



Tryon Creek

Restoration Monitoring and Assessment

The Issue

Tryon Creek is one of the largest, urban watersheds in Oregon. Much of Tryon Creek lies within the bounds of Tryon Creek State Natural Area, a 645 acre tract of public land in southwest Portland. After leaving the park, it flows through public land owned by the City of Lake Oswego and the City of Portland. This portion of the stream is bisected by a culvert that runs under Oregon Highway (Hwy) 43 and a railroad near the mouth of Tryon Creek.

A number of native fish species can currently be found in this stream including steelhead and rainbow trout, coastal cutthroat trout, coho and Chinook salmon. It is thought that Pacific lamprey, western brook lamprey, and other salmon species historically utilized this stream. However, since construction of the culvert under Hwy 43 and the adjacent railroad, passage of lampreys and salmonids has been either inhibited or prevented altogether.



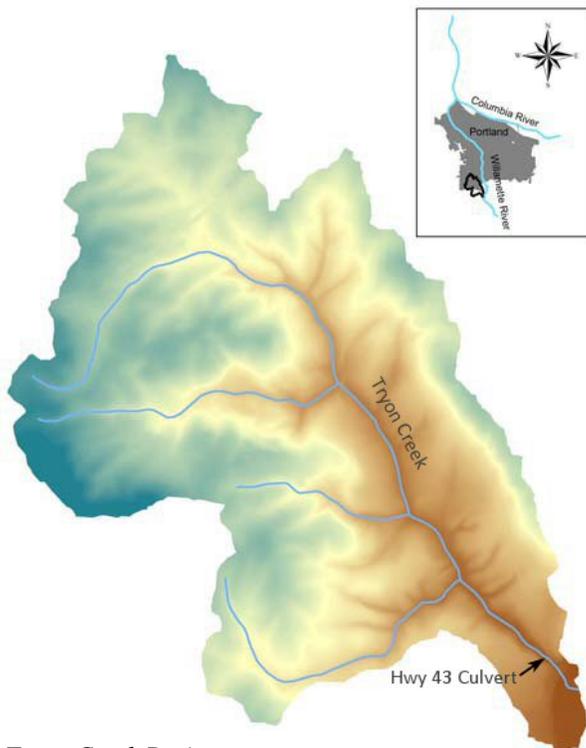
Credit: CRFPO

Retrofitted culvert with new baffles.

The Hwy 43 culvert was constructed in the late 1920s and modified in the 1950s. It is approximately 122 m (401 ft) long with a drop of nearly 6.7 m (22 ft) from top to bottom, resulting in an average grade of 4.6%. Prior to 2009, there were a series of alternating baffles that provided some structure within the culvert, but likely did not provide adequate holding water for fish attempting to migrate upstream. Consequently, this design likely blocked lamprey migration and hindered salmonid movements upstream through the culvert.

The Project

A collaborative project has been implemented by Oregon Department of Transportation, Oregon Department of Fish and Wildlife, Oregon State Parks, National Marine Fisheries Service, Cities of Portland and Lake Oswego, Friends of Tryon Creek, Tryon Creek Watershed Council, National Fish and Wildlife Foundation, and the U.S. Fish and Wildlife Service, Columbia River Fisheries Program Office (CRFPO) to improve passage conditions for anadromous fish migrating into Tryon Creek. A replacement project for the Hwy 43 culvert is proposed to occur in two phases. The initial phase (implemented in August 2008) retrofitted the existing culvert with a new baffle system to improve fish passage capabilities. This



Tryon Creek Basin

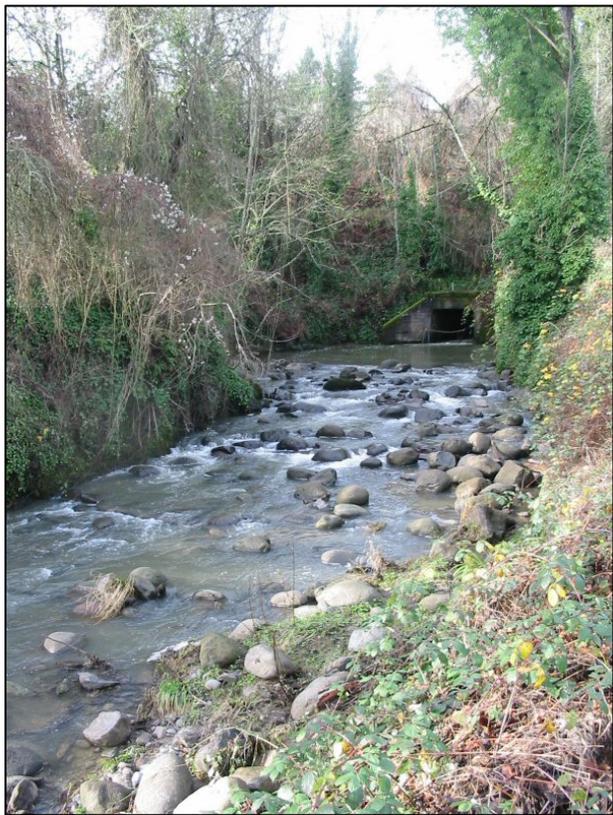


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phase also included some habitat restoration to the stream below the culvert to create a swim-in, rather than jump-in, situation that is more conducive to lamprey and salmonid passage. The second phase will consist of implementing a long-term solution to replace the existing culvert. Solutions currently being considered include a much larger culvert and a bridge.



Credit: CRFPO

Habitat restoration below the culvert to create better fish passage

What are we doing?

In 2005, the Columbia River Fisheries Program Office began to survey the creek above and below the culvert to determine the distribution of Pacific and western brook lampreys. In 2006, the monitoring and assessment program was expanded to include salmon, steelhead, and coastal cutthroat trout as well. The primary objectives of our work are to monitor what species are present in Tryon Creek, determine if fish can pass through the culvert, and eventually determine upstream passage efficiency. Our monitoring program includes three phases: 1) assessment and monitoring prior to the initial phase of culvert

improvement (completed in 2008); 2) assessment and monitoring subsequent to the initial phase but prior to the second phase of culvert replacement; and 3) assessment and monitoring subsequent to the completed culvert replacement project.

What have we found?

- Larval Pacific and western brook lampreys have been detected below the Hwy 43 culvert during electrofishing surveys conducted annually since 2005.
- No larval lampreys have been observed or detected above the Hwy 43 culvert.
- Abundance estimates generated for coastal cutthroat trout (N = 27) and coho salmon (N = 69) provided a baseline for comparison prior to habitat restoration that occurred in Tryon Creek below the Hwy 43 culvert in summer 2010. Abundance estimates will be generated annually for this reach in subsequent years.
- Monitoring to date has not yielded evidence of adult anadromous fish upstream passage through the Hwy 43 culvert either before or after the baffle retrofit. Some degree of juvenile passage occurred prior to the retrofit and continues to date. An analysis will be conducted in the future to determine if flow level through the culvert is a limiting factor in passage success, and, if so, if there is a threshold beyond which passage appears impossible. With the continuation of sampling within Tryon Creek we hope to further our understanding of all fish species within this stream.

The Future

The CRFPO will continue to survey for juvenile and resident salmonids both above and below the culvert. Both lamprey and salmonid spawning ground surveys will continue on a regular basis. Findings will be presented at the Annual Tryon Work Group meetings.

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