HIGHWAY MORTALITY
Making Road Systems More Permeable for Wildlife

BY SHAUNA LEAVITT
Over 1.5 million wildlife-vehicle collisions occur each year in the United States. This number will continue to increase as urban development spreads through wildlife habitats. The urban sprawl brings with it roads that crisscross through the landscape and these roads carry more vehicles which are driving longer distances at often higher speeds.

“The rate of increase in cars, vans and SUV's for personal travel is six times the rate of population increase. In 1969 there were 72.5 million household vehicles serving 197.2 million people. In 2001 there were 203.9 million household vehicles serving 277.2 million people,” reported the National Household Travel Survey. “In concert with the growth in vehicles is a growth in vehicles miles of travel. The average vehicle miles traveled per household have grown from 12,412 miles per year in 1969, to 21,252 in 2001.”

These scenarios are an innate part of the American Dream.

"For a generation, North American’s have been in simultaneous pursuit of twin goals that are inherently in conflict....They seek the manifold benefits of an expanding road system, [and]...have growing concerns about the threats to the natural environment....Not surprisingly, these conflicting demands clash wherever transportation decisions are made,” wrote Thomas B. Deen, retired executive director of the Transportation Research Board, in the forward to Road Ecology: Science and Solutions.

In an effort to help find workable solutions to this conflict, the National Cooperative Highway Research Program (NCHRP) funded a three-year research project with Utah State University entitled, "Evaluation of the Use and Effectiveness of Wildlife Crossings.”

John Bissonette, Unit Leader for the USGS Utah Cooperative Fish & Wildlife Research Unit and lead researcher for the project assembled an international research team comprising of experts in road ecology and transportation issues. The team faced the challenge of meeting the NCHRP mandate, “to create a Decision Guide which would help practitioners incorporate Wildlife Crossings into the building of roads,” said Bissonette.
Bissonnette found that, "In spite of a voluminous literature on ecological 'road effects', there remained an obvious lack of synthesis documents to inform and help guide highway planners and engineers with environmental mitigation and enhancement."

After three years of gathering research findings from hundreds of projects while asking "what works" and "what doesn't" the team produced the tool which provides helpful information to road planners as they go through the process of planning, building and maintaining a wildlife crossing in a manner that could save both time and money. The Decision Guide can be found online at: www.wildlifeandroads.org.

"The guidance the Decision Guide could provide is very exciting," said Chris Slesar, environmental specialist from Vermont Transportation Agency. Slesar added, "I am especially encouraged by the resources page. Having the ability to find up-to-date information on what one's peers are doing in other parts of the country in terms of habitat connectivity is very powerful."

With just a few mouse clicks the information sharing begins.

"It is imperative that study results and practices that are both successful and unsuccessful are communicated as quickly and effectively as possible.....lack of communication and data sharing among agencies at federal and state levels.....hampers progress," said Bissonnette. Finding the right information at the right time diminishes the costly problem of recreating the wheel. "The most successful and far reaching wildlife-transportation mitigation programs across the U.S. and the world have communication networks where information and experience is exchanged," said Bissonnette.

With the sharing of information, agencies can avoid the pricey errors of building wildlife crossings that are ineffective. These projects are too large to be second guessing about what will meet their needs. Using the Decision Guide, road
The  I-70 Workshop brought road practitioners, road planners, and scientists together to discuss the need for the “most appropriate” types of wildlife crossings for Interstate 70. Photo – Patricia Cramer

planners can obtain research findings specific to their state. The Guide’s “Search Engine” provides literature and articles about local studies, a list of where the state’s current structures exist and state agency websites. Additional research literature is continually being added to the Decision Guide.

The challenge now facing the creators of the Decision Guide is how to get the tool into the right hands at the right time. If the practitioners use a directive tool such as the Decision Guide early in the planning process, they’ll stand to a greater chance of having wildlife crossings in the final blueprint.

“Unfortunately too often wildlife crossing plans are brought into the process too late,” said Mac Yowell, engineering group manager for the City/County Planning Commission in Bowling Green, Kentucky. The longer you wait the more expensive it becomes.

“The big obstacle is always the budget,” said Mac Yowell; and since time equals money, if the wildlife crossing is not brought in at the beginning of the road plan, it’s usually not included—it’s just too expensive to rewrite the plans. Now is the time to get into planning rooms across the nation.

“Currently 50,000 bridges and roads are up for reconstruction [in the United States],” said Patricia Cramer, research associate on the NCHRP project.

This means hundreds of road planners are at the stage where it is easiest to add a wildlife crossing to the construction plans—and many are doing just that. In May of 2007, The Utah Department of Transportation gathered a group of road planners and scientists together for a workshop to discuss the “most appropriate” types of wildlife crossings for I-70. The group included biologists, engineers, road maintenance supervisors, rangers and federal highway administrators.

“I-70 has one of the most serious collision records with elk in the United States. Large numbers of mule deer are also killed,” wrote William Ruediger, Wildlife Consulting Resources, (Retired USDA Forest Service). Not only are there significant safety concerns for drivers on I-70, but the wildlife collisions reduce the population of elk and deer in one of Utah’s most popular hunting units.

For two days, the group traveled to the hot spots along the highway discussing what type of crossings would be most appropriate. On the last day, they shared their knowl-
edge of what does and doesn’t work. “As a result of the workshop, UDOT and its resource agency partners have developed a wildlife crossing proposal for I-70 that will reduce collisions with mule deer and elk, reduce human injuries and deaths, and provide for wildlife populations and habitat connectivity,” said Ruediger.

Workshops such as these are important because they open the communication between researchers and practitioners who have the combined knowledge to bring about the best results. They “begin the hopeful continued dialogue in a newly developing ‘culture of conservation’ within our transportation and wildlife agencies,” said Cramer.

Dedicated Hunters are another group actively involved in the creating crossings for wildlife. “They have helped build new highway fencing and escape ramps, and provided valuable monitoring so the Department of Transportation could supply maintenance where it is needed,” said Bruce Bonebrake, Southern Region habitat program manager for the Utah Division of Wildlife Resources.

Their influence is felt at all levels by, “providing valuable information about wildlife use areas, as well as political pressure to do highway projects. This aids in funding efforts through local and legislature support,” said Bonebrake. With the help of agencies and individuals, the nation has begun reversing the
past trend of creating an environment permeable for humans but not animals. Although it will take years of concentrated effort to reverse the impermeable landscape—the journey has begun.

Looking down at the land from a plane a person can easily see and understand what they are trying to reverse. The roads and developments have broken wildlife habitats into fragments. It has become challenging for wildlife to safely maneuver within their natural homes.

Trading spots for understanding may also be helpful. If a human family’s only mode of transportation was walking and their habitat was cut apart by wide busy roads with no safe crossings, the process of going through daily rituals of life would become stressful and unpleasant. Dangerous roads would separate them from their school, work, shopping, friends and recreation. Add the ignorance of not knowing how to safely cross a road and you have the situation humans have created for wildlife.

The building of safe passages will restore the landscape permeability; “the ability of the animal to move across its home range or territory, in a relatively unhindered manner, i.e., movement ease can be indexed by essentially a straight-line distance to resources,” wrote Bissonette.

Take a ride along any road through rural America and you’re likely to see first hand the impermeable problem that the nation is working to solve. Driving through rural Missouri the author witnessed this problem first hand. Within just a few miles she saw deer running along the road, wild turkeys flying over a guard rail, and a small River Cooter turtle making efforts to cross the road. This wouldn’t occur if wildlife had all its needs met within secluded mountain or meadow, but that’s not possible.

Different seasons of the year bring different needs for each animal. Such things as finding food, mating and producing offspring are dependent on the ability to move to different parts of their habitat. Salmon must swim upstream to lay and fertilize their eggs, deer must walk to lower elevations to find winter feed and elk must be able to search for a mate. Wildlife habitats can once again be permeable as individuals and agencies work together to find the best solutions.

“When folks really understand the value of habitat connectivity not just the regulator angle but the philosophical and scientific values of it, they are inspired and empowered to do something about it as transportation professionals,” said Slesar.

“I am learning that dedicated sportsmen and sportswomen really can help to make wildlife crossings possible,” said Cramer.

To receive more information and instructions about wildlife crossings and how to use Decision Guide for Wildlife Mitigation, go to: www.wildlifeandroads.org. You may also call Patricia Cramer at 435-797-1289.