

Species Status Assessment

Class: Birds
Family: Laridae
Scientific Name: *Chlidonias niger*
Common Name: Black Tern

Species synopsis:

Two subspecies are recognized, New World *surinamensis* and *niger* of Eurasia. The black tern occurs in semi-secluded freshwater marshes and forages in nearby open bodies of water. It is listed as Endangered in New York due to serious long-term population declines. In North America, Breeding Bird Survey (BBS) data show an average annual decline of 3.2% over the period 1966-2009. During the period 1966-1989 the breeding population in North America has declined at an annual rate of 5.6% per year, for an overall population decline of 71.8%. The decline has been greater during this same period in the U.S. (8.2% per year, overall 84.8%) than in Canada (4.8% per year, 66.1% overall). In New York, recent surveys have shown a decline from 235 nesting pairs at 28 sites in 1989 compared to 182 nesting pairs at 10 sites in 2010 (I. Mazzocchi, pers. comm.). Nearly all extant populations in New York occur on the Great Lakes Plain.

I. Status

a. Current Legal Protected Status

- i. Federal Not Listed Candidate: No
- ii. New York Endangered; SGCN

b. Natural Heritage Program Rank

- i. Global G4
- ii. New York S2B Tracked by NYNHP? Yes

Other Rank:

Species of Northeast Regional Conservation Concern (Therres 1999)

Status Discussion:

New York is at the southeastern edge of the North American distribution of the black tern. It is a very local breeder with most of the extant populations occurring on the Great Lakes Plain.

II. Abundance and Distribution Trends

a. North America

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Time frame considered: 1966-96

b. Regional

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Regional Unit Considered: Northeast

Time frame considered: 1966-2009

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: _____ 1966-2009 _____

Listing Status: _____ Special Concern _____

PENNSYLVANIA **Not Present** _____ **No data** _____

i. Abundance

 X **declining** _____ **increasing** _____ **stable** _____ **unknown**

ii. Distribution:

 X **declining** _____ **increasing** _____ **stable** _____ **unknown**

Time frame considered: _____ 1983-89 to 2004-08 _____

Listing Status: _____ Endangered _____ **SGCN?** Yes _____

QUEBEC **Not Present** _____ **No data** _____

i. Abundance

 X **declining** _____ **increasing** _____ **stable** _____ **unknown**

ii. Distribution:

 X **declining** _____ **increasing** _____ **stable** _____ **unknown**

Time frame considered: _____ 1984-89 to 2012 _____

Listing Status: _____ Not Listed _____

that many at a single site in the 1950s. Maximum numbers in fall migration on upper Niagara River were 2,000–5,000 in 1960s, <1,000 in 1970s, and <100 by mid-to late 1980s (Carroll 1988).

The black tern statewide count is conducted every three or four years. In 2010 a total of 182 nesting pairs were documented at 10 of the surveyed sites. This is a 13 percent decrease from the last survey conducted in 2007, which documented 209 breeding pairs at 14 sites. In 2010, 65% of the pairs were located at 3 areas: Perch River WMA, the Iroquois wetland complex (composed of Tonawanda and Oak Orchard WMAs and Iroquois NWR, and the Montezuma wetland complex (composed of Montezuma NWR and Northern Montezuma WMA)—all actively managed wetland complexes. The number of breeding pairs is down by 23% and the number of active sites is down by 64% from when the statewide surveys first began in 1989.

The second Atlas shows a 40% decline, with 73 atlas blocks with birds during the 1980-85 survey and 44 atlas blocks with birds during 2000-05.

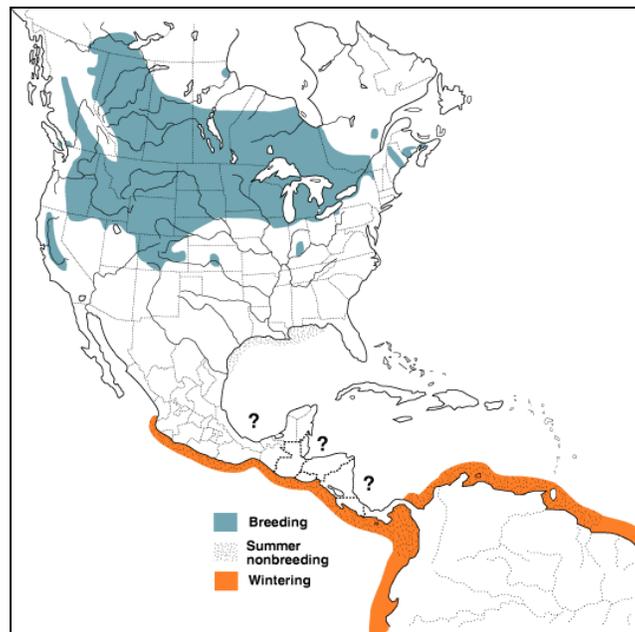


Figure 1. Distribution of black tern in North America (Birds of North America Online).

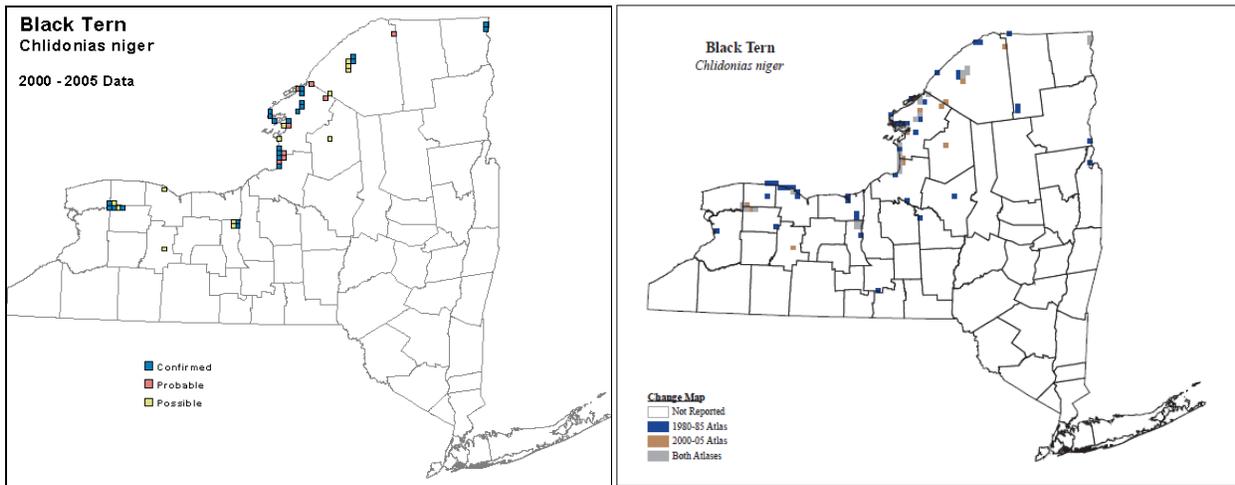


Figure 2. Known locations of black tern from the NYS Breeding Bird Atlas (NYSDEC).

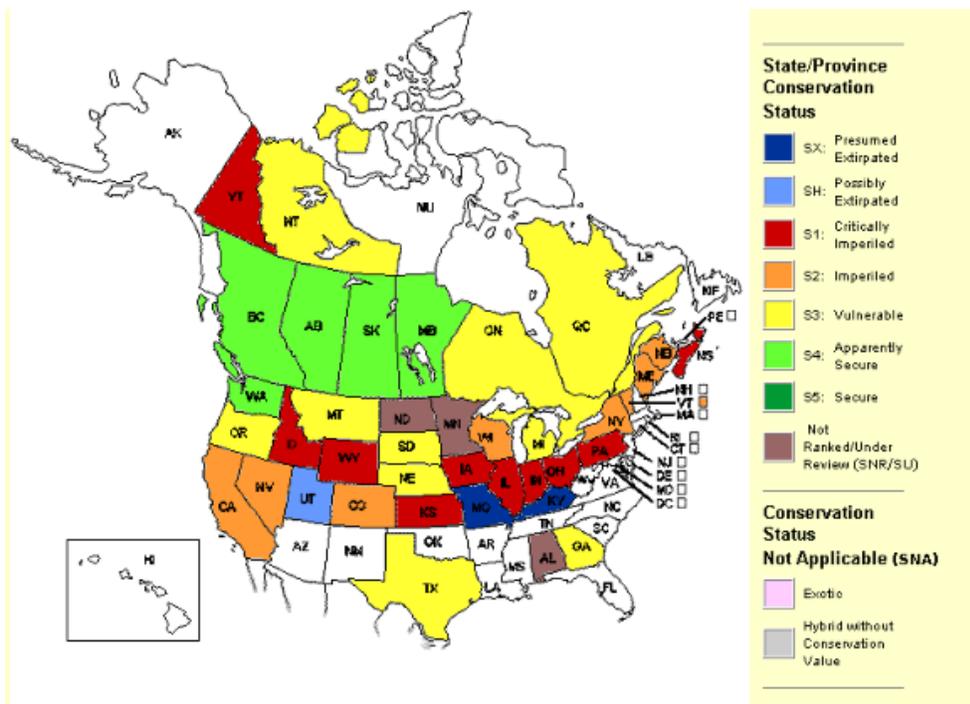


Figure 3. Conservation status of black tern in North America (NatureServe 2012).

III. New York Rarity, if known:

Historic	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
prior to 1970	_____	_____	_____
prior to 1980	<u>>400 pairs</u>	<u>35 sites</u>	_____
prior to 1990	_____	_____	_____

Details of historic occurrence:

Carroll (1988) provides a table on all known colonies in New York prior to 1980: Montezuma (Seneca Co.) had 200 pairs in 1960; Eightmile Creek (Oswego Co.) had 100 pairs in 1960s; Lakeview WMA (Jefferson Co.) had 150 in 1903. Perch River WMA (Jefferson Co.) had 100 pairs. The remaining 31 colonies with birds had fewer than 100 pairs, most fewer than 50 pairs. A total of 56 sites are listed.

Current	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
	<u>182 pairs</u>	<u>10 sites</u>	_____

Details of current occurrence:

NYSDEC conducts a black tern statewide count every three years. In 2010, 93 historic or current sites were surveyed. Ten of the sites were occupied and a total of 182 nesting pairs were documented (NYSDEC unpublished data). Occupied sites and the numbers of breeding birds at those sites can vary by year.

New York's Contribution to Species North American Range:

Distribution (percent of NY where species occurs)

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

Abundance (within NY distribution)

- _____ abundant
- _____ common
- _____ fairly common
- _____ uncommon
- X rare

NY's Contribution to North American range

- X 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. Freshwater Marsh
2. Great Lakes Freshwater Estuary Marsh
3. Wet Meadow/Shrub Swamp

Habitat or Community Type Trend in New York:

X Declining ___ Stable ___ Increasing ___ Unknown

Time frame of decline/increase: Since 1950s

Habitat Specialist? X Yes ___ No

Indicator Species? X Yes ___ No

Habitat Discussion:

Black terns breed semi-colonially in semi-secluded freshwater emergent marshes. They forage over nearby bodies of open water. In the Great Lakes region, black terns use both marshes as well as inland and lake shoreline habitat for breeding. Occupied habitats include shallow marshes, open water areas of deeper marshes, wet meadows, natural ponds, lakes and river oxbows, reed-bordered sloughs, shallow river impoundments, edges of streams, and swampy grasslands. Habitat

requirements seem strict, as black terns will colonize and abandon marshes as water level changes and vegetation makeup changes. Because the black tern is sensitive to water level fluctuations, it has been adopted as a performance indicator species by the International Joint Commission Lake Ontario - St. Lawrence River Study (www.losl.org).

The black tern is an area-dependent species and in addition to marsh size, proximity to other wetlands is a critical factor in habitat selection (NYNHP 2011). Terns favor marshes > 20 ha, but they will nest in marshes ranging from 5-11 ha, though only if they are part of a larger wetland complex (Brown and Dinsmore 1984, Novak 1992).

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:

Black tern do not breed before their second summer when some (but not all) first attain black plumage. Some may delay breeding beyond age two or skip an occasional year of breeding. Nesting success (at least one egg hatch) has been reported to range from 35.7% to 55.8% at one of the nesting sites (Mazzocchi and Muller 2000). Black terns are considered to be single-brooded but will re-nest if the nest fails (Mazzocchi and Muller 1993). Estimates of fledging success varied widely for 19 sites in New York, from 4% to 38%, with an overall average of 20% (Novak 1990). Losses of nests or eggs are due to bad weather, effects of winds and waves, changing water levels, or predation. Low fidelity to nest area (Bailey 1977, Dunn 1979, Stern 1987) is probably related to ephemeral suitability of habitat year to year owing to changes in water level, vegetation density,

and availability of nest substrates. Chapman-Mosher (1987) reported the loss of 8.6% of nests to predation. The great blue heron (*Ardea herodias*) and northern harrier (*Circus cyaneus*) have been observed taking terns (Chapman and Forbes 1984, Maxson 1989)

VI. Threats:

Since settlement by Europeans, estimated 54% of wetlands have been lost from coterminous U.S. (Tiner 1984), including 1.9 million ha of shallow wetlands between mid-1950s and mid-1970s. Successional processes, changes in water levels, invasion by exotic wetland plants (i.e., purple loosestrife), the acidification of lakes (which decreases available prey), and degradation of water quality have the potential to render wetlands unsuitable for black tern nesting. In addition to direct loss of habitat due to wetland destruction, one of the indirect effects of wetland loss is that larger rivers experience more pronounced and frequent flooding causing riverine marshes to become unreliable nesting sites.

Several of the historic breeding locations in wetlands along the Lake Ontario shoreline have been lost likely due to habitat degradation (perhaps due to water level management of Lake Ontario). Many of these wetlands are now dominated by thick cattail stands which lack the interspersions with open water and the habitat diversity that is important to black tern nesting.

PCBs, DDE, hexachlorobenzene, and octachlorostyrene (an industrial pollutant) were found in eggs and a chick collected from a site on Lake Ontario in western New York and has been linked to lower reproductive success and developmental problems in other tern species (Firstencel 1987).

Human activities such as swimming, fishing, or boating may disturb nesting colonies and prevent adults from incubating eggs or feeding offspring.

Predation is a significant cause of nest failure and larger colonies suffer higher rates of predation. In one study at least 48% and possibly as much as 85% of all nest failures were attributed to predation (Shealer 2002).

In the 2010 statewide count, 65% of the pairs were located in only three areas: Perch River WMA, Iroquois wetland complex, and Montezuma wetland complex, making the statewide population more vulnerable and susceptible to disease.

Black tern was classified as “presumably stable” in regard to predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program (Schlesinger et al. 2011).

Wading birds tend to be susceptible to many diseases such as avian cholera, botulism, lice and mites, but little is known about the effects of disease and parasites on reproduction (NatureServe 2013).

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

No Unknown

Yes

The black tern is listed as an endangered species in New York and is protected by Environmental Conservation Law (ECL) section 11-0535 and the New York Code of Rules and Regulations (6 NYCRR Part 182). A permit is required for any proposed project that may result in a take of a species listed as Threatened or Endangered, including, but not limited to, actions that may kill or harm individual animals or result in the adverse modification, degradation or destruction of habitat occupied by the listed species.

The Migratory Bird Treaty Act protects birds, but their freshwater marsh habitat is not completely protected. Article 24—the NYS Freshwater Wetlands Act—and Section 404 of the Clean Water Act are not adequate to prevent all wetland habitat losses since black terns use small wetlands. However, the Army Corps of Engineers may regulate smaller wetlands. In addition, many of the areas where black terns still nest in New York, including the three areas where 65% of the breeding pairs were most recently documented, are on public land managed for wildlife habitat.

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

Protection of appropriately-sized wetlands. Regulating water levels where feasible on statelands to enhance breeding habitat. Continued monitoring of the New York population is important as it helps inform water level management activities at some state Wildlife Management Areas. A water level management plan for Lake Ontario and habitat restoration projects that would improve the health and diversity of Lake Ontario wetlands may benefit black tern populations.

Conservation actions following IUCN taxonomy are categorized in the table.

Conservation Actions	
Action Category	Action
Education and Awareness	Awareness & Communications
Education and Awareness	Training
Land/Water Protection	Site/Area Protection
Land/Water Protection	Resource/Habitat Protection
Land/Water Management	Site/Area Management
Land/Water Management	Invasive/Problematic Species Control
Land/Water Management	Habitat & Natural Process Restoration

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for freshwater marshbirds, and for black tern in particular.

Curriculum development:

- ___ Utilize education as a tool for reducing wetland loss and the possible detrimental effects of human disturbance.

Fact sheet:

- ___ Promote the establishment of buffer areas around agricultural fields and developments.

Habitat management:

- ___ Restore wetland habitat and improve water level control.
- ___ Evaluate the extent to which management actions can reduce nest and chick losses via predator management and water level regulation.
- ___ Promote the use of Farm Bill and Landowner Incentive program funds to manage and restore appropriate habitat.
- ___ Adapt wetland management practices throughout the range of these species so they can simultaneously benefit waterfowl, marsh birds, and other water birds.
- ___ For endangered, threatened or rapidly declining marsh bird species/populations, protect all sites currently in use, and all historic sites of suitable habitat.

Habitat monitoring:

- ___ Identify and prepare a catalog of key migratory staging, molting areas, and wintering grounds.
- ___ Prepare a catalog, where possible, of breeding sites, identifying and mapping sites at a course scale to select those worthy of monitoring.
- ___ Investigate diet and nutrition in relation to breeding habitat quality and prey populations.

Habitat research:

- ___ Evaluate habitats by a variety of techniques at multiple scales to better understand the micro- and macro- habitat features important to nest site selection.
- ___ Conduct controlled experiments to see which management actions are effective locally in producing habitat suitable for marsh birds.

- ___ Further evaluate the effectiveness of artificial nest platforms for increasing nest success or densities of black tern, emphasizing placement of platforms where nest substrates appear to be limiting or where terns may be encouraged to nest in areas of low disturbance.

Invasive species control:

- ___ Identify invasive species which have the potential to negatively impact marsh birds and quantify impact.
- ___ Reduce the spread and colonization of new sites by invasive exotic species.
- ___ Where feasible, control invasive species, which are known to have detrimental effects on marsh birds, to reduce negative impact (i.e. promote the implementation of biological controls to combat purple loosestrife).

Life history research:

- ___ Conduct demographic studies at selected sites across the species' breeding range to identify "source" and "sink" populations, thus the regions most important for maintaining a breeding population.
- ___ Conduct studies of habitat use, prey availability, and diet at migratory staging and molting areas and wintering grounds to assess possible threats and limiting factors.
- ___ Investigate aspects of behavioral ecology, such as mate selection, mate fidelity, spacing behavior, coloniality, dispersal, and post-fledging parental care.
- ___ Periodically monitor the levels of contaminants in marsh birds and their eggs to assess trends and determine effects on eggshell thinning, behavioral modification, chick development, nesting success, and juvenile survival.

Modify regulation:

- ___ Concurrently with management actions, efforts should be pursued vigorously to protect the quality and quantity of available wetland habitat and minimize wetland loss.

New legislation:

- ___ Develop and implement a noxious weed law to control the introduction and distribution of invasive exotic species.
- ___ Support IJC legislation that encourages Lake Ontario water levels to fluctuate more than in recent history.

New regulation:

- ___ Maintain water quality in nesting marshes and discourage use of pesticides on public lands to prevent reduction of insect populations and contamination of wetlands.

Population monitoring:

- ___ Refine monitoring techniques to better detect population trends and determine the cause of these changes.
- ___ Initiate baseline population surveys to determine abundance and distribution and periodically resurvey to detect trends
- ___ Study metapopulation dynamics and demography, focusing on such parameters as survival, age at first breeding, recruitment, dispersal, and the factors that affect them, using color-banded or radio-tagged birds. (Have tried this- color bands you can't see and radios too small to detect unless on top of them. Irene Mazzocchi)

Regional management plan:

- ___ Collaborate with existing planning initiative such as the North American Waterbird Plan, Bird Conservation Regional Plans and other regional efforts.

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