

Conservation Challenges for Terrestrial Vertebrates (Birds) in Canada



Bridget Stutchbury



Massasauga Rattlesnake

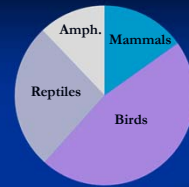


Jefferson Salamander



Wood Thrush

- 1 in 5 terrestrial vertebrates in Canada is nationally listed as a Species at Risk
- This amounts to almost 150 species
- Almost half of these species are birds
- A third are reptiles or amphibians



Canada Warbler



Spotted Turtle



Fowler's Toad

Threats: Reptiles & Amphibians

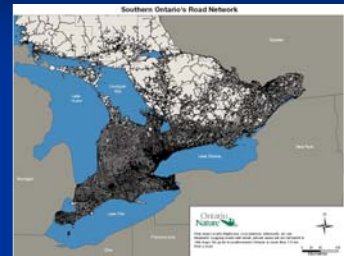
- We have about 40 amphibian and 50 reptile species in Canada
- Sadly, 42% of all amphibians and 77% of all reptiles in Canada are Species at Risk
- Most species are at the northern limit of their ranges in S. Canada



Lesbarrères et al. (2014) Biol. Conserv.

Threats: Reptiles & Amphibians

- Habitat Loss & Fragmentation
- Road Mortality
- Pesticides & Contaminants?
- Infectious Diseases?
- Climate Change?



Lesbarrères et al. (2014) Biol. Conserv.

- Canada has an impressive biodiversity of birds with roughly 450 species
- 15% of these are listed as Species at Risk
- Dozens of additional bird species are in steep decline



Burrowing Owl

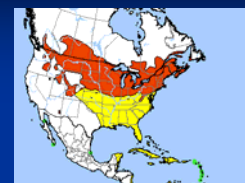
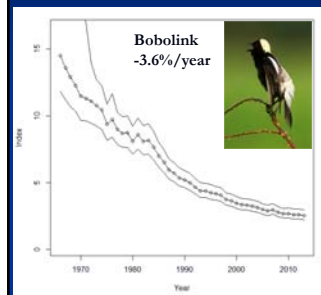


Piping Plover



Barn Swallow

Grassland Birds



Boreal Forest Birds

Olive-sided Flycatcher
-3.9%/year

Year: 1970, 1980, 1990, 2000, 2010

Population: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Causes of Bird Declines

- Most (80%) of our birds are migratory and face threats inside and outside of Canada

Breeding

Spring Migration

Fall Migration

Wintering in Tropics

Songbirds Breed in Small Forest Patches But Produce Few Offspring

Nesting Success is 50% Lower in Forest Fragments

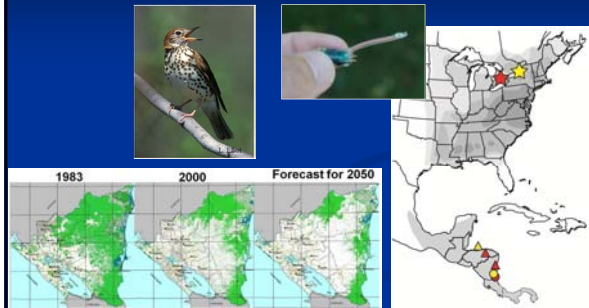
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Cats kill about 200-300 million birds per year in Canada

Volunteer cat wearing Kitty-cam

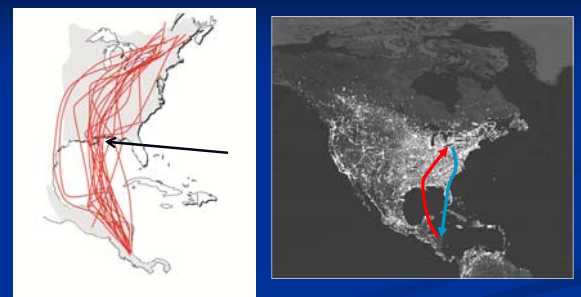
Victim: Eastern Phoebe

Threats to Canadian Wood Thrushes on the 'wintering' grounds



Deforestation in Nicaragua Stanley et al (2014) Cons Biol

Threats on Migration: Wood Thrushes



Migratory bottleneck in spring Light Pollution (blue: fall route; red: spring route)

25 million songbirds are killed in Canada each year from Window-Collisions



Yellow Warbler, White-throated Sparrow, Ovenbirds, Gray-checked Thrush and Swainson's Thrush

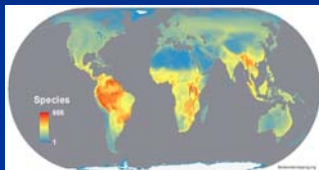
Small Forest Patches are Important Stopover Sites on Migration



York University, Toronto Brown Creeper Swainson's Thrush Black-throated Blue Warbler

Threats: Canada's Migratory Birds

- Habitat Loss & Fragmentation
- Invasive Species (cats)
- Pesticides & Contaminants?
- Climate Change?

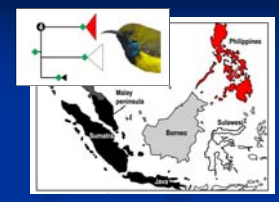


Global Patterns of Bird Diversity

Pimm et al. (2014) Science

DNA Barcoding and Birds

- DNA barcoding can identify possible new bird species in poorly studied regions, and cryptic species that look similar
- DNA barcoding has also been used in ecological studies of bird diets and seed dispersal..... who pooped the seed?



Lohman et al. (2010) Biol. Conserv. Gonzalez-Varo et al. (2014) Methods Ecol. & Evol.