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spring 2012

the Boone River watershed review

From the Field

Happy spring! Planting is just around the corner and soon the Iowa landscape will be covered in the green of corn and soybeans once again. Happen to notice any conspicuous green fields over the winter? They were most likely fields planted with cover crops, often winter rye, to help prevent soil and water erosion and fertilizer applied during the fall from washing away with rains. Since the last issue of our newsletter, over 20 producers in Wright and Hamilton counties are trying cover crops on about 3,400 acres in the Boone River Watershed! Sign-up to receive cost-share for implementing cover crops and other conservation practices is available now through May 2012. This is the second issue of what we plan to be an on-going, bi-annual newsletter to highlight Boone River Watershed improvement work—please contact me by e-mail at ebader@tnc.org or by phone at (515) 832-2916 if you have story ideas or upcoming events to announce. – Eileen Bader, freshwater specialist for The Nature Conservancy ■

Eileen Bader © Kristen Blann/TNC

Targeted Nutrient Removal in the Boone River Watershed

By Eileen Bader, TNC
and Bruce Voigts, Boone River MRBI coordinator for the SWCD

At a recent meeting to discuss the Mississippi River Basin Initiative (MRBI) program, Hamilton County farmer Arlo Van Diest discussed his experience with strip tillage on his farm. Strip tillage is a practice in which only a small strip of soil 6-10 inches wide is tilled, which leaves the rest of the field protected by residue. This allows the sun to warm and dry out the tilled strip of soil for timely planting, essentially combining the benefits of no tillage and conventional tillage. Furthermore, as Van Diest pointed out, strip tillage requires fewer passes across the field because fertilizer can be put down at the same time the strips are created, saving money on fuels costs and reducing soil compaction from additional in-field driving.

Many other farmers are beginning to try strip tillage in the Boone River watershed, and it is one of the practices for

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Arlo Van Diest's strip tillage field in Hamilton County
© Dave DeGeus/TNC

Targeted Nutrient Removal in the Boone River Watershed (continued)

which cost-share is available through the MRBI program. Farmers in eight subwatersheds covering sections of Wright and Hamilton counties within the Boone River Watershed have the opportunity to receive higher payment rates on conservation practices and systems that help avoid, control and trap nutrient runoff, improve wildlife habitat, and maintain agricultural productivity.

The goal of MRBI is to reduce nutrient loading in the Mississippi River Basin, which contributes to both local water quality problems and the hypoxic zone in the Gulf of Mexico. The MRBI is in the second year of the program, and producers are currently signing up for the third year. The targeted watershed in the Boone River includes the drainage areas of White Fox Creek and Eagle Creek in Wright County and Lyons Creek, Buck Creek, and drainage ditch 206 in Hamilton County.

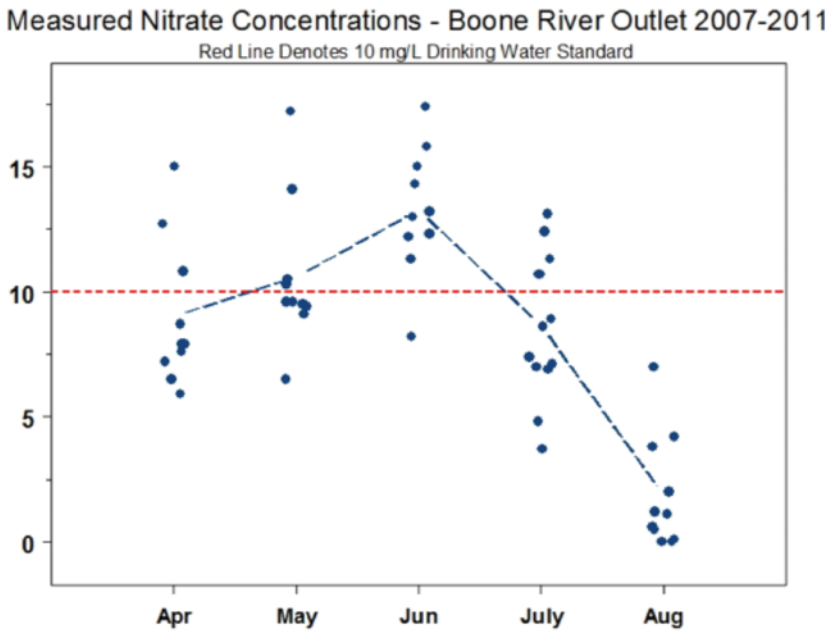
Concerns over water quality, water and soil loss on croplands, and nutrients are common themes among Boone River Watershed residents. The MRBI offers a unique opportunity to address water quality from a targeted watershed perspective. If you have questions and are interested in learning more about the MRBI program, call (515) 532-2165, extension 110, in Clarion or (515) 832-2916, extension 3, in Webster City. Sign-up for the MRBI program is available now through the end of May 2012. ■

Water Quality Monitoring on the Boone River

By Tony Seeman, resource management specialist
Iowa Soybean Association

In 2007 the Iowa Soybean Association (ISA), in partnership with The Nature Conservancy, initiated a baseline water quality study of the Boone River. Thirty locations, including several tributaries, were identified for the assessment, which was conducted bi-weekly from April 2007 to March 2008. Water samples were collected and delivered to Des Moines Water Works for lab analysis of nutrients, indicator bacteria and water clarity. In 2008 these sites became part of the expansion of Agriculture's Clean Water Alliance (ACWA) water monitoring program. ACWA is a consortium of ag retailers that have financed water monitoring and other activities in the Raccoon River since 2000. ACWA monitoring is conducted bi-weekly from April through August using trained local samplers and focuses primarily on nitrogen loss to the river. In 2011, analysis of ACWA water samples was moved to the new ISA water lab. To date, more than 1,800 water samples have been analyzed from the Boone River.

Nitrate, the form of nitrogen that is used by plants as a nutrient, is easily dissolved and transported in water. Nitrate is a concern in lakes and streams because it can fuel unsightly and potentially toxic algae blooms; levels above 10 mg/L make water unsafe to drink. Nitrate concentrations vary both within the year and between years. The highest amounts of nitrate are generally found in spring and early summer and during warm, wet years.



Leaching occurs as precipitation moves down through the soil, dissolving nitrate and eventually getting to a drainage tile or directly into the stream. The graph below shows nitrate concentrations measured at the mouth of the Boone River just before it flows into the Des Moines River, grouped by month. Each dot represents a sample value, and the lines connect the monthly averages. Complete results, including maps showing the spatial distribution of nitrate in tributaries, are available at www.acwa-rrws.org. ■

Evaluating Oxbow Restorations for Benefits

By Eileen Bader, TNC

An oxbow is a meander of a river that has been cut off from the present flow of water either by process of a river's natural lateral movement or as a result of channel straightening. Functioning oxbows provide numerous benefits to people, including water filtration and flood storage. Oxbows also create habitat for wildlife, particularly birds and fish. For instance, the slow-moving water found in oxbows is critically important for the endangered Topeka shiner, a minnow that requires off-channel habitat to complete its life cycle.

Over time, as oxbows become filled with sediment, their ability to provide these benefits decreases. During the restoration process of an oxbow site, sediment is removed, which allows the

Oxbow prior to restoration in July 2011. © Aleshia Kenney, USFWS

oxbow to again hold water. Monitoring from other oxbow restorations has shown reductions in nitrogen and phosphorus when oxbows are coupled with tile outlets. Most oxbows are located adjacent to streams and are ideal for restoration, as the land is usually not ideal for row crop production.

In December 2011, the first oxbow restoration in the Boone River watershed was completed along White Fox Creek, a tributary of the Boone River located in Wright County. Almost 2,000 cubic yards of sediment were removed to restore functionality to the oxbow. Water entered the dry oxbow as soon as the gravel layer was reached during excavation, at about a depth of three feet. The disturbed riparian area will be seeded back to native grasses this spring.

Pre-construction studies included a fish survey and surface water quality monitoring. Ongoing monitoring will include post-

Aerial view of restoration site © Bruce Voigts, SWCD

restoration fish surveys, ground water monitoring and surface water monitoring, which will be taken bi-weekly from both the stream and oxbow and analyzed for fluoride, chloride, nitrite, nitrate, phosphate, and sulfate levels as well as pH. Data collected from these monitoring efforts will provide a clearer understanding of sources of water entering the oxbow, the type of habitat created and maintained, and the efficiency of the oxbow's natural nutrient processing capability.

The Nature Conservancy along with partners from the Iowa Soybean Association, Iowa Department of Natural Resources, U.S. Fish and Wildlife Service, and the Sand County Foundation plan to restore three additional oxbows in the Boone River Watershed in 2012. ■

Aerial view of site and White Fox Creek. © Bruce Voigts, SWCD

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Iowa Soybean Association Conservation Innovation Grant Project

By Heath Ellison, resource management specialist
Iowa Soybean Association

In 2008 the Iowa Soybean Association (ISA) was awarded an USDA-NRCS Conservation innovation Grant entitled, *Cooperative Conservation for Watershed Health*. This project was designed to help local farmers optimize and document the results of voluntary conservation efforts using management tools that also improve profitability. The project has been a pro-active effort to use the science, technology and experience of local farmers, ISA, other local stakeholders, and collaborating public and private experts to advance local watershed health.

Boone River © Kristen Blann/TNC

In the Boone River Watershed, 46 farmers have participated in the Conservation Innovation Grant. These farmers are working with their local agronomist or ISA staff to develop a nutrient management plan for their operation. Guided fall corn stalk sampling has provided farmers with end-of-season performance feedback on their nitrogen management. Finally, an evaluation of energy used to produce crops on each farm will be completed and provided to farmers. This report will show the amount of energy that each farm uses to grow a bushel of corn and a bushel of soybeans, and provide comparisons to other farm operations across the watershed and state. ■

If you are interested in evaluating your operation's efficiency, contact Eileen Bader at (515) 832-2916 to take you through the Fieldprint Calculator—a tool that helps farmers analyze how farm management decisions relate to sustainability. Learn more at www.fieldtomarket.org/fieldprint-calculator/