

Species Status Assessment

Common Name: Wood thrush

Date Updated: January 9, 2024

Scientific Name: *Hylocichla mustelina*

Updated By: Beth Cooper

Class: Aves

Family: Turdidae

Species Synopsis (*a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York*):

The breeding distribution of the wood thrush includes the eastern half of the United States and the southern portions of the adjacent Canadian provinces. New York is well within this distribution. Wintering occurs in Central America. Wood thrush is a bird of mesic forests and woodlands, both mixed and deciduous. Long term trends show severe declines for wood thrush across its range and in the Northeast. Breeding Bird Survey data for the United States, the Eastern region, and New York all show significant short-term and long-term declines. Breeding Bird Atlas data for New York show a 7% decline in occupancy from 1980-85 to 2000-05. Significant threats include habitat fragmentation, mercury contamination, acid deposition, and loss of wintering habitat.

I. Status

a. Current legal protected Status

i. **Federal:** Not Listed **Candidate:** No

ii. **New York:** Not Listed

b. Natural Heritage Program

i. **Global:** G4

ii. **New York:** S5B **Tracked by NYNHP?:** No

Other Ranks:

-NYS 2025 SGCN Status: Species of Greatest Conservation Need

-IUCN Red List: LC (Least Concern)

-COSEWIC/SARA: Threatened

-USFWS: Species of Conservation Concern (Both Continental and Bird Conservation Regions 12, 13, 14, 22, 23, 24, 25, 26, 27, 28, 29, 30)

-Partners in Flight: "D" Yellow Watch List (Species with population declines and moderate to high threats); Conservation Concern Score 14 (of 20)

-Road to Recovery (R2R) – Yellow Alert Tipping Point Species

-Northeast Regional SGCN: RSGCN

Status Discussion:

Wood thrush is a widespread breeder in New York, present across the state except for higher elevations of the Adirondack and Catskill mountains. It is a fairly common spring migrant. Wood thrush is ranked Secure or Apparently Secure in all northeastern states and provinces except New Brunswick, Quebec, New Jersey, and West Virginia; where it is ranked as Vulnerable (QC, NJ, WV) or Critically Imperiled (NB).

As of 2009, the wood thrush is listed as a species of least concern by the International Union for Conservation of Nature. However, trends from BBS data, possible fragmentation effects on

reproduction in the temperate zone and on survival in tropical habitats, and the continuing demise of forests in both regions call for caution. Conspicuous song, widespread occurrence, and choice of study sites in good habitat (potential refugia) can belie reproductive success and security of this species. Subjective rankings of Neotropical migrants to identify species of management concern in different regions usually place wood thrush in top 10% among species of mature deciduous forests, second only to cerulean warbler (*Dendroica caerulea*). Wood thrush is considered vulnerable to more than slight alteration of broad-leaved tropical forests (Evans et al. 2011).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Declining	Declining	1966-2022		-
Northeastern US	Yes	Declining	Declining	1966-2022		Yes
New York	Yes	Declining	Declining	1966-2022	Not listed	Yes
Connecticut	Yes	Declining	Declining	1966-2022	Not listed	Yes
Massachusetts	Yes	Declining	Declining	1966-2022	Not listed	Yes
New Jersey	Yes	Declining	Declining	1966-2022	Special Concern	Yes
Pennsylvania	Yes	Declining	Declining	1966-2022	Not listed	Yes
Vermont	Yes	Declining	Declining	1966-2022	Not listed	Yes
Ontario	Yes	Declining	Declining	1966-2022	Special Concern	-
Quebec	Yes	Declining	Declining	1966-2022	Not listed	-

Column options

Present?: Yes; No; Unknown; No data; (blank) or Choose an Item

Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item

SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York (*specify any monitoring activities or regular surveys that are conducted in New York*):

The Wildlife Conservation Society has conducted surveys for boreal breeding birds at as many as 80 sites across the Adirondack Park since 2003. Though not a target species, wood thrush is documented during these surveys.

Trends Discussion (*insert map of North American/regional distribution and status*):

Wood thrush populations have declined significantly across its range. Breeding Bird Survey data for the United States show a significant decline of -1.1% for the period 1966-2022. The BBS trend in New York shows a significant decline of -2.4% per year for the same period and a -0.9% decline in the shorter period from 2011 to 2021 (Sauer et al. 2020). In Bird Conservation Region 14, which includes the

Adirondack Mountains, BBS data show a significant decline of -3.8% per year for 1966-2022 and -3.6% per year for 2011-2021.

The second Breeding Bird Atlas in New York documented a 7% decline in occupancy between 1980-85 and 2000-05. The decline was most notable in the Adirondack Mountains. Hames and Lowe (2008) noted that because BBA survey methods document occupancy in a survey block with as little as one individual, it does not capture declines in the abundance of a widespread and common species such as the wood thrush. They suggest that the third Atlas (2020-25) will document striking losses statewide, as seen in the Adirondack Mountains.

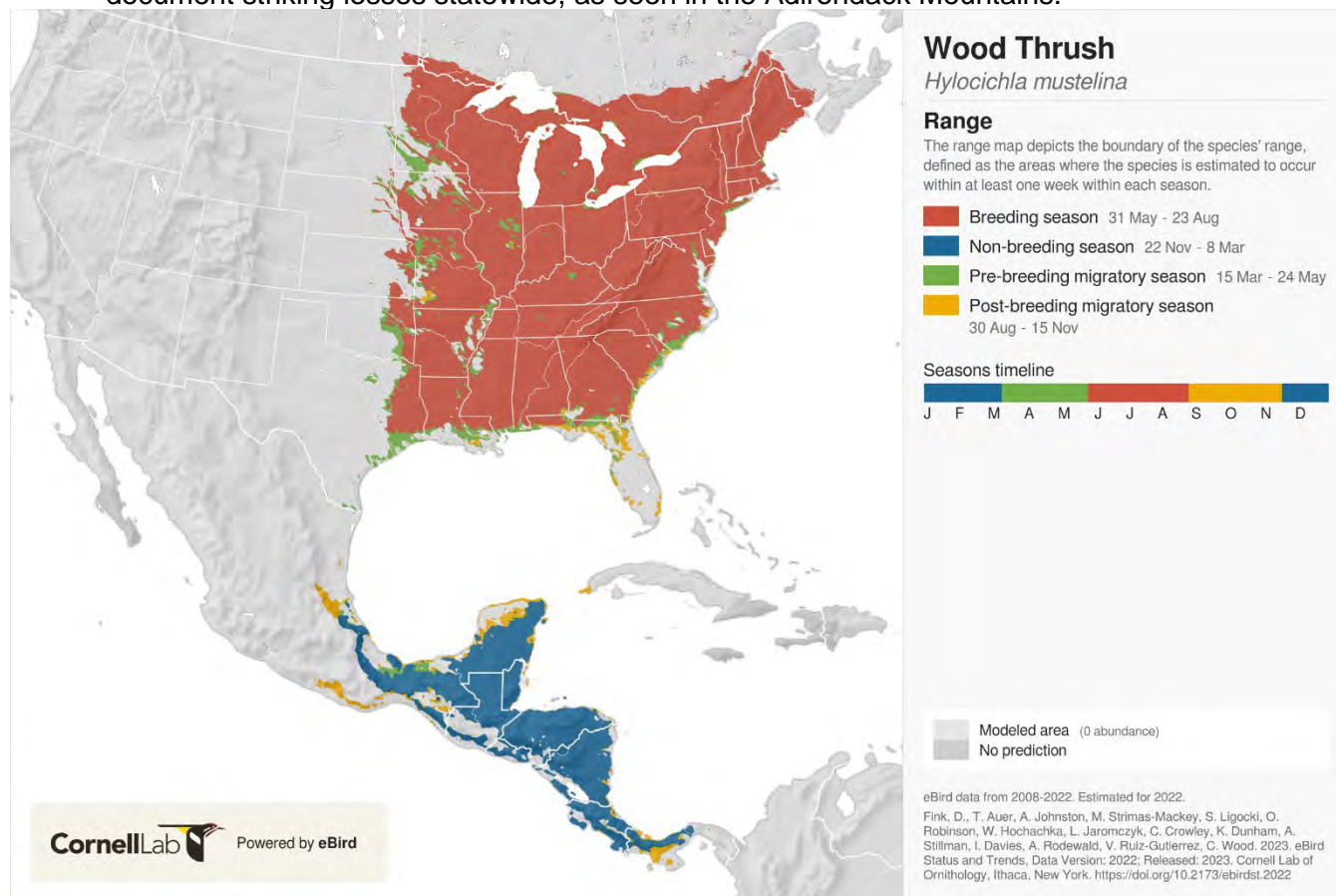


Figure 1. Wood thrush distribution in North America (eBird 2022)

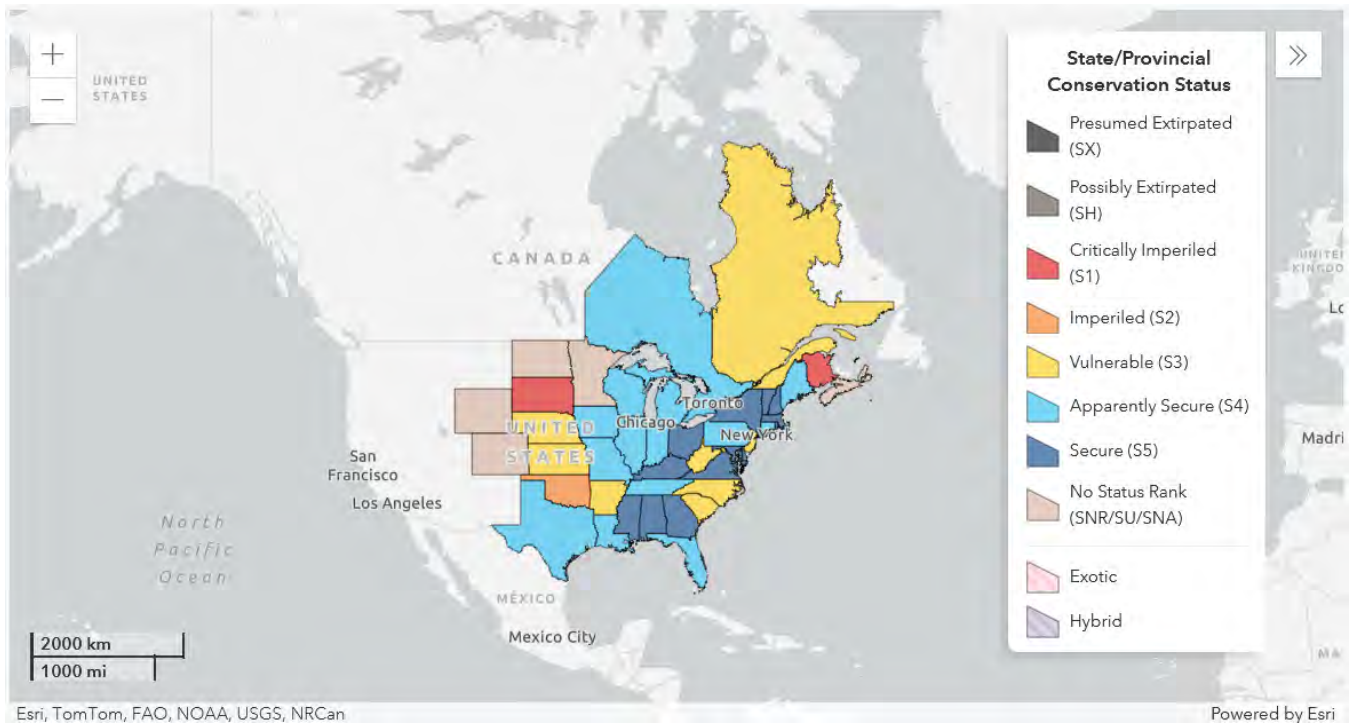


Figure 2. Conservation status of wood thrush in North America (NatureServe 2023).

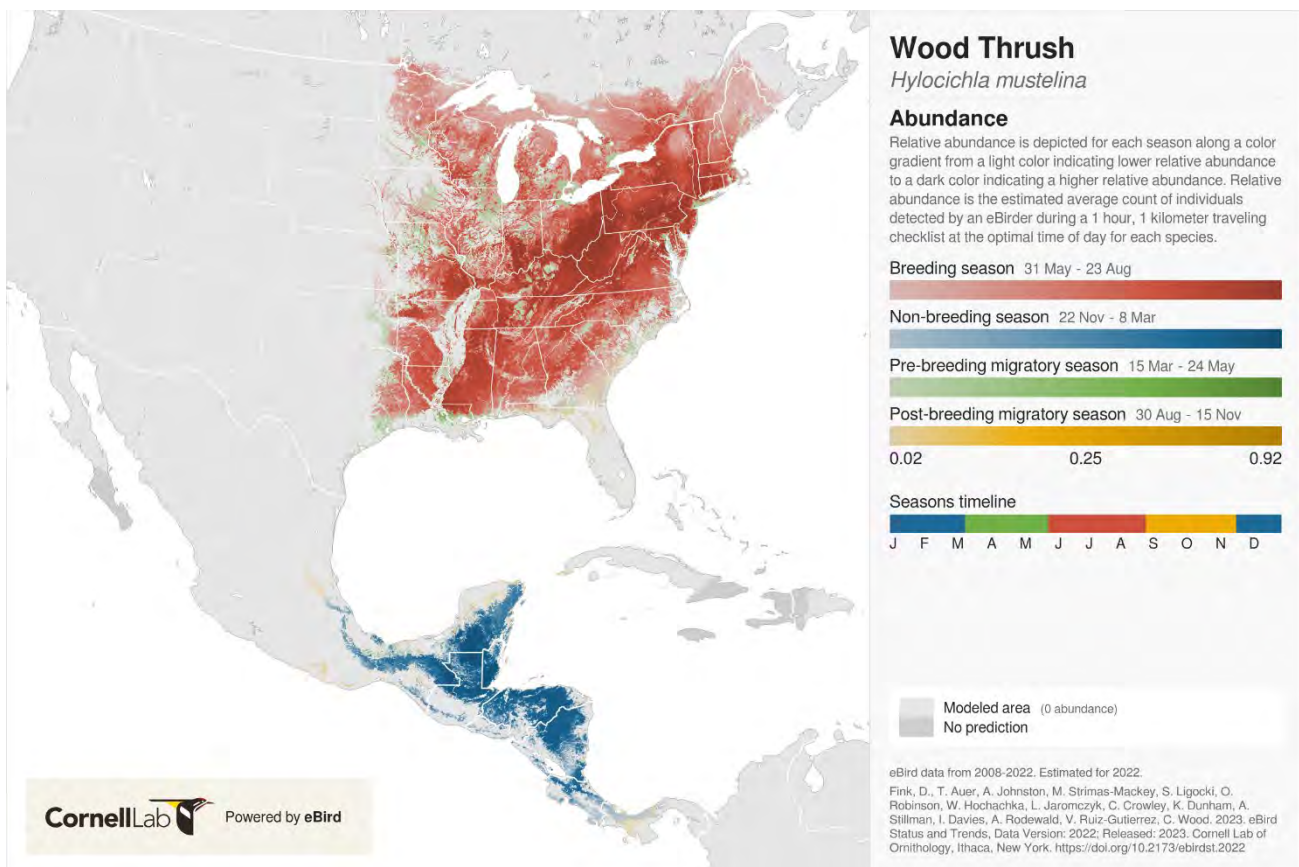


Figure 3. Wood thrush abundance in North America (eBird 2022).

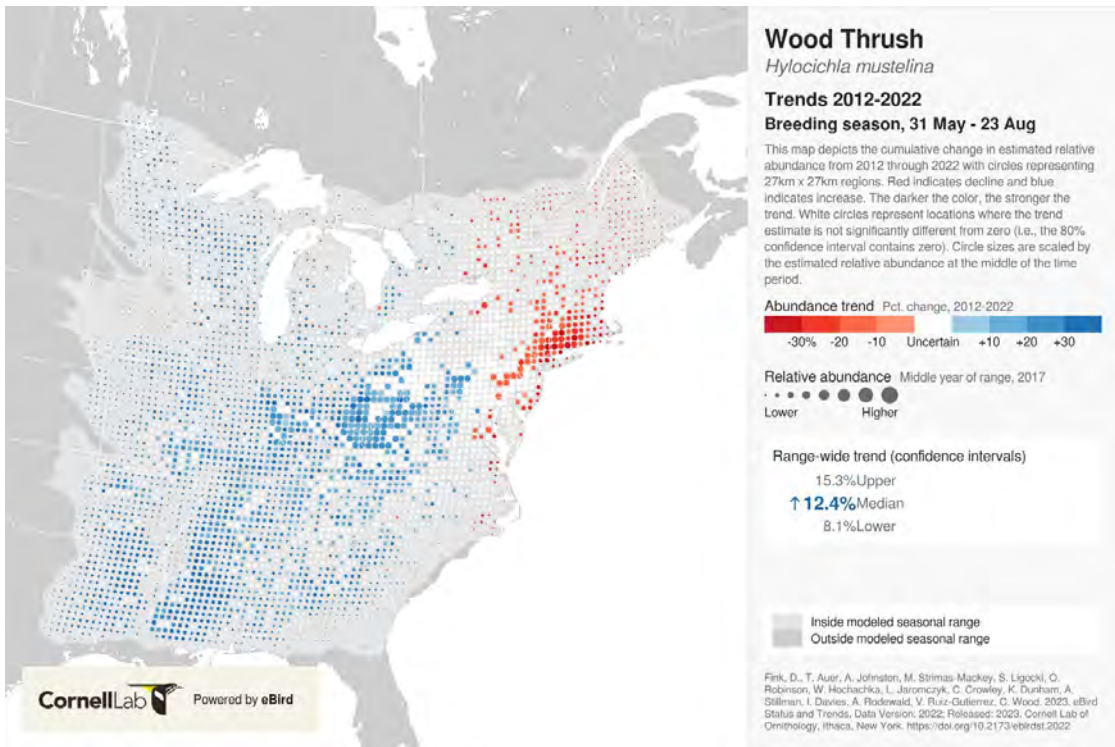


Figure 4. Wood thrush trends in North America (eBird 2022).

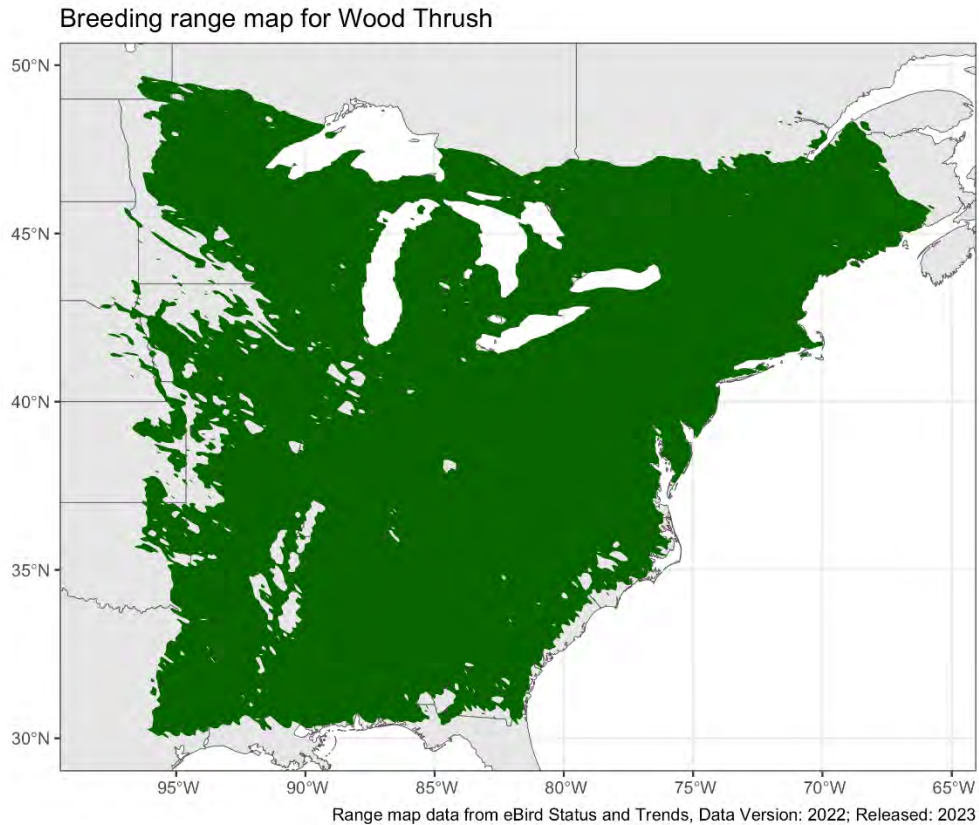


Figure 5. Breeding range of wood thrush (eBird).

Year-round range map for Wood Thrush

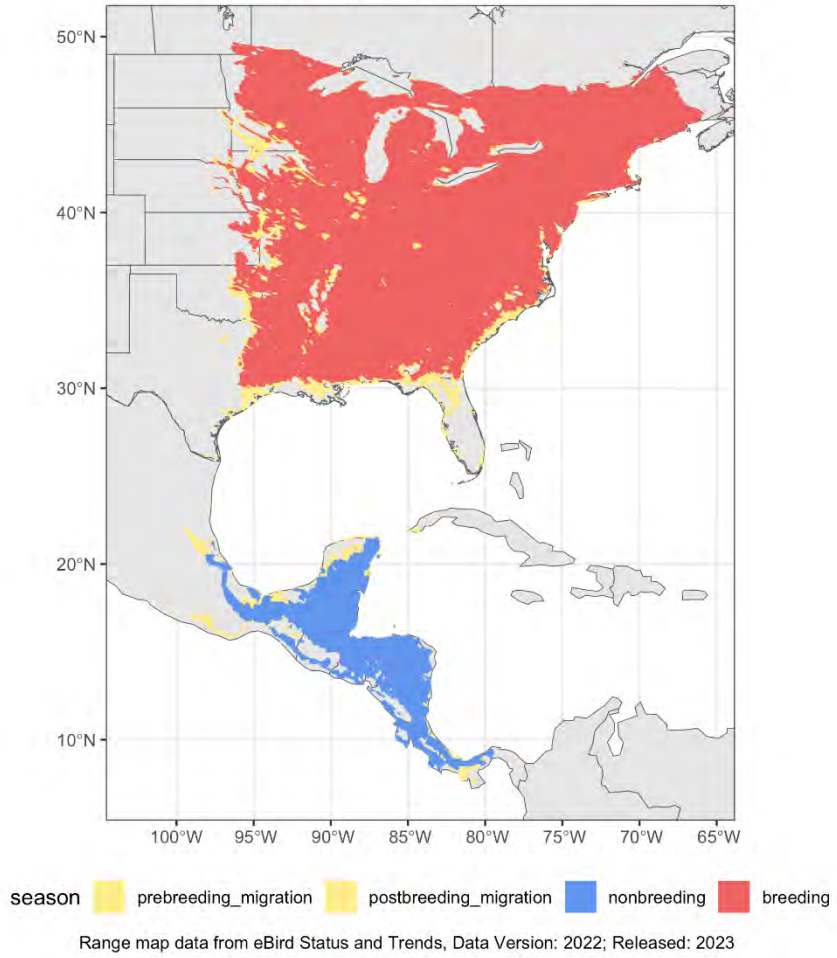


Figure 6. Year-round range of wood thrush (eBird).

Wood Thrush state-level breeding trends 2012-2022

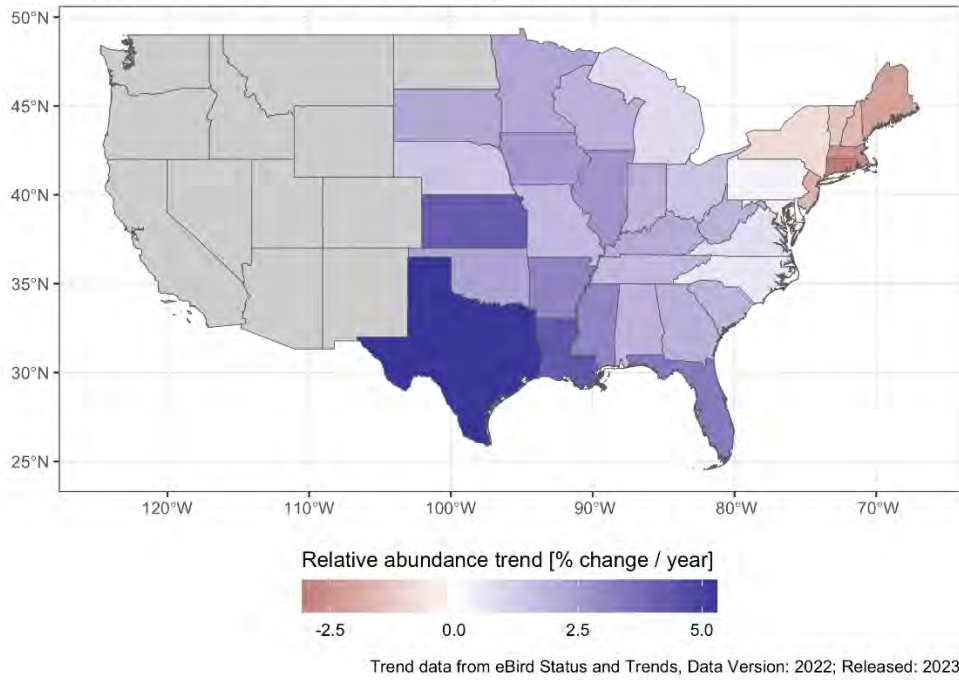


Figure 7. Breeding trends, by state, of wood thrush (eBird).

III. New York Rarity (*provide map, numbers, and percent of state occupied*)

Breeding range map in NY for Wood Thrush

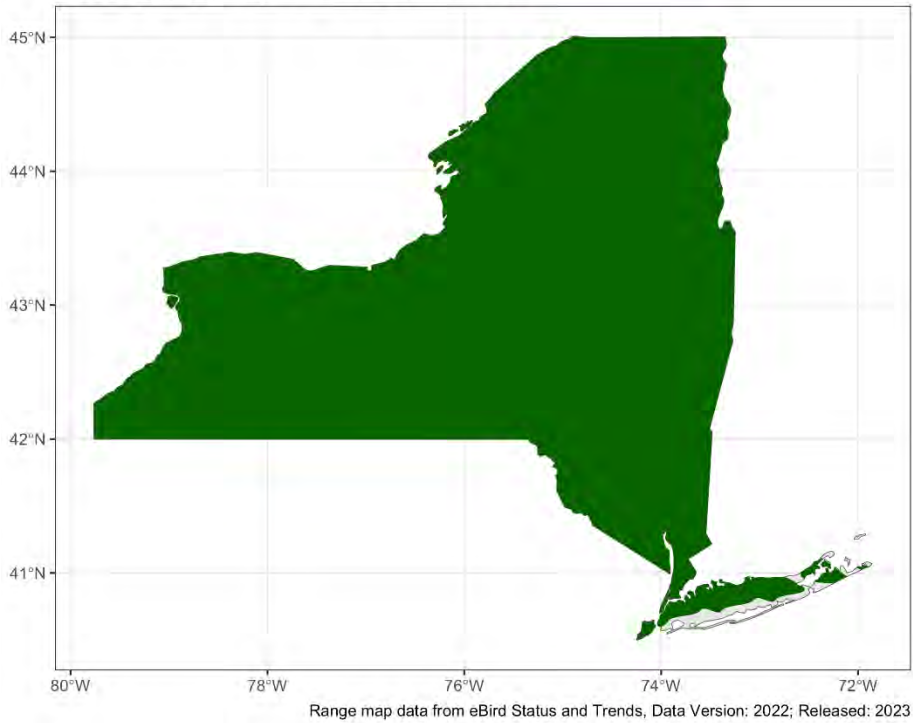


Figure 8. New York breeding range of wood thrush (eBird).

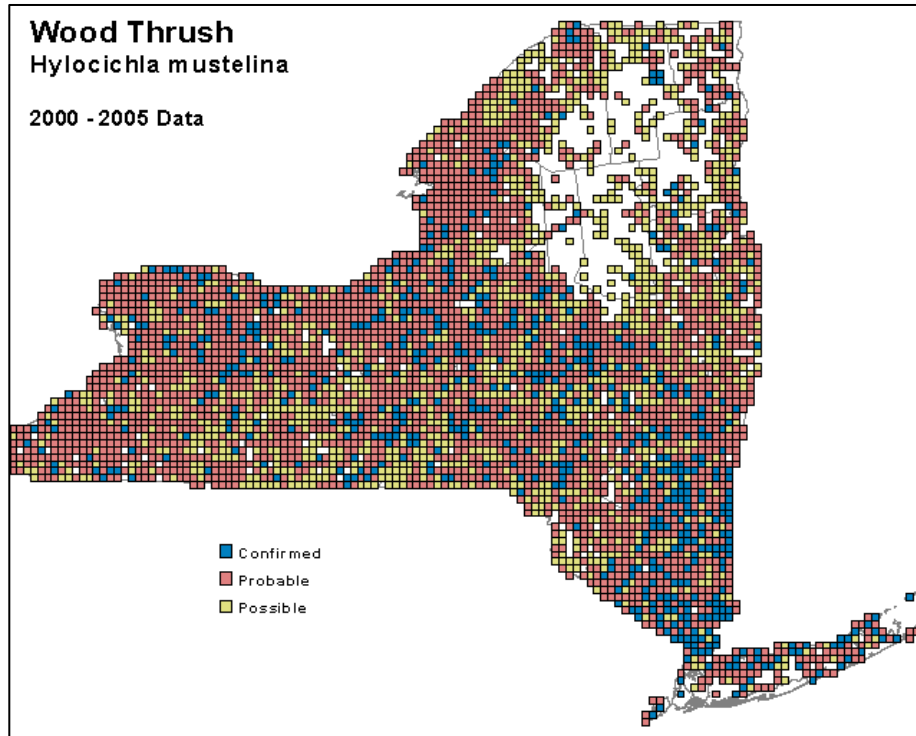


Figure 9. Wood thrush occurrence in New York State during the second Breeding Bird Atlas (McGowan and Corwin 2008).

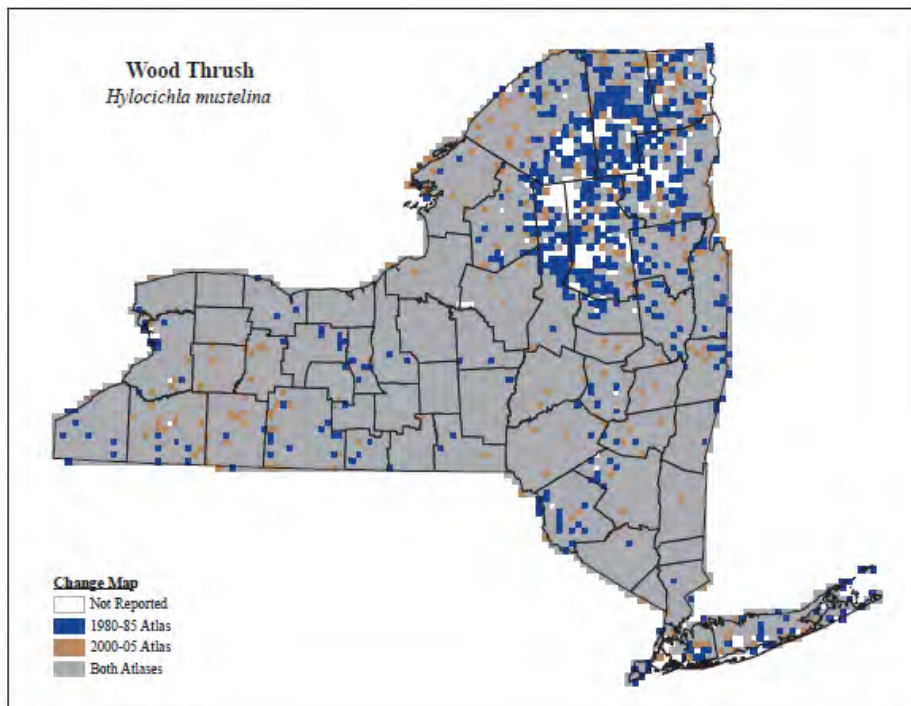


Figure 10. Change in Wood thrush occurrence in New York State between the first Breeding Bird Atlas and the second Breeding Bird Atlas (McGowan and Corwin 2008).

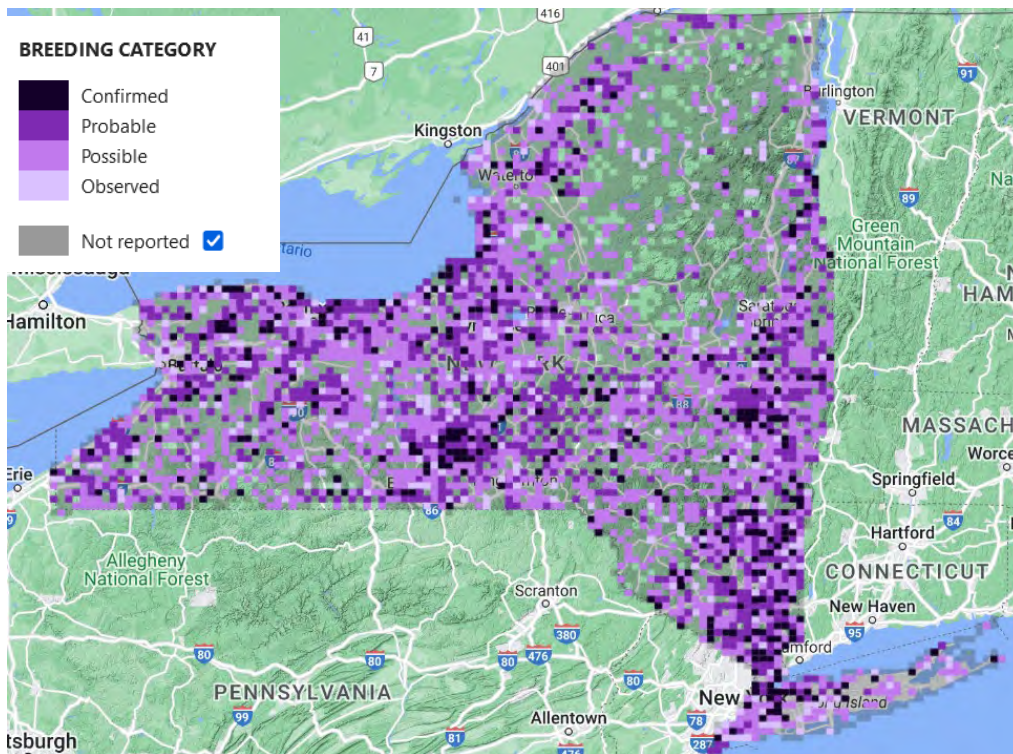


Figure 11. Records of wood thrush in New York (NYS BBA III Map, 2023)

Details of historic and current occurrence:

The first Breeding Bird Atlas (BBA) (1980-85) documented occupancy in 4,764 blocks, 89% of the survey blocks statewide (Andrle and Carroll 1988). The second BBA (2000-05) documented occupancy in 4,428 blocks, 83% of the survey blocks statewide, a decline of 7% since the first atlas (McGowan and Corwin 2008).

The third BBA (2020-25) is currently underway and utilizes a different number and layout of survey blocks across New York, making direct comparison with the first two Atlases difficult. There were 5,333 blocks in the first and second BBAs, and there are 5,710 blocks in the current BBA, of which 1,815 are considered priority blocks. To date, wood thrush has been documented in 1454 priority blocks, 80.1% of all priority blocks statewide during the third BBA (NY BBA III Overview, 2024).

New York’s Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Core	

Column options

Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item

Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type (from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):

1. Oak Forest
2. Mixed Northern Hardwoods
3. Plantation & Disturbed Land Pioneer Forests

4. Oak-Pine Forest
5. Coastal Red Maple-Black Gum Swamp
6. Residential Rural

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/Community Trend	Time frame of Decline/Increase
No	No	Stable	

Column options

Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item

Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

Wood thrush preferred habitat is mature, moist hardwood or mixed conifer/hardwood forest with a closed canopy and a sub-canopy shrub layer (DeGraaf and Yamasaki 2001). Although wood thrushes will nest in small woods and residential areas, it is area-sensitive, and habitat fragmentation may cause lower reproductive success due to the effects of nest parasitism, predation on eggs and nestlings, and nest abandonment caused by human disturbance (Roth et al. 1996).

Wood thrush readily nests in small woods and in residential areas, but is area sensitive; likely to occur in only 75% of patches of 100 ha in Maryland (Robbins et al. 1989).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/Catadromous?
Yes	-	No	Yes	-	-

Species Demographics and Life History Discussion (include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

Wood thrush breeds in its first year as an adult and annually after that. In terms of productivity, the general pattern is less success in smaller forests, in less forested landscapes, and in Midwest than in East, but there are many exceptions that could reflect different local conditions or research methods (Evans et al. 2011).

The oldest age from banding records is 8 years, 11 months; sex unknown (Klimkiewicz et al. 1983). Data from a Delaware study for 1973–1995 indicate females live about one year longer than males. Strong site fidelity by older breeders (on site for 3–5 years) makes their return rate a reasonable estimate of annual survival. At a Delaware study site in 1980–1993, 64% of 39 males present for third time (≥ 3 -yr-olds) returned the next year; of 4-year residents, 71% of 28 returned. For females, 64% of 4-year birds ($n = 14$) and 75% of 5-year birds ($n = 12$) returned. Return rates decline after these ages. By far, the greatest threat is to eggs and young, and varies geographically. Of 378 nests in Delaware that did not fledge young, 71% were lost to predation. Brood parasitism by brown-headed cowbirds may reduce productivity in nests that escape predation.

In a Delaware study, high predation rates on nests coincided with lower return rates of breeding adults, especially younger females, and no concomitant increase in immigration or return of locally produced

young; these events accompanied a 4%/yr decline in abundance. When predation declined, return rate and abundance increased (Roth and Johnson 1993). There is no data on whether such dynamics occur on a regional scale. Regional abundance may ultimately be regulated by availability of habitats that produce surplus young and by dynamics of dispersal to under-producing sites; latter is largely unknown (Donovan et al. 1995, Robinson et al. 1995, Brawn and Robinson 1996). Fledgling survivorship was related to annual rodent abundance in southeastern New York (Schmidt et al. 2008).

VI. Threats (from NY 2015 SWAP or newly described):

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	(habitat fragmentation)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
1. Residential and Commercial	1.1 Housing & Urban Areas	(building, stack, and tower strikes)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
3. Energy Production & Mining	3.1 Oil & Gas Drilling	(fracking)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
4. Transportation & Service Corridors	4.2 Utility & Service Lines	(habitat fragmentation)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.1 Terrestrial animals (domestic cats)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	8.2.3 Localized increase in invertebrate grazing	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	(cowbird parasitism)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.2 Industrial & Military Effluents	9.2.5 Mercury	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.1 Habitat Shifting & Alteration	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.5 Storms & Severe Weather	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to wood thrush.

Hames et al. (2002, 2006) found the probability of breeding by wood thrush across its geographic range decreases as acid rain deposition increases, with breeding probability decreasing further when acid rain co-occurs with habitat fragmentation. Acid rain decreases soil pH (resulting in decreased calcium content in the soil) and may influence the abundance of calcium-rich invertebrate prey available for wood thrush. Deer overbrowse that reduces the understory shrub layer can make the habitat less suitable for wood thrush (Evans et al. 2011).

Cowbird parasitism levels are likely to be exacerbated by habitat fragmentation (Dowell et al. 2000, Thompson et al. 2000, Lloyd et al. 2005). Parasitism may play a significant role in reducing nesting success of wood thrushes (Powell and Knutson 2006).

The effects of exurban development on wildlife in the Adirondack Park have been studied by the Wildlife Conservation Society. A pattern has been observed in which the introduction of houses and roads into the landscape via residential development brings in a different set of predators and competitors that previously occurred in lower numbers (e.g., blue jay, American crow, gray squirrel). The combined effect of these changes tend to favor certain kinds of species over others – omnivores over insectivores, residents over migrants, generalists over habitat specialists (especially interior forest specialists), and tree nesters over ground nesters (Glennon and Kretser In Press, Reed et al. In Press). Wood thrush is a more specialized species that must compete with, or suffer higher predation from, the more common ones for which exurban development creates habitat.

According to Stevenson and Anderson (1994), kills at towers in the southeastern U.S. were more common in fall than spring because of more westward migratory routes in spring. Wood thrush appears to be vulnerable to window strikes, but few data is available (Graber et al. 1971).

In an assessment of vulnerability to predicted climate change conducted by the New York Natural Heritage Program, wood thrush was identified as a second-priority species whose sensitivity should be assessed in the future (Schlesinger et al. 2011).

Neotropical migrants face additional threats on wintering grounds and during migration including loss and degradation of wintering habitat, exposure to unregulated contaminants, and collision with various structures such as powerlines, towers, and turbines. In some areas, hunting remains a problem. Acid rain could be a threat to forest health and therefore, this species suite (NYSDEC 2005). Lack of forestry or natural events like fire and wind throw to open the canopy and generate herbaceous and shrub growth could have serious detrimental effects on ground and shrub nesters.

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

Yes: _____

No: _____

Unknown: _____

If yes, describe mechanism and whether adequate to protect species/habitat:

Wood thrush is protected under the Migratory Bird Treaty Act of 1918.

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

Population stability requires protection of primary and old, secondary broad-leaved tropical forests on E. Caribbean slopes and of multiple replicates of temperate deciduous forests over entire geographic range, especially ones ≥ 100 ha with few roadcuts. Although productivity is usually lower in smaller fragments, these can be valuable as overflow habitat or, in largely deforested landscapes, as the only breeding sites (Roth and Johnson 1993, Hoover et al. 1995). Substantial tree canopy, native shrub

understory, leaf litter, and soil moisture in residential areas can provide suburban habitat, at least in Mid-Atlantic region, although cowbird parasitism and predation can be high (Roth 1987). Control of brown-headed cowbirds is not a currently justifiable method for wood thrush management; habitat management at site and on landscape scale offers the most ecologically compatible solution to the potential problem (Robinson et al. 1995).

Low levels of forest management that include patches of light harvesting will benefit ground and shrub nesting species. Some areas of moderate or even aged management would also be beneficial to many species by providing food and cover, although the majority of the forest needs to be in a relatively mature state. Efforts should also include minimizing the effects of fragmentation on habitats due to development, and on implementing population control of white-tailed deer in areas where deer populations are affecting forest regeneration and species composition (NYSDEC 2005).

Research is needed on area-sensitivity and habitat requirements of some species in this suite, and further research should be conducted on the effects of logging on forest interior birds. The public should be educated on the benefits and need for forest management to enhance populations of ground and shrub nesting forest breeding birds on public and private lands (NYSDEC 2005). Conservation actions following IUCN taxonomy are categorized in the table below.

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct habitat management	Site/Area management
A.1 Direct Habitat Management	A.1.1.0.0 Manage plants, animals, fungi, or bacteria	Invasive/Problematic species control
B.3 Outreach	B.3.1.4.0 Public outreach and information	Awareness & Communications
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	Site/Area Protection
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	Resource/Habitat Protection

Table 2. Recommended conservation actions for wood thrush.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for deciduous/mixed forest birds, which includes wood thrush.

Habitat management:

- _____ Minimize the effects of fragmentation of habitats due to human development.
- _____ Implement population control of whitetail deer in areas where deer populations are affecting forest regeneration and species composition.

Habitat research:

- _____ Research effects of logging on "forest interior" birds.

Other action:

- _____ Educate the public on the benefits and need for forest management to enhance populations of ground and shrub nesting forest breeding birds on public and private lands.
- _____ Educate the public on the benefits and need for forest management on public and private lands.

Population monitoring:

_____ BBS appears adequate for most species.

VII. References

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