



## Section 319

# NONPOINT SOURCE PROGRAM SUCCESS STORY

# Oklahoma

## Installing Best Management Practices Improves Fish Community in Ionine Creek

### Waterbody Improved

Ionine Creek in Grady County runs through an area of high cattle, wheat, and hog production. An assessment of the creek's fish community in 2004 revealed a *poor* biological condition, prompting Oklahoma to add the creek to the state's Clean Water Act (CWA) section 303(d) list of impaired waters for biological impairment. Implementation of best management practices (BMPs) to reduce runoff from grazing land and cropland and to improve wildlife habitat decreased sediment and nutrient contributions to the creek and provided better in-stream habitat. As a result, Oklahoma removed Ionine Creek from Oklahoma's 2012 CWA section 303(d) list for fishes bioassessment. Ionine Creek now fully attains its fish and wildlife propagation (FWP) designated use.

### Problem

Ionine Creek is a 6.5-mile-long stream in Grady County in central Oklahoma, an area of high cattle, wheat, and hog production. Poor grazing land and cropland management likely contributed to excess sedimentation and nutrient runoff in the 24,665-acre watershed, and lack of natural riparian habitat negatively impacted life in the stream. A 2004 fish assessment produced an Index of Biotic Integrity (IBI) score of 15 for Ionine Creek. Waterbodies in this ecoregion of the state are considered not supporting the FWP designated use if an IBI score is less than 19. On the basis of the assessment results, Oklahoma added the entire length of Ionine Creek (OK310820010160\_00) to the 2008 and subsequent CWA section 303(d) lists, for fishes bioassessment.

### Project Highlights

Landowners implemented BMPs with assistance from Oklahoma's locally led cost-share program and through the local U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP), Wetlands Reserve Program (WRP), Conservation Stewardship Program (CSP), Wildlife Habitat Incentive Program (WHIP), and general technical assistance program. From 2005 to 2008, 92 acres of mulch till implementation occurred in combination with conservation crop rotations. In contrast to traditional tillage, these "conservation tillage" methods retain soil moisture and reduce soil erosion by

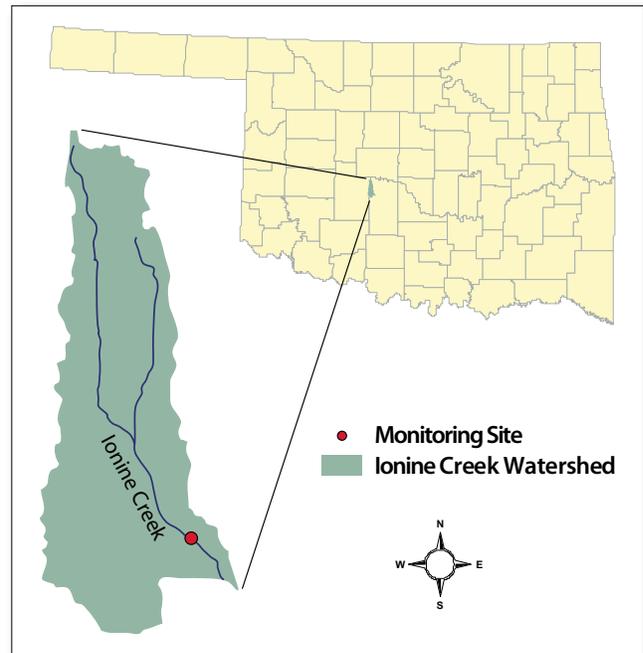


Figure 1. Ionine Creek is in central Oklahoma.

decreasing the amount of soil exposed to wind and rain. Further reducing erosion potential on cropland and pastures, landowners installed 474 acres of critical area planting and 158 acres of grassed waterways and diversions. To improve the condition of pasture and rangeland, 167 acres received nutrient management plans, and 60 acres had heavy use area improvements. Nine water control structures were installed, along with one new pond to provide

alternative water supplies to livestock while reducing erosion. Producers planted forage and grasses on 252 acres and improved upland wildlife habitat management on 132 acres. Through the WRP, 200 acres of wetland restoration and wetland wildlife habitat management occurred.

In addition, the OCC's education program, Blue Thumb, actively promoted nonpoint source pollution reduction in the neighboring counties. Groundwater screening and information sessions were held in McClain and Cleveland counties; several volunteer training events were also held. Volunteers in McClain County submitted newspaper articles describing monitoring results and suggesting ways to reduce pollution. These activities provided vital education of the residents of the watershed and likely helped facilitate behavior changes. Active volunteer monitoring and education is continuing in the area.

## Results

The OCC's Rotating Basin Monitoring Program, a statewide nonpoint source ambient monitoring program, documented improved water quality in Ionine Creek due to landowners implementing BMPs. Because of the implemented practices and the accompanying education of landowners, the fish community showed drastic improvement. The 2004 fish assessment produced an IBI score of 15, with only 5 total species observed and 115 total individuals counted. The 2009 fish assessment resulted in an IBI score of 23, with 10 species and 635 individuals collected in the 400-meter reach sample (Figure 2). Accordingly, Ionine Creek was removed from Oklahoma's 2012 CWA section 303(d) list for fishes bioassessment and is now in full attainment of its fish and wildlife propagation designated use.

Further implementation has occurred and is still ongoing in the watershed. Since 2009, an additional 1,452 acres of conservation tillage has been implemented, additional diversions and waterways have been installed, and 75 acres of proper nutrient management have been implemented. In addition, 300 acres of additional wetland habitat have been restored and are now being managed.

## Partners and Funding

The Rotating Basin Monitoring Program is supported by U.S. Environmental Protection Agency CWA section 319 funds at an average annual cost of \$1 million. Monitoring costs include personnel, supplies, and lab analyses for 18 parameters from



Figure 2. The orangespotted sunfish is once again present in Ionine Creek.

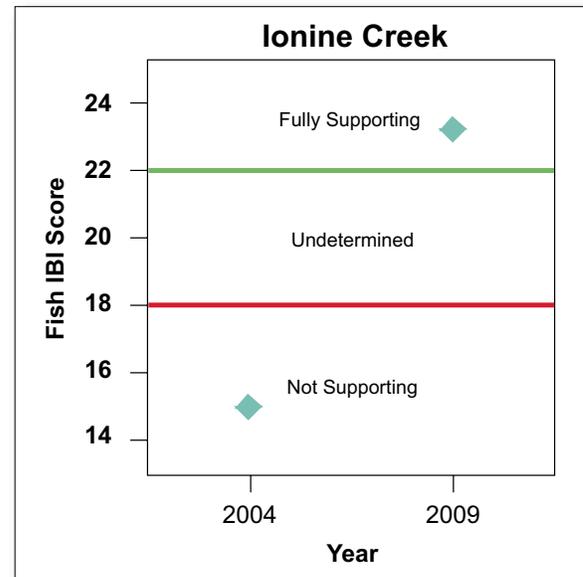


Figure 3. Bioassessment data collected in 2009 show that Ionine Creek now fully supports its fish and wildlife propagation designated use.

samples collected every 5 weeks at about 100 sites. In-stream habitat, fish, and macroinvertebrate samples are also collected. Approximately \$600,000 in CWA section 319 funding supports statewide education, outreach, and monitoring efforts through the Blue Thumb program. The Oklahoma cost-share program provided \$5,468 in state funding for BMPs in this watershed over the past decade through the Grady County Conservation District, and landowners contributed \$4,846 through this program. The NRCS spent approximately \$841,540 for implementation of BMPs in Grady County from 2005 to 2008. Implementation is continuing, with over \$2 million dollars in BMPs obligated from 2009 to 2012 through EQIP, CSP, and WHIP funds. Landowners provided a significant percentage of funding toward BMP implementation in these programs as well.



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

EPA 841-F-14-001R  
April 2014

## For additional information contact:

Shanon Phillips  
Oklahoma Conservation Commission  
405-522-4500 • shanon.phillips@conservation.ok.gov