



SHOAL CREEK CONSERVATION FORUM SUMMARY REPORT

March 15, 2017 | Joplin, Missouri

Shoal Creek is a vital resource for both people and nature in southwest Missouri. It is the primary drinking water source for Neosho and Joplin; and, Shoal Creek watershed and its streams are home to several species of conservation concern, including the Ozark cavefish, Arkansas darter and Neosho mucket.

In March, The Nature Conservancy held a Shoal Creek Conservation Forum with more than two dozen conservation partners and stakeholders at Joplin's Wildcat Glades Conservation & Audubon Center. The goal of the forum was to introduce the Conservancy's Western Ozark Waters Initiative and to share information on existing land and water conservation efforts in the Shoal Creek watershed. Drew Holt, The Conservancy's Western Ozark Waters Coordinator, welcomed attendees and participants introduced themselves and described the focus of their organization's conservation efforts.

The Initiative's aim is to keep the region's waters healthy through strategic partnerships with existing groups and to help unify these efforts and contribute needed resources to maximize results.

The Nature Conservancy convened nearly 30 conservation partners and stakeholders at the Shoal Creek Conservation Forum including:

- Audubon education director
- Cattails Environmental Consulting senior scientist/owner
- Chert Glades master naturalist
- Grand Lake Watershed Foundation president
- Harry S. Truman Coordinating Council executive director and environmental planner
- Jasper/Newton County Environmental Task Force directors
- Jasper County health department director
- Joplin health department director
- Missouri American Water Company manager
- Missouri Department of Conservation fisheries biologist, educators and community conservationist
- Missouri Department of Natural Resources southwest regional watershed coordinator
- Natural Resource Conservation Service resource conservationist
- Newton County flood plain director
- Newton County health department environmental health staff
- Newton County Soil & Water Conservation District manager and technicians
- U.S. Geological Survey hydrologist
- University of Missouri agri-business specialist

WHAT DO THE SCIENTIFIC DATA SAY?

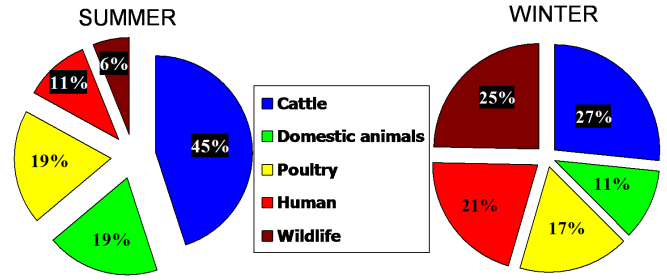
Sixty-six miles long, Shoal Creek drains a land area of 440 square miles in parts of Newton, Lawrence, Barry, and Jasper counties in south-west Missouri. Flowing east to west, it merges with Spring River in Kansas, southwest of Joplin before flowing into Grand Lake of the Cherokees.

Scientific studies in the late-1990s by U.S. Geological Survey and others documented elevated levels of bacteria, along with excess nitrogen and phosphorus, in Shoal Creek and its tributaries. During the 2000s, testing by county health departments also found some stream locations with elevated levels of bacteria.

DNA analysis conducted in the early 2000s showed *E.coli* bacteria sources included cattle, poultry, humans, domestic animals (e.g., dogs, goats, horses, etc.) and wildlife. The pie chart shows seasonal variation of *E.coli* bacteria sources in summer compared to winter.

Concerted efforts by agricultural producers and soil & water conservation partners since 2000 have resulted in improvements in stream water quality in the Shoal Creek watershed. Many of these efforts focused on better animal waste management related to poultry and cattle.

Fecal E. Coli Sources

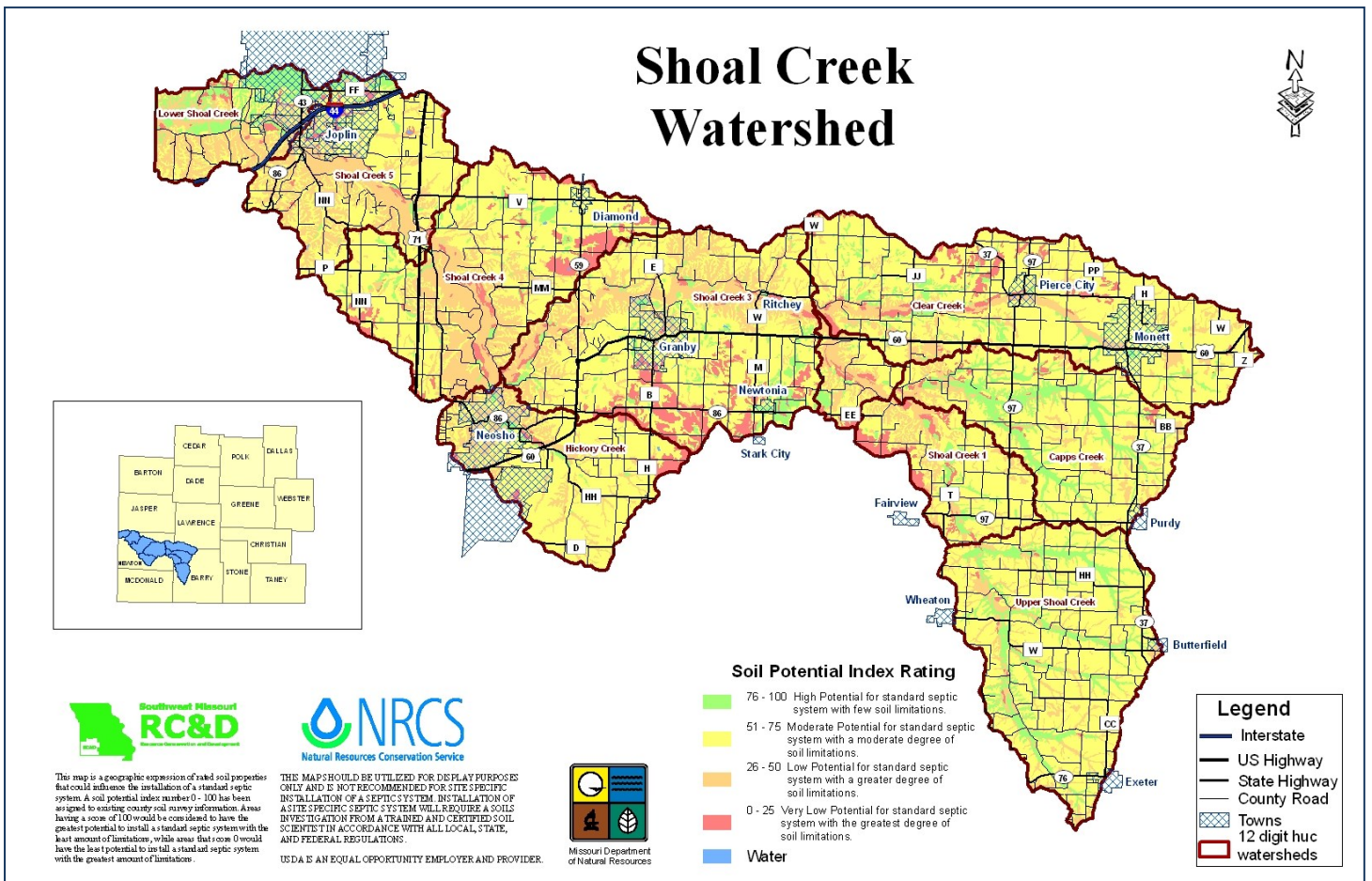


Geometric averages
 399 colonies/100ml 254 colonies/100ml
 Southwest Missouri database

Shoal Creek is part of the Grand Lake watershed encompassing a drainage area of 10,298 square miles. Such a large and diverse area presents great challenges for conserving and protecting natural resources.

The Grand Lake Watershed Alliance Foundation (GLWAF) began in 2006 to coordinate watershed conservation across parts of four states, two federal EPA regions and nine Indian tribes.

Scientific social survey data commissioned by GLWAF found 70% of people surveyed don't know where their water goes and think water pollution is the trash and litter they can see. This highlights the need for expanding public outreach and education for conservation of natural resources.



WATER QUANTITY MATTERS, TOO

The cities of Joplin and Neosho rely on Shoal Creek as their primary source of municipal drinking water with groundwater supplementing these supplies. Shoal Creek's raw water quality is good and requires only minimal treatment to meet drinking water standards, but water quantity is an increasing concern as the communities continue to grow. There is currently no storage system for Shoal Creek's water, thus making it hard to conserve. Once Shoal Creek flows past the municipal intake structures, it is too late to capture water for use in municipal drinking water systems.

In recent years, water conservation has become an increasing priority and Joplin has seen decreased average monthly household use. With periodic drought conditions, conservation will continue to be a priority. Joplin recognizes the importance of maintaining minimum flows for healthy aquatic ecological habitats.

SHOAL CREEK STREAMBANK SURVEY

In the winter of 2016-17, a 51.5-mile stream survey was conducted from Capps Creek conservation area to the Kansas state line by Cattails Environmental Consulting based in Bentonville, AR. The condition of streambanks, location of springs, types of land use, and other environmental features were documented. Highly eroding streambanks were observed at 140 locations. These data are being analyzed for future water quality and watershed projects.



Highly eroded streambank along Shoal Creek near Ritchey
December 2016 ©Cattails Environmental Consulting

WATERSHED PLANNING

Since 2014, Spring River watershed planning was led by the Missouri Department of Natural Resources with the Harry S. Truman Coordinating Council guiding plan implementation. Current efforts target sub-watersheds of the North Fork Spring River, including Lamar Lake, for reducing nutrients and sediment. Sub-watersheds of upper Shoal Creek are also priority areas for reducing nutrients and bacteria in the Spring River plan.



Smackout access west of Monett - April 2017 ©TNC

CONSERVATION PRACTICES IN DEMAND

Cost-share incentives for landowners are available through Soil & Water Conservation Districts, Natural Resources Conservation Service, and MO Department of Conservation. One popular practice with streamside landowners is WQ10-Stream Protection. This SWCD practice includes exclusion of livestock from stream corridors and revegetation with grasses and trees along streambanks. Healthy corridors then filter sediments and nutrients before they can reach streams. A few of the many practices that benefit water quality include animal waste management, intensive grazing management, and nutrient and pest management.

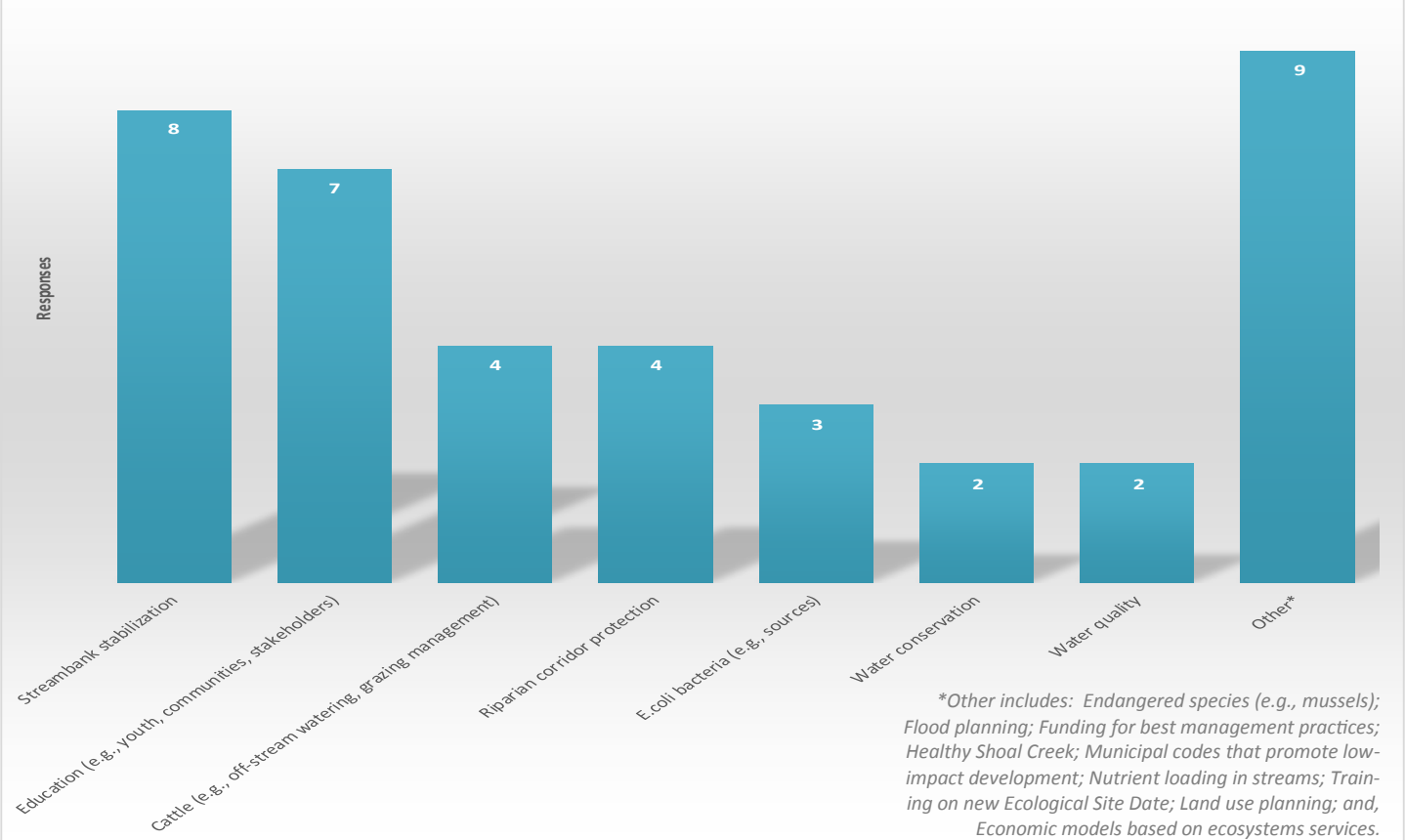
The NRCS offers many cost-share practices through the Conservation Stewardship Program and Environmental Quality Incentives Program. Popular with agricultural producers, these practices often improve water quality.

Many streamside landowners seek help with eroding streambanks worsened by extreme flooding in recent years. However, this widespread issue greatly exceeds available resources.

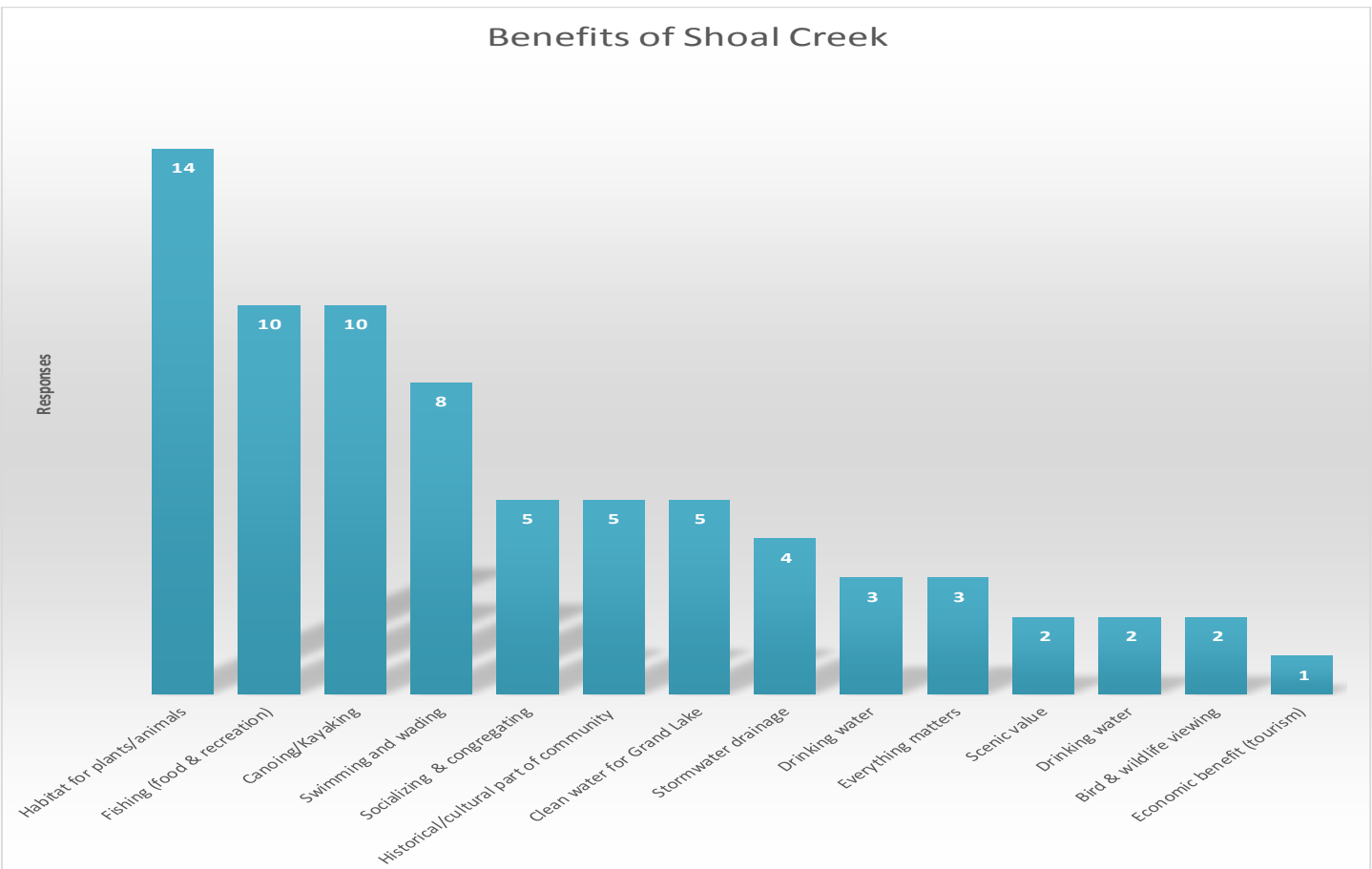
SUGGESTIONS FOR SHOAL CREEK'S CONSERVATION FUTURE

- * Expand **community outreach** to increase involvement of citizens protecting and conserving water resources.
- * Fund landowner incentives to implement **conservation practices** that reduce bacteria, nutrients, and sediments.
- * Expand **nutrient, pest, and manure management** training and technical assistance for livestock producers.
- * Demonstrate effective, affordable **streambank stabilization** techniques that improve healthy aquatic habitat.
- * Create unified **conservation action plan** to maximize results of conservation planning and land management.
- * Develop **economic models** based on concept of **ecosystem services**.
- * Protect and enhance **riparian corridors** to increase healthy terrestrial habitat.
- * Protect and improve **aquatic biodiversity** and population health of indicator species, such as freshwater mussels.
- * Assess municipal codes to identify barriers to **low-impact development** practices and advocate removal of barriers to LID.
- * Develop **PPGIS** (public participation in using geo-spatial information systems and technologies) to increase public knowledge and change attitudes.
- * Update **data on nutrients and E.coli** sources to compare with 15-year old water quality monitoring data.

Conservation Priorities in Shoal Creek Watershed



Benefits of Shoal Creek



For more information or to provide additional feedback, contact Drew Holt at (417) 838-1939 or drew.holt@tnc.org.