

First Washington Botanical Symposium
March 15, 2017

1:45 Exploring Washington's Peatland Diversity. Environmental Gradients and Associated Vegetation Patterns

Joe Rocchio, Senior Vegetation Ecologist, Washington DNR, Natural Heritage Program

Peatlands are wetlands with a substrate composed of relatively undecomposed organic material that accumulates due to saturated and/or anoxic soil conditions. Peat origin ranges from peat mosses (*Sphagnum* spp.), brown mosses (Amblystegiaceae family), sedges (Cyperaceae family), or woody species. Environmental gradients associated with water chemistry, hydrology, topography, elevation, and phytogeography result in a wide-range of peatland vegetation types. Understanding this variation is necessary to account for the full suite of ecological services and biodiversity supported by peatlands. This presentation will explore Washington's peatland diversity within the context of an expert-based, supervised classification of Washington's peatlands. The classification is based on the U.S. National Vegetation Classification framework. From 2011 to 2015, vegetation data was collected from 363 plots. Electrical conductivity (EC) and pH were collected from 97 plots. Peatland vegetation showed distinct patterns across the pH and EC gradients and 16 different peatland types were identified. Rather than focusing on simplified concepts like 'bog' and 'fen', the classification presented here provides a more adequate framework for communicating biodiversity values, distribution patterns, threats, and management needs of Washington's diverse peatland resource.

2:15 BREAK

2:45 Climate Change Impacts on Pacific Northwest Plant Communities

Janneke HilleRisLambers, University of Washington Department of Biology

Predicting how climate change will influence the plants and animals with which we share our planet is one of the most challenging problems ecologists face. Climate is often assumed to be the dominant force governing species distributions, which leads to the prediction that all species will simply shift their ranges poleward and upward as the planet warms. Locally, plant communities should therefore lose cold-adapted species, while warm-adapted species increase in abundance. However, species differences in climate sensitivity, non-climatic range boundary determinants and unprecedented rates of climate change paired with demographic inertia and dispersal limitation will add significant complexity to these simple predictions, as will many other factors. A major research goal of the HilleRisLambers lab is to explore these complexities with observations, experiments and modeling. In this talk, I will present some of our most recent work disentangling the many processes that will influence how coniferous forests and wildflower meadows at Mt. Rainier National Park and beyond will respond to climate change.

3:15 Filling in the Gaps: Contributions of Citizen Science to Botanical Inventory

Wendy Gibble, Rare Care Program Manager

Over 320 native plant species found in Washington State are considered rare. Because of their very nature, these plants are infrequently encountered and often not recognized when they come underfoot. Survey and monitoring by public agencies have been cut along with budgets and staffing, leaving inventory records bereft of recent sighting reports. Significant data gaps exist, particularly for species not located on federal lands and for species without federal status. This makes it challenging to understand the status and distribution of rare plants, and to identify which species may be in decline. Citizen scientists play a crucial role in filling in these gaps. In this talk, we explore some of the findings contributed by volunteers in Rare Care's rare plant monitoring program and how they have contributed to management of rare plant species.

3:45 Closing Remarks

Joe Arnett, Washington DNR, Natural Heritage Program

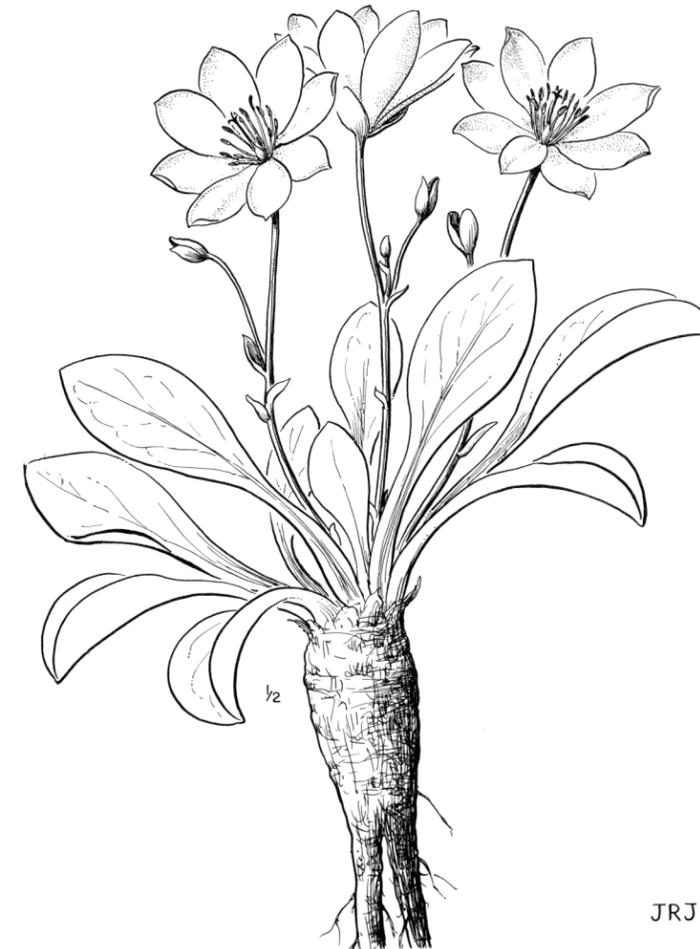
Additional program information available at <http://bit.ly/wabotanicalsymposium>

First Washington Botanical Symposium

Wednesday, March 15, 2017, 9:00am - 4:00pm

University of Washington Botanic Gardens, Center for Urban Horticulture – NHS Hall

3501 NE 41st St., Seattle, WA 98105



L. tweedyi

Lewisiopsis tweedyi (Montiaceae) by Jeanne R. Janish.

Except for a population in southern British Columbia, *L. tweedyi* is endemic to the East Cascades of central and northern Washington. Formerly known as *Lewisia tweedyi* and placed in the Portulacaceae, this species typifies recent taxonomic and nomenclatural changes impacting Washington's flora. Illustration used by permission of the University of Washington Press.



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AGENDA

9:00 Welcome and Introductory Remarks

David Giblin, University of Washington Herbarium, Burke Museum

9:15 Taxonomic Implications for Washington's Flora Resulting from the Revised *Flora of the Pacific Northwest*

Ben Legler, University of Washington Herbarium, Burke Museum

The revised *Flora*, a substantial update to Hitchcock & Cronquist's 1973 *Flora of the Pacific Northwest*, brings together current knowledge into a single identification reference. Since many of us still rely on the 1973 *Flora* today, the transition to the new *Flora* will force us to abruptly confront over 40 years of accumulated changes to nomenclature and classifications, not to mention many additional taxa. I'll discuss some of these changes, why we should accept them, and how they impact our study of the state's flora. Topics will include: a closer look at the reasons behind nomenclatural changes, the complexities of taxonomic classifications (which do not always lead to cleaner species concepts or easier identifications), an overview of the many new taxa and new introductions in our area (and how this might impact management of rare and noxious species), and some of the remaining "puzzles" in our area that need further work.

9:45 New Taxonomic Understanding and Persistent Confusions and Contusions Regarding Circumscribing *Lomatium*

Mark Darrach, Conservation Botanist, Corydalis Consulting, and University of Washington Herbarium, Burke Museum

The genus *Lomatium* has a long and confusing taxonomic history fraught with numerous differences of opinion and naming controversies. Many botanists continue to struggle with accurately identifying numerous *Lomatium* taxa and pressed specimens and incomplete label information can obscure valuable information assessable in the field. The genus remains poorly understood in many respects and new taxa are being described on a regular basis. New attention to the genus and the associated 22 genera in subfamily Apioideae using molecular tools that utilize nuclear ribosomal and chloroplast DNA sequence data improve upon existing cladogram trees and act to effectively reset morphologic baseline understanding across the genus. These new data provide foundation information that allows for creating a more accurate and understandable circumscription for *Lomatium*. New taxa, generic reassignments, and useful approaches for identification are discussed.

10:15 BREAK

10:45 Tracking Weeds: the Value of Documenting the Whereabouts of Nonnative Plants

Alison Halpern, Washington Noxious Weed Control Board

Washington State has a regulatory noxious weed list that is updated annually through a public and transparent process. Because landowners may be required to eradicate or control noxious weeds, it is imperative that inclusion on this list is based upon best available information about the biology, ecology, impacts, and distribution of these species. This information is readily available for species already known to be invasive and can be gathered from peer-reviewed literature, books, and expert opinions. However, it is far more challenging to assess the threat of newly introduced or lesser known plants. Documentation of uncommon or newly detected nonnative plants can provide valuable data that can help determine whether a species should be added to the noxious weed list. For example, herbarium specimens can provide us with a historical context of a species that can help gauge how long a species has been introduced, whether it has expanded from its initial introduction site, and if so, how quickly it has been spreading. These botanical records can also provide information about habitat and surrounding plant assemblages that can help determine vulnerable sites. Thus, the Washington State Noxious Weed Control Board encourages the submission of nonnative species to herbaria.

11:15 Some Changes in Our Aquatic Flora

Peter Zika, University of Washington Herbarium, Burke Museum

Some rare native aquatic species appear to be declining in our region, such as *Nymphaea tetragona* (pygmy water-lily), *Potamogeton fibrillosus* (fibrous-stipuled pondweed), and *Subularia aquatica* (awlwort). Their low elevation habitats have been altered by development and farming in the adjacent uplands. New competitive threats to many native aquatic and riparian species include invasive weeds like *Butomus umbellatus* (flowering-rush), *Ludwigia hexapetala* (Uruguayan primrose-willow), *Myriophyllum spicatum* (Eurasian milfoil), and *Nymphoides peltata* (yellow floatingheart). Two different hybrids between native and introduced members of the genus *Myriophyllum* (water-milfoil) are recent arrivals and show signs of aggressively replacing the parents, east and west of the Cascade Range. Outreach, education, and extensive control efforts can be successful, and populations of some invasives were recently extirpated, notably *Hydrilla verticillata* (hydrilla), *Marsilea mutica* (Australian water-clover), and *Myriophyllum heterophyllum* (two-leaf milfoil).

11:45 The end of the Multi-District Litigation settlement, developing a Species Status Assessment and the petition finding for northern wormwood (*Artemisia campestris* var. *wormskioldii*)

Theodore B. Thomas, Senior Ecologist, U.S. Fish and Wildlife Service

In 2011 the U.S. Fish and Wildlife Service (USFWS) developed a work plan to address the backlog in making listing determinations regarding 251 candidate species. It was a six-year work plan and culminated in 2016 with our determination for northern wormwood. USFWS has been subject to a flood of litigation regarding the listing of species that were parked in "candidate status", many of them for decades. Candidate species are those species that previously had been determined to meet the definition of threatened or endangered, but were precluded from official listing under the Endangered Species Acts (ESA) due to funding constraints. A Species Status Assessment (SSA) is an analytical tool used to develop foundational science for informing ESA decisions. An SSA is intended to follow the species and can be updated as new information is known; thus it becomes the one source for species biological information for listing, consultations, permitting, allocation of funds, and recovery planning. We developed an SSA and a listing determination for northern wormwood concurrently. Our final determination for northern wormwood was that the threats that were considered at the time we made the species a candidate species were no longer threatening the species, except for the threat of nonnative plant invasions. We determined that this threat could be managed, and therefore the species did not rise to the level of becoming a Federally listed plant. In my presentation I will walk through the process we followed to make this decision.

12:15 LUNCH

1:15 The Micro-world Under Our Feet: Biotic Soil Crusts

Kelli Van Norman, Inventory Coordinator, Oregon/Washington BLM and Region 6 Forest Service, Interagency Special Status/Sensitive Species Program

Have you ever looked at the open space between the higher plants in arid and semi-arid lands? It's not usually bare soil. There's a community of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Some of the lichen and bryophyte species have been assigned rarity ranks, but few surveys have been conducted. The BLM and Forest Service Interagency Special Status/Sensitive Species Program (ISSSSP) in Oregon and Washington has been partnering with members of Northwest Lichenologists to explore habitats where biotic soil crusts occur. These soil crusts are an indicator of ecological health, physical disturbance, and long-term environmental factors. We'll take a photo tour through eastern Washington and Oregon of biotic soil crust habitats and species to learn more about the fascinating micro-world under our feet.