

# 2023 Washington Botanical Symposium

Wednesday, March 8, 2023, 9am-4pm

Reception to follow, 4-5pm

NHS Hall, Center for Urban Horticulture, 3501 NE 41<sup>st</sup> 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 Welcome from Co-host Institutions:*

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

Dr. Gabriela Chavarria, Executive Director of the Burke Museum

*Symposium Acknowledgements:*

Helen Lau, Steering Committee Chair, Botanist, US Forest Service Okanogan Wenatchee National Forest, Cle Elum Ranger District

### 9:15 **21st Century Challenges in Conserving Biodiversity in PNW Forests and Ideas on Societal Responses**

Dr. Jerry F. Franklin, Professor Emeritus, School of Environmental and Forest Science, University of Washington

*Natural forest ecosystems are structurally complex, simultaneously carry out multiple functions critical to human societies, and are rich in biodiversity, broadly defined. The vast majority of these forests have been drastically altered by human society in the last 150 years and replaced with simplified, novel systems (plantations) designed to maximize wood production. Climate change is producing additional challenges. Ecologically based responses include conserving remaining natural forests and managing the altered forest landscapes to restore their integrity, while producing environmental, cultural, and economic benefits for human society. Biodiversity is essential to forest functionality.*

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

### 10:10 **BREAK**

10:30 **What the FAC is Up with Aspen in the Pacific Northwest?**

Dr. Amy Yahnke, Senior Wetland Scientist, Washington Department of Ecology

*Three parameters are used to identify wetland boundaries: hydrology, soils, and vegetation. Plants are assigned wetland indicator statuses to classify the range of likelihood a plant may occur in a wetland. Those classifications include, from wettest to driest, obligate (OBL), facultative wet (FACW), facultative (FAC), facultative upland (FACU), and upland (UPL). Currently, Populus tremuloides is classified as FACU, however this may not be representative of the habitats in which quaking aspen grow in Washington. Several regional floras and plant community descriptions identify it as a component of different plant communities dominated by FAC and FACW species. Those communities occur on sites characterized as “poorly drained”, “moist”, or in areas where “seeps” and “subirrigation” occur, and which are described as “forested swamps” or “riparian” wetlands. Herbaria records were 10-20 times more likely to mention some association with wetness and plants with FAC or wetter indicator statuses than with dryness and plants with FACU or drier indicator statuses. The status of FACU for P. tremuloides impairs the accuracy of wetland delineations in Washington, and potentially in other Pacific Northwest states. This talk will review the evidence and discuss the current standing of the wetland indicator status of P. tremuloides in the Pacific Northwest.*

Moderated by Cheryl Shippentower, Restoration Ecologist, Confederated Tribes of the Umatilla Indian Reservation

11:00 **Tidal Freshwater Forests and Marshes of the Columbia River Estuary**

Dr. Heida L. Diefenderfer, Faculty Fellow, University of Washington College of the Environment; Senior Earth Scientist, Pacific Northwest National Laboratory

*In the Pacific Northwest, only a small and poorly documented fraction of the Sitka spruce (Picea sitchensis) forested wetlands once dominating the coastal fog belt remains. Similarly, the conversion of freshwater marshes to other land cover types is widespread. This presentation will describe the potential historical distribution of such plant communities in this region, and historical impacts. It will focus particularly on characterizing Sitka spruce forested wetlands (swamps) on tidal freshwater floodplain areas of the lower Columbia River, bordering the states of Washington and Oregon, and discuss key characteristics of tidal freshwater marshes located down-gradient of the swamps. Unpublished data to be presented in this community characterization will include overstory and understory cover as compared to similar plant communities along the West Coast from Alaska to northern California, sediment texture and vertical accretion rate, microtopography, carbon, elevation range and hydrology, in-channel wood and tidal channel morphology, fish communities, and salmon prey taxa identified on the floodplain and in channels.*

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

11:30    **Feeding the fire: Drivers and impacts of the *Ventenata dubia* invasion in the Inland Northwest**

Dr. Claire Tortorelli, Postdoctoral Researcher, University California, Davis, Dept. of Plant Sciences

*Invasive grasses are problematic throughout the planet as they increase fuels and alter fire behavior to the detriment of native species. The forests of the Inland Pacific Northwest have historically been resistant to grass invasions and their subsequent ecological impacts. However, a recent annual grass invader, *Ventenata dubia*, commonly known as *ventenata*, has rapidly spread throughout forest mosaic ecosystems of the inland northwest where it threatens to alter fire behavior and ecological function. In this talk, I examine the factors that drive the *ventenata* invasion to better understand how the invasion impacts plant communities and fire across the Blue Mountains Ecoregion. Where *ventenata* invades non-forest scabland patches, it increases fuel loads and continuity, leading to burning in historically fire-resistant dwarf shrubland communities and the loss of fire sensitive native species. Fires fueled by *ventenata* can spread through non-forest patches and reach the surrounding forest, altering landscape scale fire behavior and complicating fire management strategies. These findings can be applied to help develop species specific management strategies to help conserve and restore balanced ecosystems.*

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

12:00    LUNCH

1:00    **Seeing beyond the wall of green using cross-discipline approaches**

Dr. Kyra N. Krakos, Professor of Biology, Maryville University and Missouri Botanical Garden

*A challenge in science education is capturing students' and the general public's interest and enthusiasm for plant science. As an undergraduate and community educator for more than fifteen years, Kyra Krakos has developed resources that use cross-discipline approaches to inspire and develop young scientists. She will present case studies, research examples, and new education resources being used by educators to raise plant awareness. In particular, she will showcase the Plant Humanities Lab. Blending perspectives from the arts, sciences, and humanities, this new and innovative digital space engages interdisciplinary exploration of plants and their extraordinary significance to human culture.*

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

1:30 **An Anthropocene Island Flora: the future for native and alien plants in the San Juan Island Archipelago**

R. Adam Martin, Applied Ecologist, Ecostudies Institute

*The core premise of the Anthropocene is we are altering the earth to a magnitude justifying the beginning of a new geological era. One of the most impactful Anthropocene consequence is the movement of species across continents. This movement can cause the loss of regional biological uniqueness as places become more self-similar. In Washington State, the coastal meadows of the San Juan Island archipelago are a hotspot of both native and alien floristic diversity, making the archipelago a perfect location to understand the consequences of the global shuffling of species. Alien species comprise between 38 and 47% of the San Juan Island flora and will continue to increase. Concurrently, our regionally unique native meadow species are more likely to be extirpated now and into the future. This discrepancy in species losses and additions has caused the flora of meadow habitats to primarily be composed of alien species. These floristic changes are primarily driven by the synergistic impacts of invasive annual grass, introduced Canada geese, and over-abundant black-tailed deer are hastening this change. Interestingly, the islands are becoming simpler in unique ways, causing no current directional change toward simplification or differentiation in the overall flora.*

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

2:00 **The Immensity of Minutiae: Utilizing Bryophytes to Detect an Ice Age Refugium in the North Cascades**

Miles Berkey, Western Washington University

*Ice age refugia were ecologically stable areas that remained ice free during the Pleistocene glaciations. As a result, they offered a level of suitable conditions to host arctic and boreal species associated with the climate of that time. About 16,000 years ago, as the climate began to warm, the ice sheets in western North America began to recede, and these vestiges of the late Pleistocene became surrounded by the temperate ecosystems of today leaving disjunct and isolated relicts of a previous climate. Efforts to locate ice age refugia relies on geological evidence to show an area was not impacted by continental glaciers. Given the supporting geological evidence, proportions of endemic and disjunct species of a suspected refugia can be compared to a non-refugial area. This has been a classic approach towards detecting ice age refugia. By identifying ice age refugia, knowledge gaps in the paleoecological history of species in north America can be solved, providing valuable insight towards understanding how species will respond in our warming climate. Detection of these ice age refugia has largely relied on vascular plant and animal endemic and disjunct species while ignoring refugia-indicating possibilities found in an area's bryophyte flora. However, the restrictive niche selection, species specific dispersal limitations, and intolerance of microclimatic change observed in bryophytes*

*can help locate ice age refugia. By Including bryophyte floras in the evaluation of suspect ice age refugia we improve our confidence in ice age refugia testing effectively serving conservation goals of discerning climate change refuges. This project builds on available herbaria and geological records to determine if the bryophyte flora of Barlow Pass, Washington supports an ice age refugium explanation.*

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

2:30 BREAK

2:45 **Highlights from the Field: Partnerships and Conservation efforts that Support Imperiled Invertebrates and their Habitats in Washington State**

Dr. Julie Combs, Pollinator Species Lead, Washington Department of Fish and Wildlife

*The Washington Department of Fish and Wildlife's Wildlife Diversity Division mission is to lead efforts statewide to manage, conserve and recover Washington's nongame wildlife and play an active role in protecting and improving their habitats. As WDFW's Pollinator Species Lead and Conservation Assessment Manager, we work with internal and external partners to assess species distribution, abundance, population trends, and threats and play a leading role in the recovery of Washington State's listed, candidate, and Species of Greatest Conservation Need. Partnerships are necessary to effectively respond to local and landscape-scale conservation needs and guide recovery planning and implementation. Here we share several projects that highlight our survey, monitoring, restoration, and recovery efforts in the context of partnerships that support some of Washington's most imperiled bumble bees, butterflies, and moths (e.g., Western bumble bee, Island Marble Butterfly, and Sand-verbena moth).*

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

3:15 **Epiphytic community development in Olympic rain forests**

Robert Van Pelt, Affiliate Professor, University of Washington

*Along the Queets River floodplain, tree and forest development were examined in plots aged 3 to 330 years old, with particular focus on the development of epiphytic communities. In older forests, trees were climbed and mapped to develop a set of allometric equations not only for tree wood biomass and leaf area, but also for the epiphytic communities they support. Along the river, gravel bars become young forests of willow and alder, which give way to cottonwood, maple, and ultimately very tall and large Sitka spruce-western hemlock forests. Bigleaf maple in particular is renowned for dramatic accumulations of epiphytes – a single individual can carry over 700 kg of epiphytic dry mass. Much of the living mass is bryophytes (mosses and liverworts), but ferns and other vascular plants can play a substantial role. The largest moss*

*mats have a significant canopy soil development under the green mat and above the branch or limb. The most developed communities can carry as much as 10-15 metric tons epiphytic dry mass per hectare, which for bryophytes, is a global record.*

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

3:45     **Closing Remarks**

Helen Lau, Steering Committee Chair, Botanist, US Forest Service Okanogan Wenatchee National Forest, Cle Elum Ranger District

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

4:00 – 5:00 **Reception**