

## Appendix A: Birds

### Bay-breasted Warbler

*Setophaga castanea*

|                 |           |
|-----------------|-----------|
| Federal Listing | N/A       |
| State Listing   |           |
| Global Rank     | S5        |
| State Rank      | S4        |
| Regional Status | Very High |



Photo by Len Medlock

#### Justification (Reason for Concern in NH)

Populations of the Bay-breasted Warbler have been in decline in the United States based on data from the Breeding Bird Survey (Sauer et al. 2014). The long-term trend (1966-2013) for New Hampshire is -5.48%/year, while that for BCR 14 is -1.62%/year (but a non-significant positive trend since 2003). In contrast, populations to the north in Canada have been stable or show non-significant increases (e.g., 6.59%/year in Quebec for 2003-2013). Data from repeated Breeding Bird Atlases support these trends, with increases in occupancy in Ontario (Cadman et al. 2007) and declines in New York (McGowan and Corwin 2008). The species' rarity in Vermont (Renfrew 2013) makes interpretation of Atlas data from that state difficult. Bay-breasted Warbler is considered a Regional SGCN in USFWS Region 5, and is on the Partners in Flight Watch List.

#### Distribution

Breeds across boreal Canada from northeast British Columbia to Newfoundland and Nova Scotia, and south to the extreme northern portions of Minnesota, Michigan, New York, and New England (Venier et al. 2011). It winters in Panama and northwestern South America. In New Hampshire it breeds from the White Mountains north (Foss 1994).

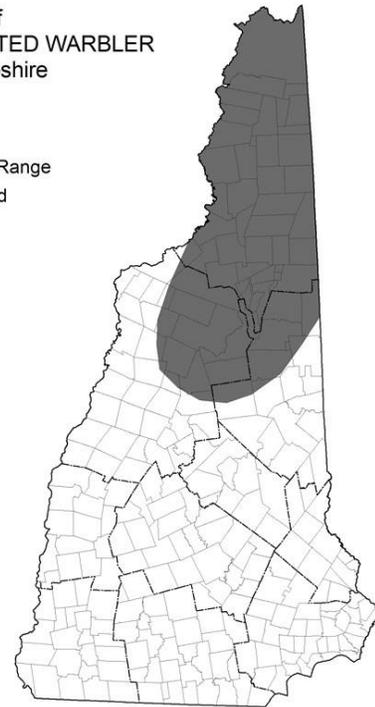
#### Habitat

Bay-breasted Warblers breed in coniferous-mixed boreal forest, usually in mature stands containing spruce and/or fir, and often near water (Venier et al. 2011). Generally occurs at lower elevations, although small numbers will use suitable habitat higher up mountain slopes. A key – although not required – habitat element is the presence of spruce budworm (*Chloristoneura fumiferana*). Along with Tennessee and Cape May Warblers, this is one of three species that are generally considered “budworm specialists,” in that they can increase in density very rapidly during a budworm outbreak, and even produce larger clutches (Venier et al. 2009). Budworm populations are highly cyclic in nature, and large outbreaks only occur at roughly 40-year intervals (Boulanger and Arseneault 2004), and these fluctuations may be responsible for much of the variation seen in population data for Bay-breasted Warblers.

**NH Wildlife Action Plan Habitats**

Distribution of  
BAY-BREASTED WARBLER  
in New Hampshire

■ Current Range  
▨ Localized



**Distribution Map**

**Current Species and Habitat Condition in New Hampshire**

Significant declines in the southern portion of its range (see Justification), but increasing in eastern Canada. A new budworm outbreak in southeastern Quebec (Natural Resources Canada 2015) is expanding south, and likely to move into Maine and New Brunswick within 10 years (Rankin 2013). Bay-breasted Warblers are already anecdotally more common as migrants in southern New Hampshire, a pattern consistent with increasing populations associated with the Quebec budworm outbreak.

**Population Management Status**

Management is not currently in place for this species.

**Regulatory Protection (for explanations, see Appendix I)**

- Migratory Bird Treaty Act (1918)

**Quality of Habitat**

Unknown, but since spruce budworm has been largely absent from the state for decades, most habitat is probably or relatively low quality at present.

**Habitat Protection Status**

Highly variable

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### Habitat Management Status

Habitat management has not been implemented for this species

### Threats to this Species or Habitat in NH

*Threat rankings were calculated by groups of taxonomic or habitat experts using a multistep process (details in Chapter 4). Each threat was ranked for these factors: Spatial Extent, Severity, Immediacy, Certainty, and Reversibility (ability to address the threat). These combined scores produced one overall threat score. Only threats that received a “medium” or “high” score have accompanying text in this profile. Threats that have a low spatial extent, are unlikely to occur in the next ten years, or there is uncertainty in the data will be ranked lower due to these factors.*

### Habitat conversion from harvest practices that result in conversion of softwood to hardwood (Threat Rank: High)

Soil and other environmental conditions over extensive acreage in northern New Hampshire create the potential to support either spruce-fir or northern hardwood-conifer forest. Historical harvesting practices in some areas have resulted in conversion of former spruce-fir sites to northern hardwood-conifer forest, in turn reducing habitat for this species. See also the lowland spruce-fir forest habitat profile.

### Habitat conversion due to development (Threat Rank: Medium)

Ongoing residential and commercial development results in permanent loss of habitats for wildlife. This threat is ranked as “moderate” largely because it was ranked this way lowland spruce-fir habitat. In reality, many of the areas used by Bay-breasted Warblers are probably at relatively low risk due to protected status or remote locations. See also the lowland spruce-fir forest habitat profile.

### Habitat degradation from harvest practices that prevent much of the forest from reaching later successional stages (Threat Rank: Medium)

Extensive, heavy cutting in recent decades has substantially reduced the distribution of mature spruce-fir forest in New Hampshire. Mahaffey (2014) reports that softwoods are being harvested far in excess of growth in the Androscoggin Valley-Mahoosuc Region of northern NH, which is further evidence of the imbalance of softwood age classes on private ownerships in NH. Note also that budworm outbreaks generally reach higher densities in older forest, and thus older forest is likely to support more Bay-breasted Warblers in such situations. See also the lowland spruce-fir forest habitat profile.

### List of Lower Ranking Threats:

Habitat impacts and disturbance from control of insect pests (spruce budworm) that reduces prey

Habitat impacts and disturbance from acid deposition that can reduce prey

Disturbance from noise associated with recreational activity

Habitat impacts from road fragmentation

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Habitat conversion and degradation from agriculture on winter grounds

Habitat degradation from habitat shifting and changes in species composition

Habitat conversion due to development on winter grounds

### **Actions to benefit this Species or Habitat in NH**

See actions for Lowland Spruce Fir Forest.

### **References, Data Sources and Authors**

#### **Data Sources**

Trend data from Breeding Bird Survey (Sauer et al. 2014, above). NH distribution data from NHBR/NH eBird

#### **Data Quality**

Because of low densities, especially in recent years, New Hampshire data on this species during the breeding season are extremely limited.

#### **2015 Authors:**

Pamela Hunt, NHA

#### **2005 Authors:**

#### **Literature**

Boulanger, Y., and D. Arseneault. 2004. Spruce budworm outbreaks in eastern Quebec over the last 450 years. *Canadian Journal of Forest Research* 34: 1035–1043.

Cadman et al. 2007. *Atlas of the Breeding Birds of Ontario, 2001-2005*. Bird Studies Canada, Environment Canada, Ontario Field Naturalists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

Foss, C.R. 1994. *Atlas of Breeding Birds in New Hampshire*. New Hampshire Audubon, Concord, NH.

McGowan, K.J., and K. Corwin (eds.). 2008. *The Second Atlas of Breeding Birds in New York State*. Cornell University Press, Ithaca, NY.

Natural Resources Canada. 2015. Spruce budworm information page:  
<https://www.nrcan.gc.ca/forests/insects-diseases/13383> (accessed 31-March-2015)

Rankin, J. 2013. Spruce budworm: Coming again soon? *Forests for Maine's Future* (website):  
<http://www.forestsformainesfuture.org/fresh-from-the-woods-journal/spruce-budworm-coming-again-soon.html>

Renfrew, R.B. (ed.). 2013. *The Second Atlas of Breeding Birds in Vermont*. University Press of New England, Hanover, NH.

Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, Jr., and W.A. Link. 2014. *The North American Breeding Bird Survey, Results and Analysis 1966 - 2013*. Version 01.30.2015 USGS Patuxent Wildlife Research Center, Laurel, MD.

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Venier, L., Steve H., and J.M. Williams. 2011. Bay-breasted Warbler (*Setophaga castanea*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online:

<http://bna.birds.cornell.edu.bnaproxy.birds.cornell.edu/bna/species/206doi:10.2173/bna.206>

Venier, L.A., J.L.Pearce, D.R. Fillman, D.K. McNicol, and D.A. Welsh. 2009. Effects of spruce budworm (*Chloristoneura fumiferana* (Clem.)) outbreaks on boreal mixed-wood bird communities.