Blue Mountain Ranger District Aquatic Restoration Efforts
Wednesday June 20, 2018 BMFP Field Trip

Participants: Ed Clark, Sally Bernstein, Lauren Romstad, Pam Hardy, Joe Behrens, Rosie Gonzales, Tony Bertel, Kate Cueno, Jeff Nelson, Hannah Smith, Susan Jane Brown, Roy Walker, Dan Armichardy, Lindsay Warness, Dave Traylor, Billy Joe George, Jim Sproul, Mark Webb

Overview

The group toured six aquatic restoration sites along Camp Creek and Beech Creek on the Malheur National Forest. The sites followed a series of projects beginning in 2011 with the most recent finished in 2017. These watersheds have been identified as high-priority areas for steelhead recovery; the main goal of the projects was to restore juvenile and spawning habitat. The projects follow the progression of focusing solely on removing log weirs to a more integrated and multifaceted approach targeting ecosystem restoration in aquatic systems. In addition to steelhead, the projects also target beavers. Beavers were once abundant in the area but trapping and habitat loss led to their decline. Beaver dams help maintain floodplain connectivity and vegetative productivity. Beaver Dam Analogs (BDAs)—channel spanning log structures with interwoven willow trees—were included in later restoration projects in the attempt to recreate healthy aquatic environments to promote beaver return.

Stop 1 – 2011 Camp Creek

Summary: Log weirs—logs buried in stream beds perpendicular to stream flow—were installed years ago as an attempt to mimic natural aquatic conditions (such as create pools and as grade control structures to prevent further channel incision). They resulted in stream widening and other negative impacts related to fish passage and stream energy dynamics. This project specifically focused on fish habitat within the existing stream, and included removal of over 200 log weirs and hand-planting willow trees. Wood was buried in the banks, but only interacted with a portion of the stream channel and many of the berms associate with buried log weirs were left in place limiting floodplain connectivity and keeping the channel within the incised channel.

Top left-hand corner shows portion of log weir after main section was removed. Camp Creek has since deepened and narrowed at this spot (classified as a Rosgen F stream channel type), which is good for fish, but can't connect to the surrounding flood plain.

Due to the lack of channel roughness, recovery of the stream channel width and associated vegetation recovery has been a slow process. Given the target or focus, the project was successful in addressing the problems log weirs unexpectedly created. Still, the water temperature remains too high for steelhead and the stream channel over-widened. Also, LIDAR shows numerous other stream channels adjacent to the site which, if connected, would facilitate floodplain connectivity more broadly and address other important aquatic issues in addition to fish habitat.

Q&A

How are fire/fuels incorporated into this project? Are they?

- This hasn't been discussed in depth but restoring the floodplain would be a positive for fire. Prescribed burning would not make sense for this area because you would have to burn late in the season, and you would not want to burn down what could be providing shade. This space would be suited better to natural fire.

If you could redo the project now, what would you do? (Regardless of cost)

- Fill the channel up 4-5 ft. to get water back into the meadow and channels.
- Use wood spanning to create pools and habitat.

What would fill do in the short-term?

- Fine sediment would go back into the creek.

Have you found fish or beaver?

- Seen ~24 reds, have seen beaver after completion of the 2011 projects (in localized area where wood interacted with low flow channel).

Stop 2 – 2013-14 Camp Creek

Summary: The project felled/tipped trees and planted Willows within the area. The attempts were made to hinder livestock from entering with restoration, generate deposition, and reconnect the floodplain and meadow. Credit is given here to the range managers who have changed their livestock management for the betterment of this area. Once we can see deposition we will start seeing fish. The felling method seems to be effective; chainsaws were used instead of heavy machinery which left little impact on the area. Felled trees were modified some (e.g. branches were cut). They are similar to BDAs in holding back or spreading water and increasing deposition; juvenile fish can work through them. BDAs were made with Grand Fir and Lodgepole.

Upper reaches of Camp Creek looking downstream at trees and debris placed across the creek.

Another view looking downstream with trees cut to fall across the stream to spread high water and increase soil deposition.

Q&A

Have you seen a change in fish count?

- The count remains the same. The carrying capacity in this area is limited, and the temperature is still too high.
- The next step is to focus on creating shade.

Does shade cool the water?

- Shade does not change water temperature – rather, shade keeps temperature consistent. You would need to create cooler temperatures in water upstream in order to change the temperature in this section of the river. To cool the temperature 1 degree, you would need 1 mile of shade.

How often are you taking the temperature?

- Temperatures are taken every 1 hr.
- Beaver dams help to moderate and keep temperature consistent.

How critical is raising the temperature for fish?

- Not many events spike the entire creek. Weirs were juvenile barriers, to see fish return we need an increase in dams and vegetation.

Could you use artificial shade cover as a short-term solution?

- Reason we don't cover the streams are because it's better to use native species. Artificial stream cover isn't self-sustaining.

Are the BDAs temporary?

- BDAs are temporary until the beaver return; BDAs take us on a path to habitat recovery.
- Projects are not trying to change but instead are trying to accelerate the natural timeline/process.

Stops 3 and 4 – 2016 Camp Creek

Looking east across Camp Creek above numerous root wads at caged willows. The root wads provide fish habitat, increase soil deposition, and with high flows spread water connecting the floodplain.

Summary: The goal of this project was to reconnect 12 miles of side channels. This was done using BDAs, wood jams, and vegetative replanting. This site has experienced significant changes already, with over 1 foot of water spreading across the floodplain in a normal water year. In the springtime water flows over the BDAs and through side-channels to inundate the entire floodplain.

This site is unique in that both permittees and Oregon Natural Desert Association (ONDA) members met together to discuss the project. ONDA members helped with some of the planting, caging, and fence rebuilding.

Looking downstream from the root wads in the above photo.

Looking downstream at an ABD. Small tree stems and limbs are woven among wood posts driven in the stream channel to function like beaver dams.

Q&A

Have you flown the site with drones?

- Not with drones, flew the site by helicopter two-years ago. Photographed the site, but had difficulty capturing the before and after.

Are there any plans for on-going changes to this site?

- Some talk six months ago about it: tried to use wood pieces to anchor BDA corners. Willows that were woven into the BDA have stuck and are self-maintaining.

Spot 5 – 2016 Camp Creek

Summary: This site is similar to stop 4 with a wide valley and BDAs, wood jams, and willow planting. The entire work site was reseeded with a native seed mix. The work was done in the fall.

Q&A

What future changes do you expect?

- Want to re-establish Willows which are food for beavers.

Pre-1860, what do you imagine this site looked like?

- Wide valley, no lodgepole but lots of willows. There wouldn't be extreme temperature rise in the creek and juvenile steelhead would be present. There would also be more wildlife in the area.
- We are not trying to recreate or change the area to what that historic landscape looked like. Instead we are working to influence the trajectory of the current landscape towards its natural patterns.

Spot 6 – 2017 East Fork Beech Creek

Summary: Tipped or thinned 250 Douglas-fir trees, taken from an adjacent ~30-acre parcel that was to be logged, to provide wood for placement in stream along a four-mile section of the creek. Acres was a commercial unit that was dropped because it was not economically viable. It cost $75k to harvest and remove the trees and $70k for 6 weeks of work by two excavators to place them in the creek. The project has been effective in providing rearing habitat, connecting the floodplain, and withstanding a very high-water event. It nicely combines aquatic and veg restoration efforts and represents an integrated approach to aquatic restoration that achieves multiple objectives.

On East Fork of Beech Creek looking north toward a unit that was not economically viable to harvest but did need thinning. Trees for the stream restoration work along the creek were taken from this and other nearby units.

Looking at a "debris jam" created by excavators with trees taken from the adjacent unit. Caged plantings can also be seen in the photo.

Looking further downstream at assorted wood placement to spread water and connect the floodplain.

Q&A

How are you sharing information about this project?

- Project reports will be shared with aquatics teams across R6.
- Information is shared at cross-boundary workshops.
- Project is unique to this area because forest has an Aquatics EA that most others do not have.

Wrap up

The group reflected on their takeaways from the field trip. The group found the format of the field trip to be very helpful – being able to not only see the change in, or progression of restoration efforts, but to also see how the aquatics team adapted their strategies for each site with lessons learned from earlier projects. It can be difficult to see progress since these restoration activities do end up leaving behind what appears to be a “mess”. There was debate about what restoring a site to its *natural* state meant since that can be broadly interpreted. The group found the photographs the team shared useful in showing the evolution of each site.