

Safe Passage

Bridges, tunnels, and other creative structures allow wildlife to cross U.S. Highway 93 on the Flathead Indian Reservation without ending up as roadkill. *By Kylie Paul*

Most Montanans have a wildlife-vehicle collision story: the totaled pickup, the injured friend, the dead or wounded deer on the side of the road. Roadkill seems inevitable in a state with one of the nation's highest rates of deer, elk, and moose collisions. State Farm Insurance reported in 2017 that Montana drivers were second only to those in West Virginia in the number of per capita wildlife-related accidents.

But recently, state, federal, and tribal agencies in Montana have proved that wildlife can cross busy highways without endangering themselves or vehicles. The 56-mile stretch of U.S. Highway 93 North that bisects the Flathead Indian Reservation between Evaro and Polson is one of the most extensive wildlife-sensitive highway design projects in North America. There, the

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Confederated Salish and Kootenai Tribes (CSKT), Montana Department of Transportation, Federal Highway Administration, and other partners have found a way to use traffic engineering and knowledge of animal behavior to reduce wildlife mortalities and costly vehicle collisions.

Wildlife death trap

In the 1990s, the Department of Transportation proposed reconstructing this stretch of U.S. 93 to improve safety on what had become one of Montana's most dangerous roads for wildlife collisions. Because the CSKT are a sovereign nation, plans required extensive tribal involvement. In addition to state and federal requirements such as public safety and reasonable cost, the tribes asked that the project protect important cultural and natural resources along the corridor. The new highway also needed to reduce mortality of moose, deer, bears, mountain lions, and other wildlife. The animals



WILDLIFE ABOVE An arched overpass between Missoula and Arlee is one of 41 crossing structures on U.S. 93 on the Flathead Indian Reservation that allow wildlife to move safely across or under the highway.

regularly crossed the road through the fertile Flathead Valley, flanked by the Mission Mountains to the east and Salish Mountains to the west.

Tribal and state wildlife biologists, along with representatives of state and federal highway agencies, visited Banff National Park in Alberta, Canada, to learn about overpass and underpass structures. They also studied underground structures used successfully in Florida and Europe. After years of discussion and negotiation, the final design contained dozens of wildlife “mitigation measures.”

Rebuilt from 2004 to 2010, the reconstruction of 56 miles of highway included installing 41 wildlife crossing structures ranging from small concrete culverts to large metal culverts and an arched overpass. On nearly nine miles of road, high fences keep wildlife off the highway and guide them to the crossing structures. More than 50 manmade hills along the highway fencing, called “jump-outs,” allow wildlife to escape from traffic. Dozens of wildlife guards (similar to cattle guards) discourage hooved mammals from entering the fenced highway at access roads.

When deciding where to place the structures, engineers worked with biologists and others to identify known wildlife crossing sites and where most accidents occur. They also factored in land ownership, long-term likelihood of human development, and topography. “Unlike wildlife mitigation projects in other states and Alberta, which are usually on fully protected lands, this is a multiple-use landscape with farming, housing, and other development along with an incredible mix of wildlife species and habitat,” says Dale Becker, CSKT Wildlife Program manager. “We had to get creative in blending engineering techniques with wildlife ecology and human development to come up with solutions.”

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NECESSARY? A doe lies dead on a Montana highway. To reduce collisions that kill wildlife and damage vehicles, wildlife biologists and highway engineers teamed up on U.S. Highway 93 to install crossing structures that drastically reduce accidents and injuries.

Wildlife structure study

To document how well the U.S 93 project meets the goals of reducing collisions and allowing wildlife movement, researchers from the Western Transportation Institute (WTI) at Montana State University and the CSKT monitored highway accidents and wildlife use before and after the project was completed.

At 29 of the highway structures, cameras recorded a total of 95,274 wildlife crossings between 2010 and 2015. Roughly 20 medium-sized or large species used the structures, including grizzly and black bears, mountain lions, bobcats, elk, moose, and river otters. Biologists predict that use will continue to increase as more animals become familiar with the passageways. “I

suspect the crossing structures are especially useful for timid animals that need to reach important habitat but might avoid the highway if these structures weren’t there,” says Neil Anderson, the FWP regional wildlife manager in Kalispell.

As part of the WTI-CSKT study, researchers documented the number of times deer and bears crossed the highway before and after the new structures were installed. They found that bear crossings stayed the same and deer crossings actually increased. What that shows, says Marcel Huijser, WTI researcher and lead author of the study, is that even though wildlife can no longer traverse the highway wherever they want, the crossing structures maintain wildlife movement.

Every deer using an overpass or tunnel was a deer not on the pavement caught in some driver’s headlights. According to Joe Weigand, Montana Department of Transportation Missoula District biologist, deer, black bears, and other wildlife used the structures on average 22,648 times each year. “That’s 22,648 times drivers were not in danger of hitting an animal. It’s

a big deal,” he says.

The study showed that wildlife-vehicle collisions were reduced significantly (70 to 80 percent) in areas with extensive lengths of high fence on both sides of the road. Yet where the highway was reconstructed without mitigation measures, wildlife-vehicle collisions increased from before. Huijser says that’s because motorists tend to drive faster on smoother, wider, straighter roads that have increased sight-distances. “We now know that wildlife collisions are likely to increase when a highway is reconstructed with increased traffic speed,” he says. This suggests that mitigation measures should always be considered in highway expansion or improvement projects in wildlife-rich



WALK THIS WAY At 29 structures monitored from 2010 to 2015, deer, bears, and other species made an astounding total of 95,274 crossings. Clockwise from top left: White-tailed deer move through an underpass; an open-span bridge facilitates both fish and wildlife; mountain lions using an underpass; a CSKT wildlife biologist prepares a tracking bed to monitor wildlife use; river otters moving through an underpass; a culvert crossing; black bear near an underpass; a “jump-out” allows wildlife trapped on the highway side of an exclusion fence to get back behind the fence.

CLOCKWISE FROM TOP LEFT: MDT & CSKT; CSKT, MDT & WFNASH; CSKT, MDT & CSKT; KYLIE PAUL; MDT & CSKT; WTI/ANAS; MDT

areas. “This project shows that we can improve human safety by reducing wildlife collisions at the same time as maintaining connectivity for wildlife,” Huijser explains. “We can have our cake and eat it, too.”

Wise investment

All wildlife fences along highways have to eventually end at some point. Because animals often walk along a fence until they can cross, fence endings can create roadkill hot spots. One solution is to reduce the number of fence endings by connecting fence segments. The study showed that longer wildlife fences, especially those over three miles long, significantly reduced collisions

with large mammals compared to sections of highway with intermittent fencing. “Our results on the importance of longer fence lengths are expanding knowledge and improving practices across highway and wildlife agencies, and we’re pretty proud of that,” says Whisper Camel-Means, CSKT wildlife biologist.

Longer fencing is still needed to connect existing sections of short fences on the highway near St. Ignatius. Though grizzly bears use several underpasses, there’s not enough fence to channel all the bears to those structures. Grizzlies continue to cross on the pavement and are hit by vehicles. Weigand says the Montana Department of Trans-

portation has been working with the U.S. Fish & Wildlife Service and CSKT to extend fence lengths in these trouble spots.

The U.S. Highway 93 wildlife mitigation study offers a detailed list of recommendations for state, federal, and tribal wildlife agencies and highway departments to consider. Though mitigation infrastructure that reduces collisions can be seen as expensive in the short run, it can quickly pay for itself by reducing costly and dangerous vehicle collisions with wildlife. “From a public policy standpoint, it seems to be a wise investment in protecting both human safety and wildlife populations,” Huijser says. 🐾