WHY DID THE TURTLE CROSS THE ROAD?

Because, like many animals, its habitat is increasingly fragmented by highways – death traps for wildlife. An ambitious road ecology project is seeking changes that will stem the car-fuelled carnage.

By Brian Banks

The moment Joshua Jones saw the two young snapping turtles crawling across the roadway in front of him, he knew he might already be too late.

Highway 2 east of Gananoque is a busy thoroughfare with an 80-kilometre-per-hour speed limit. For tiny, slow-moving hatchlings, crossing that divide at the height of mid-morning traffic often has deadly consequences.

Jones quickly parked his car on the unpaved shoulder and ran to the nearest turtle. He hoped to grab both but could reach only the first hatchling before oncoming traffic forced him back off the highway. "I couldn't get to the second one in time," he says wistfully. "It got flattened."

Every hour of every day, countless animals – turtles, frogs, snakes, small mammals, birds, butterflies, skunks, foxes, coyotes, deer, bears – are struck and killed by cars and trucks on Ontario highways. Many of these events are never even noticed, and fewer still are ever counted. The 14,000 animal-vehicle collisions reported in an average year on provincial highways include only incidents that cause vehicle damage, making the number meaningless from an ecological standpoint. Additionally, these highways account for less than 1 percent of all Ontario roads.

The fact that Jones noticed the turtles was no accident. A master's student in environmental studies at Queen's University, he was on that stretch of highway doing research – counting and plotting the location of every incidence of roadkill. That day's survey was one of more than 150 he conducted by car and bicycle over two years along the 38-kilometre segment of Highway 2 from Gananoque to Brockville. In all, he documented 9,000 animal deaths.

The tally is a grim one, but it comes with an upside. Jones's research, completed last fall, marked the conclusion of an unprecedented series of multi-year roadkill studies coordinated by the Algonquin to Adirondacks Collaborative (A2A), a cross-border, not-for-profit organization that works with local municipalities and conservation and community groups to promote ecological connectivity in the region. Starting in 2008, with original funding from Parks Canada, the Natural Sciences and Engineering Research Council and Carleton University, followed by the Ontario Ministry of Natural Resources and Forestry's Species at Risk Stewardship Program, the studies focused on three key area roads: Highway 2, Thousand Islands Parkway (where death rates are even higher) and Highway 401. These roads form a "triple threat" of obstacles and bisect the Frontenac Arch, a unique ecosystem on the narrow outcrop of Canadian Shield that extends southward from central Ontario across the St. Lawrence River – where it flows past the Thousand Islands – into eastern New York State.

Now comes the second phase. Ryan Danby, an associate professor of geography, planning and environmental studies at Queen's and a member of A2A's road ecology committee, is using the combined data – which pinpoints collision hot

→ **Cameron Smith:** Naturalist wants to reduce vehicle-wildlife collisions in the Frontenac Arch.

PHOTOS (PREVIOUS SPREAD) MEG WALLACE/ADOBE STOCK; (LEFT) BRIAN BANKS

spots by location, species and time of year – to draft a map of wildlife pathways through the area. The data will then be incorporated into an A2A report to be published later this year that will lay out a blueprint for a large-scale network of measures intended to spur major reductions in animal-vehicle collisions throughout the area. Likely elements include protective fencing, new and refurbished culverts, expanded underpasses and maybe even a wildlife overpass spanning the 401.

If the recommendations are implemented – a big if, as that would require buy-in and funding from provincial ministries, municipalities, the public and local stakeholder groups – the work will not only help local animal populations but also enhance vital north-south ecological connectivity through the entire Frontenac Arch, perhaps the most important species-migration corridor in eastern North America. "From the head of Lake Superior to the Atlantic Ocean, this is the only major [north-south] pathway," says Cameron Smith, chair of A2A's road ecology committee. That environmental importance, coupled with the scale of the road ecology project, could make it the most significant Ontario has ever undertaken.

ONE OF THE FIRST jokes kids learn asks why the chicken crossed the road. The answer could turn that question into a teachable ecology moment: "Because it had no other way to get to the other side."

For generations, the toll cars have taken on animal populations and the fragmentation of wildlife habitat caused by roads have been problems hiding in plain sight – a dead squirrel on a city street, a skunk carcass on the highway, a deer in the headlights.

Mandy Karch, coordinator of the Ontario Road Ecology Group, a not-for-profit organization that advocates for wildlife protection, sees signs of change – both in the recognition of the magnitude of the issue and the understanding of how transportation networks can be designed to ease animal passage and enhance habitat connectivity. She cites the Long Point Causeway Improvement Project in Port Rowan, on Lake Erie, as an important milestone. The 3.5-kilometre causeway, which separates the lake from the Big Creek National Wildlife Area, connects the mainland with the point. Each year, causeway traffic would kill an estimated 10,000 turtles and other small animals. "It was the fourth-deadliest road in North America," says Karch. But a $2.7-million community-driven project, completed in 2016, to install a network of signs, protective fencing and 12 wildlife underpasses has cut the death toll for reptiles by more than 50 percent. The project attracted lots of media attention, Karch notes, raising awareness of animal mortality on roads.

→ **Frequent fatalities:** Dead porcupines and turtles are a common and sorry sight on roadways.

In addition, over the past six years the provincial government has built two of its largest highway installations that incorporate ecological features. Located on Highway 69 between Parry Sound and Sudbury and on the Rt. Hon. Herb Gray Parkway extension of Highway 401 in Windsor, these installations include dedicated wildlife overpasses, underpasses and, in the case of Highway 69, fencing along 16 kilometres of highway already constructed to funnel animals toward them.

In both instances, the work was done in response to the environmental assessment process required for all new road construction in Ontario. Concern for at-risk snakes, such as eastern foxsnake and Butler's gartersnake, led builders in Windsor to include a wildlife overpass, connecting important areas of tallgrass prairie snake habitat, among the 11 ground-level "tunnel tops" spanning the new below-grade highway. With respect to Highway 69, Andrew Healy, an environmental planner with the Ontario Ministry of Transportation, credits "increasing pressure" from natural resources and environmental groups, the public and even the Ontario Provincial Police to address the dangers of wildlife collisions. The total cost of the latter installation was about $5 million.

To expand both awareness and understanding of road ecology, the Ontario Reptile and Amphibian Atlas project encourages people who submit sightings to specify if they saw the animal on a road, and if so, whether it was alive or dead, says Emma Horrigan, Ontario Nature's conservation science coordinator. "We then share that data with

PHOTOS (TOP RIGHT) LYDIA DOTTO; (BOTTOM RIGHT) MICHAEL PATRIKEEV