

Top left: A road at Gulf Mountain Wildlife Management Area in Van Buren County showcases runoff flows leading to erosion and poor driving condition. **Top right:** The road following reconstruction and implementation of best management practices, including placing gravel in the road surface and crowning it to drain water from the road surface. **Bottom left:** A shallow crosspipe and rock armor installed at an angle diverts water away from the road, into a stable outlet with a slash apron, and into a forested area. **Bottom right:** One of the best management practices is to compact the aggregate with a pavement roller. Adding proper-sized road aggregate, and then crowning and compacting the material with heavy equipment significantly upgrades the road to prevent erosion and keep aggregate and base material in place.

Photos and photo information courtesy of The Nature Conservancy

A Balancing Act

Public and private partners cooperate on road maintenance and species protection

By MICHAEL DOUGHERTY
For County Lines

The Arkansas Unpaved Roads Program is not yet two years old. But the group is opening the eyes of a number of its members and other observers in its early success in reaching a consensus on attacking sedimentation — a problem that's shared by many for a number of different reasons.

Program officials said eroding unpaved roads sometimes channel runoff from the rain in a manner that increases erosion and sediment delivery to streams, rivers and lakes. That makes the challenge a significant one in a state in which more than 85 percent of county roads are unpaved.

Besides making for rougher rides and causing wear and tear on vehicles, the problem of deteriorating roads means maintenance problems for road crews (in this case, those of Arkansas counties) and a major bite on road maintenance funds in those counties. The erosion can damage land and clog stream beds that serve as habitats to game fish and non-game fish and other aquatic species. Program officials also said the

increased sediment deposits make treatment of drinking water more expensive and decreases lake capacity in such sources of drinking water.

Jim Boggs, field supervisor of the Arkansas Ecological Services Field Office of the U.S. Fish & Wildlife Service, said the Arkansas Unpaved Roads group was formed in a political atmosphere that often stymies such activity.

"A number of the members had different reasons for working with the person across the table," Boggs said. "But the willingness to look beyond agendas and motives and listen to the needs of other members to achieve a common goal seems to be working as the Unpaved Roads group moves to the halfway point of its first project, replacing a small bridge in Polk County."

The group was formed to develop ways to solve the problem that sedimentation causes — from the deterioration of the roads themselves to the erosion of soil from the edges of the roads to nearby land and river banks and the deposits that build up in streams and rivers that eventually may change the course of the river and restructure the beds that are home to the Arkansas fatmucket and other mussels and organisms in the state.

The program's partners are the Association of Arkansas Counties; the U.S. Fish & Wildlife Service; The Nature Conservancy; the Arkansas Game & Fish Commission; the Arkansas Association of Conservation Districts; the Arkansas Highway and Transportation Department; the Arkansas Forestry Service; the Arkansas Forestry Association; Farm Bureau of Arkansas; the Arkansas Natural Resources Commission; the County Judges Association of Arkansas; the Natural Resources Conservation Service; the U.S. Department of Agriculture; and the University of Arkansas.

Polk County Judge Brandon Ellison and Stone County Judge Stacey Avey were elected co-chairmen of the group.

Several members credited Jeff Sikes, the now-retired legislative director for the Association of Arkansas Counties, with the genesis of the group, stemming from various conversations he had with representatives from a number of organizations with which AAC works.

"I think Jeff Sikes came up with the original idea of the partnership," said Boggs, of the Fish & Wildlife Service. "He had had lunch with me one day, discussing the process of how we try to protect species and that sort of thing. A few days later, I think, he had a discussion with Scott Simon [who is state director] of The Nature Conservancy about what they face in trying to protect the lands in the state, and, of course, with his job at AAC. Jeff was aware of the problems that county judges experience in trying to maintain roads and bridges and the constant strain that causes on their budgets.

"The common denominator there was sedimentation, and I think it was Jeff who first came up with the idea of getting everyone together to discuss the problem and how it affected all of us. His thought was that maybe we could all work together to try to get ahead of the problem.

"In the case of what we do here at Fish & Wildlife, that meant possibly solving the sedimentation problem in a time frame that allowed us to protect a species' habitat before we had to place it on the endangered species list."

Though such a group of disparate members working to solve a common problem is new to this part of the country, the original organization on which the Arkansas Unpaved Roads Program is based is not.

"It is modeled after a program in Pennsylvania," said Ellison, the Polk County judge. "They have been doing it [working to improve unpaved roads] for about 30 years."

After a few meetings, group members decided that by using best management practices, known by road engineers and maintenance professionals as BMP, the organization could try to turn the tide against the damage being caused by sedimentation and erosion.

Officials at The Nature Conservancy's Arkansas field office in Little Rock reported to the group that it had experienced some success in sponsoring training sessions that taught BMP to construction and road maintenance personnel at demonstration sites across the state.

Scott Simon, the state director, said the first two "barely" organized workshops, with small demonstration unpaved road BMP projects, were presented in 2005 in Sharp County (at Strawberry) and Carroll County (at Kings Rivers).

"A lot of work and learning from county judges and staff [occurred] in the interim," Simon said, noting that TNC's first formal workshop and completed unpaved road BMP demonstration project was in February 2009 in Russellville (Pope County), with the demonstration site just over the line in Johnson County.

Eventually the Unpaved Road group decided to take on its first project: the replacement of a deteriorating center-pier bridge where County Road 61 crosses Macks Creek in rural Polk County, southeast of Mena, the county seat.

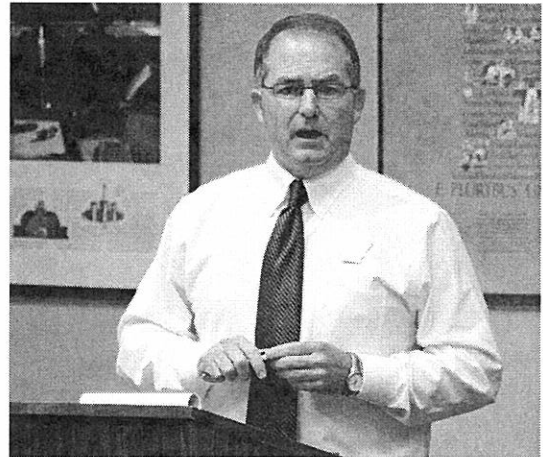
The financing of that \$82,452 job came from three partners: Polk County (\$31,705); The Nature Conservancy (25,747); and U.S. Fish & Wildlife Service (25,000).

"[Polk] County Road 61 is a part of Wolf Pen Gap, a 42-mile trail system for ATVs that is located on U.S. Forest Service land," Polk County Judge Ellison said. "Because it doesn't have enough traffic on it, we would have had to put off [replacing the bridge] until we had the money to do that job. Using this as the program's pilot project incentivizes it for us."

Ellison said the program has a number of advantages for counties, with the obvious one being the economic assistance it offers.

"As we do grant applications for various projects," Ellison said, "training will be required that uses best management practices. Partners in this group, such as the University of Arkansas and the Arkansas Highway and Transportation Department, will sometimes be helping with that aspect.

"I think that other county officials such as the judges and the heads of the road



Polk County Judge Brandon Ellison addresses members of the Arkansas Unpaved Roads Working Group.

Unpaved pilot project underway in Polk County

Unpaved roads play an important role in Polk County.

Making up about 1,000 of the county's 1,300 miles of road, they are essential to transportation. They also provide the path to a number of recreational sites for residents and thousands of visitors who come to the western Arkansas county for recreation.

That's why Polk County Judge Brandon Ellison is among the county officials participating in the Arkansas Unpaved Roads Program, an association of a number of governmental and private groups working to prevent damage and erosion to the roads, surrounding lands, and rivers and creeks where the sediment sometimes settles.

Program partners include the Association of Arkansas Counties; County Judges Association of Arkansas; U.S. Fish & Wildlife Service; The Nature Conservancy; Farm Bureau of Arkansas; and nine other public and private groups.

Ellison and Stone County Judge Stacey Avey are co-chairmen of the organization. Members chose as the group's pilot project the replacement of a center-tier bridge where Polk County Road 61 crosses Macks Creek, a tributary just off Board Camp Creek, about three miles south of state Highway 8, southeast of Mena, the county seat. Board Camp Creek flows into the Ouachita River, which is the home of the Arkansas fatmucket mussel. It is on a federal list of threatened species.

Ellison said the gravel road is a key part of the Wolf Pen Gap system of trails in the county. That trail system in the Ouachita National Forest was ordered closed to off-highway vehicles and all-terrain vehicles 32 weeks of the year by the U.S. Forestry Service to prevent damage to the environment.

"As hard as it is to believe," Ellison said, "we have 35 to 40 couples who regularly visit our county just to use the trails for off-road vehicles and all-terrain vehicles.

See "PARTNERS" on Page 32 >>>

See "UNPAVED ROADS" on Page 32 >>>

PARTNERS

Continued From Page 31 <<<

maintenance crews are going to find that, as they become involved in projects like the one we're doing at Wolf Pen Gap, there is very little difference in good construction practices and environmentally sound practices."

Simon seconded that premise.

"Significantly eroding unpaved roads are costly for counties to maintain and increase erosion and sediment into our drinking water reservoirs and streams," he said. "This becomes a costly maintenance issue not only for the county road crews but also for Arkansas' drinking water treatment facilities. By building and maintaining unpaved roads using the latest best management practices, counties see cost savings in many areas and our water quality and fisheries improve."

"When our unpaved roads erode less, the driving experience is better, the counties spend less in maintenance, our drinking water costs less to treat, and our fisheries are healthier."

Boggs agreed: "That's what's great about this program," he said. "We have these various groups getting together and talking about something that is a problem for all of us, though in some cases for different reasons, and we've found something that we believe will help each group solve its problem."

"It will help county judges stretch their budgets farther because they won't have to have their road crews grade a particular road as often as they would have. It will help The Nature Conservancy and groups like that to protect the rivers and streams. It will help the Forest Service protect its forests and it will help us keep species off the endangered lists before that causes problems for construction in the first place."

Ultimately, program officials said, the goals of the Arkansas Unpaved Roads Program are to:

- Establish dedicated funding sources and mechanisms for distribution of the funds;
- Fund safe, efficient and environmentally sound projects for the maintenance of dirt and gravel roads that have been identified as sources of sediment or dust;
- Provide training to road maintenance professionals on techniques of dirt and gravel road maintenance that minimize negative impacts to water and air quality; and
- Conduct demonstrations of new and innovative techniques of dirt and gravel road construction and maintenance to assist in training of road crews and to more broadly share BMPs.

The officials said they see a program that will provide a source of funds to start projects, training sessions and demonstrations. Counties will help with funding for projects by matching one-to-one with cash or in-kind contributions and they'll be eligible to apply for funding after they've completed an unpaved roads BMP training workshop.

The program's board of directors will consider proposals for projects. It will give preference to projects "in priority watersheds, which are identified by a criteria committee to include endangered species, drinking water sources and other important characteristics," according to a brochure issued by the group.

Program officials said they hope to get the Arkansas Unpaved Road Program affiliated with the state of Arkansas, with hopes of acquiring state funding to at least establish administration of the groups projects.

The Nature Conservancy hosted group members and about 15 legislators Oct. 6 at the Association of Arkansas Counties office in Little Rock to propose such a plan. Several Unpaved Road Program officials said the meeting "went well" and that they were encouraged by the legislators' response.

"The program has been very successful because of the great leadership of Judge Ellison, Judge Avey and the Association of Arkansas Counties and the collaborative style of the many partners working together to develop the program," Simon said. "It is a classic Arkansas story. When faced with a big challenge, a group of partners come together to develop and implement a plan to address it. Everyone is working positively together and bringing something to the table: be it funding, technical support, policy ideas, etc."

Anyone wanting more information about the program is encouraged to contact Roger W. Mangham, director of conservation programs at The Nature Conservancy of Arkansas. He is at TNC's Arkansas Field Office, 601 N. University Ave., Little Rock, AR 72205. His email address is rmangham@tnc.org or he can be reached by phone at (501) 614-5091.

UNPAVED ROADS

Continued From Page 31 <<<

Those people and other visitors to Polk County that make up our tourism industry represent a substantial part of our economy."

A 2010 economic impact study by UALR's Institute for Economic Advancement estimated the potential loss of tourism to be \$58.6 million annually.

Ellison said the project has gone well, with construction crews pouring the foundations for the bridge, which has no center pier, in early October.

"We're waiting on those foundations to cure," he said, "and the pre-fabricated bridge will arrive October 17. We will close the road that day for about four or five hours to use a giant crane to install the bridge. Once that's set, we'll need to do some dirt work to the road."

November 14 is the estimated date for finishing that phase of the project. It will include raising the road level, relocating some springs away from the road and replacing some rock that will help water run away from the road rather than stand on its surface. Ellison said soil stabilizer can be added to the road after that.

When the project is complete, county crews should not have to grade the road for a year. Ellison said that stretch of CR 61 before improvements might have needed grading three to four times in the same period.

He noted that the new road-improvement methods being taught as a part of the Unpaved Roads Program eventually will mean a substantial savings in funds to Polk County. Those economic savings, he said, are one reason why he believes that the program will be successful — as more county officials see what the training for better methods to road and construction crews mean to them economically, more counties will sign on.

Scott Simon, state director of The Nature Conservancy, said his group has been pleased with the prospects of working with other members of the group, especially in connection with its pilot project.

"We are all excited about the latest pilot project ... in Polk County," he said. "Judge Ellison and the county staff are just great to work with."

Jim Boggs, field supervisor of the Arkansas Ecological Office for the U.S. Fish & Wildlife Service, based in Conway, said the Wolf Pen Gap bridge project was an excellent choice for a pilot program for the Arkansas Unpaved Roads Program.

"It shows what this group can do by working together," he said. "Judge Ellison and his crew are showing what can be done to address the problem of sedimentation in a way that helps his county stretch its maintenance funds, helps the U.S. Forest Service and The Nature Conservancy protect the national forest there and helps us protect a species before it is placed on the endangered list."

Ellison noted that by building a short bypass around the old bridge, the Polk County crews have been able to keep CR 61 open during the bridge replacement project. The only time the road was scheduled to be closed is the four- to five-hour window on the day the pre-fab bridge is set on its foundation. The large crane must be located on the bypass as it moves the bridge into place.

— Michael Dougherty



Better Unpaved Roads for Nature and People



Eroding Roads



Runoff flows along the road, causing surface material to erode



Weak road base material and construction lead to erosion and poor driving conditions



Roadside ditch delivers sediment runoff directly to the stream

Unpaved Roads

Unpaved roads are the transportation backbone for rural communities and for many economic sectors in Arkansas, including timber, agriculture, ranching, and energy. These dirt and gravel roads are also our connection to hunting, fishing, boating, hiking and other recreation in the natural and wild places we love.

By the Numbers:
Over 85% of Arkansas
county roads are unpaved.

The Problem

Eroding unpaved roads can channel rainfall runoff, increasing erosion and sediment delivery to our streams, rivers and lakes.

This sediment can have negative effects for both people and nature. It can fill in gravel stream beds, causing the loss of in-stream habitat for game and non-game fish and other aquatic species alike, make freshwater sources more expensive to treat for drinking water, and ultimately contribute to loss of lake capacity, further jeopardizing these drinking water sources. Economies that depend on recreational fishing and boating may also suffer from degraded water quality.

Eroding unpaved roads are expensive to maintain, requiring continual grading to smooth out the effects of concentrated drainage flowing across the road surface. Problem roads can also cause excessive wear and tear on vehicles and contribute to high levels of road dust, a significant issue in many rural areas.

By the Numbers:
Lake Wister, nearby in
Oklahoma, lost nearly 24%
of its reservoir capacity from
1985 to 2001 alone.

The Challenge

Best Management Practices (BMPs) for construction and maintenance of unpaved roads are broadly accepted by road engineers and maintenance professionals as the most effective approach to managing roads that minimize sediment impacts to adjacent water bodies and aquatic habitat.

Use of BMPs reduces erosion and sedimentation by providing better drainage to the road system, stabilizing erodible ditches and drainage outlets, and creating a more durable driving surface. BMPs can reduce long-term costs by greatly reducing the need for replacing road surface gravel and reducing the need for road grading.

Road managers often do not have sufficient training to prescribe and implement BMPs appropriate to the unique conditions of their road systems. Even managers with knowledge and experience with BMPs may not have the budget needed to implement these practices. Though BMPs can reduce long-term costs, they may require greater up-front costs.

The Solution

In early 2013, the Arkansas Association of Counties, The Nature Conservancy, and a dozen public and private partner organizations joined forces to establish the Arkansas Unpaved Roads Program.

The program's vision is to establish a proactive, incentive-based unpaved roads management program that results in the utilization of best management practices on rural, unpaved roads to minimize erosion, stretch county dollars farther, and maintain and improve the health of priority lakes and rivers.

By the Numbers:
Effective BMPs can reduce erosion
on roads by as much as 95%.

The Program's goals are to:

- Establish dedicated funding sources and mechanisms for distribution of the funds.
- Fund safe, efficient and environmentally sound projects for the maintenance of dirt and gravel roads that have been identified as sources of sediment or dust.
- Provide training to road maintenance professionals on techniques of dirt and gravel road maintenance that minimize negative impacts to water and air quality.
- Conduct demonstrations of new and innovative techniques of dirt and gravel road construction and maintenance to assist in training of road crews and to more broadly share BMP's.

Program partners:

Arkansas Association of Conservation Districts
Arkansas Farm Bureau
Arkansas Forestry Association
Arkansas Forestry Commission
Arkansas Game and Fish Commission
Arkansas Highway and Transportation Department
Arkansas Natural Resources Commission
County Judges
Natural Resources Conservation Service
The Association of Arkansas Counties
The Nature Conservancy
University of Arkansas
US Fish and Wildlife Service

During Construction



Alternative maintenance practices for stream crossing known as geo-cells



Geo-textiles used to strengthen road base and prevent loss of road material



Placing gravel aggregate with a paver

Post Construction



Best Management Practices workshop - classroom



Best Management Practices workshop - Stone county grading demonstration site



Best Management Practices workshop - Johnson County demonstration site

The partners envision a program that provides a sustainable source of funding to implement projects, trainings, and demonstrations. Counties or other road managers will leverage program funding for projects by matching one-to-one with cash or in-kind contributions and be eligible to apply for funding once they have completed an unpaved roads BMP training workshop.

Project proposals will be reviewed by a board of directors to prioritize limited funds. Preference will be given first to proposed projects in priority watersheds, which are identified by a criteria committee to include endangered species, drinking water sources, and other important characteristics.

The Start

Prior to securing sustainable funding, the partners are seeking public and private funding to develop the program and establish five to ten demonstration projects in priority watershed areas throughout the state. These projects will demonstrate the effectiveness of the program to the public, decision makers, and funders, building support to ensure that the program will be sustainably funded, implemented statewide, and broadly effective in its goals.

For more information, contact:

Ethan Inlander
Ozark Rivers Program Director
The Nature Conservancy of Arkansas

Ozark Highlands Office
38 W. Trenton Blvd. Suite 201
Fayetteville, AR 72701
Work: 479-973-9110 x222
Email: einlander@tnc.org

The Nature Conservancy 
Protecting nature. Preserving life.

nature.org/arkansas