



Repairing Driftless Area Fields and Streams

Countless cold-water streams meander through Driftless Area valleys. (Robert J. Hurt)

By Ed Brick

If you were to try to walk along the banks of the Mississippi River without crossing the water, you would also have to walk thousands of miles along countless rivers and streams. Think of the river as the sum of all its tributaries, large and small.

The Driftless Area — spanning the river in southwest Wisconsin, northwest Illinois, northeast Iowa and southeast Minnesota — contains hundreds of miles of trout streams fed by clear, 50-degree groundwater and springs emanating from the layer cake limestone-dominated bedrock. These streams flow directly into the Mississippi or into one of the many rivers that flow into the Mississippi.

This rugged landscape features ridges rising up nearly 600 feet above the intervening valleys. The ridges are capped by weathered limestone, topped by loess, a windblown soil both fertile and erodible. The steep

bluffs are covered with oak and maple over a grassy, brushy floor. The valley bottoms are loamy and wet.

In the 1800s the land was settled mostly by people of European descent moving from the East in search of farmland. Their farming practices, which worked well in temperate northern European climates, were not suited to the midwestern climate, which included thunderstorms that washed plowed soil from fields in quantities that must have amazed the new settlers.

After decades of floods and growing gullies, farmers worked with soil conservation agencies to change farming practices in ways that held water on the land so it could soak into the ground rather than running off and carrying precious soil with it. They accomplished an unprecedented restoration of the Driftless Area landscape that deserves credit.

Beginnings in Coon Creek

Mel Cohee researched farming practices in the Town of Webster, Vernon County, Wis., as a graduate student in 1933. His work, published in the *Journal of Land and Public Utility Economics* in August 1934, recounted an era when farmers were in desperate straits. Their prosperity during World War I had led to increased production and profits, but also increased debt and taxes. After the war, prices fell but debt and taxes did not, so farmers pushed their land harder to avoid losing the farm. Many planted crops on steep fields and put too many cattle to graze steep, wooded hillsides. This led to “the most striking example of run-off from pasture land where close cropping and packing of the soil caused it to shed water almost like a roof.” Ninety-six percent of the woodlands were grazed. Even though the hills shed water like a roof, they did not erode much soil

until the runoff ran through the lower cropland.

Ridge-top fields eroded soon after they were cleared. These loess-capped fields were fertile but erosion prone. Plowing fields in the fall to prepare them for spring planting exposed the land to increased soil erosion.

Robert Bald, a native of Castle Rock, in Grant County, Wis., described a stream that flowed through the family farm in his youth as if it had disappeared. He said the stream looked like a gravel road because of all of the rocks and debris carried into it by floods. When we visited the stream again in the late 1980s, it had become narrow and deep with grassy banks that confined recent, reduced floods.

The distressed condition of the land and the farming economy motivated farmers to work with government to correct matters. The first soil conservation demonstration project was in the Coon Creek watershed in Vernon County, Wis., in 1934. Coon Creek flows into the Mississippi River at Stoddard.

Crops would only be planted on land where slopes would not lead to severe erosion. Cattle would be fenced out of hillside woodlots. Fields were plowed at right angles to the slope to slow runoff. Crops were planted in wide alternate strips, so that an entire hillside did not have to be plowed at once, exposing it to erosion. Adopting these practices throughout the Coon Creek watershed and other Driftless Area watersheds began an unprecedented land restoration that endures today.

In 1936 Aldo Leopold hired Joe Hickey to study the problem of eroding farmland in southern La Crosse County, in the Coon Creek watershed. Their report to the Wisconsin Soil Conservation Committee in 1943 said that economic pressures caused farmers to crop steep, unsafe land, which led first to erosion then abandonment of eroded fields. They considered returning the eroded lands to public ownership as was done in the White-water River watershed in southeast Minnesota, but instead recommended reassembling the farms into economically viable units with enough safe lands to farm. Those farms would

be sold on land contracts with funds from the transactions used in a revolving fund to restructure other eroding farms into safe, viable units.

In 1988, I took Hickey back to the area where he had done his research. He said the land looked a lot better than when he had done his study for Leopold, but he thought that there would always be more to do. He also thought that some of the smaller farms might be used for recreation.

Banking on Conservation

Gus Kerndt used Hickey and Leopold's methods to save the Kerndt Brothers Savings Bank in Lansing, Iowa, even though he didn't know about the Coon Creek watershed on the other side of the Mississippi.

Roger Kerr called me some years ago to ask why trout streams in northeast Iowa had gotten so much better. I told him that I didn't know, but that Kerndt might. I had worked with Kerndt on another project, so I called

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the bank to talk with him. He didn't work there anymore, so I called him at home and arranged a meeting with him and Kerr. When we sat in his kitchen on a rainy morning, he told us a story that made the hair on my neck stand up.

During the 1980s, when interest rates were up and commodity prices were down, Kerndt had a lot of bad loans on his books. To keep the bank examiners from closing his bank, he took the loans off his books. He sold the "roughs" — the eroded ridges, steep hillside woodlots and wet bottomlands — to the state for fish and wildlife lands, reassembled the safe lands into viable farms then worked with the farmers to move them onto farms they could make a living from or moved them into town and other jobs.

I was flabbergasted. To save his bank, Kerndt had done in 1988, what

Hickey and Leopold had recommended in 1943. The changes in land use allowed more water to soak into the ground rather than running off, just like the Coon Creek Demonstration Project. This water emerged later as cold, clear groundwater that keeps the streams warmer in the winter and cooler in the summer, which benefited the trout that Kerr was catching.

Not much later, Mel Cohee and I went to the Town of Webster with Jim Radke, the Vernon County soil conservationist. We were looking for a gully that Mel had surveyed at Aldo Leopold's suggestion, but Radke had something else in mind for us that day. He took us to the Ernest and Joseph Haugen brothers' farm on the ridge above Chaseburg. The brothers had just gotten to know Radke. They had been faithfully following the plan that Cohee had laid out for their farm in 1934. We sat in their kitchen and talked over how they rotated their crops between corn and hay, kept their cattle out of the woodlots and enjoyed life as bachelor Norwegian farmers. When we were leaving, Ernest Haugen asked Cohee if he would sign their plan again. He signed, "Melville O. Cohee, November 18, 1997" on the line above his first signature dated "March 19, 1934."

Radke had another task for us. Myron Lemke complained that he had finger gullies in his ridge-top fields, even though he rotated his crops and used good management practices. Fellow graduate student Vera Smith and I looked at Lemke's fields and concluded that his use of the moldboard plow to prepare for planting probably disturbed the soil structure enough that it could not resist the water running off of his fields. Moldboard plows turn the soil over, leaving it more exposed to erosion than a field prepared with a chisel plow. We suggested that Lemke put his moldboard plow up for sale or scrap it.

In some cases even following the soil conservation "book" does not eliminate soil erosion completely. Art Thicke is a dairy farmer in the hills above La Crescent, Minn., across the Mississippi from La Crosse. The fam-

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ily farm was featured on the cover of the 1957 U.S. Department of Agriculture Yearbook. The cover photo showed all of the fields laid out on the contour, with alternating hay and crop strips. But Thicke said that the fields still had finger gullies at the field edges and were rough to walk over. It was only when he quit cropping and went completely to grass that the gullies healed and the fields were soft underfoot.

Thicke and the Haugen brothers demonstrated ways to farm the hilly, Driftless Area landscape in a careful, caring way.

Return of the Wild Trout

The first systematic fish surveys in the Driftless Area, in the 1950s, found most of the streams held warm-water species and a few carry-over hatchery-reared trout that retreated to springs for water cold enough to live in during the heat of the summer. Hatchery rearing was required because winter flows were too cold for eggs to hatch before disease or floods swept them away.

As the soil conservation practices began to take effect, especially getting the cattle off of the hillside woodlots, flood flows became smaller and colder low flows got larger. Trout moved out into more of the streams as conditions improved. Now Driftless Area trout streams hold up to 3,000 naturally reproducing, wild trout per mile, a remarkable success story. Fish managers sped up the recovery by transferring trout from streams where they were abundant to streams where conditions were improved.

La Crosse Area fishery supervisor, David Vetrano, said recently that the large floods in 2007 and 2008 showed a 12 to 15 percent increase in base flow after the flood flows receded, indicating that much of the water was absorbed by the ground. The positive trend continues.

When the Coon Creek Demonstration Project was started in 1934, Stafford Happ, a geologist, studied erosion and sedimentation in the watershed. He set up measurement ranges across the main stem and trib-



Rapidly growing gullies, like this one near Beaver Creek in Winona County, Minn., carried off tons of soil and increased flood damage. Note the man standing halfway up the right bank of the gully. (Winona County Historical Society)

utaries throughout the watershed. He was able to find the darker pre-settlement soil surface beneath the blond layers of sand and silt that were the main components soil washed from plowed fields.

University of California-Los Angeles geographer Stanley Wayne Trimble worked with Happ beginning in the 1970s and continued the studies

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into the 1990s. Their measurements showed that sediment movement in the 1990s was six percent of the amount measured in the 1950s. Though some critics question the numbers and conclusions, the studies have been repeated in other watersheds in the Driftless Area, including Beaver Creek, in Trempealeau County, Wis., where Happ kept returning to measure sediment dynamics into the mid 1980s. His discoveries are similar to Trimble's: hillside and cropland erosion is reduced, and streambank erosion is now the principal sediment source. This is being reduced further by streambank treatments, includ-

ing riprap and "lunker" structures that create fish shelter and stabilize streambanks.

Flood flows have gotten smaller, even though precipitation has increased, while low flows have increased, especially in summer. Paul Juckem in his recent U.S. Geological Survey report ascribes the changes more to land-use changes than precipitation changes. Bill Krug and Warren Gebert described those changes in other USGS reports. They reported flood flows in the 1990s that were less than half of the 1930s flows. Low flows have increased as well, indicating that more precipitation soaks into the ground rather than running off as floodwater.

Trout populations have rebounded to rival the best trout populations in Montana and other fishing hot spots in the western United States. This success story has few equals in history. It should be highlighted and celebrated annually by anglers and as well as those who enjoy simply watching these beautiful fish dart about in the crystal-clear, cold water. 🌿

Ed Brick spent most of his career on the Upper Mississippi River working on water resources problems. In 1987 Stan Trimble introduced him to the story in the Coon Creek Watershed. Ed is still trying to understand the details and tell the story, especially to the next generation.