



NONPOINT SOURCE SUCCESS STORY

Idaho

Watershed Restoration Decreases Sediment Levels and Improves Fish Habitat in Jordan Creek

Waterbody Improved

As early as 1992, data indicated that excessive sedimentation from eroding forest roads impacted cold-water aquatic life in Idaho's Jordan Creek watershed. In 2002 the Idaho Department of Environmental Quality (DEQ) added the Jordan Creek Headwaters and Tributaries assessment unit (AU) to the state's list of impaired waters for sediment. Since the 1990s, watershed stakeholders, led by the U.S. Forest Service (USFS), have worked to remove or repair failing roads and restore stream habitat. Over time, these activities have reduced sediment levels, improved aquatic habitat and enhanced an important cutthroat trout fishery. As a result, DEQ removed the Jordan Creek Headwaters and Tributaries AU from the state's 2014 list of impaired waters for sediment.

Problem

Jordan Creek is within the boundaries of the Idaho Panhandle National Forests in the headwaters of the North Fork Coeur d'Alene (NFCDA) River Subbasin in the northern Rocky Mountains. Culvert failures, eroding roads and all-terrain vehicle trails (particularly at stream crossings and in riparian areas) contributed sediment to streams. In the early 1990s, USFS riffle stability studies and other habitat data indicated that cold-water aquatic life in creeks within the Jordan Creek watershed was impaired due to sediment. In 2001 DEQ completed an assessment of the NFCDA Subbasin (which includes the Jordan Creek watershed). On the basis of the NFCDA Subbasin assessment and past data, DEQ added the Jordan Creek Headwaters and Tributaries AU (ID17010301PN014_02) to Idaho's 2002 list of impaired waters for sediment (Figure 1).

Project Highlights

Partners have been conducting restoration work in the Jordan Creek watershed for more than 20 years. USFS and the Idaho Department of Fish and Game completed two instream habitat improvement projects in the upper reaches of Jordan Creek (downstream of Lost Fork), including placing 68 logs and rootwads in the stream in 1993, and placing more than 200 logs into the stream in 1995 to provide habitat and water quality benefits. This woody debris provided crevices and branches that forced the water to shift direction and velocity, dropping silt in quiet places and remov-

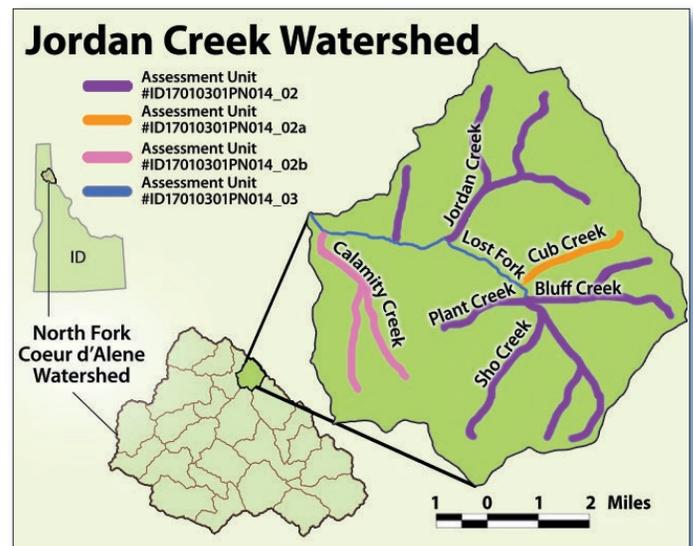


Figure 1. Idaho's Jordan Creek Headwaters and Tributaries assessment unit (ID17010301PN014_02) includes the watershed's first- and second-order streams, totaling 15.3 miles.

ing it from riffle areas. It also helped to dissipate the energy of rushing water that could otherwise lead to the erosion of stream banks.

In Lost Fork Creek (a Jordan Creek headwaters stream), the USFS replaced an undersized crossing structure on Forest Road (FR) 412 with a larger, bottomless arch structure. This new structure improved passage for aquatic organisms and restored a more natural hydrology, thereby reducing the potential for erosion

and siltation. Properly sized structures also reduce the risk of failure and associated sediment delivery to the stream. The USFS closed approximately 1 mile of unauthorized all-terrain vehicle trails in the lower Lost Fork Creek drainage. This reduced the likelihood that sediment eroding from unvegetated and unstable trail areas would enter the stream.

The USFS treated more than 3 miles of road (FR 600C) along the south side of Lost Fork and Jordan Creek. USFS closed the road, removed 14 culverts, and constructed waterbars on the remaining road surface. Removing culverts, which could be overwhelmed during high water events, prevents erosion of sediment from around the culvert and the road bed that would then enter the stream. Adding waterbars (humps of dirt placed diagonally across the road bed) reduced sediment entering the stream by preventing road runoff from flowing down the road, increasing in flow and volume, and creating sheet or rill erosion. Finally, during the Ulm Peak fire in 2006, the USFS completed extensive road treatments on FR 992, including blading and reshaping the road surface for improved travel, drainage and erosion control.

Results

Recent data indicate that Jordan Creek supports its cold-water aquatic life beneficial use (Table 1). In 2012 DEQ conducted biological monitoring (i.e., Beneficial Use Reconnaissance Program [BURP]) throughout the Jordan Creek watershed. Data from Jordan Creek (near its confluence with Lost Fork Creek), showed an average BURP score of 2.67. According to section 6 of DEQ's 2002 *Water Body Assessment Guidance*, an average BURP score of greater than or equal to 2.0 indicates full support of cold-water aquatic life. Macroinvertebrates samples included numerous EPT (ephemeroptera [mayflies], plecoptera [stoneflies] and



Figure 2. Jordan Creek during the 2012 assessment (after restoration).

trichoptera [caddisflies]) that are associated with cold, clear mountain streams.

Other 2012 data also indicate beneficial use support. A fish survey detected sculpin and westslope cutthroat trout, native species associated with good water quality. Stream habitat data showed high bank stability (85 percent) and cover (100 percent), and low percent fines less than or equal to 2.5 millimeters (mm) in size (7 percent). According to DEQ's *Guide to Selection of Sediment Targets for Use in Idaho TMDLs*, most impairment is found when percent fines of 2.5 mm in size are greater than 30 percent. Because data show Jordan Creek now fully supports its cold-water aquatic life designated use, DEQ removed this AU from Idaho's impaired waters list in the 2014 Integrated Report (Figure 2).

Partners and Funding

The USFS Coeur d'Alene River Ranger District led the effort to plan and implement watershed restoration projects. DEQ's Coeur d'Alene regional office conducted monitoring and led the assessment of the NFCDA Subbasin. The NFCDA Watershed Advisory Group (consisting of interested citizens and other stakeholders) meets multiple times per year to provide local public input and guidance to DEQ during development and implementation of water quality improvement plans for watersheds within the NFCDA Subbasin, including Jordan Creek. The Jordan Creek AU restoration effort cost an estimated \$365,000, which was supported by funds from the North Idaho Fly Casters, timber sale receipts (Knutson-Vandenberg Program funds), and other USFS sources.

Table 1. Jordan Creek 2012 assessment data.

BURP Multimetric Index Scores ¹	
Stream Macroinvertebrate Index	3.0
Stream Fish Index	2.0
Stream Habitat Index	3.0
Average BURP Score	2.67

¹Water quality standard: Average BURP score \geq 2.0 indicates full support of cold-water quality life beneficial use.



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For additional information contact:

Kajsa Eagle Van de Riet
Idaho Department of Environmental Quality
208-769-1422 • kajsa.vanderiet@deq.idaho.gov

Dan Scaife
Idaho Panhandle National Forest
208-664-2318 • dscaife@fs.fed.us