The Avian Conservation Assessment Database (ACAD)

Background, Current Status, and Opportunities for Collaborative Bird Conservation

Northern Forest Bird Workshop – BCR 12
17 April 2018

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USFWS and Partners in Flight
Avian Conservation Assessment Database

- Data for Standardized Status Assessments
  - Key factors indicative of vulnerability to extinction or extirpation
  - All birds, Canada to Panama
  - Global & regional scale assessments
  - A simple but sound scientific foundation, updated regularly (data-driven + expert input)
- Peer-reviewed methodology
Why do we need ACAD?

• Provide a common biological basis for assessment of vulnerability for all birds
• Out of 100s of species, helps identify most vulnerable and in need of conservation attention
• Tool for coordinated bird conservation
  • Across taxonomic groups, spatial scales, jurisdictions, etc.; one-stop shopping!
• A structure and framework for tracking additional conservation-related data (e.g., pop. estimates, pop. objectives, monitoring & research needs)
Assessment Factors

- 6 Vulnerability measures
  - Population Size (PS)
  - Breeding and Non-breeding Distribution (BD, ND)
  - Threats Breeding and Non-breeding (TB, TN)
  - Population Trend (PT)

- 2 Area Importance measures (for BCRs/regions)
  - Relative Density (RD)
  - % of Population (%POP)
ACAD Assessment Scores

All factors scored on same basic scale:

low vulnerability

1 = resistance to major decline or extirpation
2 = no perceived vulnerability (stability)
3 = moderate vulnerability or high uncertainty
4 = high vulnerability

high vulnerability

5 = in danger of major extirpation or extinction
Population Trend (PT)

- A score between 1 and 5 based upon direction and magnitude of recent changes in population size

  - 1 = Significant large increase (>50%)
  - 2 = Significant small increase (0% to 50%), Possible increase (>0%), or Stable (> -15%)
  - 3 = Uncertain, Stable or possible decrease (<-15%), Possible or Significant small decrease (-15% to 0%)
  - 4 = Significant/Possible moderate decrease (-15% to -50%) or Possible large decrease (≤ -50%)
  - 5 = Significant large decrease (≤ -50%)

Data Sources: Breeding Bird Survey, Christmas Bird Count, other standardized surveys, Breeding Bird Atlases, expert opinion
Threats to Breeding (TB)

- A score between 1 and 5 based upon current and foreseeable future conditions
  - 1 = Future conditions for breeding populations are *expected to improve* (i.e., due to widespread human activities or land uses that benefit the species)
  - 2 = Future conditions for breeding populations are *expected to remain stable*; no significant threats.
  - 3 = *Slight to moderate decline in the future suitability* of breeding conditions is expected.
  - 4 = *Severe deterioration in the future suitability* of breeding conditions is expected.
  - 5 = *Extreme deterioration in the future suitability* of breeding conditions is expected; species is in danger of extirpation from substantial portions of range.

**Data Sources**: published literature, reports, *expert opinion*
Using Assessments to Identify Priority Species for Conservation

- **Continental Level:**
  - **Watch List:** combined score $> 14$ or $13+PT=5$
  - **Common Birds in Steep Decline:** $PT=5$
    - *e.g.*, *PIF LCP 2016, State of the Birds Reports*

- **Regional Level**
  - **Regional Concern:** combined score $>13$ + Threats $> 3$ or (Threats $= 3$ and $PT > 3$)
    - *e.g.*, *BCR/JV/State priority species lists*
  - **Regional Stewardship:** %Pop in BCR $> 25\%$ + Threats $> 1$
How is the ACAD used??

- Partners in Flight Landbird Conservation Plan 2016
  - Guidance to Joint Ventures on priority landbirds
  - Regional and National lists
- US State Wildlife Action Plans
  - Species of Greatest Conservation Need
- Guidance to 20 US federal agencies
  - EO 13186: Responsibilities of Federal Agencies to Protect Migratory Birds
State of North America’s Birds

One-third of all North American bird species need urgent conservation action.

Major habitats of North America:
- Tundra
- Boreal Forest
- Coasts
- Temperate Forests
- Grasslands
- Aridlands
- Tropical Highland Forests
- Tropical Lowland Forests

Conservation concern across habitats:
- Conservations concern: Low, Moderate, High
- Watch list threshold
- Oceans: (54 species) 57%
- Tropical and subtropical forests: (178 species) 56%
- Coasts: (164 species) 57%
- Aridlands: (64 species) 57%
- Grasslands: (41 species) 57%
- Temperate forests: (114 species) 42%
- Tundra: (78 species) 26%
- Wetlands: (171 species) 19%
- Boreal Forest: (23 species) 19%
- Generalists: (655 species) 1%

In crisis:
- More than half of species from oceans and tropical forests are on the Watch List because of small and declining populations, small range, and severe threats to their habitats.

Steep declines:
- Many species in coastal grassland and aridland habitats are declining steeply. In particular, long-distance migrating shorebirds and species that migrate from the Great Plains to Mexico’s Chihuahuan grasslands have lost, on average, almost 70% of their continental populations since 1970.

Faring well:
The generalist group—birds that are adaptable and can live in multiple habitats—are of lowest conservation concern.

Our approach:
- This report is based on the first-ever conservation vulnerability assessment for all 1,154 native bird species that occur in Canada, the continental United States, and Mexico. The assessment was compiled by a team of experts from three countries. The overall conservation status for each species takes into account its population trend, population size, extent of breeding and nonbreeding ranges, and severity of threats to populations. The Watch List identifies species of highest conservation concern based on high vulnerability scores across multiple factors. Year-round abundance maps from eBird data, in which intensity of color reflects seasonal abundance, are presented for selected species. Animated eBird maps, as well as details on the assessment methodology and the complete Species Assessment Database, are available at stateofthebirds.org.

stateofthebirds.org
ACAD Status

- Canada & U.S. (719 species)
  - 462 landbirds, 158 waterbirds, 52 shorebirds, 47 waterfowl
  - Global assessments updated 2016/2017
  - Regional breeding assessments under review 2017/2018
  - Regional non-breeding score review planned for 2018/2019

- Mexico (1,049 species; 581 shared with U.S.)
  - Global and regional assessments (updated 2016, in part)

- Central America (1,155 spp.; 380 shared with U.S.)
  - Global and country-level assessments (updated 2016)

- Next? (Caribbean, South America?)
Regional Non-breeding Scores

Will Include:
• Relative Density (RD)
• Threats to Non-breeding (TN)

A New Frontier For Full-life Cycle Bird Conservation
• Which species are conservation priorities during the migration and wintering periods?
• What issues represent greatest threats during those periods?

Katie is seeking a small team to help with this review!

Midwest Migration Monitoring Network is a resource.
# BCR 12 Regional Review (Breeding)

## Continental Watch List:

<table>
<thead>
<tr>
<th>Species</th>
<th>Continental Watch List</th>
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<tbody>
<tr>
<td>Long-eared Owl</td>
<td>Olive-sided Flycatcher</td>
<td>Kirtland’s Warbler</td>
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<tr>
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<td>Cerulean Warbler</td>
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<td>Chimney Swift</td>
<td>Evening Grosbeak</td>
<td>Canada Warbler</td>
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<td>Piping Plover</td>
<td>Golden-winged Warbler</td>
<td>Le Conte's Sparrow</td>
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<tr>
<td>Marbled Godwit</td>
<td>Connecticut Warbler</td>
<td>Bobolink</td>
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## Regional Concern:

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<td>Tree Swallow</td>
<td>Least Flycatcher*</td>
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<tr>
<td>Northern Harrier</td>
<td>Veery</td>
<td>Field Sparrow*</td>
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<td>Northern Saw-whet Owl</td>
<td>Brown Thrasher</td>
<td>Grasshopper Sparrow*</td>
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<tr>
<td>Black-backed Woodpecker</td>
<td><strong>Black-and-white Warbler</strong></td>
<td>Eastern Meadowlark*</td>
<td></td>
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<tr>
<td>American Kestrel</td>
<td>Bay-breasted Warbler</td>
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<tr>
<td>Great Crested Flycatcher</td>
<td>Eastern Towhee</td>
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**BCR 14 (Atlantic Northern Forest) Regional Review - Breeding**

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<td><strong>American Black Duck</strong></td>
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<tr>
<td>Ruffed Grouse</td>
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<tr>
<td>Upland Sandpiper</td>
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<tr>
<td><strong>American Bittern</strong></td>
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<tr>
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<tr>
<td>Northern Flicker</td>
</tr>
<tr>
<td>American Kestrel</td>
</tr>
<tr>
<td>Eastern Wood-Pewee</td>
</tr>
<tr>
<td>Least Flycatcher*</td>
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<tr>
<td>Yellow-throated Vireo</td>
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<tr>
<td>Tree Swallow</td>
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<tr>
<td>Veery</td>
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<tr>
<td>Purple Finch</td>
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<tr>
<td>Blue-winged Warbler</td>
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<td>Black-and-white Warbler</td>
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<td>Nashville Warbler</td>
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<td>Mourning Warbler</td>
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<tr>
<td>Bay-breasted Warbler</td>
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<td>Scarlet Tanager</td>
</tr>
<tr>
<td>Rose-breasted Grosbeak</td>
</tr>
</tbody>
</table>
Common Birds in Steep Decline:

- Black Tern
- Least Flycatcher
- Field Sparrow
- Grasshopper Sparrow
- Eastern Meadowlark
- Common Nighthawk

Black Swallow
Pine Siskin
Blackpoll Warbler
Brewer's Blackbird
Common Grackle

Regional Stewardship:

- Kirtland's Warbler
- Golden-winged Warbler
- Chestnut-sided Warbler
- Veery
- Black-throated Blue Warbler
- Blackburnian Warbler
- Black-billed Cuckoo
- Ovenbird
- Mourning Warbler
- Nashville Warbler
- Yellow-bellied Sapsucker
- Black-throated Green Warbler
- Broad-winged Hawk
- Canada Warbler

Critical Information Needs:

- Spruce Grouse
- Chimney Swift
- Northern Saw-whet Owl
- Boreal Owl
- Long-eared Owl

- Great Gray Owl
- Eastern Screech Owl
- Least Flycatcher
- Black-and-white Warbler
- Lincoln's Sparrow

*limiting factors*, *unknown trends*, *relative density*
BCR 14 Regional Review (Breeding)

Common Birds in Steep Decline:
- Least Flycatcher
- Bank Swallow
- Pine Siskin
- Blackpoll Warbler
- Rusty Blackbird
- Common Grackle

Regional Stewardship:
- Bicknell’s Thrush
- Black-throated Blue Warbler
- Northern Parula
- Black-throated Green Warbler

Critical Information Needs:
- limiting factors\(^1\), unknown trends\(^2\), relative density\(^3\)

<table>
<thead>
<tr>
<th>Species</th>
<th>Frequency</th>
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<tr>
<td>Spruce Grouse (^2)</td>
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<tr>
<td>Chimney Swift (^1)</td>
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<tr>
<td>Northern Saw-whet Owl (^2,3)</td>
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<tr>
<td>Long-eared Owl (^1,2,3)</td>
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Part 1: Regenerating clearcuts and postharvest forestry treatments promote habitat for breeding spruce-fir avian assemblages in the Atlantic Northern Forest.

- Avian surveys (point counts) and vegetation sampling at 7 study sites
- 114 forest stands, 425 total survey points
Harvested Area in Maine: 1982-2015

(A) Harvest treatment
- Partial harvest
- Clearcut
- Total harvest

(B) Postharvest treatment
- Herbicide
- PCT

hectares

Year
Clearcuts w/p-h treatment help fill spr-fir void & have high BA
Spruce-fir birds love stands with post-harvest treatment = spr-fir
Species diversity also responds to clearcuts w/p-h treatment
Northeast NWR Forest Inventory Protocol Framework:

- Regional framework that is standardized yet flexible enough to meet varying Refuge survey needs

- Function at multiple geographic scales: stand, management unit and Refuge scales

- Quantify the current composition, structure, and unique characteristics of forest stands

- Initiate evaluations of habitat quality, biological integrity, diversity, and environmental health

- Detect forest health issues

- Collect data on trees, seedling and sapling regeneration, shrubs, herbaceous plants, graminoides and coarse woody debris
Forest Data Collected

- Trees (>5”)
- Seedling and Sapling
- Coarse Woody Debris
- Shrubs, herbaceous plants, graminoides
- Stand characteristics
- Watchlist species
- Health detection
Vegetation Profile

Understory Structure and Composition

Percent Cover by Growth Form in each of four layers

Layer 4 (> 16’)
- TT 35%

Layer 3 (6.1 - 16’)
- TT 15%
- NT 5%

Layer 2 (2.1 - 6’)
- TT 10%
- NT 5%

Layer 1 (0 – 2’)
- GR 25%
- GR 10%
- SH 20%
- FB 5%

A: 1%
B: 25%
C: 6%
D: 2%
E: 1%

Circle of 1% cover
The Northeast Forest Inventory and Monitoring Protocol Framework is built into a software system and uses iPads to collect forest data.

iPad mini

Forest Metrix inventory software
ArcGIS Online (AGOL) - allows graphical and spatial display of plot and stand level forest data
Goal

The study will quantify and compare stands receiving forest management treatments (treatment stands – 1600 acres) aimed at providing high-quality breeding habitat and compare to stands that will not receive treatments (no treatment stands – 600 acres).
Monitoring objectives

1) Monitor change in vegetation composition, structure, and health

2) Monitor the diversity and abundance of the bird community, with an emphasis on refuge focal species.
Opportunities for Northern Forest Bird Conservation Collaborations?

- Shared priority species: EVGR, CMWA, CAWA, BBWA, BWWA, LEFL, BBCU

- Effects of forest management on birds of concern

- Filling information gaps:
  - threats/limiting factors for aerial insectivores, owls, LEFL, BWWA
  - Population trends & RD: SPGR, owls