Overcoming Common Barriers to Beaver Restoration & Beaver Dam Analog Work on Public Lands

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Beaver Restoration Webinar Series

December 10, 2020
Purpose of Webinar

Present common barriers to beaver restoration and beaver dam analog (BDA) work and provide insights on how these barriers can be overcome.

Mimic → Promote → Sustain

From Goldfarb (2018) Science: http://science.sciencemag.org/content/360/6393/1058
• Support
• Motivation
• Partnership Development
• Project Development
• Assistance Agreement
• Program Officer
• Funding
- Opportunity exploration
- Information sharing
BLM Utah Partnership Restoration Projects
Kimbell Creek
Price River
San Rafael River
Otter Creek
Birch Creek
Bear Creek
Ten common barriers to beaver/BDA work

1. Regulatory Challenges: NEPA, T&E species, & water rights
2. Local agency project buy-in/ownership
3. Communication/understanding roles between partners
4. Grazing management associated with restoration projects
5. Beaver dispersal & mortality associated with translocations
6. The perception that beaver dams/BDAs “steal water”
7. Potential infrastructure damage from beaver dam building
8. Intolerance of beaver and/or slowing the flow
9. Different perceptions of what constitutes reference condition
10. Restoration effectiveness monitoring
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1. Regulatory Challenges: NEPA, T&E species, water rights, permits
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Identify and Communicate Project Goals and Objectives

Increase beaver populations and associated dam-building activity in the Price River in areas where potential conflicts are low.

- Increase native plant cover
- Provide artificial starter dam structures
Utilize Strengths of Partners and Stakeholders
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USGS Cooperative Research Unit Corner

Beavers in the Desert? The Potential for Translocated Beavers to Serve as Restoration Tools in Desert Rivers

The USGS Utah Cooperative Fish and Wildlife Research Unit at Utah State University (USU) is partnering with the Ecology Center (USU), the Bureau of Land Management, the Bureau of Reclamation, Utah Division of Wildlife Resources, and U.S. Department of Agriculture-National Wildlife Research Center to evaluate the efficacy of beaver translocation for desert river restoration by comparing the fates, space use, and dam building activity of naturally occurring and translocated beavers in the Price and San Rafael Rivers in eastern Utah.

Author: Emma Doden, Phaedra Budy, and Julie K. Young
Beaver translocation: It seems simple…but, beaver move and beaver get eaten

Within seconds of being released at this site, the curious beaver inspects the construction of the beaver dam analogue built to provide it deep water cover. The beaver can do better, but this will suffice to get started.

A pair of beaver ready to check out their new home

See Kent & Amy’s Webinar in this ASWM Series


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Measure stream flow: At top & bottom of restoration reach

90 degree V-notch weir, Birch Creek, Utah
Measure stream flow: At top & bottom of restoration reach.

Install staff gauges with pressure transducers; collect monthly stream discharge measurements using SonTek FlowTracker handheld wading discharge measurement devices.
• “Brokered a deal” with downstream water users on Birch Creek
Jay Wilde’s story of restoring perennial flow to his creek using beaver…

Beaver power provides year-long water to Idaho ranch

Beavers? You read that right. Here’s how four-legged engineers helped restore an Idaho ranch.

By Brianna Randall | Feb 20, 2020
Birch Creek, ID – Restoring Perennial Flow
2020 >180 dams

Strategy
• Build BDAs to provide immediate habitat/refuge for beaver
• In 2015-16 introduced 9 beavers
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Recognizing beaver can cause damage, builds your credibility – empathize with the impacted

No denying, beaver can:
• cause flooding
• block culverts, which wash out roads
• chop down ornamental landscape trees
• impact irrigation diversions

Avoid Blocked Road Culverts
Road culverts are the most common sites for problematic beaver damming. A blocked road culvert can quickly cause dangerous and expensive road safety issues. Nearly every road culvert can be protected from beavers with use of custom pipe and fence kits.

Create Beaver Proof Culverts
Living With Beaver Strategies…

• Is problem real or perceived?
• If real:
  • ‘Beaver Deceivers’
  • ‘Pond Levelers’
  • ‘Caging’ or painting trees
  • All require maintenance
• If those don’t work, live trap and relocation

Figure A - Side View

Figure B - Top View

Fence floor not shown

Culvert

Working With Nature
Resolve Your Flooding Problems

The Best Beaver Management Practices
Long Term Solutions to Beaver Dam Flooding

Flow Devices to Control Beaver Damming
Where could there be risk of human-beaver conflict?

- Assuming that beaver are present in that reach & they decide to build dams which actually causes impact
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CLOSE YOUR EYES AND IMAGINE

- Imagine a river in pristine condition...
DID IT LOOK ANYTHING LIKE THESE?
THESE ARE NOT ANOMOLIES
Stream evolution model
This is our reference condition (Stage-0)


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What constitutes a healthy riverscape?

**RIVERSCAPES PRINCIPLES**

1. Streams need **space**
2. Structure forces **complexity** and builds **resilience**
3. The importance of structure **varies** (*3a & 3b*)
4. **Inefficient** conveyance of water is **healthy**

From pages 3-4 of Pocket Guide; Wheaton et al. (2019)

DOI: 10.13140/RG.2.2.28222.13123/1

See Wheaton et al. (2019, p 60): Chapter 2 LTPBR Manual for Principles

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L-T Process Based Restoration vs. Mechanized
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Focus on the entire valley bottom not just the channel
Beaver Dam Induced Flooding

- Inundation types great proxy for residence time...
Conclusions

Barriers to beaver restoration and BDA work can be overcome by:

- Programmatic NEPAs where possible
- Local level project ownership
- Solid partnerships and good communication
- Acknowledging the complexities of partnering with a rodent
- Sharing data that beaver dams can actually enhance perennial flow
- Acknowledging that beaver can be a nuisance species
- Acknowledging that Stage 0 (multiple channels) is the reference condition
- Doing side-by-side comparisons of mechanized vs LT PBR
- Using demonstration reaches to show instead of tell
- Monitoring restoration effectiveness at the valley bottom scale
Acknowledging ‘WE’ …

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- And many others… we are neglecting
A Lot of Amazing People are behind LTPBR:

An incomplete acknowledgement...
Beaver Restoration & BDA Resources

Davee et al. (2019).

Pollock et al. (2017).

http://brat.riverscapes.xyz/

http://lowtechpbr.restoration.usu.edu
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https://north-arrow-research.myshopify.com/