

## Species Status Assessment

**Class:** Birds  
**Family:** Corvidae  
**Scientific Name:** *Perisoreus canadensis*  
**Common Name:** Gray jay

### Species synopsis:

The gray jay is a species found across North America in boreal and sub-alpine coniferous habitat, where it is considered emblematic of such habitat. In New York State, it is restricted to mature spruce forest in the Adirondack Mountains. The gray jay is considered G5 (globally secure), but it is classified as S3 (vulnerable) in New York, S1 (critically endangered) in Vermont (NatureServe 2013), and an S3 in both Nova Scotia and Prince Edward Island. Blancher (2003) suggested that the species is declining across its continental range. Peripheral populations in Algonquin Park, Ontario are experiencing significant population declines, which have been attributed to spoiling of food supplies due to a changing climate (Waite and Strickland 2006). In New York, the species was confirmed to breed at one more atlas block in the 1980-1985 Breeding Bird Atlas than in the 2000-2005 Atlas. Moreover, there was a similar number of blocks in which gray jays were observed, but not confirmed to breed. However, atlas data results should be considered with caution as survey effort is not standardized. Results of Glennon (2010) suggest that the gray jay's population was stable from the 2007-2009 surveys; however, more recent survey data show a downward population trend (Glennon, unpubl. data). Given that NY is at the southern edge of the boreal habitat and that climate change may negatively affect both food caches and boreal habitat alike, the gray jay is likely to experience further range-wide declines in NY in the future.

### Status

#### a. Current and Legal Protected Status

- i. **Federal**      None      **Candidate?** No
- ii. **New York**    None

#### b. Natural Heritage Program Rank

- i. **Global**      G5
- ii. **New York**    S3      **Tracked by NYNHP?** No

**Other Rank:**

PIF: Stewardship species for the Northern Forest Biome, requiring Long-term Planning & Monitoring Responsibility

The gray jay is listed as a Species of Greatest Conservation Need in Michigan, Minnesota, and Vermont.

**Status Discussion:**

The gray jay is common throughout most of its continental range. It is regarded as a G5 or globally secure species throughout the main portion of its range in northern Canada (NatureServe 2013). Populations are more restricted in New York, Nova Scotia and Prince Edward Island, where it is categorized as an S3 species. The IUCN lists the gray jay as a species of least concern; however, Waite and Strickland (2006) suggest that a warmer autumn would lead to decreased populations from (1) spoiling food caches (2) earlier breeding, which in turn leads to longer periods of low food supply during severe late winters, a phenomenon already manifesting in neighboring Algonquin Provincial Park populations. The gray jay is a resident of New York boreal forests, and populations appear to be declining (Glennon 2010). The gray jay was found to occupy 71% of lowland boreal sites surveyed in 2007, yet it was found to occupy only 67% of sites surveyed just four years later (M. Glennon, unpubl. data). It may be necessary to conduct management action sooner than later, before further declines cause management to be less efficient and more costly.

**I. Abundance and Distribution Trends**

**a. North America**

**i. Abundance**

  X   declining    \_\_\_ increasing    \_\_\_ stable    \_\_\_ unknown

**ii. Distribution:**

  X   declining    \_\_\_ increasing    \_\_\_ stable    \_\_\_ unknown

**Time frame considered:**           Moderate Decline from 1985-2010

**b. Regional**

**i. Abundance**

  X   declining    increasing    stable    unknown

**ii. Distribution:**

  X   declining    increasing    stable    unknown

Regional Unit Considered:   Northeast  

Time Frame Considered:   ?  

**c. Adjacent States and Provinces**

CONNECTICUT                      Not Present   X        No data   

MASSACHUSETTS                      Not Present   X        No data   

NEW JERSEY                      Not Present   X        No data   

ONTARIO                      Not Present                 No data   

**i. Abundance**

  X   declining    increasing    stable    unknown

**ii. Distribution:**

  X   declining    increasing    stable    unknown

Time frame considered:   

Listing Status:



## Monitoring in New York.

In 2007, a study by the Wildlife Conservation Society (WCS) was begun to monitor boreal bird species (Glennon 2010). In 2013, NYSDEC partnered with WCS and began a continuation of these surveys at Glennon's (2010) sites and will continue monitoring of these sites and some additional sites through 2017 to quantify boreal bird trends.

## Trends Discussion:

Range-wide gray jay Christmas Bird Count results suggest that the species is declining across its continental range (Blancher 2003). Peripheral populations in Algonquin Park, Ontario are also experiencing significant population declines, presumably due to warming climate (Waite and Strickland 2006).

In the New York Breeding Bird Atlases, the gray jay was confirmed to breed in a similar number of atlas blocks during the 1980-1985 and the 2000-2005 surveys. However, recent and more extensive target species surveys have indicated that the gray jay has experienced a decline from 71 ( $\pm 12$ )% to 67 ( $\pm 12$ )% boreal forest occupancy, which represents a 4% decline in occupied sites in the Adirondack Park between 2007 and 2011 (Table 1) (M. Glennon, unpubl. data). Figure 1 shows the decline of the gray jay relative to other boreal bird species from the period of 2007-2011. Surveys begun in 2013 by NYSDEC and WCS did not collect enough observations of gray jays to estimate occupancy by methods comparable to Glennon (2010). However, when results of playback recordings and an extra 3 minute listening period are incorporated into the data set, a rough estimate of occupancy was 42 ( $\pm 25$ )% (A. Ross, unpubl. data). Caution should be advised when comparing the 2013 occupancy estimate to those of previous studies because including playbacks and the extra listening period may alter occupancy estimates, making a direct comparison impossible. Moreover, the data from 2013 are preliminary and do not include covariates (habitat quality measures and other survey conditions) in the analysis. Also of note is that the 2013 occupancy estimate has high variability, likely due to few replicate observations of the species at each site.

The bottom line, however, is despite some quantitative differences depending on particulars of the occupancy analyses, all models indicate the same qualitative conclusions: grey jay occupancy has declined in the last eight years within its core New York habitat.

Table 1. Estimates of gray jay occupancy ( $\psi$ ), colonization ( $\gamma$ ), and extinction ( $\epsilon$ ) in the Adirondack Park, New York from surveys conducted from 2007 to 2011 (M. Glennon, unpubl. data).

<i>Parameter</i>	<i>GRAJ</i>
$\psi_{2007}$	0.71 $\pm$ 0.12
$\psi_{2008}$	0.68 $\pm$ 0.12
$\psi_{2009}$	0.67 $\pm$ 0.12
$\psi_{2010}$	0.67 $\pm$ 0.12
$\psi_{2011}$	0.67 $\pm$ 0.12
$\gamma$	0.37 $\pm$ 0.29
$\epsilon$	0.19 $\pm$ 0.10

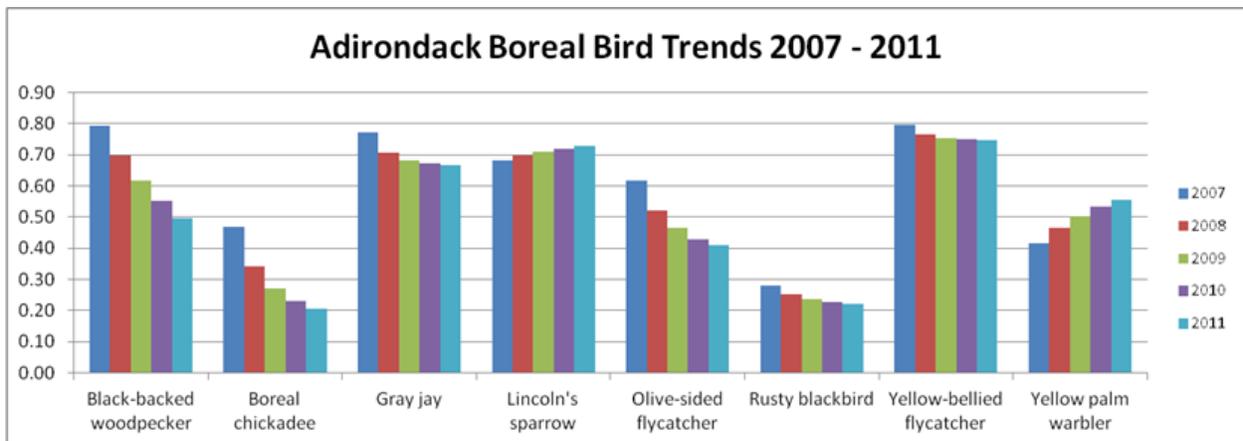


Figure 1. Occupancy of several boreal bird species during 2007-2011 surveys in the Adirondack Park, New York. Species above that were designated as SGCN in 2005-2015 were the black-backed woodpecker, olive-sided flycatcher, and rusty blackbird (from Glennon 2010).

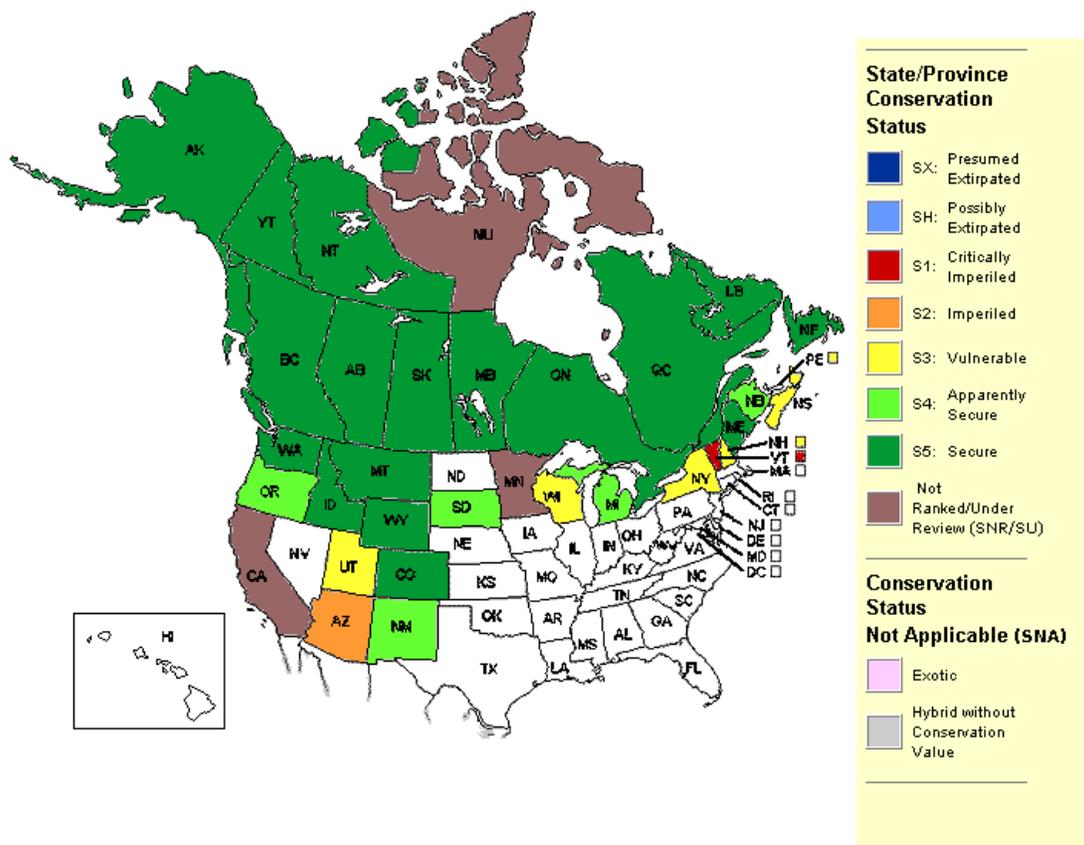


Figure 2. North American regional distribution of the gray jay (NatureServe 2013).

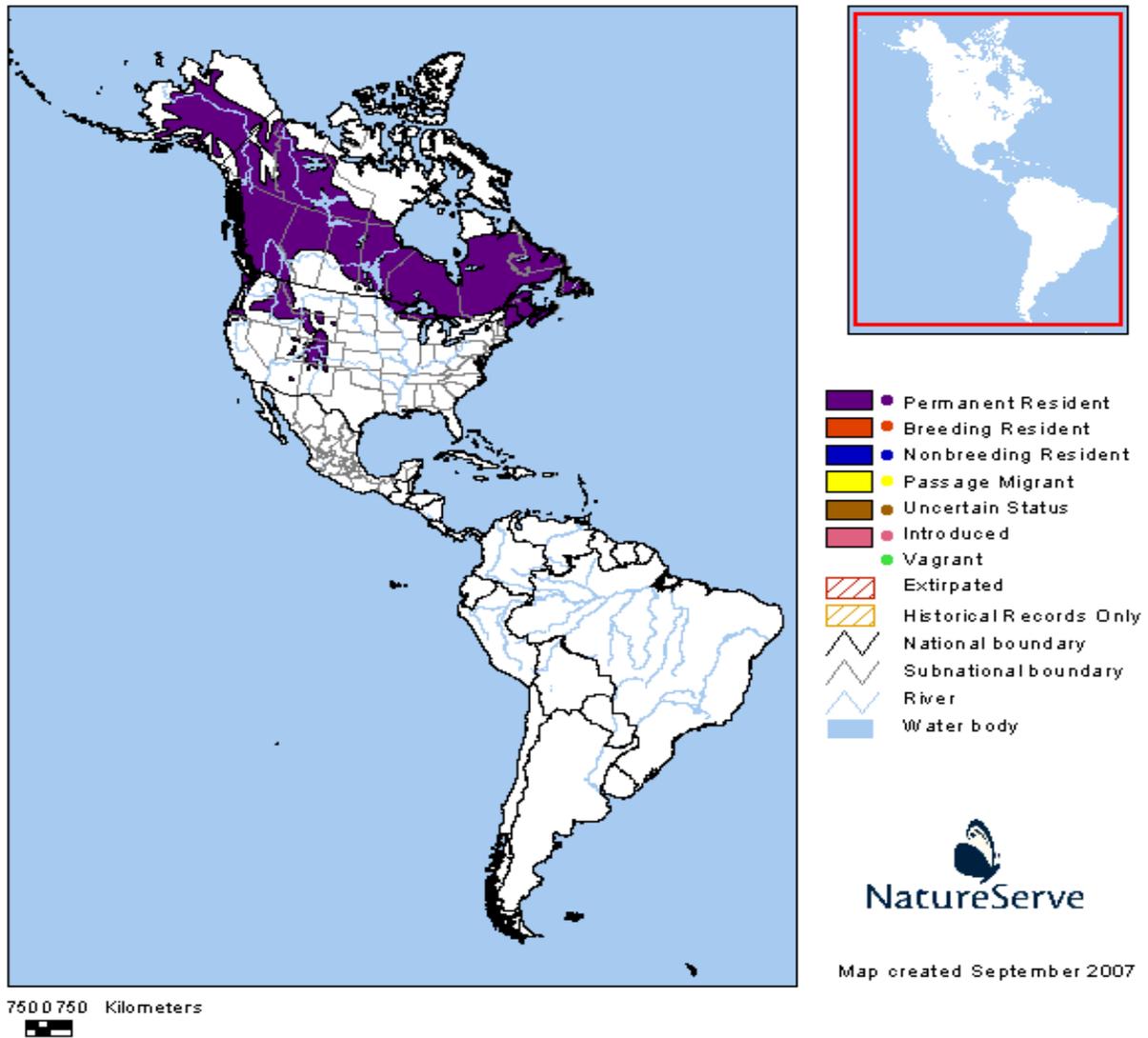


Figure 3. North American regional distribution of the gray jay depicting a disjunct population in New York (NatureServe 2013).

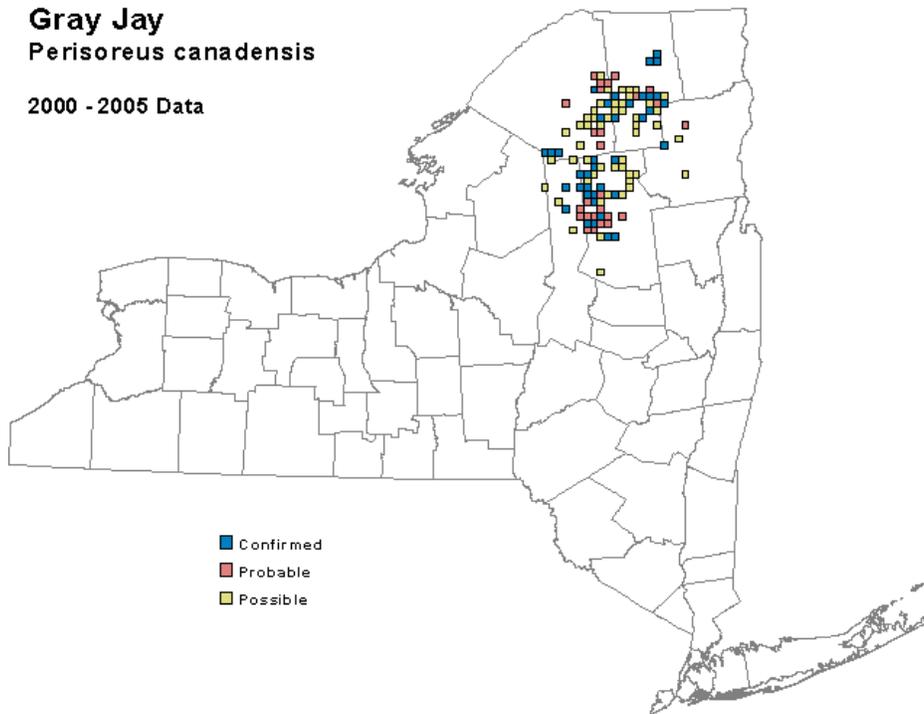


Figure 4. Gray jay distribution in 2000-2005 from the New York State Breeding Bird Atlas (McGowan and Corwin 2008).

**II. New York Rarity, if known:**

Historic	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
prior to 1970	_____	_____	_____
prior to 1980	_____	_____	_____
prior to 1990	_____	_____	_____

**Details of historic occurrence:**

Current	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
	_____	_____	<u>5</u>

**Details of current occurrence:**

Recent extensive target species surveys indicated that the gray jay has experienced a decline from 71 ( $\pm 12$ )% to 67 ( $\pm 12$ )% of boreal forest occupancy in the Adirondack Park from 2007-2001 (Table 1) (M. Glennon, unpubl. data).

**New York's Contribution to Species North American Range:**

**Distribution** (percent of NY where species occurs)

- 0-5%
- 6-10%
- 11-25%
- 26-50%
- >50%

**Abundance** (within NY distribution)

- abundant
- common
- fairly common
- uncommon
- rare

**NY's Contribution to North American range**

- 0-5%
- 6-10%
- 11-25%
- 26-50%
- >50%

**Classification of New York Range**

- Core
- Peripheral
- Disjunct

**Distance to core population:**

~260mi

**Rarity Discussion:**

The gray jay was observed to occupy 67 ( $\pm 12$ )% of boreal forest habitat surveyed in 2011 (M. Glennon, unpubl. data). Results of more limited surveys in 2013 that incorporate playback



## V. New York Species Demographics and Life History

- Breeder in New York
  - Summer Resident
  - Winter Resident
  - Anadromous
- Non-breeder in New York
  - Summer Resident
  - Winter Resident
  - Catadromous
- Migratory only
- Unknown

### Species Demographics and Life History Discussion:

The gray jay is a resident of the boreal forest. The gray jay eats a variety of foods such as nuts, fruits, nestling birds, carrion and small mammals. The species collects large quantities of food items during the summer for use during periods of scarce food. Gray jays form their food into a bolus with their sticky saliva and hide the bolus by attaching it within a bark crevice or underneath other items such as clumps of needles or lichens. The species has a monogamous breeding system and begins nesting in late winter, taking advantage of its food caches during the cold winter months when little other food is available. It is an open-cup nester that prefers spruce, especially on south-facing edges.

Age of first breeding can be as young as one year, but is usually older. Mean number of fledglings per year is around 2. First year survivorship is 0.5 or as low as 0.15 depending on when dispersal occurs. Annual adult survivorship (at Algonquin Park) is about 0.82 for females, and 0.88 for females away from roads; males are slightly higher. The maximum lifespan is over 14 years.

Adults are permanent residents on territory. Non-breeders tend to remain in the neighborhood of the natal territory. Dispersal distances of 10 km are known, but long-distance dispersal or wandering is rare. Spring population densities in southeastern Canada are 3 per km or less than 2 per km.

Natural sources of mortality include predation (accipiters, owls, mustelids, lynx/bobcat) and starvation, especially in winter. Winter warm spells can spoil food caches, resulting starvation; this is a putative cause of population declines in Algonquin Park. Significant human caused sources of mortality include vehicle collision at roads, and bycatch from fur-trapping (jays raid trap bait).

**VI. Threats:**

Climate-change driven population declines may be ubiquitous in the southern border of the species range, as is currently seen at Algonquin Park, Ontario.

**Are there regulatory mechanisms that protect the species or its habitat in New York?**

**No**       **Unknown**

**Yes**

Migratory Bird Treaty Act.  
Many occupied sites within the Adirondack Park state lands.

**Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:**

The Comprehensive Wildlife Conservation Strategy (CWCS; NYSDEC 2005) states the need for a management plan for high-altitude conifer forest birds that incorporates the results of the 2004 State Wildlife Grant study on boreal forest birds (Glennon 2010). Conservation actions following IUCN taxonomy are categorized in the table below.

<b>Conservation Actions</b>	
<b>Action Category</b>	<b>Action</b>
Land/Water Management	Site/Area Management
External Capacity Building	Alliance & Partnership Development

The CWCS includes recommendations for the following actions for boreal forest birds, which includes Cape May Warbler (NYSDEC 2005).

**Habitat monitoring:**

Conduct field studies to determine causes for declines of species known to be declining.

**Habitat research:**

Complete an inventory and analysis of the distribution and abundance of boreal species.

**Population monitoring:**

Develop a long term monitoring program to determine population trends of boreal forest birds.

**State land unit management plan:**

Review Department wildfire management for Forest Preserve lands.

## VII. References

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