

# What is an Ecological Network?

An ecological network is a key strategy for maintaining and restoring connectivity in the landscape. An ecological network is a set of ecosystems connected to each other to enable species to move, biodiversity to persist and ecosystem services to be maintained. Sometimes connectivity can be improved through the creation of habitat corridors.

## Why an Ecological Network?



A map showing the distribution of forest in the study region.

**The region has about 1,600 vascular plants including more than 130 threatened with extirpation**

**About half of the vertebrate fauna in the region, are species at risk.**

**Only 2.3% of the study region is recognized as a protected area, 60% of which is wetland.**

**In the Monteregie, forest covers 26% of the territory, but it is highly fragmented**



## Did you know .....

Matthew Mitchell ©

**Forest fragmentation reduces biodiversity and degrades many ecosystem services**

**Connecting small and large forest fragments sustains biodiversity and increase ecosystem resilience to climate change.**

**Many other environmental, social and economic benefits will derive from implementing an ecological network in our region.**

- The carbon stored in forest fragments <20ha is equivalent to 1 year of carbon emissions by the city of Montreal.
- Contact with nature is essential for healthy childhood development and for the emotional and physical health of children and adults.

**Project Partners:** Quebec Centre for Biodiversity Science, Ministère du Développement durable de l'Environnement et des Parcs, Ministère des Ressources naturelles et de la Faune, Centre d'Étude de la Forêt, Centre de la Nature, Mont-Saint-Hilaire, EEM inc., Vallée-du-Richelieu MRC, Ville de Mont St Hilaire.

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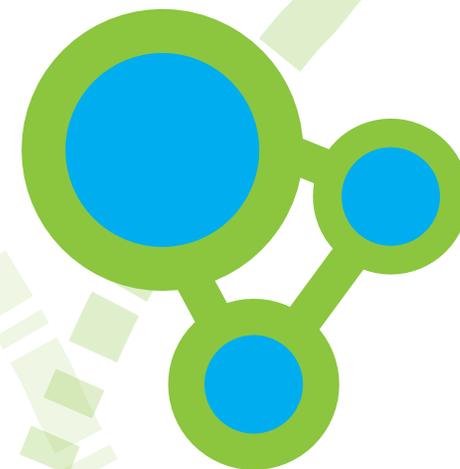
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**McGill**



# An ecological network for our region



# STUDY SPECIES

The maps to the right prioritize forest fragments based on the habitat and movement needs for our five study species. Each varies considerably in its ecological needs and roles in the landscape.



*Bombus impatiens*  
Common Eastern Bumble Bee



*Odocoileus virginianus*  
White-tailed deer



*Plethodon cinereus*  
Eastern red-backed salamander



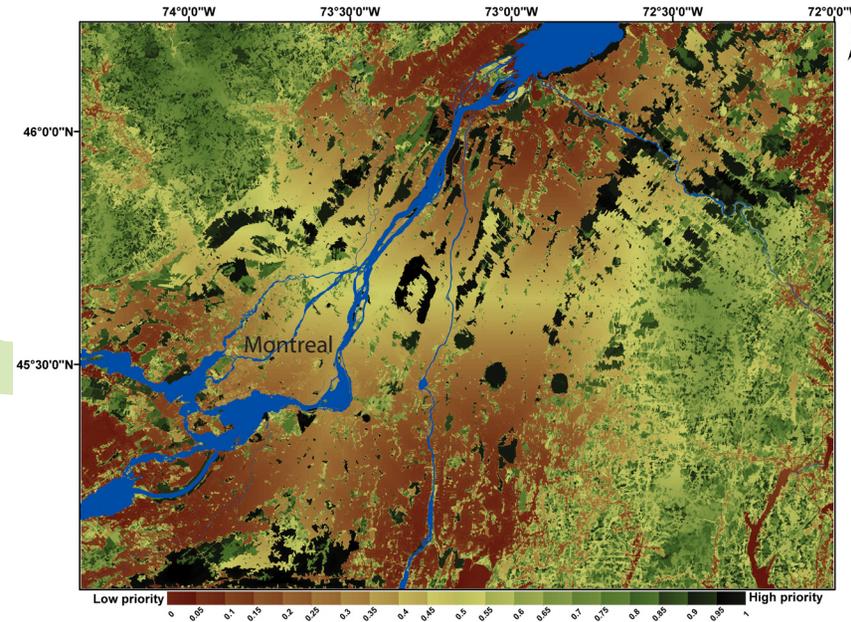
*Martes americana*  
American marten



*Seiurus aurocapilla*  
Ovenbird

## Maps of the network of forest fragments and their importance for connectivity

### Forest Fragmentation - 2000



Map showing the importance of each forest fragment to the overall connectivity of the region. Fragments were prioritized based on both inter-patch connectivity and long distance traversability of the network. Four spatial input layers for each of the five focal species formed the basis of the prioritization: node betweenness, patch importance based on equivalent connected area, pixel-level habitat quality, and current density. All input layers were derived from conditions in the year 2000. Colours range from maroon (low priority) to dark green (high priority), indicating their overall importance to the ecological network.

Landscape prioritization based on landcover conditions in 2050 under 'Business As Usual' landuse and a single climate change scenario. Colours range from maroon (low priority) to dark green (high priority). We see fewer fragments remain in 2050. We also see a zone of relatively high connectivity crosses from right to left and to the north of the city of Montreal.

### Forest Fragmentation - 2050

