



NONPOINT SOURCE SUCCESS STORY

Idaho

Watershed Restoration Decreases Sediment Levels and Improves Fish Habitat in the Shoshone Creek Headwaters

Waterbody Improved

In the early 1990s, U.S. Forest Service (USFS) data indicated that excessive sedimentation from eroding forest roads impacted cold water aquatic life in Idaho's upper Shoshone Creek watershed. In 1994 the Idaho Department of Environmental Quality (DEQ) added the Shoshone Creek Headwaters and Tributaries Above Falls Creek assessment unit (AU) to Idaho's list of impaired waters for sediment. A combination of restoration activities and natural recovery has improved water quality conditions in the upper Shoshone Creek watershed. Watershed stakeholders, led by the 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 intends to remove the AU from the state's next list of impaired waters for sediment.

Problem

Shoshone Creek is within the boundaries of the Idaho Panhandle National Forest. It is a headwaters tributary of the North Fork Coeur d'Alene (NFCDA) River Subbasin in the northern Rocky Mountains. In the early 1990s, USFS riffle stability studies and other habitat data indicated that cold water aquatic life in streams within the Shoshone Creek watershed was impaired due to sediment. On the basis of those data, DEQ added the Shoshone Creek Headwaters and Tributaries Above Falls Creek AU (ID17010301PN012_02; 46.87 miles) to Idaho's 1994 list of impaired waters for sediment (Figure 1). In 2001 DEQ completed an assessment and total maximum daily loads for the NFCDA Subbasin (which includes the Shoshone Creek watershed), which indicated that the AU should remain on the impaired waters list. The 2001 Subbasin Assessment cited forest management and forest roads as major sources of sediment causing impairment.

Story Highlights

Partners have been conducting restoration work in the upper Shoshone Creek watershed for more than 20 years. USFS placed woody debris in two tributaries (Rampike Creek, 1998; Clinton Creek, 1999), and added instream structures in Clinton Creek in 1999. This woody debris provided crevices and branches that forced the water to shift direction and velocity, dropping silt in quiet places and removing it from riffle

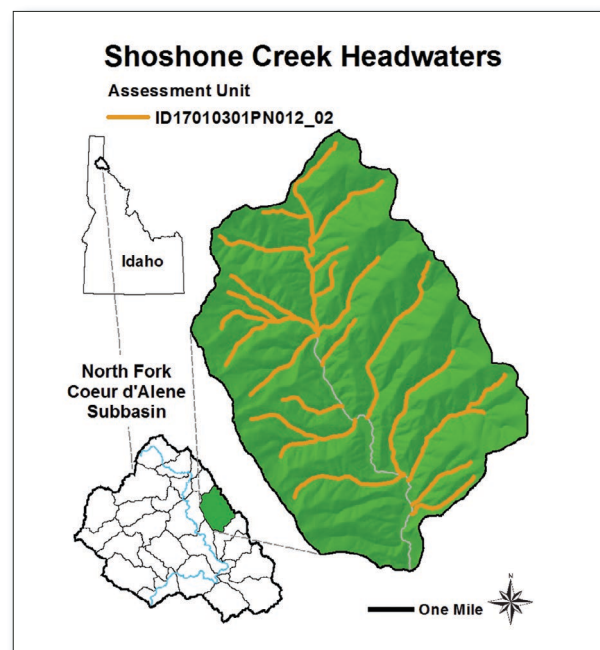


Figure 1. Idaho's Shoshone Creek Headwaters and Tributaries assessment unit includes the watershed's first- and second-order streams.

areas. It also helped to dissipate the energy of rushing water that could otherwise lead to the erosion of stream banks. USFS also removed many eroding culverts and closed over 38 miles of eroding roads and trails in the watershed in 2001–2006 (Table 1).

Table 1. Roads and culverts removed in the Upper Shoshone Creek watershed.

Tributary name	Year completed	Road miles removed	Culvert pipes removed
Hells Gulch	2001	1.3	2
Tent, Ulm, and Windfall creeks	2006	13.4	13
Clinton Creek	1997	8.4	16
Rampike Creek	1997	15.3	18

Results

Recent data indicate that upper Shoshone Creek supports its cold water aquatic life beneficial use and that sediment is no longer causing an impairment. In 2015 DEQ conducted biological monitoring (through its Beneficial Use Reconnaissance Program) at two sites within the Shoshone Creek watershed. The overall average BURP multimetric index condition for the first site, Little Lost Fork Creek, was 2.67, while the average score for the second site, Shoshone Creek, was 2.00 (Table 2). According to section 6 of DEQ's 2016 *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 trichoptera [caddisflies]) that are associated with cold, clear mountain streams.

Other 2015 data also indicate beneficial use support. A fish survey detected sculpin and cutthroat trout, native species associated with good water quality. Physical habitat conditions were good, with low percent fine sediments, high bank cover, and high bank stability (Figure 2). Because data show that sediment no longer impairs the cold water aquatic life use in the Shoshone Creek Headwaters and Tributaries AU, DEQ is proposing to remove it from Idaho's next impaired waters list.



Figure 2. Monitoring in 2015 showed that Shoshone Creek now carries low percent fine sediments and has developed stable, vegetated stream banks, all of which promote healthy aquatic habitat.

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, local government, and resource management agencies and other stakeholders) meets multiple times per year to plan and implement water quality improvement projects for watersheds within the NFCDA Subbasin, including Shoshone Creek. USFS and its partners developed a Coeur d'Alene River Corridor Management Plan in 2012.

The Shoshone Creek AU restoration effort cost an estimated \$300,000, which was supported by funds from the timber sale receipts (Knutson-Vandenberg Program funds) and other USFS sources.

Table 2. Upper Shoshone Creek 2015 assessment data.

BURP Multimetric Index Scores ¹	Site 1 (2015SCDAA003)	Site 2 (2015SCDAA004)
Stream Macroinvertebrate Index 2	3.00	1.00
Stream Fish Index 2	2.00	3.00
Stream Habitat Index 2	3.00	2.00
Average BURP Score	2.67	2.00

¹ DEQ's 2016 *Water Body Assessment Guidance* Average BURP (Beneficial Use Reconnaissance Program) score ≥ 2.0 indicates full support of cold water quality life beneficial use.



U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-18-001SS
December 2018

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

[Click here for in-depth story](#)