Species Status Assessment

Class: Birds
Family: Ardeidae
Scientific Name: *Botaurus lentiginosus*
Common Name: American bittern

Species synopsis:

The American bittern occurs across the northern half of North America and in most of Canada where it breeds in freshwater wetlands. The species is monotypic. It occurs sparsely throughout the state, occurring in 9% of Breeding Bird Atlas survey blocks statewide with concentrations in St. Lawrence and Jefferson counties (McGowan 2008). Since the early 1980s, a 10% decline in occurrence was documented during the second Breeding Bird Atlas survey. Historic declines were documented in the 1950s through 1970s due to loss of wetland habitat, but populations now appear to be fairly stable. Detection of American bittern is best attained through species-specific surveys because of its secretive nature.

I. Status

a. Current and Legal Protected Status

i. Federal ___Not Listed_____ **Candidate:** __No__

ii. New York ___Special Concern; SGCN_____

b. Natural Heritage Program Rank

i. Global ____G5_____

ii. New York ____S4_____ **Tracked by NYNHP?** __No__

Other Rank:
New York Natural Heritage Program Watch List
IUCN Red List Category: LC - Least concern
Species of Northeast Regional Conservation Concern (Therres 1999)

Status Discussion:

American bittern is an uncommon breeder in New York. Stoner (1998) referred to it as "declining." It is uncommon but regular along New York's coastline in winter and rare inland. It is listed as Endangered in CT, MA, and PA, and Threatened in NJ. It is not listed in NH or VT.

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: __1966-89 BBS showed significant -2.4% annually__

b. Regional

i. Abundance

____ declining __X__ increasing ____stable ____unknown

ii. Distribution:

____ declining __X__ increasing ____stable ____unknown

Regional Unit Considered: ___Eastern BBS: increase by 2.1% annually_____
Time frame considered: _____1999-2009_____

c. Adjacent States and Provinces

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

i. Abundance

____ declining ____increasing ____stable __X__ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Time frame considered: ___One confirmed breeding event in last decade_____
Listing status: _____Endangered_____ SGCN? ___Yes_____

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

i. Abundance

__X__ declining ____increasing ____stable ____unknown

ii. Distribution:

__X__ declining ____increasing ____stable ____unknown

Time frame considered: ____1999-2009_____
Listing status: _____Endangered_____ 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: ____Since 1970s_____
Listing status: Breeding: Endangered; Non-breeding: Special Concern SGCN? Yes

ONTARIO **Not Present** _____ **No data** _____

i. **Abundance**

____ **declining** ____**increasing** __X__ **stable** ____**unknown**

ii. **Distribution:**

____ **declining** ____**increasing** __X__ **stable** ____**unknown**

Time frame considered: ___1981-85 to 2001-05_____
Listing status: _____Not Listed_____

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

i. **Abundance**

__X__ **declining** ____**increasing** ____**stable** ____**unknown**

ii. **Distribution:**

__X__ **declining** ____**increasing** ____**stable** ____**unknown**

Time frame considered: ___BBA shows 42% decline since 1980s_____
Listing status: _____Endangered_____ SGCN? __Yes____

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

i. **Abundance**

____ **declining** ____**increasing** __X__ **stable** ____**unknown**

ii. **Distribution:**

____ **declining** ____**increasing** __X__ **stable** ____**unknown**

Time frame considered: ___Since 1984-89 (first BBA)_____
Listing status: _____Not Listed_____

VERMONT **Not Present _____** **No data _____**

i. **Abundance**

____ declining __X__ increasing ____stable ____unknown

ii. **Distribution:**

____ declining __X__ increasing ____stable ____unknown

Time frame considered: __BBA shows 71% increase since early 1980s_____
Listing status: _____Not Listed_____ SGCN? ___Yes____

d. NEW YORK **No data _____**

i. **Abundance**

____ declining ____increasing __X__ stable ____unknown

ii. **Distribution:**

____ declining ____increasing __X__ stable ____unknown

Time frame considered: __1980-85 to 2000-05_____

Monitoring in New York.

A three-year pilot study of the National Marshbird Monitoring Program was conducted from 2009-2011 at selected wetlands across the state. Surveys continued in 2012. In addition, the Marsh Monitoring Program through Bird Studies Canada has long term marsh bird monitoring routes in the Great Lakes Basin part of New York. The American bittern is a target species in both of these survey protocols.

Trends Discussion:

The second breeding bird atlas (BBA) in New York shows a decline in occupancy of 10% from 1980-85 to 2000-05. Long-term data is not available range-wide; however, habitat trends suggest that substantial declines of 30-70 percent have probably occurred.

Breeding Bird Survey (BBS) data (1966-1989) indicate a decline in the north-central U.S. (Hands et al. 1989, Brewer et al. 1991) and possibly in New England (USFWS 1987), due mainly to loss and degradation of wetlands. BBS data suggest a 2.4% annual decline in U.S. populations between 1966

and 1989, but no significant trends were evident for populations in the eastern U.S. or Canada; other sources suggest that declines have occurred in portions of New York and in southern New England, Pennsylvania, New Jersey, and Delaware (Gibbs and Melvin 1992). Eaton (1988) stated that the species had declined in New York since the 1950s.

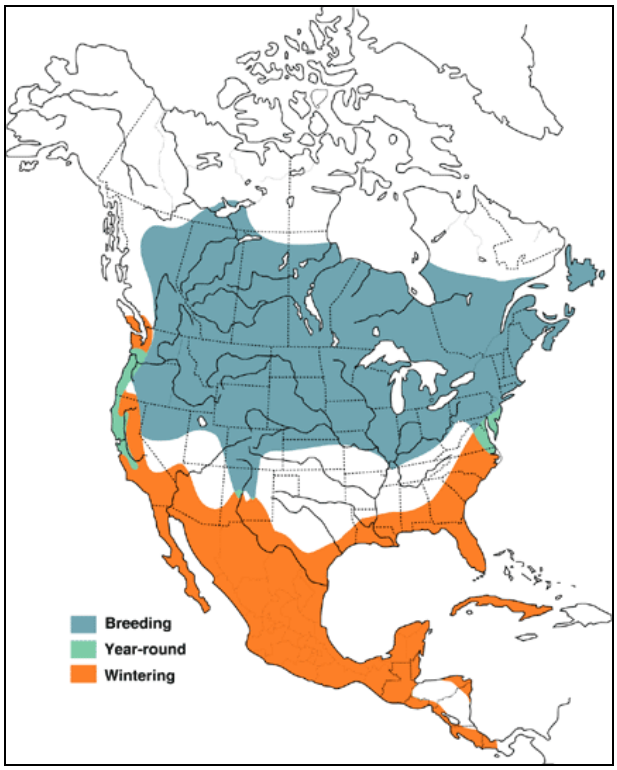

Figure 1. Distribution of American bittern in North America (Birds of North America Online).

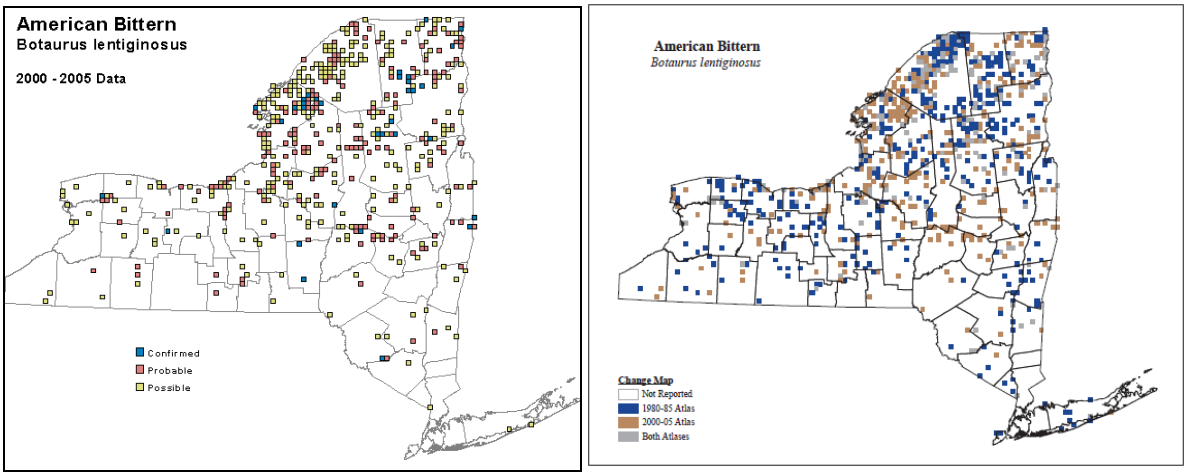

Figure 2. Known locations of American bittern from the NYS Breeding Bird Atlas (NYSDEC).

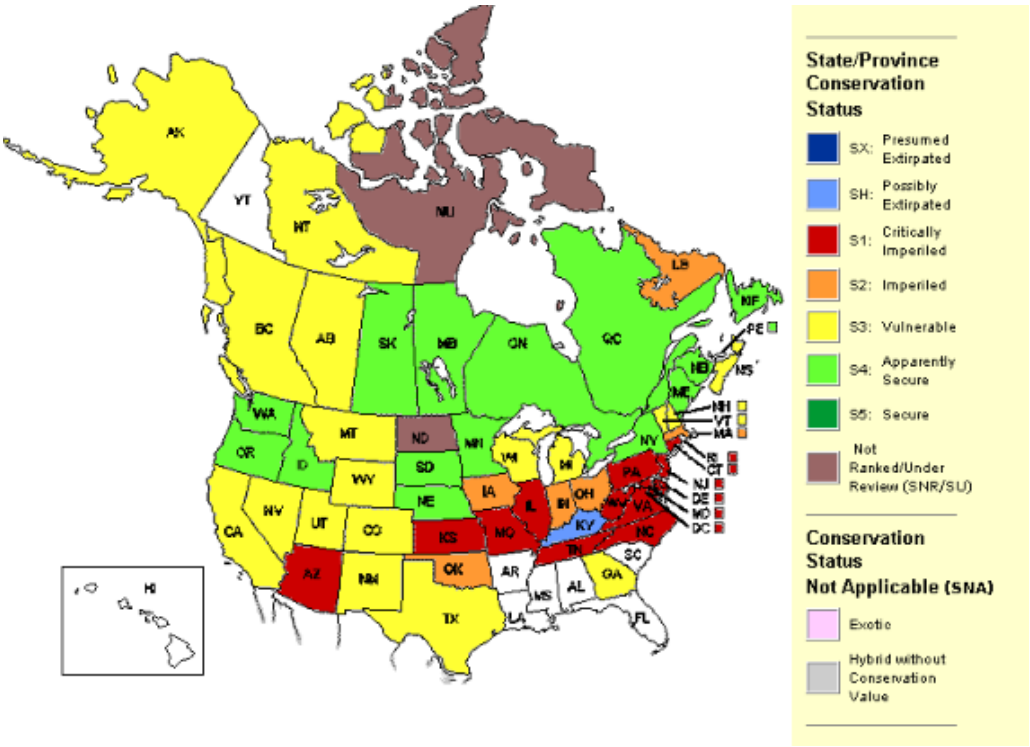

Figure 3. Conservation status of American bittern in North America (NatureServe 2012).

III. **New York Rarity, if known** (provide numbers or percent of state occupied, include citations and maps)**:**

Historic (select one)	**# of Animals**	**# of Locations**	**% of State**
prior to 1970	_____	_____	_____
prior to 1980	_____	_____	_____
prior to 1990	_____	534 blocks	10%

Details of historic occurrence:

Breeding Bird Atlas data from 1980-85 show statewide distribution with concentrations in the northern part of the state. Eaton (1988) stated that the species had declined since the 1950s.

Current	**# of Animals**	**# of Locations**	**% of State**
	_____	478 blocks	9%

Details of current occurrence:

Breeding Bird Atlas data from 2000-05 documented occupancy in 9% of the state, a 10% decrease in occupancy since the first Atlas in 1980-85 (McGowan and Corwin 2008).

New York's Contribution to Species North American Range:

Distribution (percent of NY where species occurs)

___ 0-5%

_X_ 6-10%

___ 11-25%

___ 26-50%

___ >50%

Abundance (within NY distribution)

___ abundant

___ common

___ fairly common

_X_ uncommon

___ rare

NY's Contribution to North American range

_X_ 0-5%

___ 6-10%

___ 11-25%

___ 26-50%

___ >50%

Classification of New York Range

__X__ Core

____ Peripheral

____ Disjunct

Distance to core population:

_____

Rarity Discussion:

The North American population is estimated at 10,000 to 1,000,000 individuals (NatureServe). New York lies well within the main distribution.

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

1. Freshwater Marsh
2. Great Lakes Freshwater Estuary Marsh
3. Wet Meadow/Shrub Swamp
4. Old Field Managed Grasslands
5. Native Barrens and Savannah
6. Open Alkaline Peatlands
7. Open Acidic Peatlands
8. Estuarine, Freshwater Intertidal, Tidal Wetland, Freshwater Tidal Marsh

Habitat or Community Type Trend in New York:

__X_ **Declining** ____**Stable** ____ **Increasing** ____**Unknown**

Time frame of decline/increase: ____Since the 1950s_____

Habitat Specialist? ____ **Yes** __X__ **No**

Indicator Species? ____ **Yes** __X__ **No**

Habitat Discussion:

American bitterns breed in freshwater wetlands with tall emergent vegetation, especially larger wetlands with abundant amphibian populations, and rarely tidal marshes. Eaton (1914) suggested that there were occurrences in New York at marshes of less than four hectares. This bittern seems to be adaptable to a wide variety of wetland habitats, ranging from margins of boreal lakes in Quebec (DesGranges and Houde 1989) to dense cattail marshes in New York (Andrle and Carroll 1988), and can thrive at wetlands of many types as long as suitable prey and adequate cover are available (Gibbs et al. 1991). Nesting can also occur in grasslands adjacent to wetland habitat.

V. New York Species Demographics and Life History

__X__ **Breeder in New York**

__X__ **Summer Resident**

____ **Winter Resident**

____ **Anadromous**

____ **Non-breeder in New York**

____ **Summer Resident**

____ **Winter Resident**

____ **Catadromous**

____ **Migratory only**

____ **Unknown**

Species Demographics and Life History Discussion:

Remarkably little is known about the biology of this species. There is no information on age at first breeding, but it is 1 year in the closely related Eurasian Bittern. The maximum reported longevity is 8 years, 4 months. Minimal information is available on the effects of predation or parasites and disease. The species is thought to undergo extensive, post-breeding dispersal (Lowther et al. 2009).

Because of extensive post-breeding dispersal (Cramp 1977), bitterns are able to colonize new areas and persist as small, isolated populations. The species also seems adaptable to a wide range of wetland habitats.

VI. Threats:

Threats Discussion:
The most serious factor limiting populations is availability of wetland habitat. Loss is due to drainage, filling, conversion to agriculture or recreational use, siltation, and pollution. The entire life cycle is dependent on wetlands, yet over half the original wetlands in the conterminous U.S. have been destroyed (Tiner 1984). The most serious losses have occurred among palustrine emergent wetlands, of which about 4.75 million acres (1.92 million ha) were lost between the mid-1950s and mid-1970s (Tiner 1984). Inland, freshwater wetlands, the most important nesting and wintering areas, are among the most threatened habitats (Tiner 1984). Larger wetlands (greater than 10 ha) may support large portions of regional nesting populations, and loss of these wetlands can be critical to populations in many areas. Fortunately, many of the larger emergent marshes and marsh complexes in New York are publicly owned and managed for wildlife habitat.

Agricultural chemicals may have significant, indirect effects by entering wetlands via runoff from upland areas and reducing prey populations. Many of this bird's prey, including aquatic insects, crayfish, and amphibians, are vulnerable to agricultural pesticides.

Threat from acid rain is related to high proportion of amphibians in the American bittern's diet. However, wetlands are typically buffered against shifts in acidity. 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**

__X__ Yes

American bittern is protected under the Migratory Bird Treaty Act of 1918. The Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres in size under Article 24 of

the NYS Conservation Law. Small wetlands that serve as important alternate feeding sites and as "stepping stones" during movements between larger wetlands, receive no legal protection in New York.

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

Large wetlands (>12 acres) 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 and bulrush.

Conservation actions following IUCN taxonomy are categorized in the table below.

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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