Avian Depletion – are Silent Springs becoming Silent Years?

Issue

Birds are experiencing major declines worldwide. In 2018, BirdLife International reported that, globally, 40% of all avian taxa have suffered population losses since 1970, with nearly 3 billion birds disappearing in Canada and the US during that same period. In eastern North America, 64% of forest bird species have declined since 1970, a loss of an estimated 160 million forest birds. This crisis has become so severe that not only are species of known conservation concern (e.g., Canada warbler, Rusty blackbird, Chimney swift, etc.) undergoing deeply worrying population declines, but the most common species (e.g., sparrows, warblers, starlings) are experiencing staggering losses as well.

Significance and Background

Nova Scotia contains breeding habitat for 174 bird species; 62 other species migrate through our province or spend some portion of their life cycle here.

Even if one ignores their intrinsic value, birds are important for a number of reasons. Many birds are crucial to food webs and local ecosystems. They perform a variety of critical ecosystem services, including pest control, scavenging/sanitary services, pollination and seed dispersal. Birds also provide cultural services. On social media, there are multiple Nova Scotia-based birding groups which boast a combined membership of 20,000 bird lovers. Finally, birds are important indicators of ecosystem health. The widespread declines across many taxa indicate that there are serious problems within their ecosystems. Such widespread environmental degradation will ultimately affect we humans as well.

Avian diversity and intensive forestry

Ecologists are in widespread agreement that the biggest driver of species extinction is habitat fragmentation and loss. Industrial forestry operations cause drastic changes to forest structure, forest composition, and the bird communities that depend on forest habitat. Many avian species that depend on natural, mature forest may completely disappear from intensely harvested areas. Early-successional and edge dependent species that utilize intensely harvested forests can suffer from reduced fitness when they nest in these areas due to increased predation. Migratory forest birds that breed in NS, many of which exhibit high site fidelity, are particularly vulnerable to the structural changes caused by industrial forestry. When such birds lose their territory due to forest harvesting, they may not breed elsewhere. Industrial forestry directly impacts on bird populations as well. A 2013 study estimated that industrial forestry operations destroy up to 159 thousand nests every year in Nova Scotia. Table 1 lists the bird species whose populations are most at risk from industrial forestry operations.

Table 1. Bird species of conservation concern expected to be impacted by High Production Forestry

Species & Conservation Status	Conservation Status
Common Nighthawk	***Federal Species At-Risk Act*** (special concern); ***NS Endangered Species Act*** (threatened)
Black-backed Woodpecker	*Atlantic Canada Conservation Data Center** (sensitive[?])
Eastern-wood Pewee	***Federal Species At-Risk Act*** (special concern); ***NS Endangered Species Act*** (vulnerable)
Yellow-bellied Flycatcher	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*; *Atlantic Canada Conservation Data Center* (sensitive)
Tree Swallow	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
Canada Jay	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia* *Atlantic Canada Conservation Data Center* (vulnerable)
Boreal Chickadee	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia; Atlantic Canada Conservation Data Center* (vulnerable)
Ruby-crowned Kinglet	*Atlantic Canada Conservation Data Center* (sensitive)
Blue-headed Vireo	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
Northern Parula	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
American Redstart	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
Bay-breasted Warbler	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia* *Atlantic Canada Conservation Data Center* (sensitive)
Blackburnian Warbler	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
Black-throated Green Warbler	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
Cape May Warbler	*Atlantic Canada Conservation Data Center* (imperiled)
Magnolia Warbler	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
Purple Finch	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*
Pine Grosbeak	*Atlantic Canada Conservation Data Center* (vulnerable to imperiled)
Rose-breasted Grosbeak	*Atlantic Canada Conservation Data Center* (vulnerable to imperiled)
White-throated Sparrow	*Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia*

Courtesy: Cindy Staicer, MCFC Webinar

*The Atlantic Canada Conservation Data Centre maintain the most comprehensive & up-to-date biodiversity database in Atlantic Canada. Their data are widely used by both provincial and federal governments, industry, NGOs, and researchers to inform conservation planning and environmental management. The Atlantic Canada Conservation Data Centre (with NatureServe) use existing information and in-house expertise to rank species rarity and conservation status.

[?]A classification of 'sensitive' indicates that the species was ranked between 'apparently secure' and 'vulnerable'.

**Bird Conservation Region Strategies were drafted by Environment and Climate Change Canada to support the implementation of Canada's Migratory Bird Program. Birds listed under *Bird Conservation Region 14 (Atlantic Northern Forests) in Nova Scotia* have been identified as priority species in our region under these strategies.

Recommendations

Forestry operations must be adapted to ensure suitable habitat for birds at all stages of their lifecycle and consider the food webs, habitat types and life-support systems they depend on. This means:

1. Ensure that forestry operations respect the Migratory Birds Convention Act and in particular ensure that forestry operations are suspended during the breeding season.
2. In accordance with scientifically-established criteria, watercourse buffer widths should be increased to a minimum of 100 m to maintain habitat and support habitat connectivity.
3. In addition to the above points, the Silvicultural Guidelines for the Ecological Matrix should reflect the guidelines in Table 2 and in each case should specify numerical criteria that can be used in the field to design, monitor and evaluate forestry operations with respect to their sensitivity to bird life (e.g. "Tread lightly in riparian areas and forested wetlands": specify how these areas are defined in accordance with existing provincial definitions and specify the measures that will be taken to prevent damage to these areas).

Table 2. Forestry guidelines to benefit and protect bird populations

Stand-scale guidelines	Landscape-scale guidelines
Encourage vertical and horizontal structural diversity that promotes medium- to high-density understory, midstory, and overstory cover.	When possible, create & enhance large (>100 ha) forest blocks dominated by intact canopy cover. These blocks should be more square-like in shape (as opposed to long & thin) to reduce harmful edge effects.
Promote structural diversity by fostering softwood inclusions in hardwood stands.	When possible, target a landscape-level balance of 10-20% young forest, 30-40% intermediate-aged forest, 40-50% older forest, and ≥10% mature forest.
As appropriate to a stand, create canopy gaps 0.1 ha – 0.8 ha in size.	Use multi-aged silvicultural systems where possible.
Retain and, if needed, recruit snags & decaying trees where operationally safe to do so. (Bigger = better)	Where even-aged silvicultural systems are more appropriate, incorporate stand-level guidelines to enhance bird habitat
Retain coarse & fine woody material and deciduous leaf litter.	
Address invasive plants, pests, and pathogens that threaten forest health & bird habitat.	
Tread lightly in riparian areas and forested wetlands. Protect water quality to benefit forest birds & other wildlife.	
Avoid harvesting during peak breeding season (May 15th – July 31st)	

Courtesy: Maine Audubon

Shanni Bale. Healthy Forest Coalition.