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 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

Kylie Paul is a writer in Missoula.
Wildlife regularly crossed the road through the fertile Flathead Valley, ranked 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 overpasses 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 "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 mammal hills along the highway fencing, called "jump-outs," allow wildlife to escape from traffic. Dozens of wildlife structures were not in danger of hitting an animal. It's a big deal.

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.

Wildlife used these structures 22,648 times each year. That's 22,648 times drivers were not in danger of hitting an animal. It's a big deal.

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 Mussoul 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 sightlines. "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 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 hotspots. One solution is to reduce the number of fence endings by connecting fence segments. The study showed that longer wildlife fences, especially those over 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 extending 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. Through gravelly bears use several underpasses, there isn't 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 Transportation 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.