# Rusty Blackbird Population and Habitat in Nova Scotia

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# Outline

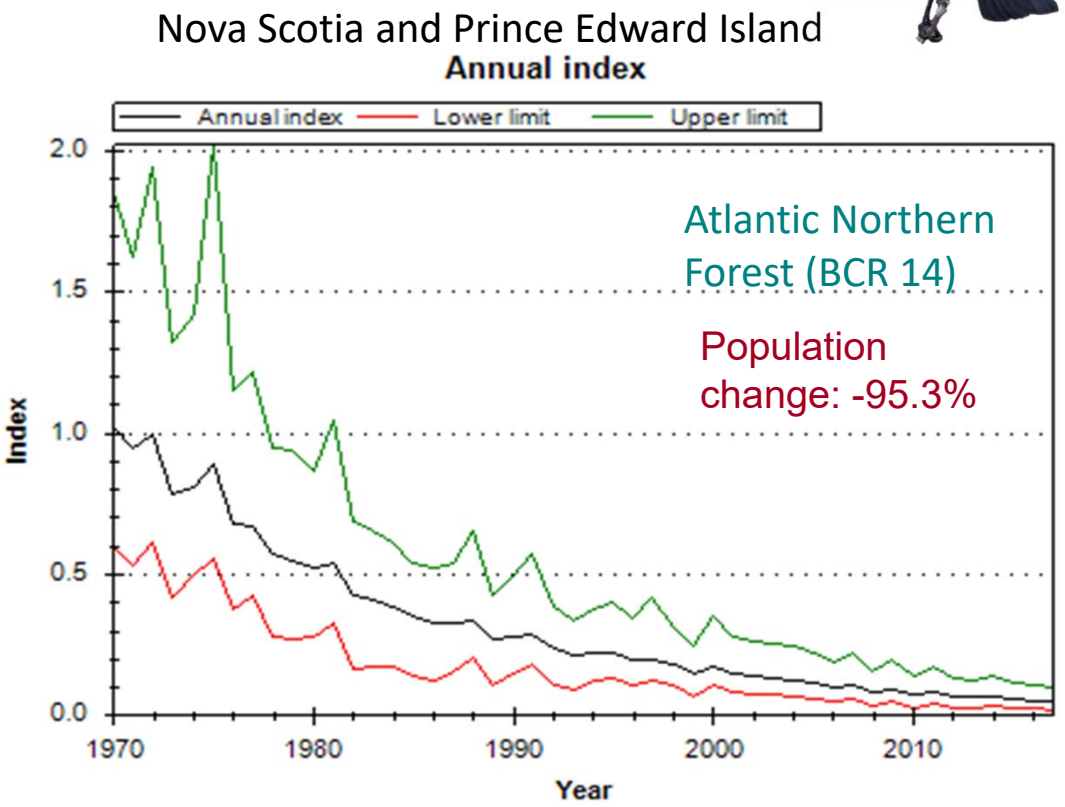
- Status of the Rusty Blackbird (RUBL) population in Nova Scotia
- Are past RUBL sites still occupied and can persistence be explained?
- What characterizes RUBL habitat at the site level?
- What habitat features are RUBLs selecting at larger scales?

Breeding site at wetland connected by streams surrounded by recent harvests

# Status of the Nova Scotia Population

- Rusty Blackbird (RUBL) (*Euphagus carolinus*)
- Endangered – Nova Scotia
- Special Concern – SARA, COSEWIC
- Poorly sampled by BBS

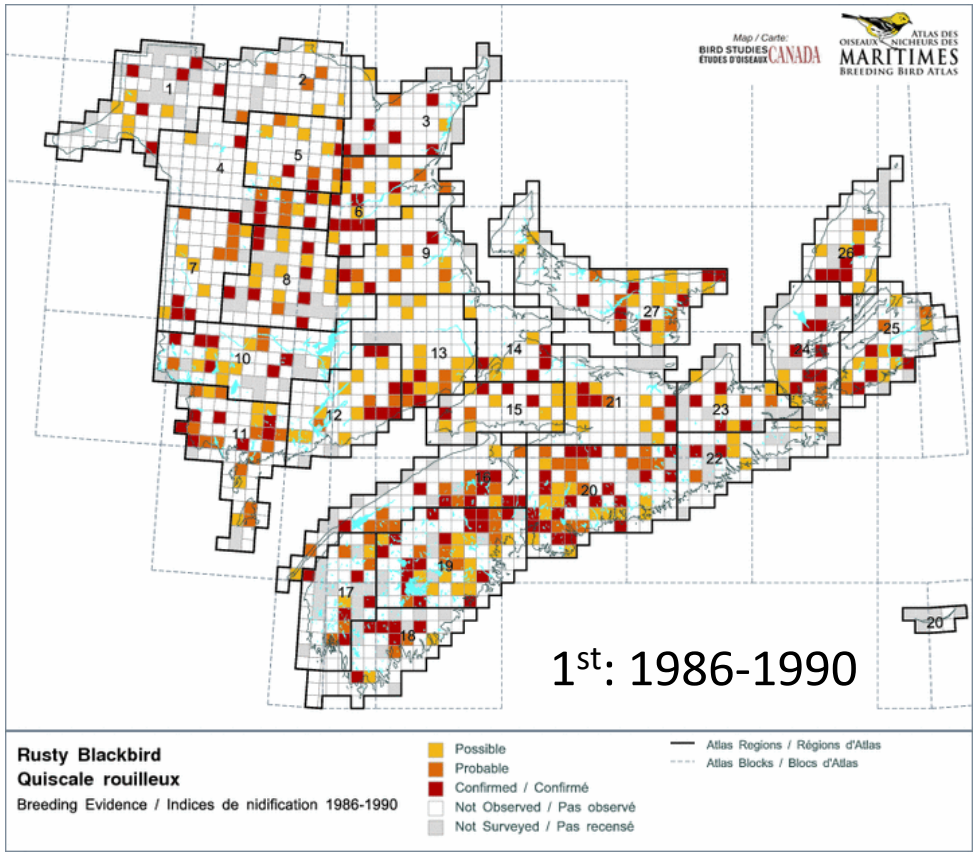
| Province | Average no. of routes run 1997-2017 | Average no. of routes with RUBL | |
|---|---|---|---|
| | | 1997-2002 | 2003-2017 |
| NS | 22.6 | 2.9 | 0.8 |
| PEI | 3.0 | 0.4 | 0.0 |

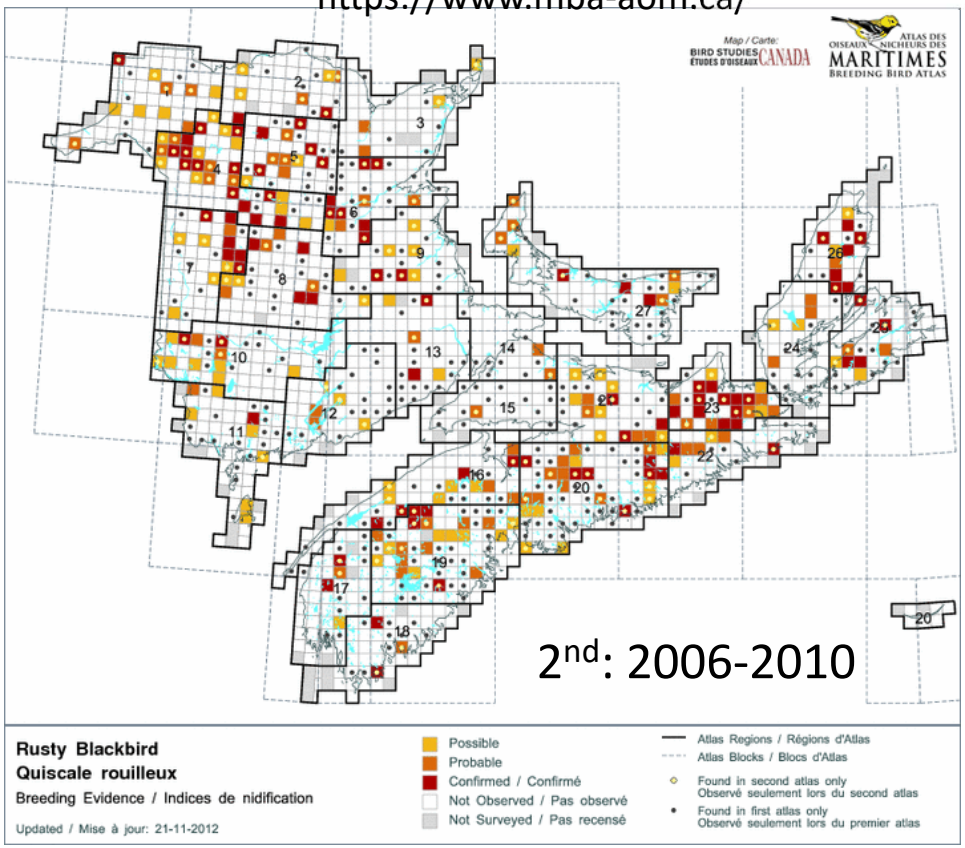



Smith et al.. 2019. North American Breeding Bird Survey - Canadian Trends Website, Data-version 2017. ECCC, Gatineau, Quebec, K1A 0H3

# Declines between the first two Maritimes Breeding Bird Atlases (MBBA)

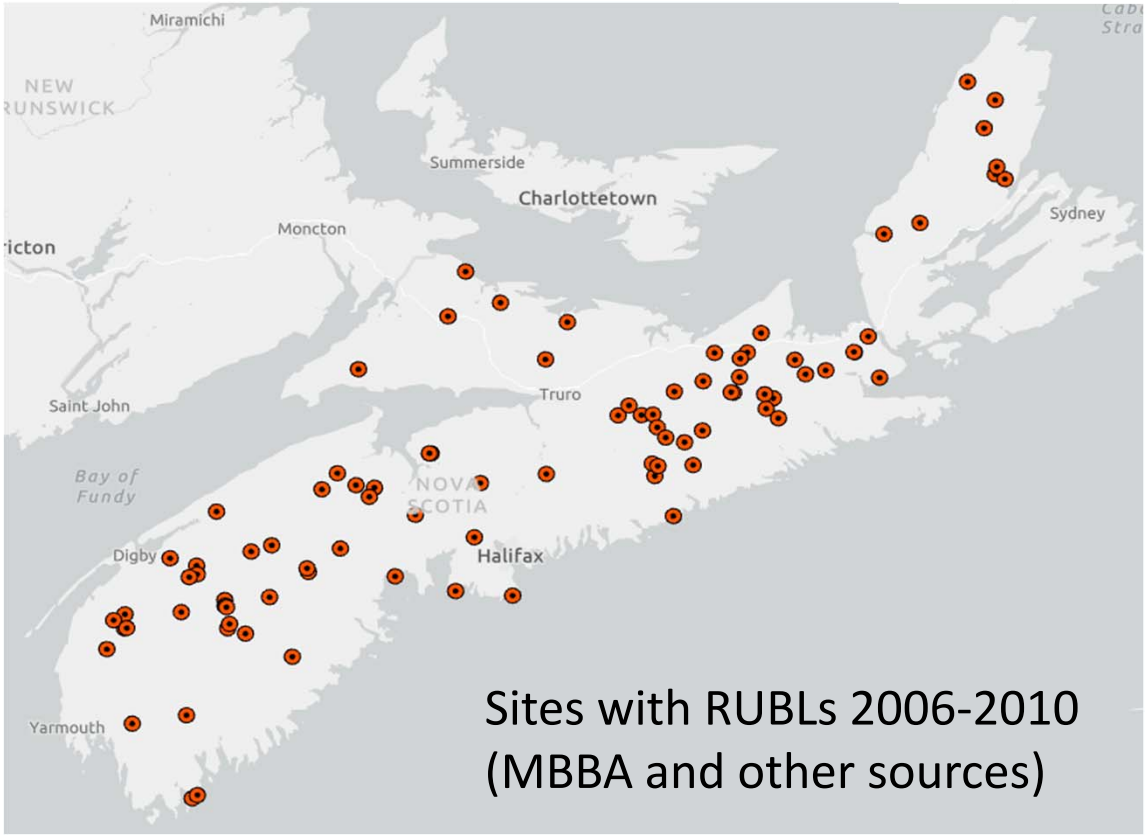
https://www.mba-aom.ca/



# Were the 2006-2010 sites still occupied?

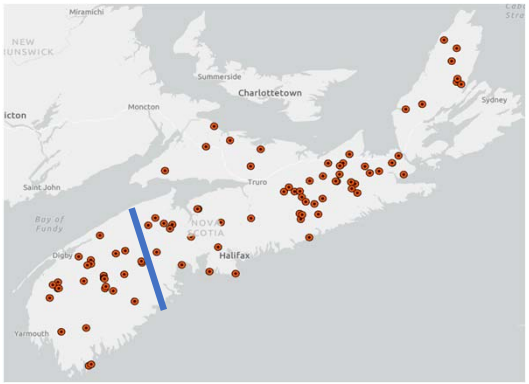
- Known RUBL-occupied sites from 2006-2010
- Field visits 2013-2019
- Playback
  - 30 sec of songs & calls used to increase likelihood of detections
- Enlisted help of volunteers to cover province
- Surveyed 56% of 93 sites




Sites with RUBLs 2006-2010 (MBBA and other sources)

# Can persistence be explained?

- **Persistence** – per cent of sites still occupied
- Found RUBLs at 38% of the previously-occupied sites
- Regional differences?
  - Southwestern: 52%
  - Rest of province: 29%




- Breeding evidence?

| **Level of breeding evidence** | **% of sites** | |
|---|---|---|
| | Persistent sites | Sites where not found |
| Possible | 25 | 28 |
| Probable | 40 | 34 |
| Confirmed | 35 | 38 |

# Analysis of habitat disturbance in satellite imagery

- Habitat disturbance (mostly forest harvesting) and roads were analyzed using satellite imagery (Google Earth or LandViewer)
- Selected images closest in time to the 2 survey dates
- Compared sites where RUBLs persisted and not found at two scales:
  - Home range (60 ha, 437 m radius)
  - Landscape (78.5 km$^2$, 5 km radius)

# Did persistent sites have less habitat disturbance?

- Possible evidence that habitat disturbance may explain persistence
  (but GIS data not yet analyzed)

| Change since first detection | % of sites | |
|---|---|---|
| | Persistent | Not found |
| Harvesting in home range buffer | 10 | 16 |
| Harvesting in landscape buffer | 75 | 97 |
| New roads in home range buffer | 55 | 53 |
| New roads in landscape buffer | 60 | 56 |

| Habitat change variable | Mean value | |
|---|---|---|
| | Persistent | Not found |
| % of home range buffer harvested | 5 | 8 |
| % of landscape buffer harvested | 14 | 15 |
| Distance (m) to nearest new road in home range buffer | 171 | 102 |
| Distance (m) to nearest new road in landscape buffer | 194 | 213 |
| Distance (m) to nearest new harvest in home range buffer | 190 | 225 |
| Distance (m) to nearest new harvest in landscape buffer | 1480 | 1158 |

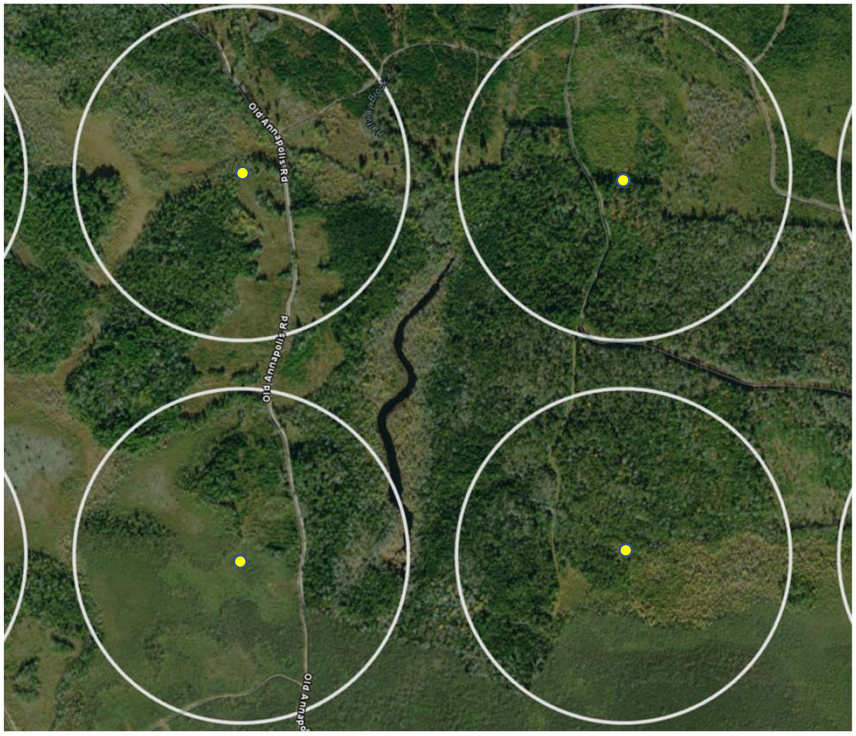
# Examples of breeding sites

# What characterizes RUBL habitat at the site level?

- Measured forest vegetation along a 50-m transect at 73 sites, mostly in forested wetlands (also CAWA & OSFL sites) in 2017-2018
- Variables:
  - Canopy cover
  - Tree species height, dbh
  - High shrub layer cover by species (2-7 m)
  - Low shrub layer cover by species (0.25-2 m)
  - Softwood vs. hardwood in each layer
  - Snags and coarse woody debris
  - Exposed, shallow water
  - Sphagnum cover
  - pH
- RUBL sites (n=13) spanned a wide range of forest stand types and wetland types
  - Most were Wet Coniferous / Wet Mixedwood veg types; Coniferous Treed Swamps, Mixedwood Tall Shrub Swamps
  - Only a few were known nest sites
- Sites with RUBLs had significantly:
  - More exposed, shallow water
  - Less low shrub cover (< 2m)
  - Less conifer cover in the low shrub layer
  - Shorter conifers in low shrub layer

# What habitat features are RUBLs selecting at larger scales?

- Three sets of points:
  - Presence (field surveys, n = 40)
  - Absence (field surveys, n = 257)
  - 1 km$^2$ fishnet grid across the province (n= 62,316)
- Sampling area (home range size): 60 ha buffer
- Compared data from GIS layers for Nova Scotia



# GIS variables compared

- Wetness and water data:
  - Area of land with saturated soils (water table <0.5 m from surface, from Wet Areas Mapping predictive layer, *minus* Area of water bodies)
  - Total stream length
  - Proportion of area covered by water bodies
- Road length
  (measure of human disturbance)

- Forest inventory data:
  - Cover type (Softwood, Mixedwood, Harwood)
  - Proportion of tree cover by each tree species
  - Second-story species (hardwood or softwood)
  - Canopy crown closure
  - Second-story crown closure
  - Tree height
  - Second-story height
  - Tree basal area, for softwood and hardwood

# Habitat features selected by RUBLs (from GIS)

**Compared to the fishnet grid sites, sites with RUBLs had significantly:**

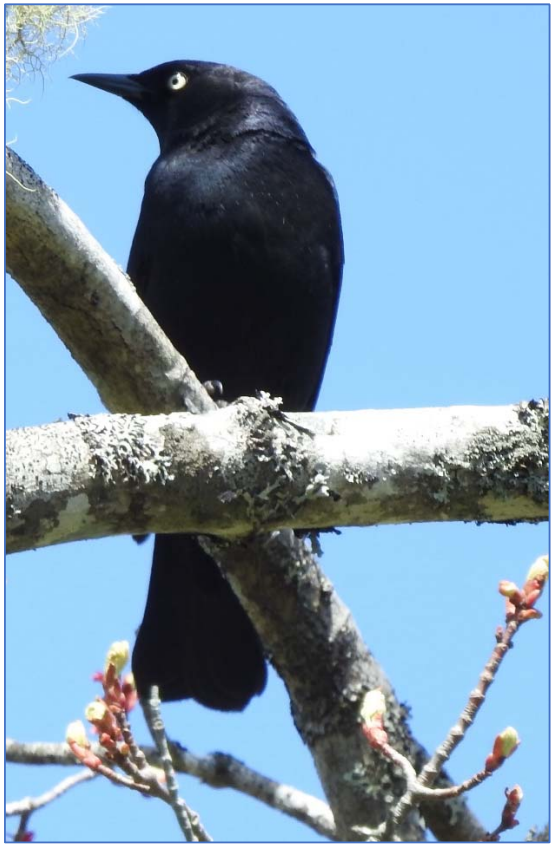
- More wet land
  - land with water table <0.5 m from surface
- More streams
  (NOT more lakes)
- More roads
  (may be sampling artifact)

- More canopy cover of:
  - Balsam fir
  - Intolerant hardwood

  (NOT more spruce)
- Taller and more closed second story of saplings, small trees
  (NOT more closed canopies or taller trees)
  (NOT more conifer cover or basal area)

# Conclusions

- Visual analysis of satellite imagery suggests persistence may be influenced by habitat disturbance, may differ by region – still need to analyse corresponding GIS data
- At site level, RUBLs mostly occupied Wet Conifer & Mixed forest (Treed and Tall Shrub Swamps), with more shallow water, less vegetation cover < 2 m
- At larger scales, RUBLs selected landscapes with more wet land, better developed second story, and more balsam fir and intolerant hardwoods, more streams
- NS regulations require forested buffers (20 m) on streams, likely provide key habitat for foraging and moving through a bird's home range; but currently no buffers are required around wetlands



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# 2020 Rusty Blackbird Workshop

## October 7 & October 9, 2020

## 12-3 PM EDT (each day)

## Via Zoom

The International Rusty Blackbird Working Group invites those with interest in this species to participate in a virtual workshop supporting development of a first-ever range-wide conservation plan for Rusty Blackbirds!

Workshop sessions will explore species status, threats/limiting factors, information gaps, and priorities for future attention. Everyone is welcome!

Please register for the workshop on our website:

**https://rustyblackbird.org/**