Restoration as a Relationship

Why Beaver Dam Analogs?

Incised channels hold little water and little life. These simplified channels act more like high-speed water conveyance systems than quality habitat. Because all of the stream energy is localized with nothing to slow it down, the stream power eats away at sediment on the channel bottom - amplifying erosion and incision. Soon most of the water has rushed out of the system into the ocean, leaving a stream with little or no water for much of the year. Our main problems:

- ✕ Water is flowing too fast
- ✕ Sediment is escaping the system
- ✕ Water is confined to one channel
- ✕ Left without the tools to naturally recover

Nature Shows Us The Solution:

BDAs mimic the beaver dams and natural woody structures that were common in healthy rivers and streams. These in-stream structures slow and spread the water, while accruing sediment behind them. The benefits of a slow water system:

- ✓ Groundwater recharge
- ✓ Carbon sequestration
- ✓ Fire resiliency
- ✓ Biodiversity

Principles of BDAs

Use all natural materials
Wood, gravel, plant material, sod, untreated wooden posts

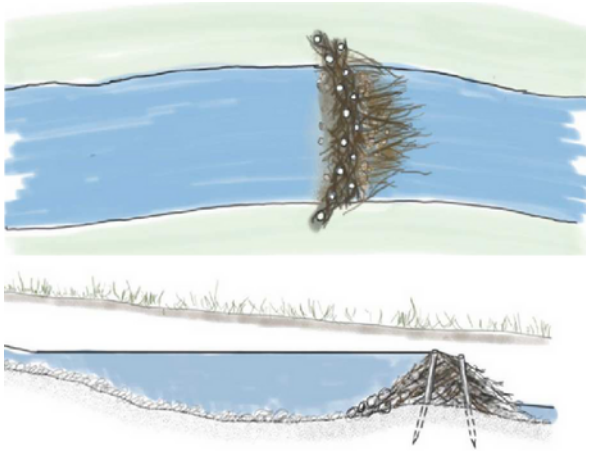
The more the merrier
Build complexes of structures, rather than stand alone

It's a relationship
Continue to build up and build more structures: 3-10 year project scope

What do BDAs Look Like?

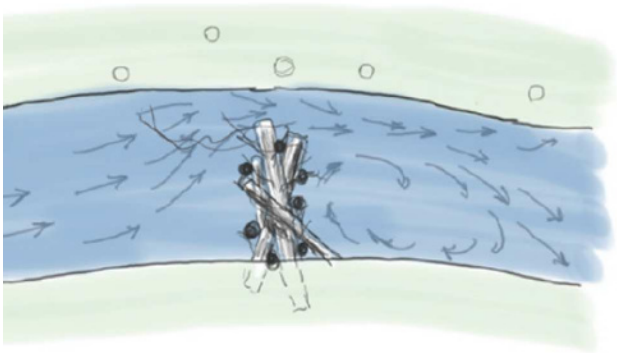
BDAs and PALS (post-assisted log structures) are by nature messy! They resemble either beaver dams or natural wood-loading, and thus they are a densely packed mound of wood, sediment and vegetation. Depending on the available materials and location in the stream, the size and form of the structures will vary. What is **important** is their **intended function**. Structures are strategically placed and designed with certain processes in mind to nudge the system back to self-sustainability. Structures usually take on one of two forms: channel spanning or bank attached.

Channel Spanning



Channel spanning structures create ponding and catch sediment on their upstream side. These ponds provide important habitat during the summer when flow is at its lowest and serve as speed bumps during high flow events, slowing the water and giving the sediment a chance to settle and collect. Ideally structures can raise the water level enough to reconnect to the floodplain allowing floods to dissipate over their floodplain and providing nutrient rich soil to the area.

Bank Attached



Bank-attached structures are ideal for incised, high flow areas. They don't try to hold back water. Instead, their goal is to redirect water around the structure, encouraging sinuosity and sediment redistribution from the high bank opposite the structure and deposition both in front of the structure and in the eddy behind it. They are crucial for directing sediment back into the channel where it can accrue behind the channel-spanning structures downstream for floodplain connectivity.

A Different Kind of Restoration:

What makes BDAs different from most restoration practices is that it is an ongoing relationship with the creek. The structures are semi-permanent in nature, and we plan on building more and adding to them over time. Instead of over designing and constructing a single feature that meets our immediate needs, but degrades the ecosystem, we are working with the system, adding the natural inputs that the **creek needs**. This is how to evolve a degraded creek, back to a healthy, self-sustaining ecosystem.