



Tuesday, October 22<sup>th</sup>, 2019  
12:30 to 4:30 pm

Reed College  
Performing Arts Building – Room 320

Parking Available in the West Lot

[Map](#)

*The Johnson Creek Science Symposium is a joint production of the Johnson Creek Watershed Council, Reed College and the Johnson Creek Interjurisdictional Committee. The Symposium co-organizers are Daniel Newberry, Noelwah Netusil and Katie Holzer.*

## Program & Schedule

<b>12:30 PM</b>	Introduction	Symposium Co-Organizer: Daniel Newberry, Johnson Creek Watershed Council
	Session 1: Looking to the future	Session Moderator: Bruce Newton, Johnson Creek Watershed Council
	Conservation with a Climate Change Lens	Kate Holleran, Metro
	Planning for the Future: Utilizing Habitat and Climate Modeling to Prioritize Restoration Actions for Salmonids	Laura McMullen, ICF
	WISE Model for Diversifying the Green Sector	Derron Coles, Blueprint Foundation
	Flood Insurance and Flood Risk Survey: Lents and Powellhurst-Gilbert Neighborhoods	Noelwah Netusil, Reed College
	Q & A, Session 1	
<b>1:47 PM</b>	Session 2: Restoration	Session Moderator: Noelwah Netusil, Reed College
	Johnson Creek Watershed Council's Coldwater Restoration Strategy	Daniel Newberry, Johnson Creek Watershed Council
	Mitchell Creek Temperature and Fish Passage Restoration	Chuck Lobdell, Johnson Creek Watershed Council
	Luther Road Habitat Restoration	Ali Young, Portland Bureau of Environmental Services
	Q & A, Session 2	
<b>2:41 PM</b>	<b>Break (0:30)</b>	
	Session 3: Monitoring	Session Moderator: Roy Iwai, Multnomah County
	Powell Butte Prairie Nesting Birds Survey	Tom Virzi, Conservation InSight
	Evaluation of different treatment methods to control Tansy Ragwort ( <i>Jacobaea vulgaris</i> ) at Powell Butte Nature Park	Christian Haaning, Portland Parks & Recreation
	Johnson Creek Agricultural Water Quality Status and Trends Report	Brenda Sanchez, Oregon Department Of Agriculture
	Do urban multi-stressors and their effects on stream biota shift during droughts?	Ian Waite, US Geological Survey
	Q & A, Session 3	
<b>4:19 PM</b>	Closing Remarks, End of Symposium	

# Abstracts

**Kate Holleran, Metro**

## **Conservation with a Climate Change Lens**

**Abstract:** Metro is a regional government that protects and manages over 17,000 acres of natural areas and parks. Our mission is to conserve regional biodiversity, protect water quality, and provide meaningful access to nature to community members. Climate change and its possible impacts on wildlife, habitats and water quality is a significant threat to the regional landscape. Metro scientists seek to understand the best science and knowledge about how climate change may impact the lands we steward and apply that understanding in our restoration work. Metro's approach to conservation with a climate change lens in Johnson Creek Watershed is three pronged. First, protect habitat connections through land purchases. Two, reduce exotics. And three, restore and enhance habitat. Metro and partners have invested millions of dollars to restore in-stream and floodplain function through installation of large wood, reconnecting streams to side-channels and floodplains, and promoting a diverse riparian forest. Metro's most recent restoration focus is on understanding the forest health issues that may impact our ability to achieve the desired ecological conditions in the long term. Of great interest is the widespread decline of *Alnus rubra* (red alder) across all of the East Buttes and along much of the mainstem of Johnson Creek, most likely triggered by the successive hotter, drier summers of recent years. Metro has developed a simple red alder decline rating system to help prioritize restoration actions in the forests of Johnson Creek Watershed.

**Laura McMullen, ICU**

## **Planning for the Future: Utilizing Habitat and Climate Modeling to Prioritize Restoration Actions for Salmonids**

**Abstract:** Restoration planning can be enhanced by integrating future predicted conditions, including climate change, into the process of evaluating and ranking opportunities. Portland (Oregon) has sought Salmon Safe Certification of its land management practices, including restoration planning for several salmonids (Chinook and Coho Salmon and steelhead). We supported the certification process as independent evaluators by incorporating predictions of climate change and future restored habitat characteristics into baseline conditions of a spatially-explicit ecosystem model, allowing prioritization of restoration opportunities through the lens of the salmonids' habitat requirements. We organized a multi-party process to incorporate empirical data, spatial analysis, expert knowledge, and mathematical modeling into a holistic habitat modeling evaluation of city-wide aquatic habitat restoration actions and opportunities. Our results highlight locations in Portland's urban streams that are most important to protect or restore for these salmonids, as well as indicating where the largest current and future impacts may be. In addition to evaluating future restoration priorities, Portland is incorporating the results into its Stormwater System Plan that evaluates stormwater infrastructure needs to align built and natural green infrastructure investments to also benefit salmonids and watersheds.

**Derron Coles, Blueprint Foundation**

## **WISE Model for Diversifying the Green Sector**

**Abstract:** Portland is recognized as a bastion for environmentally minded persons, but there remains an underrepresentation of Black Portlanders who are active in efforts to end the prevalence of polluted waterways and toxic hazards that impact public health and

imperial wildlife. Similarly, there exists an equally troubling dearth of Black youth who are intent on making a career of environmental stewardship.

The Blueprint Foundation is a culturally specific nonprofit that collaborates with industry partners to train and empower the next generation of Black environmentalists. In this presentation, we will provide an overview of our WISE model, which uses a combination of experiential and project-based learning to recruit and retain youth of color in green sector career pathways. We will also summarize academic and environmental impacts achieved during 4 years of model implementation.

### **Noelwah Netusil, Reed College**

#### **Flood Insurance and Flood Risk Survey: Lents and Powellhurst-Gilbert Neighborhoods**

**Abstract:** Flooding is the natural disaster that causes the most damage in the United States. Post-flood, many families do not have sufficient savings to rebuild and governmental aid can be limited. We conducted the first willingness-to-pay study for flood insurance in the U.S. in the Lents and Powellhurst-Gilbert neighborhoods of Portland, Oregon. We find that willingness-to-pay increases with modeled flood risk, and with flood risk perceptions, but not with past flood experience. Estimated willingness-to-pay for survey respondents living in our study area's 100-year floodplain is less than half of the current median flood insurance premium, which suggests the need for assistance to help families that are at risk of flood damage and are unable to afford premiums. Our survey also found that almost 50% of property owners living in a 100-year floodplain learned about their home's status at closing or after moving into their new home.

### **Daniel Newberry, Johnson Creek Watershed Council**

#### **Johnson Creek Watershed Council's Coldwater Restoration Strategy**

**Abstract:** Like many streams in the Pacific Northwest, Johnson Creek has elevated water temperatures and is listed on the state 303(d) list. During much of the summer months, many reaches of Johnson Creek and its tributaries have temperatures that are stressful—and in cases—lethal to salmonids.

Temperature reduction and access to cold water refugia are Johnson Creek Watershed Council's (JCWC) priorities in its stream restoration strategy. Beginning in 2012 we prioritized riparian taxlots for tree planting according to likely thermal impacts on the creek. We originally prioritized 274 identified fish passage barriers by cost benefit. Within that, we have further prioritized providing full access for salmonids over entire tributaries that are natural cold water refugia. Planned habitat enhancement / large wood addition projects are prioritized for areas with cold water inputs. Inline ponds function as heat point sources. The Council has identified more than 130 such ponds in the watershed and monitored those that are likely the most thermal-polluting. We have begun decommissioning several of these ponds on the properties of willing landowners.

### **Chuck Lobdell, Johnson Creek Watershed Council**

#### **Mitchell Creek Fish Passage and Water Temperature Restoration**

**Abstract:** JCWC's instream habitat program is focused on restoring salmon habitat and water quality and restoring fish access to these habitats, with emphasis on cold water tributaries. One such tributary is Mitchell Creek, which flows into Kelley Creek before joining Johnson Creek near the center of the watershed. Mitchell Creek is less than 2 miles in length, however it runs cold throughout the year and its headwaters in largely intact forest that is protected in perpetuity by Metro ownership. Since 2015, JCWC has been

working with the Centennial School District to restore a 900' section of Mitchell Creek by removing 2 fish passage barriers and a 1 acre in-line pond. The pond, which monitoring has shown to increase water temperatures in Mitchell Creek by as much as 14 degrees Celsius, was created over 40 years ago when the property owner constructed an earthen track for racing horses and ATVs. This track also crossed Mitchell Creek in 2 locations, ultimately creating 2 fish passage barriers. In the summer of 2019, JCWC completed the construction phase of restoration work at this site. Funding for this project was provided by the Metro Nature in Neighborhoods, East Multnomah SWCD, DEQ, OWEB, PGE&TNC, USFWS Willamette Valley Refuge Complex and Schnitzer Steel.

## **Ali Young, Portland Bureau of Environmental Services**

### **Luther Road Habitat Restoration**

**Abstract:** In 2014 the City of Portland Bureau of Environmental Services (BES) constructed the Luther Road Habitat Restoration to protect an exposed 72" sewer interceptor, reconnect and restore the adjacent floodplain, stabilize stream banks, and provide water quality treatment by retrofitting stormwater outfalls. The sewer interceptor is owned and maintained by BES.

The 2014 project modified the alignment of Johnson Creek, adding approximately 250 feet of stream length and off-channel areas as refugia during high flows. The new channel was built to connect to the floodplain and with a series of riffles and pools. By moving the stream channel, the BES was able to reinforce and bury the exposed sewer pipe. The project directed untreated runoff from industrial areas to the south and created a stormwater wetland to treat runoff prior to entering Johnson Creek. The project included a pedestrian trail and three overlooks built into the uplands.

The site has undergone several geomorphic changes since 2014, the largest in December 2015 when Johnson Creek experienced the highest peak flows on record. The creek moved laterally in several areas, incised and exposed the sewer interceptor, damaged grade control structures, deposited significant quantities of gravel downstream, and exposed constructed wood habitat structures. Bank erosion was progressing toward the stormwater facility, private property, and one of the overlooks.

In Summer 2019, BES constructed a new restoration project at the site to:

- Protect the exposed sewer interceptor by constructing a roughened channel.
- Construct a riffle to expand pool habitat and protect the toe of the roughened channel.
- Construct a cobble berm to enhance drainage in the stormwater facility and prevent headcutting.
- Relocate the overlook to an area less susceptible to erosion.
- Stabilize the banks where the overlook is removed and where the erosion is progressing onto private property.
- Construct log structures throughout the project to improve instream habitat and bank stability.

## **Tom Virzi, Conservation InSight**

### **Impact of Habitat Restoration on Bird Populations at Powell Butte Nature Park**

**Abstract:** Grassland bird populations in North America experienced declines > 40% over the past half century due to large-scale loss or degradation of habitat throughout their range. Declines were more severe in the Willamette Valley with populations of some grassland species declining by 98%. Much of the remaining prairie habitat in the Willamette

Valley exists in small, fragmented patches such as the grassland habitat at Powell Butte Nature Park (PBNP). These remnant patches may be functioning as important refuges for remaining grassland bird populations. During 2019, we initiated a project studying the impact of restoration on grassland birds at PBNP. Our project combined a rigorous scientific study of grassland birds breeding at PBNP with a citizen science study examining the impact of restoration on bird populations. Our scientific study included point transect surveys to estimate abundance of focal species, nest monitoring to assess reproductive rates, and a mark-recapture study to assess survivorship. Citizen science volunteers walked line transects and counted all birds observed. Savannah sparrows (SAVS) were the most abundant breeding grassland bird (N = 124, 95% CI = 93-165). Volunteers counted 841 SAVS, which when adjusted for effort resulted in a population estimate of 92 SAVS. Nest monitoring results indicated that breeding SAVS were very successful: hatch rate = 0.91; nest success rate = 0.52. Our results suggest that small fragments of grassland habitat may support source populations for some grassland birds. However, the absence of more threatened grassland obligates is indicative of problems associated with small patch size.

### **Christian Haaning, Portland Parks & Recreation**

#### **Evaluation of different treatment methods to control Tansy Ragwort (*Jacobaea vulgaris*) at Powell Butte Nature Park**

**Abstract:** Tansy Ragwort is a commonly occurring weed in disturbed pastures and grasslands throughout most of Pacific Northwest. Recent proliferations in the summers of 2017 and 2018 of the plant at Powell Butte Nature Park have generated concern amongst park patrons, especially equestrian trail users. This prompted Portland Parks and Recreation to evaluate different treatment options to reduce the density of plant in an economically feasible and ecologically responsible way. This presentation will discuss the decision making process, the different treatment options, monitoring methodology, and the results of the field experiment.

### **Brenda Sanchez, Oregon Department of Agriculture**

#### **Johnson Creek Agricultural Water Quality Status and Trends Report**

**Abstract:** Preventing and controlling water pollution from agricultural activities is the goal of Oregon's Department of Agriculture Water Quality Program. One important aspect to managing for water quality is the collection and analysis of water quality monitoring data. This presentation will provide a brief overview of the state's agricultural water quality program along with an introduction to water quality status and trends reports. The session will illustrate how ODA used the report and other data to drive water quality discussions related to agriculture in the Johnson Creek watershed. To finish, the presentation will take a look at how water quality data can help agriculture manage for water quality in a changing climate.

### **Ian Waite, US Geological Survey**

#### **Do urban multi-stressors and their effects on stream biota shift during droughts?**

**Abstract:** In 2015 during a 30-year drought, U.S. Geological Survey sampled 87 streams across an urban disturbance gradient in the Pacific Northwest region (PNW) of the U.S. Objectives were to assess how aquatic assemblages respond to multiple stressors and how drought conditions modulate them. We sampled Johnson creek near the mouth and eight other streams in the Portland metropolitan area. Ecological condition was assessed in relation to streamflow, habitat, nutrients, and contaminants. Streams were sampled for algae, macroinvertebrates, and fish in the summer under base-flow conditions. Response models developed using Boosted Regression Trees indicate that flow alteration accounted

for less of the variability in ecological condition than might be expected in urban systems, likely due to drought conditions. Contaminants were among the most important explanatory variables in the invertebrate and algal models; this was surprising considering there were few if any storm generated run-off events during our sampling. Temperature and water depth were common variables in the fish models. Explanatory variables in the three biotic assemblage models under drought conditions in the PNW appeared to have shifted from what might be expected and also differ from many other urban studies.

## Bios

**Derron Coles**, Ph.D. is a Learning strategist with 20 years of experience designing learner-focused competency development training. Derron has a wide-ranging portfolio that runs the gamut from learning solutions for technical topics, like a globally utilized online training on river system analysis, to interpersonal skills training, such as his award-winning cultural competency curriculum.

**Christian Haaning**. As a Natural Resource Ecologist for the Portland Parks and Recreation District, Christian Haaning, helps to manage over 1000 acres of parks and natural areas in the Johnson Creek Watershed. In this role he works to find common ground between recreation, ecology, and other interests in these small, often fragmented natural spaces. He believes community engagement and stewardship are an essential part of urban lands management. He has been working in the field of natural resources in the Pacific Northwest for over 15 years. When not at work he is likely shuttling his son from school or soccer, cooking dinner, or tinkering in the garden.

**Kate Holleran** has served as a natural resource scientist at Metro since 2007. Her work focuses on land conservation and habitat restoration across Clackamas, Multnomah and Washington counties. Prior to joining Metro, Holleran was a program coordinator and faculty member for the Natural Resources Technology Program at Mt. Hood Community College, and worked in forest management for the USDA Forest Service. Kate has a BS in Forest Science and a MS in Science Teaching. She has spent the last 30 years wandering through, working in, and studying the natural world. Recent projects at Metro include forest thinning at Chehalem Ridge Natural Area near Forest Grove, Oregon white oak release along Fanno Creek in Tigard, and stream enhancement project along Johnson Creek in Multnomah County.

**Katie Holzer** is a Watershed Scientist with the City of Gresham where she conducts studies of water quality in urban streams. She has a Ph.D. in Ecology from the University of California, Davis where she studied habitat values of urban stormwater ponds.

**Roy Iwai** has managed the Water Quality Program in the Transportation Division of Multnomah County for the past 12 years. He coordinates monitoring and management of watersheds of the unincorporated County, including Johnson Creek. Roy facilitates the Beaver Creek Conservation Partnership and also leads the Clean Rivers Coalition, a new clean water outreach collaborative in western Oregon. Roy has a Masters of Science degree from Louisiana State University with research in wetland biogeochemistry.

**Chuck Lobdell** is a professional fish and wildlife biologist with 22 years of aquatic habitat restoration experience in the Pacific Northwest. Most of his professional career has been focused on restoring wetlands and estuarine habitats, including showcase projects like Smith and Bybee Lakes and Bandon Marsh National Wildlife Refuge. His new role with JCWC focuses on fish passage and stream restoration, as well as stormwater projects. Chuck earned both his bachelors and master's degrees from the University of Idaho.

Dr. **Laura McMullen** is an aquatic ecologist with ICF based out of Portland, OR. She works on a variety of projects mainly related to river ecology and conservation biology. She frequently works with clients to assist in prioritization of restoration actions in watersheds, and enjoys the interface of theoretical and quantitative ecology with on-the-ground management decisions. Prior to her current position, she worked as a conservation biologist for the Xerces Society for Invertebrate Conservation and as an adjunct instructor at Columbia Gorge Community College and Washington State University, Vancouver. She enjoys hiking and exploring in the PNW and further abroad.

**Noelwah R. Netusil** is the Stanley H. Cohn Professor of Economics at Reed College. Her current research explores willingness-to-pay for flood insurance, flood insurance literacy, and flood risk perceptions in the Lents and Powellhurst-Gilbert neighborhoods. She teaches courses on environmental and natural resources economics, economics of the public sector, and the intersection of law and economics. She received her BS in Chemistry and Economics from Allegheny College in 1986 and her PhD from the University of Illinois-Urbana in 1992. She has been at Reed College since 1990.

**Daniel Newberry** has been the Executive Director of the Johnson Creek Watershed Council for the past 4½ years. He has worked in watershed management since 1993, including serving as a hydrologist with both the Mt. Hood National Forest and the Hoopa Valley Tribe, as the Executive Director of both the Applegate River Watershed Council and the Siskiyou Field Institute, and as an independent consultant designing/implementing stream restoration projects and strategic planning for many Oregon watershed councils. He holds a B.A. in Physics from Middlebury College and a Masters of Forest Science from the Yale School of Forestry and Environmental Studies. He currently serves as a volunteer commissioner on Portland's Urban Forestry Commission.

**Bruce Newton** is a Director at the Johnson Creek Watershed Council. Now retired, Bruce was the Director of the West National Technology Support Center of the Natural Resources Conservation Service – an agency of the US Dept. of Agriculture. Prior to moving to Oregon, Bruce worked at the US Environmental Protection Agency in Washington, DC, where he developed and managed national water quality programs.

**Brenda Sanchez** is part of the Oregon Department of Agriculture's Water Quality Program leadership team. Brenda leads ODA's Strategic Implementation Areas Initiative where she works closely with soil and water conservation districts, agricultural landowners and other partners to implement ODA's agricultural water quality program. Brenda provides technical expertise as a member of the state's Pesticide Water Quality Management Team, Conservation Effectiveness Partnership and a host of other water quality workgroups. Brenda has a Bachelor of Environmental Science from Montana State University and has been working to improve water quality in the state of Oregon for over twelve years.

**Tom Virzi** earned his PhD in Ecology and Evolution from Rutgers University in 2008 studying the effects of urbanization on the distribution and reproductive performance of American oystercatchers in coastal New Jersey. For the past decade, Tom has focused his research on studying the impact of habitat restoration on threatened and endangered bird populations throughout North America. In 2017, Tom is the Executive Director and founder of Conservation InSight, a non-profit scientific research organization focused on providing sound solutions to avian conservation issues, with the goal of developing new research projects in the Pacific Northwest.

**Ian Waite** has worked for the Oregon Water Science Center (USGS) for 27 years as a senior research ecologist. Ian's research has focused on understanding the effects of urban and agricultural land use impacts on stream ecosystems using robust and creative study designs and analytical methods. His early career focused on multivariate analysis of fish and



invertebrates related to land use indicators and environmental data, for the past 15 years it has shifted to predictive modeling focusing on more detail understanding of instream stressors, particularly water quality, habitat, and contaminants and now diatoms have been added to the biotic indicators. Ian has published in a wide variety of national and international journals and enjoys presenting at scientific conferences and stakeholder meetings.

**Ali Young** works for the City of Portland, Bureau of Environmental Services as a Capital Project Manager. Before that she spent over 15 years as an Environmental Specialist providing planning, research and technical analysis, permit and grant application, and other support for floodplain and stream restoration projects in Johnson Creek. She's worked closely on the following projects: Pleasant Valley Concept Plan, Johnson Creek Restoration Plan, Portland Watershed Management Plan, Schweitzer Natural Area, Foster Floodplain Natural Area, Luther Road Restoration, Powell Butte Stormwater Ponds, Errol Wetlands, Errol Creek Confluence, Lower Errol Heights, Oxbow Scour, and Springwater Wetlands.