

## Species Status Assessment

**Class:** Birds  
**Family:** Tytonidae  
**Scientific Name:** *Tyto alba*  
**Common Name:** Barn owl

### Species synopsis:

Formerly known as common barn-owl, the barn owl occurs across most of the United States and southward to Central America. In New York, it is at the northern extent of its range. This owl is rare in New York and has declined at an alarming rate in the past 20 years. It is a secondary cavity-nester that breeds in open habitats including grasslands, marshes, and agricultural areas. Appropriate cavities range from barns and outbuildings to cliff crevices to man-made nest boxes. Most known nesting areas are on Long Island and Staten Island (Coastal Lowlands), where nest boxes are seemingly critical.

The Breeding Bird Atlas documented a 78% decline in occupancy statewide since the 1980s with records all but disappearing from upstate New York. A 66% decline was documented on the Coastal Lowlands during this period (1980-85 to 2000-05). The species responds well to the placement of nest boxes and has a “high recovery and management potential” (Rosenberg 1992). Release of captive-raised owls in western New York beginning in 1974 has been ineffective in establishing a breeding population but may account for at least some of the records upstate. Declines have been documented in other northeastern states in the past several decades.

**I. Status**

**a. Current and Legal Protected Status**

i. Federal Not Listed Candidate: No

ii. New York SGCN

**b. Natural Heritage Program Rank**

i. Global G5

ii. New York S1S2 Tracked by NYNHP? Yes

**Other Rank:**

IUCN Red List Category: LC - Least concern

**Status Discussion:**

Barn owl is resident and migratory in New York. It is now rare everywhere in the state. Remaining breeding areas are on the Coastal Lowlands where nest boxes are provided in several locations.

**II. Abundance and Distribution Trends**

**a. North America**

**i. Abundance**

X declining \_\_\_increasing \_\_\_stable \_\_\_unknown

**ii. Distribution:**

X declining \_\_\_increasing \_\_\_stable \_\_\_unknown

Time frame considered: Since 1950s

**b. Regional**

**i. Abundance**

declining    increasing    stable    unknown

**ii. Distribution:**

declining    increasing    stable    unknown

Regional Unit Considered: Northeast

Time frame considered: Last two to three decades

**c. Adjacent States and Provinces**

**CONNECTICUT**                      Not Present                       No data

**i. Abundance**

declining    increasing    stable    unknown

**ii. Distribution:**

declining    increasing    stable    unknown

Time frame considered: Not specified

Listing Status: Endangered                      SGCN? Yes

**MASSACHUSETTS**                      Not Present                       No data

**i. Abundance**

declining    increasing    stable    unknown

**ii. Distribution:**

declining    increasing    stable    unknown

Time frame considered: 1985-2005

Listing Status: Special Concern                      SGCN? Yes

**NEW JERSEY**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_increasing            \_\_\_stable            \_\_\_unknown

**ii. Distribution:**

  X   declining    \_\_\_increasing            \_\_\_stable            \_\_\_unknown

Time frame considered:   Not specified  

Listing Status:                     Special Concern                        SGCN?   Yes  

**ONTARIO**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_increasing            \_\_\_stable            \_\_\_unknown

**ii. Distribution:**

  X   declining    \_\_\_increasing            \_\_\_stable            \_\_\_unknown

Time frame considered:   1981-85 to 2001-05  

Listing Status:                     Endangered                    

**PENNSYLVANIA**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

  X   declining    \_\_\_increasing            \_\_\_stable            \_\_\_unknown

**ii. Distribution:**

  X   declining    \_\_\_increasing            \_\_\_stable            \_\_\_unknown

Time frame considered:   1968-72 to 2004-08  

Listing Status:                     Not Listed                        SGCN?   Yes

QUEBEC Not Present \_\_\_\_\_ No data \_\_\_\_\_

i. Abundance

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

ii. Distribution:

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

Time frame considered: Not specified; very rare

Listing Status: Endangered

VERMONT Not Present \_\_\_\_\_ No data \_\_\_\_\_

i. Abundance

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

ii. Distribution:

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

Time frame considered: Rare during 1976-81; potentially extirpated

Listing Status: Not Listed SGCN? Yes

**d. New York**

No data \_\_\_\_\_

**i. Abundance**

declining     increasing     stable     unknown

**ii. Distribution:**

declining     increasing     stable     unknown

Time frame considered: 1980-85 to 2000-05

**Monitoring in New York.**

None.

**Trends Discussion:**

The northern range limit is determined by climate, specifically the severity of winter conditions. New York is at the northern edge of the range. Christmas Bird Count data show declines in the last 20 years. BBA data (2000-05) show 78% fewer blocks where the species was documented since the first Atlas (1980-85). Only 11 of the 28 atlas surveys blocks with records in 2000-05 were north of Long Island. On Long Island, there was a decline of 66% in occupancy was documented during the second atlas period since the first atlas period.

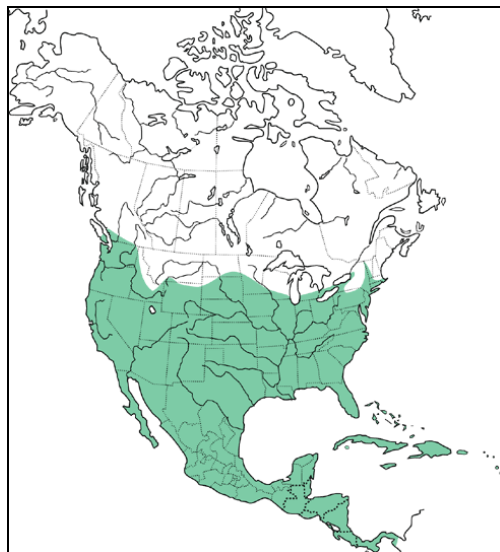


Figure 1. Range of the barn owl in North America (Birds of North America Online 2013).

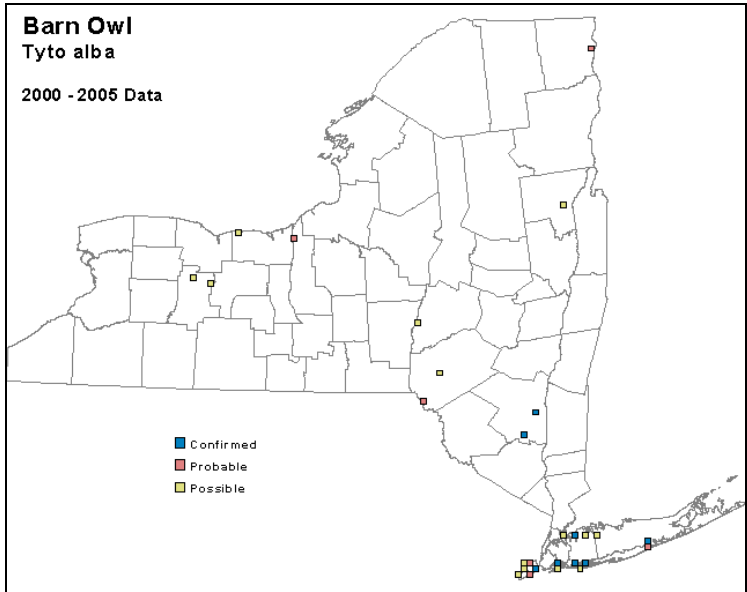


Figure 2. Barn owl occurrence in New York State during the second Breeding Bird Atlas (McGowan and Corwin 2008).

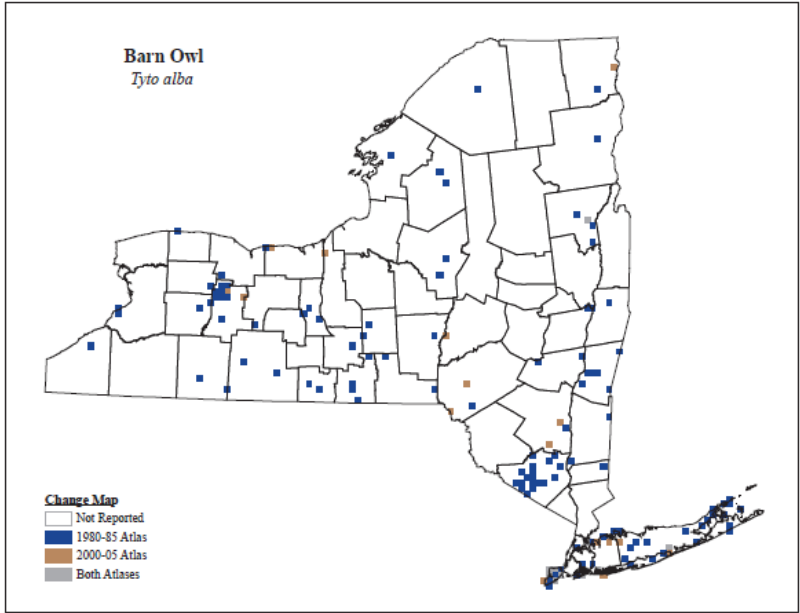


Figure 3. Change in barn owl occurrences in New York State between the first Breeding Bird Atlas and the second Breeding Bird Atlas (McGowan and Corwin 2008).

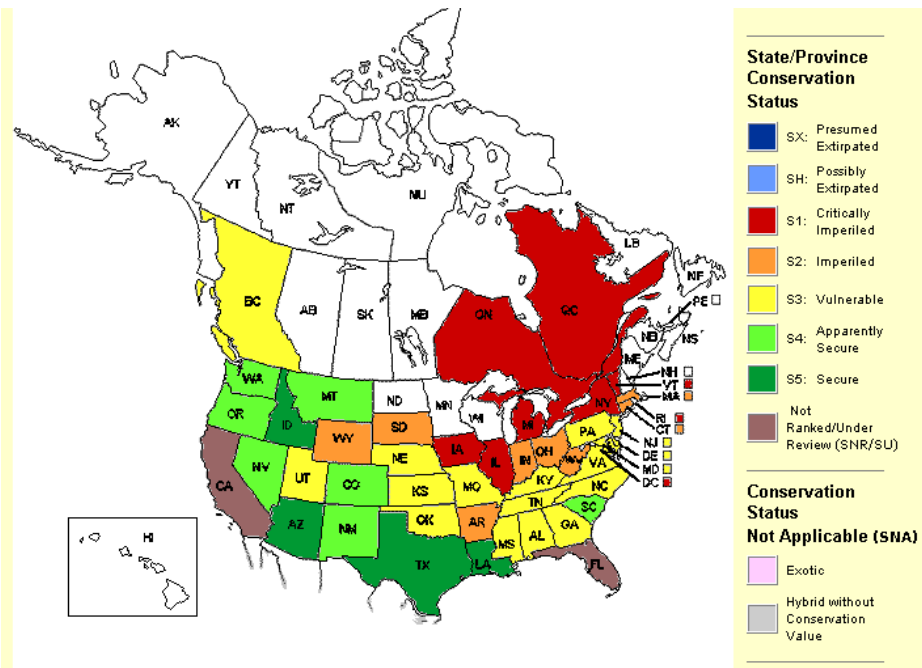


Figure 4. Conservation status of the barn owl in North America (NatureServe 2012).



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

<b>Historic</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
<b>prior to 1970</b>	_____	_____	_____
<b>prior to 1980</b>	_____	_____	_____
<b>prior to 1990</b>	_____	<b><u>126 blocks</u></b>	<b><u>2%</u></b>

**Details of historic occurrence:**

The first Breeding Bird Atlas (1980-85) documented occupancy in 126 survey blocks, which is 2% of the state (Andrle and Carroll 1988).

<b>Current</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
	_____	<b><u>28 blocks</u></b>	<b><u>&lt;1%</u></b>

**Details of current occurrence:**

The second Breeding Bird Atlas (2000-05) documented occupancy in 28 survey blocks, which is <1% of the state (McGowan and Corwin 2008).

**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

X Peripheral

\_\_\_ Disjunct

**Distance to core population:**

\_\_\_\_\_

**IV. Primary Habitat or Community Type:**

1. Native Barrens and Savanna
2. Freshwater Marsh
3. Great Lakes Freshwater Estuary Marsh
4. Estuarine, Freshwater Intertidal, Tidal Wetland, Freshwater Tidal Marsh
5. Pasture/Hay
6. Maritime Dunes
7. Old Field Managed Grasslands
8. Cultivated Crops
9. Rocky Outcrop

**Habitat or Community Type Trend in New York:**

X Declining      \_\_\_ Stable      \_\_\_ Increasing      \_\_\_ Unknown

Time frame of decline/increase: Since 1970s

Habitat Specialist?      \_\_\_ Yes      X No

Indicator Species?      \_\_\_ Yes      X No

**Habitat Discussion:**

Barn owls occupy a broad range of open habitats, urban to rural, and occur virtually anywhere there are populations of rodents upon which to feed (Bull 1974). Barn owls will nest in a wide variety of cavities, both natural and those made by humans, including trees, cliffs, caves, riverbanks, church steeples, barn lofts, haystacks, and nest boxes. Breeding numbers seem limited by the availability of nest cavities in proximity to adequate densities of small mammals, especially voles, its primary prey.

**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:**

Little data is available on reproductive patterns and success in North America, especially concerning reproductive loss and trends in reproduction from year to year. Ability to produce  $\geq 2$  broods in one year differentiates the barn owl from other raptors and can add considerably to lifetime reproductive success in this species. Most individuals have a short life span; mean age at death of 572 barn owls banded across North America and reported to the Bird Banding Laboratory was 20.9 months. Immatures disperse widely in all directions from the natal site at distances up to 1,900 km (Stewart 1952, Soucy 1980, Marti 1999). Barn owls typically nest at the same site for as long as they live (Colvin et al. 1984, Marti 1999).

Severe winter weather kills barn owls. Death results from starvation, especially when snow cover is deep and persistent and coupled with very cold temperatures (Marti et al. 2005).

## **VI. Threats:**

Loss of active farms has resulted in lessened availability of open barns and other outbuildings for nesting and roosting, and the decline in agricultural lands that support sufficiently high densities of small mammals. Conversion of crops to intensive row-cropping reduces the availability of small mammal prey. Screening used to deter rock dove nesting in barns also restricts barn owl access. Barn owls compete with wood ducks and raccoons for natural nest cavities.

Collision with automobiles is a major source of mortality, probably due to their adaptability to, and association with human developments. At JFK International Airport, 113 barn owls were struck by airplanes from 1979 to 1995 (Garber 1998).

Land-use changes are traditionally believed to be most important in affecting overall grassland bird abundance on regional and continental scales. From 1940 to 1986 in 18 northeastern states, the area in hay fields declined from 12.6 to 7.1 million ha. During the same period, hay fields planted to alfalfa and alfalfa mixtures, a vegetation type not normally used by many species of grassland birds, increased from 20 to 60% (Bollinger and Gavin 1992). Also, hay fields now are cut 2–3 weeks earlier than they were in 1940s and 1950s, with mowing coinciding with the peak nesting period.

Declines in some areas have been attributed to the decrease in hayfield area, earlier and more frequent hay-cropping, and a shift from timothy and clover to alfalfa; earlier, agricultural practices that converted wooded land to open land resulted in an increase in range (Bollinger et al. 1990, Bollinger and Gavin 1992). In New York, primary disturbance to nesting is hay-cropping; 100% of nests with eggs and young nestlings affected by mowing were abandoned or destroyed, but the proportion of young lost declined with the age of the nestlings (Bollinger et al. 1990).

Since the mid-1940s, the eastward expansion has reversed in northeastern U.S. and southern Ontario as agricultural lands have been abandoned, reverting to deciduous forest (Robbins et al. 1986, Hussell 1987). Sibley (1988) noted that declines had resulted from the replacement of grain crops by corn and alfalfa, despite the use of corn fields for breeding noted by other authors.

A study led by a Canadian toxicologist identified acutely toxic pesticides as the most likely leading cause of the widespread decline in grassland bird numbers in the United States. The 23-year assessment, which looked at five other causes of grassland bird decline besides lethal pesticide risk, including change in cropped pasture such as hay or alfalfa production, farming intensity or the proportion of agricultural land that is actively cropped, herbicide use, overall insecticide use, and change in permanent pasture and rangeland, concluded that lethal pesticides were nearly four times more likely to be associated with population declines than the next most likely contributor, changes in cropped pasture (Mineau and Whiteside 2013).

In the New York City urban environment, where barn owls raise their young in man-made nest boxes, there is an increasing threat to successful nesting due to an expanding population of raccoons that have, in recent years, been found on some of the marsh islands in Jamaica Bay Wildlife Refuge.

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

No       Unknown

Yes

This species 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:**

Barn owls successfully nest in man-made nest boxes. A reintroduction project by Hawk Creek Wildlife, Inc. in Erie County has released more than 220 barn owls since 1974, but a breeding population has not been established as a result. SUNY Cobleskill Wildlife students have been constructing nest boxes for NYSDEC for the past two years. Some boxes have been placed in proximity to Cobleskill (near where a confirmed nesting took place in Richmondville in 2010), but boxes would be better placed on Long Island, Staten Island, or in the southern Hudson Valley, especially in southern Orange County where the first BBA had a core of occupied blocks that were lost by the time of the second Atlas. The trend of warmer winters in New York could result in more barn owls remaining in New York year round.

Management control of an expanding raccoon population would greatly increase the success rate of barns owls nesting in man-made nest boxes in New York City urban areas like Floyd Bennett Field and Jamaica Bay Wildlife Refuge.

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	Invasive/Problematic Species Control
Land/Water Management	Habitat and Natural Process Restoration
Species Management	Species Recovery
Education and Awareness	Awareness & Communications

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for barn owl.

**Captive breeding:**

\_\_\_ Especially in upstate regions, investigate feasibility of nest box programs and/or releases of captive-raised owls to restore local populations.

**Habitat management:**

\_\_\_ Maintain and expand foraging habitats (e.g. dense grasslands) used by barn owls in southern New York, and protect occupied nest sites.

**Habitat monitoring:**

\_\_\_ Document nesting locations, productivity, and foraging areas of barn owls in New York.

**Other action:**

\_\_\_ Determine whether pesticide use poses a threat to barn owls in New York. Monitor rodent populations (e.g., meadow vole) in conjunction with owl populations since barn owls seem to take up residence wherever prey abundance is high and suitable nesting habitat is present (NYSDEC 1994).

\_\_\_ Cooperate with NYS farmers and grassland owners to establish best possible nesting and foraging opportunities for the barn owl, especially in areas where they are already known to breed.

**VII. References**

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