NONPOINT SOURCE SUCCESS STORY

Mississippi

Implementing Best Management Practices Restored the Biological Integrity of North Tippah Creek

Waterbody Improved

The Mississippi Department of Environmental Quality (MDEQ) placed North Tippah Creek on the state's 2012 Clean Water Act (CWA) section 303(d) list of impaired waters for aquatic life use impairment. Implementation of best management practices (BMPs) through U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) programs helped to abate sediment and nutrients entering streams in the watershed from agricultural and other land use activities. As a result of the BMPs implemented in the watershed, impacts from sediment and nutrients were reduced and the water quality in North Tippah Creek improved. In 2020, North Tippah Creek was assessed as attaining the aquatic life use in the state's CWA section 303(d) list and will be removed from the state CWA section 303(d) list in the 2022 cycle.

Problem

North Tippah Creek is in the 35,521-acre North Tippah Creek-Tippah River watershed (hydrologic unit code HUC 080302010502) in Mississippi's Tippah County. The Tippah River watershed is part of Mississippi's Yazoo River basin. The watershed spans approximately 35,521 acres and is composed of 56.9% forest, 18.8% pasture/grassland, 11.1% cropland, 5.2% urban, 4.5% scrub-barren, 2.5% wetland, and 1.0% water (Figure 1).

Biological community data are routinely used by MDEQ to determine if streams are healthy enough to support a balanced aquatic community. North Tippah Creek (Waterbody ID: MS902515) was monitored as part of Mississippi's biological monitoring program. Using MDEQ's index of biological integrity, the Mississippi Benthic Index of Stream Quality (M-BISQ), North Tippah Creek scored 44.96, which was below the attainment threshold of 71.6 used to assess aquatic life use support for this region of the state. Because the stream was not meeting the aquatic life designated use based on lack of a healthy and diverse aquatic community, MDEQ placed a 3.99-mile segment of North Tippah Creek on the state's 2012 CWA section 303(d) list of impaired waters. Sediment and nutrients (i.e., nitrogen, phosphorus) entering streams in the watershed from agricultural and other land use activities, along with areas of soil erosion potential and streambank erosion, are considered to be contributors of pollution in North Tippah Creek.

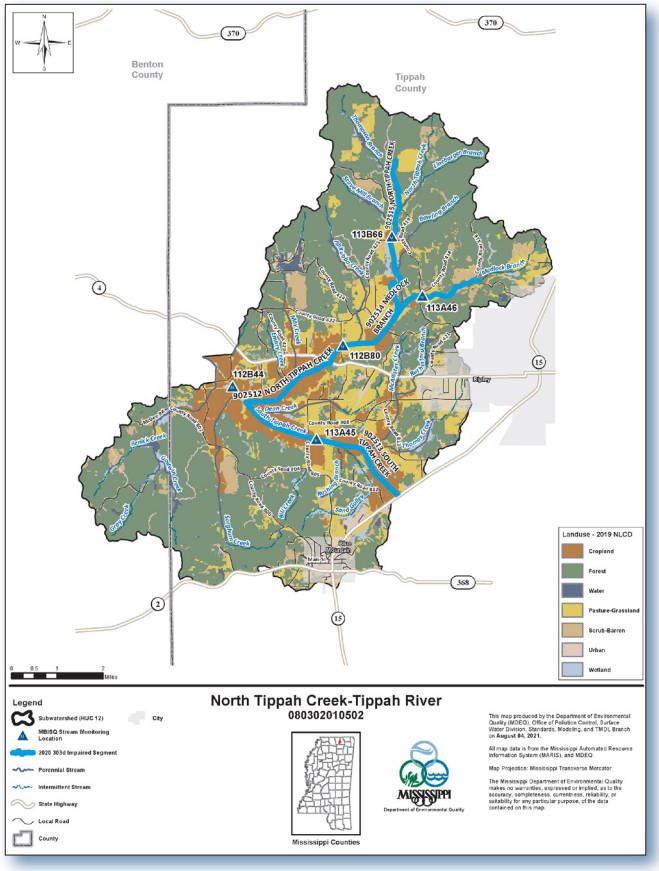

Figure 1. The North Tippah Creek-Tippah River watershed is in northern Mississippi.

Figure 2. Grade stabilization structure BMP.

Figure 3. Close-up of a grade stabilization structure.

Story Highlights

Through a subgrant from MDEQ, Mississippi Soil and Water Conservation Commission (MSWCC) was awarded $125,000 in CWA section 319 funds to facilitate the development of a Watershed Implementation Team and a Watershed Implementation Plan in the North Tippah Creek watershed to abate the adverse impacts of nonpoint sources of pollution. The U.S. Geological Survey (USGS) provided monitoring for waters within the watershed. BMPs were implemented in the watershed through two NRCS programs: (1) The National Water Quality Initiative (NWQI), which is a partnership among NRCS, state water quality agencies and the U.S. Environmental Protection Agency (EPA) to identify and address impaired waterbodies through voluntary conservation, and (2) the Environmental Quality Incentives Program (EQIP), which is a voluntary conservation program offered by the NRCS. Both NWQI and EQIP provide financial and technical assistance to agricultural and forestry producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation, and improved or created wildlife habitat.

Figure 4. Streambank and shoreline protection BMP.

From 2012 through 2020, NRCS partnered with the Tippah County Soil and Water Conservation District and local producers to implement BMPs, including grade stabilization structures (Figures 2 and 3), fencing, cover crops, and stream and shoreline protection (Figure 4). Implementing these BMPs in the North Tippah Creek-Tippah River watershed is estimated to save 21,342 tons of soil per year, with additional load reductions of 19,998 pounds per year of phosphorus and 42,648 pounds per year of nitrogen.

Results

In 2020 MDEQ returned to North Tippah Creek to collect biological community data. The M-BISQ score was 83.34, which was above the attainment threshold of 71.6 used to assess aquatic life use support for this region. Using this 2020 biological community data, North Tippah Creek was assessed as attaining the aquatic life use and will be removed from the state's CWA section 303(d) list in the upcoming 2022 cycle.

Partners and Funding

The restoration of North Tippah Creek was a collective effort between NRCS, MDEQ, the U.S. Environmental Protection Agency (EPA), MSWCC, USGS, the Tippah County Soil and Water Conservation District, and local producers. MDEQ contributed $125,000 in EPA CWA section 319 funds for the development of the Watershed Implementation Team and Watershed Implementation Plan. From 2012 through 2020, over $5 million in funds supported implementation of BMPs in the North Tippah Creek-Tippah River watershed.

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