



If You Build it, They Will Cross

Patricia Cramer has dedicated her life to connecting landscapes for wildlife.

Imagine if every time you walked out of your bedroom to the kitchen for a drink of water or bite to eat you had to cross a four-lane interstate with cars whizzing past at 80 mph. This is what many elk face each day. It's also why Dr. Patricia Cramer decided to work in the nexus between wildlife and transportation, helping make U.S. roadways safer for wildlife and humans.

Although she grew up on Long Island, Patricia has loved wildlife since she was a child. She got her PhD in wildlife conservation at the University of Florida in 1999, modeling potential Florida panther reintroductions for her dissertation. Her research revealed numerous locations where vehicle collisions posed

a significant threat to the endangered panthers. She also felt deeply troubled by how many turtles, frogs, snakes and even the occasional great blue heron or alligator were struck along U.S. Route 441, which bisects part of Paynes Prairie Preserve State Park, a 21,000-acre savanna teeming with biodiversity south of Gainesville, Florida.

Those concerns led Patricia and her fellow wildlife colleagues to form the Paynes Prairie Working Group. PPWG initiated a campaign advocating for the construction of wildlife underpasses to allow animals to move safely under this perilous section. In turn, the Florida Department of Transportation constructed a concrete barricade and four wildlife culverts under

U.S. 441, reducing roadkill by more than 93%.

"That's a big change in my life, to know you can affect change, you don't have to accept a problem," says Patricia. "A slew of mammals used it and even the pea-brained alligators learned how. I was hooked."

This accomplishment led Patricia to establish the Wildlife Connectivity Institute, a non-profit that conducts research on wildlife movements, roads and crossing structures and how to consider wildlife in the transportation planning processes.

Partnering with state departments of transportation, tribal communities and various other entities, Patricia's research often evaluates the effectiveness of establishing what she and the

PHOTO: COURTESY OF PATRICIA CRAMER

PPWG termed "ecopassages," i.e. structures that allow fish and wildlife to cross a barrier, such as a roadway, to access feeding, drinking and mating areas.

With nearly 4.2 million miles of roads spiderwebbing across all 50 states, animal-vehicle collisions pose a major problem for animals and humans alike. In 2022, Patricia headed a study which found that each year, on average, there are over 345,000 reported crashes with animals, causing 201 human fatalities and costing the U.S. public over \$10 billion. A 2008 U.S. Department of Transportation study also approximated that each year 365 million amphibians, birds, ungulates, domestic animals and other vertebrates, including federally listed threatened or endangered species, are killed on U.S. highways, the majority of which are never reported in crash data.

Patricia's friend and colleague Jeff Gagnon is also dedicated to reducing wildlife-vehicle collisions while preserving ecosystem connectivity. A research biologist for the Arizona Game and Fish Department, Jeff's primary focus is elk. He and Patricia use telemetry data to pinpoint where elk cross roadways and examine crash and carcass data to gain

insights into where animals are most frequently struck. They've spent more than 20 years working together and have collaborated on four crossing projects.

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Elk present a unique challenge because of their preference for overpasses rather than underpasses. They resist using culverts, regardless of the size, making overpasses the more effective solution, but it typically takes them about four years to decide to try a new structure, which has led Patricia to dub them "The Problem Child."

Transportation departments' primary obstacle for installing more of these crossing structures is the steep cost, Jeff says. Smaller projects like expanding the size of a culvert might cost \$100,000, where larger projects that span 15 years and include multiple structures and miles of fencing

could range between \$5 million and \$20 million.

Despite the financial investment, these structures consistently prove to be effective.

Projects like the 17 wildlife crossing structures built along on Arizona's Route 260 near Payson resulted in an impressive 97% reduction in elk-vehicle collisions, saving motorists from countless injuries and millions of dollars in reduced crashes.

Colorado's State Highway 9 saw a 96% drop in wildlife-vehicle crashes after the installation of 12 miles of fence and seven wildlife crossing structures.

Jeff says that post-project research continuously reveals that, when implemented correctly, wildlife crossing structures and fences reduce around 90% of animal-vehicle collisions.

RMEF has aided these efforts through grants for equipment like GPS collars to gather data used to study elk migration patterns and highway warning systems that detect wildlife presence. The funds have also been instrumental for installing new water catchments and habitat improvements, reducing the need for wildlife to cross highways.

In addition to her passion for conservation, Patricia finds great joy in educating others on the importance of safe wildlife passages. She mentors graduate students and provides training for professionals in scientific and transportation sectors.

"I'm proud of all the people that work together to reduce wildlife crashes and provide wildlife connectivity because animals are using the structures we build," says Patricia. "I feel like a prophet that's been vindicated."

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