

Identifying and protecting wildlife corridors and passages either side of Highway 10, in the Appalachians of Southern Quebec



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Appalachian Corridor

Non-profit NGO founded in 2002

Based in Eastman, QC, Canada – 10 permanent staff members

Our mission

Protecting natural habitats in the Appalachians of southern Quebec (Northern Greens)

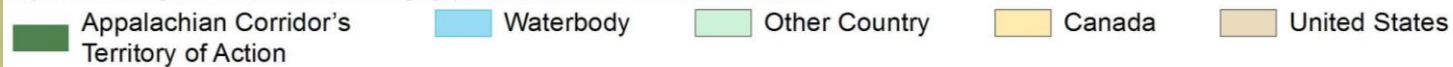
- **Large forest blocks**
- **Connectivity**
- **Biodiversity**



Territory of Action



Map ACA-1658, © August 2016. This document contains geographic information from: © Gouvernement du Canada.

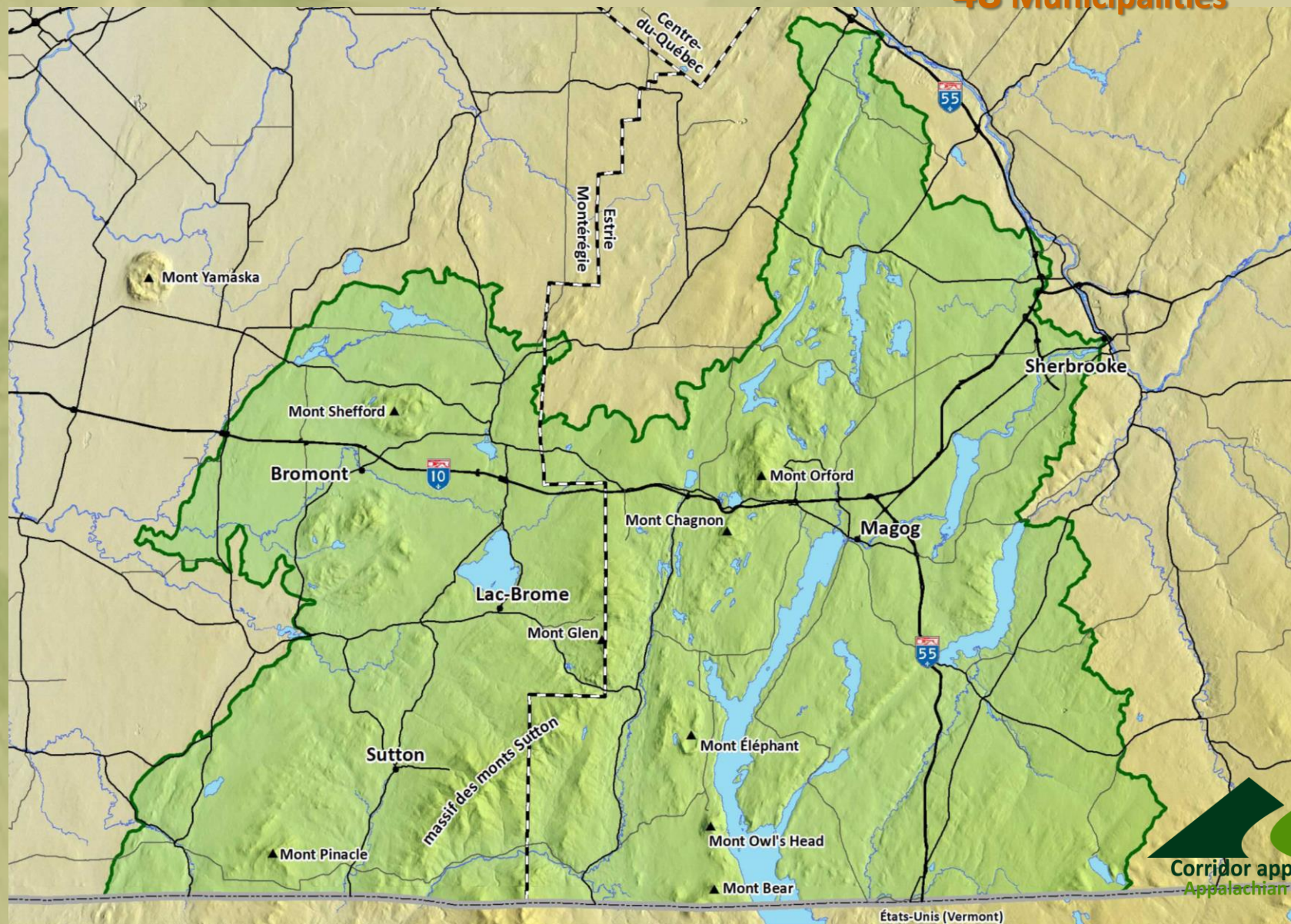


Territory of Action

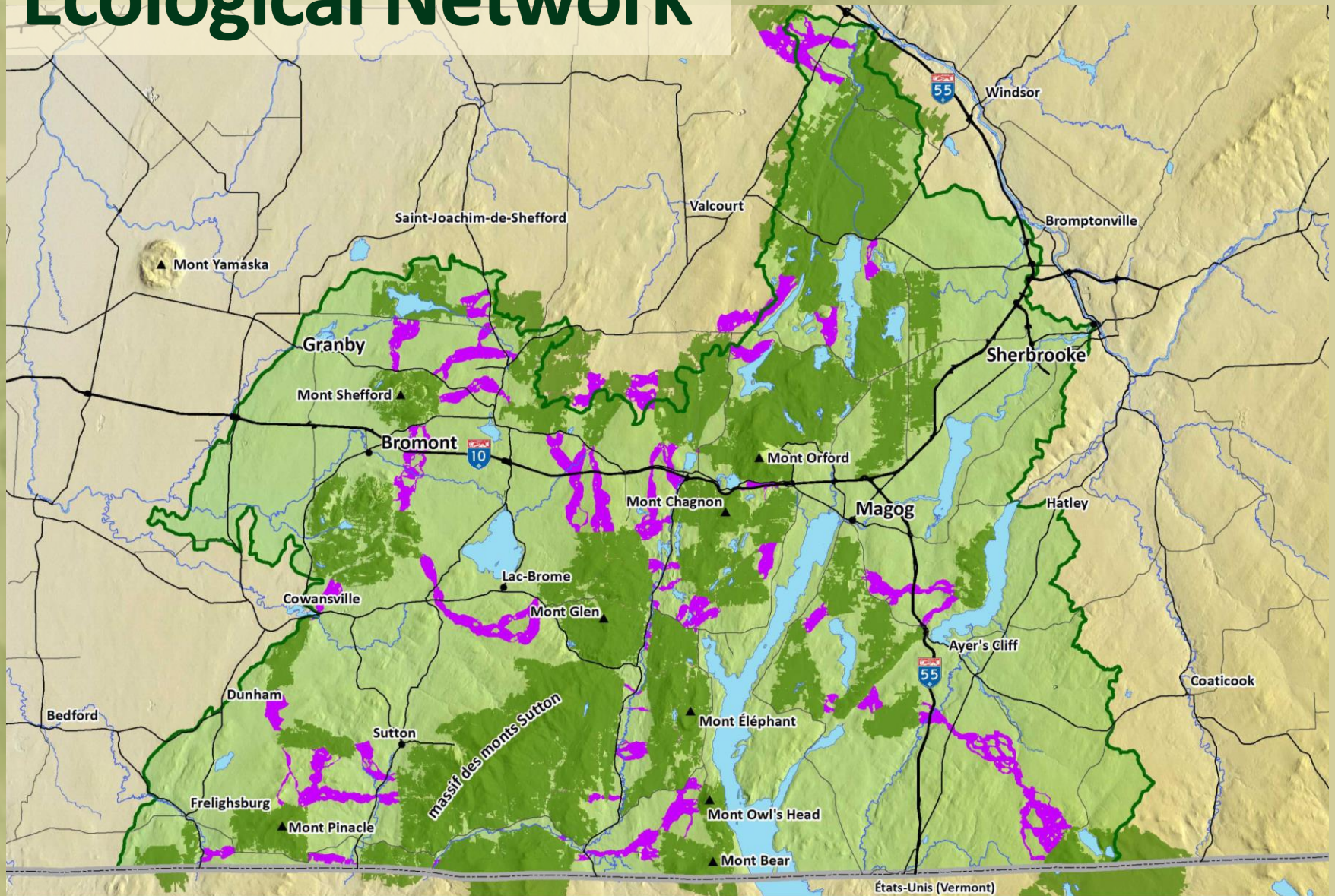
2 Administrative Regions

5 Regional County Municipalities

48 Municipalities



Ecological Network



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Corridor naturel (version 0.19.8)

Noyau forestier (v7.3)

Territoire d'action de Corridor appalachien

0 2 4 6 km

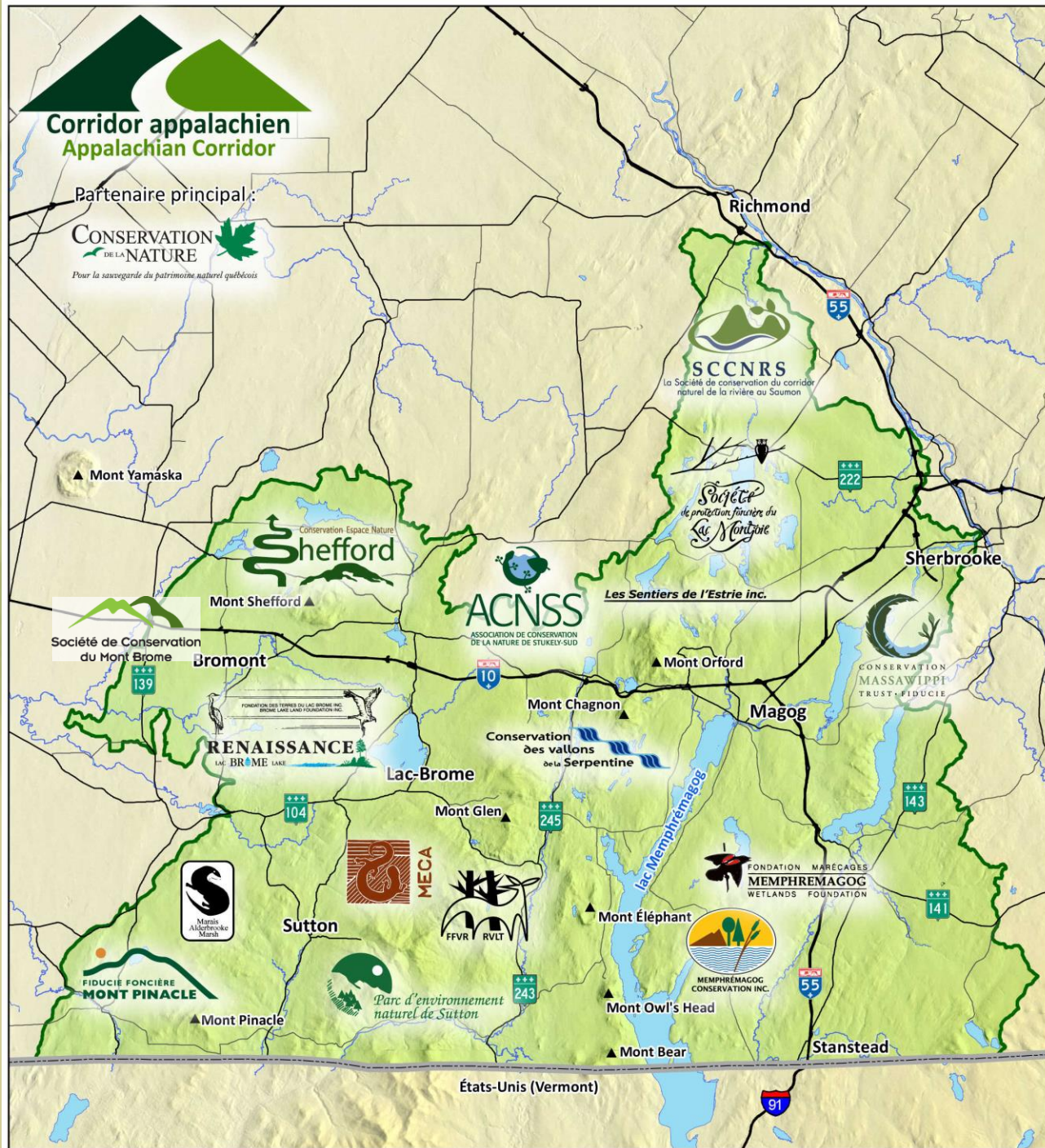


Partners

National Partner : NCC

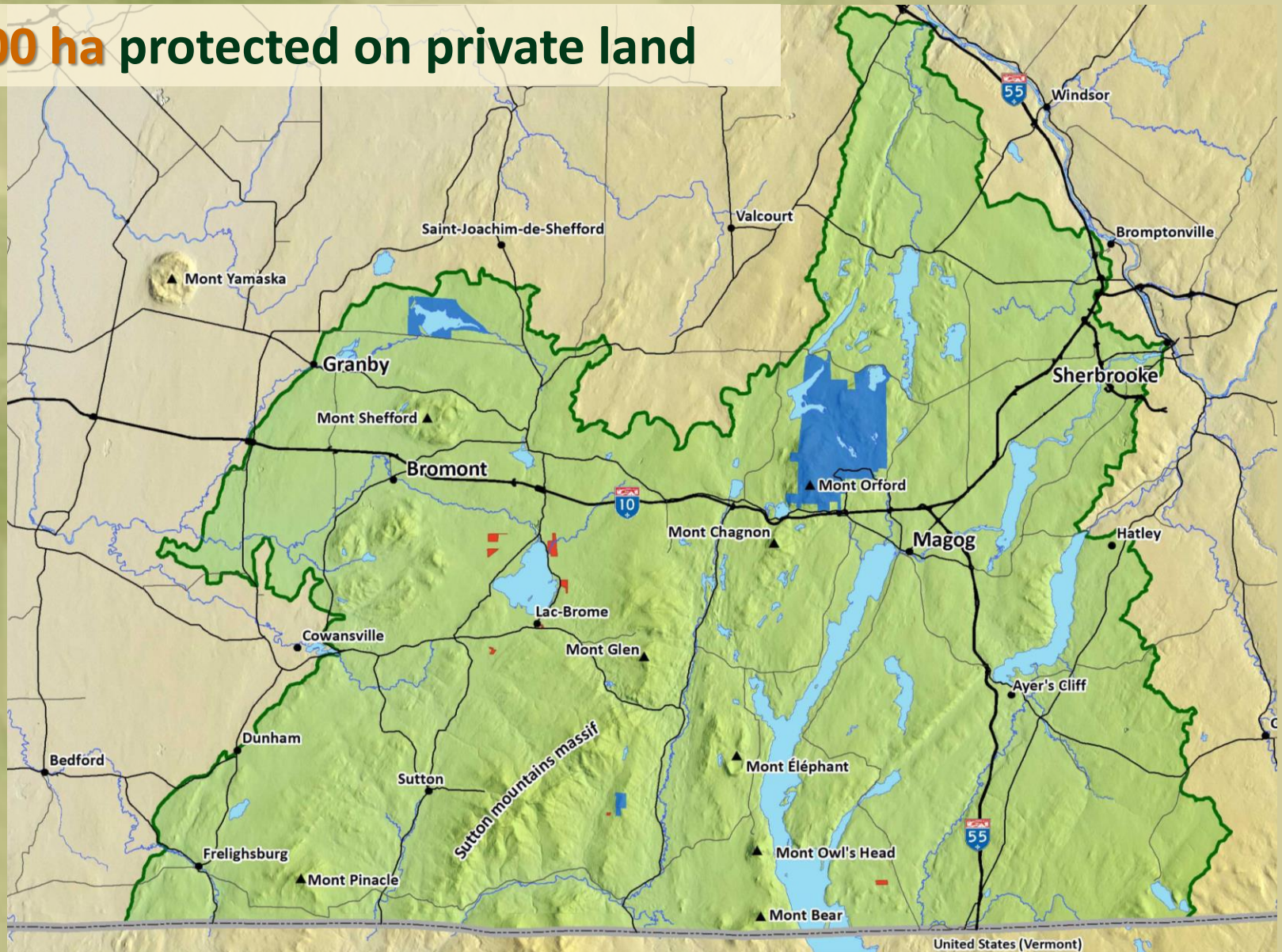
17 Affiliates Members,
incl. 15 local
conservation groups

American Partners:
e.g. Cold Hollow to Canada,
2C1F (SCI) ...



2000

400 ha protected on private land



Map ACA-1657, © August 2016. This document contains geographic information from: © Gouvernement du Québec.

Protected Area on Private Land

Protected Area on Public Land

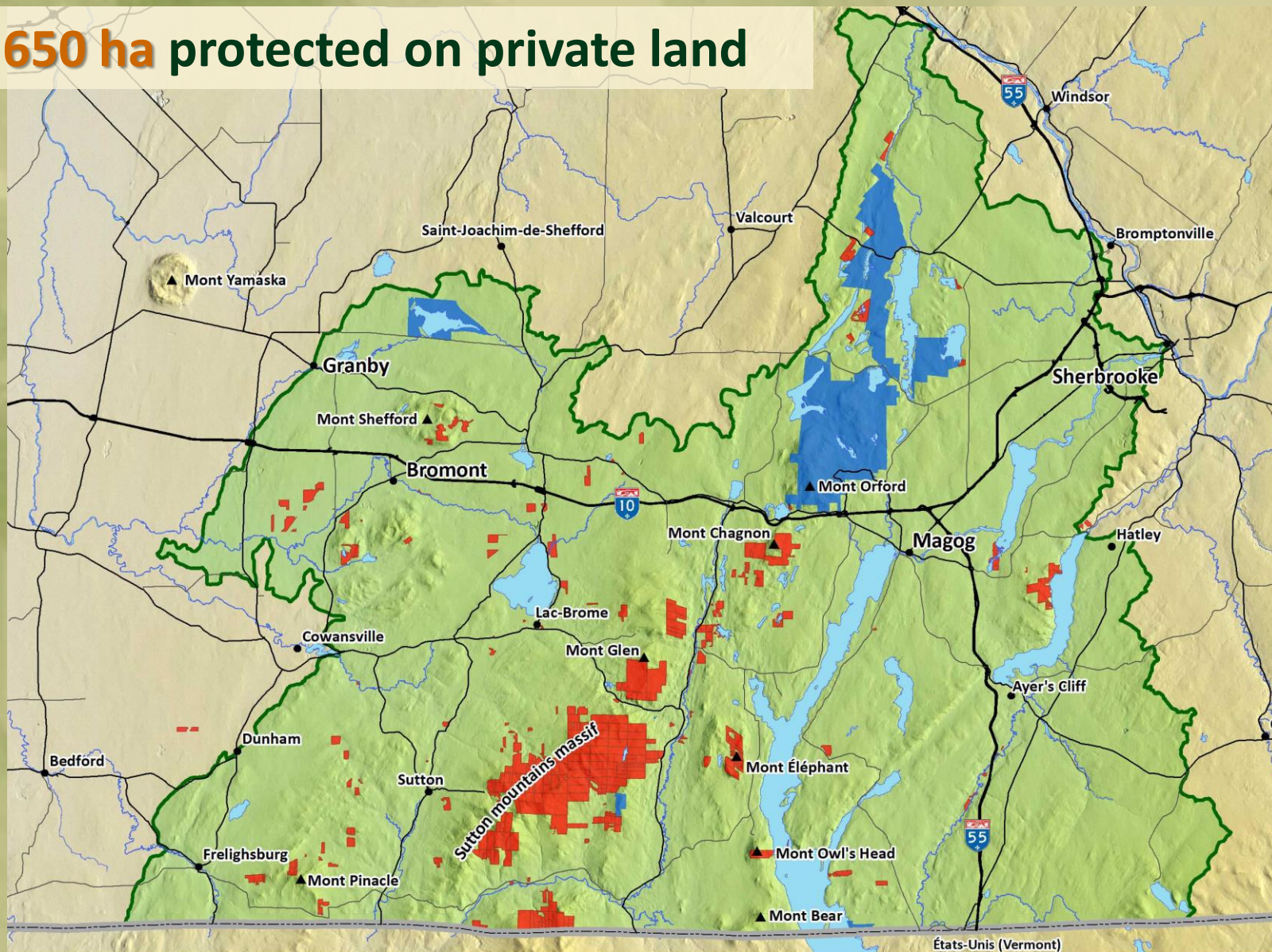
Appalachian Corridor's Territory of Action

0 5 10 km



2016

12 650 ha protected on private land



Map ACA-1656, © August 2016. This document contains geographic information from: © Gouvernement du Québec.

Protected Area on Private Land

Protected Area on Public Land

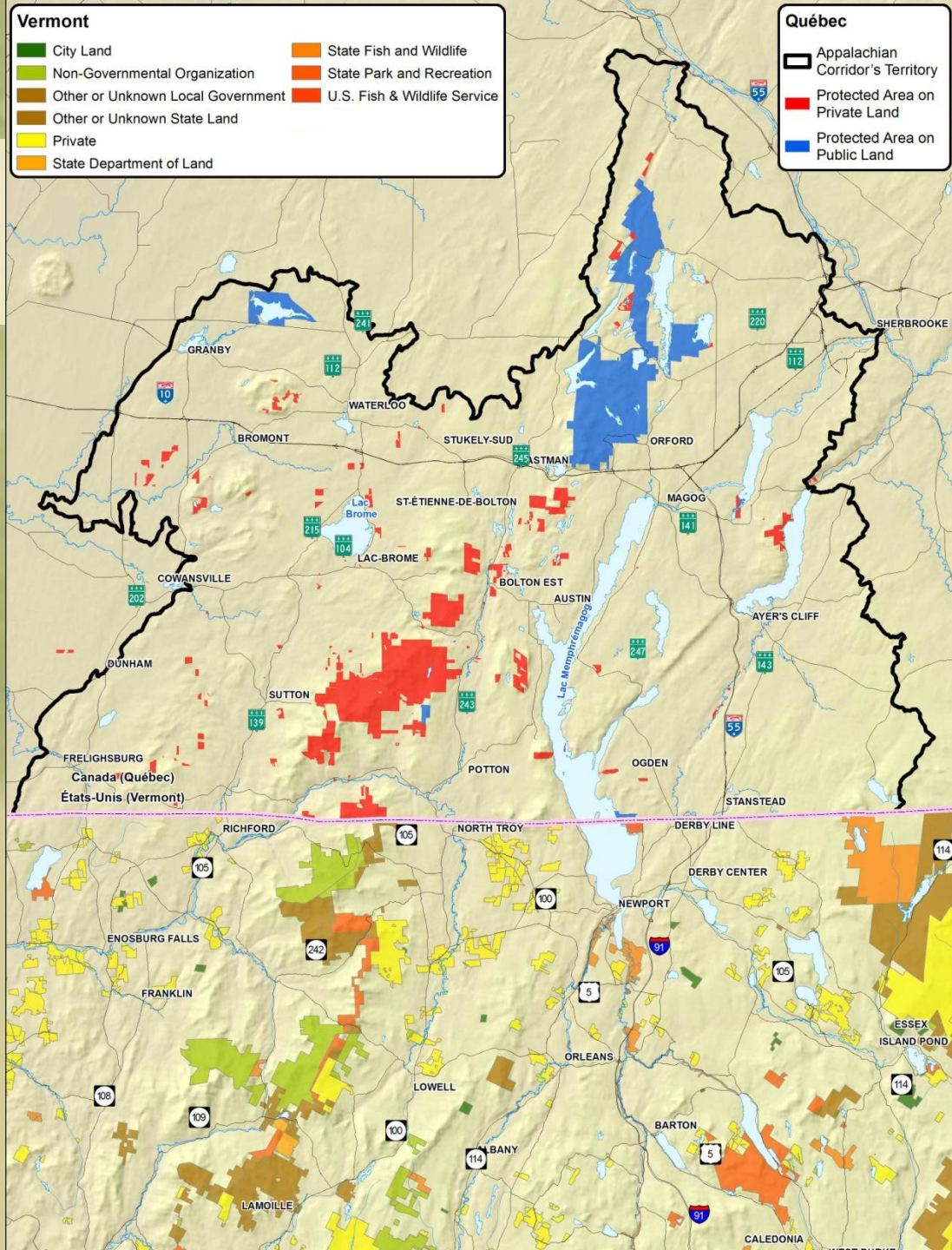
Appalachian Corridor's Territory of Action

0 5 10 km



2016

Green Mountains of Quebec & Vermont



3-fold approach to maintain connectivity: “Corridors” Project

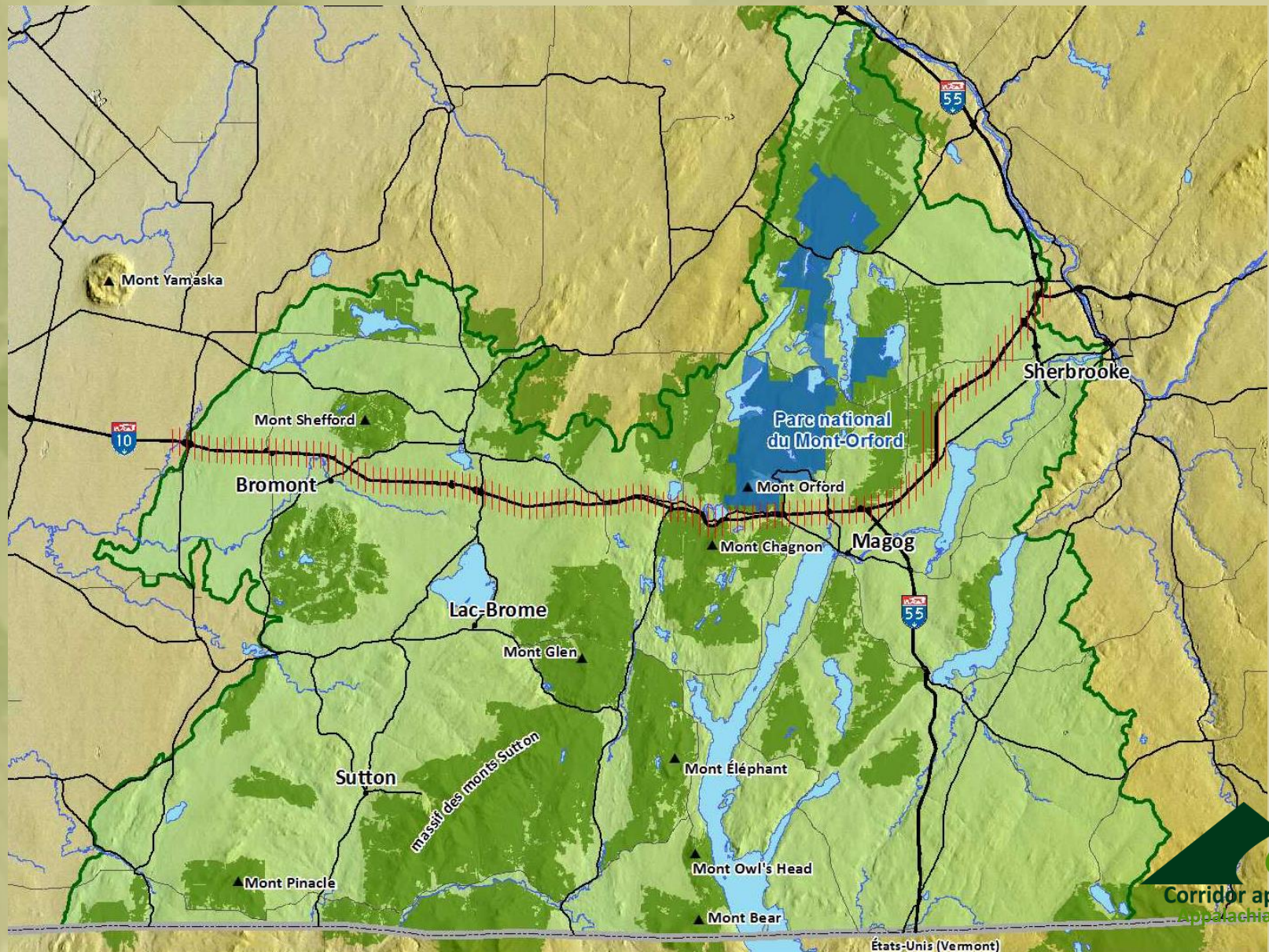
- **Landowners (Private Stewardship)**
 - Active canvassing over the next few years
 - Focusing efforts on critical areas
- **Municipal/Regional Authorities**
 - Protecting connectivity at the planning & development levels
- **Provincial Government (Transportation, Wildlife, Parks)**
 - Collaboration with the identification and protection of wildlife corridors and passages (Highway 10)
 - Research projects with *Université de Sherbrooke* and Concordia University

HIGHWAY 10 PROJECT

Identifying wildlife corridors and passages either side of Highway 10 between Granby (km 63 and Sherbrooke (km 143)



Highway 10 and conservation cores



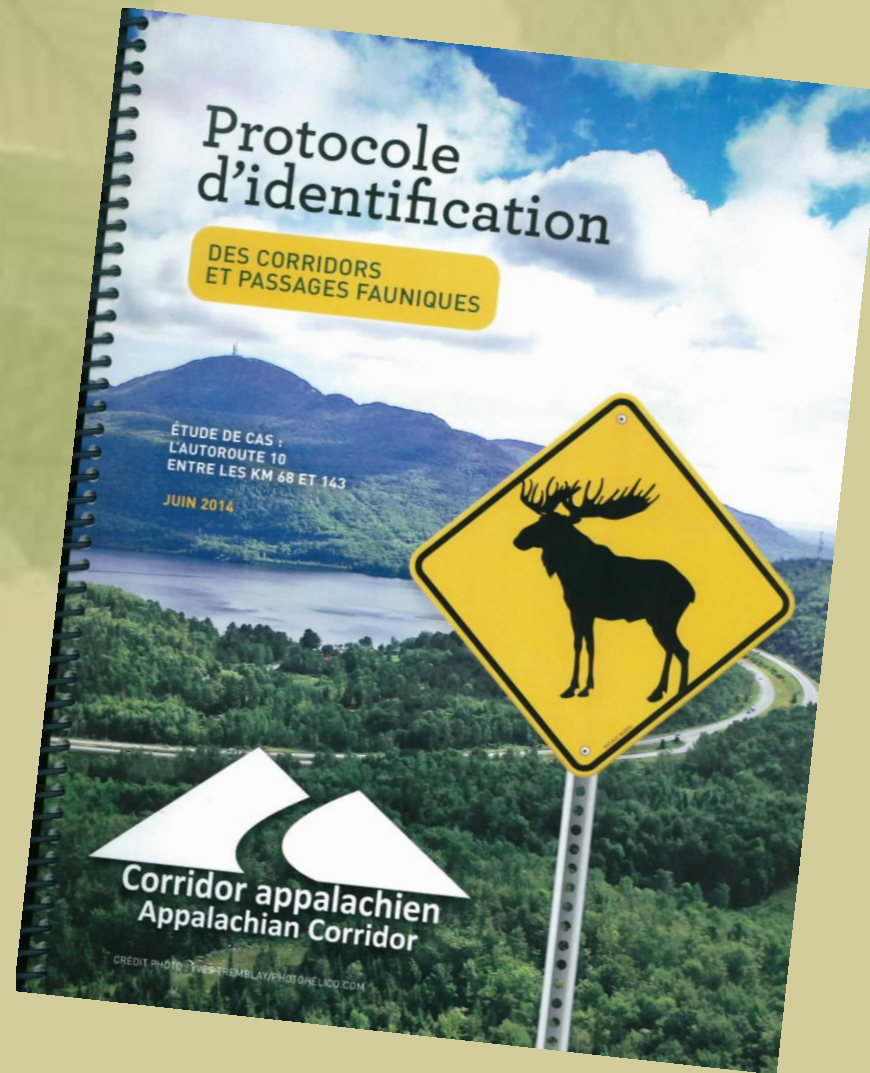
Objectives of the “Highway 10” Project

- **Improve road safety** for users and lower collision rates with large animals
- **Reduce wildlife mortality on roads**
- **Improve wildlife permeability** between habitats and populations
- In a context of climate change, ensure long-time protection and **improve connectivity** between natural habitats



HIGHWAY 10 :

Phase 1 : Protocol



HIGHWAY 10 :

Phase 1: Development of a protocol

- **Partnership:**
 - Appalachian Corridor
 - Ministère des Transports du Québec (MTQ)
 - Ministère des Forêts, Faune et Parcs Québec (MFFP)
 - Ministère de l'Environnement (MDDELCC)
 - Université de Sherbrooke
- **Consensus on a reference document to be used as a practical guide:**
 - Written in French, can be applied anywhere in Quebec
 - Based on the latest scientific literature on connectivity, wildlife corridors and passages
 - Highlights the Highway 10 case study

Phase 2: Data gathering & analysis

- Training of Highway 10 patrollers for better wildlife ID (Appalachian Corridor and MFFP)
- Detailed roadkill data (MTQ)
- Characterization of Highway 10 infrastructures (Appalachian Corridor)
- Deer yards and moose overwintering areas (helicopter survey by MFFP)
- Ground-truthing of two natural corridors (Appalachian Corridor) and adjusted maps
- **Data analysis: Masters' project in partnership with *Université de Sherbrooke***



Phase 2: Training Highway 10 Patrollers

Training highway patrollers in both regions to identify animals/roadkills:
2-year pilot project 2014-2016 (became permanent in July 2016)

Identification des grands mammifères

Coyote



Longueur : 80 à 95 cm
Poids : 9 à 22 kg

Bout de la queue noir
Oreilles pointues

Renard roux



Longueur : 55 à 65 cm
Poids : 4 à 7 kg

Pelage roux, queue
Bout de la queue

Renard gris



Longueur : 55 à 75 cm
Poids : 3 à 6 kg

Fourrure du dos gris beige. Res
renard roux. Plus petit que le
(attention à ne pas confondre :
Bout de la queue noir

Lynx roux



Longueur : 65 à 75 cm
Poids : 7 à 16 kg

Queue courte, dessous
de la queue blanc
Poils noirs sur le bout
des oreilles pointues

Castor (65-75 cm, 15-30 kg)



Queue plate
Pieds palmés

Rat musqué (25-35 cm 1-2 kg)



Queue longue
écailleuse
aplatie
latéralement

Marmotte (40-50 cm 2-4,5 kg)



Longues incisives

Porc-épic (45-55 cm 4-13 kg)



Longues
épines

Vison d'Amérique (35-45 cm 0,7-1,4 kg)



Lache
blanche au
menton

Martre d'Amérique (40-45 cm 0,7-1,25 kg)



Lache crème
gorge et
poitrine

Pékan (50-65 cm 2,5-5,5 kg)



Pattes
palmées

Loutre de rivière (65-75 cm 4-11 kg)



Queue
épaisse à la
base, non
toulue

Hermine (15-25 cm 30-170 g)



Museau
pointu
Queue
cylindrique

Opossum (35-50 cm 4-6 kg)



Queue à bout noir
Fourrure hivernale



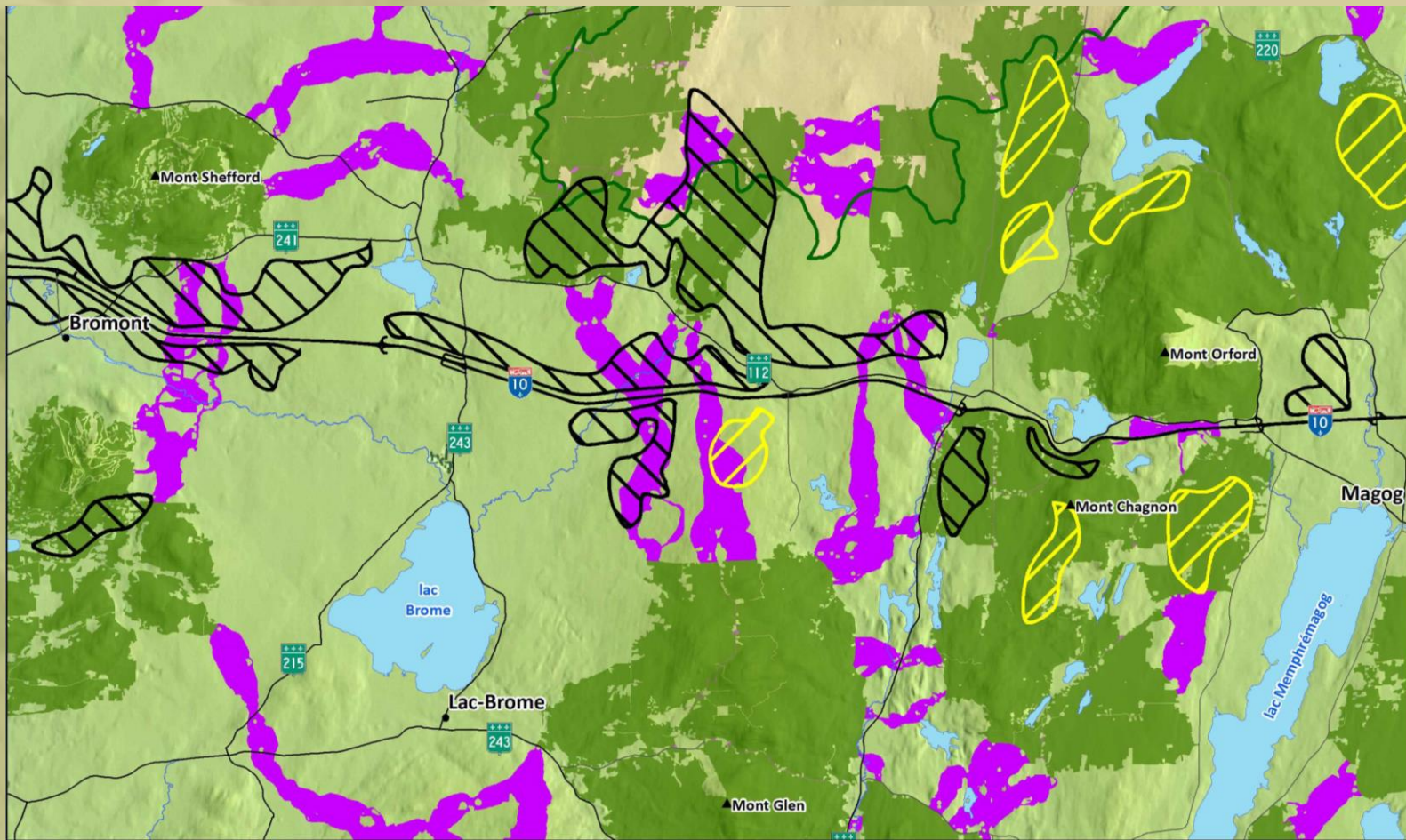
Forêts, Faune
et Parcs

Québec



Phase 2: Overwintering areas

Helicopter surveys by the MFFP (winter 2014) for accurate mapping of White-tailed Deer yards and Moose overwintering areas



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Corridor naturel (version 0.19.8)
Aire d'hivernage du cerf de Virginie

Noyau forestier (v7.3)
Aire d'hivernage de l'orignal

Territoire d'action de Corridor appalachien

0 2 4 6 km



Phase 2: Characterization of infrastructures

- Characterization of infrastructures in and around preliminary linkages/corridors:
 - Description, measurements
 - Topography, hydrography
 - Biological data (e.g. vegetation cover at entrance/exit of culverts)



**+ Validation and characterization of two natural corridors:
ground-truthing along their whole length and width**

Identification of Priority Sites

Methodology adapted from Clevenger (2010) *

Masters' project with the University of Sherbrooke (student: Farah Salvant, professor: Jérôme Théau)

- **Highway mortality** (data from Quebec's Ministry of Transportation)
- **Regional conservation significance** (network of cores & corridors)
- **Local conservation value** (deer yards, moose overwintering areas)
- **Opportunities for highway mitigation** (unsuitable road structures)
- **Land-Use Security** (degree to which adjacent lands are protected)

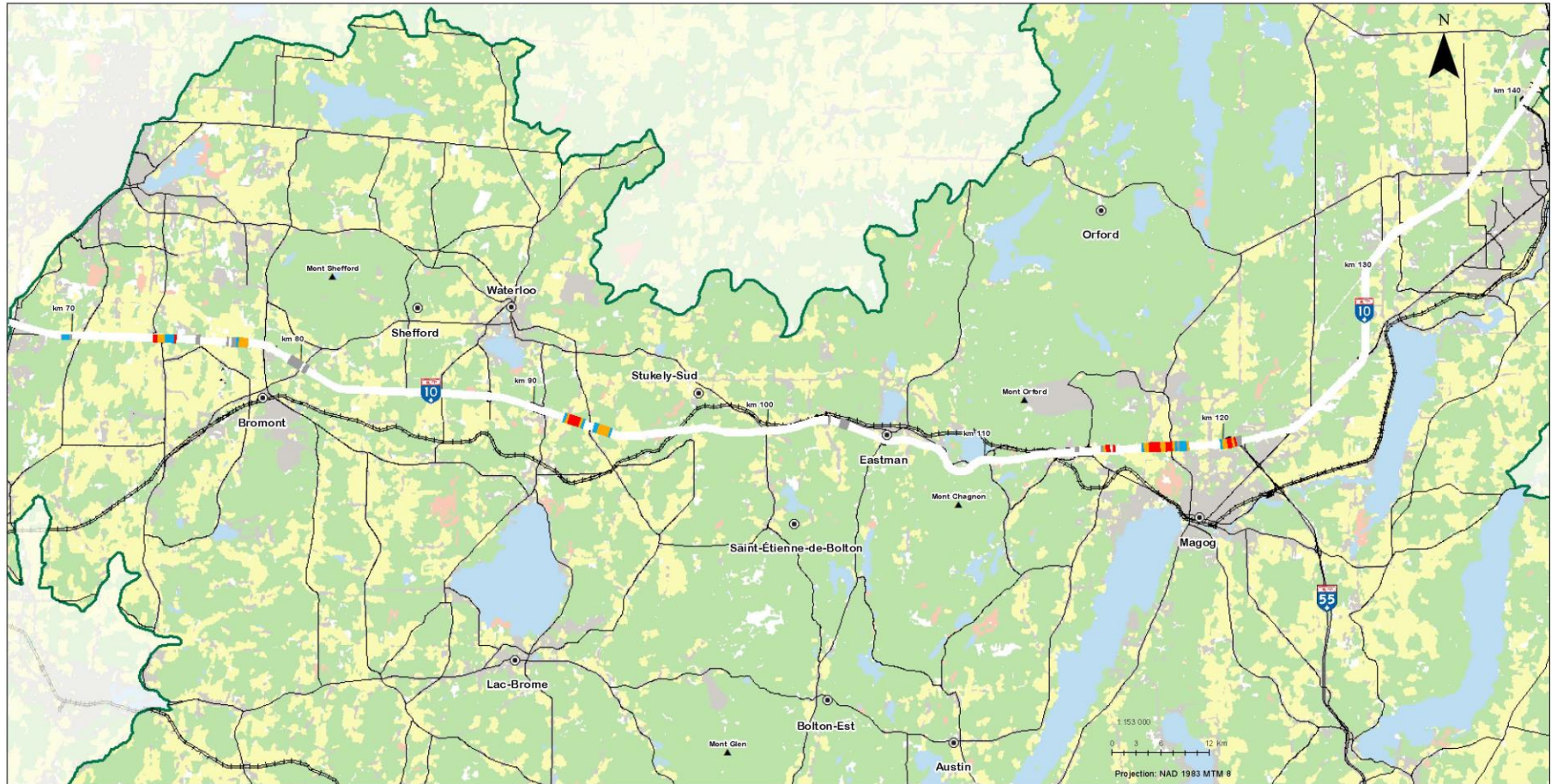
Final results and report are underway

- Narrows the focus area (km 74-120 instead of km 68-143)
- Preliminary results: **Identification of 3 priority sites**

* Clevenger et al. (2010) . *Highway 3: Transportation mitigation for wildlife and Connectivity*.

Identification of Priority Sites

Identification des zones d'intervention prioritaires pour les mouvements fauniques le long de l'autoroute 10:
Analyse de l'indicateur spatial collisions véhicules-faune (espèces-cibles)



Légende

Intensité d'aggrégation

- Nulle
- Faible
- Moyen
- Élevé
- Très élevée

- ▭ Territoire d'action de Corridor appalachien
- Lieu habité
- ▲ Mont
- ⏏ Repère kilométrique

Transport routier

- Réseau routier
- Réseau ferroviaire
- Autoroute 10

Occupation du sol

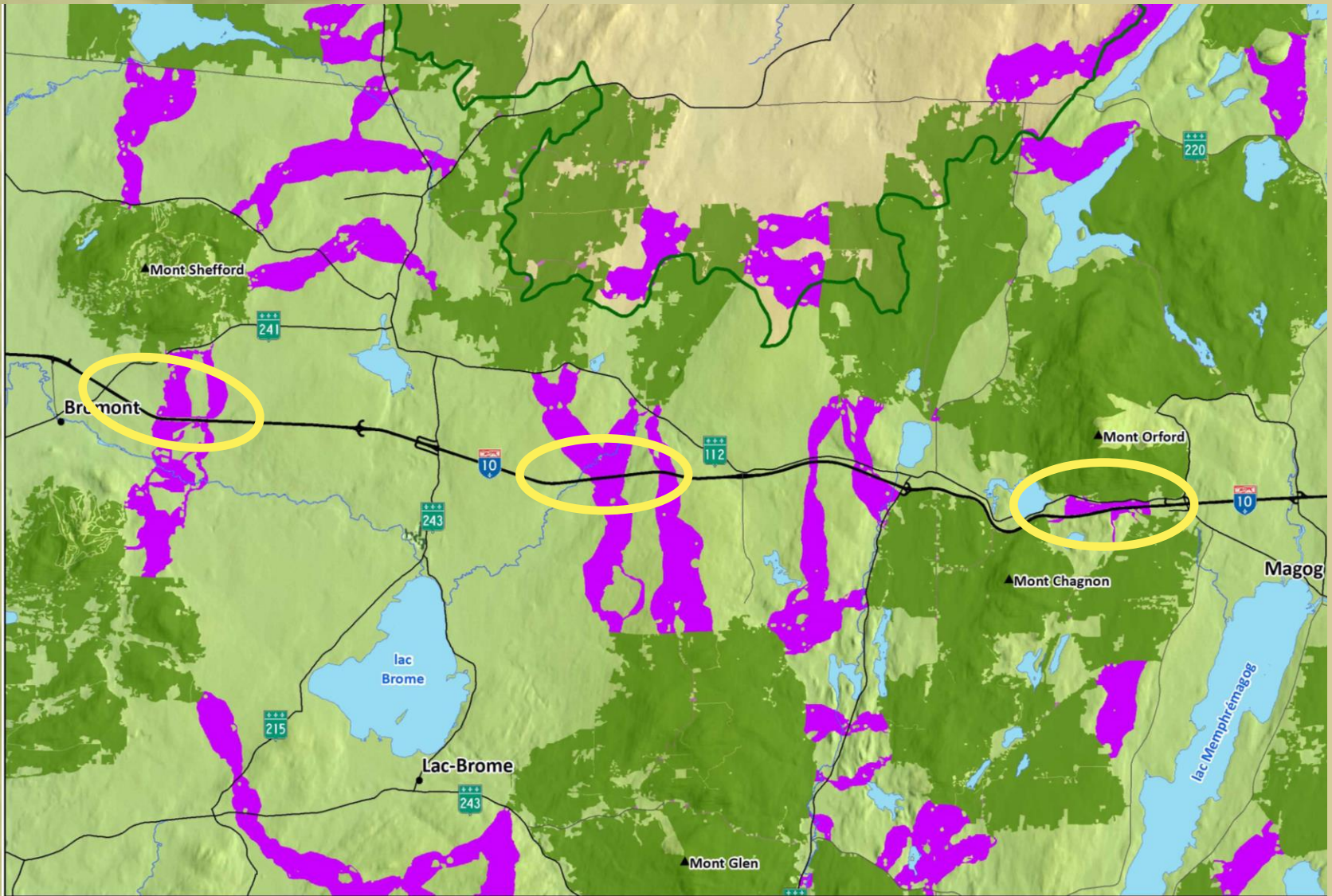
- Hydrographie
- Bâti
- Milieux humides
- Agriculture
- Forêt

Source des données : - Limites administratives du Canada et des États-Unis (Global Administrative Areas (GADM))
- ACRIS ou ACRIS (Ministère de l'Énergie et des Ressources naturelles)
- Territoire d'action Corridor appalachien (Corridor appalachien)
- Géobase - Toponymes canadiens - Québec: Couverture du sol, circa 2000 (Ressources naturelles Canada)
- Réseaux kilométriques du Québec: Moteur routier de la faune, Pictogrammes des autoroutes 10 et 55 (Ministère des Transports du Québec)

Auteurs: Farah Salvant (Université de Sherbrooke) juin 2016



Identification of Priority Sites (preliminary)



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Corridor naturel (version 0.19.8)

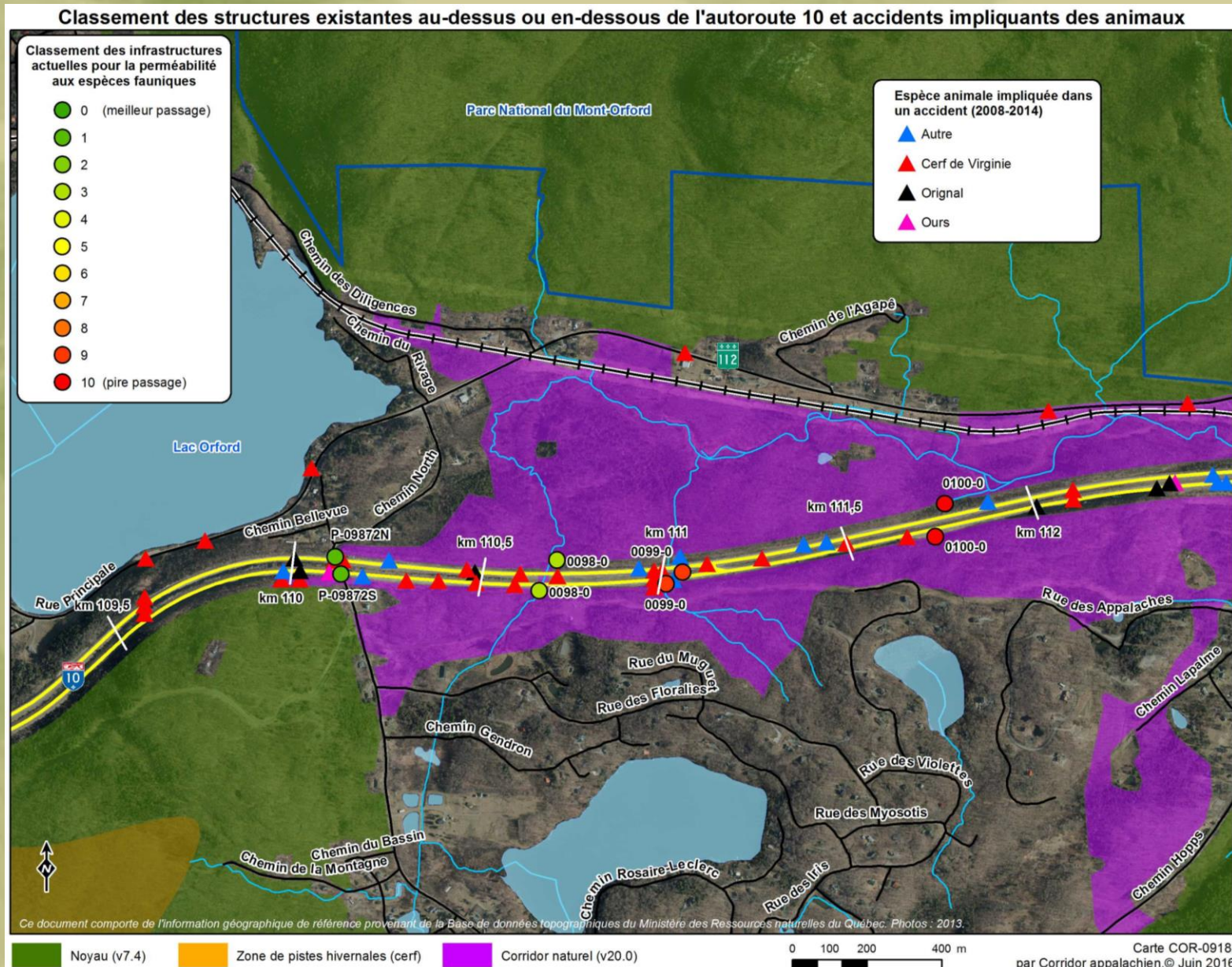
Noyau forestier (v7.3)

Territoire d'action de Corridor appalachien

0 2 4 6 km



Priority Sites: e.g. Between Chagnon & Orford



Next steps...

Monitoring wildlife movements at 3 priority sites:
partnership with Concordia University in 2016-2017

(student : Daniella LoScerbo, professor: Dr. Jochen Jaeger)



Next steps...

Recommendations to Quebec's Ministry of Transportation (highway mitigation, retrofitting culverts, etc.) **to meet the objectives:** road safety, wildlife permeability, connectivity



Next steps...

- Convincing and engaging key stakeholders (still!)
- Important issue in need of political support in Quebec
- Funding, funding, **funding!...**





Corridor appalachien

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Questions ?

