Thinking Outside the Box (Culvert)

Making difficult decisions for Fish Passage

Dave Stewart – Oregon Department of Fish and Wildlife
Overview

Fish Passage History – Fast Version
Where are we at Now
Approval Process
ODOT and Passage
The Johnson Creek Challenge
What you can do today
HISTORY

• First fish passage laws were prior to statehood (1859)

  • 1848: Oregon Territorial Constitution, Section 12:

    "The rivers and streams of water in said territory of Oregon in which salmon are found or to which they resort shall not be obstructed by dam or otherwise, unless such dams or obstructions are so constructed as to allow salmon to pass freely up and down such rivers and streams."

• Former statutes required passage, did not allow waivers, and were not followed (leaving many outside law)
SCOPE OF PROBLEM IN OREGON

- road-stream crossings: 10,000s
- dams: 1,000s
- tide gates: 1,000s
- dikes, etc.: ?

Upstream and Downstream Fish Migration has been Bisected Throughout Oregon
PRIMARY CAUSES OF PROBLEMS

- Water velocities exceed swimming capabilities of fish
- Water surface to water surface drop/jump heights
- Structural supports blocking channels (dams, bridge piers, culverts, dikes, levees, tide gates)
- Shallow water depths in receiving pools
- Abandoned structures

- Excessive culvert lengths
- Shallow water depths in culverts
- Water over-allocation “no water in stream”
- Poor water quality
- Attraction flows at fishway entrances
- Combination of multiple factors
ODFW Fish Passage Plan for a Road Stream Crossing
Stream Simulation Design Method Approach:

- new structure width is at least $\geq$ active channel width
- slope and elevation continuous
- bed material:
  - Similar to surrounding natural stream
  - is stable and remains in place
  - natural or supplemented
  - over-sized rock if >40' long
  - placed during construction
  - maintains water depth and velocity
“Natural/Nature Like” Solutions

• Rock Weirs
  • Large channel spanning rock
  • Effectively backwaters obstruction/provides adequate water surface elevation for passage and diversion
  • Water differentials meet needs of NMF present

• Roughened Channels
  • “Over steepened” sections
  • Provides depths and velocities that meet the needs of NMF present

• Stream simulation Channels
  • Channel reflects conditions in the natural stream- gradient, velocities, depths, etc.
“Of the 273 stream crossings assessed for fish passage, we found 202 or 74% of them to be fish passage barriers.”

List of projects completed in Johnson Creek

• New Data
• Prioritization
• Implementation
• Crystal Springs Example
• Ongoing projects
The East Lents Floodplain Restoration Project removed 60 houses from the 100-year floodplain, all purchased from willing sellers, to reduce local flooding and enhance fish and wildlife habitat. Restoration of the 63-acre site included excavation of 50,000 cubic yards of soil, removal of three roads, installation of 200 logs for habitat, and planting of 90,000 native trees and shrubs. Implemented by the City of Portland BES, it has reduced the risk of flooding on Foster Road to one-third the previous rate and restored a natural area.
ODFW and ODOT team up to address a big issue
Fish Passage Mitigation Banking

The Oregon Department of Fish and Wildlife (ODFW) Fish Passage Program has developed a plan to test an approach to Fish Passage Mitigation Banking in Oregon’s North Coast. In 2012, with support from ODFW staff, the Oregon Department of Transportation (ODOT), The Nature Conservancy and The Nature Conservancy began work on a package of tools that would support a pilot fish passage banking program.

Fish passage banking will allow ODFW to store mitigation from multiple projects in financial pass-through banking accounts, which will be used to offset future project needs. The states and local jurisdictions with a more standardized and transparent process to evaluate whether mitigation is appropriate, adequate, and available. This allows states to better manage their fish passage mitigation projects in the future.

Three Pilot Project Objectives

Objective A: Rigorously test and refine the Net Benefit Analysis (NBA) Tool

In order to use the NBA Tool in programmatic permitting decisions, it needs to produce credible results. This Net Benefit Analysis Tool includes a Fish Passage Credit Calculator (Calculator) that quantifies the impact of permitted actions (debts) in fish passage and the benefits of mitigation (credits). The tool will be tested in field conditions to determine its accuracy, reproducibility, cost-effectiveness, and sustainability.

Objective B: Conduct a limited number of mitigation banking transactions

As the chief sponsor ODOT, in conjunction with ODFW, will develop and test a mitigation bank site by creating a high-priority bank and will use the NBA Tool to evaluate and plan the acquisition of fish passage credits generated at the site. The project will be used to consist of the number of credits generated at the site. The project will be used to consist of the number of credits generated at the site. The project will be used to consist of the number of credits generated at the site.

Incentive Conditions:
- Each water body will use a 2-3 rate of credits to debts. In other words, every debt will require three credits to meet mitigation obligations under the fish passage banking program.
- ODEQ will limit the number of permits, issued against the bank to 32.
- Each water body will use no more than 5 at any given time.

Objective C: Evaluate the potential for statewide implementation of a fish passage banking program

http://www.dfw.state.or.us/fish/passage/mitigation.asp
Passage Repair Pilot

Highway - Geo-Environmental Section

Culvert Repair Pilot Project

The Oregon Department of Transportation (ODOT) and the Oregon Department of Fish and Wildlife (ODFW) have negotiated a programmatic agreement to implement a three-year pilot program that will allow ODOT to make specific short-term repairs to culverts in western Oregon without having to meet full fish passage criteria under the Oregon fish passage rules (SAND 535-412-000).

This agreement was approved by the ODFW Commission on October 19th, 2014. The programmatic agreement includes several key conditions for ODOT to conduct the culvert repair pilot program:

- Culvert repairs are considered temporary and are intended to last approximately 25 years in length.
- ODOT will improve fish passage at each repair site, and
- High priority fish passage basins are not eligible for the pilot project.

In addition, ODOT has agreed to pay $1.8 million into an ODFW-managed account that would fund high priority fish passage projects off the State system to other delayed passage at repair locations. Finally, ODOT will fund a new transportation liaison position within ODFW to coordinate implementation of the agreement. Both ODOT and ODFW staff have characterized the pilot project as a "win-win" that allows ODOT to make critical culvert repairs at a lower cost while protecting aquatic safety, fish passage, and watershed health.

For more information contact:

Re Watts
Aquatic Biology & Fish Passage Program Coordinator
503-399-3409

https://www.oregon.gov/ODOT/HWY/GEOENVIRONMENTAL/Pages/Culvert-Repair-Pilot-Project.aspx
Would these programs be a good fit for Johnson Creek?

• Is there one high priority site that would provide a 10X benefit to fish if we spent the money there, and didn’t provide passage at another location?

• Are there other ideas for addressing some of the other questionable passage sites?
Completed and Upcoming.....
The One Thing
Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.

-Margaret Mead
Your time is limited, so don’t waste it living someone else’s life. Don’t be trapped by dogma -- which is living with the results of other people’s thinking. Don’t let the noise of other’s opinions drown out your own inner voice. And most important, have the courage to follow your heart and intuition. They somehow already know what you truly want. Everything else is secondary.

-Steve Jobs