



NONPOINT SOURCE SUCCESS STORY

Iowa

Project Restores Aquatic Life in Tete des Morts Creek

Waterbody Improved

Tete des Morts Creek in Jackson County experienced a fish kill in 2005, and biological samples collected in 2001 showed a decline in the biological community of benthic macroinvertebrates. As a result, the Iowa Department of Natural Resources (DNR) placed the creek on Iowa's impaired waters list in 2006. Nutrients and increased sediment delivery were identified as pollutants of concern in the watershed. Through the Tete des Morts Watershed Project, farmers and landowners installed conservation practices that reduced nutrients and sediment reaching the creek and improved the habitat for aquatic life. Monitoring shows Tete des Morts now meets the impairment delisting criteria for both the benthic macroinvertebrates and fish. Therefore, Iowa DNR removed the creek from the impaired waters list in the 2022 cycle due to the recovery of the biological community.

Problem

Tete des Morts Creek (IA 01-TRK-121) is a tributary of the Mississippi River in Jackson and Dubuque counties in eastern Iowa. The name, which means "Heads of Death" in French, relates to an old legend of a battle with many casualties between two tribes in the valley. The Tete des Morts watershed includes a total of 30,433 acres (47.6 square miles) of rolling farmland and bluffs (Figure 1). The upper half of the stream is coldwater and supports a thriving brown trout population, while the formerly impaired segment is a warmwater stream.

Due to the steep topography and soil characteristics, 88% of the watershed is considered highly erodible land. Land use in the watershed is primarily agricultural, and it is managed for row crop and livestock production totaling 64% of the watershed. Timber comprises another 34%. The town of St. Donatus (population 104) is the only town located within the watershed.

Nutrients and sediment delivery were identified as the primary nonpoint pollution concerns in the watershed. Pre-project sediment delivery to the stream estimated a loss of 18,269 tons/year. The stream had a history of fish kills of unknown origin, with the most recent in 2005. The estimated fish loss in 2005 was 3,363 fish, valued at almost \$12,000. Following this event, the creek was listed on the 2006 Clean Water Act section 303(d) list of impaired waters for an unknown biological impairment.

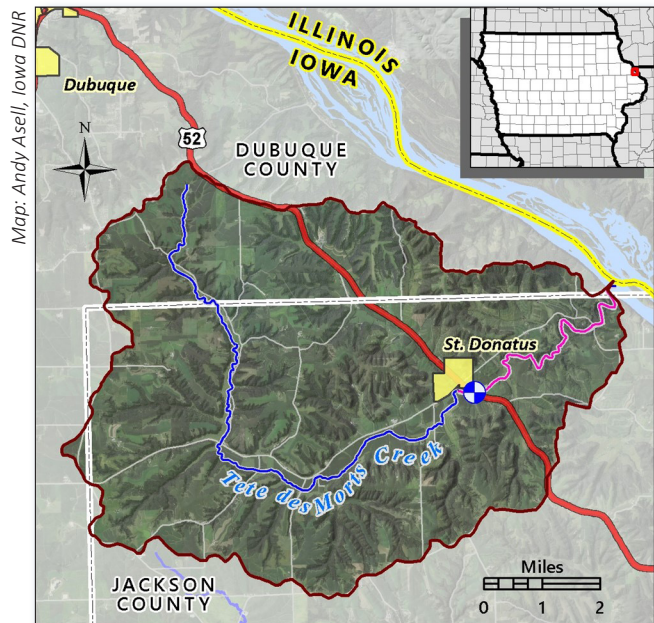


Figure 1. The formerly impaired section of Tete des Morts Creek is downstream of the biosampling station at St. Donatus near the Iowa/Illinois border.

Sampling in 2001 and 2009 found that the stream's benthic macroinvertebrate community was impaired. Low biological index scores for benthic macroinvertebrates (aquatic animals like insects, snails and crayfish which live on the stream bottom) did not meet the criteria for the ecoregion that would ensure full support of the biological life use of the stream.

Story Highlights

A watershed project was launched in 2008 by the Jackson County Soil and Water Conservation District (SWCD), led by project coordinator Michelle Turner, and ran successfully for nine years. Farmer and landowner participation led to installation of the following practices during the project: grassed waterways (29.4 acres), streambank protection (3,764 feet), grade stabilization structures (24), water/sediment control structures (23), terraces (750 feet), and animal waste systems (10). Five cattle crossings and 700 feet of fencing were installed to exclude cattle from the stream.

As a result of these efforts, the project exceeded the goal of a 40% reduction in sediment delivery by keeping 10,073 tons of soil/year on the land—a 53.7% reduction. Fishing is a popular activity in the stream, and Iowa DNR stocked brown trout in the tributaries until 2010 when successful in-stream reproduction indicated stocking was no longer necessary. Additionally, watercress, which was only found at one site in the watershed pre-project, is now found throughout the watershed (Figure 2). Finding watercress growing in a stream is a sign of clean water, as it does not tolerate pollution.

Results

Fish are thriving in Tete des Morts, scoring an additional 10 points higher post-project despite the creek's history of fish kills and one nonpassing fish count score in 2007. Brown trout are now successfully reproducing, and populations of largemouth and smallmouth bass have increased and are now supporting recreational fishing in the watershed.

Decreased sedimentation led to increased habitat diversity, which improves the benthic community as the different species make use of the varying habitats and food available. The numbers and diversity of feeding types increased. Data also showed increases in mayflies, stoneflies, and caddisflies, which are sensitive to pollution and sudden changes in their environment; these are used as indicator species to determine water quality. Additionally, there was a decrease of midge larvae, which are generally considered to be very pollution-tolerant. The benthic macroinvertebrate scores (biotic index) increased by 20–30 points due to the improvements made in the watershed, and they now meet the delisting criteria (Figure 3).



Photo: J. Kurth, Iowa DNR

Figure 2. Project coordinator Michelle Turner holds watercress from Tete des Morts Creek.

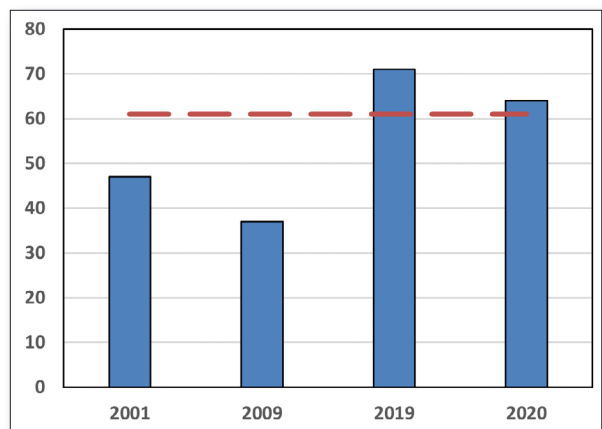


Figure 3. Biotic index scores for Tete des Morts; scores above the red dotted line meet delisting criteria.

Because Tete des Morts now meets the impairment delisting criteria for both the fish and benthic macroinvertebrates, Iowa DNR removed the creek from the impaired waters list in the 2022 cycle.

Partners and Funding

The Tete des Morts Watershed Project was funded and supported by Iowa DNR through U.S. Environmental Protection Agency CWA section 319 grants (\$1,087,364). Partners used this money to leverage an additional \$1,202,872 for the project. Other major project partners included landowners, the Jackson County SWCD, the U.S. Department of Agriculture Natural Resources Conservation Service, and the Iowa Department of Agriculture and Land Stewardship. Funding from all sources totaled \$2,290,236.



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