

Mitigating Measures

for small and medium mammals

Highway 175

Bulletin No. 5

December 2014

April Martinig, Judith Plante,
Katrina Bélanger-Smith, Jochen Jaeger

PROJECT CONTEXT

Roads and traffic negatively impact many wildlife populations and ecological processes because they act as barriers to animal movement, reduce habitat accessibility, and reduce habitat quality next to the road. Roads have several effects on the level of populations, such as changes in predator-prey relationships and decreases in species richness, biodiversity, and overall community composition. However, many of these higher-level effects have a response delay, therefore predicting their magnitudes can be difficult. For this reason, long-term monitoring projects are essential to arrive at more accurate impact predictions in the future.

Most studies about road mitigation measures focus on large mammals because they are a concern for traffic safety, while very few studies examine the effects on medium sized and small mammals. Medium and small mammals can be a safety concern, but the road impacts on these populations are equally important as with large mammals.

HIGHWAY 175

In 2012, the enlargement of HWY 175 from two to four lanes between Quebec City and Saguenay was completed. This enlargement increased the width of the road approximately three times and has created a major barrier, fragmenting natural habitat, especially for smaller mammals. To offset this, wildlife passageways for mammals of all sizes and fences for large and medium sized mammals were put in place along HWY 175. Fencing prevents animal crossings and directs movement to the passageways where they can safely cross under the highway. With enough movement, this can restore habitat connectivity between the two sides of the highway. The passageways along HWY 175 are among the first to be built in Québec, which provides a unique opportunity to study their effects on the native wildlife.

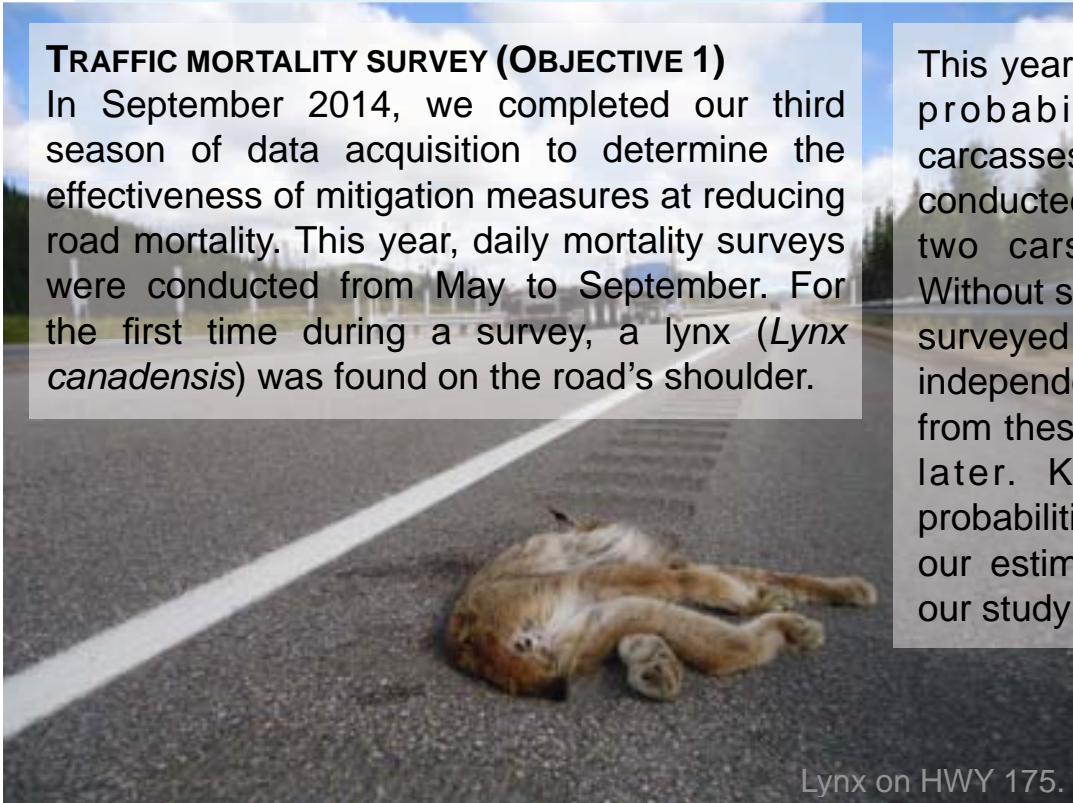
PROJECT OBJECTIVES:

1. To characterize the locations and rates of vehicle collisions with small to medium-sized mammals and to evaluate the difference in the frequency of highway-related mortality between areas of the highway with mitigation measures and areas without;
2. To determine passageway effectiveness for small and medium-sized mammals;
3. To assess if the mitigation measures allow movement and gene flow across the highway, with a focus on the American marten (*Martes americana*).

TRAFFIC MORTALITY SURVEY (OBJECTIVE 1)

In September 2014, we completed our third season of data acquisition to determine the effectiveness of mitigation measures at reducing road mortality. This year, daily mortality surveys were conducted from May to September. For the first time during a survey, a lynx (*Lynx canadensis*) was found on the road's shoulder.

This year, we tried to determine the probability of detecting the carcasses on the road. To do so, we conducted mortality surveys with two cars instead of only one. Without seeing each other, each car surveyed the study area conducting independent mortality surveys. Data from these surveys will be analyzed later. Knowing the detection probabilities will help us to correct our estimates of road mortality for our study area.



Lynx on HWY 175.

MONITORING THE USE OF WILDLIFE PASSAGES USING CAMERAS (OBJECTIVE 2)



The wildlife passages are monitored year-round with infrared cameras. Given their ease of use and accuracy, infrared cameras are highly valuable for gathering wildlife data that may otherwise be difficult to obtain. Their application can also serve an important role in presenting scientific research in a way that is exciting and tangible. The images of wildlife taken with remote cameras can be used to engage the public by presenting them with the opportunity to witness and observe wildlife in engaging with their habitats. Such an increase in public engagement with wildlife research may lead to a greater awareness of conservation related issues. We collected over 250,000 images between June 2012 and September 2014.

We attempted to estimate species abundances around the passages by using track stations (for more information see past bulletins). We finished track collection this year.

PERMEABILITY OF THE HIGHWAY FOR THE AMERICAN MARTEN (OBJECTIVE 3)

We are trying to assess the effectiveness of the mitigation measures along HWY 175 for individual martens. In this context, permeability is a measure of how much the highway impedes or facilitates movement and dispersal of individuals. As a control, we replicated this study on HWY 381, a two-lane highway. We can therefore compare permeability measures and assess how much of a barrier effect a 4-lane highway imposes on this target species. More results should become available in the next bulletin.



A captured marten.

NOTICE TO TRAPPERS

This project is conducted at the Réserve Faunique des Laurentides, the Jacques-Cartier National Park, the Grands-Jardins National Park, and the ZEC des Martres. It was developed by Concordia University in collaboration with the Ministère des Forêts, de la Faune et des Parcs, and the Ministère des Transports du Québec. Many martens have been captured and fitted with numbered ear tags or a radio collar along Highways 175 and 381. It is possible that you capture an animal fitted with ear tags or a black collar. We count on your cooperation and we kindly urge you to contact the persons mentioned below so we can recover the radio collars for our research. *To remove the collar from the animal's neck, please unscrew the nut on the base of the collar; please do not cut the collar with a knife, which will make it unusable.* Concordia University will pay \$20 (+shipment fees) to trappers who return a collar as compensation and will also send a map showing the marten's movements before its capture. **We thank you for your cooperation and we wish you an excellent trapping season.**

If you trap an animal with ear tags or a collar, please contact:

- Marianne Cheveau (MFFP) at 418-627-8694 ext. 7515
- Jorge Gaitan-Camacho (Concordia Univ.) at 514 848-2424 ext. 5484 or 514-688-6795
- Jochen Jaeger (Concordia Univ.) at 514 848-2424 ext. 5481

PARTNERSHIP

To put this project into place, the Quebec Ministry of Transport (MTQ) brought together a team of scientific researchers, which **presently** includes: **Yves Bédard**, Direction de la Capitale-Nationale of the MTQ. He is the main contact at the Ministry of Transportation; **Dr. Jochen Jaeger**, Concordia University; **Judith Plante**, MSc student in Geography, Planning and Environment at Concordia University; **April Martinig**, MSc student in Biology at Concordia University; **Dr. André Desrochers**, Laval University; **Katrina Bélanger-Smith**, MSc student in Biology at Concordia University; **Jorge Gaitan-Camacho**, research associate at Concordia University (since September 2014); **Dr. Marianne Cheveau**, researcher at the Ministère des Forêts, de la Faune et des Parcs du Québec; **Sarah Sherman Quirion**, field technician at the Ministère des Forêts, de la Faune et des Parcs du Québec; **Yves Leblanc**, AECOM Inc.; and various other personnel: Dr. Jeff Bowman, Dr. Paul J. Wilson, Rodrigo Lima, Robby Marrotte, Carling Dewar, Dylan Robinson, Carlos Zambrano, Stephen Macfarlane, Amy Jones, Mary-Helen Paspaliaris, Sandra Anastasio, Kenzie Azmi, Tanya Barr, Josephine Cheng, Melanie Down, Joey O'Connor, Sarah Courtemanche, Bertrand Charry, Megan Deslauriers, Valérie Hayot-Sasson, Gregor Pachmann.

The researchers are supported by the members of the Enlarged Advisory Committee which meets annually. This committee includes representatives of the main groups and organizations affected by the project: **Éric Alain**, Ministère des Transports du Québec; **Jean-Emmanuel Arsenault**, Parc national de la Jacques-Cartier, Sépaq (until April 2014); **Héloïse Bastien**, Ministère des Forêts, de la Faune et des Parcs du Québec; **Dr. Pierre Blanchette**, Ministère des Forêts, de la Faune et des Parcs du Québec; **Sylvain Boucher**, Réserve faunique des Laurentides, Sépaq; **Julie Boucher**, Ministère des Transports du Québec; **Mathieu Brunet**, Parc national de la Jacques-Cartier, Sépaq; **Amélie D'Astous**, Huron-Wendat Nation; **Louis Desrosiers**, Ville de Stoneham; **Benoit Dubeau**, Parc national de la Jacques-Cartier, Sépaq (since May 2014); **Martin Lafrance**, Ministère des Transports du Québec; **Michel Michaud**, Ministère des Transports du Québec; **André Rouleau**, Parcs nationaux des Hautes-Gorges-de-la-Rivière-Malbaie et des Grands-Jardins; **Hugues Sansregret**, Forêt Montmorency.

PRIMARY CONTACT: Email: jochen.jaeger@concordia.ca, phone: (514) 848 2424 ext. 5481.

You can find more information about this project in our previous news bulletins:

- http://gpe.concordia.ca/documents/suivi_efficacite_passages_rte175_bull_1.pdf
- http://gpe.concordia.ca/documents/Jaeger_suivi_efficacite_passages_rte175_bull_2.pdf
- http://gpe.concordia.ca/documents/Jaeger_et_al.2013_Suivi_efficacite_passages-rte175_bull_3-final-1.pdf

