

Species Status Assessment

Class: Birds
Family: Ardeidae
Scientific Name: *Ixobrychus exilis*
Common Name: Least bittern

Species synopsis:

Least bittern trends are difficult to assess because the secretive nature of the birds make them difficult to detect without targeted surveys. Where least bitterns do breed, however, they can occur in densities as high as 15 nests per hectare (Poole et al. 2009). Least bitterns are listed as Endangered, Threatened, or Special Concern in all states adjacent to New York except Vermont. It has been included on the National Audubon Society Blue List since 1979 (Tate 1986) because birdwatchers reported the species as reduced over much of its range and extirpated in some areas.

In New York, the second Breeding Bird Atlas (2000-05) documented a 9% decline in occupancy since the first Atlas in 1980-85, but abundance trends are difficult to detect.

I. Status

a. Current and Legal Protected Status

- i. **Federal** Not Listed **Candidate?** No
- ii. **New York** Threatened; SGCN

b. Natural Heritage Program Rank

- i. **Global** G5
- ii. **New York** S3B, S1N **Tracked by NYNHP?** Yes

Other Rank:

COSEWIC - Threatened
USFWS - Nongame Bird of Management Concern

Status Discussion:

Least bittern is an uncommon breeder with a spotty distribution in New York. In winter it is very rare along the coast and unknown upstate (Stoner 1998).

II. Abundance and Distribution Trends

a. North America

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Time frame considered: 1999-2009

b. Regional

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Regional Unit Considered: Northeast

Time Frame Considered: _____

c. Adjacent States and Provinces

CONNECTICUT **Not Present** _____ **No data** _____

i. Abundance

 X declining ___ increasing ___ stable ___ unknown

ii. Distribution:

 X declining ___ increasing ___ stable ___ unknown

Time frame considered: Not specified in WAP

Listing Status: Threatened SGCN? Yes

MASSACHUSETTS **Not Present** _____ **No data** _____

i. Abundance

 ___ declining ___ increasing X stable ___ unknown

ii. Distribution:

 ___ declining ___ increasing X stable ___ unknown

Time frame considered: 27 occurrences since 1980; 10 in BBA1, 16 in BBA2

Listing Status: Endangered SGCN? Yes

NEW JERSEY **Not Present** _____ **No data** _____

i. Abundance

 ___ declining ___ increasing ___ stable X unknown

ii. Distribution:

 ___ declining ___ increasing ___ stable X unknown

Time frame considered: _____

Listing Status: Special Concern SGCN? Yes

Trends Discussion:

The Breeding Bird Survey does not adequately address secretive marsh birds, but the Marsh Monitoring Program found a significant decline of 8.5% per year in the Great Lakes Basin between 1995 and 2003. The Breeding Bird Atlas documented a 9% decline in occupancy from 1980-85 to 2000-05.

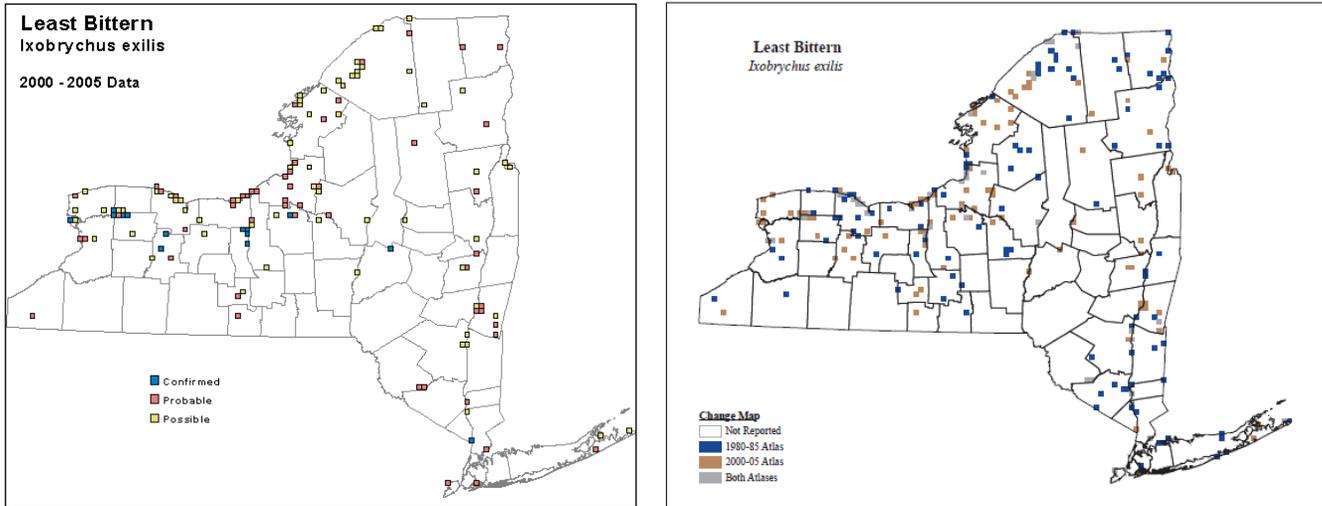


Figure 1. Known locations of least bittern from the NYS Breeding Bird Atlas (NYSDEC).

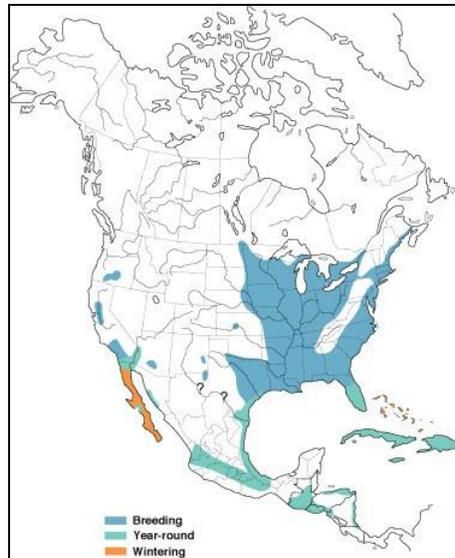


Figure 2. Distribution of least bittern in North America (Birds of North America Online).

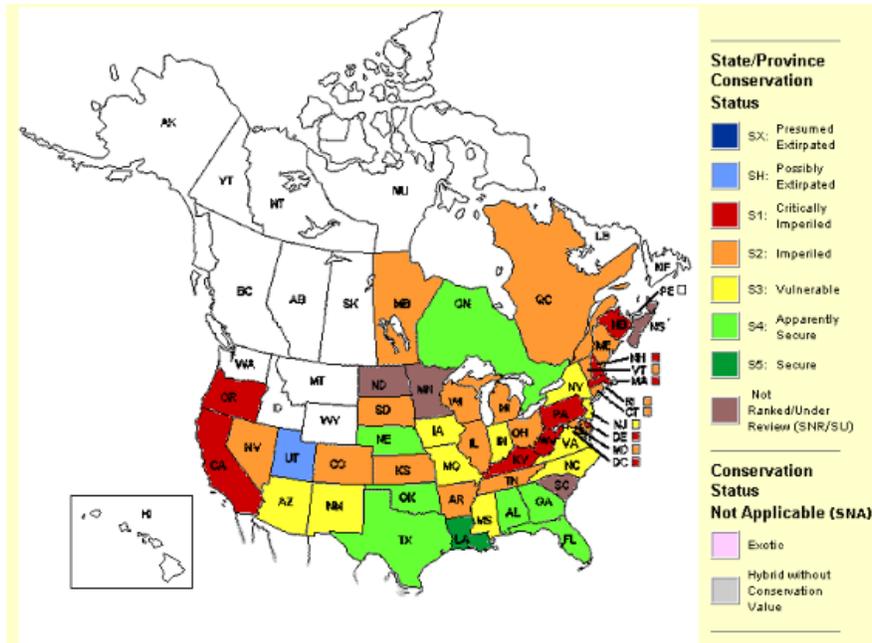


Figure 3. Conservation status of least bittern in North America (NatureServe 2012).

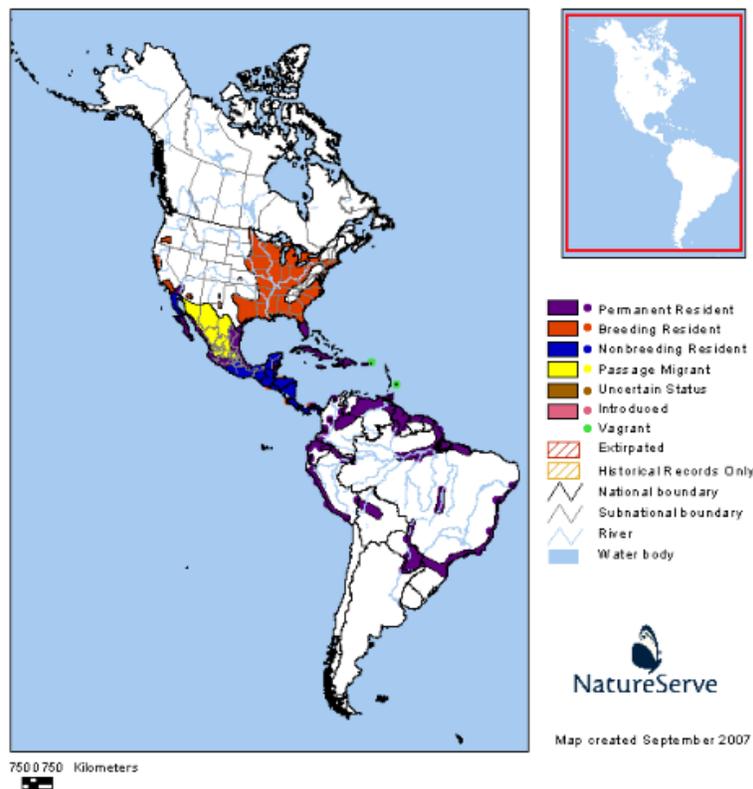


Figure 4. Least bittern range map (NatureServe 2012).

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	_____	_____	_____
prior to 1990	_____	<u>142 blocks</u>	<u>3%</u>

Details of historic occurrence:

The first Breeding Bird Atlas (1980-85) documented occupancy in 142 survey blocks (out of 5,335). Breeding was concentrated on the Great Lakes Plain and Hudson Valley.

Current	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
	_____	<u>129 blocks</u>	<u>2%</u>

Details of current occurrence:

The second Breeding Bird Atlas (2000-05) documented occupancy in 129 survey blocks (out of 5,335), a decline of 9%. Concentrations are apparent near the Iroquois and Montezuma wetland complexes, as well as at marsh complexes along Lake Ontario, most of which are at least partially contained in state Wildlife Management Areas.

New York's Contribution to Species North American Range:

Distribution (percent of NY where species occurs)	Abundance (within NY distribution)
<u>X</u> 0-5%	___ abundant
___ 6-10%	___ common
___ 11-25%	___ fairly common
___ 26-50%	___ uncommon
___ >50%	<u>X</u> rare

NY's Contribution to North American range

<u>X</u> 0-5%
___ 6-10%
___ 11-25%
___ 26-50%
___ >50%

Classification of New York Range

Core

Peripheral

Disjunct

Distance to core population:

IV. Primary Habitat or Community Type:

1. Freshwater Marsh
2. Great Lakes Freshwater Estuary Marsh
3. Estuarine, Brackish Intertidal, Tidal Wetland
4. Estuarine, Freshwater Intertidal, Tidal Wetland, Freshwater Tidal Marsh

Habitat or Community Type Trend in New York:

Declining Stable Increasing Unknown

Time frame of decline/increase: Since 19750s

Habitat Specialist? Yes No

Indicator Species? Yes No

Habitat Discussion:

In New York, least bitterns breed in freshwater marshes with tall emergent vegetation, such as cattail, interspersed with open water. Recent breeding reports on Long Island have been from freshwater and brackish marshes, which appear to be favored over salt marsh habitat (Kennedy 2008). Least bitterns are thought to be area-dependent, preferring marshes of greater than 5 hectares (12.3 acres) (Brown and Dinsmore 1986).

Least bitterns prefer stands of cattails or bulrush with bur-reed, sedges, or common reed. Stands of cattails are often interspersed with pools of open water or slow-moving channels and some woody

vegetation. Large marshes are important breeding areas for this species. Open habitats such as mats of emergent vegetation are rarely used (Frederick et al. 1990 cited in NatureServe 2003).

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:

No definite information is available on age at first breeding, which is presumably 1 year (Poole et al. 2009). Pairs will occasionally nest twice per breeding season (e.g., Weller 1961), both re-nesting after depredation and raising two broods (Bogner and Baldassarre 2002). In western New York, the mean time between failure or hatching of the first nest and initiation of a new nest was 5.3 d \pm 0.9 SE (n = 3) for re-nesting birds, and 21.7 d \pm 3.5 SE (n = 3) for double-brooded pairs (Bogner and Baldassarre 2002). In western New York wetlands, 1999-2000, nest success (% nests hatching young) ranged from 58-68% in 2 years; fledging success (% young hatched that fledged) ranged from 76-78% (Bogner and Baldassarre 2002). Thus overall success in this study (% eggs producing fledged young) was 44-52%.

No information is available on lifespan and survivorship, except 2540 individuals banded between 1914 and 2004 with only 8 subsequent encounters, none of which > 3 years after banding (Klimkiewicz 2008). Little information is available on the effects of disease and parasites or causes of death; the least bittern is known to host trematode worms (Font et al. 1984) and two species of lice and one species of mite (Peters 1936). Populations were thought to be reduced by an unknown disease during the nesting season at an Iowa wetland (Kent 1951).

Nest loss may be due to abandonment, predation, cannibalism, and disease (Kent 1951). High water also may destroy least bittern nests (McVaugh 1975). In S. Carolina, reproductive loss at nests was generally 1-2 eggs or young, rather than total loss (catastrophic mortality) owing to predation or weather (Post 1998).

VI. Threats:

New York has lost more than half of its wetlands since colonization (Tiner 1984 cited in NatureServe 2003). More recently, losses of wetlands in the Great Lakes Plains portion of the state have been offset as agricultural lands revert back to wetlands, although net losses of wetlands in the Hudson Valley continue. Emergent marshes, which constitute only five percent of the state's 2.5 million acres, have declined overall. On a positive note, in addition to being protected by the State Freshwater Wetlands Act (Article 24), many of the larger emergent marshes and marsh complexes important to least bitterns in New York are publicly owned and managed for wildlife habitat (NatureServe 2013).

The habitat that remains may be degraded by fragmentation, exotic plants, and nutrient enrichment. Run-off from development and agricultural practices may also negatively impact prey. Water level management of Lake Ontario may also change the quality of habitat for least bitterns (King 2005). As a result of Lake Ontario water level management, many great lakes wetlands are now dominated by thick cattail stands which lack the interspersions with open water that is important to least bittern nesting. Unnaturally high densities of predators may also pose a threat.

In an assessment of vulnerability to predicted climate change conducted by the New York Natural Heritage Program, least bittern was identified as a second-priority species whose sensitivity should be assessed in the future (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). Because least bitterns fly low to the ground, collisions with motor vehicles, barbed-wire fences, and transmission lines can be a significant mortality factor (Forbush 1927, Guillory 1973).

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

No **Unknown**

Yes

The least bittern is listed as a threatened 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.

Least bitterns are protected under the Migratory Bird Treaty Act of 1918. Wetlands used for breeding are protected. The Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres in size under Article 24 of the NYS Conservation Law. In addition, many of the larger wetlands and wetland complexes important to least bitterns are on public land.

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

Wetlands with abundant emergent vegetation need preservation, protection, and improvement (Gibbs and Melvin 1992). It is important to prevent chemical contamination, siltation, eutrophication, and other forms of pollution in marsh habitats and to control invasive species (such as purple loosestrife). When managing large wetland complexes for waterfowl, consider retaining areas with cattails, bulrush, and bur-reed, and when possible, manage marshes for a hemi-marsh condition with a good mix of open water and emergent vegetation. A Lake Ontario water level management plan that would improve the health and diversity of Lake Ontario wetlands would benefit least bittern populations. Projects that create openings in thick cattail stands and encourage muskrat populations would also be beneficial.

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.

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.

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.

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.

Regional management plan:

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

VII. References

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