

# Bridge Creek IMW Accomplishment Report

## Partnering with Beaver in Stream Restoration

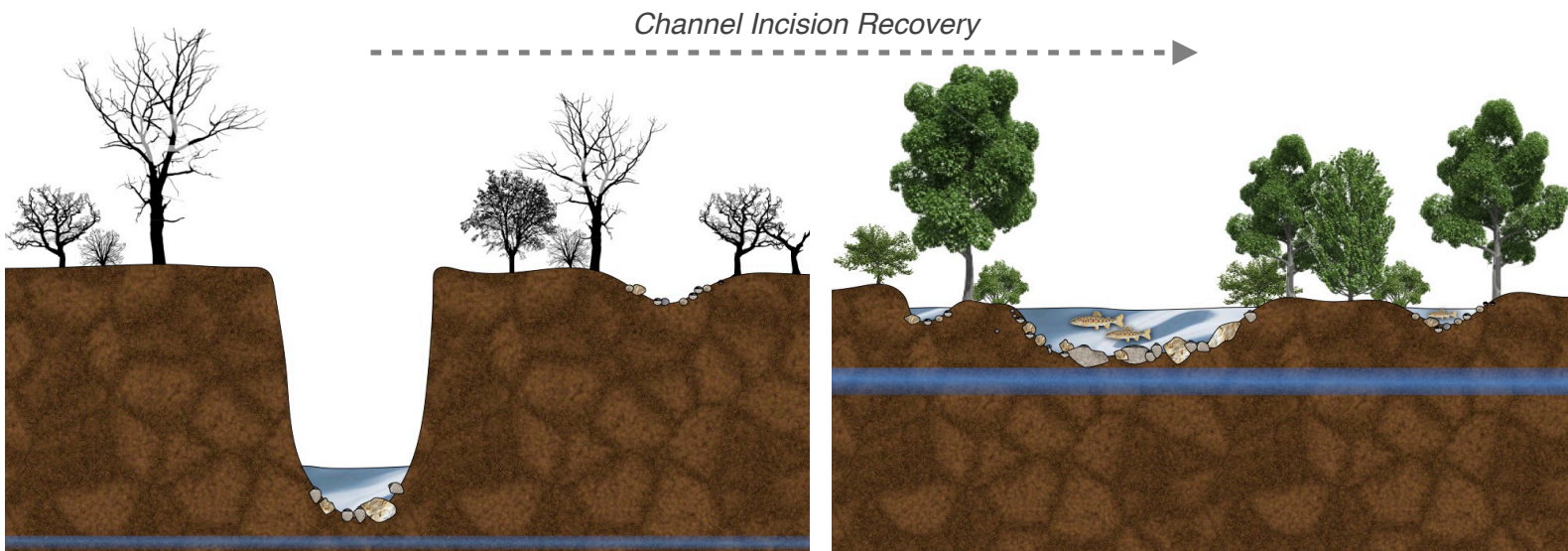
### Project Overview

**Focal Species:** Middle Columbia Steelhead

**Limiting Factors:** Highly incised channel featuring low habitat complexity, high stream power, floodplain disconnection, groundwater disconnection, and high summer stream temperatures

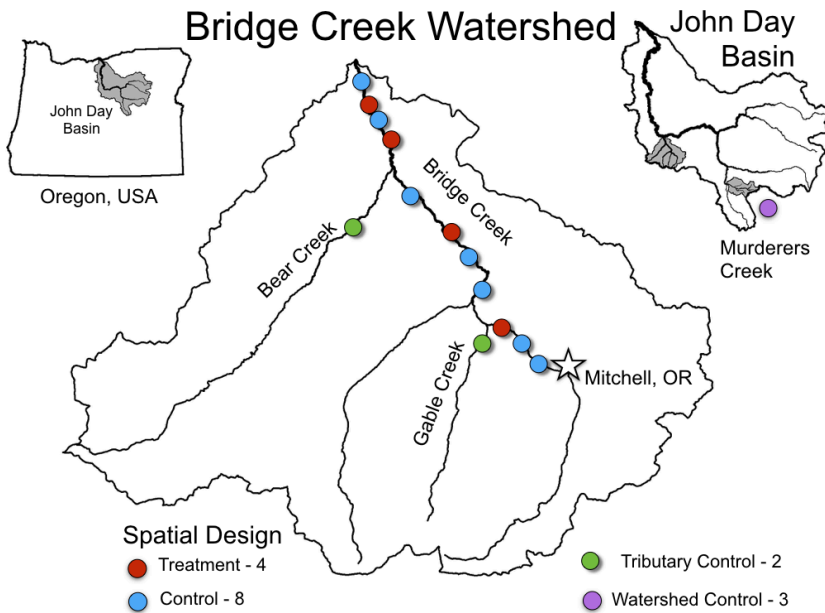


### Restoration Strategy



**Channel Incision Recovery:** The Bridge Creek IMW sought to test whether beaver dam analog structures (BDAs, pictured above) could accelerate the process of channel incision recovery resulting in a stream that is hydrologically connected to adjacent floodplains, groundwater, and features increased habitat complexity that might benefit steelhead populations.

# Bridge Creek IMW Accomplishment Report



## Study Design

**Hierarchical BACI:** Restoration and monitoring were implemented according to a spatially hierarchical **Before-After-Control-Impact** design. This design included 5 years of pre-implementation monitoring, and was developed to allow detection of fish population and habitat responses at the stream reach, tributary, and watershed scales.

## Restoration Effectiveness

Pre-restoration 2005

Post-restoration 2015

**BDA structures** resulted in development of persistent beaver complexes that served to trap sediment and contribute to rapid channel aggradation, floodplain reconnection, and increased channel complexity. Increased surface water storage and groundwater connectivity also served to moderate extreme summer temperatures. These habitat responses resulted in increased juvenile steelhead survival and productivity.

**Bridge IMW Publications:** Pollock et al. 2014. Using beaver dams to recover incised stream ecosystems. *BioScience*  
Bouwes et al. 2016. Ecosystem experiment reveals benefits of natural and simulated beaver dams to a threatened population of steelhead. *Scientific Reports*  
Weber et al. 2017. *In Press*. Alteration of stream temperature regimes by natural and artificial beaver dams. *PLoS ONE*