

Luckiamute Watershed Fish Passage Action Plan



Luckiamute Watershed Council

**Michael Cairns,
Project Manager**

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The Project

Fish passage barriers are well-known to be limiting factors to productivity of steelhead, salmon and trout throughout the Luckiamute River watershed. Stream reaches selected for this project correspond to the distribution of upper Willamette winter steelhead according to critical habitat designations by both ODFW and NOAA Fisheries. Salmonid spawning and rearing habitat is limited by impassable culverts.

We selected 42.7 miles of stream reaches having good potential for winter steelhead production for this project, begun in November 2006 (Table 1, Figure 1). All the reaches were within 8 miles of the drainage divide and the expected maximum temperatures were within the temperature regime favorable for steelhead rearing. The upstream extent of the surveys was selected where the drainage area was less than one square mile.

To identify and prioritize barriers, many hydrological and physical parameters were measured during the survey. Culvert condition, knowledge of downstream barriers, and extent of potential new habitat were also considered in prioritizing barriers. This project collected data to allow for an informed prioritization of restoration projects and to identify willing landowners for these projects.

The LWC outreach specialist contacted all 175 landowners along the study reach streams for access permission. Starting at the mouth of each study stream Benton Fish Passage Improvement Program personnel surveyed all permitted stream reaches to locate potential barriers during the spring and summer of 2007. They also entered field data in a spatial database. A total of 70% of the targeted stream miles (30.1/42.7) were surveyed, limited by access refusal by some landowners.

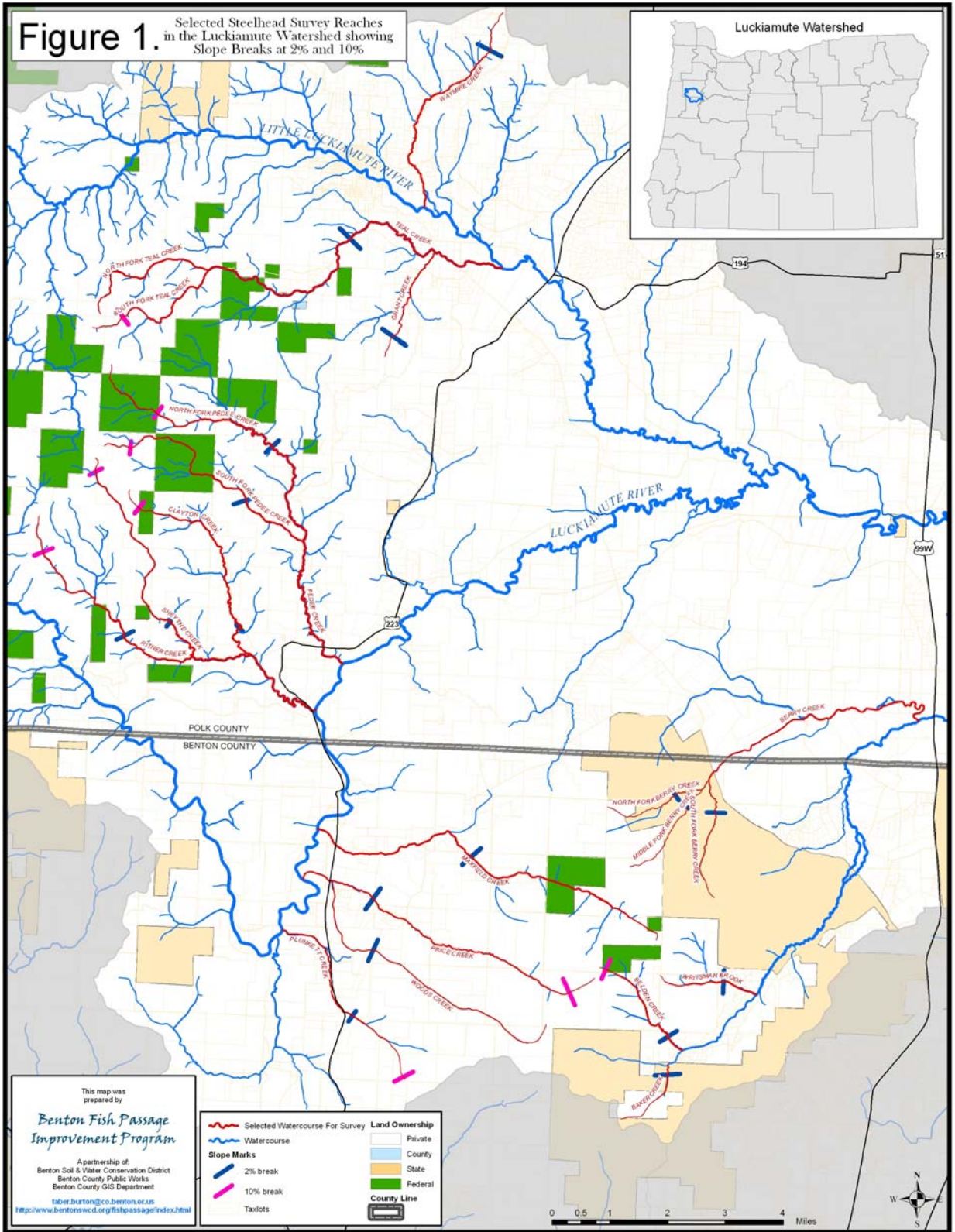
An expert panel met in November 2007 to work through a process to develop a prioritized list of all potential barriers deemed to be impeding movement of steelhead adults and/or juveniles. The panel identified 16 of the 29 surveyed as top priorities for repair (Attachment 1). They found 5 to be of unknown condition and 8 were deemed adequate. Replacement of all the priority barriers identified in this project would open nearly five miles of additional winter steelhead habitat. The LWC Project Manager will complete a Luckiamute Watershed Fish Passage Action Plan during the 2007-08 winter. The prioritized list will be reviewed by engineers in early 2008 to assign cost estimates to the 16 top priority passage barrier

projects. LWC outreach staff will discuss possible restoration work with the property owners associated with these 16 projects and request their participation. The \$24K project (\$13.5K from an Oregon Watershed Enhancement Board grant) will end in 2008, and the resulting passage restoration project proposals will follow in October.

Table 1. Reaches targeted for LWC passage barrier survey

Stream	Survey length (mi)
Plunkett Creek	2.0
Woods Creek	3.8
Price Creek	4.3
Maxfield Creek	5.3
Upper Berry Creek	2.2
Belden Creek	0.7
Writsman Creek	0.9
Baker Creek	0.2
Clayton Creek	2.0
Ritner Creek	4.0
Sheythe Creek	2.0
Pedee Creek (+ 2 tribs.)	5.0
Teal Creek	7.4
Grant Creek	1.3
Waymire Creek	1.6
Total	42.7

The Luckiamute Watershed Steelhead Passage Barrier Survey and Action Plan project was designed during 2004-05 by Luckiamute Watershed Council (LWC) members and staff. Design details are described in the OWEB technical assistance grant application (207-029) submitted in April of 2006 (Attachment 2). LWC partners included the Benton Fish Passage Improvement Program (Taber Burton, Chris Stebbins and Donna Schmitz), Oregon Department of Fish & Wildlife (Steve Mamoyac and Karen Hans), Bureau of Land Management - Salem District (Scott Snedaker), the Polk County Public Works Department (Aaron Geisler), Cascade Pacific RC&D (Karen Strohmeier, Jennifer Held and Jackie Nichols), Weyerhaeuser (Tim Tompkins), and numerous landowners. The LWC contracted with Benton Soil & Water Conservation District to complete the survey and GIS tasks, and with Christine Hurst to complete the outreach tasks. Michael Cairns was contracted as the Project Manager.



Outreach began in early 2007 and survey work began in the spring. Surveys were completed in late summer and data were delivered to the LWC in September (Attachment 3). The expert panel met in November 2007 and was comprised of three fishery biologists, a GIS specialist, an engineer, and two wildlife biologists (Attachment 4).

Barrier Prioritization

Criteria used to classify barriers as the highest priority were culvert gradient (depends on culvert type), culvert span:bankful stream width (<0.5 is a definite barrier), and perch (drop to the downstream pool) height (>4” is a definite barrier). These criteria closely followed the BLM coarse filter model (Attachment 5) used by many public and private entities to assess culverts for replacement. Attachment 1 identifies sixteen priority barriers, located in sub-watersheds. The following grouping of these barriers is based upon culvert condition, proximity, amount of habitat that could be made accessible, and level of understanding of downstream passage conditions. Groups are reported in priority order. Barriers within groups are not prioritized.

Group A – Waymire Creek						
Barrier	County	Ownership	Culvert gradient (%)	Drop to pool (in)	Culvert span: bankful width	Habitat opened (mi)
12	Polk	Private	-1.0	10	0.4	0.34
13	Polk	Private	-0.7	12	(see above)	(see above)
15	Polk	County	-4.0	19	0.9	0.23
16	Polk	Private	0.5	24	0.6	0.40
17	Polk	Private	-2.1	22	(see above)	(see above)

This group was selected first primarily because of the close proximity of the individual sites and because they are severely perched (drop to the downstream pools ranged from 10 to 24 inches). Note that barriers 12 and 13 are co-located, as are barriers 16 and 17. Four of the barriers are privately owned and barrier 15 is located on Oakdale Road. Approximately one mile of potential steelhead and cutthroat trout habitat could be gained by replacing these five passage barriers.

Group B – Pedee (6), Price (26), Woods (27), Plunkett (28), and Writsman (29) Creeks						
Barrier	County	Ownership	Culvert gradient (%)	Drop to pool (in)	Culvert span: bankful width	Habitat opened (mi)
6	Polk	Private	-14.9	0.0	0.38	0.63
26	Benton	Private	-5.0	14	0.28	?
27	Benton	Private	0	7	0.53	?
28	Benton	ODOT	-2.5	0	0.45	?
29	Benton	Private	-7.8	2	0.47	0.74

This group was selected for a variety of reasons. Barrier 6 has the most extreme gradient of the 29 surveyed barriers, and is undersized. A significant amount of potential steelhead habitat could be gained by replacing this passage barrier. Barrier 6 is located on Bald Mountain Road on industrial forest land. Barrier 26 has a major perch and an extreme gradient. This Price Creek culvert, on industrial forest land, is also severely undersized. Barrier 27 is perched such that it represents a passage barrier for juvenile salmonids. Barrier 28 is slightly undersized and has a steep gradient. Barrier 29 is slightly undersized and an extreme gradient. Replacing this culvert would potentially open an additional 0.74 miles of steelhead habitat. It is believed that this culvert is located on a road owned by a homeowners association. Habitat that could be opened by replacing barriers 26-28 is unknown because of proximity to upper extent of steelhead use or great uncertainty downstream.

Group C – Grant (7, 8, 11) and Berry (22, 23, 25) Creeks						
Barrier	County	Ownership	Culvert gradient (%)	Drop to pool (in)	Culvert span: bankful width	Habitat opened (mi)
7	Polk	County	-1.8	10	0.70	0.50
8	Polk	County	-7.4	12	(see above)	(see above)
11	Polk	Private	-8.0	24	0.19	?
22	Benton	Private	-2.2	31	0.50	0.43
23	Benton	Private	-4.7	1	0.30	1.30
25	Benton	Private	-7.5	23	0.36	0.27

This group also contains significant fish passage barriers, all but one being perched to a significant degree, and half are undersized. The other culvert (23) is severely under-sized and has a steep gradient. Replacement of this group of culverts would open 2.5 additional miles of steelhead habitat.

Additional survey data collected for each barrier is seen in Attachment 1. Photos of the priority barriers are also included (Attachment 6). Maps of streams where potential barriers were surveyed are to be found in Attachment 7.

It is worth noting that uncertainty exists in the prioritization of barriers on streams where downstream access was denied by the landowners. Permission was denied on reaches representing a total of approximately 12.6 stream miles. Much of Berry Creek downstream from the mainstem split is an unknown. Thus, the Berry Creek barriers were in Group C. Similarly, much of Woods, Price and Pedee Creek were inaccessible to this survey, and they were in groups rated lower than those in Group A. Nearly all of Woods Creek and approximately half of Price Creek were inaccessible. Upper Maxfield Creek is the site of an ongoing restoration project implemented by the LWC in partnership with BLM, Starker Forests, and Rosboro that will eliminate all passage barriers by 2009. Lower Maxfield Creek is thought to be barrier-free. Because Belden and Baker Creeks are barrier free, replacing the barrier on Writsman Creek would likely open nearly the entire Soap Creek sub-watershed to salmonid migration. Nearly all of Clayton and Sheythe Creeks were surveyed, and approximately half of Ritner Creek was accessible. Several culverts were surveyed and none were judged to be barriers to fish passage. Most of Pedee Creek was surveyed and all of the South Fork Pedee Creek was surveyed, while most of the North Fork Pedee Creek was surveyed. Much of Teal and Grant Creeks were inaccessible. The priority barriers on Berry and Grant Creeks were placed in Group C because of the downstream uncertainty. Most of Waymire Creek was accessible to surveyors and priority barriers on this stream were placed in Group A. Landowners who did not give access permission for the 2007 barrier survey will be contacted in the future to eventually solicit their permission to survey passage barriers.

Our estimation is that a total of 4.9 miles of new winter steelhead spawning and rearing habitat would be opened up if all 16 of the priority barriers were replaced. This assumption is framed within an estimated upper extent of steelhead use, derived from stream gradients. However, it is likely that, because of their high-gradient stream tolerance, cutthroat trout and other native fish would have access to far more than the nearly five miles of new habitat.

Owners of prioritized barriers identified in this project will be contacted by LWC's Outreach Specialist in the near future to offer technical and financial assistance for repair or

replacement of faulty or under-sized culverts located on their lands. A restoration grant application will be prepared for an October 2008 submission to OWEB.

List of Attachments

<u>Number</u>	<u>Title</u>
1	Survey Table
2	OWEB Grant Application
3	BFPIP Deliverables
4	Expert Panel meeting
5	BLM Coarse Screen Filter
6	Priority Barrier Photos
7	Barrier Maps