

Behind the Scenes

December 2022



Dear Friend,

How is it December already?? It is hard to believe that we are now finishing up the last days of 2022 and about to embark on a new year's journey in just a few short weeks. Looking out the window however, it is clear that the land has already given itself to winter's embrace in advance to the solstice date of December 21. The days feel so much shorter, the nights much colder, the birds more silent and the trees more bare. But at the same time as the outside realm grows quieter, we are gearing up for a lot more inside activities to keep you engaged with the watershed!

Starting in January, we will usher in a brand new Love Your Watershed theme for 2023 and 2024 - Beaver in the Basin! Our first two Sips 'n' Science pub talks for the new year will help us kick off this theme with a look back at when giant beavers used to live in our watershed, as well as the ecology and benefits of their modern day counterparts. First, on January 25, "Pleistocene Paleoeecology of the Mid-Willamette Valley: A Ghost Story" will be presented by our very own Aubrey Cloud, LWC's Project Manager (and part-time amateur paleoecologist in his free time!) at the West Valley Taphouse in Dallas. Then, on February 23, you won't want to miss an engaging presentation of the ecology and benefits of these web-footed, buck-toothed ecosystem engineers by Brian Bangs.

Our next BTS will be coming out together with the Winter issue of Meanderings, the LWC's quarterly newsletter. In that issue, we will be able to introduce our newest staff member, Ross Hiatt, who just joined the team as a second Project Manager on December 8. We are excited to be welcoming and orienting Ross to the watershed council and the watershed over the next few weeks, and will look forward to sharing the good news with you very soon!

May you have a wonderful holiday season, and a very happy and healthy New Year!

--Suzanne Teller, LWC Outreach Coordinator (contact me at Outreach@LuckiamuteLWC.org or 503-837-0237)

Upcoming LWC and Partner Events:

What are birds telling us about habitat use and survival at Luckiamute Landing?

Tuesday, December 13 - via Zoom webinar

A wide range of breeding, migrating, and wintering birds are using Luckiamute Landing State Natural Area (LSNA), and responding to changing local habitat conditions. During this Salem Audubon Society presentation, ecologist Dr. Josée Rousseau will share her research and many fascinating aspects of LSNA's rich bird life! [Click here to learn more and register!](#)

Pleistocene Paleoeecology of the Mid-Willamette Valley - A Ghost Story

Wednesday, January 25 @ West Valley Taphouse, Dallas

Mammoths, camels and bear-sized beavers in the Luckiamute?? LWC Project Manager, Aubrey Cloud, will take us to the watershed's distant past and introduce us to the lessons that paleoecology can teach us about our present and future. Learn more and register at <https://www.luckiamutelwc.org/paleoecology.html>

Beaver Ecology and Benefits

Thursday, February 23 (Location TBD)

Come join the LWC and US Fish and Wildlife Service Aquatic Ecologist, Brian Bangs, for a fascinating look at the ecology of the North American beaver, and the many benefits that this industrious rodent brings to the watershed. *Stay tuned for more information and a registration link, coming soon to your inbox!*

Your Land. Your Rivers. Your Community. Your Watershed.

Watershed Notes

Bed Elevation Monitoring Shows How Rivers “Level Up” After Large Wood Placement

by Monitoring Coordinator, Amanda Brackett & Outreach Coordinator, Suzanne Teller



Project Manager Aubrey Cloud measures bed elevation above a large wood placement along the Luckiamute River.

One of the main goals of the LWC’s large wood placements is to slow the flow of the water, so that more sediment is deposited on the river bed instead of being carried away downstream. An increase in sediment deposition not only provides important habitat for macro-invertebrates and spawning gravels for salmon, trout and lamprey, it can also help raise the river bed itself. But why might raising a river bed be so important?

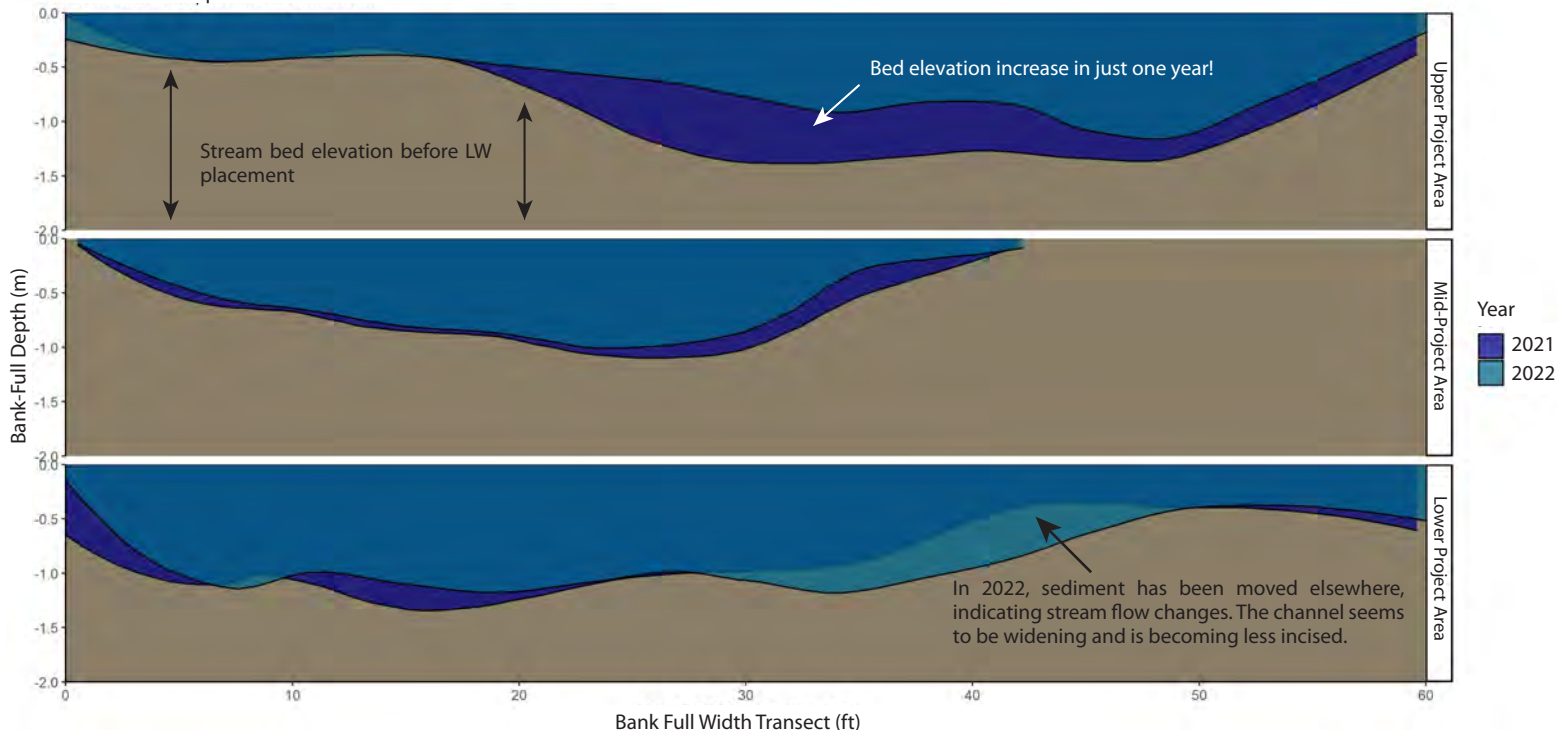
In a straight, obstruction-free river channel, the flow of water builds up a lot of speed and power, which results in erosion along the river banks and scouring out of sediment along the river bottom. Eventually, the channel becomes incised, which means that it has deepened to the point at which it no longer interacts with its floodplain. The loss of the connection between a waterway and the surrounding landscape results in a decrease in

habitat quality for aquatic and terrestrial species, reduced land productivity, increased erosion, and a lower water table. Adding large wood (LW) to an incised stream helps slow down the water, allow sediment and gravels to settle out onto the stream bottom, and bring the river bed back to a level where it is interacting more often with its floodplain.

In order to measure these changes in stream bed elevation over time at a large wood structure site, we measure *bank-full* depth (BFD) across the *bank-full* width (BFW) of the river channel each year. “Bank-full” refers to the river at maximum height just before it spills out of its natural channel over its floodplain. This means that BFW spans the entire width of a river channel at maximum height, and BFD is the maximum depth of that river from the top surface of the bank-full water flow to the stream bed. We then compare that data to the baseline BFD measured at the time the LW placements occurred.

The graphs below are from an LW project along the upper Luckiamute River. The wood was placed in fall 2021 and initial bed elevation data were collected shortly after placement to capture baseline conditions (dark blue). In fall 2022, the bed elevation was measured again and by comparing the data from 2022 to 2021 you can see the dramatic change in bed elevation at one of our LW sites in the first year after log placement! Areas that only show the darker blue are places where the bed elevation has risen after log placement. This shows that sediment is accumulating above the structures increasing habitat complexity and decreasing channel incision. Areas where the lighter blue from 2022 overlap with the tan sediment layer indicate a reduction in bed elevation from 2021-2022 (stream is getting deeper). This shows that sediment is being moved around and new flow paths are being created. We look forward to sharing more monitoring news with you in the coming months!

Bed Elevation at Three Large Wood Structures in the Upper Luckiamute River Project Area
From Farthest Upstream to Downstream



The captions above help explain how to read the graphs if you imagine you are looking at a cross-section of the river. The tan color represents the stream bed before LW placements at three (out of twenty-four total) sites along the upper Luckiamute River project area. The dark blue represents the increase in bed elevation at these three sites in 2021, while the lighter blue (most noticeable in the bottom graph) indicates that in 2022, sediment has been moved elsewhere.