

PNW Blue Carbon Working Group

Key Reports and Publications

2014-2023

In Review

Brand MW, Diefenderfer HL, Cornu C, McKeon M, Janousek C, Borde AB, Souza T, Keogh M, Bridgham S, and Brown C. (2023) Can restoring tidal wetlands reduce nuisance flooding of coasts under future sea-level rise? *Earth's Future* (in review).

Diefenderfer HL, Gunn CM, Cullinan VI, Weisenhorn P, Borde AB. In review. (2023) Tidal effects on N₂O, CH₄ and CO₂ emissions from seawater-treated wetland soils and microbiota. *Scientific Reports* (in review)

In Preparation

Williams T, Janousek C, McKeon M, Diefenderfer HL, Cornu C, Borde AB, Apple J, Brophy L, Norwood, M, Bridgham, S. (2023) A regional assessment of methane and nitrous oxide emissions from reference, restored, and disturbed tidal wetlands in the Pacific Northwest, USA. (in preparation)

Laufer A, Beers L, Taggart M, Cornu C, Brophy L, Janousek C. (2023) Blue carbon in Yaquina estuary online mapping tool. (in preparation)

Poppe K, Rybczyk J, Bridgham S, Williams T, Cornu C, Pellatt M, Diefenderfer HL, Borde AB, Janousek C, Fuller R, Apple J, Brophy L, Kauffman B. (2023) Wetland land classes and decadal-scale accretion and carbon sequestration in the Pacific Northwest, USA. (in preparation)

McKeon M, Williams T, Bridgham S, Cornu C, Norwood M, Janousek C, Diefenderfer HL, Borde AB, Fuller R, Apple J, Brophy L. (2023) Carbon dioxide fluxes from Pacific Northwest tidal wetlands. (in preparation)

Bridgham S, Poppe K, Williams T, McKeon M, Janousek C, Rybczyk J, Diefenderfer HL, Borde AB, Cornu C, Apple J. (2023) Land use effects on net ecosystem carbon balance and radiative forcing in Pacific Northwest tidal wetlands. (in preparation)

Janousek C, Diefenderfer HL, Cornu C, Brophy L, Borde AB, Van de Wetering S. (2023) Tidal wetland restoration in the Pacific Northwest: A review of geomorphic and vegetative responses and new case studies of two Oregon estuaries. *Estuaries and Coasts*. (in preparation)

Janousek C, Cornu C, Borde AB, Diefenderfer HL, Peck E, Poppe K, Rybczyk J, Apple J, Thom R. (2023) Variability in tidal wetland blue carbon stocks and sequestration rates along the Pacific coast of North America. *Limnology and Oceanography*. (in preparation)

Janousek C, Cornu C, Giovanonni L, Borde AB, Brophy L, Diefenderfer HL, Apple J, Thom R. (2023) Hydrologic drivers of soil carbon and organic matter decomposition in Pacific Northwest tidal wetlands. *Ecosystems*. (in preparation)

Beers L, Taggart M, Laufer A, Cornu C, Brophy L, Janousek C, Crooks S, Lambert B, Ruther E, Phipps L. (2023) Pacific Northwest blue carbon calculator. (in preparation)

Published (Reverse Chronological Order)

Brand MW, Diefenderfer HL, O'Connor JE, Borde AB, Jay DA, Al-Bahadily A, McKeon M, Talke SA. Impacts of a Cascadia Subduction Zone Earthquake on Water Levels and Wetlands of the Lower Columbia River and Estuary. *Geophysical Research Letters* 2023;50(14): e2023GL103017
<https://doi.org/10.1029/2023GL103017>

Laufer A, Beers L, Taggart M, Cornu C, Brophy L, Janousek C. Blue carbon in Coos estuary online mapping tool. 2023; available at <https://oregonexplorer.info/content/blue-carbon-coos-estuary?topic&topic>

Peck EK, Guilderson TP, Walczak MH, Wheatcroft RA. Recovery rate of a salt marsh from the 1700 CE Cascadia Subduction Zone earthquake, Netarts Bay, Oregon. *Geophysical Research Letters*. 2022; Sep 28;49(18):e2022GL099115.
<https://agupubs.onlinelibrary.wiley.com/doi/pdfdirect/10.1029/2022GL099115>

Peck EK, Wheatcroft RA. Spatiotemporal variation in Oregon salt marsh expansion and contraction. *Estuarine, Coastal and Shelf Science*. 2022; Aug 31;273:107908.
<https://doi.org/10.1016/j.ecss.2022.107908>

Poppe KL, Rybczyk JM. Assessing the future of an intertidal seagrass meadow in response to sea level rise with a hybrid ecogeomorphic model of elevation change. *Ecological Modelling*. 2022; Jul 1;469:109975.

Moritsch MM, Byrd KB, Davis M, Good A, Drexler JZ, Morris JT, Woo I, Windham-Myers L, Grossman E, Nakai G, Poppe KL. Can coastal habitats rise to the challenge? Resilience of estuarine habitats, carbon accumulation, and economic value to sea-level rise in a Puget Sound estuary. *Estuaries and Coasts*. 2022; Dec;45(8):2293-309.

Russell BT, Cressman KA, Schmit JP, Shull S, Rybczyk JM, Frost DL. How should surface elevation table data be analyzed? A comparison of several commonly used analysis methods and one newly proposed approach. *Environmental and Ecological Statistics*. 2022; Jun 1:1-33.

St Pierre KA, Hunt BP, Giesbrecht IJ, Tank SE, Lertzman KP, Del Bel Belluz J, Hessing-Lewis ML, Olson A, Froese T. Seasonally and spatially variable organic matter contributions from watershed, marine macrophyte, and pelagic sources to the Northeast Pacific Coastal Ocean Margin. *Frontiers in Marine Science*. 2022; Jul 6;9:863209.

Poppe KL, Rybczyk JM Tidal marsh restoration enhances sediment accretion and carbon accumulation in the Stillaguamish River estuary, Washington. *PLoS ONE* 2021; 16(9): e0257244.
<https://doi.org/10.1371/journal.pone.0257244>

Beers L, Troost S, Clayton A, Cornu C, Crooks S, Ruther E, Theuerkauf K, Wade H. Incorporating Coastal Blue Carbon Data and Approaches in Oregon's First Generation Natural and Working Lands Proposal. White paper submitted to the Oregon Global Warming Commission, July 2021. https://ceff240a-b12a-47ec-aa5a-52c962fe647b.filesusr.com/ugd/43d666_34c238ccbabc4552b34ee63348c5ca51.pdf

Woo I, Davis MJ, De La Cruz SE, Windham-Myers L, Drexler JZ, Byrd KB, Stuart-Haëntjens EJ, Anderson FE, Bergamaschi BA, Nakai G, Ellings CS. Carbon Flux, Storage, and Wildlife Co-Benefits in a Restoring Estuary: Case Study at the Nisqually River Delta, Washington. *Wetland Carbon and Environmental Management*. 2021; Oct 19:103-25.

Prentice, C., Poppe, K. L., Lutz, M., Murray, E., Stephens, T. A., Spooner, A., et al. A synthesis of blue carbon stocks, sources, and accumulation rates in eelgrass (*Zostera marina*) meadows in the Northeast Pacific. *Global Biogeochemical Cycles*. 2020; 34, e2019GB006345. <https://doi.org/10.1029/2019GB006345>

Kauffman JB, Giovanonni L, Kelly J, Dunstan N, Borde AB, Diefenderfer HL, Cornu C, Janousek C, Apple J, Brophy L. Total ecosystem carbon stocks at the marine-terrestrial interface: blue carbon of the Pacific Northwest Coast, United States. *Global Change Biology* 2020; 26(10): 5679-5692.

Cornu C, Kauffman JB, Janousek C, Diefenderfer HL, Borde AB, Thom RM, Brophy L, Apple J, Schooler, S, Bragg J, Angell C, Simpson S, Crooks C, Emmett-Mattox S. Enhancing coastal zone policy, management, and research through end user-driven quantification and public dissemination of carbon stocks data for Pacific Northwest tidal wetlands: Phase 1 Blue Carbon Project. Final project report prepared for the National Estuarine Research Reserve System Science Collaborative. 2020.

Crooks S, Beers L, Settelmyer S, Swails E, Emmett-Mattox S, Cornu C. Scoping Assessment for Pacific Northwest Blue Carbon Finance Projects. A report by Silvestrum Climate Associates, TerraCarbon LLC, Strategic Solutions LLC and the Institute for Applied Ecology. 2020; https://www.pnwbluecarbon.org/_files/ugd/43d666_2c5acc56fba34b189903ea528d7ef3be.pdf

Peck EK, Wheatcroft R A, Brophy LS. Controls on sediment accretion and blue carbon burial in tidal saline wetlands: Insights from the Oregon coast, USA. *Journal of Geophysical Research: Biogeosciences*. 2020; 125, e2019JG005464. <https://doi.org/10.1029/2019JG005464>

Borde AB, Diefenderfer HL, Cullinan VI, Zimmerman SA, Thom RM. Ecohydrology of wetland plant communities along an estuarine to tidal river gradient. *Ecosphere*. 2020; 11(9):e03185. <https://doi.org/10.1002/ecs2.3185>

Brophy LS. Comparing historical losses of forested, scrub-shrub, and emergent tidal wetlands on the Oregon coast, USA: A paradigm shift for estuary restoration and conservation. Institute for Applied Ecology, Corvallis, Oregon, USA. 2019.

Brophy LS, Greene CM, Hare VC, Holycross B, Lanier A, Heady WN, et al. Insights into estuary habitat loss in the western United States using a new method for mapping maximum extent of tidal wetlands. *PLoS ONE*. 2019; 14(8): e0218558. <https://doi.org/10.1371/journal.pone.0218558>

Poppe KL, Rybczyk JM. Carbon sequestration in a pacific northwest eelgrass (*Zostera marina*) meadow. *Northwest Science*. 2018 May; 92(2):80-91.

Brophy LS, Peck EK, Bailey SJ, Cornu CE, Wheatcroft RA, Brown LA, Ewald MJ. Southern Flow Corridor effectiveness monitoring, 2015-2017: Sediment accretion and blue carbon. Prepared for Tillamook County and the Tillamook Estuaries Partnership, Tillamook, Oregon, USA. Corvallis, Oregon, USA: Institute for Applied Ecology. 2018; <https://doi.org/10.13140/RG.2.2.28592.38405>

Diefenderfer HL, Cullinan VI, Borde AB, Gunn CM, Thom RM. High-frequency greenhouse gas flux measurement system detects winter storm surge effects on salt marsh. *Global Change Biology*. 2018; 24:5961-5971. [Technical Advance] [10.1111/gcb.14430](https://doi.org/10.1111/gcb.14430)

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Thom RM, Breithaupt SA, Diefenderfer HL, Borde AB, Roegner GC, Johnson GE, Woodruff DL. Storm-driven particulate organic matter flux connects a tidal tributary floodplain wetland, main stem river, and estuary. *Ecological Applications*. 2018; 28:1420–1434. [Cover article. Corresponding Author.] <https://doi.org/10.1002/eap.1759>

Brophy LS, Ewald MJ. Modeling sea level rise impacts to Oregon's tidal wetlands: Maps and prioritization tools to help plan for habitat conservation into the future. Prepared for the MidCoast Watersheds Council, Newport, Oregon, USA. Corvallis, Oregon: Institute for Applied Ecology. 2017; https://ir.library.oregonstate.edu/concern/technical_reports/tt44ps38k

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Brophy LS, Brown LA, Ewald MJ, Peck EK. Baseline monitoring at Wallooskee-Youngs restoration site, 2015: Blue carbon and channel morphology. Corvallis, Oregon: Institute for Applied Ecology. Prepared for U.S. Fish and Wildlife Service, Portland, Oregon. 2015; <https://doi.org/10.13140/RG.2.2.20203.77609>

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