



OREGON SOCIETY OF  
**Soil Scientists**

**Soil Workshop**  
**South Slough National Estuarine Research Reserve, Coos Bay, OR**  
**Friday, April 19<sup>th</sup> 2019 – 8am to 5pm**

**8:00 – 8:15am – Registration / Check-In (coffee and snacks)**

**8:15 - 8:25am – Opening Remarks - Sean Rochette**

**8:25 – 8:55am – Welcome to Coos Bay: A Short History - Dr. Shon Schooler & Jenni Schmitt**

Coos Bay and the South Slough are diverse areas that encompass complex habitats and ecosystems. We will discuss a brief history of the area with emphasis on geology and land use.

**8:55am – 9:55am –Soil Water Transport: Texture, flow rates, and movement of contaminants - Ron Reuter**

Onsite wastewater disposal is a common method for treating waste in rural areas and in some urban settings where development charges make connection to municipal systems prohibitive. The one thing most onsite systems have in common is using the soil to treat waste. Soil treatment relies on aerobic conditions and flow rates that allow contaminants to be remediated by the soil. Soil flow rates and aerobic conditions are strongly influenced by soil texture. We will explore soil water flow rates with respect to texture and review case studies of contaminant movement in soil water, reflecting on the implications for effective onsite treatment systems.

**9:55 – 10:10am – Break**

**10:10am – 11:00am – Aerobic Conditions, Redox, and Hydromorphic features - Dr. Markus Kleber**

This section will review the processes involved in the development of soil color patterns indicative of occasional or permanent reducing conditions. Reducing conditions will be defined, and their relevance for the decomposition of organic matter will be mechanistically explained. Key terms used in the “Field Book for Describing and Sampling Soils, Version 3” will be reviewed and discussed.



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**11:00 – 11:30am – Hydric Soil & Seasonal High Saturation Indicators - Sean Rochette**

Being able to identify indicators of saturation / anaerobic conditions in soil can be very important for making determinations for land use or in delineating wetland boundaries. We will discuss some of the common observable indicators that occur in soil driven by anaerobic conditions that can lead to organic matter accumulation and/or redoximorphic feature formations.

**11:30am – 12:00pm – Salt Marsh Systems and Soils - Marissa Theve**

Tidal marsh systems are among the most productive in the world due to ocean-derived and up-stream inputs. This presentation will cover the basics of salt marsh functions, dynamics, threats, soil sampling and lab techniques, and unique soil characteristics to note in the field.

**12:00 – 1:00pm – Lunch - Provided**

**1:00 – 1:15pm – Break into groups and travel to field site (2 miles down road)**

**1:15 – 2:00pm – Soil Texturing Exercise**

**2:00 – 4:30pm – Field Pit Explorations (4 rotational pits)**

We will visit four pit locations within the Wasson Creek Marsh area. Pit discussion leads will include Markus Kleber, Vance Almquist, Marissa Theve, Sean Rochette, and Ron Reuter. Discussion will include landscape positions, hydrology, redox features, saturation indicators, morphology, and more.

**4:30 – 5:00pm – Debrief / Wrap-Up Pit Discussion**

**5:00pm – End Workshop**

Participants are free to explore the trails of the South Slough Reserve until dusk or if staying in town for the night, a post-workshop meetup at the local 7 Devil's Brewery is an option.



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Speaker Bios

**Jenni Schmitt**- Jenni Schmitt has been studying, living, or working in Pacific Northwest coastal systems for over 18 years, first as a graduate student at the University of Oregon's Institute of Marine Biology and most recently as the Watershed Monitoring Coordinator at the South Slough Reserve. Her work at the Reserve includes implementing restoration effectiveness monitoring, establishing a vertical control network in the reserve, implementing long-term status and trends monitoring at "Sentinel Sites", and coordinating GIS mapping and spatial data analysis projects. Jenni also coordinates the community-based Partnership for Coastal Watersheds program whose projects include the Community, Lands & Waterways Data Source, an inventory of environmental and socio-economic conditions for the Coos estuary and its surrounding communities.

**Dr. Shon Schooler**- Dr. Schooler is the Research Coordinator at the South Slough Reserve. He conducts environmental research and assists others with research projects that benefit the sustainability of South Slough organisms and habitats. He received his B.S. from the University of Wisconsin-Madison, and his Masters and PhD from Oregon State University. He spent 8 years at the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Brisbane, Australia researching management of aquatic invasive plants and then 7 years at the Lake Superior National Estuarine Research Reserve before moving to Coos Bay in 2018.

**Ron Reuter**- Dr. Reuter is an Associate Professor of Natural Resources with Oregon State University's College of Forestry. He has been exploring the geo-ecology of Central Oregon since 2003 and he teaches and researches soils, geomorphology, and restoration ecology at the OSU-Cascades campus. His travels for research and teaching have taken him across the United States and internationally, including Chile, Costa Rica, and Abu Dhabi.

**Dr. Markus Kleber**- MaK is a Professor of Soil System Science at the Department of Crop and Soil Science, Oregon State University. He obtained MS and PhD degrees in soil science from the University of Hohenheim in southern Germany. Following his PhD, MaK moved to the Martin Luther University Halle-Wittenberg in central Germany, where he was introduced to mineral-organic associations and their role in soil organic matter



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cycling. This latter interest eventually induced MaK to join the Earth Sciences Division at the Lawrence Berkeley National Laboratory, Berkeley, CA. After two exciting years at the National Lab, the opportunity to join the Department of Crop and Soil Science at Oregon State University arose and Mak made his move in October 2006. Since coming to OSU, MaK has continued to research the mechanisms and processes associated with carbon flow through soils both west and east of the Cascades, most recently under special consideration of fluctuating redox conditions.

**Sean Rochette-** Sean is the current president of the Oregon Society of Soil Scientists but has been working by day for the Oregon Department of Environmental Quality (DEQ) since 2015 as the Onsite Wastewater Specialist covering Coos and Curry Counties. He is a Certified Professional Soil Scientist and holds a Master's Degree in Soil & Water Science and a B.S. in Environmental Science both from the University of Florida. Sean started his professional career in the state he grew up in with the Florida Department of Health in 2010 and has been conducting onsite wastewater regulatory work ever since.

**Marissa Theve-** Marissa hales from rural Eastern Connecticut where she grew up playing in the woods and brook near her home. She received a bachelor of science in environmental science and management from the University of Rhode Island, followed by a master's of science in natural resources and the environment from the University of Connecticut. In grad school Marissa was hired full-time by the USDA-NRCS soil survey office in Tolland, CT, where she spent 6 years studying tidal marshes, helping finish urban mapping in New York City, and working on several subaqueous soil projects. Marissa moved to Salem, OR in 2016 to accept a position at the Bureau of Land Management where she currently helps decision makers make informed choices about timber sales, recreation activities, and restoration projects.

**Dr. Vance Almquist-** Dr. Almquist is a soil geomorphologist and pedologist. Vance received his B.S. degree in Soil and Water Science from Utah State University in 2013 and his Ph.D in Soil Science from Oregon State University in 2018. Vance's doctoral research was primarily focused on the pedogenic and geomorphic processes which affect the forest soils in Oregon, where he primarily worked in the Ochoco and Wallowa-Whitman National Forests. Currently Vance is working as an ORISE Postdoctoral Fellow at the US EPA Office of Research and Development in Corvallis, OR.