



# NONPOINT SOURCE SUCCESS STORY

## Iowa

### Watershed Work Restores Native Freshwater Mussels in a Segment of the Upper Iowa River

#### Waterbody Improved

With increasing amounts of soil washing in, the scenic Upper Iowa River was struggling to support the native freshwater mussels living in its waters, which landed three river segments on Iowa's impaired waters list in 2002. But this wasn't an overnight change; studies showed the mussel population declined between 1984 and 1998 largely due to extra sediment and nutrients washing into the river from row-cropped fields in the watershed. The Coldwater/Pine Creek Watershed Project helped farmers and landowners install conservation practices that reduced sediment loading to the river and improved the habitat for mussels. After a 2012 study showed mussel populations had rebounded, the aquatic life impairment was removed from the state's list of impaired waters for one segment of the Upper Iowa River in 2014 (just downstream from the confluences with Coldwater and Pine creeks).

#### Problem

The Upper Iowa River basin drains 604,901 acres in northeastern Iowa and southeastern Minnesota (Figure 1). The Upper Iowa River has 60.6 miles of High Quality Waters and 183.9 miles of High Quality Resource Waters, demonstrating exceptionally better quality than the levels specified in Iowa's water quality standards and having exceptional recreational and ecological importance. Additionally, over 73 miles of the Upper Iowa River is designated as an Iowa Protected Waters Area. Located in the "Driftless Area," a hilly landform region missed by recent glaciers, the Upper Iowa River is the only Iowa river to be nominated for the national Wild and Scenic Rivers Program. Canoeing the Upper Iowa River has been listed as one of the top 100 adventures in the United States by National Geographic Adventure Magazine.

The Upper Iowa River draws tens of thousands of people annually for recreational activities including canoeing, kayaking, tubing, bicycling, hunting, fishing, wildlife watching and camping. The watershed includes many small- to medium-sized farms, mostly dairy, beef or row crop operations. Land use in the watershed includes more forest and pastureland than most other large watersheds in Iowa.

A freshwater mussel survey done in the Upper Iowa River in 1984 found 13 species of mussels. A follow-up survey done in 1998 only found four species of mussels, which

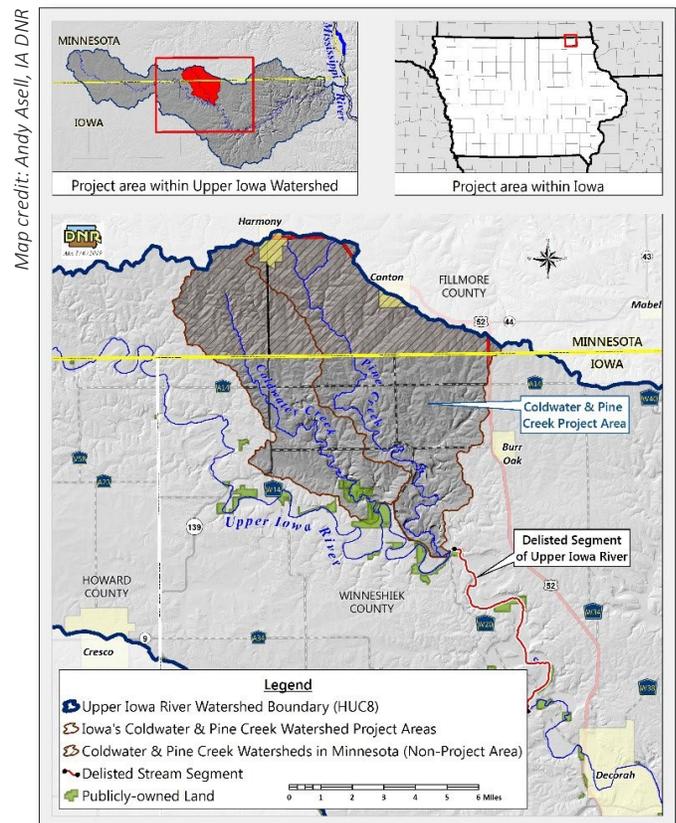


Figure 1. The Coldwater/Pine Creek watersheds are within the Upper Iowa River basin.

Photo: Jen Kurth, IA DNR



Figure 2. Mussel habitat has improved in the Upper Iowa River near Bluffton, Iowa.

triggered impairment of the river's aquatic life designated use. As a result, three segments of the Upper Iowa River were placed on Iowa's impaired waters list for sediment-siltation and nutrients in 2002. In the segment that was delisted in 2014, five species were found in 1984, while no live mussels were found in 1998.

## Story Highlights

Two tributaries of the Upper Iowa River—Coldwater Creek and Pine Creek—are trout streams designated as Class (B) Coldwater, High Quality, and Resource Waters by the State of Iowa. These tributaries drain a combined land area of more than 60 square miles in Minnesota and Iowa. The Iowa portion of the combined basin includes 22,313 acres, or almost 35 square miles. Scientists mapping karst features have documented several sinkholes and losing stream segments (i.e., segments that lose water volume due to infiltration as they flow downstream) in both the Coldwater Creek and Pine Creek watersheds. Both creeks have been shown to drain to the underground river in Coldwater Cave. Therefore, for watershed protection purposes, the two watersheds were considered as one.

Concerns about water quality in Coldwater and Pine creeks, and as well as in the Upper Iowa River downstream, led to the formation of the watershed project in 2006, which was administered by the Winneshiek County Soil and Water Conservation District (SWCD) in Decorah. About 49 of 85 landowners in the watershed (57%) participated in the project by adopting conservation practices on their land. Popular practices included grassed waterways (80 acres), riparian filter strips (138 acres), sinkhole filter strips (35 acres), cover crops (343 acres), streambank protection (320 feet), riparian corridor fencing to exclude cattle from the streams (2.1 miles), and

Photo: Jen Kurth, IA DNR



Figure 3. The threatened creek heelsplitter mussel has reappeared in the Upper Iowa River.

rotational grazing. "Even more than a decade later, most of these practices are still in place, demonstrating the commitment of the landowners to conservation," said former Coldwater/Pine Creek Project Coordinator Corey Meyer.

## Results

Practices adopted by 49 different producers through the Coldwater/Pine Creek Project reduced sediment delivery by about 6,223 tons per year (415 dump truck loads annually). The reduced sediment delivery to this segment of the Upper Iowa River improved the habitat for native mussels (Figure 2). The Iowa Department of Natural Resources' (DNR's) Statewide Mussel Survey, funded by a U.S. Environmental Protection Agency (USEPA) Clean Water Act (CWA) section 319 grant, showed that the number of mussel species in the Upper Iowa River segment just downstream from Coldwater and Pine creeks had rebounded from zero in 1998 to six in 2012. One of the species found, the creek heelsplitter (*Lasmigona compressa*), is listed by the State of Iowa as threatened (Figure 3).

## Partners and Funding

Funding and technical assistance to the Coldwater/Pine Creek Project was provided by the Winneshiek SWCD, the Iowa Department of Agriculture and Land Stewardship's Watershed Protection Fund (\$381,160) and Water Protection Fund (\$302,688), the U.S. Department of Agriculture Natural Resources Conservation Service (general: \$20,000; Environmental Quality Incentive Program: \$202,965) and Farm Service Agency (Conservation Reserve Program: \$203,173), Iowa Resource Enhancement Assistance Program funds (\$4,406), and private landowners (\$295,752). Project funding totaled \$1,407,145. The Iowa DNR statewide mussel survey was funded by a \$253,060 USEPA CWA section 319 grant.



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