



BANFF PARK HIGHWAY CROSSINGS BENEFIT WILDLIFE AND HUMANS

By Andrew Bennett and Adam T. Ford

Alberta is the proud site of North America's premier experiment to reduce roadkills and encourage connectivity. The 40-km stretch of the Trans-Canada Highway (TCH) in Banff National Park (BNP) between Canmore and Castle Junction is fully fenced, includes 24 underpasses and two overpasses, and has been continuously monitored for wildlife activity since 1996. The short story is simple: mitigation works.

Increasing traffic through the 1970s convinced transportation planners to twin the Trans-Canada between BNP's East Gate and the Banff townsite. Early mitigation attempts sought to reduce wildlife-vehicle collisions by erecting fences, while passage across the highway was made possible with six underpasses. Crossings were placed at common roadkill sites, but it wasn't known if the underpasses would be effective. After the project's completion in the early 1980s, it was soon obvious that elk and deer were quick to use the crossings. This finding was corroborated in the late 1980s when Phase 2 of construction extended mitigation to the Sunshine overpass.

By 1996 Phase 3A of construction was complete and included the 18 km of twinned highway from the Sunshine overpass to Castle Junction. More fencing and underpasses had been added, as well as the two overpasses that stand as the project's most visible icons. The time had come for a rigorous long-term study of the crossing structures to answer many pressing questions. For example, we know ungulates use the structures, but how effective is the mitigation in reducing roadkill? Do carnivores use the structures? What kinds of crossing architecture do different species prefer?

For the past 12 years, Dr. Tony Clevenger has guided an enthusiastic team of researchers ever deeper into the complications of road ecology. The answers have been revealing.

Mitigation reduces ungulate collisions



Two elk contemplate using one of the underpasses in Banff National Park to cross the Trans-Canada Highway. PHOTO: A. FORD/WTI

by 80 percent, despite increases in traffic volumes.

Not only do carnivores use the crossings frequently, but they also have distinct preferences. Grizzlies and wolves tend to choose wide open culverts or overpasses, while black bears and cougars prefer tight concealed passageways.

Use of the crossings has increased over time. Grizzly bear crossings, for example, increased from seven in 1996 to more than 100 in 2006. This shows that animals take time to become accustomed to the structures and to incorporate the passages into their trail networks. Perhaps the most important lesson for wildlife conservationists is the paramount importance of long-term studies.

Current research is directed at questions of population and individual use of the crossings. Using bears as a model, PhD candidate Mike Sawaya from Montana State University in Bozeman is taking DNA samples from hair obtained at the crossing structures and in the backcountry of BNP. Combined, these two pools of DNA data will reveal which individuals are crossing the highway and how populations separated by the highway are mixing genetically. By ensuring that highway mitigation is performing as planned, we are helping to

maintain viable populations of rare and wide-ranging species.

In the coming years, Dr. Clevenger and his crew plan to study how birds use crossing structures and how small mammals respond to culverts and fences. Studies are currently addressing the feasibility of mitigating sections of Highway 93 South through Kootenay National Park as well as the TCH through the Kicking Horse Pass in B.C.

Like it or not, we must recognize that roads are here to stay. Nevertheless, as we understand how wildlife respond to roads and through efforts to mitigate the negative effects of roads, we can work to create a smarter transportation system that allows people and goods to move safely throughout the country while having a negligible effect on wildlife.

Andrew Bennett (left) is the Banff Wildlife Crossing Project's research technician. After completing an MSc in plant ecology, Andrew moved west to enjoy a winter of skiing, snowshoeing, and home-brewing. Adam T. Ford (right), a former AWA conservation specialist, is a research associate with the Western Transportation Institute at Montana State University, Bozeman. Banff is teaching Adam to enjoy winter outside of a hockey arena.