously to your Oregon Flora Project

by Linda Hardison, Project Coordinator

As the end of the year approaches, we are asking for your generous financial support of the Oregon Flora Project. With approximately one-half of our operating budget derived from individual donations, success of our annual fundraising campaign is crucial for progress toward the publication of our much-anticipated new *Flora of Oregon*.

Over the past year, we have received grant funds to support two important projects. The first will finance development of a morphology database for the Oregon grasses (Poaceae). This will result in a character set for each grass taxon and the ability to identify grasses using our online, multiple-entry key. The second grant is funding the development of databases and data-handling protocols for floristic quality analyses based on existing lists of Michigan wetland species. This project capitalizes on our own data management expertise, and positions us for developing a similar project with Oregon taxa.

Recently submitted grant proposals include OFP collaborations with a University of Oregon lab studying the impact of climate change on endemic plant distributions, and with The Nature Conservancy to provide information about invasive and potentially invasive species. These grant funds are helpful and appreciated, but they are far from adequate to support all the present activities of the Oregon Flora Project.

In addition to the activities above, our accomplishments this year have occurred in two fronts: increasing the ease with which the public can access Oregon Flora Project information, and deepening the taxonomic framework of our data. The online Atlas saw significant improvements in public usefulness as we completed an upload of new information to the Atlas database, resulting in a 20% increase in the number of mappable records to more than 493,000. The Atlas now reflects the nomenclature in our proposed Checklist, incorporating the most recent taxonomic research and introducing a number of changes to plant names.

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Jennifer Sackinger, continued from front page

and wildlife as well as botany. She moved to Corvallis and enrolled in OSU. One of her first classes here was plant taxonomy, taught by Dr. Kenton Chambers. Seeking opportunities to be out in the field, Jennifer took a summer job with the US Forest Service as a stream survey technician. This led to additional forestry-oriented jobs in the Tillamook and Mapleton Ranger Districts. "I enjoy working outdoors," Jennifer says, "and when I was routinely in the field, I developed a greater interest in the local plants and the ecological framework for the work I was doing."

In 1996, Jennifer began work at Dynamac, an environmental consulting firm that holds many contracts with the Environmental Protection Agency facility based in Corvallis. Her first work there was on a riparian monitoring project with sites throughout western Oregon. She later became the logistics coordinator for the Environmental Monitoring Assessment Program. This was a five-year project covering stream and river surveys across twelve states. After working there for nearly a decade, Jennifer became a casualty of company layoffs in 2006.

Jennifer's expertise in organizing and synthesizing data from many sources has been a valuable addition to our Flora Project team. As a part-time employee, she produced forty of the rare plant fact sheets that are part of our online Rare Plant Guide (*www.oregonflora.org/rareplants/index.php*). She then worked on a project compiling species lists for developing wetland assessment tools. Jennifer has also accomplished the formidable task of preparing images for online release through the Oregon Flora Project's Photo Gallery. This includes cropping and editing over 2,000 herbarium specimen images as well as hundreds of field photos!

When not busy contributing her efforts to the Flora Project, Jennifer can often be found at a stable west of campus, riding her thoroughbred horse, Nick. An avowed animal lover, Jennifer has owned and cared for two horses, and shares her home with a dog and cat—as well as her husband Doug. She and Doug also do period-appropriate restoration of their 1919 house.

Working for the Oregon Flora Project has been a good experience, Jennifer says. "I enjoy the people and the work I have been doing, and I appreciate the flexibility in my schedule. Getting to know the plants of our region is interesting to me, and I like being in a learning environment."

Thank you, Jennifer, for being a valued part of the Oregon Flora Project!

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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Georgia Mason (1910-2007)

by Rhoda Love

We are sad to report that Oregon botanist Georgia Mason died in Eugene-Springfield Oregon on October 8, 2007 at the age of 97.

Ms. Mason played an important role in Oregon botany. She was the Curator of the University of Oregon Herbarium in Eugene from 1969 to 1976. (The Herbarium was later transferred to OSU.) Mason earned a BA degree from Montclair State University in New Jersey in 1941, and an MS from Oregon State University in 1960. She was an expert on the flora of the Wallowa Mountains, and was also interested in wetland plants and weedy invasives of the Willamette Valley. After her retirement from the UO, she continued to live in Eugene and led many educational botany walks in the area. Otherwise she gardened and lived a quiet life with her beloved dogs. She has 4,546 herbarium sheets at the OSU Herbarium (see map, back page). In 1979 she established the Georgia Mason OSU Herbarium Fund with an endowment that supports student employment at the Herbarium in Corvallis.

Georgia Mason published two well-respected books: *Guide to the Plants of the Wallowa Mountains of Northeastern Oregon* (UO Museum of Natural History, 1975), and *Plants of Wet to Moist Habitats in and Around Eugene Oregon* (self-published, 1982).

Carl Linnaeus: plant geneticist

by Kenton L. Chambers

Satureja capitulis terminalibus, foliis lanceolatis (Linnaeus 1753). Is that enough to discourage you from reading the rest of this article? I hope not, because I have an interesting story to tell about some early glimmerings of plant genetics by the great taxonomist, Carl Linnaeus. I began with a short Latin description, published by Linnaeus for the plant he named *Satureja virginiana*. Today we call this plant *Pycnanthemum virginianum*, a common herbaceous species of forest edges, roadsides, and abandoned pastures in the eastern United States. *Pycnanthemum*, which is in the Lamiaceae (mint family), is the subject of a taxonomic treatment that my wife, Henrietta, and I are preparing for a future volume of *Flora of North America*. Hence our interest in the early literature on the genus, including the species described by Linnaeus in his monumental work, *Species Plantarum*. The only western species, *P. californicum*, doesn't quite reach Oregon but is widespread at scattered sites southward from the Klamath Range to the mountains of southern California.

Wedding portrait of Carl Linnaeus painted by J. H. Scheffel in 1739

Specimen of Satureja virginiana *(*Pycnanthemum virginianum*) in the Linnean Herbarium, studied by Linnaeus for his description of its nonfunctional anthers. Note that none of the corollas have projecting stamens.*

Linnaeus' brief description, above, translated as "*Satureja* heads terminal, leaves lanceolate," is accurate for *Pycnanthemum virginianum*. However, it is inadequate to distinguish this species from *P. tenuifolium*, another common plant of similar habitats, which is often sympatric (co-occurs) with *P. virginianum*. Although these two are genetically distinct, their similar morphology caused them to be confused by 18th century botanists writing on the flora of the Atlantic Coast region. Unfortunately, taxonomists began to apply Linnaeus' species name "*virginiana*" (which he later changed to "*virginica*") to the species we now call *P. tenuifolium*. It wasn't until 1908 that this error in the use of "*virginiana*" was corrected (Robinson & Fernald 1908).

But the question arises, if the two species were confused with each other by botanists of Linnaeus' time, how can we be sure which was the one he intended to describe as *Satureja virginiana*? Let's look further at his *Species Plantarum* treatment of 1753. After citing five earlier authors' phrase-descriptions, and stating "*Habitat in Virginia*," Linnaeus wrote the following sentence:

Stamina in fundo corollae latent Antheris minimis effoetis, ut fere posset genere proprio tradi.

I should have warned you earlier that there was going to be some Latin in this! But I can translate this for you; it says: "Stamens lie hidden in base of corolla Anthers very small exhausted, such as hardly ever can bequeath proper offspring." Only if we know certain details about the genetics of *P. virginianum* does this unusual statement take on special meaning—hence the title of this article.

What Linnaeus was describing are the abortive, non-functional stamens that often occur in *P. virginianum*, as well as in three other species of *Pycnanthemum* in eastern North America. They have tiny filaments, and their anthers are brown and shrunken, lacking pollen. Hence, as well stated by Linnaeus, they "hardly ever can bequeath proper offspring." In Linnaeus' sexual system of plant classification, the reproductive parts of flowers took on prime importance. Hence male organs that "could not perform their normal function" would instantly have caught his attention and be worth remarking on. The website of the Linnaean Society of London (*http://www.linnean-online.org/*) has available excellent images of all the plants in Linnaeus' private herbarium, and the accompanying figure shows the exact specimen that he must have consulted when writing the note about the "exhausted" anthers. None of the flowers show exserted stamens, as are found in all the sexual species of the genus.

See Linnaeus, page 16

Linnaeus, *continued from page 15*

The final piece to this puzzle was the discovery (Chambers 1961) that *P. virginianum* with abortive anthers can make perfectly normal seeds without pollination, by the process of apomixis. A diploid cell in the vicinity of the female gametophyte, we believe, takes over the function of the egg cell and develops into an embryo spontaneously, without the need for fertilization by a pollen nucleus. Meanwhile, nutritive endosperm tissue forms inside the seed by cell divisions within the gametophyte. The exact details in *Pycnanthemum* have not been worked out cytologically, but the process is well known in other angiosperm genera (an example in *Amelanchier* was described by Rhoda Love in the last *OFN* issue). American plants that Linnaeus was examining when he wrote his 1753 book must have come from the colonies that would later form the 13 original American states, extending from Georgia north to New England. In this region, *P. virginianum* is almost entirely apomictic, lacking functional anthers, whereas in the same area, *P. tenuifolium* mostly has normal, pollen-bearing anthers and reproduces sexually. (Farther west, in Ohio and Tennessee, are found sexual races of *P. virginianum* and apomictic ones of *P. tenuifolium*, but that's another story).

The conclusion, therefore, is that Linnaeus must indeed have intended the apomictic *Pycnanthemum virginianum* when he described his species *Satureja virginiana*. He didn't provide a separate name for the large-anthered, sexual *P. tenuifolium*, although we suspect he had seen specimens of it earlier, for example when he described what he called "*Clinopodium foliis linearibus acuminatis, capitulis terminalibus*" in *Hortus Cliffortianus* (1737). Even the great Linnaeus could make mistakes, and he may have thought that the "linear-leaved" plant he had seen in George Clifford's garden in Holland in 1737 was the same as the "lanceolate-leaved" plant in his hands in Sweden in 1753, with its "small, exhausted stamens." Although he didn't understand the biological significance of such stamens, he deserves credit for calling attention to them. Even more credit, I think, goes to Henrietta Chambers, who in 1961 was the first botanist to understand their meaning for the apomictic breeding system in *Pycnanthemum*.

References

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Project News

by Linda Hardison

Work on the grasses of Oregon has been a recent focus of the Oregon Flora Project. With funding provided by a grant from the OSU Research Office, staff member Katie Mitchell has been leading the work to create a list of the morphological characters of grasses, and designating each character state for all of Oregon's 403 known grass taxa. This morphology database will be the source of information for our online multiple entry key. Completion of Family Poaceae will result in a unit that can be immediately utilized by the public while the remainder of Oregon's taxa continue to be researched. We thank David Bogler of Missouri Botanical Garden for sharing his initial list of grass characters, and Richard Halse and Rob Kimmich for assistance in refining our list.

As the preparation of the Checklist enters its final stage, we continue to add detail to this aspect of the Flora. For example, an analysis of Oregon's non-native plants has led data manager Thea Cook to assign a specific "exotic status" to each taxon. With categories such as "escaping cultivation," "vegetatively spread," and "ballast species," we hope to better define and track these elements of our flora. With the release of the full Checklist in the coming year, we will include appendices that note which plants have not been recently collected, and those which display narrow distributions. We hope these designations will serve as a catalyst for further study of these taxa. Our work with the ever-developing Checklist makes abundantly clear what a wealth of information we have assembled, and the opportunities for research that will be possible through the use of this new resource.

Several of the Flora Project activities in progress have received significant input from our much-valued volunteers. Gene Newcomb has completed an important project in which he compared the plant names in one of our key references, Hitchcock's *Flora of the Pacific Northwest*, to those currently used by the Flora Project, and entered this information in an accessible research table. Gene has also been cataloging a large collection of plant images from *another* volunteer/donor, Bruce Newhouse of Eugene. The Photo Gallery continues to move closer to its public release with the work of Jeff Cook, who has been developing software that will make available on the Oregon Flora Project website our many photographs of Oregon plants as another "stand alone" feature such as our present Atlas and upcoming Checklist.

Our newsletters, with color images, are posted on our website at *www.oregonflora.org/newsletter.php*. If you would like to receive an email notification of each new issue and **stop** delivery of the paper copy, please send us a message at *ofpflora@oregonflora.org* with "Newsletter" in the subject line.

Please Give, *continued from front page*

Our website, www.oregonflora.org, has undergone a complete renovation, making it more attractive, informative, and easier to navigate. We also launched the full-color Rare Plant Guide, a searchable interface to more than 100 fact sheets on Oregon's rare plants.

Our second area of important progress is within the Oregon Plant Checklist itself. The final document, the work of dozens of botanists over 13 years, is nearly ready to submit to Checklist committee members for review. This compendium of Oregon plants captures the details and rationale of the nomenclatural changes within Oregon taxa. The preparation of the Checklist has also raised issues about how we recognize exotics as well as plants not officially seen or collected in our state for decades. In response, we are preparing additional features and analyses of these topics and will soon share these with the public.

What will your dollars support in the coming year? First and foremost will be the online publication of the annotated Checklist of all plants known to exist in our state with their presently accepted names. Also important will be the release of a searchable Photo Gallery featuring thousands of full-color images of herbarium specimens and plants in the field. The Checklist is the foundation of the Oregon Flora Project, and a published, working version marks a significant achievement from which we can begin the writing of the new *Flora of Oregon*. Our development of the morphology database also supports the projected new *Flora*, as we are able to apply our information both to create an online, multiple entry key as well as provide the data as a resource to authors of floristic treatments.

Another effort your financial support will fund is the creation of a support system for the writing of the *Flora of Oregon* in book form. While our current activities of maintaining and expanding the Atlas and other features must continue, we are also poised to begin the information gathering necessary for writing our *Flora*. The creation of a financially sound infrastructure that will successfully support this endeavor is the surest way to guarantee success of this long-anticipated undertaking.

How can you help? There are two ways in which we challenge you to demonstrate your support of the Oregon Flora Project: 1) Oregon citizens will receive a "kicker" from the surplus tax revenue generated in the last biennium. We challenge you to donate your kicker check to the OFP as a demonstration of your belief that state funds should support this statewide project. 2) Assign a dollar amount to the value you place on Oregon's botanical resources, its biodiversity, and its unique ecosystems. Donate this amount to the only organization that is providing scientifically based information about Oregon plants to the public, to policy makers, and to government agencies—our Oregon Flora Project!

Please give generously—our fundraising campaign runs from November through January 2008. This provides an opportunity to contribute your tax-deductible gifts in two tax years. Checks can be made out to the Native Plant Society of Oregon *or* to the OSU Foundation; please include "Oregon Flora Project" on the memo line. In both cases, all funds go to the OFP. Mail them to:

Friends of the Oregon Flora Project
P.O. Box 402
Corvallis, OR 97339-0402

Thank you in advance for your generous support.

Thanks

We thank the following for their recent generous financial support of the Oregon Flora Project:

(names deleted for internet privacy)

We also thank for their recent donation of computer equipment, which provided a much-needed technological upgrade.

Gifts were given in memory of Mary Carlson, Joan Fosback, Georgia Mason, and Scott Sundberg.

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) Through the Friends of the Oregon Flora Project, with a check payable to the Native Plant Society of Oregon, ATTN: OFP *(preferred method)*

(2) With a check payable to the Oregon State University Foundation, ATTN: Oregon Flora Project.

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* electronic or paper mailing list.

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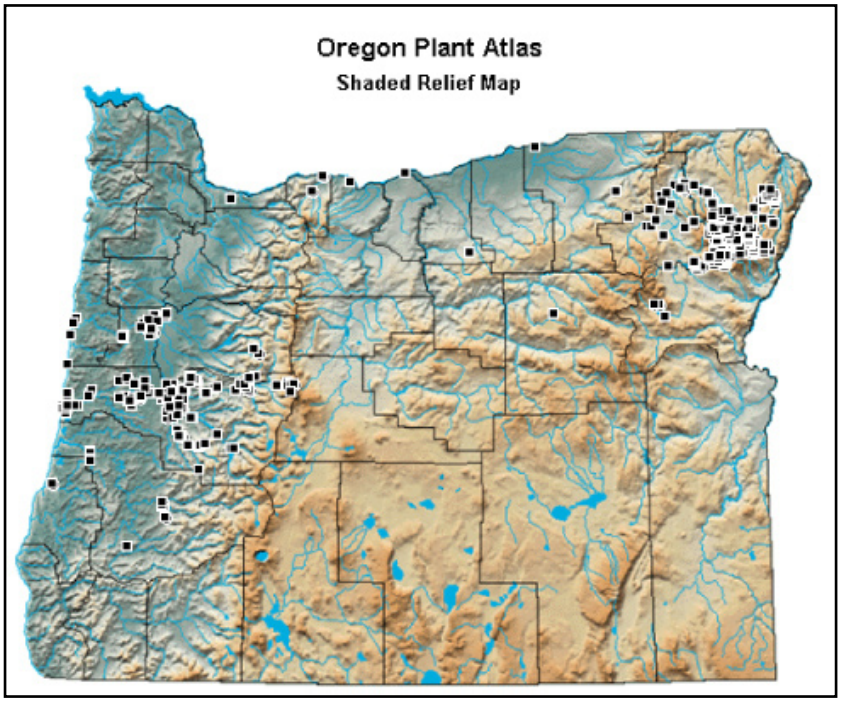
TIME DATED MAIL

Did you know?

- The work of the Oregon Flora Project benefits a great many individuals, businesses, and institutions, and is accomplished on a very constrained budget.
- We have employed 111 undergraduate students in the 13 years of the project.
- We have evaluated 1,677 possible error reports provided by Oregon Plant Atlas users; this has resulted in changes to 1,253 records.
- Of the almost 1,200 individuals and small societies on our Friends list, 68% have donated to the OFP. From these, more than half have made more than one donation, and almost 100 have been regular donors.

You can help with your financial support of the OFP—see page 17 for details.



The OSU Herbarium collections of Georgia Mason, reflecting her intense research in the Wallowas and the Willamette Valley. Ms. Mason collected over 4,500 specimens spanning 22 years from 1959-1981. From the Oregon Plant Atlas (*www.oregonflora.org/atlas.php*).