# Conserving Canada's Boreal:
# The Concise Science Case

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# The Context

- More than 80% of the land surface of the world is visibly altered by human activities.

- Habitat losses and other impacts have accelerated extinction rates by ~1000 times or more: we are in a period of mass extinctions whose most recent comparison is with the end of the age of the dinosaurs.

- Looming before us is the prospect of accelerating, human-induced climate change: 15-37% of species may be committed to extinction by 2050.

# The Context

- Habitat losses in Canada are overwhelmingly responsible for accelerating species endangerment, which are comparable to rates in developing nations. Habitat losses that endanger species also prevent their recovery.

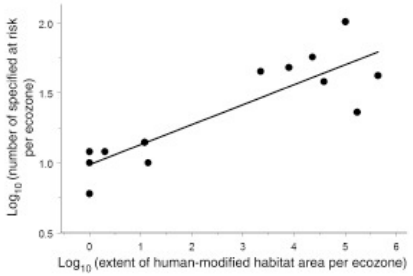
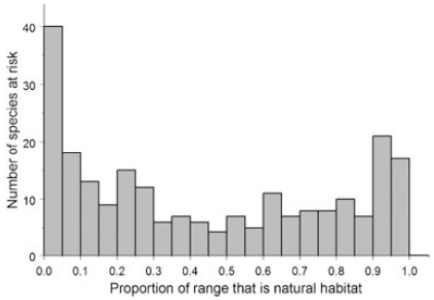


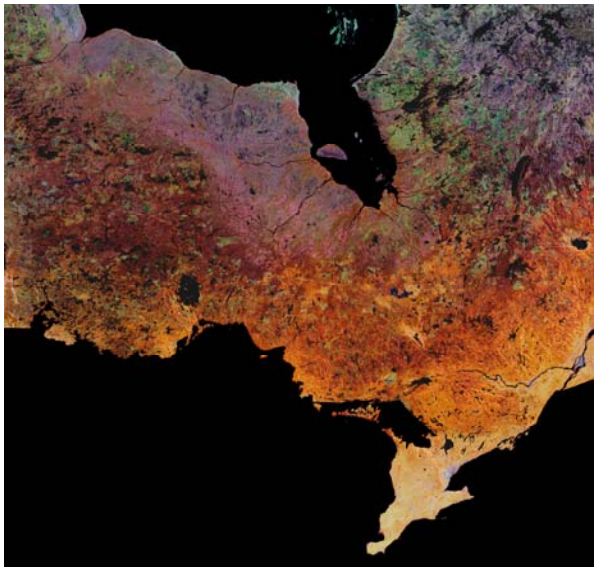

**Figure 3** The relationship between the numbers of species at risk and the extent of human-modified area per ecozone. Data were $Log_{10}$ transformed.




Kerr & Deguise 2004, *Ecology Letters*

# The Context

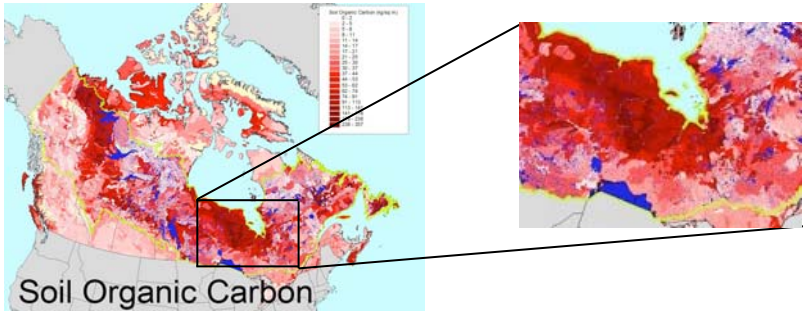
- Habitat loss is widespread in southern Ontario - and wildlife here is threatened in proportion.
- Conservation is vastly more likely to succeed when it is proactive, not a last ditch effort.
- Why focus on Ontario's northern boreal?



# Ontario's Northern Boreal: Carbon

- Currently stores VAST quantities of organic carbon, enough to detectably alter global climate, and more than any ecosystem on the planet.

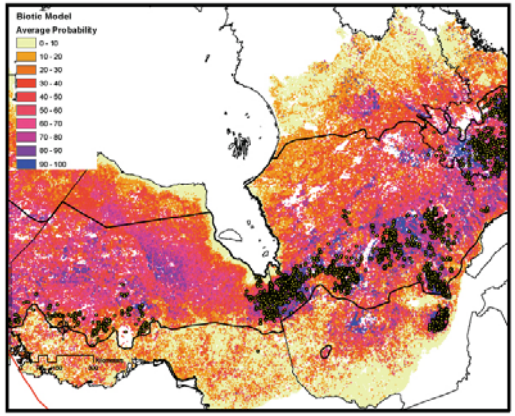
- Canada's boreal stores about 27 times the global emission of carbon from fossil fuels in 2003. Ontario's northern carbon stores are especially large and they continue to sequester carbon.



# Ontario's Northern Boreal: Biodiversity

- The intact ecosystems in this region are home to iconic wildlife species, like caribou, and hundreds of millions of migratory birds.

Scientific review for the identification of critical habitat
for Woodland Caribou - Boreal Population: April 9, 2009

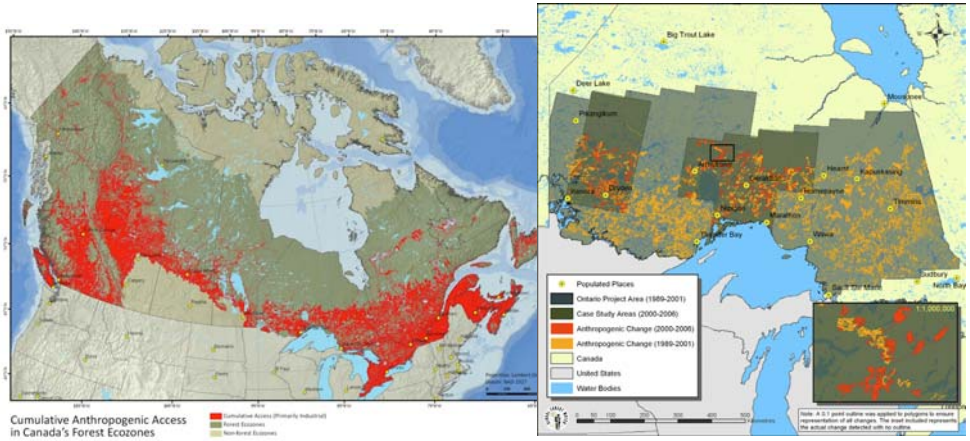



**Appendix 6.4 - Figure 5b.** Biotic model output in central Canada.
Yellow dots indicate collar locations used for training data.

Current range conditions in Ontario:
60% chance of being self-sustaining.
This chance drops fast and
deterministically with forest loss.

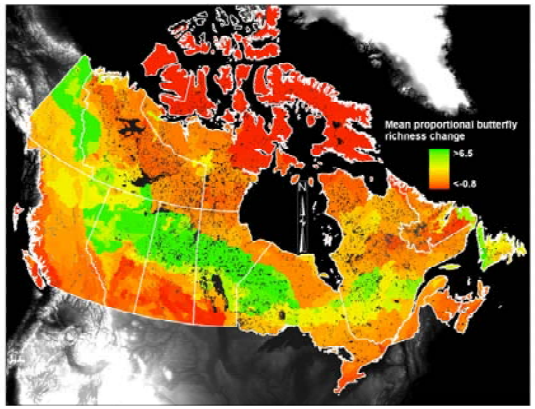
# Ontario's Northern Boreal: Threats

- Change is coming to Ontario's northern boreal, an effect that is readily detectable with high resolution satellite data.



# Ontario's Northern Boreal: Threats

- Climate change has now been shown to be causing species to shift north: this is not just a prediction for the future, but an observation from the 20th century (Kerr *et al*. Science, 2007; Kharouba, Algar, Kerr, 2009, Ecology).




The band of intact ecosystems across northern Canada is the frontier for range expansion of Canadian species.

Species have shifted into these areas because they are intact.

# Ontario's Northern Boreal: Calls for Conservation

- May, 2007: Scientists' letter presented to Parliament of Canada, signed by 1500 scientists in 50 countries, issuing a strong call to conserve at least 50% of Canada's boreal ecosystems and to ensure sustainable practices across the remaining area.

- This letter called for recognition of the need to maintain ecological integrity through broad-scale, ecosystem-level conservation, and recognizes the need to plan across whole landscapes. Piecemeal approaches are much riskier.

## Ontario's Northern Boreal: Proactive Conservation

- "We will only get one chance to get this right... The Ontario government will be protecting more than 225,000 square kms — or more than half of the Northern Boreal lands — in an interconnected network of conservation lands. Priority will be given to protect lands with key ecological features such as habitat for endangered species or important carbon sinks. These lands will be permanently protected through the Far North planning process. Activity on these lands will be restricted to tourism and traditional Aboriginal uses."

  -- Premier Dalton McGuinty, July 2008

# Ontario's Northern Boreal: The Future

- Premier McGuinty's announcement got it just right, including key principles:
  - at least 50% needs protection.
  - the interconnectedness of these ecosystems.
  - prioritize by conservation need, on the basis of the best science.

# Acknowledgements

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