

2025 Washington Botanical Symposium

Wednesday, March 5, 2025, 9am-4pm

Reception to follow, 4-5pm

NHS Hall, Center for Urban Horticulture, 3501 NE 41st St, Seattle, WA USA 98105

Co-hosted by University of Washington Botanic Gardens and
the University of Washington Herbarium at the Burke Museum

AGENDA

9:00 **Welcome and introductory remarks**

Opening Remarks:

Wendy Gible, Associate Director, University of Washington Botanic Gardens and the Rare Plant Care and Conservation Program Manager

Symposium Acknowledgements:

David Giblin, Ph.D, Collections Manager, University of Washington Herbarium, Burke Museum

Symposium Welcome from Co-host Institutions:

Dr. Christina Owens, Executive Director of the University of Washington Botanic Gardens

Dr. Carrie Tribble, Burke Herbarium Curator and Assistant Professor of Biology

9:20 **The Power of the Plant Microbiome**

Sharon L. Doty, Professor, University of Washington BS Genetics, Ph.D Microbiology

While the human microbiome has proven to be important to our health, the plant microbiome may be essential for all plants in natural environments, providing nutrients and protection from abiotic and biotic stresses. Tapping into this microbial resource has the potential for improving the environmental sustainability of agriculture, forestry, and bioenergy production. Bacterial endophytes were isolated from within plants growing in challenging environments. Some of the endophyte strains were able to fix atmospheric dinitrogen gas, thus providing the plant host with nitrogen fertilizer. Some could solubilize phosphate, making this macronutrient that is normally locked up in soils now more bioavailable. Under drought conditions, the endophytes promoted host plant survival, reduced the stress response, and increased water use efficiency. Endophytes from plants in a semi-arid environment conferred heat tolerance to plants from the west side of the Cascades. Specific strains were also isolated that degrade environmental pollutants such as trichloroethylene and polycyclic aromatic hydrocarbons. Some endophyte strains have strong antimicrobial activities, inhibiting the growth of several major agricultural pathogens, including *Rhizoctonia solani*, *Fusarium culmorum*, *Pythium ultimum*, *Gaeumannomyces graminis*, *Penicillium expansum*, and *Botrytis cinerea*. With the need to substantially improve production to meet the needs of a growing human population, and the increased stress of climate change, the implications of plant-microbe symbioses for agriculture, forestry, and bioenergy production are profound.

Moderated by Clayton Antieau, Senior Specialist, Environmental Review and Environmental Permitting, Seattle Public Utilities, City of Seattle and Past President, Washington Native Plant Society

10:15 **BREAK**

10:30 **First Nations in the Native Plant Industry in Canada**

Gerald Puhach, Business Manager, Nupqu Native Plant Nursery

This talk will cover what it is like to be a 100% First Nation's owned native plant nursery in the Canadian environment, focusing on the nursery, our history, and what we do. This talk will cover future plans for the nursery, such becoming a provincial seed bank for common native plant seeds for British Columbia and a supplier of native plants for most of British Columbia, and how we are also looking to set up training center for native plant propagation.

Moderated by Wendy Gible, Associate Director, University of Washington Botanic Gardens and the Rare Plant Care and Conservation Program Manager

11:00 **The secret lives (and deaths) of seedlings: How plant establishment strategies can inform restoration strategies**

Julie Larson, Ph.D, Assistant Professor of Ecological Restoration and Management, University of Washington

There is a growing push across the Western US to collect and produce native seed needed to restore more biodiverse ecosystems. At the same time, seeding into harsh or unpredictable environments remains challenging given the vulnerability of young plants at the earliest stages of life. However, seedlings hold secrets. Even at the smallest sizes, seedlings can differ drastically in their construction, growth, and sensitivity to environmental pressure. In our developing work at the University of Washington, we are on a mission to unravel the diverse strategies of seedlings, from dominating sagebrush and ponderosa pines to understory *Lomatium* and *Lupinus*. In this talk, we'll discuss what the secret lives of seedlings can tell us about how to avoid their mortality in seed-based restoration.

Moderated by Wendy Gible, Associate Director, University of Washington Botanic Gardens and the Rare Plant Care and Conservation Program Manager

11:30 **DNA: The Secret History of Fungal Evolution**

Danny Miller, Education Chair and Identification Coordinator, PSMS

What are the biggest surprises that recent studies in DNA have shown us about the (until now) secret history of mushroom evolution? Danny is the Education Chair for the Puget Sound Mycological Society, helping to design and teach the curriculum for the club's mycology classes. He is also the club Librarian, and ID Committee coordinator and an emergency poisoning point person for King County Washington Poison Control. Danny also belongs to the PNW Key Council, a group of amateur and professional mycologists and is a co-author of MycoMatch (formerly MatchMaker) with Ian Gibson, the free PNW mushroom ID program for the PC. He has a big interest in taxonomy and figuring out where all of the mushrooms fit into the fungal tree of life, and is currently trying to collect the DNA of every PNW species to determine which still need names.

Moderated by Helen Lau, Botanist, US Forest Service Okanogan Wenatchee National Forest, Cle Elum Ranger District

12:00 **LUNCH**

1:00 **Updating the flora of Mount Rainier National Park**

Peter F. Zika, Research Associate, WTU Herbarium, Burke Museum

Since 2022 I have worked with the National Park Service (NPS) to update the flora of Mt. Rainier National Park. Since the publication of David Biek's excellent book cataloging the park flora in 2000, more than 150 additions to the species list were verified with confirmed herbarium specimens. About one third of those additions were non-native. With a NPS collecting and research permit, I made voucher specimens of new records for the University of Washington Herbarium (part of the Burke Museum, WTU), and the Park herbarium (MORA) in Ashford. Some interesting records included the first Washington site for *Eleocharis nitida* (quill spike-rush), and the seldom-seen intergeneric hybrid between *Tellima grandiflora* (fringecup) and *Tolmiea menziesii* (youth-on-age). The MORA herbarium contains more than 6000 specimens of vascular plants dating back to the 1890s, and includes more than 20 type specimens gathered by Oscar Allen. I have examined less than half of the MORA specimens so far. I annotate each specimen with its modern name and correct identifications as needed. The herbarium study deleted more than 50 taxa from the flora because the supporting herbarium vouchers were misidentified. At present the Park flora is close to 1,000 taxa. From a historical perspective, 7% of the native taxa (and 23% of the non-native taxa) have not been observed, photographed, or collected in the last 40 years. Vascular plant families with the most species in the Park are asters (Asteraceae), grasses (Poaceae), sedges (Cyperaceae) and roses (Rosaceae). Genera with the most species in the Park are sedges (*Carex*), rushes (*Juncus*), willow-herbs (*Epilobium*) and bluegrasses (*Poa*).

Moderated by David Giblin, Ph.D, Collections Manager, University of Washington Herbarium, Burke Museum

1:30 **Relocating Historic Populations of Sensitive Vascular Plants at Mount Rainier National Park**

Allie Howell, Research Scientist, UWBG Rare Plant Care and Conservation & Erik Ertsgaard, Post-Bachelor Research Assistant, University of Washington

Mount Rainier National Park preserves habitat for many unique species, including several plant species found nowhere else in the world. Documenting the distribution and health of rare plant populations in Mount Rainier will help preserve these populations in areas where management or visitor activities may adversely impact them and provide an opportunity to detect population declines. This project updated the Park's list of sensitive vascular plant species and compiled a cross-referenced geodatabase to help the Park track sensitive plant species populations in the future. The updated sensitive species list was developed by consulting electronic plant distribution databases, existing species lists, and experts, resulting in a list of 25 highest priority species. Spatial data for these priority species were compiled from the Consortium of Pacific Northwest Herbaria, Burke Herbarium Image Gallery, and research-grade iNaturalist observations to create a geodatabase of rare plant occurrences in the park. Field surveys for a portion of these occurrences were conducted in the summer of 2024 to verify populations' presence and provide updated information about the population location and condition. The geodatabase can be used to inform future surveys, streamline rare plant conservation management, and prioritize habitat preservation or restoration efforts.

Moderated by David Giblin, Ph.D, Collections Manager, University of Washington Herbarium, Burke Museum

2:00 **Native Climate-Smart Plants**

Mason Bowles, Senior Ecologist, King County Water and Land Resources Division

Climate-smart native plants are species that have a high probability of survival under current and future projected climate change conditions. These native plants can help preserve local ecosystems and address climate change by maintaining resilient plant communities. The project will identify "climate-smart" species by identifying keystone species, using species distribution models and the participation of conservation practitioners and managers.

Moderated by Clayton Antieau, Senior Specialist, Environmental Review and Environmental Permitting, Seattle Public Utilities, City of Seattle and Past President, Washington Native Plant Society

2:30 **BREAK**

2:45 **Washington Bee Atlas: Learning more about Washington's plants and pollinators**

Katie Buckley, Pollinator Health Coordinator, WSDA, BS, MS, and Ph.D in Entomology

What is the Washington Bee Atlas, how did we come to have it, and how can you get involved? This presentation will also cover some results from the Atlas' first year and other projects and programs stemming from the state's Pollinator Health Task Force.

Moderated by Joe Rocchio, Program Manager, Washington DNR, Natural Heritage Program

3:15 **Olympic Lowland Beargrass: A Forgotten landscape**

David Peter, Ph.D, USFS Pacific Northwest Research Station, Olympia Forestry Sciences Laboratory

In the southeastern Olympic Peninsula, there is an area of over 40,500 ha with unusual botanical characteristics. When considered together, they suggest a former fire-maintained anthropogenic landscape of parklands, savannas and prairies that was likely important to native people. Because the structure appears to have been highly variable, we refer to this landscape as "parkland". Due to forest succession, there is currently no intact example, but by drawing from historical accounts supplemented with our own botanical field investigation an approximate description can be made. Elevations range from 80 to 300 m and precipitation from 1,498 to 2,210 mm making this area somewhat higher and wetter than most South Puget Sound Prairies. However, like those prairies it has droughty, infertile gravelly soils of glacial origin. Several prairies more typical of the South Puget Sound prairie composition are present at the periphery of the former parkland, but their floras are distinct from that of the parkland. Current parkland area vegetation consists mostly of managed Douglas-fir plantations with a salal understory. Current openings include towns, roads, powerline corridors, clearcuts, and wetlands. However, historical accounts indicate there were large areas devoid of trees mixed with areas that varied from savannas to forests. Historical accounts also indicate some of the forests had open understories without brush. Because few botanical surveys were conducted the floral composition is not well known. We conducted extensive botanical surveys, and sought

relict stands, to make a fuller description of the parkland flora and ecology. Beargrass and salal were pervasive throughout the parkland and are still widely present, but beargrass also dominated large openings. Notable widespread species were shore pine, kinnikinnick, dwarf snowberry, poverty oatgrass, rosy bird's-foot trefoil, Columbia lily, Columbia manzanita, and dwarf bilberry. Some typical South Puget Sound prairie species that also grew in the parkland included Oregon white oak, hooked-spur violet, big-flower agoseris, common woolly sunflower, giant white fawn-lily and harsh paintbrush. Recognition of this landscape and the possibility such areas were more common than has been appreciated has important implications for conservation of biodiversity because forest succession does not favor retention of this sun-loving flora.

Moderated by Joe Rocchio, Program Manager, Washington DNR, Natural Heritage Program

3:45 **Closing Remarks**

David Giblin, Ph.D, Collections Manager, University of Washington Herbarium, Burke Museum

4:00 **Reception**

Optional tour of the SER-UW Native Plant Nursery with Sarah Rogers, SER-UW Native Plant Nursery Manager (CLEC AmeriCorps)