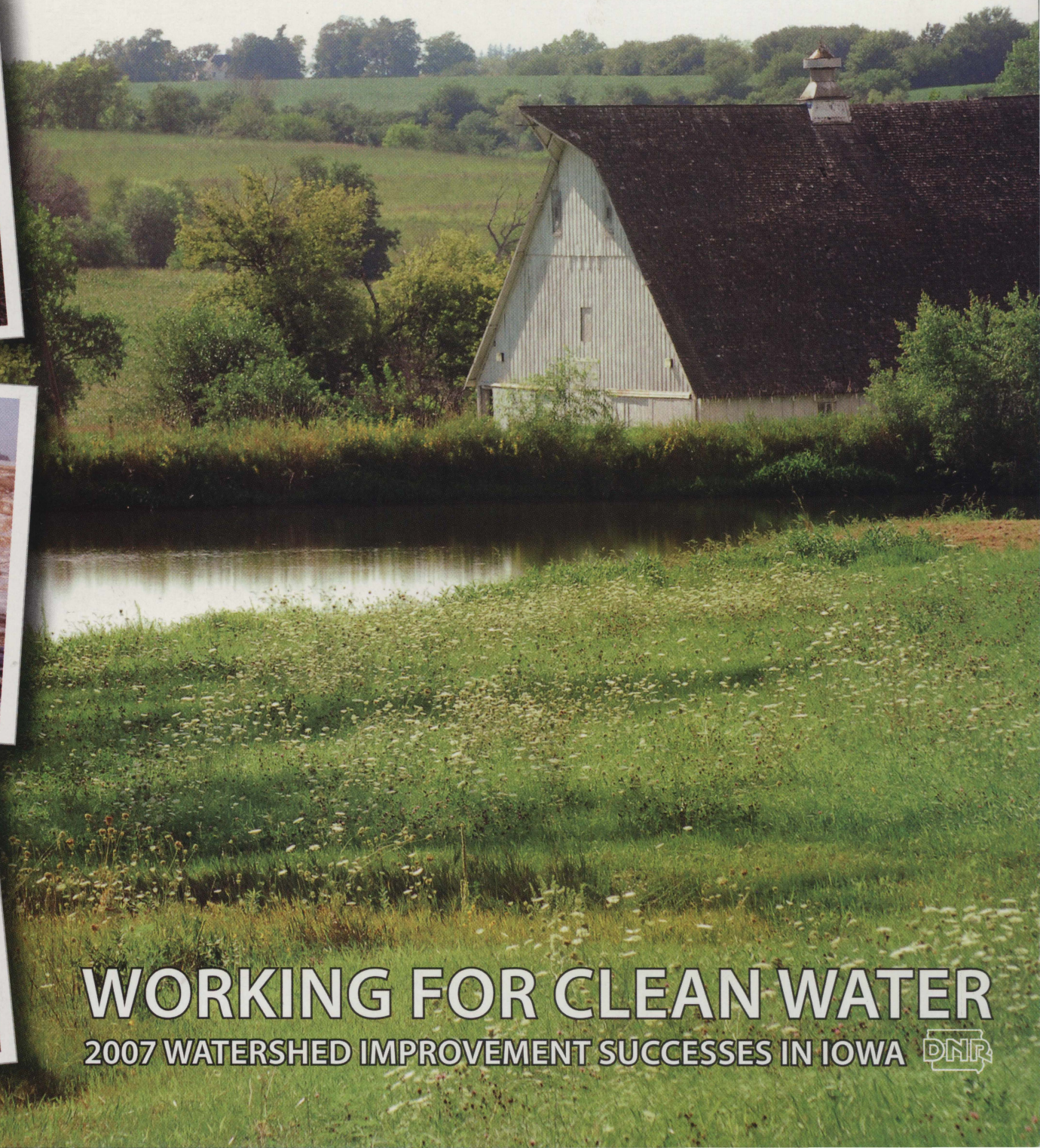
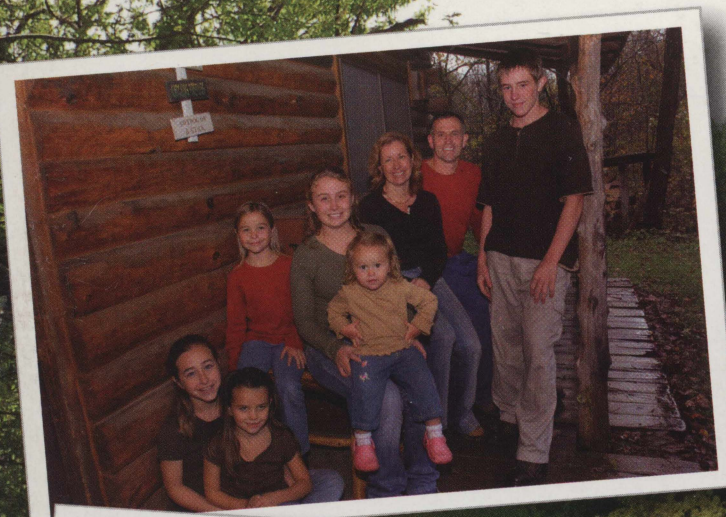




WORKING FOR CLEAN WATER
2007 WATERSHED IMPROVEMENT SUCCESSES IN IOWA 



Working for clean water

2007 watershed improvement successes in Iowa

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We all live in a watershed, an area of land that drains to a lake or stream. What we do on that land — whether a backyard, farm or factory site — affects the health of our lakes, streams and rivers.

When water runs off the land, it can carry pollutants with it. For example, motor oil can wash off our driveways and into storm sewers, which dump directly to a lake or stream. Rainfall can send loads of exposed soil from fields and bare ground into our waterways. It's that soil, and the nutrients and bacteria that can move with it, that's the biggest water quality issue in Iowa. If we don't make changes to the way we manage the land to keep soil, nutrients and other materials where they should be, they'll end up in our water.

The DNR works with other state and federal agencies to help Iowans organize local watershed improvement projects, providing technical know-how and financial assistance. Watershed project coordinators work one-on-one with landowners, homeowners and volunteers to improve the quality of water entering our lakes, streams and rivers. Through organized projects, landowners often have access to better funding assistance to make improvements on their property. That funding can make it easier to put in place conservation practices, like farming and land management practices that help keep soil on the land and pollutants out of our water.

While the Watershed Improvement Program heads up these watershed projects for the DNR, projects are a collaborative effort with many DNR programs and other partners. Fisheries staff do in-stream work, that together with improved water quality, helps fish and aquatic life thrive. Wildlife staff work with landowners to install buffer strips and other vegetation that provide habitat for pheasant, turkey and other wildlife while protecting streams. Our foresters help Iowans plant trees to stabilize streambanks and more. Our geologists, water monitors and water quality staff help identify problems and offer solutions. The DNR also works with a number of partners, such as the **Iowa Department of Agriculture and Land Stewardship (IDALS)**, the **Natural Resources Conservation Service (NRCS)** and **Iowa soil and water conservation districts**.

The Section 319 program of the U.S. Environmental Protection Agency provides DNR funding for nonpoint pollution programs. The DNR then generally funds local watershed projects in cooperation with IDALS, NRCS and local soil and water conservation districts.



Badger Creek Lake, Madison County, Clay Smith



Badger Creek Lake, Madison County, Clay Smith

From the Director



Welcome to the Iowa Department of Natural Resources' 2007 report on watershed improvement efforts in Iowa. This is more than a listing of what the DNR has done in regard to water quality. It's a celebration of the successes we've seen, thanks to the help and hard work of local citizens.

While we've worked hard to find ways to improve our water, *it's the participation of Iowans in communities across the state* that is the key to making changes in our water. Iowans are coming together to improve their valuable lakes, rivers and streams. Partnering with the DNR and countless other organizations, Iowans are making changes to the way they manage the land to create better water. With about 90 percent of land in Iowa in private ownership, it's critical that Iowans get involved. Whether it's using conservation practices on their farm or acreage, placing a rain garden in an urban backyard or becoming a volunteer water monitor with IOWATER, Iowans are working to ensure we have clean water to pass on to our kids and grandkids.

We're here to assist local groups in improving water quality. Funding like the \$8.6 million designated by the Iowa Legislature for lake restoration helps Iowans make real change. Our Watershed Improvement Program provides funding to about 50 watershed improvement projects, which help farmers and landowners use conservation practices that help keep sediment, nutrients and bacteria out of our water. Our fisheries, wildlife, forestry, and water quality staff – along with countless other DNR staff – contribute to those projects and other water quality improvement projects. We have the expertise, technology and know-how to help Iowans achieve their water quality goals.

Groups around Iowa recognize that water quality affects everyone, and that every Iowan affects water quality. They also know that we still have a lot of work left to do in improving Iowa's waters. There is no one simple or quick solution to improving water quality, but by working together, we can make a difference. Cleaner water provides countless benefits —clean drinking water; better boating, swimming and fishing; and a better place to live for wildlife and aquatic plants and animals. With better water comes a higher quality of life for nearby communities, and economic development opportunities through increased tourism. The success stories on the following pages illustrate these improvements and are just an indication of what's to come.

Clean water starts with every Iowan. Let us help you make a difference.

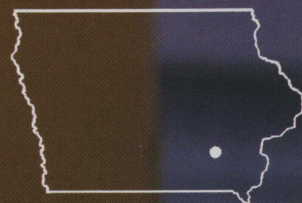
A handwritten signature in dark ink, reading "Richard Leopold". The signature is fluid and cursive, with the first name being more prominent.

Richard Leopold
DNR Director

Two clear plastic bottles filled with water are shown side-by-side. The bottle on the left contains clear water and has a white label with 'April 2005' written in black marker. The bottle on the right contains murky, brownish water and has a white label with 'April 1999' written in black marker. Both bottles have white screw caps. The background is a blurred outdoor scene.

April 2005

April 1999



Lake Darling makes a comeback

Lake Darling was slowly disappearing, and so were swimmers, boaters and anglers.

The 305-acre southeastern Iowa lake, built in 1950, had shrunk to 267 acres. Sediment washed in from the watershed, filling in the lake. Excess nutrients and pesticides washed in with the sediment, making the water cloudy and ruining fish habitat. High bacteria levels led to swimming advisories at the beach, keeping swimmers and anglers away.

"In the spring, the lake was the same color as hot chocolate," said Don Kline, a DNR fisheries biologist who has tested Darling's water clarity monthly since 1978. Small fish in the lake had no microorganisms to feed on, because the water was so cloudy, Kline said. Larger fish couldn't see through the murky water to feed. The sediment in the water clogged stream channels, destroyed aquatic habitat and covered fish spawning and feeding areas, among other things.

With numerous swimming advisories and cloudy water affecting fishing, people stopped coming to Lake Darling State Park. That was until the Lake Darling Watershed Project stepped in. Landowners, like the Wright family pictured at right, installed ponds and basins to trap sediment before it reached the lake, and enrolled land in the Conservation Reserve Program. Many projects were group projects, collaborations between the watershed project, multiple landowners and other agencies and organizations.

Without those conservation practices, more than 16,000 tons of sediment were reaching Lake Darling every year. Put 16,000 tons of soil in dump trucks, and you'd have a line of trucks reaching from the lake to nearby Brighton, about five miles.

Farmers using conservation practices dropped that number to 6,978 tons per year. With less sediment in the lake, there's clearer water and bacteria levels have dropped dramatically at a number of testing sites. As the water improves, people are returning to the lake.

With practices now in place in the watershed, the DNR is planning in-lake restoration work that will continue to improve Lake Darling. And by improving the quality of water reaching the lake, watershed work will help protect the lake restoration investment.



The Wright family made changes on its farm to help Lake Darling. Clay Smith



Barb Mendenhall Rain Garden, Clay Smith

Locals defend Iowa's Great Lakes

The people of Dickinson County know a good thing when they see one.

Or six. That's why they work together to protect Iowa's superior Great Lakes.

The Great Lakes – Big Spirit Lake, West Okoboji, East Okoboji, Upper Gar, Lower Gar and Lake Minnewashta – provide drinking water, recreation and about \$131 million in tourism revenue each year to northwest Iowa. That's why residents recognize the need to keep the lakes in top shape.

"Our economy and our drinking water is determined by the quality of our lakes," said Steven Anderson of the Dickinson County Clean Water Alliance, a group of about 50 nonprofit groups and government agencies. "People come here because of the water quality. The key is to protect it and enhance it."

For generations, locals have banded together to improve water quality. In 1905, West Lake residents formed a lake protection association. Today, groups like the Clean Water Alliance and new lake associations help organize watershed projects.

"People in this area have valued this very special resource we have here for a very long time," said Barb Mendenhall, a member of the Okoboji Protective Association and Friends of Iowa Lakeside Lab. "Now, we're trying to look at storm water as a resource."

Mendenhall's yard was one of the first in the area to feature a rain garden to absorb and filter storm water runoff. Neighbors' efforts weren't far behind. Residents promote ordinances regulating the quality of storm water entering the lakes. Builders use low-impact development practices to reduce urban impact on the lakes, during construction and after. Kids and adults alike take part in volunteer water monitoring through IOWATER. Farmers make changes on their fields to reduce erosion and sediment reaching the lakes. Watershed projects are there to help urban and rural residents make these changes on lawns and fields to improve water quality.

A member of the Clean Water Alliance, the DNR has helped fund the locals' efforts since 1989 through a number of watershed projects, and residents set an example for other Iowans concerned about water quality. "The people of the Great Lakes show what Iowans can accomplish when they come together," said Steve Hopkins of the DNR's Watershed Improvement Program. "Iowans across the state with the same enthusiasm can organize their own projects, and the DNR is here to help."



Great Lakes residents gather for Education Day. Steven Anderson



John Beard fishes North Bear Creek, Clay Smith

Trout streams revitalize Iowa towns

They're small streams, but they mean big business for northeast Iowa.

Watershed projects on northeast Iowa's famed trout streams are improving water quality, and in turn, fishing and tourism. By changing the way water comes into trout streams, watershed projects have kept excess sediment, nutrients and bacteria out of the water. Along with in-stream work by DNR fisheries staff to improve trout habitat, trout are thriving again.

In 1980, only six streams in Iowa sustained a trout population without stocking. Today, trout reproduce naturally on 32 streams, thanks to improvements. With cleaner water, trout can spawn naturally and better feed on aquatic insects, resulting in greater fish diversity. That's a boon for anglers and local communities.

According to a 2006 DNR trout angler survey, licensed anglers made an estimated 535,064 trips to Iowa trout fisheries. At about \$27 per trip – that includes food, lodging, transportation and equipment – anglers spend more than \$14.4 million annually on trout in Iowa. The 2006 survey also shows that anglers have taken 161,000 more trips to Iowa trout streams than they did in 2001. That includes residents of 45 other states and Canada, Australia and England.

Trout anglers come to Iowa streams for a two-day trip, if not a week, and bring family and friends, according to local business owners. They spend time and money in local sports stores, hotels, gas stations, restaurants and shops. For many small northeast Iowa businesses, most – if not all – of their business depends on trout anglers.

"We would not be here if it weren't for them," said Bev Stortz, who owns Highland General Store and Campground with her husband Gary, pictured at right with her family along South Bear Creek.

Business has improved along with water quality. To meet demand, the Stortzes have added log cabins to their campground, located northeast of Decorah.

"People love fishing the Iowa streams," Stortz said. "It amazes me, the influx of people. I never imagined when we bought the store that so many people would come to this remote area."



Campground owners Gary and Bev Stortz give grandson Mason a trout lesson as his dad Mitch and brother Gavin look on. *Clay Smith*



Bigalk Creek, Tom Wilton
Inset: Bigalk before improvements



Bigalk Creek continues to flourish

Howard County residents are still enjoying sterling water quality

in one of Iowa's most improved spring-fed trout streams – five years after a watershed project at Bigalk Creek ended.

Before the project, livestock overgrazed and trampled the streambanks, leaving the creek shallow, wide and unsuitable for trout. Manley and Linda Bigalk went to work on the land that has been in the family for almost 125 years; land where a creek that bears the family name flows.

The Bigalks put in fences to keep cattle out of the creek and planted trees to hold the banks of the stream in place. They also added nose pumps – some of the first in the state – that deliver water to their cattle in the pasture.

Other landowners in the watershed followed suit and turned highly erodible cropland into permanent vegetation with the Conservation Reserve Program and installed stream buffers and filter strips to protect 3.5 miles of creek.

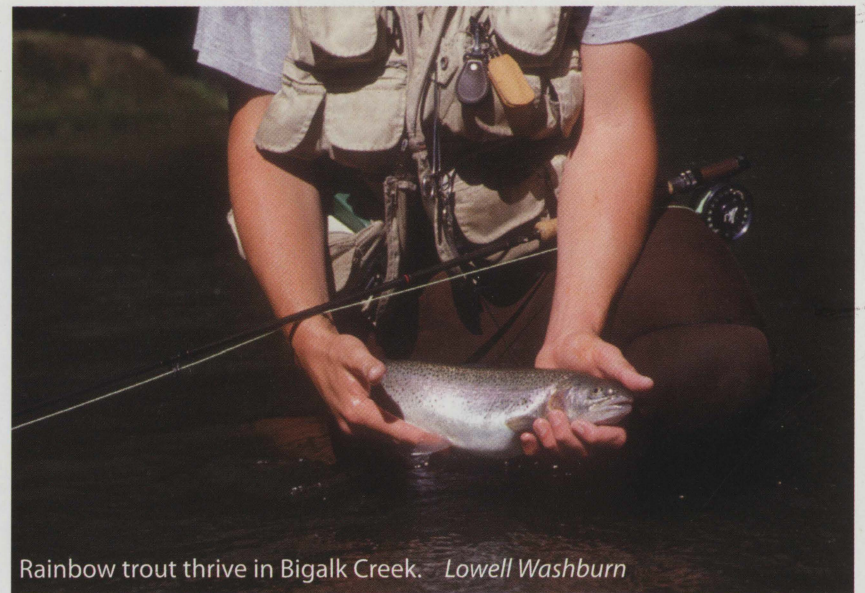
"Getting the cattle out of the stream had a real impact on this stream, and it's evident in the response of the trout," said Jeff Tisl, the regional coordinator of watershed projects in northeast Iowa. "Projects have been modeled after Bigalk."

DNR Fisheries staff reshaped the streambank, installed rip-rap to hold the banks in place, reseeded grasses in the area and created bank hides. Bank hides provide overhead cover for trout and help protect them from predators.

Today, anglers and neighbors continue to see the effects of the Bigalk Creek Project.

"This is the only stream in Iowa that we see any consistent reproduction of rainbow trout, so that makes it pretty unique," said Bill Kalishek, a DNR fisheries biologist at the Decorah hatchery. "There is no doubt that the watershed improvement and in-stream habitat work has made the difference in the water quality of Bigalk Creek."

The watershed project, like many others featured in this publication, used funding from the DNR as well as from the Iowa Department of Agriculture and Land Stewardship and the U.S. Department of Agriculture.



Rainbow trout thrive in Bigalk Creek. Lowell Washburn



The Kerns family's Volga River acreage in 2007 and in 1997 (inset). *Jeff Tisl photos*



Family builds a conservation legacy

Jim and Jody Kerns' belief in conservation education is as deeply rooted as the trees that protect the banks along their Volga River property.

For almost 10 years, their 22 acres in Clayton County have served as a living classroom for local high schoolers and their own six children.

The Kerns family, which farms 10 miles south of the river near Edgewood in northeast Iowa, is no stranger to conservation. The farm has land in the Conservation Reserve Program (CRP) and the Conservation Security Program. The river property is in CRP, prairie, pasture and managed timber.

But if not for work 10 years ago, the classroom may never have come about. The riverbank was eroding quickly, so Jim and Jody planted trees to keep the bank in place. They worked with the U.S. Department of Agriculture to make the site an open demonstration and with the DNR to spread the word about stabilizing streambanks.

When a powerful flood in 1999 wiped out a town three miles to the north and another three miles to the south, the Kernses' riverbank held steady.

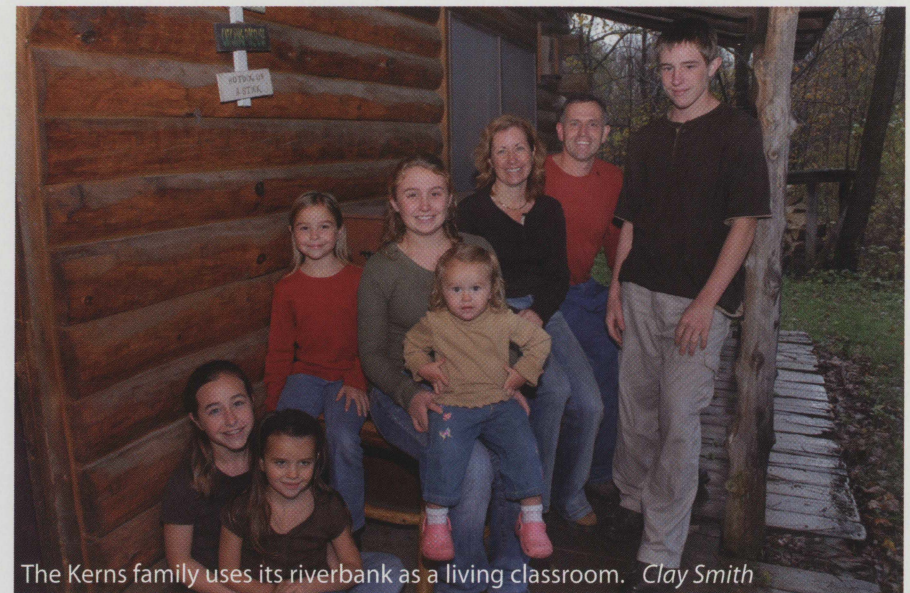
"Had that project not been there, most of that (land) would be gone today," said Jody, who also serves on the State Soil Conservation Committee. "From a soil erosion point, there's no doubt this was a success."

Since that time, high school students have recorded improvements in water quality and watched aquatic life and wildlife thrive.

"This property was a perfect learning tool for kids," said Jody. "We feel if we have the good fortune to have this land entrusted to us, we have the responsibility to do good by the land."

Maintenance of the tree plantings and other conservation projects has been less of a chore for the Kerns family and more of a bonding opportunity.

"It's fun to build this legacy for our children with them," Jody said of projects. "We always have something in the works."



The Kerns family uses its riverbank as a living classroom. *Clay Smith*



Miller Marsh, Clay Smith



Partnerships protect Brushy Creek

Outdoor groups in Iowa are doing more than increasing habitat for wildlife – they're also making a difference in water quality. In Webster County, the local Pheasants Forever chapter is working to restore prairie and wetlands that will protect Brushy Creek Lake and provide a home for pheasants. In 2003, Pheasants Forever helped the Webster County Conservation Board purchase 40 acres in northeastern Webster County for the Miller Marsh wildlife area. The north-central Iowa group is continuing its work as the marsh expands.

As the Iowa Department of Transportation (DOT) worked on the Highway 20 road project in the area, it purchased, in the county's name, almost 180 acres of poorly-drained farm land next to the marsh. As part of the road project, the DOT built new wetlands to replace those that had to be removed as part of construction. Pheasants Forever donated \$25,000 to restore 165 acres of native prairie and 50 acres of wetlands on the newly expanded marsh. The wetlands will provide nesting and wintering cover for pheasants while catching and filtering pollutants from runoff before they can reach the lake.

"These new wetlands filter the first 800 acres of the watershed and are the centerpiece of our project," said T.J. Lynn, who coordinates the Brushy Creek Lake Watershed Project. "The contributions of our partners, including Pheasants Forever, made the process a lot smoother. They're really important in the success of our project."

Pheasants Forever also bought a drill used to plant native grasses and donated it to the Webster County Conservation Board to use at Miller Marsh. The restoration of the site will also close an agriculture drainage well. Ag drainage wells allow tile drainage, including pollutants, to directly enter aquifers that many Iowans use for drinking water.

"It gives habitat for pheasants, but it all kind of goes together. We all need good water quality, and we're getting young hunters out there. We're working for the next generation," said Kirk Seltz, habitat co-chair for the Webster County Pheasants Forever chapter. "These projects take more funds than one group could have. You can do bigger projects when you partner."

The Webster County chapter of Pheasants Forever is working with the Brushy Creek Lake Watershed Project, the DNR, the Webster County Soil and Water Conservation District, the USDA Natural Resources Conservation Service, Ducks Unlimited, Whitetails Unlimited and the Pocahontas County chapter of Pheasants Forever on the project.



Courtesy Kirk Seltz, Webster Co. Pheasants Forever



Lake Icaria beach, Clay Smith

Work protects Icaria investment

Where Lake Icaria's clarity used to be measured in inches, it's now measured in feet. Before, you could only see down six inches in the murky waters of the southwestern Iowa lake. Now, following work in the watershed and in the lake, you can watch your toes wiggle when standing in waist-deep water.

Landowners set out in 1996 to improve the lake as part of the Adams County Three Lakes Project. In the past decade, landowners have changed how they farm to improve water quality. Farmers reduce erosion by using new ways to till fields. They've put terraces in their fields to slow erosion and changed the way they manage manure. All this work aims to keep soil, nutrients and bacteria out of the lake, allowing restoration to begin.

"Local leadership was instrumental in completing the project," said Gary Sobotka, a DNR fisheries biologist who helped with the restoration. "The relationship of a protected watershed to good water quality and good water quality to increased economic activity kept the community excited about the possibilities for Icaria."

With work in the watershed in place, the DNR moved ahead with restoration efforts in the lake in 2004. At Lake Icaria, in-lake work has helped protect 10,000 feet of shoreline from erosion. Anglers will notice four new fishing jetties, repaired jetties and a repaired main boat ramp, as well as a renovated fishery and restocked lake. The DNR also placed 12 underwater rock mounds to attract fish for anglers. The watershed work, by improving the quality of water entering the lake, protects the investment of in-lake improvements. With restoration complete, the results of that investment are clear.

"Aquatic insects – the foundation for the food chain – have flourished, resulting in a dramatic increase in everything that depends upon them from fish, to songbirds, to waterfowl. In many ways the entire ecosystem has been reborn," said Bob Waters, the regional coordinator of watershed projects in western Iowa.

Since Lake Icaria completely refilled in the spring of 2007, the water is remarkably clearer – generally, a person can see three feet down in the water, sometimes up to six feet. With an improved lake, anglers, campers and other park visitors are taking notice.

"Fishing has improved and park staff expect 2008 to be the busiest season ever," said Sobotka.



Construction work on a fishing jetty. Gary Sobotka



Gathering watershed data, Adam Kiel

Tools make improvement easier

New tools for the field and the office can help simplify and speed the watershed assessment process. These tools, available from the DNR, are helping local watershed coordinators pinpoint problems, determine solutions and improve water quality.

Coordinators can take new tablet computers, about the same size as a notebook, to electronically enter data right in the field. The tablet offers GPS tracking and Geographic Information Systems (GIS) programs, which show watershed assessment data, watershed boundaries, field boundaries and aerial color infrared photos.

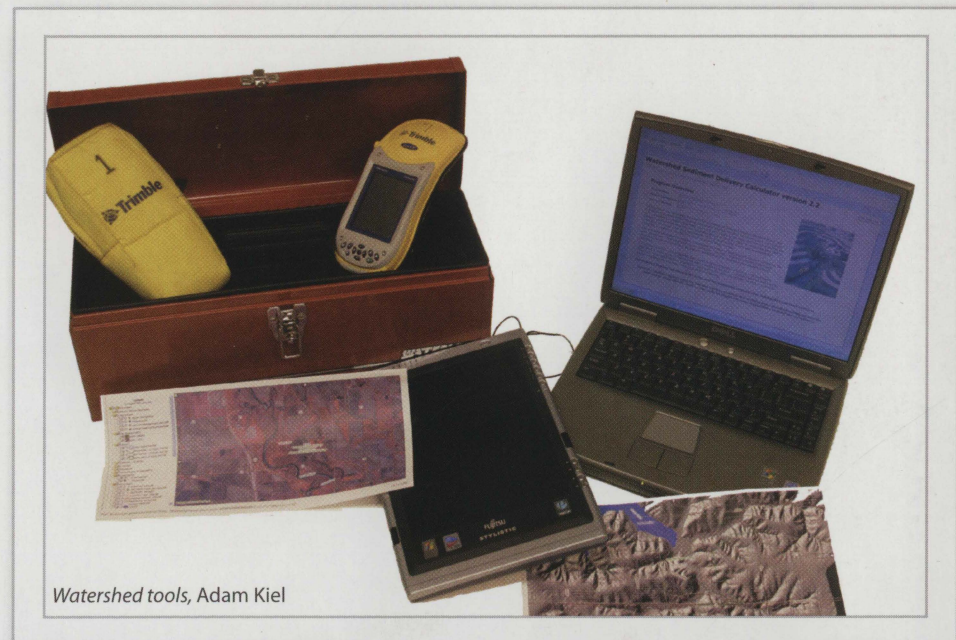
With similar benefits as the tablet, hand-held GIS units can assist with stream corridor and gully assessments. As they walk in or near the stream, coordinators use the handheld units to collect valuable information. The tool logs variables such as streambank stability, substrate, land cover and more.

During a field survey, a coordinator can mark the locations of existing conservation practices, gullies and other points of interest. Knowing locations of existing practices allows for increased accuracy when modeling soil erosion and sediment delivery. In addition, it can help identify priority areas for conservation practices.

Once back in the office, a coordinator can use the DNR's computer-based Sediment Delivery Calculator, which simplifies the process of calculating the amount of sediment kept from reaching a water because of conservation practices. It can help staff develop a watershed project plan and can help assess the effectiveness of conservation practice options. In addition, it can be used to report project accomplishments to the public and to funding agencies.

Results from all these tools come together in the watershed planning protocol. The protocol is a planning process that helps coordinators better identify where pollution in a watershed is coming from, and to better target solutions for reducing that pollution. With that plan in place, coordinators can focus efforts on trouble areas and get the largest improvement possible. The planning protocol was developed by the DNR, the Iowa Department of Agriculture and Land Stewardship, and the USDA Natural Resources Conservation Service.

Watershed project coordinators can use tools like the hand-held GIS unit at left to collect valuable information about the watershed, allowing them to better focus watershed improvement efforts.





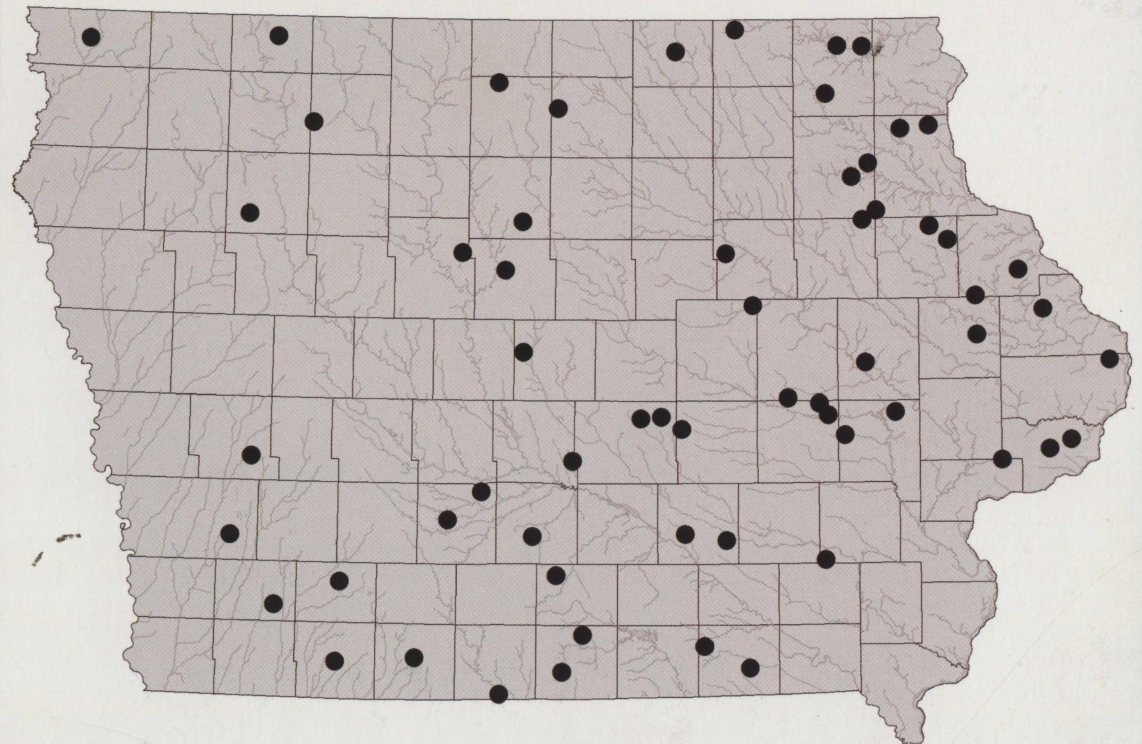
Nine Eagles Lake, Decatur County, Clay Smith

Working towards continued success

The successes featured here are just an indication of what's to come for water quality in Iowa. As watershed improvement efforts continue in 2008 and beyond, the DNR is working towards these goals for Iowa:

- Target our efforts to improve streams, lakes and rivers on Iowa's impaired waters list, and to protect high-value lakes and coldwater streams.
- Work with additional partners to use our innovative watershed tools such as the watershed planning protocol, land assessment tools, stream assessment tools and gully assessment tools.
- Document water quality successes in at least four Iowa lakes, as well as in additional lakes and streams, in 2008.
- Continue to work hand-in-hand throughout the DNR, with Parks, Forestry, Fisheries, Wildlife, Lake Restoration, Water Monitoring and Assessment, and Watershed Improvement to achieve water quality improvements in state park lakes.
- Continue work with current watershed partners and seek out potential partners to improve the effectiveness of our Watershed Improvement Program.
- Begin measuring how watershed improvement efforts reduce the amount of nitrates reaching our waters, in addition to sediment and phosphorus.

DNR Watershed Projects 2000-Present

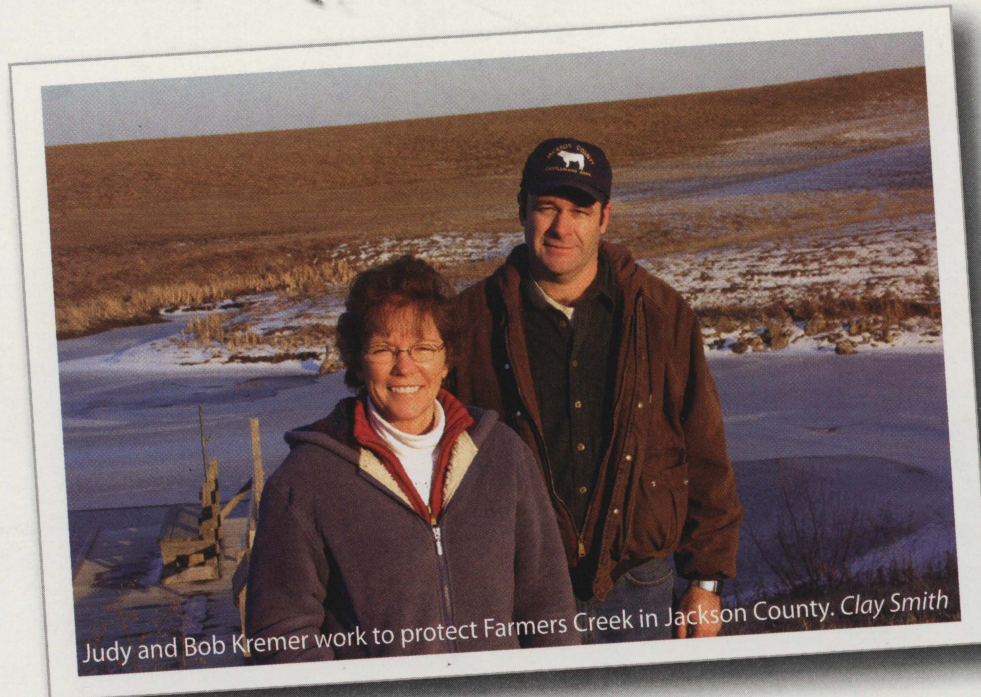


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Judy and Bob Kremer work to protect Farmers Creek in Jackson County. Clay Smith



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