Ooze News

Society of Wetland Scientists Pacific Northwest Chapter Volume 27, No. 2: Spring 2017

http://www.sws.org/pacific-northwest-chapter

President's Corner

By Yvonne Vallette, PNW Chapter President

Well just as I predicted, 2017 is shaping up to be a pretty wild year on the wetland and other waters front. With the recent roll back of the Clean Water and the Stream Protection Rules, to the potential unraveling of U.S progress on the Climate Change front, the national landscape for wetlands and other resources will most likely be changing. On the local front, it's also been an interesting time for wetlands and streams in the Oregon state legislature with the introduction of bills to provide exemptions for the construction of agricultural buildings in wetlands, as well as for any wetlands that aren't on the State Wetland Inventory, to repealing the current moratorium on suction dredging mining in Oregon's streams.

On a positive note, our Chapter has finalized plans for a joint meeting with the Society of Ecological Restoration's Northwest Chapter in October (15-18) 2018 in Spokane, Washington. This should be an exciting and dynamic meeting for both of our organizations. But we will need help to organize this meeting. There are many potential volunteer positions that need to be filled. So we need SWS members to either lead a committee or participate in a committee. Some of the key committees where we need member involvement include: Plenary and technical sessions, posters, workshops, field trips, abstract reviews, student volunteers, exhibitors, sponsors, outreach, designing and organizing the printed program, etc. If you have time to donate a couple of hours each month for conference calls and tasks, we would love to hear from you. You can contact me directly or Fiona McNair to let us know your interest. Else expect us to be knocking at your door (or ringing your phone) asking for your help.

Meanwhile, we are planning for a mini-meeting forum, for late September (September 27-28) to provide our members an opportunity for technical and policy dialogue as well as some potential organized fieldtrips and workshops. We are looking at venues in either Vancouver or Kelso, Washington to provide a convenient and affordable location for both Washington and Oregon members.

Activities on the SWS International front, include looking at some governance restructuring to provide more representation for International Chapters and looking at the pros and cons for hiring an Executive Director for our organization to provide some much needed continuity and strategic thinking for SWS as we continue to grow and expand internationally.

I will be attending this year's International SWS meeting in San Juan, Puerto Rico, on June 5-8. I hope to have a lot more news to share with our Chapter after that meeting (but also looking forward to enjoying a bit of sun and warmth after the slow start we have had in transitioning into Spring this year). Other future SWS meetings in the works include: Denver, Colorado in 2018; Baltimore, Maryland in 2019; Quebec City, Canada in 2020.

So as current events continue to unfold at the local and national level, we'll do our best to keep you all informed of these happenings. If you also come across any items of interest (including training opportunities), please pass those on to our wonderful and responsive Chapter newsletter editors: Maki Dalzell (Maki.Dalzell@hdrinc.com) and Katrina Poppe (katrina@nwecological.com).

May is American Wetlands Month

By Katrina Poppe, Co-Secretary

If you were disappointed that World Wetlands Day came and went so quickly, you can now look forward to a whole month of wetland appreciation with American Wetlands Month in May. If you have a fun wetland-related event planned, go to the SWS celebrates American Wetlands Month facebook page or email Julie Alcon at julalcon@gmail.com.

Upcoming SWS-PNW Conferences

By Katrina Poppe, Co-Secretary

SWS-PNW is currently planning a mini-meeting for September 27-28, 2017 (was originally May), with the second day devoted to workshops. The meeting will be held in southern WA, in Vancouver or Kelso. Registration is expected to be under $100. More details will come soon, and will be sent to members via the chapter email list.

The joint conference with SWS-PNW and SERNW is planned for October 15-18, 2018 at the Davenport Hotel in Spokane, WA.

Mallards are Good for Wetlands

By Maki Dalzell, Co-Secretary

Mallards are usually dismissed by so many people because they are found everywhere, but did you know they provide an important role in helping wetland plants survive and spread the seeds across the landscape? Erik Kleyheeg and colleagues at Utrecht University in the Netherlands recently published their study on how mallards connect isolated wetlands by dispersing plant seeds. The researchers tracked mallards with GPS to model movements of mallards and developed a spatially explicit, mechanistic model for seed deposition patterns. Wintering mallards are known to rest during the day near their roosting site and forage primarily on seeds at night in one or more foraging sites. Combining the bird movements and seed deposition patterns, the researchers were able to estimate that approximately 34 percent of seeds are transported from foraging areas to communal roost areas, and approximately 7 percent of seeds are dispersed between foraging areas. The study also demonstrated that the dispersal distance can be up to 5 miles! So next time you see mallards, give them a round of applause for being a good landscaper for wetlands and for maintaining wetland plant diversity!

Photo credit: Robert Bunch/Audubon Photography Awards

Kleyheeg, E., J. Treep, M. de Jager, B.A. Nolet, and M.B. Soons. 2017. Seed dispersal distributions resulting from landscape-dependent daily movement behavior of a key vector species, *Anas platyrhynchos*. Journal of Ecology. doi:10.1111/1365-2745.12738

Blue Carbon and the State of the Science in the PNW

By Katrina Poppe,
Northwest Ecological Services, LLC
and Western Washington University

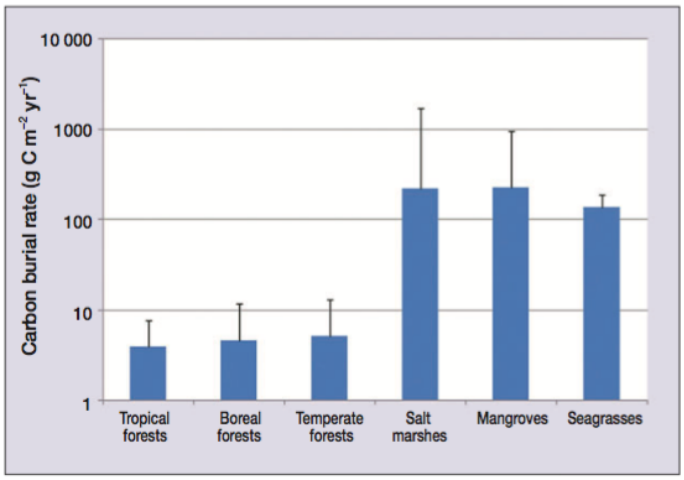
Perhaps you have heard the "blue carbon" buzz word enough recently that you've resolved to learn more about it and how it might apply to your wetland work or studies. There seems to be a growing curiosity among SWS-PNW members on the topic, so you are not alone.

What is blue carbon?

"Blue carbon" refers to the carbon that is sequestered and stored long-term in marine environments. The "blue" refers to the blue of the ocean, to differentiate it from the "green carbon" stored in terrestrial systems. Green carbon originally came about to highlight the carbon storage ecosystem service provided by forests, which could be used as an incentive to protect those systems from massive-scale deforestation and burning. Of course, wetlands worldwide are also quite prone to degradation. Coastal wetlands in particular are being lost an estimated 5-10 times faster than rainforests (Nellemann et al. 2009). And when scientists determined that coastal wetlands are actually much better at sequestering carbon than terrestrial forests, blue carbon, as a field of its own, was born.

What makes coastal wetlands so good at sequestering carbon?

The primary pathway for carbon uptake is through the plants, while storage takes place in the soil. After plants remove carbon dioxide from the atmosphere through photosynthesis, the carbon is temporarily held in the living roots and shoots. Much of this organic material is swiftly decomposed, but the portion that isn't – the refractory material – either stays in the soil as dead roots, or falls to the sediment surface as litter, some of which is eventually buried. Although coastal wetlands, including mangroves, tidal marshes, and seagrass beds, contain only 0.05% of the total plant biomass of terrestrial systems, they are able to sequester an equivalent amount of CO_2 every year (Nellemann et al. 2009). Moreover, this coastal carbon is stored for millennia, instead of the decades or centuries offered by terrestrial systems. There are three major reasons for the unrivaled capacity of coastal wetlands to sequester carbon. First, tidal mangroves, marshes, and seagrasses have relatively high plant productivity rates, so they take up a lot of carbon each year. Second, in contrast to terrestrial systems, the anaerobic soil environment in wetlands slows decomposition, which results in less organic carbon being remineralized and re-emitted to the atmosphere. Third, and perhaps most importantly, in contrast to inland wetlands, coastal wetlands have a tidal influence that is continually delivering sediment to the system. These sediment inputs bury the plant material, reducing the likelihood of decomposition, and also preventing the soil from reaching its carbon saturation point.



Carbon sequestration rates from a variety of habitats, from Mcleod et al. (2011). Note the log scale on the y-axis.

What are the benefits of quantifying blue carbon?

Once carbon stocks and sequestration rates are quantified for a variety of habitats and regions, carbon offsets can be assigned to any particular site and entered into a carbon market system. In a perfect world, we wouldn't need carbon offsets and cap and trade programs, but the reality is that no economic sector will be completely eliminating their carbon emissions anytime soon. Carbon markets offer a source of funding for wetland conservation and restoration, and I don't see any reason to turn that down! Carbon credits can be awarded to a wetland conservation project that prevents the release of stored carbon that occurs during degradation. Credits can also be awarded to restoration projects that increase carbon sequestration, typically through the reintroduction of the tidal regime. Carbon markets can be either compliance or voluntary markets. At this point, all U.S. carbon markets are voluntary, with the exception of the California Global Solutions Act system and the Regional Greenhouse Gas Initiative in the northeastern states. In addition to carbon markets, there is also potential for blue carbon to be integrated into existing federal policies and regulations (Pendleton et al. 2013).

For a wetland to be entered into a carbon market, practitioners must use an approved carbon standard that describes acceptable methodologies for calculating carbon offset credits. A few carbon standards are in use today, the Verified Carbon Standard (VCS) being the most widely used. The VCS was recently revised to include wetland

restoration and conservation as an eligible project activity. In late 2015, just over one year ago, the VCS approved the Methodology for Tidal Wetland and Seagrass Restoration, which finally allows coastal wetlands to receive carbon credits.

Restore America's Estuaries (RAE) is an organization that has been heavily involved in advancing the science, policy, and project implementation components of blue carbon. They provide many helpful resources on their Blue Carbon Initiative webpage, including the VCS itself and a (much appreciated) Manual for using the VCS Methodology. RAE is currently working on a pilot project entering a restoration project into the carbon market, and I hear they are on the hunt for additional pilot projects.

State of the Science

At this point, the science of blue carbon is still fairly young and scientists worldwide are in the process of gathering baseline data on carbon stocks and sequestration rates across a variety of habitats and regions, and standardizing field and lab methods. There remains a large amount of variability in carbon stocks and sequestration rates from different sites (Grimsditch et al. 2013), hence the need to continue gathering baseline data to better understand how carbon dynamics are affected by various environmental factors. Regions differ in their tidal regimes, temperature, and sediment supply, not to mention dominant plant species. The global average stocks and rates found in the literature can be heavily biased toward certain regions where prolific researchers reside, causing the reported global average to be unrepresentative of all regions and species. This is particularly the case with seagrasses, where studies in Mediterranean *Posidonia oceanica* meadows dominate the literature. Their growth habits allow for impressive carbon stocks, but they are unique in the world of seagrasses, causing the global average to be a bit of an overestimate.

Here in the PNW, we happen to live and work in one of those under-represented regions, but we are working hard to catch up. In 2013 we completed a study of carbon stocks and sequestration rates across a variety of natural, degraded, and recently restored marshes and tidal swamps in the Snohomish River Estuary (Crooks et al. 2013). This collaboration between WWU, Environmental Science Associates, RAE, and EarthCorps also produced an estimate of the climate benefits of varying levels of estuary restoration, and considered a potential 1-m rise in sea level. RAE gave that study a tremendous amount of publicity and really put the PNW on the map! Current studies in the PNW are further investigating blue carbon in both tidal marshes and seagrass meadows.

Students pounding in a sediment corer in the Stillaguamish River estuary. (Photo: Katrina Poppe)

The typical progression for blue carbon studies is to first measure carbon stocks, then sequestration rates, and greenhouse gas emission rates. In the PNW, all research to date has included an evaluation of carbon stocks, but only some have measured carbon accumulation rates, and none have yet measured emissions. All three are important pieces of the story, so we still have much to do. Stocks tell us how much stored carbon could potentially be lost as a result of habitat degradation. Sequestration rates tell us how quickly a wetland is currently accumulating carbon, which is necessary for comparisons of the carbon sequestration capacity of different systems. Degraded tidal wetlands or upland systems often have very high stocks, but minimal accumulation rates, so stocks alone may not provide the intended incentive for wetland restoration or conservation. Lastly, greenhouse gas emission rates, particularly carbon dioxide, methane, and nitrous oxide, can be substantial in some cases, particularly in fresh or brackish wetlands, and they can tip the scale from greenhouse gas sink to source. If we can find funding to continue this important research (big if), you may soon be able to consider carbon markets as a funding mechanism to protect or restore your favorite PNW coastal wetland.

Literature Cited

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Upcoming Webinars

By Maki Dalzell, Co-Secretary

Society of Wetland Scientists:
Register online at http://www.sws.org/About-SWS/upcoming-webinars-for-members.html

- The Clean Water Rule: Real Facts: April 1, 2017, 10:00 – 11:00 AM PDT.

Association of State Wetland Managers:
Register online at http://www.aswm.org/aswm/aswm-webinarscalls

- Improving Crediting of Wetland and Stream Mitigation: May 17, 2017, 12:00 – 2:00 PM PDT
- The Naturally Resilient Communities Project: Siting Guide and Case Studies for the Mainstreaming of Natural Infrastructure to Address Coastal and Riverine Flooding: May 18, 2017, 12:00 PM PDT.

Coastal and Estuarine Research Federation:
Register online at http://www.erf.org/webinars

- Social Media and Science: Navigating Science Communication in a Hyper Connected World: May 3, 2017, 10:00 – 11:00 PDT.

Photo: Katrina Poppe

Calendar of Wetland Classes and Workshops

By Maki Dalzell/Katrina Poppe, Co-Secretaries

To better serve our members we have included a list of wetland related classes and workshops occurring in the Pacific Northwest. If you know of other organizations that offer classes please forward the web link to katrina@nwecological.com.

Coastal Training Program:
http://www.coastaltraining-wa.org/

- How to Explain Science, Share Data, and Build Trust: Presentation Skills for Scientists and Public Officials: May 2 and May 16, 2017. Yakima, WA.
- How to Conduct a Forage Fish Survey: May 10, 2017. Mt Vernon, WA.
- How to Determine the Ordinary High Water Mark: May 17-18, 2017. Lacey, WA.
- Enhancing your Presentations: Additional Techniques for Scientists and Public Officials: May 24, 2017. Lacey, WA.
- Puget Sound Coastal Processes, Shoreline Modifications, and Beach Restoration: May 25, 2017. Tacoma, WA.
- How to Determine the Ordinary High Water Mark: June 7, 2017. Mt Vernon, WA.
- Eelgrass Delineation Training: June 13, 2017. Mt Vernon, WA.

Northwest Environmental Training Center:
https://nwetc.org/

- Planning and Preparing an Ecological Risk Assessment: May 16-17, 2017. Kirkland, WA.
- Habitat Restoration Webinar Series: Planning and Implementing a Successful Restoration Plan: May 16 – Dec 29, 2017. Online.
- ArcGIS 10: An Introduction to Environmental Applications: June 13-15, 2017. Olympia, WA.
- ArcGIS 10: An Introduction to Environmental Applications: August 29-31, 2017. Bellingham, WA.

Portland State University Environmental Professional Program: https://www.pdx.edu/environmental-professional-program/

- Hydric Soil Indicators for Regional Supplements: May 9-10, 2017. Portland, OR.
- Site Evaluation and Assessment Tools: June 20-23, 2017. Portland, OR.
- Applied River Restoration Field Course: August 14-18, 2017. Portland, OR.
- Wetland Hydrology Indicators and Problem Situations: Summer 2017. Portland, OR

Richard Chinn Environmental Training, Inc.:
http://www.richardchinn.com/

- Wetland Delineation: May 30 – June 2, 2017. Boise, ID.
- Regional Supplement Wetland Delineation: June 1-2, 2017. Boise, ID.

The Seminar Group:
http://www.theseminargroup.net/

- Shoreline Regulation in Washington State: Marine Shorelines, Rivers, and Lakes: June 1-2, 2017. Seattle, WA.

University of Washington – Professional Development Program:
http://www.pce.uw.edu/
No wetland related courses at this time.

Western Washington University:
https://ee.wwu.edu/summer-session

- Wetland ID and Delineation: June 19–23, 2017. Bellingham, WA. (For info contact Elizabeth Binney at elizabeth.binney@wwu.edu).
- Wetland Plant ID: June 27–29, July 5–6, 2017. Bellingham, WA. (For info contact Katrina Poppe at katrina.poppe@wwu.edu)

Washington Native Plant Society:
http://www.wnps.org

- Grass workshop with Clay Antieau at UW Herbarium: June 28-30, 2017. Seattle, WA.

Wetland Training Institute:
http://wetlandtraining.com/

- Basic Wetland Delineation: August 21-25, 2017. Arlington, WA.
- Basic Wetland Delineation eSession with Field Practicum: August 28-29, 2017. Arlington, WA.
- Wetland Delineation Refresher: August 28-29, 2017. Arlington, WA.

SWS Funds Available for Wetlands Workshops

By Maki Dalzell/Katrina Poppe, Co-Secretaries

The PNW Chapter Board is encouraging applications for SWS support to conduct workshops on relevant topics. The application can be found on the chapter website: http://www.sws.org/Pacific-Northwest-Chapter/pacific-northwest-chapter-events.html

SWS PNW Consultant Directory

By Maki Dalzell, Co-Secretary

The PNW Chapter hosts a quarterly updated consultant list on the website: http://sws.org/images/chapters/pacific_northwest/docs/2017-4-5-Consultant-List.pdf. The only requirement to be on this list is current SWS PNW membership. If you would like to be added to the list or have your information updated, contact Maki Dalzell at maki.dalzell@hdrinc.com.

Update your contact information

The Chapter uses the current SWS membership list to email newsletters. Make sure your information is current to receive a copy:
http://sws.org/
https://netforum.avectra.com/eweb/DynamicPage.aspx?Site=SWS&WebCode=LoginRequired

Chapter Board Meetings

By Yvonne Vallette, Chapter President

The PNW Chapter Board conducts quarterly board meetings via conference call. These meetings are open to the general membership and you are encouraged to attend. If you have questions, concerns, want to get involved or are just curious please feel free to attend the meetings. Our last meeting was held on February 3, 2017 at 10:00 am, and our next meeting date is TBD. If you are interested, please contact Yvonne at vallette.yvonne@epa.gov to receive conference call information.

Ooze News Deadlines for Articles

Articles and announcements are welcomed and appreciated for the summer edition of the Chapter newsletter, Volume 27 Number 3, no later than July 15, 2017. Please send associated documentation to co-secretaries Katrina Poppe at katrina@nwecological.com or Maki Dalzell at maki.dalzell@hdrinc.com. We will review your information for submission to the Ooze News.
Thank you.

SWS PNW Member List Serve

By Maki Dalzell/Katrina Poppe, Co-Secretaries

Of the many benefits of becoming a SWS-PNW member, members enjoy being on an exclusive list serve which provides up to date information regarding events, workshops, news, etc. If you're not a member already, please consider becoming one or encourage your colleagues, employees, or the like to join. Thank you!